Female Entrepreneurship and Trust in the Market

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Abstract

Commerce requires trust, but trust is difficult when one group consistently threatens to expropriate another. If men have a comparative advantage at violence, then without strong contract enforcement, unequal bargaining power can lead women to segregate into low-return industries and avoid entrepreneurship altogether. We present a model of female entrepreneurship that predicts women will only start businesses that interact primarily with men when external authorities can enforce contracts ex post, and when social norms support female bargaining power ex ante. The model's predictions are supported both in cross-national data and with a new census of Zambian manufacturers. In Zambia, female entrepreneurs collaborate less, learn less from fellow entrepreneurs, earn less and segregate into industries with more women, but gender differences are ameliorated when women have access to adjudicating institutions, such as Lusaka's "Market Chiefs" who are empowered to adjudicate small commercial disputes. We experimentally induce variation in local institutional quality in an adapted trust game, and find that this also reduces the gender gap in trust and economic activity.

1 Introduction

Why are some groups, such as women, systematically under-represented in some of the most vital forms of economic activity, including in the domains of business and science? While many of these activities hinge on collaboration, contracts are never complete, and the possibility of hold-up is ubiquitous. Asymmetries of social power and physical strength can mean that more vulnerable groups avoid interactions with the more powerful and occupations where such interactions are important.

Despite the change in the relative importance of physical strength in economic activity, women remain deeply vulnerable to the greater strength of men and the male proclivity to violence (Wilson and Herrnstein, 1985). This has its own implications for economic collaboration, independent of the diminished value of physical strength in the labor force. 31% of women worldwide have been subject to physical and/or sexual violence (World Economic Forum, 2020). Workplace sexual harassment is ubiquitous, with studies in the US measuring incident rates ranging from a quarter to 80 percent of all women in the workforce (Feldblum and Lipnic, 2016). Unequal social norms, guiding behavior both at home and in the market, exacerbate physical vulnerability. Women trust others less, which might be justifiable given the propensity to be expropriated.[1]

This paper examines the connection between female vulnerability and an economic domain which requires significant collaboration to grow - entrepreneurship. Entrepreneurship remains a male-dominated activity in many countries, and female entrepreneurs often cluster in a small number of female-dominated industries (OECD, 2012; Cirera and Qasim, 2014; Fairlie et al., 2017; Singer et al., 2018; Campos et al., 2019; Berge and Pires, 2021; Essers et al., 2020).[2] The self-selection of female entrepreneurs into less profitable activities is particularly pervasive in developing world cities (Klapper and Parker, 2011; Campos et al., 2019; Nordman et al., 2011; Bardasi et al., 2011). Working in industries with abundant female collaborators and customers, such as apparel and food production, allows female entrepreneurs to avoid asymmetric interactions with men. This segregation may explain why women appear to receive lower benefits from loans (De Mel et al., 2008, 2009) and business training (De Mel et al., 2015; Berge et al., 2015), especially when norms are more restrictive (Field et al., 2010; Jayachandran, 2020).

In this paper, we first present a theoretical framework that explores the role of social norms and contract enforcement in exacerbating female vulnerability in economic activity. We extend Behrer et al.'s (2021) result that when adjudicators are weak, the strong trade only with the strong and the weak trade only with the weak. In our model, women choose whether to become entrepreneurs and whether to partner with men. The model embeds two aspects of inter-gender trading relationships. When institutions are weak and facts are unclear, then adjudicators favor the powerful and men are more likely

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[1]Trust is particularly low among women in weak rule-of-law countries. For example, in Africa and South America, typically between ten and fifteen percent of respondents say that most people can be trusted, but that number falls on average by 6 percent among women (World Value Survey, 2004-2014).

[2]Worldwide the proportion of female ownership is below 50 percent and in half of the countries the female proportion is below 20 percent (see Section 3).

to have power.[3]

Better adjudication increases the returns to female entrepreneurship, because anarchy privileges male aggression and violence. Even when adjudicators are strong, if social norms favor male aggression, then men can extract a greater share of the rents from bilateral commercial transactions through their greater bargaining power. In this case, both men and women lose from having weak legal institutions because they reduce overall surplus. Very high male bargaining power and legal bias become a liability for men as well as women, because women refuse to partner with men.[4] There is also a perverse case for when male bargaining power is limited, men actually prefer weak institutions that reduce overall social surplus, because more biased institutions increase their share of profits.

The interaction of weak rule of law and male bargaining power can also affect the allocation of the two genders across industries. In a given industry, the entry of male entrepreneurs can create advantages for women if men have a higher rate of receiving orders, but also disadvantages if they secure a higher share of any joint surplus. If men have no inherent productivity advantage, then women will tend towards gender segregation in environments where they have limited bargaining power with men and there is weak rule of law.

We test the implications of this model both with cross-national data and by focusing on female entrepreneurs in Zambia. In Section 3, we used the World Bank Enterprise Survey, the Doing Business Indicators, the World Justice Project and the World Values Survey to test the model's predictions. The World Justice Project data indicates that courts particularly discriminate against women in many countries and that rule of law is more strongly correlated with female entrepreneurship when courts are deemed, by the World Justice Project, to be less discriminatory towards women.

We measure gender norms against women with indicators of long-standing discriminatory practices within families and limited protection of female physical integrity. Female entrepreneurship is rarer when these measures are high. As the model predicts, contract enforcement appears to complement gender norms that favor women. We find that there is more female entry into male dominated industries in countries with better contract enforcement, in countries with less discrimination against women and, especially, in countries that have both.

We then turn to new micro-data in Section 4, our Census of Entrepreneurs in Lusaka, Zambia. Zambia is a country with both weak rule of law and discriminatory gender norms.[5]

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[3]All over the world, women also face disadvantages in accessing fair legal resolution. For instance, 28% of respondents in the World Justice Project say that being a woman represents a disadvantage with the local police. This share goes from a high of 48%, 33% and 32% in Latin America, MENA and Africa to a low of 14% in Europe and North America.

[4]Family firms can allow women to partner with male relatives who may be less likely to exploit them, but Mehrotra et al. (2011) find no correlation between the prevalence of such firms and norms of gender differentiation.

[5]According to the World Justice Project (http://data.worldjusticeproject.org/), Zambian rule of law is neither particularly good nor particularly bad for sub-Saharan Africa. The country's score on the World Justice Project's Rule of Law Index in below Ghana and South Africa, but above Zimbabwe and

We collect geocoded data on more than 2000 firms, which represents sixty percent of all the manufacturers in Lusaka. Interviews and focus groups suggest that economies of scale can generate large returns to collaboration for these entrepreneurs (as also suggested by Bassi et al. (2021)). In our sample, twenty-seven percent of the entrepreneurs in manufacturing are women, and women earn slightly more than one-half of male earnings. In Lusaka, three-fourths of female entrepreneurs make apparel and eighteen percent make food. Between one-half and three-fourths of the gender earnings gap for Lusaka entrepreneurs can be explained, in an accounting sense, by the massing of female entrepreneurs into two industries that are neither capital nor trust intensive. While many factors contribute to the segregation of women in these industries, in our qualitative work, Lusaka's female entrepreneurs repeatedly emphasized the difficulties of trusting men.[6]

In Section 5, we present our survey measures of trusting behaviors, such as working collaboratively to fill an order or jointly buying inputs or even giving advice. As the model predicts, women are less likely to take actions that require trust. Perhaps most strikingly, we find that women are much less likely to learn their trade from incumbent workers. Instead, they turn more often to formal educational institutions. Alfred Marshall (1890) emphasized that in dense clusters, "the mysteries of the trade become no mystery but are, as it were, in the air," but it seems as if female entrepreneurs cannot access these human capital spillovers in Lusaka, partially because they cannot trust the men that surround them.

We then test whether Lusaka's female entrepreneurs trust more when contract enforcement is stronger. We focus on major local institutions that adjudicate commercial disputes: the Small Claims Court (SCC), Market Chiefs, and the Police. The Small Claims Court is a new institution that enables individuals with small lawsuits to bypass Zambia's overloaded and cumbersome court system. However, few entrepreneurs in our sample made any use of Zambia's formal court system, including the SCC. Instead, most of small-scale entrepreneurs rely on local adjudicators known as "Market Chiefs", who exercise authority over transactions that occur within their own local market areas, and only sometimes refer to the police, which is also deemed to be quite slow and resource-constrained. We measure institutional strength by proximity to the SCC or the Police and location within a market that is adjudicated by a chief.

Female-led businesses located inside formal markets, closer to the Small Claims Court or the Police cooperate more, even controlling for business density, marketplace and industry fixed effects. The gender gap in sales is also smaller within markets.[7]

Nigeria, and is about the same as Russia and Mexico.

[6]Zambia's female entrepreneurs both say that they trust others less, and indeed are less trusting in standard laboratory measures.

[7]Kutsoati and Morck (2015) also explore the connection between rule of law and outcomes for women in Africa, focusing on the Ghana's 1986 Intestate Succession Law 111, which was meant to protect the rights of widows to their husband's estates. The authors find that the mere knowledge of the law provides an incentive for couples to build up family assets jointly, and motivates intervivo transfers from husband to wife. Hyland et al. (2021) focus on gendered laws and show that greater legal equality between men and women is associated with a narrower gender gap in opportunities and outcomes across countries.

A key prediction of our model is that women should disproportionately benefit from unbiased and competent adjudicators. This implies that the average impact of institutions may mask substantial heterogeneity depending on the degree of biasedness of the adjudication process. We focus on market chiefs and collected individual measures of gender bias, legal competence and managerial duties. Consistently with the model, we show that the gender gap in cooperation disappears in markets where the chief is unbiased, while women's cooperation remains signficantly lower than men's in markets with a chief characterized by high gender bias.[8]

To address the endogeneity issue inherent in being inside a market or close to an enforcement institution, in Section 6 we present our population of entrepreneurs with an adapted version of the trust game (Berg et al., 1995), framed as an opportunity to invest in another person's business. We randomize pairs of players into three groups: a control group that received no access to institutions, a treatment group that had access to the Small Claims Court, and a second treatment group that had access to the market chief. As the overwhelming majority of our respondent had either not heard of the Small Claims Court or thought that it was not useful for people like them, we focus on the results with the market chiefs.

In the control group, the game replicates our survey results and echoes the model. We find a significant gender gap in both trust and trustworthiness: women send fewer tokens and return fewer token than men in our game. Sending money in the trust game is positively correlated with our actual measures of cooperation by the participants in their real lives.

In the game, we test whether contract enforcement has a disproportionate impact on women by introducing a form of adjudication which is modelled on actual Zambian institutions, but which has no room for being gender biased. Subjects in the market chief treatment appeal to the chief anonymously, in this way ensuring access to an unbiased judgement (δ close to 0 in the model). We find that randomizing access to this unbiased institution significantly increases women's trusting behavior, increasing the surplus for both parties and earnings for both women and men. This suggests that alleviating frictions to inter-gender collaboration may increase overall economic efficiency, beyond allowing for women's inclusion into profitable economic opportunities.

Our paper contributes to the growing literature on inter-gender relationships in group work and scientific production (Boschini and Sjögren, 2007; Lissoni et al., 2013; Sarsons et al., 2021; Coffman, 2014; Aman-Rana et al., 2021; Shan, 2021). Previous work has highlighted that men (are able to) get more credit than women for joint work and that women's performance worsens in mixed-gender settings, implying that women will seek to work with other women (either through the choice of fields or co-workers). We provide a general framework that can account for this rich empirical evidence, and propose a mechanism through which gender gaps may be mitigated.[9]

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[8]We also find that the chief's level of gender bias is not correlated with the share of female manufacturers within a market (correlation coefficient = -0.05, $p = 0.66$), indicating that we are not simply capturing a selection effect of women-friendly market chiefs being elected in markets with more female businesses.

[9]Lissoni et al. (2013) document that women are more likely to be excluded from inventorship (of

Our results also speak to research on gender-based violence and policies to reduce it (Sviatschi and Trako, 2021; Eswaran and Malhotra, 2011; Aizer, 2010). While most work has focused on gender-specific policies, we highlight that weak institutional quality is not gender neutral. The implication is that improving generalized access to institutions may help mitigate gender gaps and limit men's proclivity for expropriation. Along these lines, close to our work is the paper by Sandefur and Siddiqi (2013), who show that women suing men are much more likely to choose the formal legal system, which guarantees a progressive and unbiased judgement, compared to the lower-cost customary system. Moreover, while gender-based violence has mainly been studied in the context of the household, we propose a framework to think about the role and implications of power asymmetries in one-shot business transactions. This complements recent work on sexual harassment at the workplace (Folke and Rickne, 2022).

Finally, we relate to the literature on court enforcement and firm outcomes (Ponticelli and Alencar, 2016; Cahuc et al., 2021), as well as gender gaps in business in developing countries (Hardy and Kagy, 2018; Field et al., 2010; Campos et al., 2019; Berge and Pires, 2021; Essers et al., 2020; Jayachandran, 2020; Bjorvatn et al., 2022). We contribute by documenting the relationship between contract enforcement and gender gaps in entrepreneurship in a low-income country.

Section 2 presents our model. Section 3 uses international data to test the implications of our model and the complementarity between contract enforcement and female bargaining power. Section 4 describes our Zambian empirical setting and data. Section 5 presents correlational evidence on the relationship between institutions, trusting behavior and the gender gap in entrepreneurship among small- scale entrepreneurs. Section 6 presents the lab-in-the- field evidence on the impact of contract enforcement on trust and business outcomes. Section 7 concludes.

2 Female Entrepreneurship, Gender Bias and Contract Enforcement

We now present a model where female entrepreneurs first choose whether or not to enter into an industry, and then potentially to partner with men. As in Behrer et al. (2021), weak legal institutions intrinsically favor the socially powerful who are able to pressure adjudicators when facts are unclear. The weak anticipate their lack of legal protection and consequently avoiding dealing with the strong. If men have a comparative advantage in coercing weak institutions, then women will not contract with men in weak institutional environments, and they may avoid male-dominated industries altogether. Stronger rule of law enables women to better enforce contracts against men, but even when rule of law is perfect, male bargaining power may still limit the returns to female entrepreneurship.

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patents) in mixed-gender and mixed-seniority teams. However, (Lissoni et al., 2020) show that different institutional settings can mitigate or exacerbate the gap. This result is closely aligned to the crucial role of institutions that we put forward in the paper.

In stage 1, a female entrepreneur "E" is offered a business opportunity to make and sell a product of value π. E is also matched with a randomly chosen potential partner "P". Neither E nor P can make the product on their own at a cost less than π. If the parties do not partner, E can either pay π to produce the good or do nothing. In either case, her payoff is zero.

If the parties do partner, they create a contract that specifies a share of π, denoted s, that will be given to P if the contract is not breached. We assume that there is an adjudicator, who may be a judge or a local strongman. By assumption, the adjudicator will only enforce contracts in which s lies between zero and one, because the adjudicator's power is limited to splitting the profits.

In stage 2, P chooses to work or shirk. P can fulfill the contract and pay a cost of $q < .5\pi$ for effort and materials. He can breach the contract and pay only $q - b$, and we assume that $.5\pi > b - q$. This breach might take the form of P doing shoddy work that must be fixed by E, or not working at all (in which case $b = q$), or of P stealing E's inputs (in which case b may be greater than q). E also pays a cost of q and works during this period[10].

In stage 3, E learns whether P breached or fulfilled the contract. If P fulfilled the contract then no further work is needed. If P breached the contract, then E must pay a remediation cost of $b + \Delta$. The value of b and Δ are both known at the time of the contract and $\Delta > 0$. If E remediates the harm, then she receives a payment of π, and chooses how much to pay P out of that sum. We assume that $2q + \Delta > \pi > b + \Delta$, so that E will remediate if work has begun, but that a partnership will not generate a positive social surplus if shirking always occurs.

In stage 4, either P or E can approach the adjudicator for justice. As in Behrer et al. (2021), the outcome depends on the relative power of the litigants and the obviousness of the facts, which are either disputable or indisputable. We assume that the adjudicator pays a penalty for ignoring indisputable facts, such as external embarrassment or judicial review, but ignoring disputable facts is costless. Consequently, the adjudicator always enforces indisputable facts, but when facts are disputable the adjudicator favors the more powerful.

The share of profits specified by the contract is always indisputable, but P's shirking is disputable with probability δ. We interpret the variable δ as capturing both elements of this particular transaction and overall institutional quality of the courts and society. When institutions are stronger, a wider range of facts will be indisputable. We assume that P learns whether his shirking will be disputable at the beginning of stage 2, and that E learns whether the shirking is disputable at the beginning of stage 3. We do not allow renegotiation at any point after stage 1.

If both litigants are women, then they are equally powerful and the contract will be enforced fairly even if the facts are disputable. The adjudicator will force E to pay P the stipulated share, but will subtract damages of $b + \Delta$ from the payment to cover the damages if shirking has occurred. The adjudicator cannot force a payment from P to E, as we assume that his power is limited to reallocating the surplus. If P is male,

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[10]It is never optimal for E to shirk as she is the residual claimant of the product.

then the contract will be enforced fairly if the shirking is an indisputable fact. If the shirking is disputable, then the adjudicator will assign no damages and force E to pay P the contractually stipulated payment.

This legal or social bias is one source of inequality between men and women. The second bias occurs at the point of bargaining in stage 1. If P is female, then the two agents split the total expected surplus equally. If the partner is male, then he receives a share β of the surplus, where β is determined by social norms about gender and male violence. Male bargaining power can be micro-founded by assuming that men and women alternate making offers, and when a male offer is rebuffed, the man may harm the woman in some way.

When P is female, then a partnership occurs, there is no shirking and both agents receive $.5\pi - q$. Since courts will enforce contracts fairly when both parties have equal power even when facts are disputable, P knows that she will receive no payment if she shirks. Not shirking is incentive compatible as long as $s\pi > b$. If this constraint is satisfied, then the total surplus is $\pi - 2q$. The assumption of equal bargaining power implies that both partners receive one half of this amount, which implies that $s = .5$, and since $.5\pi > b - q$, the incentive compatibility constraint holds.

When P is male, then he will always shirk when there is an opportunity for disputable shirking. Men will not shirk when shirking is indisputable as long as $s\pi > b$, and that generates an incentive compatibility constraint. As the only contracts that are signed prevent shirking when facts are indisputable, then expected surplus for E and P together is $\pi - 2q - \delta\Delta$ when they partner and 0 when they do not partner. Proposition 1 describes the returns to partnering with men (all propositions are proven in the Appendix):

Proposition 1.

If $\delta > min\left[\frac{\pi - 2q}{\Delta}, \frac{\pi - q - b}{\Delta + b}\right]$ then no partnership occurs. If $\delta < min\left[\frac{\pi - 2q}{\Delta}, \frac{\beta(\pi - 2q) + q - b}{\beta\Delta + b}\right]$ then a partnership occurs that sets $s = \beta + \frac{q - \delta b - \beta(2q + \delta\Delta)}{\pi}$, that generates expected welfare of $\beta(\pi - 2q - \delta\Delta)$ to P and $(1 - \beta)(\pi - 2q - \delta\Delta)$ to E. If $min\left[\frac{\pi - 2q}{\Delta}, \frac{\beta(\pi - 2q) + q - b}{\beta\Delta + b}\right] < \delta < min\left[\frac{\pi - 2q}{\Delta}, \frac{\pi - q - b}{\Delta + b}\right]$, which is only possible if $b > \frac{q\Delta}{\pi - 2q + \Delta}$, then the partnership specifies $s = b/\pi$, which generates expected welfare of $(1 + \delta)b - q$ to P and $\pi - q - (1 + \delta)b - \delta\Delta$ to E.

Figure 1 provides the intuition of this Proposition. When the incentive for P to cheat is low $\left(b < \frac{q\Delta}{\pi - 2q + \Delta}\right)$, there are two possible outcomes. If legal institutions are weak $\left(\delta > \frac{\pi - 2q}{\Delta}\right)$, then there is no cooperation and returns are 0 to both actors. If legal institutions are strong $\left(\delta < \frac{\pi - 2q}{\Delta}\right)$, then a contract occurs. Within this region, E and P split the expected surplus $(\pi - 2q - \delta\Delta)$ and E receives $1 - \beta$ times this amount. While both E and P would prefer stronger institutions (lower δ), male bargaining power (β) leads to higher returns for P and lower returns for E. Consequently, female entrepreneurship may need both a relatively egalitarian society (low β) and strong legal or social institutions (low δ) to thrive in male dominated industries.

If the incentives for P to cheat are high $\left(b > \frac{q\Delta}{\pi - 2q + \Delta}\right)$, then there are three regions. When legal institutions are weak ($\delta > \frac{\pi - q - b}{\Delta + b}$), then there is again no partnership. When legal institutions are strong ($\frac{\beta(\pi - 2q) + q - b}{\beta\Delta + b} > \delta$), then a partnership emerges that gives E a share $(1 - \beta)$ of the surplus of $\pi - 2q - \delta\Delta$. In this region, both E and P would prefer stronger legal institutions, while male bargaining power benefits P and harms E.

If the incentives for P to cheat are high $\left(b > \frac{q\Delta}{\pi - 2q + \Delta}\right)$, and legal institutions are neither too strong nor too weak $\left(\frac{\beta(\pi - 2q) + q - b}{\beta\Delta + b} < \delta < \frac{\pi - q - b}{\Delta + b}\right)$, then the female entrepreneur may effectively pay her male partner an efficiency wage of "b" to stop him from shirking when facts are indisputable. In this case, as $(1 + \delta)b$ increases, the returns to P go up and the returns to E go down and total surplus does not change. In this region, men benefit and women lose from weaker rule of law. This perverse comparative static suggests that dominant groups, like men, may actually sometimes prefer weak institutions because that weakness ensures that they will receive a larger share of the surplus, despite the fact that institutional weakness diminishes the overall surplus. The return for men drops from $(1 + \delta)b - q$ to zero at the point where δ exceeds $\frac{(\pi - q - b)}{\Delta + b}$. At this point, male strength becomes a disadvantage because women shun them. This result may help explain why African-American men struggle more than women in the labor market, if a legacy of prejudice means that customers and co-workers are more afraid of African-American men than women. Male bargaining power can also hurt men by reducing the number of female entrepreneurs who are potential partners.

We now endogenize the entrepreneurship choice, by adding a period 0 to the model, in which a continuum of potential entrepreneurs may join one of J distinct industries. We assume that there are a fixed number of men, N_j^M in each industry. In stage 1, entrepreneurs of either gender in industry j receive an order with probability $p_j < .5$, and get paired with a potential partner, who is randomly selected from the entrepreneurs who did not receive an order. If a male entrepreneur pairs with a female partner, then the male extracts extra rents, but there is no issue of later expropriation since it is the entrepreneur not the partner who is at risk.

In step 0, the potential entrepreneurs compare the expected benefits from joining industry j with their entry and opportunity costs. The entry cost is θ_j. Opportunity costs are distributed on the interval $[0, \varphi N_{Total}^F]$ with density $\frac{1}{\varphi N_{Total}^F}$, where N_{Total}^F refers to the total number of women. Consequently, the share of women with opportunity costs less than any value x is $\frac{x}{\varphi N_{Total}^F}$ and the number of women with opportunity costs less than x equals $\frac{x}{\varphi}$. These assumptions imply that if there are N_j^F female entrepreneurs in industry j, then the total entry plus opportunity cost for the marginal entrepreneur will equal $\theta_j + \varphi N_j^F$.

For analytic clarity, we focus on entry into a single industry, but our assumptions imply that women will choose to segregate into a single industry, because returns within an industry for women are always increasing with the number of women in that industry. Consider a possible equilibrium in which women are split across two industries and earn the same amount in both industries. If women move from one industry to another, then

returns for women will increase in the industry that grows and fall in the industry that shrinks, which violates standards notions of stability.

Even within a single industry, there can be multiple equilibria. When there are two equilibria, then at the equilibria with less female entry, the returns to women entering into that industry, net of entry and opportunity costs, are increasing with the number of women in that industry. We will focus on the equilibria with the most female entry, where the net returns to women in that industry are declining in the number of women in that industry. Such equilibria are also the equilibria with most female entry. The next proposition describes the equilibria that can exist:

Proposition 2a.

For industry j, there exists a value of θ_j denoted θ_j^*, and an equilibrium with female entry into the industry exists if and only if $\theta_j \leq \theta_j^*$. The value of θ_j^* is everywhere rising with p_j and π, falling with q and β and weakly falling with N_M^j. If $\delta < min\left[\frac{\pi-2q}{\Delta}, \frac{\pi-q-b}{\Delta+b}\right]$, then θ_j^* is also falling with δ and Δ. If $\theta_j \leq \theta_j^*$, then in the equilibrium that has the largest amount of female entry, the number of female entrepreneurs and their average returns net of opportunity and entry costs are rising with p_j, and π and falling with θ, q, N_M^j and β. If $\delta < min\left[\frac{\pi-2q}{\Delta}, \frac{\pi-q-b}{\Delta+b}\right]$, then the number of female and their average returns net of opportunity and entry costs is also falling with δ and Δ.

Proposition 2a focuses on the possibility of female entry into an industry, because our assumptions never guarantee that women will enter into a particular industry. If entry costs are sufficiently low, women may enter the market. In some cases, which are discussed in the appendix, women only enter if they are surrounded by a large enough group of other women. The maximum entry cost that is compatible with female entry goes up with the variables p_j and π, which reflect productivity and down with q, which reflects cost. If women only enter when they have enough female peers, then a higher value of N_j^M makes that more difficult and reduces the maximum entry cost.

These same comparative statics are shown in the equilibrium entry of women and in the average returns that women earn, net of entry and opportunity costs. The productivity parameters push entry and net returns up; the cost parameters reduce entry and net returns. Male bargaining power reduces net returns and female entry. If the number of men in the industry are larger, then the number of women who enter into the industry will be smaller, because each woman's probability of interacting with a man will be higher.

If $\delta > min\left[\frac{\pi-2q}{\Delta}, \frac{\pi-q-b}{\Delta+b}\right]$, then female entrepreneurs don't pair with men and so that parameters δ and Δ do not impact the returns to entry, or the maximal entry cost that allows female entry or the amount of entry in equilibrium. If $\delta < min\left[\frac{\pi-2q}{\Delta}, \frac{\pi-q-b}{\Delta+b}\right]$, then δ, which reflects the quality of the legal system, and Δ, which reflects the waste from male expropriation, both decrease the maximum entry cost and reduce the amount of female entry in equilibrium. We now turn to the male benefits from female entry:

Proposition 2b.

If $\delta > min\left[\frac{\pi - 2q}{\Delta}, \frac{\pi - q - b}{\Delta + b}\right]$, then the returns to male entrepreneurship are always increasing with β. If $\delta < min\left[\frac{\pi - 2q}{\Delta}, \frac{\beta(\pi - 2q) + q - b}{\beta\Delta + b}\right]$ and $(2\beta - 1)(\pi - 2q) > \beta\delta\Delta$, then the returns to male entrepreneurship are decreasing with δ. If $\delta < min\left[\frac{\pi - 2q}{\Delta}, \frac{\beta(\pi - 2q) + q - b}{\beta\Delta + b}\right]$ and $\Delta = 0$, then the returns to male entrepreneurs are decreasing with β if and only if $((\pi - 2q)p_j - \theta_j)^2 < 2\varphi N_M^j(\theta_j + (4\beta - 3)(\pi - 2q)p_j)$. This condition is guaranteed for all θ_j if $(\pi - 2q)p_j < 2\varphi N_M^j(4\beta - 3)$.

Proposition 2b highlights that men can either benefit or lose from male bargaining power. If $\delta > min\left[\frac{\pi - 2q}{\Delta}, \frac{\pi - q - b}{\Delta + b}\right]$, then men do not partner with female entrepreneurs and consequently, they actually prefer women to stay out of the industry. Even thought they are able to benefit from their bargaining power when they have a job and work with a female partner, they still lose out from female entry overall. Higher bargaining power serves both to extract rents from the women who are in the industry and to keep women out, both of which benefit men when there is little trust between the genders.

If $\delta < min\left[\frac{\pi - 2q}{\Delta}, \frac{\beta(\pi - 2q) + q - b}{\beta\Delta + b}\right]$, the returns to male entrepreneurship are declining with δ. The condition $(2\beta - 1)(\pi - 2q) > \beta\delta\Delta$ guarantees that men benefit from the entry of women and legal certainty increases the entry of women. Moreover, men also lose directly from higher values of legal uncertainty, because in the efficient bargain that is struck up front, women are compensated for the costs that they anticipate.

More surprisingly, it is also possible that men prefer lower levels of bargaining power. However, if $\Delta = 0$, which ensures efficient contracts, and $(\pi - 2q)p_j < 2\varphi N_M^j(4\beta - 3)$, then men prefer to bind their hands and reduce their bargaining power. These conditions ensures that lower bargaining power attract enough extra women and that men value the extra female partners to offset the direct loss in profits.

The model is applied to entrepreneurial collaboration, but it also applies to collaboration more generally. For example, Proposition 1 can explain why female economists are disproportionately likely to write papers on their own (Boschini and Sjögren, 2007). The proposition also suggests why mixed-genders paper among economists are relatively rare. Propositions 2a and 2b can help explain the sorting of female economists in particularly subfields as described by Boschini and Sjögren (2007), just as it can explain the sorting of female entrepreneurs into a few major industries.

The model does not allow for two real-world institutions that both can and do reduce the challenges facing female entrepreneurship in the real world: competition and reputation. Male bargaining power matters in the first stage of the model, because we have assumed bilateral bargaining. In many cases, the woman might have a bevy of possible collaborators and she can extract the lion's share of the rents even when men tend to bargain aggressively. Competition will not solve the problem of expropriation, but particular men could specialize in providing trustworthy partnerships for women. Their reputation could attract future female partners and become a valuable asset that would then provide an incentive to future good behavior. Yet if there are few women

in the field, then the incentive to create such a reputation is limited, and expropriation may yield higher returns than reputation-building.

A third omitted element is the role that male family members can play either at the initial bargaining stage of a relationship (stage 1) or during a dispute (stage 4). Our focus group participants frequently discuss being accompanied by their husbands to negotiate for better prices, but they also note that the man's presence can come at the cost of lost control over the business or a share of the profits. To capture this possibility, we can interpret the parameter β as the total share received by the male partner and the husband. We could also add an extra stage to the model where E has the option to bring in male support at the adjudication stage at a price, which might be another potential risk of expropriation.[11]

In the empirical work that follows, we test whether the existence and success of female entrepreneurship depends on contract enforcement, less biased social norms or both.

3 Cross-National Evidence of Female Entrepreneurship and Contract Enforcement

In this section, we first document three stylized facts about female entrepreneurs globally: the rate of female entrepreneurship is often shockingly low, female entrepreneurs appear to earn less than male entrepreneurs and are strongly segregated into a small number of industries. Second, we introduce our measures of legal weakness and social bias against women. Third, we show suggestive evidence for our model's prediction that female entrepreneurship depends on both good contract enforcement and limited social bias, and particularly on the co-existence of both.

3.1 Three Stylized Facts about Female Entrepreneurship Worldwide

The relative paucity of female entrepreneurs is a well-known fact in the developed world. In the U.K., France, Germany and U.S., more than two men select into entrepreneurship for every nascent female entrepreneur according to the Global Entrepreneurship Monitor (GEM) and the Kauffman Foundation (Singer et al., 2018; Fairlie et al., 2017).[12] Gender gaps in entrepreneurship as large are also found in the developing world, but things are more heterogeneous and depend on the sector as well as geographical region. In 2016 the female-to-male ratio in entrepreneurial activity was around 0.7 in South Africa, 0.8 in Botswana and Burkina Faso and only around 0.4 in Tunisia or Egypt according to the Global Entrepreneurship Monitor (Kelley et al., 2017). The gender gap persists over

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[11]For instance, a focus group participant mentioned: "At the beginning of the business a man took on credit and she had to chase him at the Intercontinental Hotel with someone else. I was scared that he would take advantage of me."

[12]The GEM survey is collected across countries and, for each country, at least 2000 adult entrepreneurs/business managers are surveyed. It interviews nascent and established entrepreneurs in urban/rural areas and excludes people who are considered to be out of the labor market (e.g., retirees). Specific information can be found here https://www.gemconsortium.org/wiki/1157.

the life-cycle of the firm and is as large for long-established firms, if not larger (Kelley et al., 2017).[13]

We replicate these results using the 2006 to 2020 waves of the World Bank Enterprise Survey. We limit our sample to businesses which are sole proprietorships or partnerships, and define female entrepreneurship as the share of firms that have a (weak) majority of female owners.[14] Figure 2 shows that Moldova, Timor Leste and Bolivia are the only countries in the sample with a clear majority of firms led by women (with an average sample size across years of collection of 45, 131 and 247 firms respectively). In more than one-half of the countries, fewer than one-in-five enterprises have a majority female ownership.[15] Not only is the global level of female entrepreneurship low, the rates of female entrepreneurship appear to differ significantly across countries.[16]

The gender gap in entrepreneurship can be associated with either decreased returns to female entrepreneurship or higher opportunity costs of women's time, perhaps because of productivity in home production. If the gender gap reflected opportunity cost of time, then the returns to entrepreneurship should be higher for women, but that does not appear to be the case. The World Bank Enterprise Survey provides more reliable measures of revenues than profits, so we focus on the revenue differences between female and male led firms. Across the entire sample, male firms average 0.65 log points higher sales than female led firms controlling only for year of data collection (a reduction in the mean of sales by 48 percent).

Female entrepreneurs may earn less because they specialize in industries with lower returns or because there are more female entrepreneurs in poorer countries. In Figure 3, we show the distribution of earnings controlling for year of data collection, industry (ISIC 3.1 code) and country fixed effects.[17] The overall sales gender gap is 0.57 log points controlling for industry, year and nation (a reduction in the mean of sales by 43 percent). A Kolmogorov-Smirnov test rejects the equality of these two distributions at the 99 percent level, and as the figure shows, the distributions differ especially in their right-tail. Women seem to hit a cash ceiling to their earnings. The fact that women and men differ especially at the top of the distribution of sales goes against the idea that women are negatively selected into entrepreneurship, as this would predict a larger

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[13]The Global Entrepreneurship Monitor classifies entrepreneurs in two broad categories: nascent entrepreneurs and owner-managers. A nascent entrepreneurs is someone who is involved in setting up a business. Owner-managers are those entrepreneurs who have been working for longer, either for a new or an established firm.

[14]We exclude 6.2 percent of countries with less than 20 observations in this sample.

[15]The distribution looks very similar considering female-led businesses as firms with at least a female owner.

[16]Hardy et al. (2022) discuss some drawbacks in using the WBES to measure gender shares in entrepreneurship. In particular, the WBES gender-blind sampling protocol, which focuses on larger and formal enterprises, seems to underestimate the presence of female entrepreneurs in Sub-Saharan Africa compared to nationally representative surveys such as the LSMS. However, Hardy and coauthors show that gender shares between the two sources of data are similar when considering businesses with 5 or more employees in the LSMS survey.

[17]ISIC Codes 3.1 are based on the question "In the last complete fiscal year, what were this establishment's two main products (represented by the largest proportion of annual sales)?".

difference in outcomes at the bottom of the distribution.[18]

Perhaps the most surprising fact about female entrepreneurship is that it is so concentrated in a small number of industries. The three industries with the greatest proportion of female managers across countries are retail trade (ISIC 3.1 code 52), manufacturers of food products and beverages (ISIC code 3.1 code 15) and hotels and restaurants (ISIC code 3.1 code 55). While female owners only own fourteen percent of all manufacturing firms in our global sample, they own twentyone percent of enterprises in food and apparel production. The cross-country average of the Herfindahl–Hirschman index (HHI) of industrial concentration is 0.13 for female-led businesses, which is significantly greater than the 0.04 average HHI for male-led businesses (p=0).[19]

The industries chosen by women not only have a greater proportion of peers of the same gender, but they also have more female customers and employees. For instance, female-led firms employ more women in both production and non-production roles than male-led firms. On average, fifty percent of the fulltime workforce in female-led firms is made of women. This percentage is almost halved (to 28 percent) in male-led firms. Similarly, sixty percent of female-owned firms have a female top-manager, as opposed to only seven percent of firms with a majority of male owners.

3.2   Measuring Contract Enforcement and Gender Norms

We now turn to our measures of gender norms and contract enforcement. To measure biased gender norms, we use the Social Institutions and Gender Index (SIGI), created by the OECD Development Centre and covering 180 countries.

The SIGI index constructs variables on four gender-related topics (discrimination in the family, restricted physical integrity, restricted access to productive and financial resources, and restricted civil liberties) based on qualitative and quantitative data on discriminatory social institutions. We focus on the SIGI index of discrimination in the family, which is based on laws on child marriage, household responsibilities, inheritance, and divorce. We also look at the SIGI Physical Integrity Index, which includes laws on violence against women and reproductive autonomy, attitudes towards and prevalence of female genital mutilation (FGM) and domestic violence, missing women, and access to family planning. There are two years of data collection for the SIGI: 2014 and 2019. For each country, we average the scores in the two years to build one unique measure of gender norms.[20]

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[18]Consider a model in which selection into entrepreneurship depends on outside option, which is the maximum between home production and wage employment. Ceteris paribus, if the formal wage that men can get is higher than women's wage (e.g. because of discrimination in labor markets), the threshold level of profits (either due to entrepreneurial ability or sector-specific profitability) above which people choose entrepreneurship over wage labor is lower for women. This would predict that women select in low profit sectors and have lower profits within sector. However, the difference between men and women should be greater at the bottom than the top (because only at the very top of ability women can enter formal sector).

[19]For each country, the HHI is computed as the sum over industries of squared shares of female (or male) entrepreneurs.

[20]More information on the SIGI can be found here: https://www.genderindex.org/.

The SIGI measures of discrimination in the family and physical integrity should not directly relate to commercial contracts signed by women, but they should capture social norms towards women and the social acceptability of male violence against women, which are conceptually closest to our male bargaining power variable: β. These measures are particularly removed from the commercial and public spheres, and strongly correlated with long-standing cultural practices. We supplement these measures with the proportion of respondents in a country in the World Values Survey who agree with the statement "it is justifiable for a man to beat his wife" as a measure of gender norms about violence, as well as the Global Gender Gap Index (GGGI) by the World Economic Forum.[21]

Our main measure of contract enforcement is the Enforcing Contract Score from the World Bank Doing Business Data (WBDB). The Enforcing Contract Score measures "the time and cost for resolving a commercial dispute through a local first-instance court and the quality of judicial processes, evaluating whether each economy has adopted a series of good practices that promote quality and efficiency in the court system". This measure should capture the extent to which courts will enforce binding contracts signed by men and women, which is captured by our variable δ. For years between 2006 and 2019, we consider the score computed using the latest methodology and we then average the score across years, to have a unique average measure of contract enforcement quality for each country.[22]

We complement the Doing Business data with measures from the Worldwide Governance Indicators (WGI) and the World Justice Project (WJP).[23] The WGI rule of law index captures "perceptions of the extent to which agents have confidence in and abide by the rules of society, and in particular the quality of contract enforcement, property rights, the police, and the courts, as well as the likelihood of crime and violence" (Kaufmann et al., 2010). We also use the World Justice Project Rule of Law Index, which relies on surveys with citizens and legal experts to measure how the rule of law is perceived and experienced around the world.

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[21]The GGGI index measures the progress of countries towards gender parity across four themes: Economic Participation and Opportunity, Educational Attainment, Health and Survival, and Political Empowerment. We focus on the Educational Attainment index and its components (all in ratios): female/male literary, female/male net primary enrolment, female/male net secondary enrolment, and female/male gross tertiary enrolment. Again, our hope is that these variables capture gender norms, but do not directly relate to the enforcement of contracts signed female entrepreneurs. The four variables come from the UNESCO Institute for Statistics. More information on the GGGI can be found here: https://www.weforum.org/reports/the-global-gender-gap-report-2017.

[22]The Doing Business data are collected through study of the codes of civil procedure and other court regulations as well as questionnaires completed by local litigation lawyers and judges. For more information, see: https://subnational.doingbusiness.org/en/data/exploretopics/enforcing-contracts/what-measured.

[23]The Worldwide Governance Indicators report on six measures of governance (voice and accountability, political stability and absence of violence, government effectiveness, regulatory quality, rule of law, and control of corruption) for over 200 countries since 1996. The six indicators are created by summarizing data from 30 different sources, that report views of citizens, experts, and private and NGO sectors. The questions from each data source used to construct the rule of law index can be found here: http://info.worldbank.org/governance/wgi/index.aspx#doc.

To measure legal bias against women, we use the World Justice Project's survey of qualified respondents. This survey asks legal experts throughout the world to assess the quality of the judicial system. One question asks "In your opinion, how likely are the following criteria to put a person at a disadvantage before a civil or commercial trial court?" where one of the "criteria" is being female. The World Justice Project produces this measure as a score on a zero to one scale, where one represents less bias in the judicial system. We also use the overall score of the World Justice Project's survey of qualified respondents on equal treatment of the genders by all legal institutions.[24] The correlation between this measure of bias against women and the WGI measure of contract enforcement is .61, suggesting that when overall rule of law is weaker, courts show more bias against women, just as the model suggests.

3.3 Female Entrepreneurship, Gender Norms and Rule of Law

We now turn to the relationship between gender norms, contract enforcement quality and female entrepreneurship. Figure 4a shows the cross-country relationship between female ownership, on the vertical axis, and the SIGI family discrimination measure. The correlation coefficient is -0.53, which is significant at the one-percent level. The fitted line suggests that as a country improves from the 90th percentile (42.5) to the 10th percentile (11.3) of discrimination in the family, the predicted level of female entrepreneurship increases from 7 to 26 percent. Social attitudes towards women are strongly correlated with low levels of female entrepreneurship.

Female entrepreneurship is also correlated with variables that measure modern, commercial institutions. The WBDB Enforcing Contract Score should capture the extent to which men and women are able to sign binding agreements that enable them to work together.

Figure 4b shows the correlation between the WBDB Enforcing Contract Score and the rate of female entrepreneurship across countries. The correlation coefficient is 0.28, and the relationship is statistically significant at the 1 percent level. The fitted values suggest that as a country moves from the 10th percentile in the quality of contract enforcement to the 90th percentile, the share of female entrepreneurship increases from 21 to 30 percent.

Appendix Table C.1 shows the univariate and bivariate (controlling for country level income) relationships between female entrepreneurship and our other measures of gender norms and contract enforcement. The World Value Survey measure of whether "Men make better business leaders than women" has a -.5 correlation with female entrepreneurship and a t-statistic of -4.62 in a bivariate regression with country level income. The World Justice Project measure of court bias against women in a commercial or civil court has a correlation coefficient of .25 with the entrepreneurship measure and a t-statistic of 1.76 in the bivariate regression.

We now look at the complementarity between female bargaining power and fair and

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[24]This overall score is an average of the scores on equality of genders in courts, hospitals, government hiring and police.

effective institutions that was predicted by our model. Our hypothesis is that women will enter into economic interactions with men, and most entrepreneurship requires such interactions, when they are safe both from expropriation through male bargaining power and from expropriation through the adjudication process.

We continue to use the SIGI index of discrimination in the household, based on laws on child marriage, household responsibilities and divorce. For our measures of overall legal quality (δ), we return to the Enforcing Contracts Score from the WBDB at the national level years of the World Bank Enterprise Survey.

Tables 1a and 1b show the basic interaction between contract enforcement quality and discrimination against women. Table 1a shows that there is plenty of variation across countries in the patterns of contract enforcement and family discrimination. There are 43 countries in our sample with high contract enforcement quality and low discrimination in the family, and 43 countries in our sample with bad contract enforcement and high discrimination. There are also 44 countries which are off the diagonal, with either high contract enforcement and high discrimination or weak contract enforcement and low discrimination. Table 1b shows the female entrepreneurship patterns across the table. The entrepreneurship rate is 15 percent in the box with low contract enforcement and high discrimination, but moving to either off-diagonal square increases the female entrepreneurship rate to 18 or 24 percent. Moving to the high rule of law, low discrimination panel effectively almost doubles the female entrepreneurship rate to 27 percentage points.

Our model focused on the entry of women into male-dominated industries, and predicted that women would be willing to join female-dominated industries even when gender norms are discriminatory or adjudicators' quality is low. While we believe that this prediction is supported by the segregation of women into a small number of industries, even these industries are typically predominantly male. Consequently, our results on overall female entrepreneurship can be interpreted as examining whether women enter into male dominated fields.

Nonetheless, we now also ask whether our contract enforcement and gender bias variables also predict whether women enter into the industries that are much less likely to include women worldwide. To do this, we recalculate female entrepreneurship rates only in manufacturing. Figure 5 provides a graphical illustration of the distribution of countries depending on their level of discrimination in the family (x-axis), score of contract enforcement (y-axis) and rate of female entrepreneurship in manufacturing. Square red markers indicate countries with above-median female ownership in manufacturing, while hollow blue circles are for countries with below-median rate of female manufacturers. The share of countries with above-median female entrepreneurship is 30 percent in the bottom-right quadrant, where discrimination is high (above median) and contract enforcement quality is low (below median). In the top-right and bottom-left quadrant such share goes to 42 and 56 percent, respectively. Most of the countries with rates of female manufacturing above median are concentrated in the top-left corner, where 70% of all countries are characterised by such high levels of female manufacturing. Indeed, 25 countries out of the 56 countries that have female manufacturing rates above median

are located in the top-left quadrant.

4 The Zambian Context and the Census of Small-Scale Manufacturers

In this section, we discuss the Zambian context and the Census of Small-Scale Manufacturers that is the starting point for our work on female entrepreneurship in Lusaka. Zambia is a natural setting to study weak institutions, gender discrimination and female entrepreneurship. Zambia ranks 99th out of 179 countries in the 2019 SIGI index of discrimination within the family and of 94th out of 132 countries in the 2019 SIGI index of physical integrity restrictions. Sixty-eight percent of the 2007 World Values Survey respondents in Zambia say that it is justifiable for men to beat their wives in some circumstances, which is the highest share in sub-Saharan Africa.[25] Just as in many Sub-Saharan African countries, entrepreneurship is a particularly important activity for many households in urban Zambia. Despite weak rule of law and gender discrimination, our Census still documents a sizable number of female entrepreneurs.[26]

4.1 The Lusaka Census of Small-Scale Manufacturers

Between May and September 2016, we collected the Lusaka Census of Urban Entrepreneurs ("Census" from now on), which is a spatial mapping of all the firms in Lusaka. For each establishment operating from a fixed location, across all industrial sectors, the Census includes geocoded location, industrial classification at the North-American Industry Classification System (NAICS) 4-digit level, number of employees and structural description (e.g., standalone building, inside markets).[27]

The Census data describe the distribution, size and characteristics of economic activities in a fast-urbanizing environment and supplements the Central Statistical Office's 2012 Economic Census of the whole country. Our Lusaka Census includes a total of 48,163 establishments. As there were 16,063 businesses listed in Lusaka District in the 2012 Economic Census, our data suggests either 200 percent growth rate over 4 years

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[25]South Africa, Nigeria and Zimbabwe follow with 63, 54 and 52 percent respectively.

[26]In 2012, 40 percent of adults in Zambia were starting a new business according to the Global Entrepreneurship Monitor (Xavier et al., 2012). Zambia has 1.02 million informal Micro, Small, and Medium Enterprises (MSMEs)-one for every five members of Zambia's total labor force (Shah, 2012). According to the 2015 Living Conditions Monitoring Survey, 54.6% of working women and 36.5% of working men are self-employed without employees in urban areas in Zambia. These percentages drop to 0.8% and 1.6%, respectively, for employers.

[27]A business was considered to operate from a fixed location if 1) the business operated from a permanent structure with concrete foundations, 2) the business maintained either stock or machinery on site overnight, and 3) the permanent structure in question was not exclusively used for storage. Our analysis split Lusaka into sub-regions called Census Supervisory Areas (CSAs), and our census covered all the businesses in 90 percent of all CSAs in Lusaka district. For security reasons, we excluded 8 CSAs in the region surrounding Chibolya compound (Harry Mwaanga Nkumbula ward). We also excluded areas of low population density in the following wards: Kabulonga, Lubwa, Lilayi, Munkolo, Mwebeshi, Kamulanga, Munali, Roma and Mpulungu.

or differences in methodology or comprehensiveness. Our data includes far more small firms than the 2012 Economic Census. Ninety percent of the firms in our Census have fewer than 5 employees, six percent have between 5 and 10 employees, and fewer than one percent have 50 or more employees.[28]

Figure 6 shows the spatial distribution of businesses in the Census, which enables us to construct measures of business density at a granular level.

Table 2 presents the distribution of businesses across industries at the NAICS 2-digit level and the main characteristics associated with the businesses. The largest sectors (by number of businesses) are retailing, accommodation and food industry, and other services (the vast majority being hair dressers). Retailing firms typically have fewer employees compared to any other industry. The Census also shows that Zambian manufacturing enterprises are smaller - in terms of employment - than those in both neighboring and developed countries (Hsieh and Klenow, 2009; Bloom et al., 2014).

We complemented the Census with a short survey of business owners with less than 20 employees belonging to manufacturing, mining, and construction, which we refer to as the "Census of Small-Scale Manufacturers". This survey had a total of 2,216 respondents, which accounts for 58.3 percent of the total number of businesses in these sectors. The survey includes questions on business practices, sales and history, levels of trust, collaborative behavior with other businesses, and demographics.[29] We instead know the gender of the owner for 97% of businesses eligible to participate in the "Census of Small-Scale Manufacturers".[30] We focus on manufacturing because it is traditionally male, offers the possibility of exploiting economies of scale through partnerships and has been a priority for the Zambian industrial and development strategy for decades.[31]

Women-led businesses represent twenty-six percent of the businesses in manufacturing, construction and mining (N=3,723), which is unsurprising given that manufacturing is often a male-dominated activity (Global Partnership for Financial Inclusion and International Finance Corporation, 2011; Campos et al., 2014).[32] Women's firms have 0.38 fewer full time employees and 0.7 fewer part time employees than male-led firms.

Women earn less than men. On average, women's sales value in good weeks is 2,356 Kwacha (KW), as compared to 4,085KW for men, or 180 and 311 dollars in the current exchange rates for women and men respectively (1 KW = 0.076 USD). In bad weeks,

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[28]In the 2012 Economic Census, the percentages were respectively 71, 11 and 3 percent. In total 84 percent of businesses disclosed their employment figures in our Census, so the percentages in the body of the paper refer to about the 40,517 respondents to this question. Some larger businesses were unwilling to share their employee numbers with our census takers.

[29]If the owner was not available, the interview was conducted with the main manager.

[30]Gender is available also for non-respondents as it was coded by our surveyors when asking about the owner's availability to participate in the survey.

[31]Recent research in Uganda and Ethiopia (Campos et al., 2014; Alibhai et al., 2017) show that women could potentially have high returns in manufacturing, but both social norms and fixed set-up costs might be barriers to female entry. We focus on a different source of gender gaps in our paper, in interaction with these traditional explanations.

[32]Gender segregation is also apparent in highly developed economies, as shown in the introduction. According to the Kauffman Index of Start-up Activity 59.4 percent of new entrepreneurs in the U.S. were male in 2015 (Morelix et al., 2016).

women earn on average 599.9KW as compared to 1,313KW for men, or 45 and 100 dollars respectively. Figure 7 shows the kernel densities of logged-sales in good and bad weeks by gender, where the sales variables have been winsorised at the top 1% to remove the influence of outliers.[33] The distributions are significantly different between men and women and women earn less most of the times (p=0.00, Kolmogorov-Smirnov equality-of-distributions test). Moreover, men have a higher variance in sales in good weeks than women's (p=0.00, variance ratio test), which is driven primarily by a thicker right-tail. While the variance in sales during bad weeks is not different between genders (p>0.50, variance ratio test), both the minimum and maximum value of sales are lower for women than for men.

4.2 Gender, Segregation and the Earnings Gap

Figure 8 shows that Lusakan women make different sectoral choices than men. Ninety-three percent of women operate in apparel and food manufacturing, while women represent a minority in wood, metal manufacturing and printing. Women appear to select into non-complex industries, despite having on average the same qualifications as men.[34]

In our survey of manufacturers, industry choice, not observable human capital, explains much of the gender gap in earnings. Male and female entrepreneurs have similar levels of education, as shown in Table 3. Women are more likely to have participated in management or entrepreneurship training than men and the two groups do not differ in terms of practices such as record keeping.[35]

Column (2) of Table 4 shows the raw gender gap in sales variables (average, in good week and bad week), both in levels and logs, and employment level and growth. Column (3) shows that controlling for education does not reduce the gender gap in sales. These results are unchanged when using or including alternative proxies for skills, such as literacy, numeracy, social skills.[36]

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[33]During piloting, we found that recalling exact sales digits or for periods longer than a week was challenging for most of the respondents. We thus asked the sales in the previous working day, the sales in a good week and the sales in a bad week. If the person could not provide an exact number, we also asked for an upper and lower bound. We then imputed the average of the bounds to the sales variables.

[34]We define non-complex industries as industries that have less than the mean number of skilled occupations associated with the corresponding NAICS 3 code, whereby the mean of number of skilled occupations by NAICS code is computed using the Census data (following Minondo and Requena-Silvente, 2013). Our index of complexity is correlated with owner's education in the data.

[35]48.5 percent of men and 47.2 percent of women report to keep written records of all the sales and purchases of their businesses (p>0.50). 34.3 percent of men and 32.4 percent of women use budgets to plan for future costs.

[36]The definitions of these alternative proxies are as follows. For literacy, subjects were asked whether the sentences "The light balloon floated in the bright sky" and "A comfortable pillow is soft and rocky" make logical sense. For numeracy, subjects were presented with the following question: "Suppose you have K1,000 in a bank account with no bank fees. The bank pays interest of 10 percent each year. How much money will you have after 2 years?" Subjects were then presented with a choice of either "Less than 1,200 Kwacha", "1,200 Kwacha exactly", or "More than 1,200 Kwacha". For social skills, subjects stated how much they agreed, on a scale of 1-5, with the statement "I know what other people are feeling just by looking at them", as well as "Gaining happiness requires taking it away from others" and questions on how often the subject talks with others about social topics (e.g., sports) or personal topics

Column (4) of Table 4 adds controls for industry and Column (5) add household constraints, including marital status and work time. Selection into different industries explains between two-thirds and three-fourths of the gender gap in average sales, in logs and levels respectively. The coefficient on the female dummy for log sales in a good week is reduced from -0.59 to -0.18 when controlling for education and industry, and the R-squared goes from 0.045 to 0.26. The coefficient on log sales in a bad week is similarly reduced by one-half when controlling for education and industry, and the R-squared goes from 0.045 to 0.25. The average level of sales is the lowest in apparel manufacturing - where most women operate - and the highest in food manufacturing. The other sectors lie between these two. Employment growth differences between the two genders are completely explained by the distribution of the two genders across different industries. Controlling for sector, education, working time and marital status makes the coefficient on the female dummy insignificant for sales in levels, log sales good weeks and employment variables. This evidence is compatible with previous studies also finding that women enjoy less profitability and lower sales growth even controlling for extensive observable characteristics (Bardasi et al., 2011; Klapper and Parker, 2011; Campos et al., 2014; Campos and Gassier, 2017; Nordman and Vaillant, 2014; McKenzie and Woodruff, 2017; Hardy and Kagy, 2018, 2020). Recent evidence by the World Bank similarly finds that one-quarter of the gender gap in profits in the Democratic Republic of Congo can be explained by industry (Campos et al., 2019). As we have emphasized throughout this paper, one explanation for female industrial segregation may be that, when gender bias is large and institutions are weak, women cannot trust men.

4.3   Adjudicators in Lusaka

Zambian rule of law is neither particularly good nor particularly bad for sub-Saharan Africa, but it is in the bottom half of countries worldwide. The country's score on the World Justice Project's Rule of Law Index is below Ghana and South Africa, but above Zimbabwe and Nigeria, and about the same as Russia and Mexico. Zambia's overall index of gender equality and gender equality in courts from the World Justice Project are among the lowest in Africa. Not surprisingly, Zambian firms cite institutional constraints as being more important than those related to finance to their expansion and growth (Bloom et al., 2014).

There are three main sources of legal support for small-scale firms in Lusaka: the formal court system, the police and more informal local adjudicators. Few entrepreneurs in our sample made any use of Zambia's formal court system, which are notoriously slow and cumbersome. Instead, many of them rely on the police, which is also deemed to be quite slow and resource-constrained, or local adjudicators known as "Market Chiefs", who exercise authority over transactions that occur within their own local market areas. We describe each of these institutions in the following paragraphs.

There are approximately 80 formal markets in Lusaka. These fall under two broad categories: council and cooperative. Cooperation appears to be easier within the market,

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(e.g., health).

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and somewhat surprisingly, rents also appear to be lower, at least relative to space in well-travelled commercial thoroughfares. The offsetting downside of markets is that they are sometimes harder for customers to access, have shorter opening times and business space is limited.

The 30 council markets are regulated by Lusaka City Council and are led by a market chair (henceforth referred to as a chief) who is elected by market members or appointed by the Council. The chief's functions are guided by legislation and market unit guidelines.[37] The cooperative markets usually have a market committee of 6-10 members, including a democratically elected chair.

Figure 9 shows the spatial location of markets with blue dots. Markets generally have their own system of rules. They set fines for prohibited behavior, such as drinking or insulting other marketeers on site, and rules of suspension for behavior such as theft or disobedience of the market committee. Most importantly, the market chiefs resolve disputes among marketeers and market customers.

One typical dispute was that a marketeer sold his plot within the market to two different people, taking money from both. The marketeer did not have assets to seize, beyond the plot, but the chief knew a lender had agreed to loan the marketeer some money. To solve the dispute, the chief ensured this loan money was given to one of the buyers.

In another dispute, a customer complained that a marketeer had failed to fulfill his promise to fix a television. The chief gave the marketeer a deadline of two days to meet the customer's request or pay a fine. As one chief said, "we want to handle disputes internally and peacefully first," and "only if this does not work do we go to the police."

Markets are an essential part of Lusaka's business environment: 30 percent of firms across all industries in our Census and 59 percent (N=1324) of manufacturers are located in formal markets.

To address the weaknesses of the formal court system, a Small Claims Court was founded in 2008 by an act of Parliament and opened in 2009. No legal representation is required, as the court is intended to hear minor cases, for example, relating to employment, borrowing and lending, insurance and fraud. The court only permits cases involving amounts up to 20,000KW (around 1,962 USD), which represents 150 percent of average sales in a good month.

To file a case with the Small Claims Court, a plaintiff must first produce a letter of demand which opens the case and serves notice to the defendant. This letter of demand brings with it a seal of the court and often by itself can be sufficient to recoup any contested amount (at a cost of 5Kw, around 50 cents in USD). Many cases get settled

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[37]Arrangements in Council markets vary. Sometimes they have two figures in charge: a market "master" and a market chairperson (the chief). The former is a civil servant appointed by the Lusaka city council who usually has a short mandate (around one or two years) and does not run or own a business in the market. The market chairperson (the chief) is elected by marketeers and/or shareholders of a market (those who own a space within the market) to manage the market and represent them where necessary. The market chief works hand in hand with the market master in the day to day running of the market, and s/he is the main person in charge of dispute resolutions. The market chiefs' tenure is longer than the master's and in most of the cases is between 3 to 5 years.

between the two parties at this initial stage. However, if the defendant refuses to pay the amount stated in the letter of demand, a court hearing is scheduled where the defendant has an opportunity to submit a written defense. Within a month of being served, the case is heard and, depending on the outcome, the losing party has to pay according to a certain schedule. If the plaintiff wins, the defendant has to pay back the money and also cover the legal costs.[38]

The time frame to settle the claim is usually outlined in the judgement by the commissioner. Defendants can be asked to pay in installments over a period of time or to pay in 14 days; if they fail, bailiffs are engaged. In extreme cases where an individual is not able to pay, the person can be imprisoned. This outcome is rare because the amounts the court deals with are small and the defendant's relatives usually pitch in to help prevent the person being incarcerated. The Small Claims Court currently has excess capacity, due to lack of awareness. In our data, only 21% of respondents had heard of it, and of those, 56% did not believe "people like them" had access. Market Chiefs are a far more common mechanism for resolving disputes. Anecdotally, Senior Clerks at the Small Claims Court note that women sue mostly men, especially their (former) employers.

Alongside formal courts, the police is another common institution where small-scale businesses bring their disputes. Since the late 1990s, the Zambia Police Service has being particularly focused on establishing a connection between its forces and the communities they serve. For instance, in 1999 a Community Services Directorate (CSD) was established with the explicit goal to improve policing within communities and commercial centers. Community Liaison Officers were created to help the vulnerable and disadvantaged people in the community, including women. We geocoded all the 93 police stations and posts in Lusaka. Figure 9 shows where the Small Claims Court is located and the location of police stations.

5 Trust, Gender and Institutions in Zambia: Observational Evidence

Partnerships in Lusaka resemble the world of incomplete contracts described by our theory. Written contracts are used only in one out of five partnerships. Collaborations are mostly triggered by time constraints (e.g., in fulfilling big orders), which limits entrepreneurs' ability to search for partners. In seventy-five percent of cases, partnerships form between entrepreneurs that are located close to each other. In this section, we first

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[38]If the Small Claims Court makes a decision on a case and the defendant does not settle the claim, a writ of execution is issued by the courts and bailiffs are engaged. The writ of execution is put on the file together with a report from the bailiffs about the property they seized, how much they realized at auction and whether the amount recovered covered the full claim. The bailiffs are not allowed to seize personal items such as clothing and the tools of trade of the individual. In practice, the plaintiff has to know the residence of the defendant in order to give detailed directions to the bailiffs (a sketch map is usually on file for these cases). In cases where the amount realized from the seized property is not enough to cover the claim the court will tell the plaintiff to keep a look out if the defendant buys new property and contact the bailiffs so that they can seize the new property.

examine whether female entrepreneurs are less trusting and form fewer partnerships than their male counterparts. We then look at whether this gender gap is ameliorated by physical proximity to local institutions: Market Chiefs, the Small Claims Court and the Police.

5.1   Gender and Trust

To examine whether women have a disadvantage in bargaining, we look at their trust levels and interactions with other businesses. Throughout the paper, we use the following survey measures of trust asked in the Census of Small-Scale Manufacturers and taken from the World Values Survey (WVS) and General Social Survey (GSS):[39]

- Trust GSS: Do you think that most people can be trusted or you cannot be too careful? (one-zero indicator variable)

- Trust in Strangers: How much do you trust people you meet for the first time? (from 1 (not at all) to 4 (completely))

- Trust in Neighbors: How much do you trust your neighbors? (from 1 (not at all) to 4 (completely))

- Trust in Business: I am comfortable leaving my shop unattended during the day if I need to do something for 30 minutes (5-points Likert scale from strongly agree to strongly disagree) [40]

These measures of trust can be interpreted in different, but related, ways. They can be seen as the internal psychic cost of betrayal, or as the individual belief in others' trustworthiness. That belief might reflect the reality that some people have a greater ability to enforce trustworthy behavior relaying on either low-cost tools such as social sanctions, or high-cost tools, such as violence or courts. In the model, trustworthy behavior reflects the existence of a high-cost enforcement tool (the adjudicator), but in reality, many forces may shape individual's answers to these questions.[41]

We couple these general trust questions with questions about business behavior that involves trust, including the formation of business partnerships. We conducted extensive piloting to identify the most common cooperative activities that small-scale manufacturers engage in, across all industries. We then adapted the language used by our piloting participants to create the following four questions:

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[39]See tables D.1 and D.2 for validity checks of the survey measures of trust and trustworthiness using our experimental data.

[40]The Trust in Neighbors and Trust in Strangers variables were converted into dummy variables by combining low scores (1 and 2) and high scores (3 and 4). Low scores were given a value of 0, and high scores a value of 1. Trust in business was also converted into a dummy variables by combining low scores (1, 2) and high scores (3, 4 and 5)

[41]This flexibility allows us to interpret individual trust as a proxy of individual investment in social capital. As for any other form of capital, investing in social capital requires forming expectations on its returns, which can be affected by several determinants such as other's trustworthiness, risk aversion and the ability to punish cheating (Glaeser et al., 2000; Ashraf et al., 2006; Butler et al., 2016).

- Sometimes two or more businesses participate in a common order from a client, or one business subcontracts to other businesses part of an order. Have you ever done this with another business like yours? (share order)

- Sometimes businesses make joint orders of materials from suppliers. Have you ever done this with another business like yours? (joint buy)

- Sometimes businesses ask for advice (or give advice) to other firms doing their same activity, for instance on topics like: the production process, the market conditions, new technologies, business practices, suppliers. Have you ever done this with another business like yours? (advice)

- Sometimes businesses borrow (or lend) machines, materials or other assets from firms doing their same activity. Sometimes they hire (subcontract) employees who come from other firms doing their same activity for a short period of time. Have you ever done this with another business like yours? (lending)

In our analyses, we use both indicator variables that take on a value of one if an individual ever engaged in a particular activity and also an index of cooperative behavior from their responses (averages of the four indicator variables).[42] We end this section by also discussing our limited information on the transfer of knowledge across Lusakan entrepreneurs.

Panel A of Table 5 shows the mean differences in trust between men and women. Women are less trusting across all three direct survey measures. Women are more likely to disagree with the statement that they would be comfortable leaving their shop unattended. Panel B of Table 5 shows that women are also less likely to engage in any of the four cooperative behaviors that we measure.

Table C.2 shows that low levels of trust are associated with lower frequency of co-operation among entrepreneurs. These results support the view that the trust questions are capturing something real about the trustworthiness of the environment. Table C.3 shows that cooperative behavior is also correlated with our three measures of sales. While these correlations do not imply any causal relationship, they are compatible with the view that entrepreneurial activity benefits from the ability to form partnerships with others.

In the previous section, we documented that female entrepreneurs selected into less profitable industries. Our model suggests that this self-selection occurs because women choose industries with other women, because they are able to trust and partner with those women, either as customers or collaborators.[43] Figure 11 shows that women collaborate more and similarly to men in apparel, which is the only gender-balanced industry in our data. In contrast, women in other industries cooperate less than female tailors, and substantially less than men.[44] Figure C.1 replicates this evidence by looking at

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[42]Results are robust to alternative aggregations of these variables, such as a z-score.

[43]This latter explanation is in line with the results by Campos et al. (2014), who identify role model as one of the most important reasons for women to select into industries.

[44]Differently to women, men tend to cooperate slightly less in apparel manufacturing. This reassures that female tailors' cooperation level is not driven by a higher industry-specific need for collaboration.

more general social interactions with other entrepreneurs. Women talk less about the business with other entrepreneurs than men, but that tendency disappears in industries that are not male dominated. Thus women who work in the disproportionately female industries have cooperative and social interactions that are as frequent as men in those industries.

Perhaps the most important form of cooperation occurs when one urbanite shares knowledge with another. In these informal industries, many skills are often passed along from one worker to another. Yet chains of knowledge also require trust. In many cases, a skilled worker who teaches a newcomer expects that student to serve as an apprentice. For centuries, the relationship between mentor and apprentice has been open to abuse. Apprentices, including Benjamin Franklin, run away to avoid promised service. Mentors typically gain the power to punish their students either physically or by harming their reputations, and that power also creates the potential for misuse, especially between a man and a woman.

Panel C of Table 5 shows that male entrepreneurs are far more likely to have been taught their trade by another entrepreneur or a family member. Female entrepreneurs are usually formally trained. Female entrepreneurs are also less likely to have taught others their trade and slightly less likely to talk with others frequently about the business, but this last difference is not statistically different from zero.

Table 6 shows these results using a linear probability model with controls for business density and owner characteristics. Regression (1) shows that women are 18.4 percent less likely to learn their trade from another owner. Regression (2) shows that they are 13.2 percent less likely to learn from another owner in the same industry. Regression (3) shows that they are 15 percent less likely to learn from family and friends, which seems more plausibly related to gender discrimination within the household than trust.

The last three regressions in the table show the relationship between the source of the owner's knowledge, sales and employment. Regression (4) shows that in a good week, women have sales that are .6 log points lower than men, but this difference is largely reduced if women have learned from another owner or family member. Regression (5) repeats this regression for sales in a bad week and finds quite similar results. Regressions (6) and (7) repeat the regression using employment and employment growth as the dependent variables. The pattern for employment is similar but the interaction between owner gender and source of skill is not significant. If human capital externalities rely on trust, then women may be unable to access those externalities and benefit fully from working in a dense urban environment.

5.2 Institutions and Female Trust

In this section, we ask whether institutions can mitigate the gender gap in collaboration and earnings among Lusaka manufacturers. The model predicted that female entrepreneurship requires both female bargaining power and strong contract enforcement, and gender norms appear to be quite biased in Zambia. Yet conditional upon entry, the model predicts that women will be unequivocally more likely to partner with men when rule of law is higher, independent of gender discrimination.

The two conditions for partnership in Proposition 1 are $\frac{\pi-q-b}{\Delta+b} > \delta$ and $\frac{\pi-2q}{\Delta} > \delta$, depending on parameter values. Both conditions depend on the returns to partnership and the returns and costs of cheating, but as long as these parameters are held constant, the model strongly predicts that improvements in the quality of legal institutions will make partnership between men and women more likely.

We use two measures of institutional strength: access to the justice offered by the chief of a formal market and physical proximity to either the Small Claims Court or the Police. We then compare the outcomes of female and male entrepreneurs who are located within a market, or close to the Small Claims Court or the Police, with their counterparts who are located either outside a market or further away from the Small Claims Court or the Police.

A primary question is whether these measures of access actually capture δ. If market chiefs or formal institutions such as courts or the police are thoroughly biased, then physical proximity to them will not engender cooperation by women. The closest mapping between these measures and our model occurs when women have no ability to enforce contracts against men without these institutions ($\delta = 1$), but that with these institutions δ decreases to some lower number.

Table C.4 shows survey evidence consistent with this mapping between the theory and the data. Panel A of Table C.4 shows the preferred institutions where participants in our lab-in-the-field experiment (see Section 6) would bring a business dispute. The great majority of respondents would bring the dispute to the Market Chief (73 and 68 percent of men and women, respectively). This is also the institution with the highest reputation: 55 percent of men and 50 percent of women in the sample think that their market chief is always or usually fair and only 18 and 24 percent of men and women, respectively, think that the chief is always or usually slow. The police is the second commonly used institution for business disputes (with 17 percent equally for men and women) and the Small Claims Court is the last. Interestingly, the percentage of women who would refer to the court (11 percent) is more than double the percentage of men (4 percent), and the difference is even more strinking if we limit the sample to those few business owners who have heard of the Small Claims Court. Panel B of Table C.4 shows that market chiefs and the court tend to have the highest reputation in terms of fairness and speed of resolution, while the police tends to be considered less fair and slower on average. Overall, this evidence suggests that the local institutions we are considering are a good proxy for the imperfect adjudicators of our model.

Table 7 shows the following regression where cooperative behaviors are regressed on access to legal institutions and the interaction between these institutions and gender. We run regressions of the form:

$$y_{ism} = \beta_1 Fem_{ism} + \beta_2 instProx_i + \beta_3 Fem_{ism} * instProx_i + X'_{ism}\delta + \lambda_m + \epsilon_{ism}$$

where y_{ism} is the outcome variable for business i in sector s in market or within 1 km from market m. The set of controls X_i includes the following characteristics about the area around the business: the logarithm of the total number of businesses within 100

meters of business i, the logarithm of the total number of businesses in the same industry (NAICS3) within 100 meters around business i, a dummy for whether the business is within 100 meters of a market and the population density in the administrative area where the business is located ("density controls"). This set of controls allows us to isolate the effect of proximity to institutional support from the effect of urban density on business interactions. Both the Small Claims Court and several markets are located in areas of the city with a high business and population density. Omitting controls for density would bias our estimates of the effect of $instProx_i$ on cooperation upward, as density can have a direct positive effect business cooperation. We control for both business and population density as increased business interactions can be driven by either supply (other businesses) or demand (customers) factors. To control for idiosyncratic differences in the quality of market chiefs and police stations across marketplaces, we add marketplace fixed effects (λ_m) and standard errors are clustered at the marketplace level.[45] Our empirical strategy thus compares the effect of institutional proximity for businesses of different genders that are exposed to similar demand conditions and agglomeration effects, controlling for unobservable characteristics of the marketplaces where business are located. Our coefficient of interest is β_3, which captures the systematic effect of institutional support on female owners' outcomes.

We define $instProx_i$ in two ways. To estimate the effect of the market chief, $instProx_i$ is an indicator variable equal to one if the business i is located inside a formal market. To estimate the effect of being close to formal institutional support by the court or the police, $instProx_i$ is an indicator variable equal to one if the business i has a lower than median distance from a police station or from the court.[46]

The dependent variables in columns 1-4 of Table 7 are the indicator variables that capture cooperative behavior: whether the respondent said that they had lent/borrowed capital, given/received advice, participated in a common order from a client, or placed a joint order of materials with another business like their own. The dependent variable in column 5 is their mean.

Panel A of Table 7 shows that being in a market disproportionately increases women's probability of enacting any cooperation activity with other businesses and average cooperation.[47] This is consistent with the hypothesis that strong market leaders might

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[45]A marketplace is defined as the set of businesses located inside a formal market or within one kilometer from the market. Each business located outside a formal market is assigned to only one marketplace, that is the closest market within a kilometer. Businesses located further than one kilometer from a formal market (N=103) are assigned to one extra category instead of a marketplace ("Far from market").

[46]If $instProx_i$ is a dummy for being close to the police or the court, we further control for being located inside a market. If $instProximity_i$ is a dummy for being inside a market, we also control for a dummy for proximity to the police or the court.

[47]The relationship is substantially unchanged when including business owner controls (our set of individual controls includes: whether the business owners trust their neighbors, how old the business is, how many days the business owner spends working in the business, age of business owner, whether business owner is married or not and indicators for educational achievement). It is also qualitatively the same when controlling for both industry fixed effects and individual controls, but the direct and interacted effect of gender is attenuated. See table C.5 of the Appendix.

provide support to women's interactions with other businesses, overcoming their disadvantage in bargaining power. Figure 10 shows that the increase in women's average cooperation in markets is not driven by markets where women's manufacturers are the majority, but also happens in markets where men's manufacturers are the majoritarian group.[48]

Panel B of Table 7 shows the relationship between cooperation and the distance to the Small Claims Court or the police. Being close to the Small Claims Court or the police disproportionately encourages cooperation for women.[49] Figure C.2 shows the proportion of people of each gender cooperating with other businesses based on quintiles of distance from the closest formal institution (between the Small Claims Court or the police). Cooperation is stable for men, with the exception of the more distant areas. If women's business location is farther from the Small Claims Court or the police, then cooperation diminishes. Both Panels of Table 7 tell a consistent story in which access to legal institutions disproportionately enables cooperation by female entrepreneurs.

Table 8 turns to sales and employment, which are our primary measures of economic success. We use the same empirical specification described at the beginning of this section, but we further control for sector s fixed effects given their explanatory power for gender differences. The outcome variables in Columns (1) to (3) are average sales, sales in a good week and sales in a bad week. The outcome variables in Columns (4) to (6) are constructed from the same survey responses, but transformed into logs.[50] Women sell less than men in all the specifications and in four of six specifications the difference is significant. The interaction term is positive across all the columns, suggesting that female businesses particularly benefit from locating within a market and having access to a market chief. Only the coefficients in levels are statistically significant, but they are large in magnitude: the coefficient on being located inside a market for a woman is similar to the coefficient on the female dummy. The coefficient on the market dummy is negative across specifications and significant in five out of six, indicating that male-owned businesses perform worse inside markets than their counterparts outside the same market. Columns (7) to (8) focus on fulltime employment level and growth. While women tend to have smaller business - that do not grow - with respect to men, the gender gap is attenuated inside markets.

These results suggest that the economic pie in markets is smaller for everyone, but relatively smaller for men than women, with a resulting attenuation of the gender gaps in economic performance uncovered in previous sections. Given the central role of the Chief in dispute resolution, these results may reflect women's increased ability to trust and redistribute the pie in their favour when there is a strong enforcing institution such

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[48]Figure 10 splits the sample in markets with above 40% female share of manufacturers, which is the 75th percentile of the distribution of female shares in the sample.

[49]This relationship remains the same even when including business owner controls (as defined above) and when controlling for industry fixed effects. See Table C.5 of the Appendix.

[50]As in previous specifications using sales, the variables have been winsorised asymmetrically at the top 1% to control for outliers and reduce noise. Appendix Figure C.3 shows the robustness of the coefficients on the interaction term $Fem_{ism} * instProx_i$ for different cleaning procedures of the sales variables.

as the markets chief. The worse economic performance of businesses inside markets also suggests that owners may be negatively selected into markets. However, the mitigated gender gap may still be the result of the chief's support as long as selection is not differential by gender. We consider selection issues at the end of this section and of section 5.3.[51]

In Panel B of Table 8 we focus on the relationship between proximity to formal institutions and economic outcomes. There seems to be no strong evidence on formal institutions significantly affecting businesses' sales, neither for the female nor for the male-owned businesses. Indicator variables for being close to the Small Claims Court or the police, and their interaction with the gender indicator, are largely insignificant. One natural interpretation of these results is that the Market Chief is a far better known and more frequently used remediation mechanism than the Small Claims Court, which is largely unknown in our sample, or the police, which has a reputation of being slow and ineffective.

One concern with the exercises presented in this section is that businesses decide where to locate. If there is endogenous selection of more cooperative female businesses closer to local institutions, our estimates would capture this selection rather than the effect of institutional support per sè. Table C.11 shows that in the raw data female-led businesses tend to locate closer to the Small Claims Court or the police. However, gender differences become small and not statistically significant when we include marketplace fixed effects as we do in our main specifications. Another worry is that the higher density of businesses in markets might mechanically increase the opportunities - and thus the incentives - for cooperation. However, our specifications control for granular measures of business density, which should address this issue.

5.3 Institutional Bias and Female Trust

So far we studied the average impact of having access to any form of adjudicator, controlling for the idiosyncratic differences between market chiefs through market-area fixed effects. In this section, we ask whether the positive effect of institutional proximity on women's cooperation depends on the degree of institutional bias against women. Our model predicts that women should disproportionately benefit from unbiased and competent adjudicators, who are characterized by a low parameter δ. The extreme case of a completely biased adjudicator ($\delta = 1$) should be, for women, equivalent to not having any adjudicator at all. This implies that the average impact of institutions may mask substantial heterogeneity depending on the degree of biasedness of the adjudication process.

The focus of this section is on market chiefs, who are the most used and well-known adjudicator for our manufacturers. In 2021, we went back to Lusaka's markets and tried to interview all the market chiefs who were in charge of markets during 2016. We found a total of 76 respondents, of whom 68% are the original 2016 chiefs and the remaining

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[51]The effect of being in a formal market on mean sales remains the same when including business owner controls (as defined above) in addition of industry fixed effects. See Columns (4) to (6) of Table C.5 of the Appendix.

are the new chiefs in charge in a certain market. Appendix D contains details on the survey collection.

Our main measure for δ is an index of the chief's gender bias, which captures the extent to which the chief is unlikely to help a woman in a business dispute against a man and/or has traditional gender values. The gender bias index aggregates survey answers about the chief's use of subjective decision rules, whether the chief thinks that a woman is unlikely to win a dispute against a men, whether he thinks it's more likely to catch a thief for a male rather than a female marketeer and whether he reports more traditional gender attitudes and values (measured through questions taken from the World Value Survey and the World Justice Project).[52]

We further construct two indexes which capture the overall quality of the chief's adjudication process (index of legal competence) and the chief's degree of involvement in the market affairs (index of managerial duties). We consider the former as the component of parameter δ which captures overall institutional quality (e.g., how easy is to find evidence to be used in the adjudication), thus we expect better legal competence to positively affect business collaboration. We also look at the chief's managerial burden as a possible confounder of the relationship between chief's characteristics and female outcomes.

We restrict our attention to businesses located inside markets and compare the collaboration behavior of women and men, now allowing for differences across markets in the degree of chief's gender bias. Figure 12 shows the coefficients from the following regression:

$$coop_{ism} = \beta_1 Fem_{ism} + \beta_2 HighIndex_{im} + \beta_3 Fem_{ism} * HighIndex_{im} + X'_{ism}\delta + \epsilon_{ism}$$

where $coop_{ism}$ is average cooperation for business i in sector s located inside market m, Fem_{ism} is equal to 1 for being a female owner and $HighIndex_{im}$ is a dummy variable for having a chief who scores above median in one of the indexes constructed from the Chiefs' survey (gender bias, legal competence and managerial duties). The set of controls X_{ism} is defined in section 5.2.

Figure 12a shows the main results on the relationship between chief's gender bias and female trust in business. The top panel of Figure 12a shows that women inside markets cooperate as much as, or even slightly more, than men, as discussed in the previous section. Perhaps not surprisingly, men cooperate more in markets with a high degree of chief's bias against women compared to markets where chiefs are less biased. This is consistent with men being able to take advantage of biased institutions in their business dealings. However, Figure 12a further shows that men face the risk of not being able to find female partners in markets with biased chiefs. Consistently with our main hypothesis, the bottom panel of Figure 12a shows that coefficient β_3 is negative and significant, indicating that women's cooperation is signficantly lower in markets with a

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[52]The exact components of the index are listed in Table D.2. Questions on the way in which the chief arbitrates disputes were asked referring to two hypothetical scenarios involving a female and a male marketeers, reported in Appendix D.

chief characterized by high gender bias. We also find that the chief's level of gender bias is not significantly correlated with the share of female manufacturers within a market (correlation coefficient = -0.05, $p = 0.66$), indicating that we are not simply capturing a selection effect of women-friendly market chiefs being elected in markets with more female businesses.

Figure 12b shows that female cooperation is also related to the degree of legal competence of the chief. High legal competence benefits both men and women, as both coefficients β_2 and β_3 tend to be positive, but their magnitude and significance highly depend on the controls used. A robust result is that women in markets with a legally competent chief cooperate significantly more than women in markets with an adjudicator of low quality ($p \leq 0.10$ across specifications). This is an important piece of evidence which suggests that better institutions, even in a gender neutral way, have the potential to benefit women in business.

Finally, Figure 12c shows that a busy chief seem to favour male rather than female cooperation. Importantly, this effect is not coming from a positive relationship between managerial duties and gender bias, as the correlation coefficient is -0.15 between the two indexes ($p < 0.10$).

Appendix Figure D.1 shows similar patterns by comparing the average cooperation levels of women located inside versus outside markets with varying levels of chief's gender bias, legal competence and managerial duties. Figure D.1a shows that there is no significant difference in the cooperation behavior of women located outside markets which differ in the degree of chief's bias, a fact which reassures that the constructed index is not only a proxy for broader gender attitudes in the area where the chief operates. Moreover, the bottom panel of Figure D.1a shows that, for the sample of women only, there is a negative interaction between being located inside a market and having a gender-biased chief.

Despite the robustness of the trends shown in the last two sections to different controls, unobservable characteristics of entrepreneurs located into markets might be driving our results. For instance, the fact that men perform worse relative to women inside markets may suggest that the marginal female marketeer is better than the marginal male marketeers, implying that the higher cooperation by women inside markets could be explained by their better quality. Heterogeneity on chief's gender bias may be driven by reverse causality, such that chiefs become less biased in areas where women and men cooperate more together. We address these issues in the next section, where we present results from a lab-in-the-field experiment that shows the causal effect of unbiased institutions on trust and business cooperation.

6 Trust, Gender and Institutions in Zambia: Experimental Evidence

To provide causal evidence of the impact of unbiased institutions on trust and business cooperation, we perform an embedded experiment with a sample of Lusaka entrepreneurs.These experiments, an adapted version of the trust/investment game pio-

neered by Berg et al. (1995), examine whether institutional support particularly impacts female players. We take an extreme case of our model: an unbiased institution ($\delta = 0$) which adjudicates on a business dispute. We run the games with actual entrepreneurs located inside or around formal markets and involve actual local institutions: Market Chiefs and the Small Claims Court judges.

6.1 Experimental design

Using data from the Lusaka Census of Urban Entrepreneurs, we randomly selected participants for the experiment, stratifying by gender and whether the business is located within a market. In order to avoid imposing on marketeers' time and to increase control, we conducted the game within people's shops. Surveyors communicated with each other electronically to convey to a player the choice of their partner in real time.

The sample selection procedure was designed to oversample manufacturers and women in a selection of Lusaka's 80 dense urban marketplaces. We chose sixteen markets that contained the largest numbers of (female) manufacturers. For each market, we used the Census data to assemble a list of entrepreneurs located inside the market and a list of entrepreneurs outside the market, but within 500 meters of its borders. We oversampled the manufacturing sector by placing all of the manufacturers at the top of the list in random order and all other businesses at the bottom of the list in random order. If a marketeer could not be located or refused to participate, we replaced the marketeer with the next female on the list. As soon as all women had been exhausted, the recruiters simply moved to the next marketeer on the list. The survey team visited businesses on the lists in this way until they had valid responses for 24 businesses inside each market and 6 businesses outside each market. We recruited a total of 480 participants across the 16 marketplaces.[53]

The experiment consists of a modified version of the trust game (Berg et al., 1995), framed as an opportunity to invest in another person's business opportunity.[54] Player A (the Investor) was given 10 tokens that could either be kept or invested in the business of Player B (the Trustee). The Trustee received three times the number of invested tokens and must decide how many to return to the Investor. The Trustee used the strategy method: before receiving the Investor's tokens, he or she completed a matrix indicating how many tokens they would like to return for a given amount sent. The decision in their matrix was followed even if they wanted to change it after the Investor's offer.

Participants played the game for two rounds in total, but they switched roles between the first and the second round. Players who started playing as an Investor (Trustee) would play as a Trustee (Investor) in the second round. After the game was complete, players could exchange tokens for real money. The sessions were on average 90 minutes long. Investors earned on average 11.4KW (1 dollar at the time) and Trustees earned

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[53]We excluded 3 responses in the analysis because of limited attention and understanding of the respondent.

[54]We relate to a rich literature using a similar methodolody (Bohnet et al., 2008; Fehr and Rockenbach, 2003; Ederer and Schneider, 2019; Bartoš and Levely, 2021). However, we are not aware of other studies involving real institutions.

6.6KW (0.60 dollars) per round. These amount to 3.6 percent and 2.1 percent of average daily earnings.[55] In addition, all players received a participation fee of 35KW (3.5 dollars) as a token of appreciation for their time.

We cross-randomized two experimental conditions (Table 9). The first condition tests the effect of institutions on trust. We randomly assigned pairs of players to three groups: a control group that receives no access to institutions, a first treatment group that has access to the Small Claims Court and a second treatment group that has access to the market chief. If the Investor is dissatisfied with the number of tokens received, then the Investor may ask the experimenters to go on their behalf to the court or chief to adjudicate. Excerpts from the instructions of Players A and B follow:

> If you think that the number of tokens sent back by Player B is not fair, you can ask us to call the chief (senior clerk at the Small Claims Court) on your behalf, to decide how many tokens each of you should get. The chief (senior clerk) will then decide how many tokens each of you should get. The chief's (senior clerk's) ruling is based only on your choices and the choices of player B, and we will tell you their decision accordingly. The chief (senior clerk) does not know anything about you and the other player, only your choices. Player B will know that you can complain to the chief (senior clerk). In the case that you complain, the final division of tokens will be determined by the ruling of the chief (Small Claims Court).

> Player A can ask us to consult the chief (senior legal clerk at the Small Claims Court) on his/her behalf, to decide how many tokens each of you should get. The chief's (senior clerk's) ruling is based only on your choices and the choices of player A, and we will tell you their decision accordingly. The chief (senior clerk) does not know anything about you and the other player, only your choices. In the case that player A complains, the final division of tokens will be determined by the ruling of the chief (Small Claims Court).

The implementation of the complaint required us to ensure that participants trusted that the experimenters would call the institution to complain, and that the Chief and the Small Claims Court Senior Clerk would understand the game and act as if it were a real-life dispute. We provide details on our solutions to these challenges in Appendix B.

In previous sections, we showed that cooperation levels are higher for businesses located inside formal markets than outside formal markets. The second experimental condition allows us to explore whether this result is driven by in-group vs out-group dynamics which could increase cooperation within markets independently of contract enforcement (Kranton et al., 2020). Pairs of players were randomly assigned to two groups. For the first treatment group, both players were drawn from within the same

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[55]In 7 percent of chief-treated games and 9 percent of court-treated games, the Investor asked for arbitration. Average earnings for all games before arbitration were 11.3 tokens for the Investor and 6.7 for the Trustee.

market. For the second treatment group, one participant was drawn from the market, while the other from outside the market. For all groups, the players are told whether they are playing with a person from the same market or an outsider. The two experimental conditions were cross-randomized, yielding five distinct experimental groups.

In order to assure understanding of the game, everyone had to correctly answer understanding checks about the rules of the games with the surveyors before proceeding.

We also implemented a Pre-Games Survey with questions about access to institutions and exposure to crime. We asked entrepreneurs whether they had had disputes with other business owners, how disputes had been resolved, and whether respondents had heard of the Small Claims Court. We also presented business owners with a hypothetical scenario in which one marketeer failed to pay back a loan to another. Business owners were asked whether they thought that the market chief, Small Claims Court, and police would be fair and/or slow in arbitrating the dispute.[56]

Table C.6 shows mean differences by gender of these variables. Even though men and women are equally likely to have had work-related disputes and to know about institutions such as the Small Claims Court, men are significantly more likely to seek out another person, group or institution for help in resolving the dispute. This suggests women believe that institutions will not be effective for them. The fact that both women and men are similarly prone to be victims of theft, but the thief is rarely caught when the case involves female entrepreneurs, suggests why women may hold such a belief. Men and women are equally pessimistic about the fairness of police or the chief on average, but women are more likely than men to think that either the market chief or the police are slow in dispute resolution (see Table C.4). Overall, Table C.6 indicates that institutions may be more effective for men, which leads women to rely less on these institutions and to have lower trust levels. Yet even biased institutions may be better for women than a complete absence of adjudication.

The pre-games survey showed a significant difference between market chiefs and the Small Claims Court. Market chiefs are a well-known institution to both men and women. For instance, one participant said that, in his market, the marketeers "have resolved to take all disputes to the market chairman". Half of the games participants think that the chief is "usually or always" fair in solving disputes.

The participants also note the flaws of Market Chiefs. One-fifth of men and one-quarter of women think that the chief is "usually or always" slow in solving disputes.[57] Moreover, across markets, the chief's perceived fairness decreases as the proportion of female manufacturers increases. In the games, we improve upon this well-known institution by ensuring anonymity, which should eliminate any possibility of gender bias, and by bringing claims to the Chief on the participants behalf.

The subjects' awareness of the Small Claims Court's existence was far more limited. Eighty percent of our sample had not heard of the Small Claims Court before. Among the

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[56]Answers to these questions are presented also in Table C.4. The pre-game survey might have primed participants to think about their past experiences with institutions before the play. This should not be an issue for the interpretation of the results as long as this effect is the same across experimental conditions.

[57]Anecdotally, taking a long time to arbitrate a dispute is one common way in which Market Chiefs try to favor one party of the dispute.

20 percent who had heard of the Small Claims Court, half gave a negative answer to the question "whether they thought that business owners like them had access to the Small Claims Court". Five women out of 25 (and 7 men out of 76) mention that the Court has high costs and "terribly" long procedures.[58] This limited and faulty knowledge, which we discovered only after setting the experiment in motion, led us to conclude that the Small Claims Court was not understood as an institution and we therefore present our results on the Small Claims Court only in Appendix tables.

We will interpret having access to the market chief - as compared to the control - as an improvement to the local institutional quality (decrease in δ).

6.2 Results on Trust and Trustworthiness

Table 10 shows our primary results. Regression (1) uses the amount sent in the trust game as our experimental measure of trust. In this regression, we find that women without access to the Market Chief trust much less than men. This trust gap is compatible with all of the previous results in this paper showing the female entrepreneurs collaborate less than men.

This trust difference is eliminated when we introduce the market. As Figure 13 shows, men and women have a sizable gap in trust without the Market Chief. With the market chief, this gap disappears. This result suggests that experimentally generated differences in access to contract enforcement encourage cooperation disproportionately for women in a developing world setting.

Regression (2) examines trustworthiness using the average return ratio, as in Glaeser et al. (2000). We divide the number of tokens the Trustee would return by the number of tokens available (return ratio) for each possible amount of tokens received, and then average over all return ratios. Somewhat surprisingly, women actually return less than men. The mean level of trustworthiness does not increase when we introduce the Market Chief, although Figure 14 shows that there is a reduction in the variance of return ratios with the Market Chief.[59]

Figure 15 shows that the increase in business investment by women in the Chief condition is driven by markets where the chief has above-median gender bias.[60] This result is consistent with our interpretation of the experimental treatment as providing an unbiased ruler where participants can appeal. Women used to unfair or slow chiefs benefit the most from the improvement in local institutions offered in the game. Women located in markets where the chief has a good reputation also slightly increase the tokens sent as Investors, probably as access is also easier in the game compared to reality.

Why did the Market Chief increase trust, especially for women, but not trustworthi-

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[58]For instance, one female participant felt like the Court "is a waste of time due to complicated procedures and costs. Also most people are illiterate and don't understand the services provided as well as what it's for".

[59]In particular, the Market Chief condition discourages very low return ratios among men.

[60]A similar pattern is observed if we split the results by median level of marketeers' opinion about the chief (in terms of fairness and speed): the increase is coming from markets where the chief has a below-median reputation.

ness? This apparent puzzle reflects one major difference between our experiment and reality. The Market Chief in the experiment has no ability to punish, just to change the return ratio. Consequently, there was no real reason for Trustees to alter their behavior above and beyond the norm considered fair by the marketeets (which is 50% return rate). The main effect of the Market Chief is indeed to coordinate trustees' behavior and, thus, concentrate return ratios closer to the norm. The Investors, on the other hand, could still feel more protected, because even if the Trustee behaved badly, the Market Chief could still protect their investment.

Regressions (3) and (4) of Table 10 show the final earnings. Regression (3) shows that female and male Investors in the control group tend to receive the same number of tokens at the end of the game. The chief raises the Investors' total earnings, with the effect being statistically the same for entrepreneurs of both genders. Regression (4) shows that the chief has little impact on the earnings of the Trustees.[61]

Zooming-in into rounds of the game with male or female investors, Figure 16 shows that women's increased trust in the Chief condition leads to an increase in the overall pie, with a greater share for both the Investor and the Trustee.

7 Conclusion

The developing world's rapid urbanization generates economic opportunities because urban density allows for collaboration and trade that is just not possible on far-flung farms. Yet the ability to interact positively is limited if one partner consistently fears expropriation by the other. Consequently, contract enforcement complements urbanization, not just because effective public order reduces activities that generate negative externalities, like water pollution, but also because adjudication enables a wider range of positive interactions.

The advantages of contract enforcement are particularly high when one set of actors has more power in a state of anarchy than the other. If men are more prone to use violence than women, then this will reduce women's bargaining power without legal support, and may cause inter-gender partnerships to break down or fail to form. In Lusaka, we believe that that industrial segregation of female entrepreneurs partially reflects the advantages of being able to trade within genders.

A central theme of this paper, and an implication of our cross-sectional and experimental work, is that even gender-neutral applications of contract enforcement can have benefits that accrue disproportionately to women. When rule of law is absent, the threat of violence looms over even seemingly innocuous market transactions. Men have displayed a disproportionate propensity towards violence across almost every known human society (Wilson and Herrnstein, 1985). Consequently, enforcing basic rule of law can make it easier for women to transact with men.

A second theme is that female entrepreneurship can be blocked both by weak institutions and by social norms that favor men and male bargaining power. Women can

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[61]See the Appendix for results of the game splitting the sample by all the different institutional treatments.

either lose in ex ante bargaining or ex post expropriation. Women will only enter entrepreneurial fields where much of the benefits require dealing with men, when they are protected from both types of loss.

While our paper focuses on women's expropriation risks in entrepreneurship, the interplay between contract enforcement and norms is central also in other settings, such as formal employment. An implication of our model is that the strength of contract enforcement should matter only in entrepreneurship, while discrimination should affect women's outcomes in both wage work and self-employment. This predicts that improvements in contract enforcement may not necessarily affect women's labor force participation over the course of development (Olivetti and Petrongolo, 2016), but may change the relative expected utility of self-employment with respect to wage work, affecting the occupational structure by gender (Ashraf et al., 2022). Future research may shed further light on this topic.

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Tables

Table 1: Countries by Contract Enforcement Quality and Discrimination in the Family

(a) Number of Countries

Number of countries			
		Discrimination in family	
		Low	*High*
Contract Enforcement Quality	*High*	43	22
		33%	17%
	Low	22	43
		17%	33%

This table shows the categorization of countries in our data using "discrimination of the family" from the SIGI above or below median (on the columns) and the World Bank Doing Business Contract Enforcement Score (on the rows) above or below median. We average observations for each country, so that there is a unique observation for each country in the dataset.

(b) Female Entrepreneurship

Female ownership			
		Discrimination in family	
		Low	*High*
	High	27%	18%
Contract Enforcement Quality	*sd*	[0.11]	[0.12]
	N	36	19
	Low	24%	15%
	sd	[0.11]	[0.10]
	N	18	37

This table shows the proportion of firms with female ownership in each combination of countries, categorized using "discrimination of the family" from the SIGI above or below median (on the columns) and the World Bank Doing Business Contract Enforcement Score (on the rows) above or below median. We average observations for each country, so that there is a unique observation for each country in the dataset. We define female-owned businesses those with a weak majority of female owners.

Table 2: Descriptive Statistics for Entire Census

	Mean	Observations
Number of Employees	2.27	40,517
Industry (Naics2)		
Retailing industry	0.51	48,163
Manufacturing industry	0.08	48,163
Accomodation/food services industry	0.14	48,163
Other Services	0.13	48,163
All Other Industries	0.13	48,163
Number of Employees by Industry		
Number Emp. Retail ind.	1.12	20,472
Number Emp. Manufacturing industry	3.86	3,625
Number Emp. accom/food services ind	2.34	5,854
Number Emp. other services ind	1.20	5,541
Number Emp. other ind	7.05	4,873
Business is part of a chain	0.04	48,670
Business has standalone structure (bricks)	0.11	48,670
Business in building with multiple businesses	0.71	48,670
Business has standalone structure (cardboard)	0.03	48,670
Business is in residential house	0.15	48,670

This table presents industry composition for the 2016 Lusaka Census of Urban Entrepreneurs. Observations may be dropped because of missing values.

Table 3: Manufacturers' Education and Firm Size by Gender

	Mean		Diff	N	
	Male	Fem		Male	Fem
Panel A: Firm Size and Growth					
No. full-time emp.	2.05	1.68	-0.38***	1579	635
	(0.06)	(0.07)	(0.10)		
No. part-time emp.	0.99	0.29	-0.69***	1571	633
	(0.08)	(0.04)	(0.13)		
No. apprentices/unpaid	0.68	0.35	-0.33	1575	634
	(0.13)	(0.04)	(0.21)		
No. family members	0.49	0.30	-0.19***	1546	602
	(0.03)	(0.03)	(0.04)		
No. full-time emp at start	2.06	1.77	-0.30***	1510	596
	(0.06)	(0.07)	(0.11)		
Growth rate in full-time emp.	0.19	0.06	-0.13**	1510	596
	(0.03)	(0.03)	(0.05)		
Positive full-time emp. growth	0.14	0.10	-0.04**	1579	637
	(0.01)	(0.01)	(0.02)		
Panel B: Education					
Training (mgmt/Entrep)	0.21	0.28	0.06***	1570	631
	(0.01)	(0.02)	(0.02)		
University	0.04	0.03	-0.01	1566	629
	(0.00)	(0.01)	(0.01)		
Diploma	0.16	0.19	0.03*	1566	629
	(0.01)	(0.02)	(0.02)		
Completed Secondary	0.23	0.20	-0.03	1566	629
	(0.01)	(0.02)	(0.02)		
No Formal Education	0.02	0.01	-0.01*	1566	629
	(0.00)	(0.00)	(0.01)		

Panel A compares firm size and full-time employment growth by gender for completed interviews in the Census of Small-Scale Manufacturers. The number of full-time employees includes the owner. Panel B compares educational background by gender for completed interviews in the Census of Small-Scale Manufacturers. Stars denote statistical significance of the two-sided t-test by gender. *** denotes $p<0.01$, ** denotes $p<0.05$, and * denotes $p<0.1$.

Table 4: Gender Sales Gap Among Manufacturers

(1) Outcome Variable	Regression Controls:				(6) Male Mean of Y	(7) N
	(2) None	(3) +Education	(4) + Industry	(5) + Work/marital		
Mean Sales	−944.72***	−940.17***	−278.02	−166.33	2125.21	2073
Standard Error	(151.848)	(152.822)	(172.949)	(196.013)		
R^2	.014	.071	.141	.142		
Sales Good Week	−1500.2***	−1491.8	−381.91	−243.53	3273.36	2048
	(234.164)	(234.591)	(265.321)	(302.912)		
	.014	.081	.141	.142		
Sales Bad Week	−429.03***	−428.80	−210.49	−149.62	1010.86	2048
	(83.2490)	(85.2699)	(92.8399)	(105.558)		
	.009	.039	.133	.134		
ln(Mean Sales)	-.586***	-.591***	-.199***	-.089	6.82	2066
	(.0579)	(.057)	(.057)	(.0619)		
	.0439	.1040	.25	.2590		
ln(Sales Good Week)	-.586***	-.593***	-.179***	-.083	7.26	2048
	(.057)	(.057)	(.0560)	(.0610)		
	.0450	.1120	.2560	.2630		
ln(Sales Bad Week)	-.658***	-.663	-.321	-.219	6.07	1830
	(.0700)	(.0710)	(.0710)	(.0759)		
	.0450	.0879	.2479	.2579		
Employment Growth	-.128***	-.130***	-.037	-.028	.18	2075
	(.0390)	(.0410)	(.0450)	(.0460)		
	.003	.0170	.0240	.0240		
Employment Level	-.375***	-.377***	.0399	.0460	2.05	2183
	(.0909)	(.0879)	(.0970)	(.1000)		
	.0060	.1159	.1589	.1609		

Robust Standard errors in parentheses. Sales Variables subject to 1% asymmetric winsorization.

This table shows explanatory variables of employment and sales for entrepreneurs of all industries in the 2016 Census of Small-Scale Manufacturers. The dependent variables are listed in Column 1, and each cell reports the coefficient on a dummy for being a female owner on the variable in Column (1). After the name of each variable and the coefficient on the female dummy, two rows report the robust standard error and the adjusted r-squared. For sales in a good or bad week, if the person could not provide an exact number, we also asked for an upper and lower bound. We then imputed the average of the bounds to the sales variables. The mean sales variable is constructed as the average of sales in a good or bad week. All the sales variables are winsorised at the 99% level to control for outliers. Regressions in Column (2) report the coefficient of a regression of the row variable on the female dummy only. Regressions in Column (3) control for education dummies, which are indicator variables indicating different levels of educational achievement: the omitted category is "illiterate or literate, no formal education", the other categories are "Primary Incomplete", "Primary", "Secondary Incomplete", "Secondary", "Diploma", "University". Regressions in Column (4), in addition to education indicators, also control for two indicator variables for being in food manufacturing or apparel manufacturing (omitted category is "other industries"). Regressions in Column (5), in addition to education and industry indicators, also control for variables regarding the time worked (daily hours and days per week) and whether the owner is married or not. Column (6) reports the mean of the dependent variable in the sample of male manufacturers. Column (7) reports the number of observations from the model run in Column (5): this is a lower bound given that the hours and marital status controls are missing for some respondents.

Table 5: Manufacturers' Trust, Cooperation and Knowledge Sharing by Gender

	Mean		Diff	N	
	Male	Fem		Male	Fem
Panel A: Trust					
Trust Strangers	0.29	0.20	-0.09***	1590	644
	(0.45)	(0.40)	(0.02)		
Trust Neighbours	0.54	0.43	-0.11***	1589	640
	(0.50)	(0.50)	(0.02)		
Trust GSS	0.10	0.04	-0.07***	1585	645
	(0.31)	(0.19)	(0.01)		
Feel safe leaving shop unattended	0.44	0.32	-0.12**	346	126
	(0.50)	(0.47)	(0.05)		
Panel B: Cooperation					
Joint Buy	0.35	0.27	-0.08***	1579	637
	(0.48)	(0.44)	(0.02)		
Lent	0.55	0.44	-0.11***	1579	637
	(0.50)	(0.50)	(0.02)		
Advice	0.76	0.71	-0.05**	1579	637
	(0.43)	(0.45)	(0.02)		
Share Order	0.58	0.54	-0.04*	1579	637
	(0.49)	(0.50)	(0.02)		
Coop Average	0.56	0.49	-0.07***	1579	637
	(0.33)	(0.34)	(0.02)		
Panel C: Knowledge sharing					
Learnt from family or friends	0.42	0.25	-0.17***	1585	639
	(0.49)	(0.43)	(0.02)		
Learnt from entrepreneur	0.35	0.17	-0.18***	1579	637
	(0.48)	(0.38)	(0.02)		
Learnt from entrepreneur in same sector	0.26	0.13	-0.13***	1579	637
	(0.44)	(0.33)	(0.02)		
Learnt through formal training	0.15	0.51	0.36***	1585	639
	(0.36)	(0.50)	(0.02)		
Ever taught others	0.71	0.63	-0.08***	1588	636
	(0.45)	(0.48)	(0.02)		
Talk frequently with others about business	0.52	0.49	-0.03	1598	647
	(0.50)	(0.50)	(0.02)		

Panel A shows mean differences in trust, Panel B shows mean differences in cooperation and Panel C mean differences in knowledge sharing between women and men. The variables "Trust in Strangers" and "Trust in Neighbors" are measured on a scale from 1-4, and have been converted into dummy variables by combining low scores (1 and 2) and high scores (3 and 4). Low scores were given a value of 0, and high scores a value of 1. The "Feel safe leaving shop empty" variable is measured in a scale from 1-5, converted into a dummy variable equal to 1 if people agree or strongly agree with the statement that they feel safe leaving their shop unattended for 30 minutes. The variable "Trust GSS" is a dummy measuring whether most people can be trusted or not: a value of 1 indicates that "most people can be trusted", and a value of 0 indicates that "you cannot be too careful in dealing with people". The variables "Joint Buy", "Lent", "Advice" and "Share Order" are dummies that indicate whether a person ever engaged in the relevant activity. The variable "Coop Average" is an index of cooperative behavior, calculated as a simple average of the four dummies "Joint Buy", "Lent", "Advice" and "Share Order". Variables "Learnt from" show answers to the question "Who taught you how to do this job?". Formal training was mainly interpreted classroom training, usually delivered by the government or NGOs and other associations. The variable "Ever taught others" is equal to one if a person says that s/he "ever taught her/his job to anyone else, who afterwards started a business", and zero otherwise. "Talk frequently with others about business" is a dummy constructed for values above the median in answers to the question "Consider other business owners in your sector in this neighborhood. How many times do you talk about topics related to the business?". Answers were given on a 5-Likert scale: Never, Once a Month, Between 1 and 4 times a month, More than once a week, Every day. The dummy takes value one for the two highest values (median is 4). The sample for all the panels stems from our Census of Small-Scale Manufacturers in Lusaka (N=2,216), except for the variable "Feel safe leaving shop unattended" which was collected in the pre-games survey (N=477). Stars denote statistical significance of the two-sided t-test by gender. *** denotes p<0.01, ** denotes p<0.05, and * denotes p<0.1.

Table 6: Learning History and Sales

	Learnt from			Logged Sales		Employment	
	(1) Owner	(2) Owner in same sector	(3) Family or friends	(4) Good Week	(5) Bad Week	(6) Level	(7) Growth
Female	-0.184***	-0.132***	-0.153***	-0.616***	-0.720***	-0.533***	-0.0680
	(0.0215)	(0.0191)	(0.0236)	(0.0934)	(0.114)	(0.168)	(0.0640)
Informal learning				0.0512	0.0664	-0.0783	0.0563
				(0.0780)	(0.0931)	(0.152)	(0.0648)
Female*Informal learning				0.353***	0.347**	0.299	-0.0290
				(0.121)	(0.155)	(0.202)	(0.0841)
Observations	2081	2081	2072	1963	1752	2079	2004
Adjusted R^2	0.051	0.035	0.074	0.163	0.132	0.176	0.020
Mean Dep Var	.3	.22	.37	7.08	5.85	1.91	.15
SD Dep Var	.46	.41	.48	1.24	1.41	2.23	1.04
Density Controls	✓	✓	✓	✓	✓	✓	✓
Owner Controls	✓	✓	✓	✓	✓	✓	✓
Industry Fixed Effects							

Robust SE in parentheses. Sales Variables subject to 1% asymmetric winsorization.

* p<0.10, ** p<0.05, *** p<0.01

The variables "Owner", "Owner in same sector", "Family or Friends" are dummies that indicate whether an entrepreneur learnt the job from each category. "Informal learning" is a dummy for whether the owner learnt the business from any of the previous three categories. Density Controls include a dummy variable for whether the business is located within 100 meters of a market, the total number of businesses within 100 meters, the number of business from the same sector within 100 meters and population density in the ward where the business is located. Owner Controls includes owner's age, business age, how many days the business owner spends working in the business, educational dummies and whether business owner is married or not. In columns (4) and (5), the dependent variables are the log of the answers given when asked the sales in a good week and the sales in a bad week. If the person could not provide an exact number, we also asked for an upper and lower bound. We then imputed the average of the bounds to the sales variables. In Column (6), the dependent variable is the number of full-time employees. In Column (7), the dependent variable is the growth rate in the number of full-time employees since the start of the business. The sample comes from our Census of Small-Scale Manufacturers in Lusaka (N=2,216). Differences in observations are due to missing owner controls.

Table 7: Effect of Local Institutions on Cooperation

	(1) Share Order	(2) Lent	(3) Advice	(4) Joint Buy	(5) Coop Average
Panel A: Effect of being in a market					
Female	-0.0784*	-0.140***	-0.0819**	-0.106**	-0.102***
	(0.0402)	(0.0402)	(0.0366)	(0.0429)	(0.0288)
In market	0.116**	0.108**	-0.0158	0.114**	0.0806**
	(0.0519)	(0.0534)	(0.0470)	(0.0476)	(0.0312)
Female × In market	0.0718	0.109*	0.0641	0.0801	0.0812**
	(0.0506)	(0.0556)	(0.0475)	(0.0569)	(0.0398)
Adjusted R^2	0.049	0.053	0.044	0.038	0.072
P-value (In + Fem.*In = 0)	.01	0	.47	0	0
P-value (Fem + Fem.*In = 0)	.83	.4	.54	.43	.41
Panel B: Effect of being close to court or the police					
Female	-0.132***	-0.164***	-0.0601	-0.139***	-0.124***
	(0.0440)	(0.0536)	(0.0397)	(0.0450)	(0.0296)
< med dist from court or police	0.110***	-0.0529	0.0295	0.0383	0.0312
	(0.0404)	(0.0407)	(0.0496)	(0.0332)	(0.0312)
Female × < med dist	0.120**	0.108*	0.0188	0.0991*	0.0865**
from court or police	(0.0515)	(0.0595)	(0.0460)	(0.0516)	(0.0357)
Adjusted R^2	0.050	0.052	0.043	0.038	0.071
P-value (In + Fem.*In = 0)	0	.33	.33	0	0
P-value (Fem + Fem.*In = 0)	.65	.08	.13	.17	.08
Observations	2215	2215	2215	2215	2215
Mean Dep Var	.57	.52	.75	.32	.54
SD Dep Var	.5	.5	.44	.47	.33
Density Controls	✓	✓	✓	✓	✓
Market Fixed Effects	✓	✓	✓	✓	✓
Owner Controls					
Industry Fixed Effects					

Clustered standard errors in parentheses.

* p<0.10, ** p<0.05, *** p<0.01

The variables "Joint Buy", "Lent", "Advice" and "Share Order" are dummies that indicate whether a person ever engaged in the relevant activity. The variable "Coop Average" is an index of cooperative behavior, calculated as a simple average of the four dummies "Joint Buy", "Lent", "Advice" and "Share Order". The variable "In market" is an indicator of value one if the business is located inside a formal market. The variable "< med dist from court or police" is an indicator of value one if the business is located below median distance from the police or below median distance from the Small Claims Court. Density Controls include a dummy variable for whether the business is located within 100 meters of a market, the total number of businesses within 100 meters, and the number of business from the same sector within 100 meters and the population density in the administrative area where the business is located (ward). All the regressions include marketplace level fixed effects. Regressions in Panel A include a control for whether the business is located close to the police or the SCC, and regressions in Panel B include a control for whether the business is located inside a market. Standard errors are clustered at the marketplace level. The sample comes from our Census of Small-Scale Manufacturers in Lusaka (N=2,216).

Table 8: Effect of Local Institutions on Economic Outcomes

	Sales			Log Sales			Employment	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Mean	Good week	Bad Week	Mean	Good week	Bad Week	Level	Growth
Panel A: Effect of being in a market								
Female	-776.9**	-1181.6***	-422.4***	-0.270**	-0.248**	-0.404***	-0.221*	-0.143**
	(309.1)	(440.1)	(157.5)	(0.107)	(0.103)	(0.122)	(0.127)	(0.0674)
In market	-988.1*	-1506.7*	-495.5	-0.414**	-0.413**	-0.396**	-0.367	-0.00923
	(527.9)	(769.1)	(337.3)	(0.177)	(0.170)	(0.192)	(0.252)	(0.109)
Female × In market	767.4**	1211.8***	365.1**	0.140	0.144	0.201	0.324***	0.197***
	(311.0)	(436.7)	(172.6)	(0.123)	(0.119)	(0.153)	(0.121)	(0.0670)
Adjusted R^2	0.204	0.209	0.176	0.301	0.313	0.289	0.284	0.047
P-value (In + Fem.*In = 0)	.68	.70	.69	.09	.09	.35	.88	.16
P-value (Fem + Fem.*In = 0)	.94	.87	.43	.07	.17	.02	.09	.16
Panel B: Effect of being close to court or the police								
Female	-58.08	-169.6	-83.88	-0.287**	-0.285**	-0.399**	-0.149	-0.0592
	(366.9)	(600.3)	(163.7)	(0.113)	(0.119)	(0.166)	(0.176)	(0.0739)
< med dist from court or police	49.87	4.791	20.59	-0.0740	-0.121	0.0671	-0.0738	-0.0166
	(471.6)	(750.1)	(205.0)	(0.171)	(0.185)	(0.196)	(0.151)	(0.0663)
Female × < med dist	-326.9	-356.7	-152.1	0.124	0.153	0.141	0.146	0.0405
from court or police	(408.0)	(675.6)	(179.0)	(0.116)	(0.126)	(0.160)	(0.202)	(0.0785)
Adjusted R^2	0.202	0.207	0.175	0.301	0.313	0.288	0.283	0.045
P-value (In + Fem.*In = 0)	.63	.70	.6	.76	.86	.27	.67	.74
P-value (Fem + Fem.*In = 0)	.37	.5	.25	0	0	0	0	0
Observations	2088	2062	2063	2080	2062	1840	2211	2103
Mean Dep Var	1872.35	2871.09	901.23	6.66	7.09	5.88	1.94	.15
SD Dep Var	3598.89	5574.99	1970.1	1.28	1.26	1.42	2.22	1.03
Density Controls	✓	✓	✓	✓	✓	✓	✓	✓
Market Fixed Effects	✓	✓	✓	✓	✓	✓	✓	✓
Industry Fixed Effects	✓	✓	✓	✓	✓	✓	✓	✓
Owner Controls								

Clustered standard errors in parentheses.

* p<0.10, ** p<0.05, *** p<0.01

The dependent variables are the answers given when asked the sales in a good week and in a bad week. If the person could not provide an exact number, we also asked for an upper and lower bound. We then imputed the average of the bounds to the sales variables. Columns (1) to (3) show the sales variables in levels, Columns (4) to (6) show the variables in logs. The dependent variable in Column (1) is defined as the average of sales in a good week and in a bad week, the dependent variable in Column (5) is the log of this average. Variables have been winsorised asymmetrically at the 99th percentile. Density Controls include a dummy variable for whether the business is located within 100 meters of a market, the total number of businesses within 100 meters, and the number of business from the same sector within 100 meters and the population density in the administrative area where the business is located (ward). All the regressions include marketplace level fixed effects. Regressions in Panel A include a control for whether the business is located close to the police or the SCC, and regressions in Panel B include a control for whether the business is located inside a market. Standard errors are clustered at the marketplace level. The sample comes from our Census of Small-Scale Manufacturers in Lusaka (N=2,216).

Table 9: Experimental Treatments

| | Institutional Access Treatment | | |
	Control	Chief	Court
Inside/Inside	95	96	96
Outside/Inside	94	0	96

Numbers indicate the number of rounds in each treatment cell. Each player played two rounds (once as Investor and once as Trustee), with two distinct entrepreneurs. Three out of the 480 rounds that occurred were not used for data quality reasons.

Table 10: Games' Behavior and Earnings: Control vs Chief Treatment

	(1) Tokens Investor Sent	(2) Average Return Ratio	(3) Investor's Earnings	(4) Trustee's Earnings
Female	-1.005***	-0.0436**	-0.218	-0.241
	(0.331)	(0.0199)	(0.324)	(0.777)
Chief	-0.0225	0.0141	0.507*	-0.532
	(0.362)	(0.0189)	(0.298)	(0.641)
Female × Chief	1.365**	-0.0116	0.728	1.687
	(0.632)	(0.0373)	(0.659)	(1.253)
Observations	283	284	283	284
Adjusted R^2	0.022	0.027	0.018	0.002
Mean	4.08	.44	10.89	6.78
SD	2.35	.13	2.12	4.52

Robust standard errors in parentheses. * $p<0.10$, ** $p<0.05$, ***$p<0.01$

The dependent variable in Column (1) is the number of tokens sent by the Investor and in Column (2) is the average return ratio by the Trustee. The dependent variables in Columns (3) and (4) are the Investor's and Trustee's earnings, respectively. All regressions include a dummy for the round played and for the control group in the "outsider" condition. The regressions exclude the Small Claims Court treatment. The sample comes from our lab-in-the-field games conducted in Lusaka in 2017 (N=477).
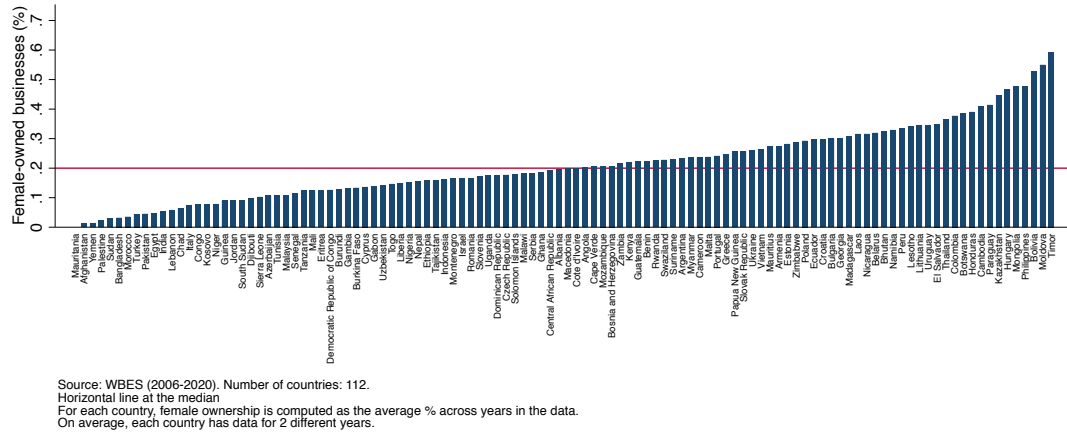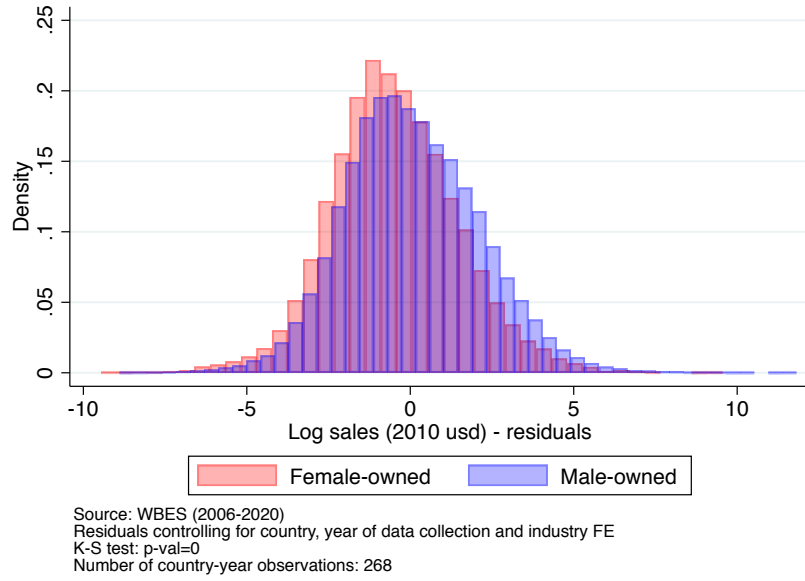
Figures

Figure 1: Theoretical Predictions
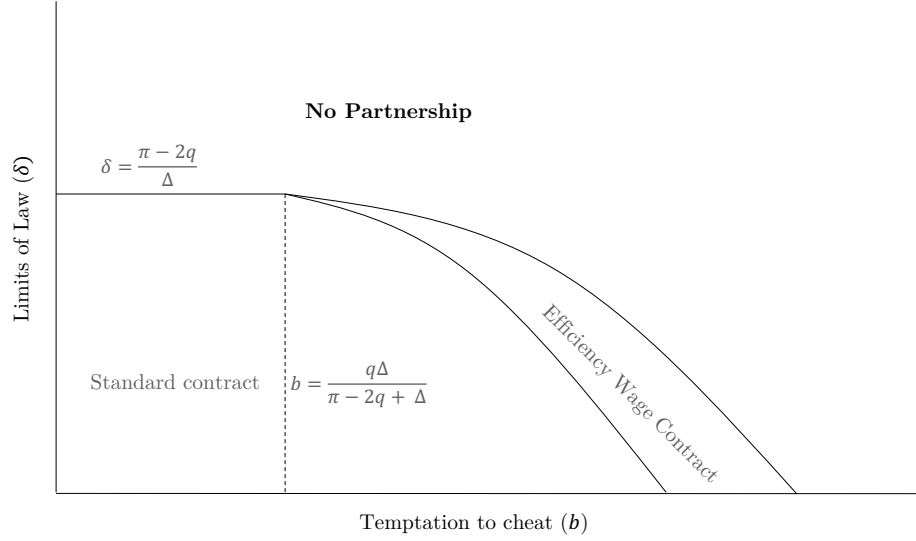
This figure provides the intuition for proposition 1. When the incentive for P to cheat is low $\left(b < \frac{q\Delta}{\pi - 2q + \Delta}\right)$, there are two possible outcomes. If legal institutions are weak $\left(\delta > \frac{\pi - 2q}{\Delta}\right)$, then there is no cooperation and returns are 0 to both actors. If legal institutions are strong $\left(\delta < \frac{\pi - 2q}{\Delta}\right)$, then a contract occurs. Within this region, E and P split the expected surplus $(\pi - 2q - \delta\Delta)$ and E receives $1 - \beta$ times this amount. If the incentives for P to cheat are high $\left(b > \frac{q\Delta}{\pi - 2q + \Delta}\right)$, then there are three regions. When legal institutions are weak $(\delta > \frac{\pi - q - b}{\Delta + b})$, then there is again no partnership. When legal institutions are strong $(\frac{\beta(\pi - 2q) + q - b}{\beta\Delta + b} > \delta)$, then a partnership emerges that gives E a share $(1 - \beta)$ of the surplus of $\pi - 2q - \delta\Delta$. If the incentives for P to cheat are high $\left(b > \frac{q\Delta}{\pi - 2q + \Delta}\right)$, and legal institutions are neither too strong nor too weak $\left(\frac{\beta(\pi - 2q) + q - b}{\beta\Delta + b} < \delta < \frac{\pi - q - b}{\Delta + b}\right)$, then the female entrepreneur may effectively pay her male partner an efficiency wage of "b" to stop him from shirking when facts are indisputable.

Figure 2: Female-owned firms across countries

This Figure shows the proportion of female-led businesses across countries. Female-led firms are defined as firms with a weak majority of female owners. We consider the average share from the World Bank Enterprise Survey for each country (years from 2006 to 2020). We limit the sample to businesses which are sole proprietorship or partnerships. The final sample excludes countries with less than 20 observations in those categories (6%). The number of countries in this figure is 112.

Figure 3: Business Earnings by Owner's Gender

Source: WBES (2006-2020)
Residuals controlling for country, year of data collection and industry FE
K-S test: p-val=0
Number of country-year observations: 268

This Figure shows the gender-specific distributions of logsales in 2010 USD after controlling for country, year of collection and industry fixed effect. We consider the World Bank Enterprise Survey from 2006 to 2020, and each country has on average two observations in the dataset. We limit the sample to businesses which are sole proprietorship or partnerships. The final sample excludes countries with less than 20 observations in those categories (6%). Female-led businesses are defined as firms with a weak majority of female owners. The number of countries in this figure is 136.

Figure 4: Female Business Ownership, Family Discrimination and Contract Enforcement

(a) Female Business Ownership and Family Discrimination

Source: WBES and SIGI, Beta of fitted line = -.005 (SE = .001; p = 1.00000000000e-07)
Controls: GDP in 2006
N=111
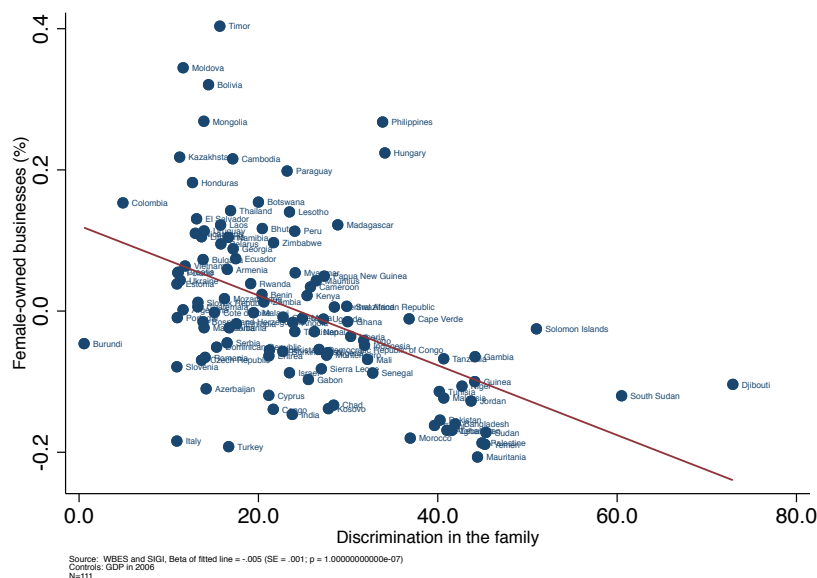
(b) Female Business Ownership and Contract Enforcement

Source: WBES and Ease of Doing Business, Beta of fitted line = .002 (SE = .001; p = .022)
Controls: GDP in 2006
N=111
Ownership = majority female owners
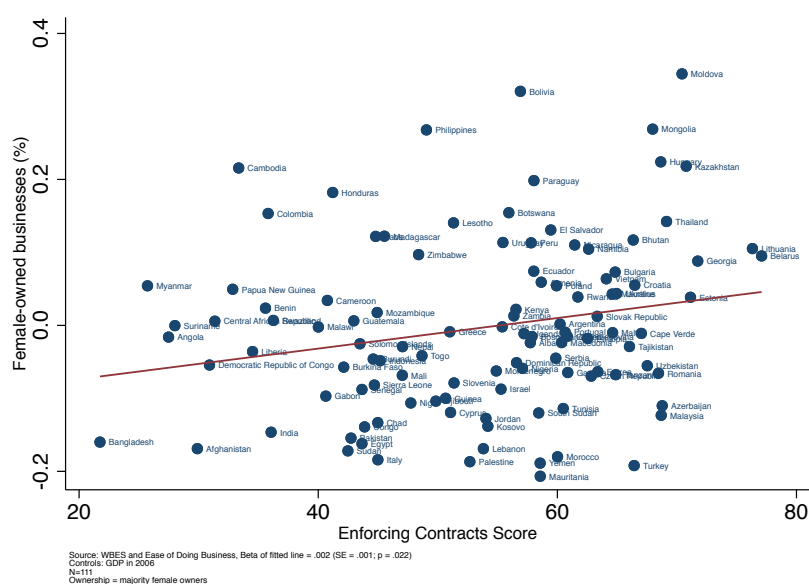
Figure (a) shows the correlation between a country's percentage of female-owned businesses and the SIGI measure of family discrimination. The variable for family discrimination is constructed as the weighted average of the following subcomponents: laws on child marriage, household responsibilities, inheritance laws and divorce laws. For each country, we use the average index across the two years of collection of the SIGI (2014 and 2019). Figure (b) shows the correlation between the percentage of female-owned business from the WBES and a country's quality of contract enforcement as measured by the World Bank Doing Business Indicators and averaged across years available (for each year the measure collected with the most recent methodology is used). Female-led firms are defined as firms with a weak majority of female owners. We consider the average percentage across all the years of collection of the World Bank Enterprise Survey for each country (from 2006 to 2020, on average a country has two years in the data). We limit the sample to businesses which are sole proprietorship or partnerships. The final sample excludes countries with less than 20 observations in those categories (6%). The number of countries in both figures is 111.

Figure 5: Family Discrimination, Contract Enforcement and Female Manufacturing

Source: SIGI and Ease of Doing Business
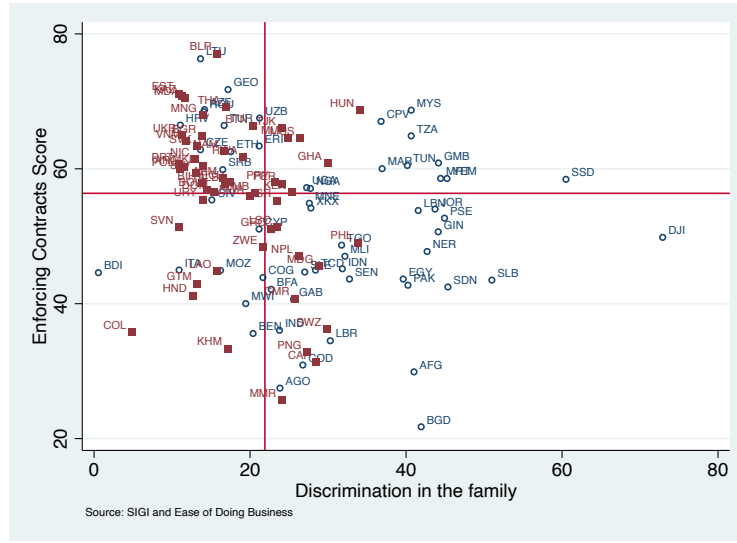
This Figure shows the distribution of countries in our dataset based on their SIGI measure of family discrimination (on the x-axis) and the World Bank Doing Business Contract Enforcement Score (on the y-axis). The two solid red lines show the median value of the two measures, respectively. Square red markers indicate countries with above-median female ownership, while hollow blue circles are for countries with below-median female ownership. The variable for family discrimination is constructed as the weighted average of the following subcomponents: laws on child marriage, household responsibilities, inheritance laws and divorce laws. For each country, we use the average index across the two years of collection of the SIGI (2014 and 2019). Similarly, the measure of quality of contract enforcement as measured by the World Bank Doing Business Indicators is averaged across years available, and for each year the measure collected with the most recent methodology is used. For the measure of female ownership we consider the average percentage across all the years of collection of the World Bank Enterprise Survey for each country (from 2006 to 2020, on average a country has two years in the data). Female ownership is defined as a business having a weak majority of female owners. We limit the sample to businesses which are sole proprietorship or partnerships. The final sample excludes countries with less than 20 observations in those categories (6%). The number of countries in the figure is 111.
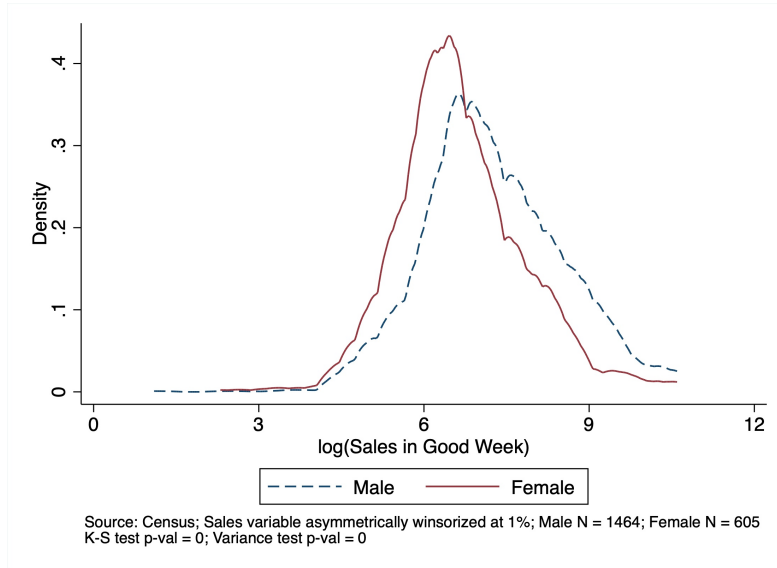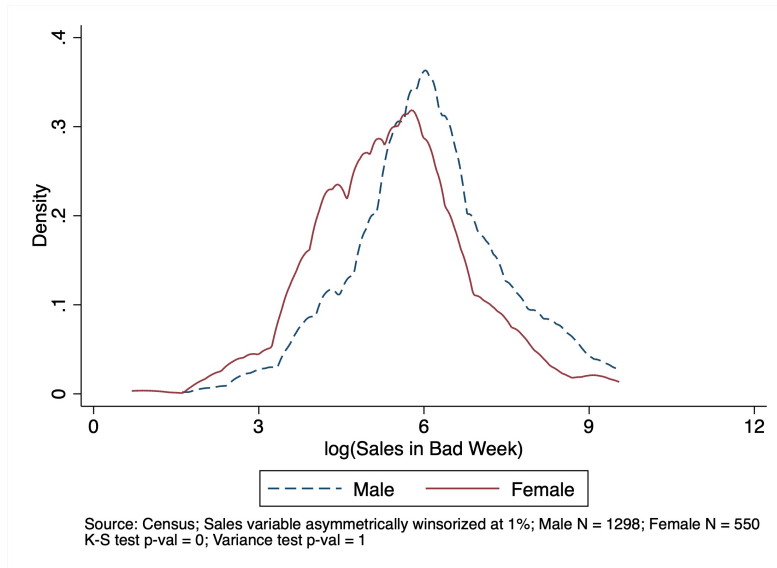
Figure 6: Census Coverage
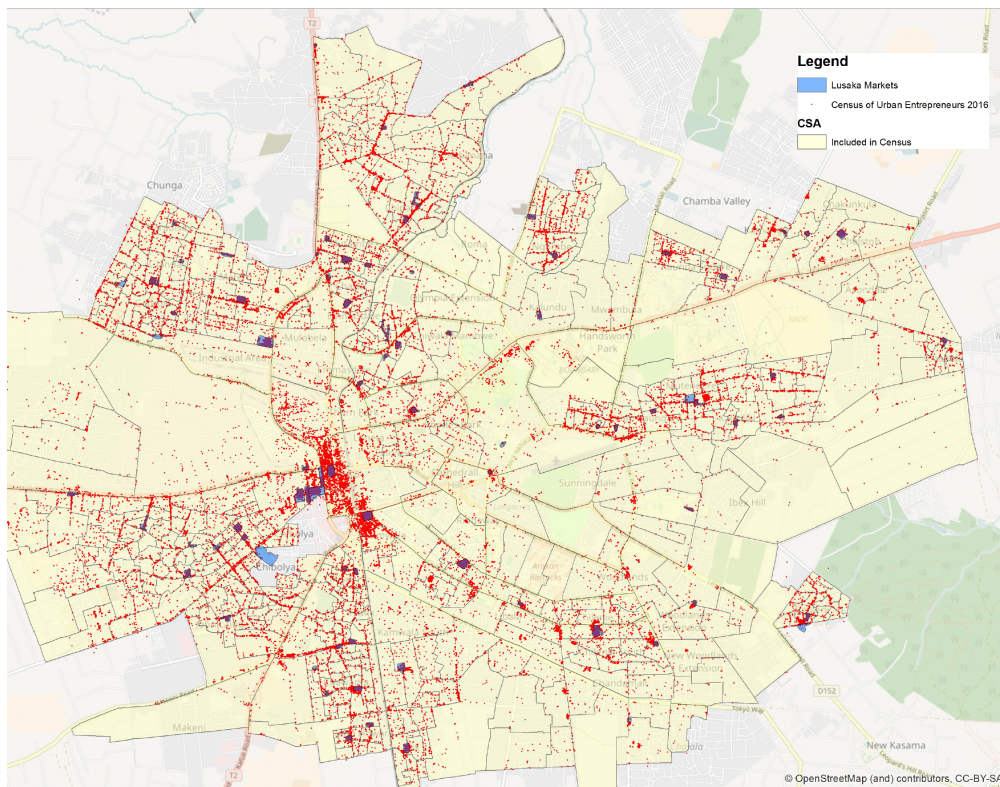
This figure shows the spacial distribution of businesses in the Lusaka Census of Urban Entrepreneurs. It covers 48,163 establishments in Lusaka. The blue squares show where markets exist.

Figure 7: Sales in Good and Bad Weeks by Gender

(a) Logged Sales in Good Week

Source: Census; Sales variable asymmetrically winsorized at 1%; Male N = 1464; Female N = 605
K-S test p-val = 0; Variance test p-val = 0

(b) Logged Sales in Good Week

Source: Census; Sales variable asymmetrically winsorized at 1%; Male N = 1298; Female N = 550
K-S test p-val = 0; Variance test p-val = 1

These figures shows the kernel density of logged sales in good and bad weeks by gender. Both sales variables are winsorised at the 99% level to control for outliers before taking the log. The dashed blue line shows the distribution for men and the solid red line for women. The p-value of the Kolmogorov-Smirnov equality of distributions test is 0.00. The p-value of the variance test ratio is 0.001 for sales in good weeks and > 0.50 for sales in bad weeks. The sample comes from our Census of Small-Scale Manufacturers in Lusaka (N=2,216).

Figure 8: Distribution across Industries by Gender
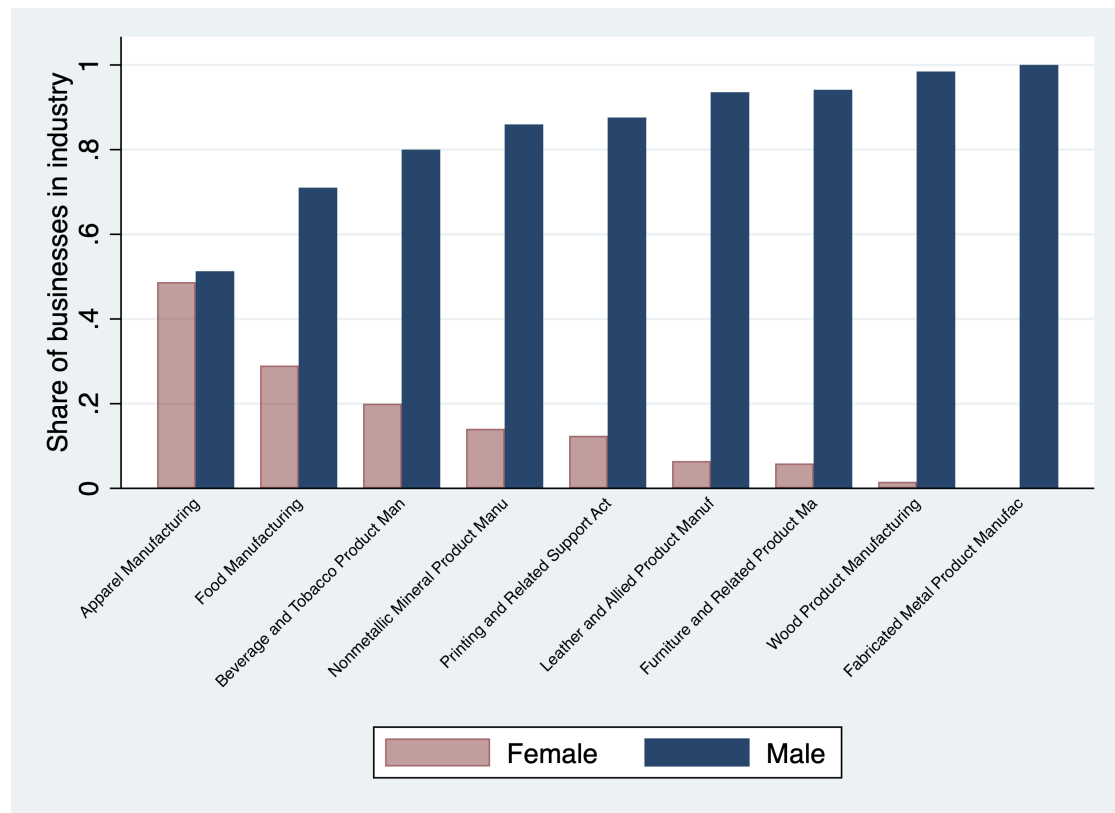
This figure shows the industries in which manufacturers from the Lusaka Census of Urban Entrepreneurs operate, by gender. Gender data are available for 97% of businesses in manufacturing, construction and mining with less than 20 employees (N=3723). The graph shows only industries with more than 10 businesses in our data.

Figure 9: Local Institutions in Lusaka

◆ Police Stations

■ Markets
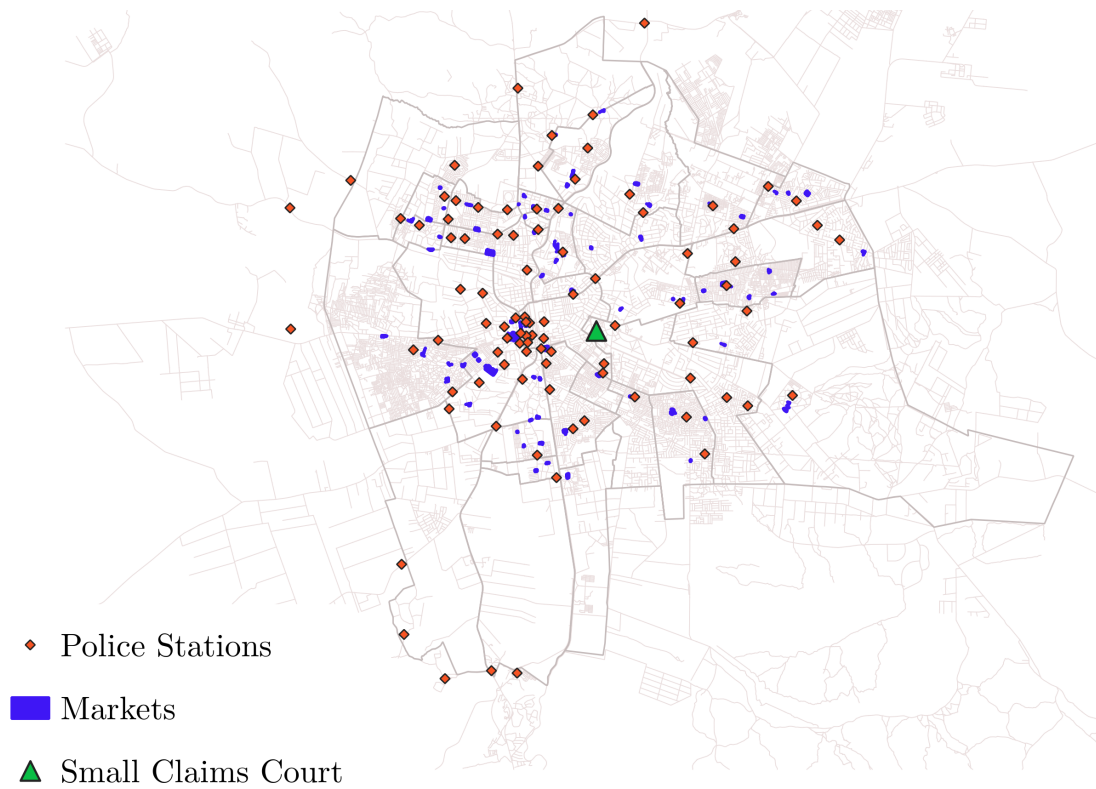
▲ Small Claims Court

The figure shows the spacial distribution of local institutions in Lusaka. The blue dots show where markets are located, the green triangle shows the Small Claims Court and the red diamonds show the location of police stations.

Figure 10: Cooperation by Gender and Market Location
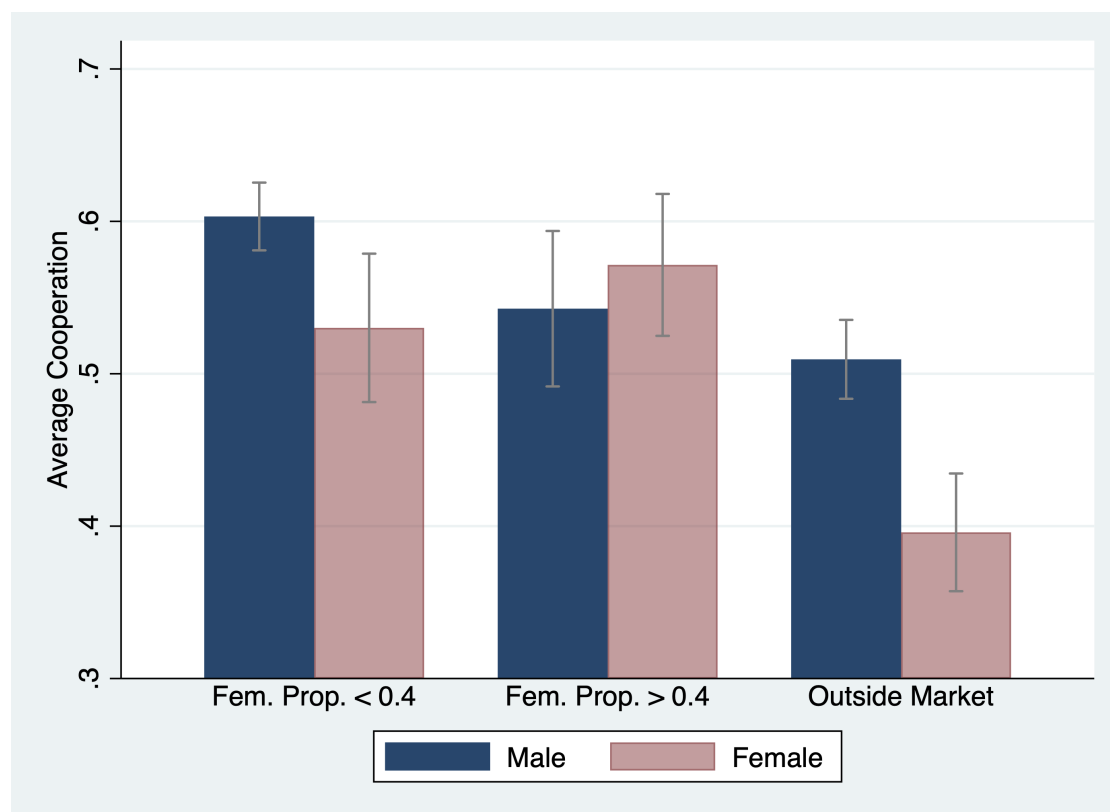
This figure shows the average cooperation of female and male-led businesses in markets with a large or a small share of female businesses, or outside of markets. The threshold of 0.4 corresponds to the 75th percentile of the distribution of gender shares across markets. The sample comes from our Census of Small-Scale Manufacturers in Lusaka (N=2,216).

Figure 11: Cooperation by Gender and Industry
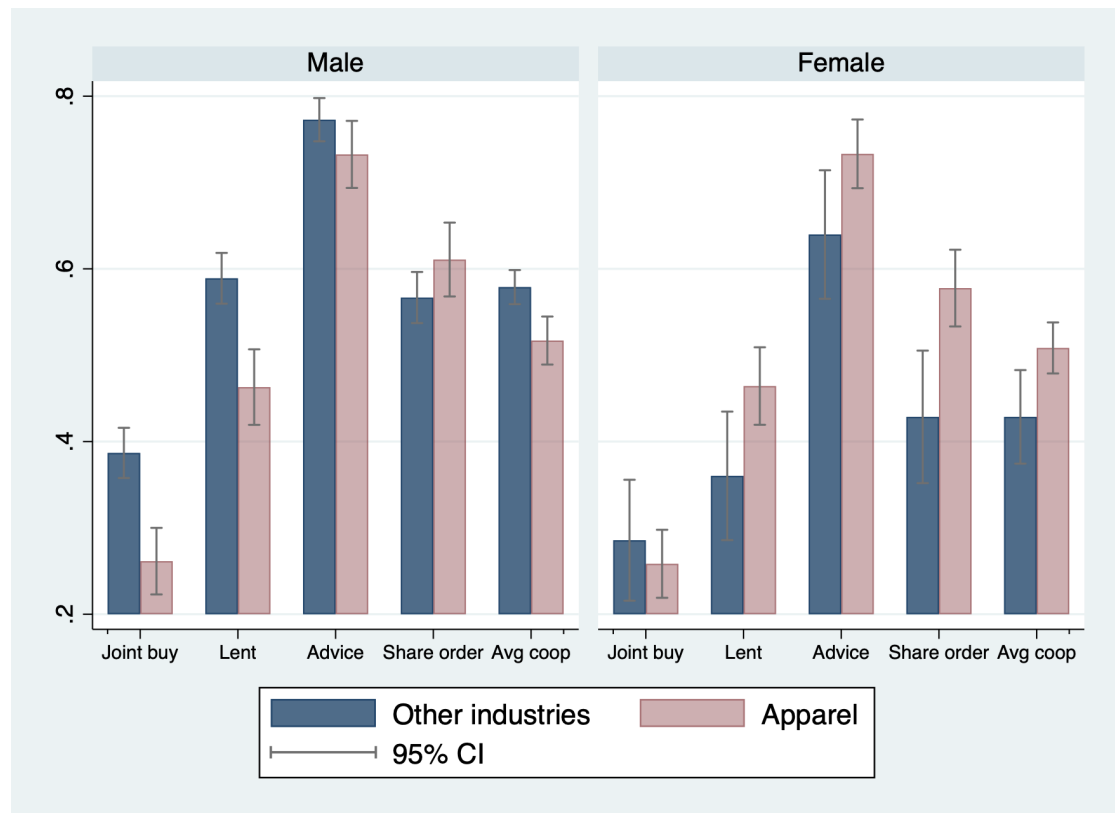
This figure shows the proportion of men and women engaging in each of the collaboration activities we asked about, and their level of average cooperation (last bar). The variables "Joint Buy", "Lent", "Advice" and "Share Order" are dummies that indicate whether a person ever engaged in the relevant activity. The variable "Coop Average" is an index of cooperative behavior, calculated as a simple average of the four dummies "Joint Buy", "Lent", "Advice" and "Share Order". The sample comes from our Census of Small-Scale Manufacturers in Lusaka (N=2,216).

Figure 12: Market Effect on Female Cooperation by Chief's Characteristics: Women vs Men Inside Markets
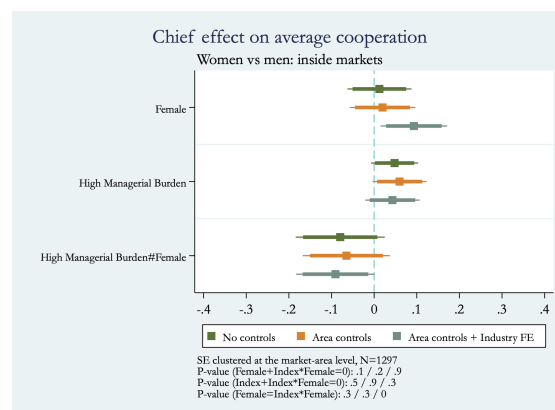
(a) Cooperation and Chief's Bias
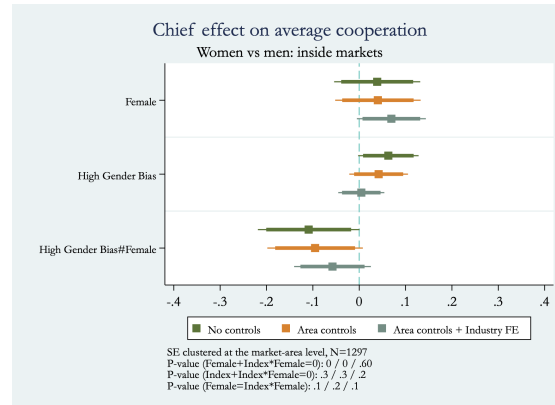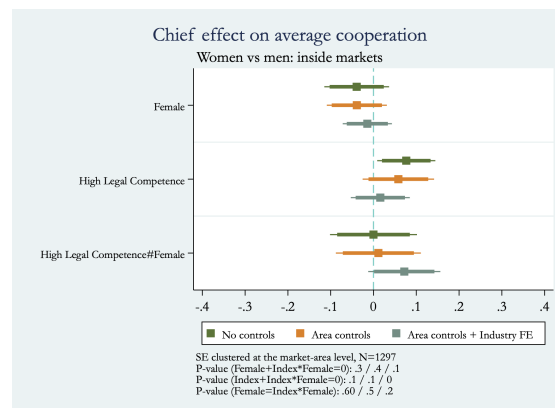
(b) Cooperation and Chief's Legal Competence

(c) Cooperation and Chief's Managerial Duties

Each figure in Panels (a), (b) and (c) show the coefficients of three regressions, which differ only in the controls used. All the specifications regress average cooperation on a dummy variable for being a female owner ("Female"), a dummy variable for having a chief with above average score on a certain index and the interaction between the two. In Panel (a), the dummy is for above-median score in the index of gender bias. In Panel (b), the variable is for above-median score in the index of legal competence and in Panel (c) for above-median managerial duties. The top coefficient (dark green) is for a regression with no additional control, the intermediate (orange) coefficient is for a regression with density controls and the bottom coefficient (light green) is for a regression with density controls and industry fixed effects (Naics 3). Average cooperation is an index of cooperative behavior, calculated as a simple average of the four dummies "Joint Buy", "Lent", "Advice" and "Share Order" defined in the main tables. Error bars show 95% and 90% confidence intervals. The construction of the indexes on gender bias, legal competence and managerial duties is explained in Appendix D.

Figure 13: Number of Tokens Sent by Gender: Control vs Chief
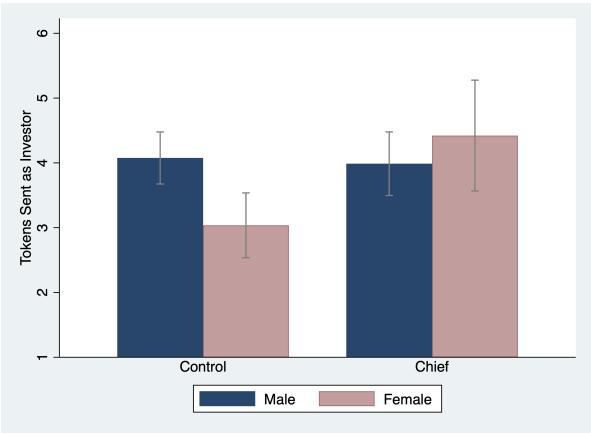
This figure shows the number of tokens sent by gender and treatment group. The control group includes both businesses located inside markets and outside markets. Data are from the experimental games (N=477).

Figure 14: Distribution of Average Return Ratios by Gender: Control vs Chief
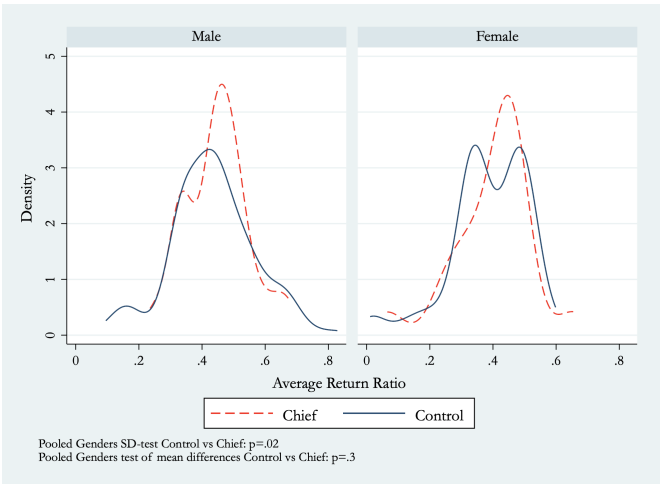
This figure shows the distribution of average return ratios by treatment (Chief or Control) and gender. The control group includes both businesses located inside markets and outside markets. Data are from the experimental games (N=477).

Figure 15: Number of Tokens Sent by Market Chief's Gender Bias: Control vs Chief

(a) Tokens Sent by Women
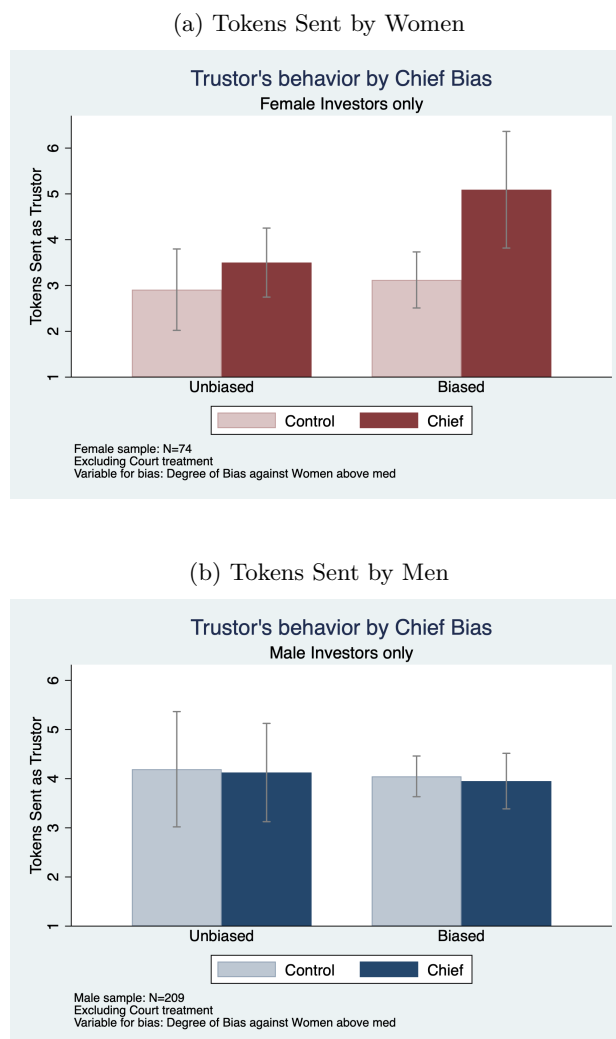
(b) Tokens Sent by Men

This figure shows the number of tokens sent by women (left) and men (right), splitting the sample by markets with better - or worse - than median market Chief's gender bias. Chief's gender bias is an index constructed from the following survey variables: whether the chief follows subjective rules to arbitrate disputes, whether the chief thinks that a woman does not usually win in inter-gender disputes, whether the chief is more effective at catching perpetrators of thefts against men, Wolrd Value Survey (WVS) and World Justice Project (WJP) gender attitudes. More details on the index construction are reported in Appendix D. The control group includes both businesses located inside markets and outside markets. Data are from the experimental games (N=477) and the market chief survey.

Figure 16: Distribution of Total Earnings between Investor and Trustee by Investor's Gender: Control vs Chief

(a) Female Investors
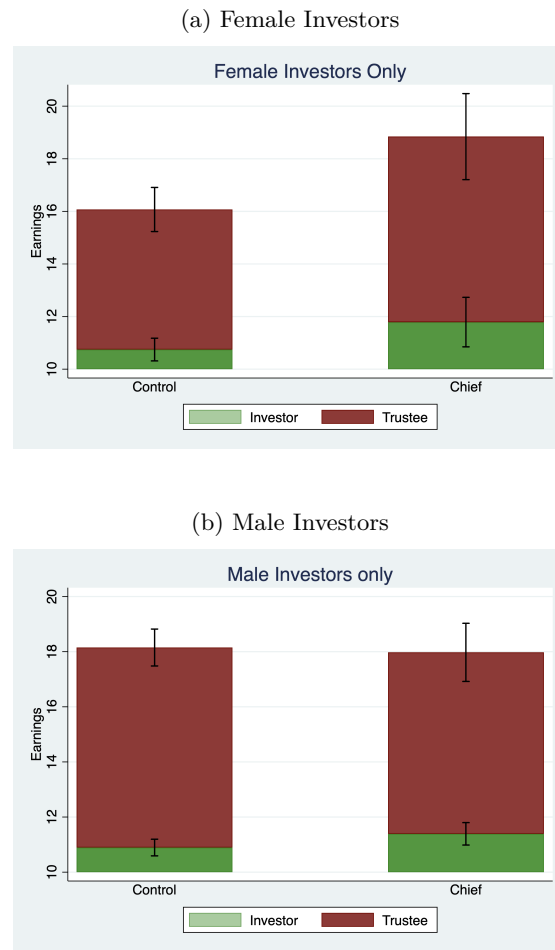
(b) Male Investors

This figure shows the distribution of total final earnings in rounds with a female Investor (Panel a) and male investor (Panel b). The control group includes both businesses located inside markets and outside markets. Data are from the experimental games (N=477).

Appendices

A   Proofs

Proof of Proposition 1.

A male P will always shirk when shirking is disputable. When shirking is indisputable, he will not shirk as long as $s\pi$ is weakly greater than b. We refer to this as the IC contract and it must be satisfied for a contract to occur, since the woman will never partner when there is always shirking.

If the IC constraint is satisfied, then in any contract between a female E and a male P the man will in expectation receive $s\pi - q + \delta b$, and so s must be weakly greater than $(q - \delta b)/\pi$. The woman will receive $(1 - s)\pi - q - \delta(b + \Delta)$, and so her participation requires that s is weakly less than $(\pi - q - \delta(b + \Delta))/\pi$. The total expected surplus is $\pi - 2q - \delta\Delta$, and that must be positive for a partnership to occur, which requires that δ is weakly less than $(\pi - 2q)/\Delta$. We refer to this as the individual rationality or IR constraint.

If the IR constraint is satisfied, and the IC constraint is slack, then men and women share the surplus according to the bargaining rule so that men receive $\beta(\pi - 2q - \delta\Delta)$ and women receive $(1 - \beta)(\pi - 2q - \delta\Delta)$, which implies that $s = \beta + [q - \delta b - \beta(2q + \delta\Delta)]/\pi$. This will satisfy both IR constraints, but it will only satisfy the IC constraint as long as $\beta\pi + [q - \delta b - \beta(2q + \delta\Delta)]$ is weakly greater than b or $[\beta(\pi - 2q) + q - b]/[b + \delta\beta]$ is greater than δ. Consequently, as long as δ is less than the minimum of $(\pi - 2q)/\Delta$ or $[\beta(\pi - 2q) + q - b]/[b + \delta\beta]$ then the standard sharing contract satisfies both the IC and IR constraints and will be reached in equilibrium.

If δ is less than $(\pi - 2q)/\Delta$ and greater than $[\beta(\pi - 2q) + q - b]/[b + \Delta\beta]$ then there are gains from trade, but they cannot be reached with a standard sharing contract, which will fail to satisfy the IC constraint. Instead, the IC constraint will hold with equality, which implies that $s = b/\pi$. In this case, returns to the male P will equal $(1 + \delta)b - q$ and the returns to the female E will equal $\pi - (1 + \delta)b - q - \delta\Delta$. These returns will only be positive if $[\pi - b - q]/[b + \Delta]$ is greater than δ. Consequently, this equilibrium can only exist if δ is less than the minimum of $(\pi - 2q)/\Delta$ and $[\pi - b - q]/[b + \Delta]$ and greater than the minimum of $(\pi - 2q)/\Delta$ and $[\beta(\pi - 2q) + q - b]/[b + \Delta\beta]$, which also ensures that $(1 + \delta)b - q$ is positive. Note that $[\pi - b - q]/[b + \Delta]$ and $[\beta(\pi - 2q) + q - b]/[b + \Delta\beta]$ will only be less than $(\pi - 2q)/\Delta$ if b is greater than $q\Delta/[\pi + \Delta - 2q]$.

Proof of Proposition 2.

We let V_i^j refer to the returns that a matched entrepreneur of gender i receives from pairing with an unmatched entrepreneur of gender j, and W_i^j refers to the returns than an unmatched entrepreneur of gender j receives from working with a matched entrepreneur of gender i. These returns are independent of industry. We know that $V_i^i = W_i^i = .5\pi - q$. We also know that when a matched male pairs with an unmatched woman, then contracts are perfectly enforceable, and consequently $V_M^F = \beta(\pi - 2q)$ and $W_F^M = (1 - \beta)(\pi - 2q)$. The values of V_F^M and W_F^M are described in proposition 1.

We let σ_j refer to the share of women in industry j. Consequently, the payoff for a man in industry j is $p_j[(1 - \sigma_j + \beta\sigma_j)(\pi - 2q) + \sigma_j W_F^M]$ and the payoff for a woman is $p_j[(1 - \sigma_j)V_F^M + (1 - \beta + \beta\sigma_j)(\pi - 2q)]$. The average net returns for women equals $.5p_j[(1 - \sigma_j)V_F^M + (1 - \beta + \beta\sigma_j)(\pi - 2q)] - .5\theta_j$, which also equals $N_F/2\varphi$.

An equilibrium where women only enter industry j requires: $p_j[(1-\sigma_j)V_F^M + (1-\beta+\beta\sigma_j)(\pi-2q)] = \theta_j + \varphi N_F$, or $p_j[(1-\sigma_j)V_F^M + (1-\beta+\beta\sigma_j)(\pi-2q)] - \frac{\varphi\sigma_j N_M^j)}{1-\sigma_j} = g(\sigma_j) = \theta_j$. The function $g(\sigma_j)$ is strictly concave, its derivative is $p_j[\beta(\pi-2q) - V_F^M] - \varphi N_M^j/(1-\sigma_j)^2$, and it approaches negative infinity as σ_j goes to one. Strict concavity means that $g(\sigma_j)$ can strike θ_j only once from above, and hence there can be at most two equilibria. As we are only interested in the equilibrium where $g(\sigma_j)$ strikes θ_j from above, it follows that σ_j is declining in θ_j and since women's average welfare is proportional to the number of women in the industry, then women's welfare is also declining with θ_j.

If $p_j[\beta(\pi - 2q) - V_F^M] < \varphi N_M^j$, then $g(\sigma_j)$ achieves its maximum value of $p_j[V_F^M + (1 - \beta)(\pi - 2q)]$ on the interval [0,1] at $\sigma_j = 0$. If $p_j[\beta(\pi - 2q) - V_F^M] > \varphi N_M^j$, then $g(\sigma_j)$ achieves its maximum value of $p_j(\pi - 2q) + \varphi N_M^j - 2\sqrt{(\varphi N_M^j p_j(\beta(\pi - 2q) - V_F^M)}$ on the interval [0,1] at $\sigma_j = 1 - \sqrt{\frac{\varphi N_M^j}{(p_j(\beta(\pi-2q)-V_F^M)}}$.

Thus we can define a smooth function $h(N_M^j, X)$ that equals $p_j(\pi - 2q) + \varphi N_M^j - 2\sqrt{\varphi N_M^j p_j(\beta(\pi - 2q) - V_F^M)}$ when $p_j[\beta(\pi-2q) - V_F^M] > \varphi N_M^j$ and $p_j[V_F^M + (1-\beta)(\pi - 2q)]$ for $p_j[\beta(\pi - 2q) - V_F^M] < \varphi N_M^j$. This function is decreasing with N_M^j for $p_j[\beta(\pi - 2q) - V_F^M] > \varphi N_M^j$ and independent of N_M^j after that point. An equilibrium with female entry exists if and only if $h(N_M^j, X) \geq \theta_j$.

If $h(N_M^j, X) \geq \theta_j$, and $g(0) > 0$, then there exists only one equilibrium since $g(.)$ can only cross then the horizontal line with a value of θ_j once from above. If $h(N_M^j, X) \geq \theta_j$, and $g(0) < 0$, then there will be two equilibria, and as discussed in the text, we choose to focus on the "stable" equilibria with greater female entry.

We define $\theta_j^* = h(N_M^j, X)$, as the maximum level of entry costs that supports female entry into the industry, where X denotes the vector of all other paramters. As $h(N_M^j, X)$ is weakly decreasing in N_M^j, θ_j^* is also weakly decreasing in N_M^j. For all other attributes $\frac{d\theta_j^*}{dX} = h_x(N_M^j, X)$.

If an equilibrium exists, as discussed in the text, we focus only on equilibrium where $g'(\sigma_j) < 0$, which will be the equilibrium with more female entry. For any equilibrium $g(\sigma_j^*, X) = \theta_j$, where σ_j^* refers to the equilibrium share of women in the market and X refers to the vector of other characteristics. In an equilibrium where $g'(\sigma_j) < 0$, and

that always holds for the equilibrium with the larger number of women in the industry, $\frac{d\sigma_j^*}{d\theta} = \frac{1}{g_\sigma(\sigma_j^*,X)} < 0$. For any other attribute "x" $\frac{d\sigma_j^*}{dx} = \frac{g_x(\sigma_j^*,X)}{-g_\sigma(\sigma_j^*,X)}$ and so the sign of $g_x(\sigma_j^*,X)$ determines the sign of $\frac{d\sigma_j^*}{dx}$. As N_M^j is fixed, the sign of $\frac{d\sigma_j^*}{dx}$ determines whether x causes the number of women entering to increase or decrease.

If $\delta > Min[\frac{\pi-2q}{\Delta}, \frac{\pi-q-b}{\Delta+b}]$ then no partnership occurs, then $V_F^M = 0$, and $p_j(1-\beta+\beta\sigma_j)(\pi-2q) - \frac{\varphi\sigma_j N_M^j}{1-\sigma_j} = g(\sigma_j)$, and $p_j(\pi-2q) + \varphi N_M^j - 2\sqrt{\varphi N_M^j p_j \beta(\pi-2q)} = h(N_M^j)$ if $p_j[\beta(\pi-2q) - V_F^M] > \varphi N_M^j$ and $p_j(1-\beta)(\pi-2q)$ for $p_j[\beta(\pi-2q) - V_F^M] < \varphi N_M^j$.

The function $h(.)$ is everywhere rising with p_j, and π and falling with q, and β, and hence the value of θ_j^* is rising with p_j, and π and falling with q and β. When $p_j[\beta(\pi-2q) - V_F^M] > \varphi N_M^j$, then θ_j^* is also falling with φ and N_M^j. The function $g(.)$ is increasing with p_j and π and decreasing with $\theta_j, \beta, q, \varphi$ and N_M^j and hence the number of women entering the industry and women's average welfare in the industry rises with p_j and π and falls with $\theta_j, \beta, q, \varphi$ and N_M^j.

Men's welfare is $(1-\sigma_j+\beta\sigma_j)p_j(\pi-2q)$, which is decreasing in σ_j and hence male welfare is rising with θ, φ, β and N_M^j. Using the closed-form solution for σ_j, and using the notation $A = p_j(\pi-2q)$, we find that male welfare can be written as $\beta A + \frac{1-\beta}{2\beta}(A + \varphi N_M^j - \theta - \sqrt{(A+\varphi N_M^j - \theta)^2 - 4\varphi N_M^j \beta A})$, and the derivative of this with respect to A is $\beta + \frac{1-\beta}{2\beta}(1 - \frac{(A+\varphi N_M^j - \theta) - 2\varphi N_M^j \beta}{\sqrt{(A+\varphi N_M^j - \theta)^2 - 4\varphi N_M^j \beta A}})$. If $3(\frac{(A+\varphi N_M^j - \theta)^2}{4\varphi N_M^j \beta} - A) + (1-\beta)\varphi N_M^j > \theta$, then $\frac{(A+\varphi N_M^j - \theta) - 2\varphi N_M^j \beta}{\sqrt{(A+\varphi N_M^j - \theta)^2 - 4\varphi N_M^j \beta A}} < 2$ and the condition is obviously satisfied.

If $Min[\frac{\pi-2q}{\Delta}, \frac{\beta(\pi-2q)+q-b}{\beta\Delta+b}] < \delta < Min[\frac{\pi-2q}{\Delta}, \frac{\pi-q-b}{\Delta+b}]$, which is only possible if $b > \frac{q\Delta}{\pi-2q+\Delta}$, then $V_F^M = \pi - q - (1+\delta)b - \delta\Delta$ and $W_F^M = (1+\delta)b - q$. In this region $g(\sigma_j) = p_j[(1-\sigma_j)(\pi-q-(1+\delta)b-\delta\Delta) + (1-\beta+\beta\sigma_j)(\pi-2q)] - \frac{\varphi\sigma_j N_M^j}{1-\sigma_j}$. The function $h(N_M^j, X)$ equals $p_j(\pi-2q) + \varphi N_M^j - 2\sqrt{\varphi N_M^j p_j(\beta(\pi-2q) - \pi + q + (1+\delta)b + \delta\Delta)}$ when $p_j[\beta(\pi-2q) - \pi + q + (1+\delta)b + \delta] > \varphi N_M^j$ and $p_j[\pi-q-(1+\delta)b-\delta\Delta+(1-\beta)(\pi-2q)]$ for $p_j[\beta(\pi-2q) - \pi + q + (1+\delta)b + \delta] < \varphi N_M^j$.

The function $h(.)$ is rising with p_j, and π and falling with $q, \varphi, \delta, \beta$, and Δ, hence the value of θ_j^* is rising with p_j, and π and falling with q, δ, β, and Δ.

The function $g(.)$ is increasing with p_j and π and decreasing with $\beta, q, \varphi, \delta, \Delta$ and N_M^j and hence the number of women entering the industry and women's welfare rises with p_j and π and falls with $\theta_j, \beta, q, \varphi, \delta, \Delta$ and N_M^j.

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If $\delta < Min[\frac{\pi-2q}{\Delta}, \frac{\beta(\pi-2q)+q-b}{\beta\Delta+b}]$ then $W_F^M = \beta(\pi - 2q - \delta\Delta)$ to P and $V_F^M = (1 - \beta)(\pi - 2q - \delta\Delta)$, and $g(\sigma_j) = p_j[(2 - \beta)(\pi - 2q) - (1 - \sigma_j)(1 - \beta)\delta\Delta] - \frac{\varphi\sigma_j N_M^j}{1-\sigma_j}$.

The function $h(N_M^j, X)$ equals $p_j(\pi-2q)+\varphi N_M^j - 2\sqrt{\varphi N_M^j p_j((2\beta - 1)(\pi - 2q) + (1 - \beta)\delta\Delta)}$ when $p_j[(2\beta - 1)(\pi - 2q) + (1 - \beta)\delta\Delta] > \varphi N_M^j$ and $p_j(1 - \beta)(2(\pi - 2q) - \delta\Delta)$ for $p_j[(2\beta - 1)(\pi - 2q) + (1 - \beta)\delta\Delta] < \varphi N_M^j$. This function is decreasing with N_M^j for $p_j[\beta(\pi - 2q) - V_F^M] > \varphi N_M^j$ and independent of N_M^j after that point. An equilibrium with female entry exists if and only if $h(N_M^j, X) \geq \theta_j$.

The function $h(.)$ is rising with p_j, and π and falling with $q, \delta, \beta,$ and Δ ,hence the value of θ_j^* is rising with p_j, and π and falling with $\theta, q, \delta, \beta,$ and Δ. The function $g(.)$ is increasing with p_j and π and decreasing with $\beta, q, \varphi, \delta, \Delta$ and N_M^j and hence the number of women entering the industry and women's welfare rises with p_j and π and falls with $\theta_j, \beta, q, \varphi, \delta, \Delta$ and N_M^j.

The welfare of men is $p_j[(1 - \sigma_j + 2\beta\sigma_j)(\pi - 2q) - \sigma_j\beta\delta\Delta]$, which if $\Delta = 0$ is decreasing with β if and only if $((\pi - 2q)p_j - \theta_j)^2 < 2\varphi N_M^j(\theta_j + (4\beta - 3)(\pi - 2q)p_j)$. If $\theta_j = 0$, this holds if $(\pi - 2q)p_j < 2\varphi N_M^j(4\beta - 3)$ and this will hold for all higher values of θ_j. Male welfare is always declining with δ in this region if $(2\beta - 1)(\pi - 2q) > \beta\delta\Delta$ because σ_j falls with δ, and welfare rises with σ_j.

B Games Procedures

Six surveyors and two recruiters were hired to conduct the games and were managed by a research assistant. Typically two days were spent in each market. We created two lists of randomly-ordered businesses for each market; one list for businesses located inside the market and one for businesses located outside the market. Manufacturers, being of primary interest, were placed at the top of each list. The two recruiters met early and were given the randomized list of entrepreneurs; they then set up appointments with potential participants, following the order of the list. If a marketeer could not be located or refused to participate, the following skip pattern was implemented: the marketeer was replaced by the next female on the list and as soon as all women had been exhausted, the recruiters simply moved to the next marketeer on the list. In markets where the response rate was low, or we failed to find many businesses or an above average amount of businesses were closed, we thus also surveyed and played the games with non-manufacturers. It is also important to note that all entrepreneurs on the outside list were screened extensively to ensure that they truly did not belong to the market.

In general, the first day at a market, the games were played with inside-inside pairs, wherein both players worked within the market. The corresponding three treatments arms for these pairs were control, Court and Chief. Generally, the second day at a market, the games were played with inside-outside pairs, wherein one player was a marketeer and the other an entrepreneur located outside of the market. The corresponding two treatment arms for these pairs were control and Court. Surveys were conducted first, and then the games. However, if there were delays in reaching a participant or if a player refused to play the games after having completed the survey, the order was switched. The order in which each treatment arm was conducted was randomized each market to limit selection bias due to logistical factors (E.g. Time of day, eagerness of participants, etc.).

We ran the games on groups of six entrepreneurs at time, with one surveyor assigned to one entrepreneur. For each market, a switch matrix was constructed to inform surveyors whether their assigned entrepreneur was to be Player A (Investor) or Player B (Trustee) first, and who the entrepreneur was to play in each round. For logistical reasons, surveyors whose respondents were located outside of the market always started the games with the respondent being the Trustee, therefore all outsiders played the games in the same order, first as Trustees then as Investors. Once finishing a survey with a respondent, a surveyor sent a text to their corresponding surveyor to inform that they were about to start the instructions for the games in the following format: "surveyornum-initials-CensusID-AB/BA-start (e.g. 4-D-6230-AB-start)". The instructions for the games were given to the respondent in written as well as oral form in the respondent's preferred language, and surveyors asked the respondent check questions to ensure that they fully understood the pay-out rules, who they were playing against, and the possibilities for complaint when relevant. Once both surveyors in a pair had received the "ready" text message from their partner surveyor for that round and had ensured that the participant understood the rules, they started with the game.

The surveyor of the Investor sent the surveyor of the corresponding Trustee the number of tokens his player had chosen to send in the following format "SurveyorNum-Surname-Game-Player-TokensSent (e.g. 4-AD-R1-A3)". The surveyor of the Trustee then responded with the number of tokens the Trustee had decided to send back in the following format "SurveyorNum-Surname-Game-Player-TokensReturned (e.g. 2-PB-R1-B2)". The surveyors were instructed to always use neutral language to inform the respondents of the amount that had been sent (or sent back) to them.

In the case of the Court and Chief treatments, the Investor, upon being told how many tokens the Trustee had sent back, was asked whether they wanted to complain to the Court (chief) or not. The surveyor then messaged the corresponding surveyor whether or not the Investor intended to complain (format: A-Comp OR A-NoComp). If the Investor complained, the surveyor also messaged the recruiter in the following format: "SurveyorNum-Surname-ANumGiven-BNumReturned-TotNum-Co E.g. 4-AD-A3-B2-Tot9-Comp". In the case of the Court treatment, the recruitment officer already had a completed matrix of decisions from the Court (obtained from the Small Claims Court before the start of the games field work). The recruitment officer examined the matrix and sent the Court's decision to the surveyor of the Investor in the following format: "ANumTokensReceived-BNumTokensReceived. E.g. A6-B3". In the case of the chief treatment, the recruiter would ask the market's chief in real-time how s/he wanted to settle the complaint and sent their response in the same format to the surveyor of the Investor. The chief her/himself was given information (both oral and written) prior to the games commencing, which explained the game and made clear her/his role as an arbitrator during the games. Similar to the respondents, they were asked questions to check whether they had fully understood the games and their role in the games. If/ when a complaint reached the chief, the recruiter who was assigned to her/him would announce the complaint and ask for her/his decision in the following way: "There has been a complaint from a player. In this game, player A (the Investor) sent XX number of tokens to B (the Trustee), which means B received XX number of tokens. B sent back XX tokens. A has complained to you. Do you wish to redistribute the tokens? If so, how?"

It is important to note, that the players were never told who they were playing against, however, they knew whether the player was located inside or outside the market. Furthermore, after playing the first round as Investor or Trustee, they played the second round as Trustee (Investor respectively) against a new player, so that no two players played each other twice. It was explicitly made clear to them that they would be randomly assigned to a new partner after the first round and they were reminded whether this player was inside or outside the market and if they (or the opposing player) could complain to the Chief or Court or neither.

As some of the markets were quite small, and six surveyors, two recruiters and one research assistant naturally stuck out, it is possible that participants had heard of the games we were conducting before we reached them. Thus, we cannot fully exclude the possibility that some players may have played with more information to begin with i.e. on how the Court or Chief had decided in other cases in the market, though, this is

more likely to be true for the second day in a specific market as the games conducted in a specific day followed back-to-back, thus there was not much time for entrepreneurs to gossip in-between. Furthermore, the field team sought to minimize the attention drawn to themselves by merely sending the two recruiters into the depths of the markets to find participants, whilst the surveyors would generally just directly be taken from one entrepreneur to the other.

Data consistency checks were conducted at the end of each field day.

C Additional Tables and Robustness Checks

Table C.1: Cross-country Correlations with Female Ownership

Variables	Correlation coefficient	T-stat univar reg	T-stat bivar reg	N
Panel A - discrimination, norms and rule of law				
Discrimination in the family (SIGI)	-.53	-6.12	-5.38	111
Restricted physical integrity (SIGI)	-.14	-1.54	-.96	104
Men better business leaders than women (WVS)	-.51	-5.55	-4.62	52
Justifiable for men to beat wives (WVS)	-.27	-2.5	-1.85	51
Health and safety rank (GGG)	-.51	-6.34	-5.74	102
Rule of law percentile rank (WB WGI)	.16	1.95	.76	112
Rule of law score (WJP)	.17	1.68	.21	83
Female disadvantage with police (GPP)	-.09	-.67	-.25	68
Gender equality in courts (WJP experts)	.25	2.3	1.76	68
Gender equality score (WJP experts)	.1	.78	.11	68
Masculinity (Hofstede MFI)	-.04	-.33	-.45	62
Panel B - democracy, religion and education				
Average Polity and Democracy Index (1960-2000)	.21	2.17	.89	101
Democracy Index 2018 (EIU)	.35	4.24	2.87	109
Female school enrollment, tertiary (UN)	.27	3.07	2.05	102
Female school enrollment, secondary (UN)	.4	5.53	4.2	106
Educational Attainment rank (GGG)	-.49	-6.46	-7.3	102
Percentage of muslim citizens (2000)	-.65	-11.01	-9.8	111
Panel C - ease of doing business				
Doing business score global (DB17-19 method)	.31	3.97	2.69	111
Score-Enforcing contracts (DB04-15 method)	.26	2.77	2.18	111
Score-Registering property	.35	4.23	3.5	111
Enforcing contracts score	.28	3	2.33	111
Women Business Law index	.49	7.96	7.62	112

This Table shows the correlation between empirical measures of the model parameters and female ownership across countries. Column 1 reports the raw correlation coefficient. Column 2 reports the t-stat of a univariate regression of female entrepreneurship on the given row variable. Column 3 reports the t-stat of a bivariate regression of female entrepreneurship on the given row variable and log gdp per capita in 2006. The last column reports the number of observations, which may vary depending on the surveys' coverage and years. Acronym in brackets show the source of the variable and the years of collection used.

Table C.2: Correlations between Trust and Cooperation

	Trust ST	Trust NB	Trust GSS	Joint Buy	Lent	Advice	Share Order	Coop Average
Trust in Strangers	1							
Trust in Neighbors	0.313***	1						
Trust GSS	0.129***	0.119***	1					
Joint Buy	0.0516*	0.0577**	0.00748	1				
Lent	0.0773***	0.123***	0.0151	0.259***	1			
Advice	0.0596**	0.0978***	-0.0123	0.258***	0.356***	1		
Share Order	0.0618**	0.0819***	-0.0394	0.349***	0.328***	0.347***	1	
Coop Average	0.0901***	0.129***	-0.0104	0.665***	0.708***	0.683***	0.734***	1
Complexity	0.0214	-0.00476	0.0435*	0.103***	0.0685**	0.0209	-0.0330	0.0569**
N	2216							

This table shows correlations between the trust variables and cooperation variables. The variables "Trust in Strangers" and "Trust in Neighbors" are measured on a scale from 1-4, and have been converted into dummy variables by combining low scores (1 and 2) and high scores (3 and 4). Low scores were given a value of 0, and high scores a value of 1. The variable "Trust GSS" is a dummy measuring whether most people can be trusted or not: a value of 1 indicates that "most people can be trusted", and a value of 0 indicates that "you cannot be too careful in dealing with people". The variables "Joint Buy", "Lent", "Advice" and "Share Order" are dummies that indicate whether a person ever engaged in the relevant activity. The variable "Coop Average" is an index of cooperative behavior, calculated as a simple average of the four dummies "Joint Buy", "Lent", "Advice" and "Share Order". The sample comes from our Census of Small-Scale Manufacturers in Lusaka (N=2,216). *** denotes $p<0.01$, ** denotes $p<0.05$, and * denotes $p<0.1$.

Figure C.1: Talking about the Business with Other Entrepreneurs
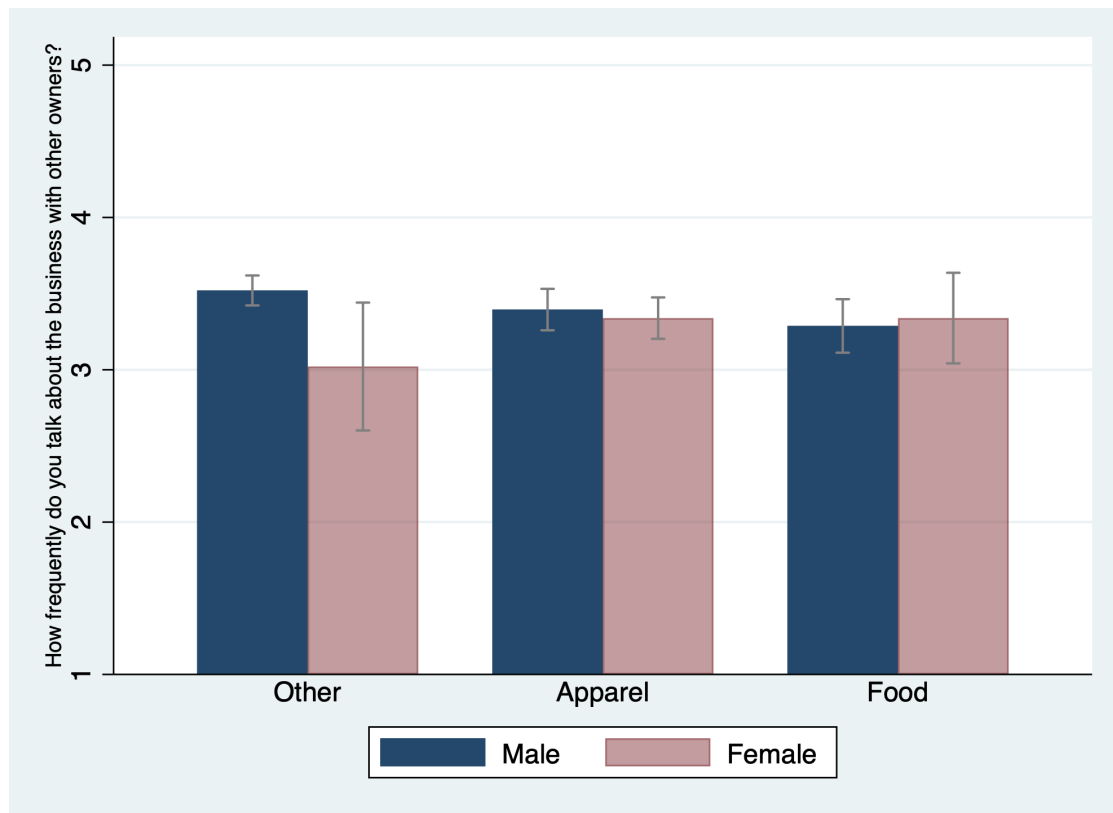
This figure shows the proportion of men and women talking several times a week with other entrepreneurs about the business. We asked "Consider other business owners in your sector in this neighborhood. How many times do you talk about topics related to the business?". Answers were given on a 5-Likert scale: Never, Once a Month, Between 1 and 4 times a month, More than once a week, Every day. The sample comes from our Census of Small-Scale Manufacturers in Lusaka (N=2,216).

Table C.3: Correlations between Sales and Firm Size with Trust and Cooperative behavior

| | Logged sales | | | Employment | |
	Good Week	Bad Week	Yesterday	Level	Growth
Trust NB	.01	0	-.01	0	.05**
Trust ST	.04**	.04	.03	.01	.01
Trust GSS	.04*	.04*	.01	.05**	.03
Coop Average	.09***	.02	.05**	-.04*	.02
Lent	.03	-.03	.02	-.04*	0
Advice	.05***	.01	.04*	-.02	.02
Share Order	.06***	0	.03	-.05**	.01
Joint Buy	.1***	.07***	.06**	.01	.04*

This table shows correlations between sales or employment and trust or cooperative behavior. The dependent variables are the log of the answers given when asked the sales in the previous working day, the sales in a good week and the sales in a bad week. If the person could not provide an exact number, we also asked for an upper and lower bound. We then imputed the average of the bounds to the sales variables. All the sales variables are winsorised at the 99% level to control for outliers. The variables "Trust in Strangers" and "Trust in Neighbors" are measured on a scale from 1-4, and have been converted into dummy variables by combining low scores (1 and 2) and high scores (3 and 4). Low scores were given a value of 0, and high scores a value of 1. The variable "Trust GSS" is a dummy measuring whether most people can be trusted or not: a value of 1 indicates that "most people can be trusted", and a value of 0 indicates that "you cannot be too careful in dealing with people". The variables "Joint Buy", "Lent", "Advice" and "Share Order" are dummies that indicate whether a person ever engaged in the relevant activity. The variable "Coop Average" is an index of cooperative behavior, calculated as a simple average of the four dummies "Joint Buy", "Lent", "Advice" and "Share Order". The sample comes from our Census of Small-Scale Manufacturers in Lusaka (N=2,216). *** denotes p<0.01, ** denotes p<0.05, and * denotes p<0.1.

Figure C.2: Cooperative Activities by Distance to Court or Police
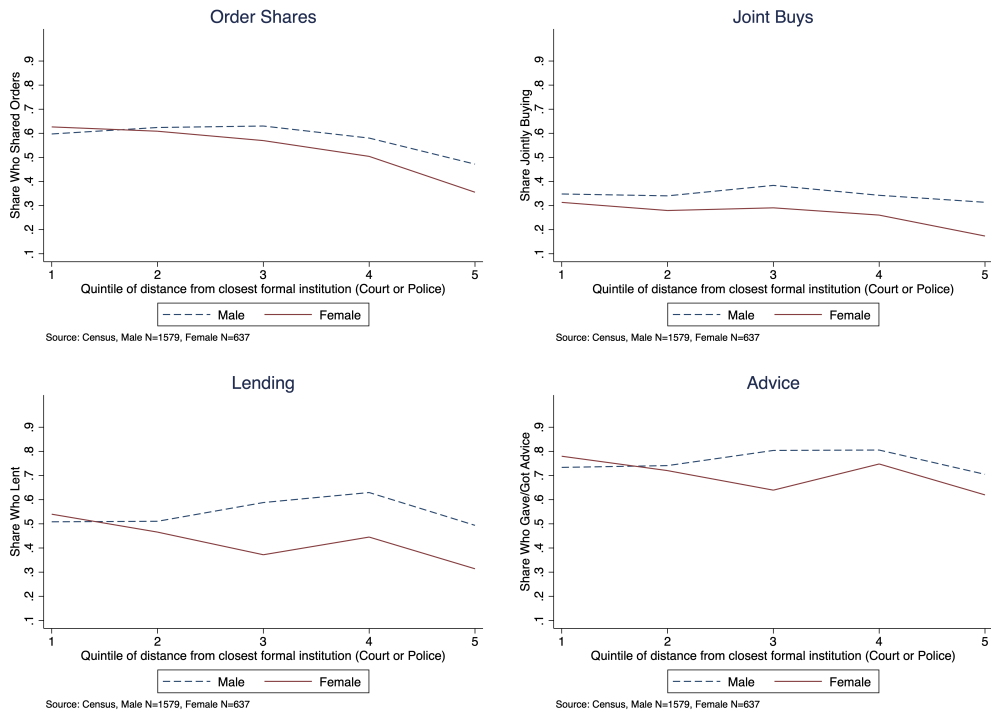
This figure shows the share of entrepreneurs who said they cooperated with a similar business in the given activity by gender and distance from the closest formal institution between the Small Claims Court or the Police. The dashed blue line shows raw average cooperation for men and the solid red line for women. Numbers on the x-axis report the quintile of distance from the closest formal institution. The sample comes from our Census of Small-Scale Manufacturers in Lusaka (N=2,216).

Table C.4: Preferences for Different Institution by Gender

	Male Mean	Fem Mean	Diff	Male N	Fem N
Panel A: Choice of Institutions					
Market Chief	0.73	0.68	-0.05	346	128
	(0.44)	(0.47)	(0.05)		
Court	0.04	0.11	0.07***	346	128
	(0.20)	(0.31)	(0.02)		
Police	0.17	0.17	-0.00	346	128
	(0.38)	(0.38)	(0.04)		
Conditional on knowing the court:					
Market Chief	0.64	0.32	-0.32***	76	25
	(0.48)	(0.48)	(0.11)		
Court	0.12	0.44	0.32***	76	25
	(0.33)	(0.51)	(0.09)		
Police	0.21	0.20	-0.01	76	25
	(0.41)	(0.41)	(0.09)		
Panel B: Opinion on Institutions					
Market Chief Fair	0.55	0.50	-0.05	347	127
	(0.50)	(0.50)	(0.05)		
Court Fair	0.52	0.65	0.13	77	26
	(0.50)	(0.49)	(0.11)		
Police Fair	0.21	0.24	0.03	347	128
	(0.41)	(0.43)	(0.04)		
Market Chief Slow	0.18	0.24	0.06	347	127
	(0.39)	(0.43)	(0.04)		
Court Slow	0.43	0.42	-0.01	77	26
	(0.50)	(0.50)	(0.11)		
Police Slow	0.29	0.41	0.12**	347	128
	(0.45)	(0.49)	(0.05)		

Panel A shows the share of men (Column 1) and women (Column 2) who would choose a certain institution to solve a business dispute. The survey question was the following: "Think about an average marketeer in this market. Assume that another person in the market buys items on credit from him and does no pay back what he owes. Which person or group would the person owed money most likely go to?". The last three rows of panel A show the answers to the same question but limiting the sample to people who have heard of the Small Claims Court (N=103). Panel B shows respondents' opinions of the Market Chief, Police and Small Claims Court fairness and efficiency. For fairness, we gave people the same scenario described above and asked "If the person owed money goes to the market chief, how often do you think the proccess would be fair?". We coded the answer as 1 is the person says that the process will be always or usually fair, and 0 if the person says that the process would be sometimes, rarely or never fair. We repeated the same question for the Police and the Small Claims Court (conditional on having heard of the Court before). For efficiency, we gave people the same scenario described above and asked " If the person owed money goes to the market chief, how often do you think the proccess would be slow?". We coded the answer as 1 is the person says that the process will be always or usually slow, and 0 if the person says that the process would be sometimes, rarely or never slow. We repeated the same question for the Police and the Small Claims Court (conditional on having heard of the Court before). Data are from the pre-games survey (N=477).

Table C.5: Effect of proximity to institutions on cooperation and sales: robustness

	(1)	(2)	(3)	(4)	(5)	(6)
	Average Cooperation			Mean Sales		
Panel A: Effect of being in a market						
Female	-0.06**	-0.06*	-0.02	-1253.17***	-1049.56***	-573.95*
	(0.029)	(0.032)	(0.032)	(279.630)	(273.788)	(306.447)
In market	0.07**	0.10***	0.09**	-1503.71**	-1175.46**	-874.65
	(0.030)	(0.035)	(0.034)	(599.340)	(577.831)	(527.848)
Female × In market	0.07*	0.07*	0.06	880.50***	760.68**	583.18*
	(0.039)	(0.043)	(0.042)	(297.894)	(291.215)	(305.560)
Adjusted R^2	0.100	0.100	0.120	0.106	0.154	0.233
P-value (In + Fem.*In = 0)	0	0	0	.27	.44	.58
P-value (Fem + Fem.*In = 0)	.72	.63	.14	.03	.11	.94
Panel B: Effect of being close to court or the police						
Female	-0.08***	-0.09***	-0.04	-636.71	-383.57	177.50
	(0.029)	(0.029)	(0.030)	(410.470)	(391.458)	(369.490)
< med dist from court or police	0.04	0.02	0.03	35.28	393.52	378.34
	(0.028)	(0.030)	(0.028)	(468.860)	(432.667)	(450.696)
Female × < med dist	0.07**	0.09**	0.07**	-131.79	-262.23	-483.54
from court or police	(0.034)	(0.035)	(0.035)	(479.291)	(462.329)	(399.384)
Adjusted R^2	0.099	0.100	0.120	0.103	0.152	0.233
P-value (In + Fem.*In = 0)	0	0	0	.88	.83	.85
P-value (Fem + Fem.*In = 0)	.75	.96	.2	0	0	.07
Observations	2213	2068	2064	2093	1974	1968
Mean Dep Var	.54	.55	.55	1876.33	1821.55	1817.57
SD Dep Var	.33	.33	.33	3600.89	3500.19	3498.52
Density Controls	✓	✓	✓	✓	✓	✓
Market Fixed Effects	✓	✓	✓	✓	✓	✓
Owner Controls		✓	✓		✓	✓
Industry Fixed Effects	✓		✓			✓

Clustered standard errors in parentheses.

* p<0.10, ** p<0.05, *** p<0.01

The variable " Average Cooperation" is an index of cooperative behavior, calculated as a simple average of the four dummies "Joint Buy", "Lent", "Advice" and "Share Order" defined in previous tables and in the main body of the paper. The variable "Mean Sales" is the average of sales in a good week and in a bad week. If the person could not provide an exact number, we also asked for an upper and lower bound. We then imputed the average of the bounds to the sales variables. All the sales variables are winsorised at the 99% level to control for outliers. The variable "In market" is an indicator of value one if the business is located inside a formal market. The variable "< med dist from court or police" is an indicator of value one if the business is located below median distance from the police or below median distance from the Small Claims Court. Density Controls include a dummy variable for whether the business is located within 100 meters of a market, the total number of businesses within 100 meters, and the number of business from the same sector within 100 meters and the population density in the administrative area where the business is located (ward). All the regressions include marketplace level fixed effects. Regressions in Panel A include a control for whether the business is located close to the police or the SCC, and regressions in Panel B include a control for whether the business is located inside a market. Owner Controls include whether the business owners trust their neighbors, how old the business is, how many days the business owner spends working in the business, age of business owner, whether business owner is married or not and indicator variables for educational achievement. All the regressions include marketplace level fixed effects. Standard errors are clustered at the marketplace level. The sample comes from our Census of Small-Scale Manufacturers in Lusaka (N=2,216), but the sample in each regression varies because of missing values in the owner controls variables.

Table C.6: Women and Help from Institutions

	Male Mean	Fem Mean	Diff	Male N	Fem N
Panel A: Knowledges and Opinions					
Heard of Court	0.22	0.20	-0.02	347	128
	(0.41)	(0.40)	(0.04)		
Would Leave Shop	0.44	0.32	-0.12**	347	127
	(0.50)	(0.47)	(0.05)		
Opposition Abused	0.37	0.41	0.04	339	125
	(0.48)	(0.49)	(0.05)		
Panel B: Work Disputes					
Any Dispute	0.67	0.60	-0.07	348	129
	(0.47)	(0.49)	(0.05)		
Disp. Workplace	0.19	0.12	-0.08*	348	129
	(0.39)	(0.32)	(0.04)		
Disp. Bus. Agree	0.32	0.26	-0.06	348	128
	(0.47)	(0.44)	(0.05)		
Disp. Over Debt	0.52	0.40	-0.12**	347	129
	(0.50)	(0.49)	(0.05)		
Disp. Over Goods	0.34	0.25	-0.09*	347	129
	(0.47)	(0.43)	(0.05)		
Panel C: Theft, Assault, Harassment					
Victim of Theft	0.40	0.37	-0.03	348	129
	(0.49)	(0.49)	(0.05)		
Thief Caught	0.22	0.06	-0.16**	140	48
	(0.42)	(0.24)	(0.06)		
Victim of Assault	0.05	0.03	-0.02	348	129
	(0.22)	(0.17)	(0.02)		
Assailant Caught	0.22	0.00	-0.22	18	3
	(0.43)	(0.00)	(0.25)		
Police Harass	0.05	0.00	-0.05**	348	129
	(0.22)	(0.00)	(0.02)		

* p<0.10, ** p<0.05, *** p<0.01

This table shows mean differences in the access and use of institutions between women and men. All the variables are dummy variables. The variable "Heard of Court" is 1 if the person has heard of the Small Claims Court, and 0 otherwise. The variable "Would Leave Shop" is 1 if the person would feel comfortable leaving the shop unattended for 30 minutes, and 0 otherwise. The variable "Opposition Abused" is 1 if the person feels that members of the (political) opposition frequently receive verbal or physical abuse, and 0 otherwise. The work dispute variables are equal to 1 if the person has experienced the mentioned type of work-disputed, and 0 otherwise. The variables "Victim of theft" and "Victim of assault" equal 1 if the person has been a victim of these crimes, and 0 otherwise. The variables "Thief caught" and "Assailant caught" equal 1 if the crime perpetrator has been captured, and 0 otherwise. The variable "Police Harass" is 1 if the person has suffered from police harassment in the last 12 months, and 0 otherwise. The sample stems from the survey we conducted with business owners before the lab-in-the-field games (N=477).

Table C.7: Tokens Investor Sends by Institutional Treatment

	Tokens Investor sent		
	(1)	(2)	(3)
Female	-1.243***	-1.030***	-1.236***
	(0.430)	(0.331)	(0.433)
Chief	-0.0851		
	(0.382)		
Court		0.252	
		(0.281)	
In/out			-0.0527
			(0.416)
Chief × Female	1.610**		
	(0.682)		
Court × Female		0.281	
		(0.452)	
In/out × Female			0.462
			(0.662)
Constant	4.198***	4.101***	4.267***
	(0.361)	(0.238)	(0.364)
Observations	189	379	187
Adjusted R^2	0.020	0.030	0.031
Mean	4.087	4.076	4.087
SD	2.412	2.346	2.412

Robust standard errors in parentheses. * $p<0.10$, ** $p<0.05$, *** $p<0.01$

The dependent variable is the number of tokens sent by the Investor. All regressions include a dummy on the Investor's gender, and each column includes a dummy for the different treatment arm (in/out, Court, and Chief), together with the interaction of that treatment arm and the Investor's gender. Column (1) only includes participants in the Inside/Inside condition, either in Control or Chief arms. Column (2) includes participants in both the Inside/Inside and Outside/Inside conditions, either in Control or Court arms, and controls for the in/out treatment. Column (3) excludes participants in Chief or Court arms. The sample comes from our lab-in-the-field games conducted in Lusaka in 2017 (N=477).

Table C.8: Average Return Ratio by Institutional Treatment

	Average Return Ratio		
	(1)	(2)	(3)
Female	0.000115	-0.0427**	0.00144
	(0.0263)	(0.0200)	(0.0265)
Chief	0.0247		
	(0.0200)		
Court		0.0340**	
		(0.0163)	
In/out			0.0218
			(0.0222)
Chief × Female	-0.0524		
	(0.0417)		
Court × Female		0.0284	
		(0.0260)	
In/out × Female			-0.0787**
			(0.0376)
Constant	0.416***	0.418***	0.403***
	(0.0208)	(0.0143)	(0.0209)
Observations	190	380	188
Adjusted R^2	0.000	0.046	0.053
Mean	.423	.435	.423
SD	.135	.131	.135

Robust standard errors in parentheses. * p<0.10, ** p<0.05, *** p<0.01

The dependent variable is the Trustee's average return ratio. All regressions include a dummy on the Trustee's gender, and each column includes a dummy for the different treatment arm (in/out, Court, and Chief), together with the interaction of that treatment arm and the Trustee's gender. Column (1) only includes participants in the Inside/Inside condition, either in Control or Chief arms. Column (2) includes participants in both the Inside/Inside and Outside/Inside conditions, either in Control or Court arms, and controls for the in/out treatment. Column (3) excludes participants in Chief or Court arms. The sample comes from our lab-in-the-field games conducted in Lusaka in 2017 (N=477).

Table C.9: Investor's Earnings

| | Investor's Earnings | | | |
	(1)	(2)	(3)	(4)
Female	-0.0680	-0.152		
	(0.355)	(0.381)		
Chief	0.566*	0.566*	0.620**	0.607**
	(0.292)	(0.292)	(0.251)	(0.271)
Court	1.107***	1.108***	0.914***	0.888***
	(0.282)	(0.282)	(0.221)	(0.292)
In/out	0.208	0.208	0.0577	0.0317
	(0.284)	(0.284)	(0.221)	(0.301)
Female × Chief	0.550	0.634		
	(0.657)	(0.668)		
Female × Court	-0.588	-0.412		
	(0.429)	(0.478)		
Female × In/out	-0.256	-0.105		
	(0.418)	(0.578)		
Female × Court × In/out		-0.306		
		(0.612)		
Court × In/out				0.0516
				(0.442)
Constant	10.67***	10.67***	10.73***	10.74***
	(0.253)	(0.254)	(0.214)	(0.243)
Observations	475	475	477	477
Adjusted R^2	0.043	0.041	0.034	0.032
Mean	10.855	10.855	10.863	10.863
SD	2.244	2.244	2.097	2.097

Robust standard errors in parentheses. * $p<0.10$, ** $p<0.05$, *** $p<0.01$

The dependent variable is the Investor's final earnings. Regressors include the treatment arms (in/out, Court, and Chief). Columns 1 and 2 additionally include a dummy variable indicating the Investor's gender, and the interaction terms of this variable with the treatment arms. The sample comes from our lab-in-the-field games conducted in Lusaka in 2017 (N=477).

Table C.10: Trustee's Earnings

	Trustee's Earnings			
	(1)	(2)	(3)	(4)
Female	-0.119	0.517		
	(0.976)	(1.176)		
Chief	-0.202	-0.204	0.114	-0.147
	(0.596)	(0.596)	(0.536)	(0.598)
Court	-0.393	-0.394	-0.305	-0.824
	(0.512)	(0.512)	(0.432)	(0.582)
In/out	0.389	0.390	0.360	-0.164
	(0.512)	(0.512)	(0.432)	(0.677)
Female × Chief	1.400	0.771		
	(1.390)	(1.537)		
Female × Court	0.239	-1.093		
	(0.971)	(1.338)		
Female × In/out	-0.143	-1.262		
	(0.987)	(1.464)		
Female × Court × In/out		2.292		
		(1.657)		
Court × In/out				1.039
				(0.864)
Constant	6.892***	6.903***	6.805***	7.066***
	(0.538)	(0.538)	(0.488)	(0.562)
Observations	476	476	477	477
Adjusted R^2	-0.007	-0.005	-0.002	-0.001
Mean	6.757	6.757	6.821	6.821
SD	4.519	4.519	4.736	4.736

Robust standard errors in parentheses. * p<0.10, ** p<0.05, *** p<0.01

The dependent variable is the Trustee's final earnings. Regressors include the treatment arms (in/out, Court, and Chief). Columns 1 and 2 additionally include a dummy variable indicating the Investor's gender, and the interaction terms of this variable with the treatment arms. The sample comes from our lab-in-the-field games conducted in Lusaka in 2017 (N=477).

Table C.11: Distances to Local Institutions by Gender

	(1)	(2)	(3)
		Coefficient on Female dummy (SE)	
	Male Mean (SD)	OLS (no controls)	OLS (with market FE)
In Market	0.598	-0.001	0.032
	(0.490)	(0.023)	(0.020)
Market within 100m	0.675	-0.022	0.014
	(0.468)	(0.022)	(0.020)
Km to Market	0.128	0.002	-0.012
	(0.229)	(0.011)	(0.011)
< med km to Court	0.468	0.124***	-0.004
	(0.499)	(0.023)	(0.008)
Km to Court	5.646	-0.555***	-0.003
	(2.422)	(0.120)	(0.036)
< med km to Police	0.585	0.032	0.014
	(0.493)	(0.023)	(0.015)
Km to Police	0.485	-0.032*	-0.023*
	(0.400)	(0.019)	(0.013)
< med km to Court or Police	0.735	0.058***	-0.005
	(0.441)	(0.020)	(0.013)

Robust standard errors in parentheses. * p<0.10, ** p<0.05, *** p<0.01

This table shows gender differences in the distance to different local institutions. The variable "In Market" is an indicator for whether a business is located inside a formal market. The variable "Market within 100m" is an indicator for whether there is a market in a circle of 100 m radius around the business. The variables "Km to Market", "Km to Court" and "Km to Police" show the distance from a market (conditional on being within one kilometer within a market), from the Small Claims Court or from the Police in kilometers. The variables "< med km to" are indicator variables equal to one if a business has a below-median distance from a given local institution. Column (1) shows the mean and standard deviation of each variable for the sample of male businesses. Columns (2) and (3) report the coefficient of a regression of the row variable on a female dummy, without controls (in Column (2)) and with marketplace fixed effects (in Column (3)). Robust standard errors in parentheses.

Figure C.3: Robustness of Coefficients on $Fem_{ism} * InstProx_i$ in Sales Regressions

(a) Mean sales

(b) Sales in Bad Week

(c) Sales in Good Week
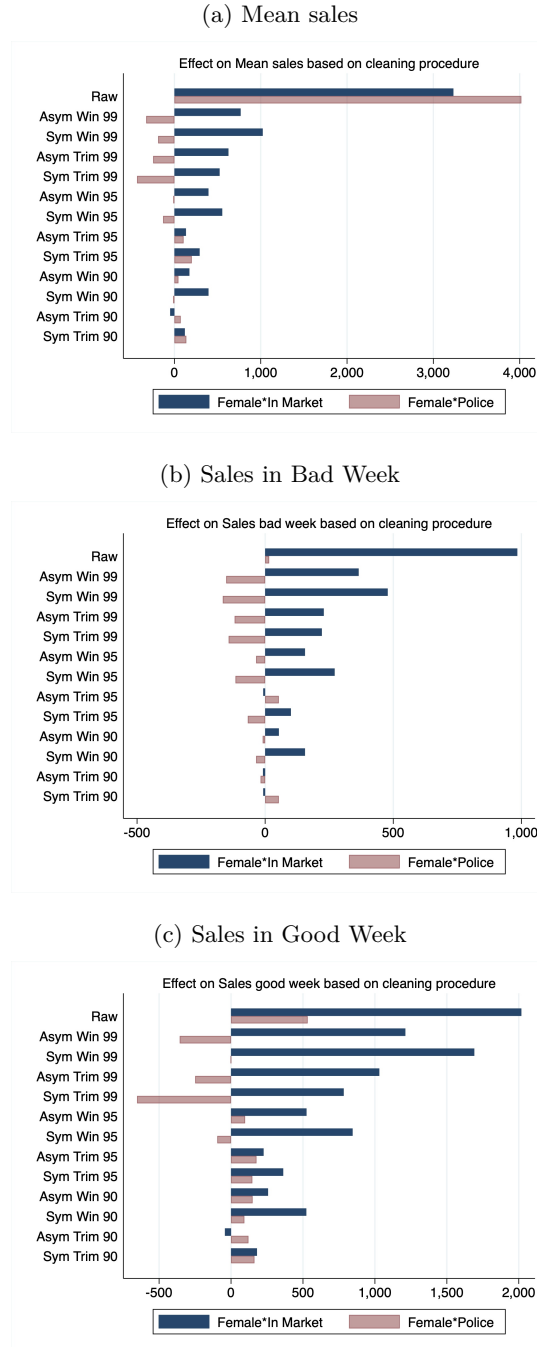
This figure shows the robustness of the coefficients on the interaction term $Fem_{ism} * instProx_i$ in regressions where the dependent variables are sales, for different cleaning procedures of the sales variables. The top figure is for average sales, the middle figure for sales in a bad week and the bottom figure for sales in a good week (all in levels). Blue bars show the coefficients on the interaction of the female dummy with being in a market and pink light bars for the interaction of the female dummy with being close to the Small Claims Court or the police. The main tables in the paper use the version of the variables winsorised asymmetrically at the top 1%. The raw data version of the sales in good week removes one outlier which is more than 40 times greater than the standard deviation of the distribution of sales in a good week.

D Chiefs Survey and Indexes Construction

The Chiefs survey was collected between the end of July 2021 and the beginning of September 2021. The survey was implemented over the phone in most of the cases to guarantee the safety of the surveyors (N=2) during the collection. One of the challenges was being able to find chiefs who were operating in the market in 2016 (when our main Census data were collected). Our approach was to visit most markets in person and ask marketeers if they knew who was the market chief in 2016. If we couldn't find the 2016 chief after several attempts, we interviewed the current chief for that particular market. We have a total of 86 respondents in our data, for a total of 76 unique markets. Market chiefs from 2016 are 51. In some markets, we interviewed both the current and old market chief (10 markets), but we consider only the 2016 market chief for the analysis. As we have 81 markets in our data, we were thus able to cover most of the markets with our interviews. In terms of business representativeness, the chiefs interviewed belong to markets were 531 female firms out of 538 in-market female firms are located. If we consider only the 51 chiefs from 2016, they cover 473 female marketeers out of 538.

The survey contained the following main sections:

- Demographics, education, business status, tenure and roles in market

- Market characteristics: chief elections, chiefs' length of mandate, other commitees, written record keeping of market affairs

- Scenario questions on inter-gender dispute resolution

- Gender attitudes and trust

To measure how the chief behaves in dispute resolutions between men and women, we proposed two different scenarios:

A woman marketeer gets an unusual order and asks a male marketeer to help her. She says that he agreed to produce 50 pieces for 5000KW. But the next day he refuses to help for that quantity. The female marketeer asks you for help, but the man says that they had agreed that he would produce 30 pieces for 5000KW. Now we are going to ask you some questions about the decisions you would take in this scenario.

A female marketeer leaves the shop unattended for 10 minutes. She comes back and realizes that some of her products have been stolen. She comes to you for help.

We ask follow-up questions belonging to four broad categories: i) institutional support for women, ii) formal and objective rules for adjudication, iii) practice and procedures followed by the chief, iv) likely outcome of the dispute.

Answers to the different questions of the survey feed into the construction of three different indexes of gender bias, legal competence and managerial duties. Table D.2 shows the components of the different indexes. For all the indexes, a common methodology was used following Kling et al. (2007). All variables are first consistently signed (e.g. higher value associated with higher bias); (ii) each component of the index is then standardized by subtracting the overall mean and dividing by the overall standard deviation; (iii) the sum of the standardized components is taken and (iv) the sum is standardized again. Finally, a dummy variable is created by taking values above or below median value.

Table D.1 shows descriptive statistics on the first two sections of the survey.

Table D.1: Descriptive statistics from Chiefs Survey

	(1) Full sample	(2) Council markets	(3) Cooperative markets
Age	47.68	46.87	48.04
	(8.156)	(8.181)	(8.197)
Female	0.08	0.09	0.08
	(0.271)	(0.288)	(0.267)
Secondary school	0.57	0.74	0.49
	(0.499)	(0.449)	(0.505)
Chief has a business	0.87	0.83	0.89
	(0.340)	(0.388)	(0.320)
Business age	8.13	8.13	8.14
	(1.456)	(1.125)	(1.584)
Business is inside mkt	0.92	0.95	0.91
	(0.267)	(0.229)	(0.282)
Home-Market Distance	0.53	0.39	0.58
	(0.503)	(0.499)	(0.497)
GSS Trust	0.09	0.04	0.11
	(0.291)	(0.209)	(0.320)
Chief start year	2016.36	2016.30	2016.38
	(3.131)	(3.350)	(3.065)
How often market meetings	3.97	4.09	3.92
	(1.119)	(1.125)	(1.124)
Mandate length	3.80	4.29	3.60
	(1.653)	(1.953)	(1.485)
Less than 24 hours to arbitrate	0.82	0.78	0.83
	(0.390)	(0.422)	(0.379)
Share of services responsible for	0.52	0.56	0.50
	(0.306)	(0.307)	(0.307)
Chief is elected	0.87	0.74	0.92
	(0.340)	(0.449)	(0.267)
N	76	23	53

mean coefficients; sd in parentheses

Table D.2: Index components

|	Question Type	Questions	Source
Gender Bias Index	Inter-gender Dispute Scenarios	Chief uses subjective decision rules	Own
		Woman is unlikely to win dispute	Own
		Chief more likely to catch perpetrator against a man	Own
	Self-reported Attitudes	Women are better political leaders	WVS
		Women are better business executives	WVS
		Men have more right to a job when jobs are scarse	WVS
		Women are at a disadvantage in dealing with police	WJP
		Women are at a disadvantage in dealing with market leaders	WJP
Legal Competence Index	Inter-gender Dispute Scenarios	Number of times perpetrator is caught	Own
		Written records of disputes are kept	Own
		Number of pieces of evidence to decide	Own
		Time to reach a decision	Own
	Market characteristics	Chief part of disciplinary committee	Own
Managerial Duties Index	Market characteristics	Number of services in market	Own
		Share of services under chief's responsibility	Own
		Written records of disputes, behaviors, fees, entrants/leavers	Own
	Relationship with marketeers	How many ways to meet	Own
		Chief's phone number available to all	Own
		Frequency of market meetings	Own

Figure D.1: Market Effect on Female Cooperation by Chief's Characteristics: Women Inside vs Outside Markets
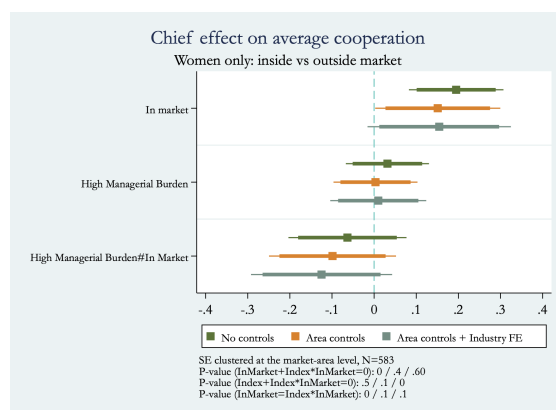
(a) Cooperation and Chief's Bias
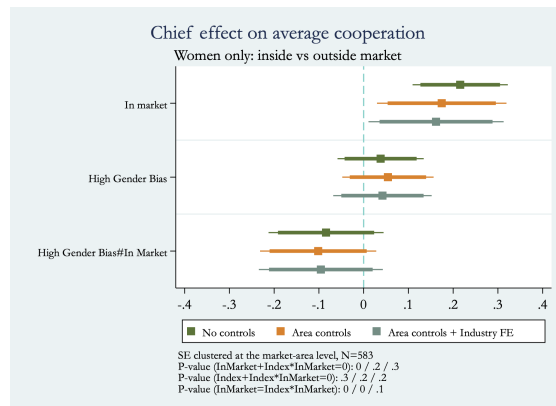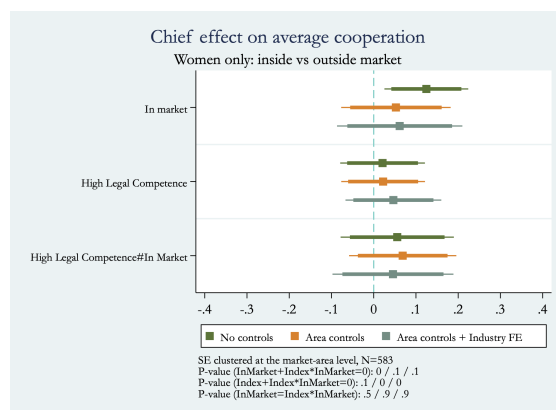
(b) Cooperation and Chief's Legal Competence

(c) Cooperation and Chief's Managerial Duties

Each figure in Panels (a), (b) and (c) show the coefficients of three regressions, which differ only in the controls used. All the specifications regress average cooperation on a dummy variable for being located inside a market ("In Market"), a dummy variable for having a chief with above average score on a certain index and the interaction between the two. In Panel (a), the dummy is for above-median score in the index of gender bias. In Panel (b), the variable is for above-median score in the index of legal competence and in Panel (c) for above-median managerial duties. The top coefficient (dark green) is for a regression with no additional control, the intermediate (orange) coefficient is for a regression with density controls and the bottom coefficient (light green) is for a regression with density controls and industry fixed effects (Naics 3). Average cooperation is an index of cooperative behavior, calculated as a simple average of the four dummies "Joint Buy", "Lent", "Advice" and "Share Order" defined in the main tables. Error bars show 95% and 90% confidence intervals. The construction of the indexes on gender bias, legal competence and managerial duties is explained above.

Online Appendix - Survey Measures and Games Behavior

In this Appendix we show that our survey measures of trust are correlated with trust-worthiness, as shown in previous research (Glaeser et al., 2000). Moreover, the survey cooperation measures are correlated with the number of tokens sent by the investors.

Table D.1: Trust Survey Measures and Behavior as Investor

| | Tokens Sent | | | |
	(1)	(2)	(3)	(4)
Lent	0.256	0.545**		
	(0.232)	(0.240)		
Gave Advice	1.124***	0.942***		
	(0.346)	(0.356)		
Joint buys	-0.0555	-0.0329		
	(0.214)	(0.230)		
Shared Order	-0.420*	-0.421*		
	(0.241)	(0.253)		
Average Cooperation			0.278	0.497
			(0.339)	(0.377)
Observations	474	474	474	474
Adjusted R^2	0.017	0.041	-0.001	0.023
Mean Dep Var	3.97	3.97	3.97	3.97
Industry FE		✓		✓
Market FE		✓		✓

Robust standard errors in parentheses. * p<0.10, ** p<0.05, *** p<0.01

This table shows correlations between survey measures of cooperation between businesses and the number of tokens that investors send to their partners. The dependent variable is the number of tokens sent by the Investor to the Trustee. The mean of the dependent variable is 3.97 and its standard deviation is 2.21. The variables "Joint Buys", "Lent", "Gave advice" and "Shared Order" are indicator variables that indicate whether a person ever engaged in the relevant activity. The variable "Average Cooperation" is an index of cooperative behavior, calculated as a simple average of the four dummies "Joint Buy", "Lent", "Advice" and "Shared Order". Robust standard errors in parentheses.

Table D.2: Trust Survey Measures and Behavior as Trustee

| | Average Return Ratio | |
	(1)	(2)
Trust in Strangers	0.0341**	0.0300*
	(0.0173)	(0.0180)
Trust in Neighbors	0.0182	0.0104
	(0.0119)	(0.0125)
Trust GSS	0.0207	0.0248
	(0.0142)	(0.0171)
Observations	476	476
Adjusted R^2	0.014	0.006
Mean Dep Var	.44	.44
Industry FE		✓
Market FE		✓

Robust standard errors in parentheses. * p<0.10, ** p<0.05, *** p<0.01

This table shows correlations between survey measures of trust and the ratio of tokens sent by the Trustee to the number of tokens that the Trustee could have sent (average return ratio). The dependent variable is the number of tokens sent by the Investor to the Trustee. The mean of the dependent variable is 0.44 and its standard deviation is 0.14. The variables "Trust in Strangers" and "Trust in Neighbors" are measured on a scale from 1-4, and have been converted into dummy variables by combining low scores (1 and 2) and high scores (3 and 4). Low scores were given a value of 0, and high scores a value of 1. The variable "Trust GSS" is a dummy measuring whether most people can be trusted or not: a value of 1 indicates that "most people can be trusted", and a value of 0 indicates that "you cannot be too careful in dealing with people".