Women's Representation, Accountability, and Corruption in Democracies

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Abstract

At the turn of the twenty-first century, an important pair of studies established that greater female representation in government is associated with lower levels of perceived corruption in that government. But recent research finds that this relationship is not universal and questions why it exists. This paper presents a new theory explaining why women's representation is *sometimes* related to lower corruption levels and provides evidence in support of that theory. We argue that the women's representation-corruption link exists only when the risk of corruption being detected and punished by voters is high; in other words, when one can be held electorally accountable. This can lead to women being less likely to run for office and/or women being less likely to engage in corruption once elected. Multiple mechanisms underlie this theory: greater risk aversion has been observed in women and evidence shows that voters hold women to a higher standard at the polls. We hypothesize that the relationship between women's representation and reduced corruption will be strongest in democracies with high electoral accountability: where corruption is not the norm, where press freedom is respected, in parliamentary systems, and under personalistic electoral rules. We present observational evidence that accountability moderates the link between women's representation and corruption with a panel of nearly 80 democracies over the past 20 years.

Women's Representation, Accountability, and Corruption in Democracies

Fifteen years ago, two important papers established a curious observational link: greater representation of women in government is associated with lower levels of perceived corruption[1] in that government (Dollar, Fisman, and Gatti 2001; Swamy et al. 2001). The impact of these studies was substantial. In academia, the articles became extremely well-cited and inspired a still-growing literature (see, for example, Sung 2003; Alhassan-Alolo 2007; Wangnerud 2012; Esarey and Chirillo 2013; Barnes and Beaulieu 2014; Watson and Moreland 2014).[2] In the policy world, the finding justified governments enthusiastically bringing women into political offices and bureaucratic positions, such as police forces and the civil service, as an anti-corruption measure (C. Kahn 2013; Moore 1999; Quinones 1999; Karim 2011; McDermott 1999; World Bank 2001).[3]

In the years since the publication of these studies, two important challenges to this finding have emerged. First, research has found that the relationship between women's representation and corruption is not universal—it holds in some countries but not others (Alatas et al. 2009; Alhassan-Alolo 2007; Esarey and Chirillo 2013; Goetz 2007; Schwindt-Bayer 2010; Sung 2003). Second, scholars have criticized Dollar et al.'s (2001) explanation for the finding: that women are simply more honest and trustworthy and therefore less likely to be corrupt (Goetz 2007). These challenges call into question our understanding of the relationship between women's representation and corruption, as well as the basis for some public policies.

In this paper, we re-examine the relationship between women's representation and corruption, offer a new theory that explains why the relationship exists in some countries but not others, and provide

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[1] By corruption, we mean the appropriation of public authority for personal or private benefit. This definition includes the solicitation of bribes, embezzling public money, and other forms of graft. Due to the difficulty of measuring these usually hidden behaviors, we measure corruption as corruption perceptions rather than actual corruption. Our definition and measure is consistent with those used in most empirical studies of country-level corruption; see our *Data and Variables* section for more details.

[2] According to Google Scholar, Dollar et al.'s (2001) has more than 379 citations and Swamy et al. (2001) has over 477 as of September 22, 2014.

[3] Although Dollar et. al (2001) focused just on women's representation in parliament and corruption, Swamy et al. (2001) studied the effect of women's parliamentary representation, their presence in senior bureaucratic posts, and their labor force participation on corruption. The findings have been used to justify increasing women's presence in many areas of government, not just parliaments and legislatures.

empirical evidence to support that theory. Our theory argues that women's representation is linked to corruption because of electoral accountability, which we define as the ability of voters to identify corrupt officials and punish them at the ballot box. Where electoral accountability is high, corruption is a risky behavior; where electoral accountability is low, corruption is less risky. We expect the strength of the relationship between women's representation and corruption to be proportional to the risk of being held accountable for corruption, with the strongest relationship in places where the risk of accountability is greatest. We offer two mechanisms to explain why accountability influences the women's representation-corruption relationship. First, experimental and observational evidence indicates that women tend to be more risk averse than men (on average) when confronting identical situations. If women are more risk averse, they should be less likely to engage in corruption in high accountability contexts because of the risks involved. Second, evidence suggests that voters hold female elected officials to a higher standard than men. If this is true, then the consequences for corruption disproportionately fall on women, which may deter them from participating in corruption when the risk of getting caught and punished for corruption is high.

This paper studies democracies, where the concept of electoral accountability for corruption is most relevant (Kolstad and Wiig 2011; Kunicova 2006); prior evidence has shown little relationship between women and corruption in autocracies (Esarey and Chirillo 2013). We expect that the observed relationship between corruption and women in government should be strongest in democracies where institutions allow voters to hold government officials individually accountable for corruption by punishing them at the polls (and weakest where they do not). Specifically, we hypothesize that greater levels of women's representation in the legislature will be more strongly associated with lower levels of corruption (i) when corruption is not an institutional norm, (ii) where freedom of the press is respected, (iii) in parliamentary rather than presidential systems, and (iv) under personalistic rather than party-centered electoral rules. As we explain below, each of these settings is associated with high levels of electoral accountability.

We use a dataset of 80 democracies over 20 years (collected by Authors 2015) to test our hypotheses. Following existing research, we measure corruption perceptions using three of the most commonly employed measures: Transparency International's Corruption Perceptions Index (TI CPI), the World Bank Governance Indicators Control of Corruption measure (WBGI), and the Political Risk Services' International Country Risk Guide's (ICRG) corruption indicator. We present a set of bivariate correlations, multivariate statistical models, and substantive marginal effects plots to show that all four hypotheses have strong empirical support. Our evidence is consistent with a relationship between women's representation and corruption that is moderated by the risk of corruption.

Our goal in this paper is to demonstrate that the empirical link between female participation in government and corruption is sensitive to the strength of electoral accountability, and to articulate a theory that explains this and the pattern of prior results in this literature. This is an important contribution because it makes sense of a somewhat confusing pattern of findings and sets a theoretically-driven agenda for future research. One part of that agenda for the future involves determining the causal impact on corruption for policies that increase the number of women in government in contexts of high and low accountability. Measuring the causal impact of a policy requires a fundamentally different and more complex research design, one that would not be justified if we cannot establish the context-sensitivity of the gender-corruption relationship. We discuss possible designs to answer this questions and other directions for future research in the final section of this paper.

Women's Representation and Corruption

Dollar, Fisman, and Gatti (2001) provided the first empirical evidence from cross-national time series data suggesting that greater levels of female participation in government is associated with lower levels of corruption in that government. Swamy et al. (2001) followed shortly after with a broader study producing similar findings not just in parliaments but in high-level bureaucratic posts and the labor force. Their analysis of cross-national individual and firm-level survey data revealed that "(a) in hypothetical

situations, women are less likely to condone corruption, (b) women managers are less involved in bribery, and (c) countries which have greater representation of women in government or in market work have lower levels of corruption" (Swamy et al. 2001, 26). These findings have been replicated in recent research. For example, a similar association was observed among municipal governments in Mexico (Wangnerud 2012, 237–239), and a strong correlation was found with more recent cross-national data including legislatures with higher representation of women in government than existed when Dollar et al. and Swamy et al. conducted their studies (D. Watson and Moreland 2014). One study has substantiated a causal relationship between women's representation and perceived corruption with experimental evidence that female candidates reduce the perception of election fraud (Barnes and Beaulieu 2014).

These findings have been challenged in several ways. First, studies have shown that the relationship between women's representation and corruption is sensitive to social and political context. For example, research using observational data has shown that greater female participation in legislatures is only associated with less corruption in democracies, but *not* in autocracies (Esarey and Chirillo 2013). An experiment designed to measure willingness to engage in corruption[4] found that women are less susceptible to corruption in some countries but not in others (Alatas et al. 2009). The context sensitivity of women's behavior at the macro level of overall government corruption is mirrored by context sensitivity in women's micro level attitudes toward corruption. Examining the World Values Survey data, Esarey and Chirillo find that "there is little difference in corruption tolerance between men and women for countries that rank lowest on the Polity scale [viz., autocracies]. In more democratic countries, however, men are considerably more tolerant of corruption than women" (Esarey and Chirillo 2013, 372). Similarly, Schwindt-Bayer (2010) finds no relationship between women's representation in legislatures

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[4] Research on how female behavior is more context-sensitive than men's has been conducted in a variety of scenarios, not just in corruption experiments. For example, Croson and Gneezy (2009, 463) argue that "…women are more sensitive to cues in the experimental context than are men. Research from psychology suggests that women are more sensitive to social cues in determining appropriate behavior (Kahn, Hottes, and Davis 1971). Small differences in experimental design and implementation will thus have larger impacts on female participants than on male participants." Croson and Gneezy go on to show that there is greater variation in female behavior (compared to male behavior) within multiple experiments, and also greater variation in female behavior between repeated studies of the same behavior (compared to male behavior between these same studies).

and citizens' perceptions of corruption levels in Latin American countries using mass survey data from the Americas Barometer (LAPOP).

Second, there has been considerable debate about the theoretical mechanism that can explain this collection of findings. Dollar et al. (2001) suggested that women are more honest and trustworthy than men, and therefore less likely to be corrupt. This explanation has been hotly criticized as myth (Goetz 2007) and cannot explain variation across contexts. Other studies have suggested that the association of women and less corruption results from the fact that women have had less opportunity to engage in corruption because they are often excluded from power and patronage (Branisa and Ziegler 2011; Goetz 2007; Tripp 2001). Counter to this explanation, a recent study finds that the link between women's representation and corruption holds even after accounting for measures of political opportunity (Torgler and Valev 2010). Esarey and Chirillo (2013) argue that the context sensitivity of this link can be explained by gender differences in risk aversion: women are less likely to engage in corruption where it is stigmatized (and therefore risky), but equally likely to do so where it is not. Finally, some argue that the relationship results from networks of corrupt officials suppress women's representation in government as a means of ensuring that outsiders do not penetrate these networks and disrupt the stream of benefits from corruption (Bjarnegård 2013; Grimes and Wängnerud 2012; Stockemer 2011; Sundström and Wängnerud 2014; Goetz 2007; J. E. Johnson, Einarsdóttir, and Pétursdóttir 2013).

A Theory of Gender, Corruption, and Accountability

In this paper, we provide a robust theory of how the risks associated with corruption translate into a relationship between women's representation in government and corruption and why it exists in some countries but not others. The heart of our theory is that the relationship between women in politics and corruption is moderated by the risk of being held accountable for corruption by voters. This risk is determined by two factors: the likelihood of corruption being detected and the severity of punishment

upon detection.[5] Increases in the probability of detection and/or the severity of punishment make the prospect of corruption riskier, and should decrease their propensity to engage in corruption compared to men. We suggest two mechanisms by which this occurs: gender differences in risk aversion and differential treatment of corrupt men and women by voters. Both mechanisms imply that women and men are differentially responsive to the risks of corruption.

Mechanism 1: Differential Risk Aversion

A recent review of the economic literature presents the following summary of the relationship between gender and risk-taking:

> The robust finding is that men are more risk prone than women. Previous surveys of economics (Eckel and Grossman 2008) and psychology (Byrnes, Miller, and Schafer 1999) report the same conclusions: women are more risk averse than men in the vast majority of environments and tasks. (Croson and Gneezy 2009, 449)

Much of the evidence for women's greater risk aversion in economics comes from laboratory experiments. Subjects in these experiments make a series of choices between lotteries offering a different combination of risks and rewards (Table 1 in Croson and Gneezy 2009, 450); the lotteries are structured to determine a subject's risk aversion (Holt and Laury 2002). The experimental findings are bolstered by observational research on differential risk-taking in investment portfolios managed by men and women (Bernasek and Shwiff 2001; Sundén and Surette 1998; J. Watson and McNaughton 2007). In psychology, evidence of gender differences in risk taking comes from a combination of survey experiments with hypothetical choices, self-reported risky behavior from surveys (e.g., unsafe sex), and directly observed risky behaviors such as dangerous traffic maneuvers monitored by researchers (Byrnes, Miller, and Schafer 1999, 370).

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[5] We present the probability of detection and the severity of punishment as co-equal contributors to the strength of accountability. Our paper does not intend to distinguish when women's propensity to engage in corruption results from a threat of detection versus when it results from punishment. We more simply argue that women's reduced engagement in corruption could result from one, the other, or both.

The explanation for women's greater risk aversion is unclear. Based on recent evidence indicating no gender difference in risk aversion in traditional societies (Gneezy, Leonard, and List 2009; Henrich and McElreath 2002), we speculate that it results from the social, cultural, and institutional environments in which women are socialized and operate. For the purpose of our research, the reason *why* women are on average more risk averse than men is less important than building from the empirically-grounded assumption that they *are* on average more risk averse than men and determining *how and when* that risk aversion translates into different behavior. Experimental research on gender and bribe-taking lends insight into this question: it finds that women will only be less likely to take bribes than men when their behavior is being monitored and there is a chance of it being detected—in other words, when that bribe-taking (i.e., corruption) is risky.

Armantier and Boly (2011) conduct a field experiment in Burkina Faso designed to detect the effect of independent monitoring on corruption. They find that women in their experiment are far more responsive to monitoring compared to men. Specifically, women who are grading exams are much more likely to give a failing grade to exam-takers who offer a bribe, compared to their male counterparts, when the results are independently monitored. But when results are not monitored, women are *less* likely to fail the briber. These results were later replicated in similar laboratory experiments conducted in Canada and in Burkina Faso (Armantier and Boly 2013).

Schulze and Frank (2003) provide another example of how women's greater sensitivity to risk reduces their susceptibility to corruption. In their study, experimental subjects are given the opportunity to accept varying levels of bribes to award a plumbing contract. Larger bribes come at the expense of a student film group in whose events they are participating. When there is no risk that the bribe will be detected, women and men are equally prone to accept bribes; when there is such a risk, women take much smaller bribes (on average).[6]

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[6] Note that subjects in the experiment "did not run the risk of public shaming or a criminal record" by accepting a bribe (Schulze and Frank 2003, 153). When there was a risk of detection, the experimenter rolled a die to determine whether those who accepted a bribe would receive no payment; all payment (or lack thereof) was made secretly.

If women are more averse to the risks presented by corruption than men, then women should be less likely than men to participate in corruption when it is risky. The risks of corruption come from the likelihood of corruption being detected and punished in systems with high levels of electoral accountability. Increases in the probability of detection or severity of punishment for corruption will more strongly decrease women's propensity to engage in corruption compared to men. This translates into an empirical expectation: the relationship between women in government and corruption gets stronger as corruption gets riskier. This occurs because women respond more strongly than men to an increased possibility of getting caught and punished.

Mechanism 2: Differential Treatment by Gender

A second reason why the relationship between women's representation and corruption may be moderated by the strength of accountability is that the mechanisms of accountability may be biased against women. That is, it is possible that women are proportionally more likely to be investigated, more likely to be blamed, and more harshly punished for corruption compared to men. Our paper is most concerned with voters as a source of accountability, and there is evidence that voters hold female candidates for office to a higher standard than their male counterparts (Anzia and Berry 2011). There is also evidence that voters evaluate male and female candidates through the filter of gender stereotypes (Dolan 2010; Lawless 2004; Paul and Smith 2008), although the evidence for the importance of these evaluations in candidate choice is mixed (Dolan 2014).

If women are more likely than men to be held accountable for corruption, then women will be less likely to participate in corruption than men simply because they face greater disincentives: they are more likely to be caught and punished. This implies that the empirical relationship between women in government and corruption will get stronger as corruption becomes riskier: the increased risks of corruption fall disproportionately on women and they are disproportionately deterred from participating in corruption.

Hypotheses for Accountability and Corruption

We identify four contexts where voters should be able to hold elected representatives accountable for corruption—in other words, where they can more easily identify corrupt officials and punish them at the polls—and, in turn, make corruption more risky: (i) when there are no pervasive corruption norms, (ii) where press freedom is respected, (iii) in parliamentary systems (as compared to presidential systems), and (iv) when electoral rules establish direct and personalistic linkages between voters and elected legislators or members of parliament. If our theory is correct, the link between women's representation and corruption should be strongest in these settings. In this section, we explain our reasoning for the link between our theory and these observable relationships.

Corruption Norms

Although corruption occurs in countries around the world, research has found that democracies are less corrupt on average than non-democracies (Adserà, Boix, and Payne 2003; Lederman, Loayza, and Soares 2005; Treisman 2000; Treisman 2007). But even within democracies, corruption is present and in some cases endemic to the political system (Mishra 2006). Countries where corrupt behaviors (like bribery and graft) are a normal part of doing government business have strong corruption norms. In countries with pervasive corruption, the risk of corruption being detected and punished (i.e., accountability) must be low in order for the corruption to flourish. In these settings, corruption is not particularly risky; women and men in office should be equally likely to engage in corruption. By comparison, a country with less corruption has (ipso facto) demonstrated a tendency to remove or exclude corrupt persons from government. In these cases, accountability is high, almost by definition, and corruption is risky. Women in office should be less likely to engage in corruption than men because of women's greater risk aversion and/or the differential treatment of women by voters. As a result, we

expect a stronger link between women's representation in government and corruption levels in countries with lower prior histories of corruption.[7]

> Hypothesis 1 (H1): *The relationship between female share of the legislature and corruption level will be more negative in states with low prior levels of corruption compared to states with high prior levels of corruption.*

Some evidence supporting this hypothesis has already been presented in prior work. For example, Chaudhuri (2012, 40 Table 6) reviews multiple experimental studies of the propensity to commit various corrupt behaviors (such as offering or accepting bribes).[8] He finds that there is substantial heterogeneity in female behavior across multiple experiments. In some experiments, women are less likely to offer a bribe than men, but in others women are statistically indistinguishable from men. He suggests that one of the key contextual factors may be the degree to which corruption is endemic to its political and economic culture: "evidence for greater incorruptibility on the part of women comes primarily from developed nations. We do not find strong differences in developing countries where the problem of corruption is far more endemic" (Chaudhuri 2012, 41–42).

Press Freedom

A second contextual factor that could affect the relationship between women's representation and corruption in a democracy is the freedom of the press. The ability of citizens to identify corrupt officials is at least partly conditional upon the ability of the media to investigate and report on allegations of corruption. Brazil's now-infamous mensalão scandal, for example, came to light when several newspapers and news magazines produced a series of news stories alleging that the governing Worker's Party (PT) was paying opposition legislators monthly salaries to support the governing party's legislative agenda (*The Economist* 2013). In the aftermath of the scandal, several deputies were forced from office,

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[7] In the terminology of Esarey and Demeritt (2014), we hypothesize that the relationship between women in government and corruption is *state-dependent*: it grows stronger as corruption levels fall.

[8] See also Alhassan-Alolo (2007).

and the PT lost 8 seats in the 2006 Chamber of Deputy elections—the first time since the transition to democracy in 1985 that it lost seats rather than gaining them.

We argue that countries with a freer press should have lower levels of corruption compared to those where the government restricts press freedom (Adserà, Boix, and Payne 2003; Lederman, Loayza, and Soares 2005; Treisman 2007). This should occur because the risk of detection, and consequently punishment, is higher where journalists are free to investigate corruption and bring it to light. The greater risk of detection and punishment in countries with a free press should in turn lead women in office to be proportionally less likely to engage in corruption compared to men, resulting in a stronger relationship between female participation in government and corruption.

> Hypothesis 2 (H2): *The relationship between female share of the legislature and corruption level will be more negative in countries with a free press compared to those with an unfree press.*

Parliamentary governance

A third contextual factor influencing accountability for corruption in a democracy is the nature of the separation of powers. Research on the differences between parliamentary and presidential systems has long debated the strengths of each in terms of accountability. Scholars concerned about the fragility of democracy in presidential systems often argue that parliamentary systems are better for democracy because the fixed terms inherent to presidential systems make it impossible to bring an end to unpalatable governments in any way other than the breakdown of democracy (Linz 1990; Linz 1994). The ability to call a vote of no confidence in parliamentary systems, in contrast, gives voters an opportunity to preserve democracy but turn over the government more quickly. Linz (1990, 54) notes one of the key drawbacks[9] of the fixed terms of presidential systems: "It breaks the political process into discontinuous, rigidly

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[9] Defenders of presidentialism have pointed out some of the strengths of accountability in presidential systems: for example, voters have the opportunity to hold the executive and legislature independently accountable for government (Hellwig and Samuels 2008; Mainwaring and Shugart 1997; Persson, Roland, and Tabellini 1997; Samuels and Shugart 2003; Shugart and Carey 1992). However, this also means that voters may have a more difficult time assigning blame due to the separation of powers inherent in presidential systems (Samuels and Shugart 2003; Shugart and Carey 1992); each branch of government can blame the other. In this paper, we cannot distinguish empirically corruption in the executive branch from corruption in the legislative branch making it impossible to test this angle of the accountability argument.

demarcated periods, leaving no room for the continuous readjustments that events may demand." He later explicitly relates this to corruption, saying "parliamentary systems, precisely by virtue of their surface instability, often avoid deeper crises. A prime minister who becomes embroiled in scandal or loses the allegiance of his party or majority coalition and whose continuance in office might provoke grave turmoil can be much more easily removed than a corrupt or highly unpopular president" (Linz 1990, 64).

We build on Linz' logic and argue that the absence of fixed terms in parliamentary systems should strengthen accountability for corruption. Indeed, there is already empirical evidence that parliamentary systems have lower levels of perceived corruption than presidential ones, although the causal pathway identified varies (Gerring and Thacker 2004; Lederman, Loayza, and Soares 2005; Treisman 2007; but see Persson and Tabellini 2002). In parliamentary systems, the chief executive, cabinet, and parliament's terms in office are not fixed and elected officials constantly face the threat of being held to account by voters at any time. When a corruption scandal breaks, the absence of fixed terms for the parliament, the threat of a vote of no confidence, and the fact that a no confidence vote not only causes the MP to suffer defeat but can bring down the entire government means that the punishment for an MP and a party is severe, and thus corruption is risky. In presidential systems, fixed terms mean that punishment may be delayed to the end of the term in office, giving elites time to rebuild their images prior to being held to account by voters, and the separation of powers means that actions in the legislature do not necessarily threaten the government itself. Thus, we argue that corruption is riskier in parliamentary systems. Because of women's greater behavioral response to this risk (attributable to greater risk aversion and/or differential treatment by voters), the link between women's representation and lower levels of corruption should be strongest in parliamentary systems.

> Hypothesis 3 (H3): *The relationship between female share of the legislature and corruption level will be more negative in parliamentary systems when compared to presidential systems.*

Personalism

Finally, we directly examine the strength of the link between elected representatives and voters: the degree of personalism produced by the electoral system. Existing research has produced mixed findings for the effects of electoral rules on corruption. Persson et al. (2003) and Kunicová and Rose-Ackerman (2005) link electoral rules to the ability of voters to monitor elected officials and find that stronger ties between constituents and individual elected representatives produce lower levels of corruption. In contrast, Chang (2005) and Chang and Golden (2007) find that electoral systems that produce incentives to cultivate personal votes (measured as open list proportional electoral systems with high district magnitude) have higher levels of corruption, which they argue results from candidates having greater incentives to seek illegal funds for their campaigns in more personalistic systems. Attempting to mediate these divergent findings, Treisman (2007) found that the relationships between electoral rules and corruption were often indeterminate.

We argue that more personalistic rules should strengthen the effect of women's representation on corruption. Personalistic electoral rules create tighter ties between voters and their elected representatives, while less personalistic rules emphasize the mediating role of parties in the voter-representative linkage (Cain, Ferejohn, and Fiorina 1990; Carey and Shugart 1995). The risk of being punished for corrupt behavior is therefore greater in personalistic systems because voters can individually identify their representative and hold them directly accountable. In less personalistic (more party-centric) systems, elites may be able to hide inside the party organization and deflect direct punishment at the polls. Voters may be willing to swallow one bad egg that the party wants to defend if they are supportive of the party more generally. Parties may even collaborate to conceal the individual guilt of one member to preserve their collective electoral viability.

Because of the stronger electoral accountability created by personalistic systems, we claim that the individual risk of corrupt behavior is greater in these systems. Our theory predicts that this risk more

substantially deters women in office, and as a result, the link between female representation in government and corruption is stronger than in party-centered systems.

> Hypothesis 4 (H4): *The relationship between female share of the legislature and corruption level will be more negative in personalistic systems when compared to party-centric systems.*

Data and Variables

We use a dataset that contains measures of corruption perceptions, women's representation in the legislature, accountability indicators, and control variables for 78 democracies from 1990-2010; summary statistics for all variables are reported in Table 1. Following Epstein et al. (2006), the dataset includes all countries and years for which Polity IV's polity2 score was greater than 0 for ten years or more (Marshall, Jaggers, and Gurr 2010).[10] It also requires countries to have a population of at least 500,000, score 5 or lower on Freedom House's average Civil Liberties and Political Rights scales (Freedom House 2014a),[11] and not have missing values for the entire study period for any corruption measure. These selection criteria have several advantages: (i) they exclude countries that do not function according to the rules and norms of minimalist democracies, (ii) they include both semi-democracies and full democracies to allow

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[10] Polity2 is the most commonly used measure of electoral democracy. It ranges from -10 (highly autocratic) to +10 (highly democratic). The measure is an aggregation of scores on various components that measure electoral participation and contestation in a country; these scores are assigned by expert coders. These components are: competitiveness of executive recruitment, openness of executive recruitment, executive constraints, the regulation of political participation, and the competitiveness of participation (Marshall, Gurr, and Jaggers 2014). Note that Epstein et al. (2006) use a trichotomous coding of democracy, with semi-democracies coded +1 to +7 and democracies coded +8 to +10. We collapse their "partial" and "full" democracy categories into one category to distinguish democracies from non-democracies.

[11] The two Freedom House scores provide a measure of liberal democracy. One score measures political rights, and the other measures civil liberties; both are rated on a 7-point scale, with lower scores indicating greater freedom. The score is assigned by a team of analysts employed by Freedom House based on a series of related questions about the country. The political rights measure is based on questions related to electoral process, political pluralism and participation, and functioning of government; the civil liberties questions are related to freedom of expression and belief, associational and organizational rights, rule of law, and personal autonomy and individual rights (Freedom House 2014b, 2–3). A combined score of 5 or lower ensures that we exclude countries from our dataset that are "not free" in terms of civil liberties and political rights even if they pass the threshold of electoral democracy from the polity2 score. This provides a minimalist measure of democracy that includes countries that are at least semi-democratic both in terms of electoral and liberal democracy.

for investigation of variation across level of democracy, (iii) they ensure some basic level of consolidation of democracy, and (iv) they allow sufficient time points to conduct a panel analysis.

Table 1

The dependent variable is the perceived level of corruption in countries as determined by three widely accepted country-level measures of corruption: Transparency International Corruption Perceptions Index (TI CPI), which measures "the abuse of public office for private gain" (Transparency International 2011, 2); the World Bank Governance Indicators Control of Corruption measure (WBGI), which measures "the extent to which public power is exercised for private gain, including both petty and grand forms of corruption as well as 'capture' of the state by elites and private interests" (Kaufmann, Kraay, and Mastruzzi 2010, 4); and the Political Risk Services' International Country Risk Guide's (ICRG) corruption measure, which measures "bribery… excessive patronage, nepotism, job reservations, 'favor-for-favors,' secret party funding, and suspiciously close ties between politics and business" (Political Risk Services Group 2012). Because corruption is notoriously difficult to assess, cross-national research often relies on corruption *perceptions* as a measure of underlying corruption. All three measures are created from surveys and expert assessments of country-level corruption, and each measure has strengths and weaknesses (Knack 2007; Treisman 2007). By examining all three, we strengthen the robustness of our conclusions. The three measures correlate very highly with one another, bolstering their validity as measures of perceived corruption.[12]

Because the ICRG has the longest annual time-series in our dataset (1990-2010), we focus on that measure in our presentation of the findings; the TI CPI is available from 1995-2010 and the WBGI is available from 1996-2010 (with biannual measurements between 1996 and 2002). The ICRG measure is a scale of 0 to 6,[13] the TI CPI measure is a scale of 0 to 10, and the WBGI measure is a scale of -2.5 to 2.5. The original coding of all of these variables is such that higher numerical values indicate *less* perceived

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[12] WBGI and TI CPI correlate at r = 0.98; ICRG correlates with WBGI at r = 0.87 and with TI CPI at r = 0.86.
[13] ICRG data were monthly up through mid-2009. In those cases, we calculate the average score across the twelve months of the year.

corruption (or *more* perceived government control of corruption). However, for ease of interpretation, we have recoded all three variables so that higher values equal *more* perceived corruption.[14]

Our main independent variables are the percentage of the lower house of the legislature/parliament[15] that is female (Inter-Parliamentary Union 2012) and four measures of accountability in the political system. Those four measures are: (i) a one-year time lag of the dependent variable (specific to the corruption measure under analysis) to capture corruption norms in a country,[16] (ii) the Freedom House's Freedom of the Press measure, which we recode to range from -80 to 0 in order of increasing freedom,[17] (iii) a dichotomous coding of whether a country's form of government is presidential (= 1) or parliamentary (= 0),[18] and (iv) a measure of the degree of personalism produced by the parliamentary or legislative electoral system in a country (J. W. Johnson and Wallack 1997).[19] Personalism ranges from 1 to 13 in order of increasing levels of personalism. Each of these four measures of accountability is interacted with the percentage of women in the parliament/legislature to allow the relationship between female participation in government and corruption to be conditional on the accountability variable.

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[14] The TI CPI measure is recoded by 10 minus the original value of the DV. The ICRG measure is recoded by 6 minus the original value of the DV. The WBGI measure is recoded by 2.6 minus the original value of the DV.

[15] We believe that focusing on women in the legislature in this analysis is appropriate because our accountability measures are focused on accountability to voters.

[16] Our results are robust to using a two or three year lag instead of a one year lag in this model; see the Supplementary Results Appendix Table S1 for details.

[17] Freedom House assesses freedom of the press in all countries every year. Their measure of freedom of the press assesses freedom in print, broadcast, and internet media and does so by creating a sub-score for each media type of the following ways in which media freedom can be restricted: laws and regulations that influence media content; political pressures and controls on media content; economic influences over media content; and repressive actions (www.freedomhouse.org). These are aggregated into a scale that runs from 0 to 100 (in order of decreasing freedom). However, in our dataset, no country had levels higher than 80 because non-democracies where press freedom is likely to be most restricted are excluded from our analyses. As noted in the text, we invert the press freedom index in our analyses such that larger values equal more media freedom.

[18] We code semi-presidential systems as presidential or parliamentary depending on the powers of the president. Specifically, we code premier-presidential systems as parliamentary systems where the president has no power to dissolve the cabinet (only the assembly can) and president-parliamentary systems as presidential where the president has the power to dissolve the cabinet alongside the assembly (Elgie 2011; Samuels and Shugart 2010).

[19] Johnson and Wallack's (1997) personalism score has become a common measure of how strongly certain configurations of electoral rules incentivize personalistic rather than party-centered behavior among candidates and elected representatives. They use Carey and Shugart's (1995) schema for coding electoral systems by the extent to which the ballot structure allows voters to disturb party lists, how votes are pooled across a ballot, and the type of vote a voter places. Configurations of scores are then ranked by how much personalism they create and the electoral system of a country is classified accordingly. Our data came directly from Johnson and Wallack's dataset for 1978-2005; 2005-2010 was coded by Authors (2015).

We also include a set of common control variables for these kinds of corruption models (Gerring and Thacker 2004; Rose-Ackerman 1999; Tavits 2007; Treisman 2000; Treisman 2007): the percentage of citizens who are Protestant (*CIA World Factbook* 2013); democratic freedom, measured as the average political rights and civil liberties Freedom House scores inverted such that higher scores indicate greater freedom (Freedom House 2014a); level of economic development, as measured by logged GDP per capita (*World Development Indicators* 2013); trade imbalance, measured as imports minus exports as a percentage of GDP (*World Development Indicators* 2013); and women's economic rights, as measured in the Cingranelli-Richards Human Rights Dataset (Cingranelli and Richards 2010). These measures block possible sources of spurious correlation attributable to cultural, socioeconomic, and political explanations for variation in levels of corruption across countries and over time.

Statistical methods

Our approach to analyzing and presenting our empirical evidence is straightforward. We consider each of our four accountability variables in turn. For each one, we first use a scatterplot to examine the pooled bivariate relationship between the ICRG corruption dependent variable and the percentage of women in government. To determine whether this relationship changes with the strength of electoral accountability for corruption, as would be consistent with hypotheses 1-4, we split the data into high and low values on the accountability variable and construct separate scatterplots for each.

Second, we verify the findings of the bivariate plot by constructing a multivariate linear regression model.[20] We include a lagged dependent variable in all models because we believe that corruption is a

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[20] Random effects variants of these models are substantively no different from standard OLS regressions; the random effects explain no appreciable portion of variance when added. Fixed effects models and system GMM dynamic panel data models produce weaker findings, albeit with some qualitative similarities (see Supplemental Results Appendix Tables S2 and S3). We argue that the models we present are more credible; consider the comparison with FE models. First, FE models are inefficient in the presence of short panels thanks to an incidental parameters problem (Hsiao 2003, 48–49; Neyman and Scott 1948); in our data set, even the dependent variable with the greatest availability (the ICRG) has just ≈ 20 observations per panel. Second, FE models are inefficient for estimating the effect of slow-moving independent variables, and all of our main variables are very slow moving within panels; fixed effects alone explain 83% of the variance in press freedom, 99% of the variance in presidentialism, and 86% of the variance in personalism. Third, from a theoretical perspective, we do not believe or wish to model persistent country-level variation in corruption net of the path-dependent history of corruption being captured by the lagged dependent variable and the other institutional influences being captured by our control

path-dependent process whose present is a function of its history; this variable also models temporal dependence in the data. We include year and geographical region dummies[21] to account for additional temporal and spatial dependence in the data.

We plot the marginal effect of percentage women in the legislature on the dependent variable at different values of the accountability variable, as prescribed by Brambor, Clark, and Golder (2006), to determine whether the relationship between perceived corruption and women in government is stronger when individual accountability for corruption is stronger (as indicated by hypotheses 1-4).

Some variables (including the dependent variables, press freedom, personalism, GDP per capita, trade imbalance and women's economic rights variables) have missing observations in our data set.[22] Simply deleting the observations with partially missing data can lead to biased and inefficient estimates in cases where stochastic multiple imputation of the data set would not (van Buuren 2012, 3–23). Consequently, when we estimate our model, we use multiple imputation with chained equations[23] as implemented in Stata 13.1 (Royston and White 2011) to perform regression including the partially-missing cases while incorporating uncertainty about the unknown true values of the missing variables.

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variables. For example, corruption in the United States was widespread in the latter 19th century but comparatively low by the end of the 20th century; a fixed effect presumes that this characteristic is essentially permanent. Finally, FE models are known to be biased in short panels in the presence of lagged dependent variables (Judson and Owen 1999; Nickell 1981), and the lagged dependent variable is a theoretically relevant variable for the analysis. Dynamic panel data models address only this last problem: models with a lagged dependent variable are consistent in short panels when the number of panels is large (Roodman 2006). But a new problem is created in its place: dynamic panel data models are not supported after multiple imputation (using `mi estimate`) in Stata 13.1, and thus any problems inherent to the missing data problem reappear. Additionally, we have a relatively small number of panels to support an argument of consistency. We do not have confidence that this model is compatible with an interaction between % women in the legislature and a lag of the dependent variable, and so do not estimate this model.

[21] The regions are Sub-Saharan Africa, South Asia, East Asia, South East Asia, Pacific Islands/Oceania, Middle East/North Africa, Latin America, Caribbean and non-Iberic America, Eastern Europe/Soviet Union, and Western Europe.

[22] For the ICRG dependent variable, all models use data sets that have $\leq 3\%$ cases with missing observations. For the TI CPI dependent variable, all models use data sets that have $\approx 15.9\%$ cases with missing observations. For the WBGI dependent variable, all models use data sets that have $\approx 21.1\%$ cases with missing observations.

[23] Multiple imputation by chained equations (MICE) generates multiple imputation data sets by (1) eliminating any observations with missing values for all variables; (2) substituting random values for missing values in any remaining observations; (3) imputing the values of a missing variable X_i using model predictions from a GLM model of all the other variables X_{-i} on the (non-missing) values of X_i, where the model includes observations with imputed values of X_{-i} where X_i is non-missing; (4) repeating step 3 for all values of $i = 1 ... k$ in sequence for the k independent variables; (5) repeating steps 3-4 a large number of times to refine the predicted missing values; and finally (6) repeating steps 2-5 with new initial values M times to generate M imputation data sets. The resulting data sets are analyzed and the results combined using the method of Rubin (1996). See Royston and White (2011) for more details of the implementation of MICE in Stata.

Evidence: gender, accountability, and corruption

As described previously, we have four hypotheses about how accountability should influence the relationship between women's political representation and corruption. We show evidence associated with each hypothesis in turn.

H1: Corruption Norms

Our first hypothesis is that the relationship between female share of the legislature and perceived corruption level should be stronger (more negative) in democracies with low prior levels of corruption compared to democracies with high prior levels of corruption. As Figure 1 indicates, we find evidence for this relationship in our data. The simple bivariate scatterplots with the linear prediction included show that the percentage of the legislature/parliament that is female is not associated with perceived corruption in countries with high levels of prior perceived corruption. Where prior perceived corruption levels are low, greater levels of women's representation in the lower house of parliament are strongly associated with lower levels of perceived corruption.

Figure 1

Table 2 confirms this pattern in a multivariate regression using all three measures of corruption.[24] The interaction between the percentage of the legislature that is female and the lagged measure of corruption perceptions is positive and statistically significant in all three models.[25] Figure 2 presents the marginal effect of women's representation on perceived corruption as the prior perceived corruption level

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[24] The ICRG time series passes the Augmented Dickey-Fuller and Phillips-Perron unit root tests with $p < 0.01$ using the inverse χ^2 transformation; this is an indicator that the series is stationary and the state-dependence model can be used (Esarey and DeMeritt 2014, 74–76).

[25] When the lagged dependent variable is interacted with percentage women in the legislature, a state-dependent dynamic model is created (Esarey and DeMeritt 2014). In a state-dependent system, the effect of an independent variable on the dependent variable depends on the prior level of the dependent variable. Methodological study of this model has indicated that, regardless of the number of panels, a longer time series is helpful in order to ensure accurate inference from this model; T = 20 is a rule of thumb for a minimum (Esarey and DeMeritt 2014, 76). Thus, while we report model results from all three of our dependent variables—and all yield substantively similar findings—we place particular importance on the test using the ICRG measure in this particular circumstance because it has the longest time span (from 1990-2010).

increases based on the ICRG results from Table 2; it indicates that a larger share of women in government is associated with a lower level of perceived corruption, but only when prior levels of perceived corruption are already low. When prior perceived corruption levels range from 0 to about 2.5, increasing women's representation correlates with less perceived corruption to a statistically significant degree. At a prior corruption score of 1, the present corruption score would be ≈ 0.01 lower for every 1 percentage point higher value of women in parliament. This indicates that a state with a 40% share of women in the legislature would have a 0.40 point lower present ICRG corruption score compared to a state with no women in parliament; this is about 7% of the maximum difference possible on this perceived corruption scale. The finding is consistent with our theoretical argument that the gender-corruption relationship is sensitive to electoral accountability. Interestingly, the model also indicates that there is a statistically significant and positive relationship between women's participation in government and perceived corruption at the highest lagged values of perceived corruption (between 5 and 6 on the ICRG scale); however, only about 2% of our observations lie in this range.

Table 2

Figure 2

H2: Press Freedom

We also find evidence that press freedom is associated with the relationship between women's representation and corruption in a way that is consistent with our theory of electoral accountability. The bivariate scatterplot shown in Figure 3 shows no relationship between gender and corruption perceptions when press freedom is restricted, but a strong negative relationship in countries with high levels of press freedom. This is consistent with the idea that the greater risk of detection and punishment for corruption that is created by a free press disproportionately impacts the behavior of women.

Figure 3

Table 3 shows that this finding is supported by the results of a multivariate regression: a statistically significant interaction effect exists between women's representation in parliament and press freedom for

all three measures of corruption. The relationship is most clearly seen in Figure 4, which illustrates the marginal effect of women's parliamentary representation on corruption perceptions as press freedom increases based on the ICRG results from Table 3.

The estimated marginal effect of women's representation on perceived corruption becomes negative and statistically significant when press freedom is in the top third of its range (about -30 to 0). When press freedom is at -10, the marginal effect of women in parliament is ≈ -0.01. Once again, this implies that countries with a 40% female parliament are on average about 0.4 lower in the ICRG corruption perceptions measure as compared to a country with no women in parliament. As hypothesis 2 indicated, a larger share of women in parliament is associated with lower levels of corruption when the press is free, but not when the press is restricted.

Table 3

Figure 4

H3: Parliamentary governance

The relationship between women's representation and corruption perceptions in our data is different across types of democratic government. In presidential systems, women's representation in legislatures has no discernible relationship with perceived corruption, whereas in parliamentary systems, greater women's representation correlates with considerably lower levels of perceived corruption. These divergent patterns are striking in the bivariate relationships depicted in Figure 5.

Figure 5

As Table 4 shows, multivariate regression models support the bivariate findings: the interaction between the percentage of female legislators and the presidentialism dummy variable is statistically significant and positive in all three models. The marginal effect plot in Figure 6 shows the relationship between the percentage of the legislature/parliament that is female and corruption perceptions estimated in the ICRG model in Table 4. While greater women's representation has no statistically significant relationship with level of perceived corruption in presidential systems, it has a strong and statistically

significant negative relationship in parliamentary systems of ≈ -0.01; this is an effect of roughly the same substantive magnitude as the relationships we uncovered in the prior two contexts.

This finding supports our theoretical argument that parliamentary systems present a greater individual risk for corruption because of the threat of swift sanctioning by voters, creating a larger gender difference in corruption behavior. This difference becomes manifest in a stronger negative relationship between perceived level of corruption and share of women in the legislature in parliamentary systems when compared to presidential systems.

Table 4

Figure 6

H4: Personalism

Finally, we examine how the relationship between women's representation and corruption is influenced by the personalism embedded in legislative or parliamentary electoral rules. We find that more personalistic rules are associated with a stronger negative relationship between percentage women in parliament and perceived corruption. Figure 7 shows the bivariate scatterplots and linear predictions for democracies with more party-centered (less personalistic) electoral rules compared to more personalistic electoral rules. Both figures show a negative relationship, but the effect is slightly steeper in democracies with more personalistic rules (and the difference between the slopes is statistically significant, $p = 0.022$).

Figure 7

Table 5 shows our multivariate statistical models with personalism interacted with the percentage of female legislators. The interaction terms are negative and statistically significant in all three models. Figure 8 shows the ICRG model's marginal effect for women in parliament on perceived corruption at varying levels of personalism. The effect is not statistically significant in the least personalistic systems (where the personalism score is less than about 2.5); this encompasses 36% of the sample of country-years (i.e., a bit more than two-thirds of the sample has more personalistic electoral rules). As personalism

increases from 3 to 13, the effect of women's representation on corruption perceptions is negative and statistically significant. At a personalism value of 13, the marginal effect of women in parliament is about -0.02; this means that a country with 40% women in parliament is expected to have a corruption score 0.8 points lower than a country with no women in parliament, about 13% of the maximum difference possible for the ICRG. This supports our argument that electoral rules that produce a stronger accountability link between individual representatives and voters, which disproportionately deters women from engaging in corruption.

Table 5

Figure 8

In sum, we observe that the relationship between the level of women's representation and the perceived level of corruption is indeed conditional upon the strength of individual accountability to voters in the political system. This finding matches the implications of our theoretical argument: accountability moderates the relationship between women's representation and corruption through the mechanisms of greater risk aversion and/or higher standards of accountability for women.

Conclusion

Corruption is a political threat that all countries fight, with varying degrees of success. In some countries, corruption levels are low and instances of suspected corruption are quickly brought to justice. The recent convictions of former Illinois governor Rod Blagojevich and former New Orleans mayor Ray Nagin in the United States exemplify this. Corruption is a risky activity for political elites in these settings. In other countries, like Mexico and Venezuela, corruption levels are persistently high and individual cases of corruption rarely make headlines or produce negative consequences for those involved. Participating in corruption is not particularly risky in these locales and may even be a way that elites further their political career. In this paper, we argue that greater women's representation in parliaments and legislatures is associated with lower levels of corruption in countries only in the presence

of strong electoral accountability, i.e., where voters have the ability to identify corrupt officials and punish them at the ballot box. We explain this conditional relationship via two theoretical mechanisms that relate the relationship between women's representation and corruption to the risks of corruption. First, prior research indicates that women are (on average) more risk averse than men; this makes women more responsive than men to an increased probability of being caught and punished by voters, and in turn more strongly deters them from engaging in corruption. Second, some evidence indicates that voters hold female candidates and officeholders to a higher standard than men, making the risk of engaging in corruption more salient for women.

We identified four institutions that should influence electoral accountability, and then used them to examine whether accountability moderates the relationship between women's representation and perceived corruption in democracies around the world. We found no evidence that corruption is associated with female participation in government in countries with pervasive corruption norms (where corruption is not risky), but showed that greater levels of female representation are associated with lower levels of perceived corruption in countries without such a set of norms (where corruption *is* risky). We also found that countries with a press that is free to investigate and report on the corrupt activities of political elites have a negative empirical association between women in government and corruption; women's representation has little empirical relationship with perceived corruption when the press is less free. Third, we found that women's participation in government is negatively associated with perceived corruption in parliamentary systems, whereas women's representation has no association with corruption perceptions in presidential systems; we believe this is because parliamentary systems expose individual members to greater accountability for corruption through the threat of government collapse and snap elections. Finally, we found that personalistic electoral rules that generate tight ties between individual elites and voters create strong electoral accountability and strengthen the relationship between women's representation and corruption perceptions.

As we noted at the outset, we believe that the findings of this paper set an agenda for theoretically-directed future research into the gender-corruption link. Much important work remains to be done. We

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think that the most important priority should be identifying whether and how much policies that aim to increase the representation of women in government can change corruption. Several governments have already attempted to reduce corruption by increasing female participation in government, but there is little systematic evidence to indicate how well such an intervention would work. Although our theory argues that women will be less-inclined to engage in corruption when accountability is high but not when accountability is low, this is not the same as saying that externally imposed changes in female representation will cause lower perceived corruption if implemented in any particular country or in the world as a whole at the macro level.

For example, it would be consistent with our theory and empirical findings if women are equally likely to run for office in high corruption environments with a substantial risk of electoral accountability, then provide stronger resistance to corrupt activities once in power. This would seem to support a strategy of elevating more women into office as an anti-corruption measure where electoral accountability is strong. However, it is possible that women are more likely to avoid running for public office in these circumstances (compared to men); this is *also* a strategy of avoiding participation in corruption, and therefore generally consistent with our theory that women avoid corruption in high accountability contexts.[26] In this case, increasing the number of women in office may or may not be efficacious at reducing corruption; it depends on how women who would not have ordinarily run for office behave once there. Stating the issue in another way, it may be the case that women currently in office are more resistant to engaging in corruption, but that these women come from a self-selected population that is

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[26] Note that this argument is quite different than saying that networks of corrupt officials collude in suppressing female participation in government (which often involves newcomers to governance) as a part of ensuring and increasing the benefits that they derive from corrupt governance; this alternative argument has been made by others in the literature who believe that corruption suppresses women's participation in government (Bjarnegård 2013; Grimes and Wängnerud 2012; Stockemer 2011; Sundström and Wängnerud 2014; Goetz 2007; J. E. Johnson, Einarsdóttir, and Pétursdóttir 2013). We do not believe that our evidence is consistent with this alternative argument. We know of no logical or theoretical reason to believe that increased accountability for corruption will make the suppression of women's participation in government by corruption networks more effective, as would be implied by the empirical evidence presented in this paper. Indeed, heightened accountability to voters for corruption would presumably make it *easier* for women to gain office in spite of corruption, as prior research argues that many women come to participate in politics through social movements that (amongst other activities) work against corruption and serve as the basis for independent political networks (Rodríguez 2003). Corruption-fighting can even become a signature issue for female candidates (Goetz 2002, 566).

particularly resistant; a policy initiative to increase women's representation might draw from a different population that is less (or more) resistant to corruption. Our current study is not designed to disentangle all these possibilities, but rather to identify that accountability is an important contextual factor that must be considered in future work that *is* designed to do so.

We believe that this future work should attempt empirically recover an estimate of the causal effect of increased women's representation on corruption. We believe that two strategies could be particularly useful on this front. First, survey and laboratory experiments could be designed to investigate the degree to which people select themselves out of positions that involve corruption, or choose to accept these positions but resist corruption once there. Other experiments could focus on how and why voters hold politicians accountable for corruption, which would be particularly useful in helping us to establish what causes voters to punish corruption (and what causes politicians to avoid it) at the micro level. Finally, instrumental variables techniques may help to directly measure the local average treatment effect of a program designed to increase female representation in government on corruption in that government.

This paper takes an important first step in answering the question of why and when women's representation in government is associated with political corruption. While early work suggested that there is a clear and relatively simple link—namely, that more women in government means less corruption because women are intrinsically less corrupt—our findings support a more subtle relationship that runs through electoral accountability. These findings matter for scholars hoping to better understand the causes and consequences of women's political representation, and they have important implications for policymaker who think that increased women's representation is a direct solution for endemic and pervasive corruption. Our findings support Goetz' (2007, p. 102) assertion that "To expect that women's gender alone can act as a magic bullet to resolve a corruption problem that is much bigger than they are, that is systemic, is unrealistic to say the least. It reflects not just wishful but almost desperate thinking." At the same time, our findings suggest that countries considering the anti-corruption benefits of increasing gender parity in government should consider simultaneously implementing institutional

reforms to catch and punish officials who are guilty of corruption. This may also increase women's representation in elected office.

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Table 1: Data Set Summary Statistics*

	mean	sd	count	min	max
TI CPI	5.173	2.339	1048.000	0.400	10.000
ICRG	3.424	1.330	1494.000	0.000	6.000
WBGI	0.395	1.049	923.000	-1.458	2.591
FH press freedom	-30.725	15.940	1570.000	-75.000	-3.000
presidentialism	0.412	0.492	1575.000	0.000	1.000
personalism	4.828	3.882	1561.000	1.000	13.000
% women in lower house	15.448	10.066	1572.000	0.000	46.400
FH freedom score	-2.113	1.032	1575.000	-5.000	-1.000
log GDP per capita	8.511	1.483	1571.000	4.795	11.464
% protestant	22.855	26.493	1575.000	0.000	91.000
trade imbalance (% of GDP)	79.000	38.330	1559.000	13.753	280.361
women's economic rights	1.580	0.649	1560.000	0.000	3.000

Figure 1: How Does the Past Prevalence of Corruption Influence the Relationship Between Gender and Corruption?*
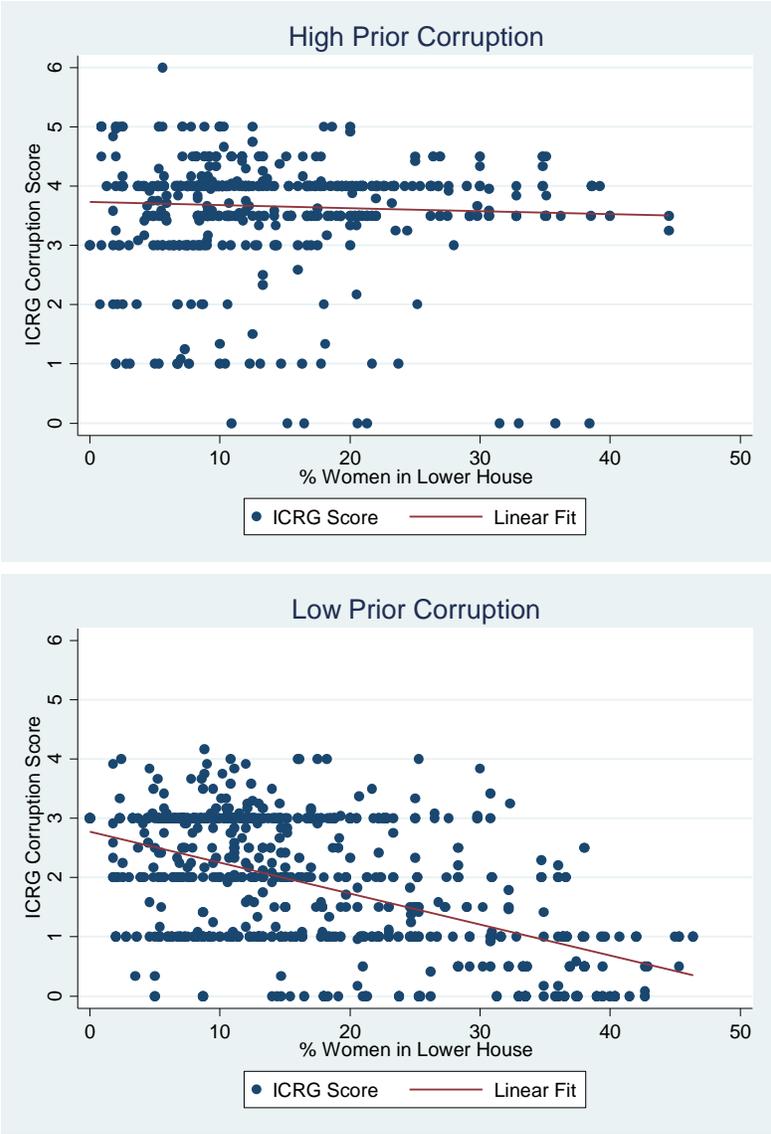
*The figures show the relationship between International Country Risk Guide corruption rating (ICRG) and % women in the lower house for 76 democracies between the years 1991-2010; the top panel shows countries with prior ICRG scores > 3 and the bottom panel shows countries with ICRG scores ≤ 3. The difference between the slopes is 0.042, which is statistically significant ($p < 0.001$).

Table 2: How Does the Past Prevalence of Corruption Influence the Relationship Between Gender and Three Measures of Corruption?*

	(1) TI CPI	(2) ICRG	(3) WBGI
lag TI CPI	0.549*** (14.01)		
lag ICRG		0.718*** (26.21)	
lag WBGI			0.263*** (4.94)
% women in lower house	-0.0326*** (-5.30)	-0.0153*** (-5.02)	-0.0180*** (-4.88)
% women * lag DV	0.00546*** (4.81)	0.00431*** (4.09)	0.00563*** (3.68)
FH Freedom	-0.190*** (-4.62)	-0.0621** (-3.01)	-0.192*** (-7.74)
log GDP per capita	-0.410*** (-8.78)	-0.0703*** (-3.69)	-0.296*** (-11.28)
% protestant	-0.00292* (-2.35)	-0.000334 (-0.50)	-0.00216** (-3.09)
trade imbalance (% of GDP)	-0.000984 (-1.39)	0.000480 (1.25)	-0.0000499 (-0.13)
women's economic rights	-0.0188 (-0.38)	0.0375 (1.38)	-0.0254 (-0.94)
N	1230	1496	1154

t statistics in parentheses
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

*The table reports the output of OLS regression models using three dependent variables: (1) the Transparency International Corruption Perceptions Index (TI CPI); (2) the International Country Risk Guide corruption rating (ICRG); and (3) the World Bank Governance Indicators Control of Corruption measure (WBGI). All three measures have been recoded so that higher values on each DV indicate more corruption. The data includes 78 democratic countries; the time dimension spans 1995-2010 for the TI CPI variable, 1996-2010 for the WBGI variable, and 1991-2010 for the ICRG variable. Year and region dummies are included in the models, though not reported in this table. Estimates are based on multiple imputation into 50 data sets using chained equations. R-squared for the models are: (1) 0.911, (2) 0.886, (3) 0.867.

Figure 2: How Does the Relationship Between Gender and Corruption Differ By Prior Corruption?*
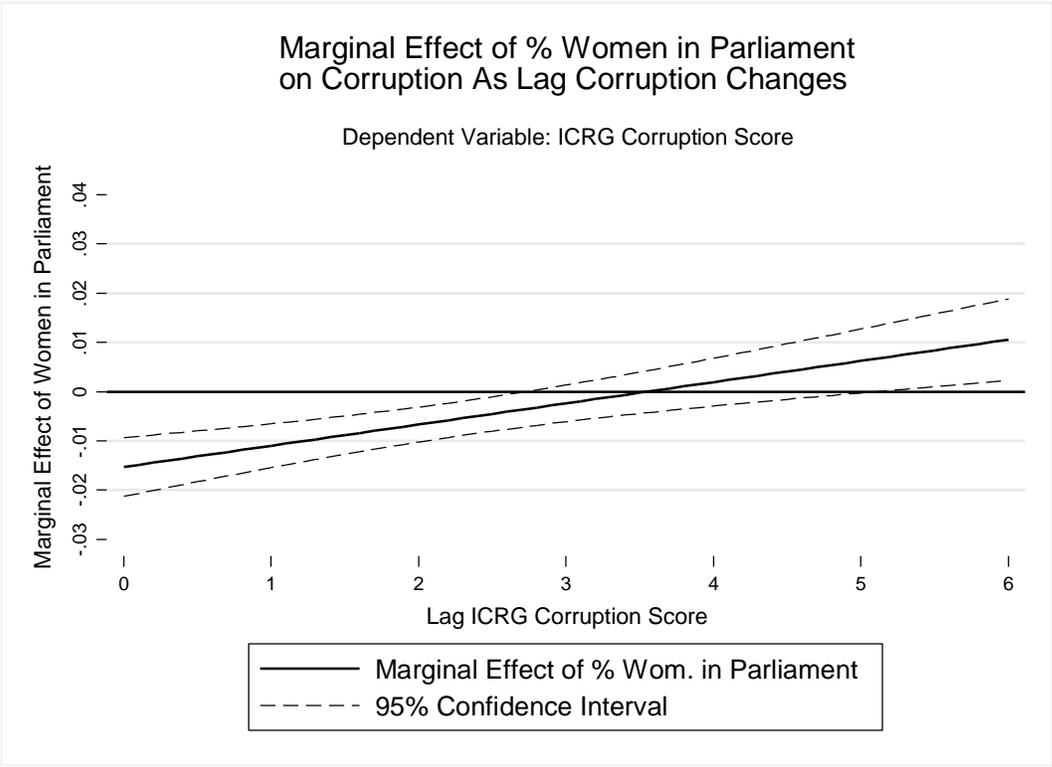
*The figure reports the marginal effect of the percentage of female members in the lower house of parliament on the ICRG corruption rating for different lagged values of the ICRG score. Estimates are based on model (2) reported in Table 2.

Figure 3: How Does Press Freedom Influence the Relationship Between Gender and Corruption? *
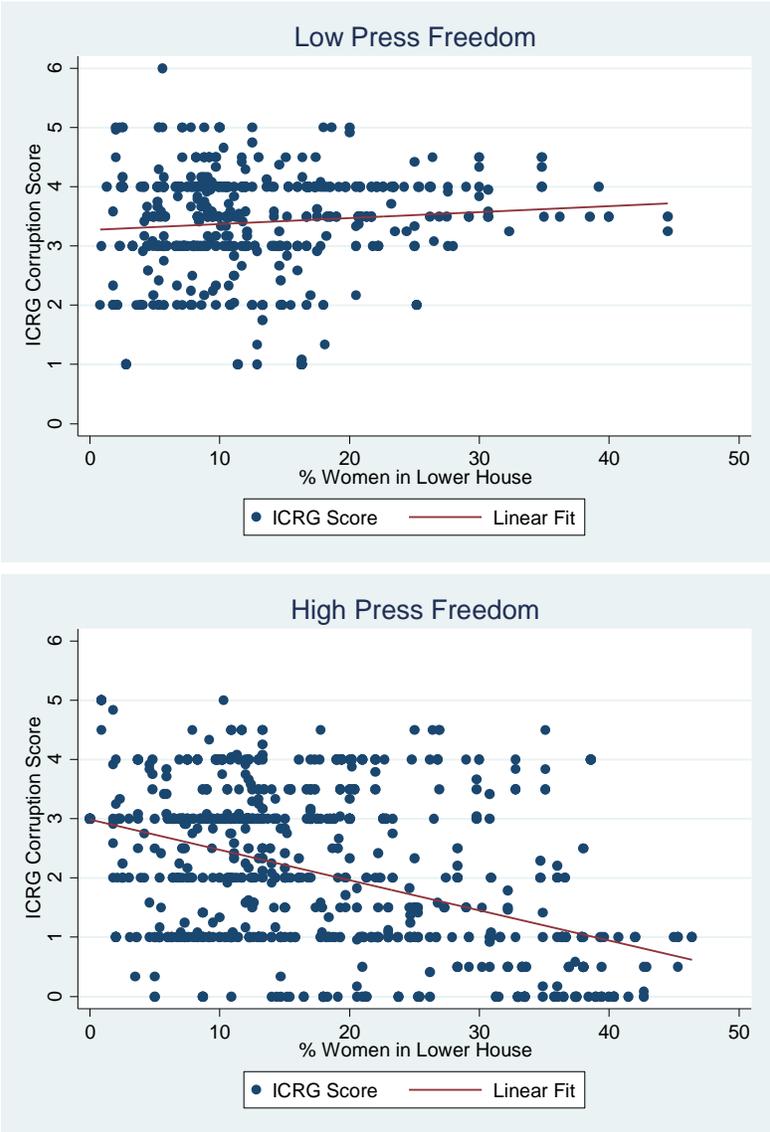
*The figures show the relationship between International Country Risk Guide corruption rating (ICRG) and % women in the lower house for 76 democracies between the years 1991-2010; the top panel shows countries with press freedom scores < -30 and the bottom panel shows countries with press freedom scores ≥ -30. The difference between the slopes is 0.071, which is statistically significant (p < 0.001).

Table 3: How Does Press Freedom Influence the Relationship Between Gender and Three Measures of Corruption?*

	(1) TI CPI	(2) ICRG	(3) WBGI
lag TI CPI	0.654***		
	(19.79)		
lag ICRG		0.783***	
		(38.37)	
lag WBGI			0.367***
			(8.44)
% women in lower house	-0.0267***	-0.0127***	-0.0190***
	(-4.41)	(-3.86)	(-5.54)
press freedom	0.00901*	0.00498*	0.00225
	(2.02)	(2.22)	(0.95)
% women * press freedom	-0.000771***	-0.000291**	-0.000471***
	(-3.98)	(-2.72)	(-4.53)
FH Freedom	-0.171**	-0.0814**	-0.134***
	(-2.70)	(-2.74)	(-3.90)
log GDP per capita	-0.361***	-0.0599**	-0.279***
	(-7.66)	(-3.24)	(-10.51)
% protestant	-0.00315**	-0.000970	-0.00178**
	(-2.66)	(-1.50)	(-2.67)
trade imbalance (% of GDP)	-0.000634	0.000586	0.000197
	(-0.91)	(1.48)	(0.51)
women's economic rights	-0.0424	0.0355	-0.0258
	(-0.86)	(1.36)	(-1.00)
N	1230	1496	1154

t statistics in parentheses
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

*The table reports the output of OLS regression models using three dependent variables: (1) the Transparency International Corruption Perceptions Index (TI CPI); (2) the International Country Risk Guide corruption rating (ICRG); and (3) the World Bank Governance Indicators Control of Corruption measure (WBGI). All three measures have been recoded so that higher values on each DV indicate more corruption. The data includes 78 democratic countries; the time dimension spans 1995-2010 for the TI CPI variable, 1996-2010 for the WBGI variable, and 1991-2010 for the ICRG variable. Year and region dummies are included in the models, though not reported in this table. Estimates are based on multiple imputation into 50 data sets using chained equations. R-squared for the models are: (1) 0.914, (2) 0.886, (3) 0.872.

Figure 4: How Does the Relationship Between Gender and Corruption Differ By Press Freedom?*
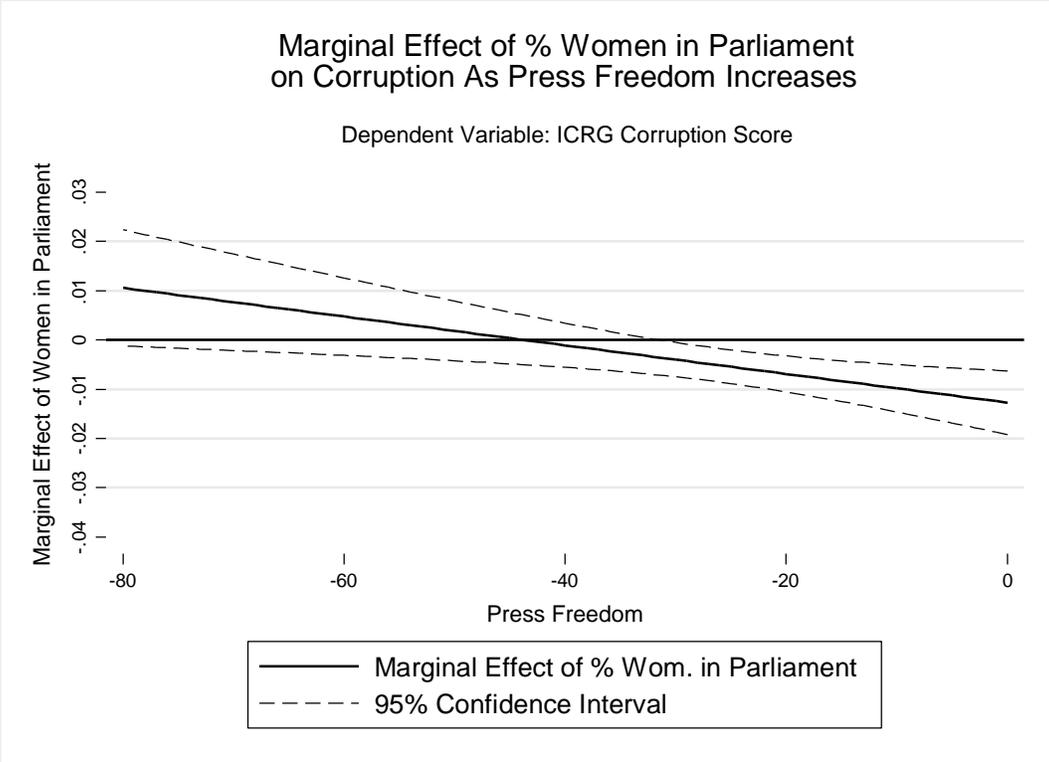
Marginal Effect of % Women in Parliament
on Corruption As Press Freedom Increases

Dependent Variable: ICRG Corruption Score

*The figure reports the marginal effect of the percentage of female members in the lower house of parliament on the ICRG corruption rating for different values of the press freedom variable. Estimates are based on model (2) reported in Table 3.

Figure 5: How Does Separation of Powers Influence the Relationship Between Gender and Corruption?*
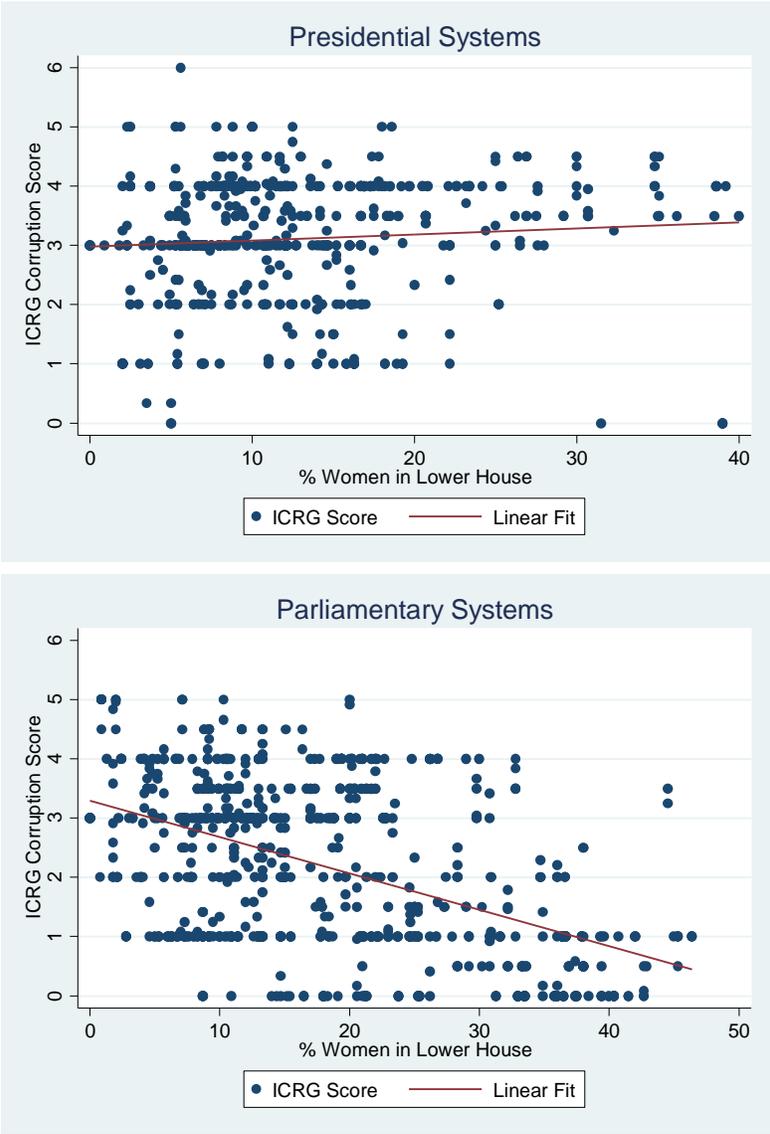
*The figures show the relationship between International Country Risk Guide corruption rating (ICRG) and % women in the lower house for 76 democracies between the years 1991-2010; the top panel shows countries with presidential systems and the bottom panel shows countries with parliamentary systems. The difference between the slopes is 0.072, which is statistically significant (p < 0.001).

Table 4: How Does Separation of Powers (and Accountability) Influence the Relationship Between Gender and Three Measures of Corruption?*

	(1) TI CPI	(2) ICRG	(3) WBGI
lag TI CPI	0.648***		
	(19.51)		
lag ICRG		0.784***	
		(38.97)	
lag WBGI			0.369***
			(8.25)
% women in lower house	-0.0121**	-0.00929***	-0.0102***
	(-3.24)	(-4.38)	(-4.72)
presidential system	-0.188	-0.186***	-0.160**
	(-1.74)	(-3.38)	(-2.59)
% women * presidentialism	0.0159**	0.00923**	0.0101**
	(2.70)	(3.14)	(3.19)
FH Freedom	-0.181***	-0.0540**	-0.180***
	(-4.51)	(-2.66)	(-7.23)
log GDP per capita	-0.356***	-0.0589**	-0.270***
	(-7.57)	(-3.16)	(-10.24)
% protestant	-0.00492***	-0.00127*	-0.00306***
	(-4.20)	(-2.12)	(-4.63)
trade imbalance (% of GDP)	-0.000579	0.000530	0.0000245
	(-0.79)	(1.36)	(0.06)
women's economic rights	-0.0700	0.0234	-0.0440
	(-1.40)	(0.89)	(-1.70)
N	1230	1496	1154

t statistics in parentheses
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

*The table reports the output of OLS regression models using three dependent variables: (1) the Transparency International Corruption Perceptions Index (TI CPI); (2) the International Country Risk Guide corruption rating (ICRG); and (3) the World Bank Governance Indicators Control of Corruption measure (WBGI). All three measures have been recoded so that higher values on each DV indicate more corruption. The data includes 78 democratic countries; the time dimension spans 1995-2010 for the TI CPI variable, 1996-2010 for the WBGI variable, and 1991-2010 for the ICRG variable. Year and region dummies are included in the models, though not reported in this table. Estimates are based on multiple imputation into 50 data sets using chained equations. R-squared for the models are: (1) 0.911, (2) 0.887, (3) 0.868.

Figure 6: How Does the Relationship Between Gender and Corruption Differ By Government Type?*
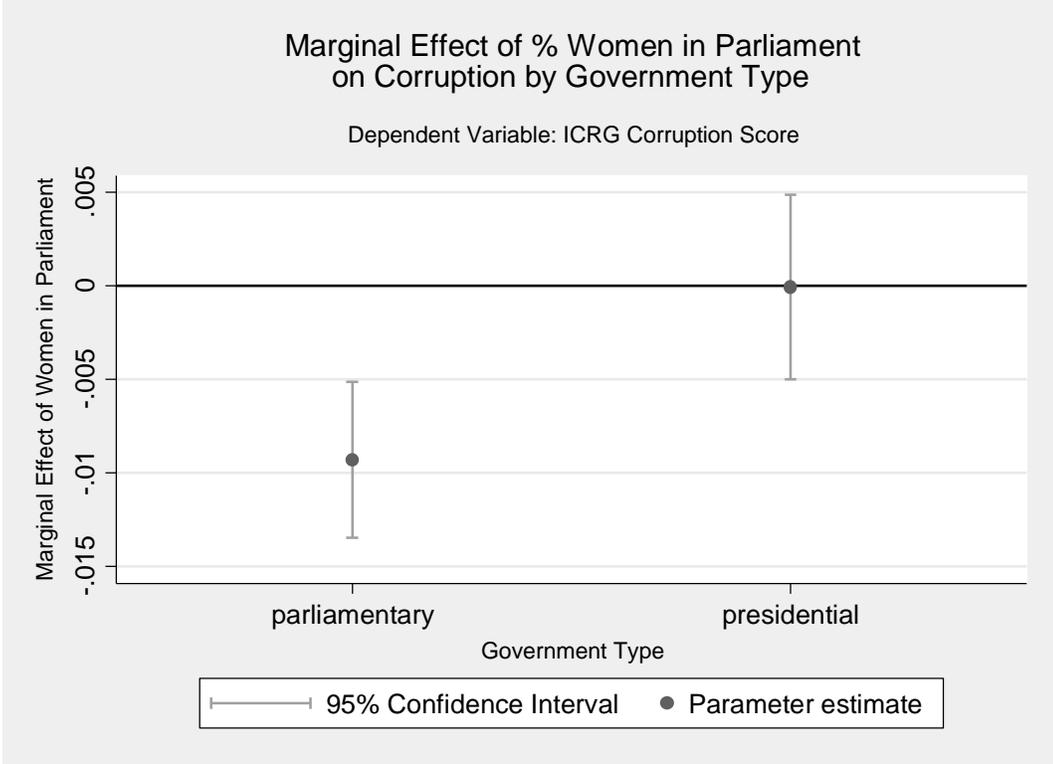
*The figure reports the marginal effect of the percentage of female members in the lower house of parliament on the ICRG corruption rating for parliamentary and presidential systems. Estimates are based on model (2) reported in Table 4.

Figure 7: How Does Personal Accountability Influence the Relationship Between Gender and Corruption?*
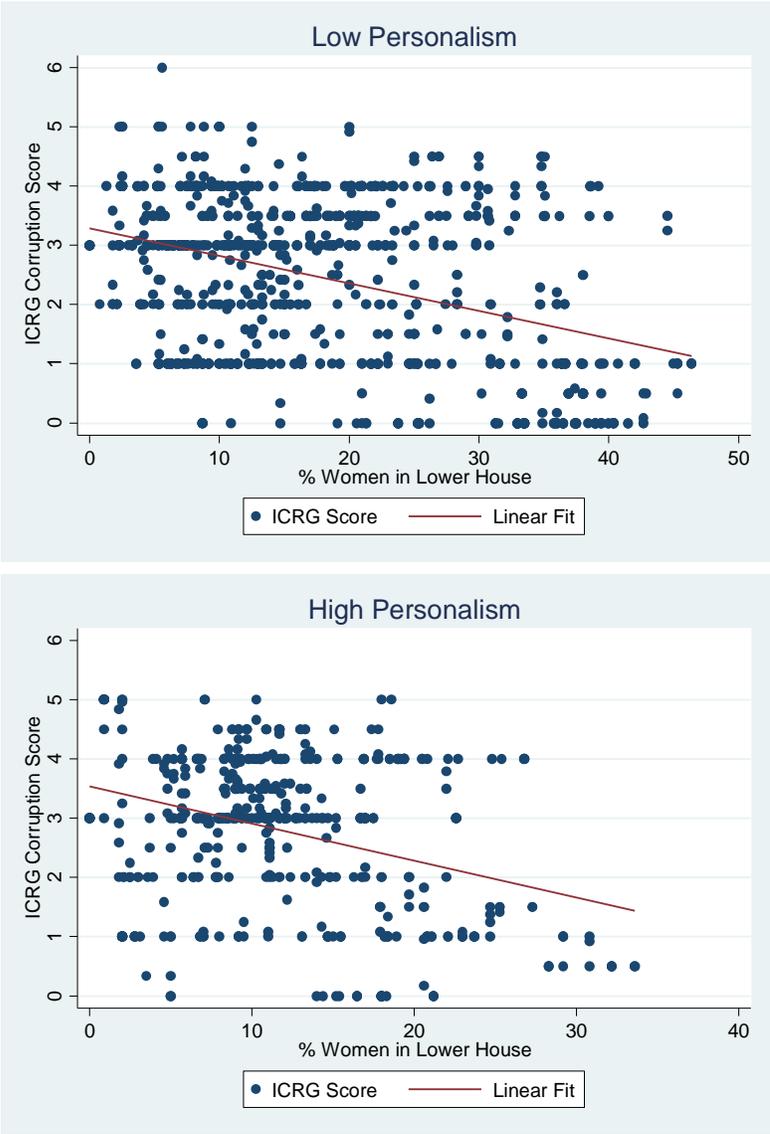
*The figures show the simple bivariate relationship between International Country Risk Guide corruption rating (ICRG) and % women in the lower house for 76 democracies between the years 1991-2010; the top panel shows countries with personalism scores $\leq$ 6, and the bottom panel shows countries with personalism scores > 6. The difference between the slopes is 0.020, which is statistically significant (p = 0.022).

Table 5: How Does Personal Accountability Influence the Relationship Between Gender and Three Measures of Corruption?[*]

	(1) TI CPI	(2) ICRG	(3) WBGI
lag TI CPI	0.642[***] (19.55)		
lag ICRG		0.775[***] (37.62)	
lag WBGI			0.362[***] (8.27)
% women in lower house	-0.00264 (-0.61)	0.000379 (0.16)	-0.00269 (-1.15)
personalism	0.0134 (0.93)	0.0259[**] (3.29)	0.0132 (1.65)
% women * personalism	-0.00246[**] (-2.76)	-0.00156[**] (-3.19)	-0.00168[***] (-3.55)
FH Freedom	-0.190[***] (-4.66)	-0.0528[*] (-2.49)	-0.184[***] (-7.32)
log GDP per capita	-0.349[***] (-7.41)	-0.0587[**] (-3.08)	-0.266[***] (-9.98)
% protestant	-0.00568[***] (-4.64)	-0.00206[**] (-3.28)	-0.00357[***] (-5.20)
trade imbalance (% of GDP)	-0.00124 (-1.63)	0.000681 (1.63)	-0.000310 (-0.77)
women's economic rights	-0.0406 (-0.81)	0.0313 (1.18)	-0.0298 (-1.14)
N	1230	1496	1154

t statistics in parentheses
[*] $p < 0.05$, [**] $p < 0.01$, [***] $p < 0.001$

[*]The table reports the output of OLS regressions using three dependent variables: (1) the Transparency International Corruption Perceptions Index (TI CPI); (2) the International Country Risk Guide corruption rating (ICRG); and (3) the World Bank Governance Indicators Control of Corruption measure (WBGI). All three measures have been recoded so that higher values on each DV indicate more corruption. The data includes 78 democratic countries in each model; the time dimension spans 1995-2010 for the TI CPI variable, 1996-2010 for the WBGI variable, and 1991-2010 for the ICRG variable. Year and region dummies are included in the models, though not reported in this table. Estimates are based on multiple imputation into 50 data sets using chained equations. R-squared for the models are: (1) 0.912, (2) 0.884, (3) 0.869.

Figure 8: How Does the Relationship Between Gender and Corruption Change as Personal Accountability Changes?*
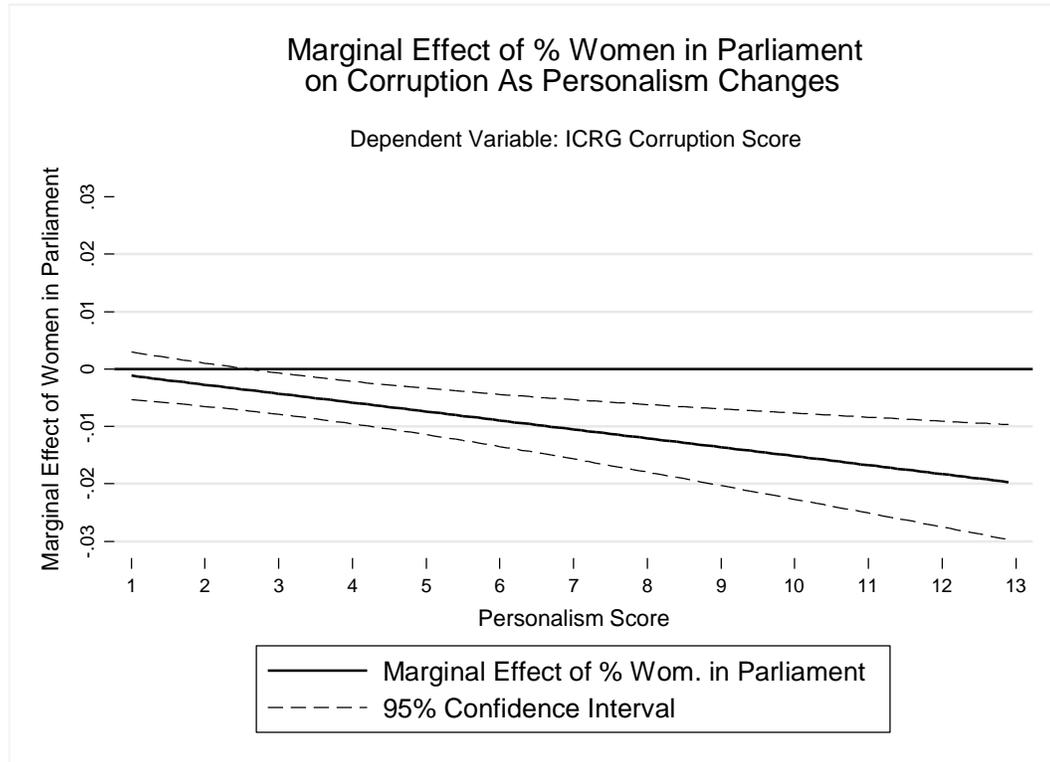
*The figure reports the marginal effect of the percentage of female members in the lower house of parliament on the ICRG corruption rating at different levels of personalism (J. W. Johnson and Wallack 1997). Estimates are based on model (2) reported in Table 5.

Supplemental Results Appendix

Table S1: How Does the Past Prevalence of Corruption Influence the Relationship Between Gender and Three Measures of Corruption? (Repetition of Table 2, Model 2 with varying lag lengths)*

	(1) one year lag	(2) two year lag	(3) three year lag
lag ICRG	0.724*** (27.18)		
lag (2) ICRG		0.536*** (16.13)	
lag (3) ICRG			0.375*** (10.69)
% women in lower house	-0.0157*** (-5.64)	-0.0257*** (-7.34)	-0.0317*** (-7.79)
% women * lag DV	0.00454*** (4.81)	0.00726*** (6.08)	0.00881*** (6.28)
FH Freedom	-0.0657*** (-3.61)	-0.103*** (-4.43)	-0.138*** (-4.94)
log GDP per capita	-0.0651*** (-4.35)	-0.105*** (-5.50)	-0.142*** (-6.26)
trade imbalance (% of GDP)	0.000581 (1.74)	0.000907* (2.14)	0.00121* (2.35)
women's economic rights	0.0327 (1.25)	0.0186 (0.58)	0.00261 (0.07)
N	1496	1419	1341

t statistics in parentheses
$^*\ p < 0.05$, $^{**}\ p < 0.01$, $^{***}\ p < 0.001$

*The table reports the output of OLS regression models using the International Country Risk Guide corruption rating (ICRG). The measure has been recoded so that higher values on the DV indicate more corruption. The data includes 78 democratic countries; the time dimension spans 1991-2010 for the model with a one-year lag of the DV, 1992-2010 with a two-year lag, and 1993-2010 for the model with a three-year lag. Year and region dummies are included in the models, though not reported in this table. Estimates are based on multiple imputation into 50 data sets using chained equations.

Table S2: ICRG results including country fixed effects[*]

	(1) lag DV	(2) press freedom	(3) presidentialism	(4) personalism
lag ICRG	0.595***	0.647***	0.653***	0.642***
	(15.05)	(22.13)	(23.02)	(22.10)
% women in lower house	-0.00825	0.00392	0.000233	0.00817
	(-1.25)	(0.67)	(0.06)	(1.89)
% women * lag DV	0.00400*			
	(2.06)			
press freedom		0.00167		
		(0.49)		
% women * press freedom		-0.0000208		
		(-0.12)		
presidential system			0.130	
			(0.42)	
% women * presidentialism			0.00515	
			(1.04)	
personalism				0.0262*
				(2.06)
% women * personalism				-0.00144
				(-1.88)
FH Freedom	-0.0757*	-0.0825*	-0.0682*	-0.0676
	(-2.23)	(-2.25)	(-2.09)	(-1.96)
log GDP per capita	0.0320	0.0411	0.0437	0.0490
	(0.45)	(0.56)	(0.64)	(0.67)
trade imbalance (% of GDP)	0.00143	0.00151	0.00169	0.00155
	(1.27)	(1.23)	(1.43)	(1.22)
women's economic rights	0.0543	0.0487	0.0436	0.0483
	(1.69)	(1.60)	(1.40)	(1.56)
N	1496	1496	1496	1496

t statistics in parentheses
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

[*]The table reports the output of fixed-effects models using the International Country Risk Guide corruption rating (ICRG). The measure has been recoded so that higher values on the DV indicate more corruption. The data includes 78 democratic countries in each model; the time dimension spans 1991-2010 for the ICRG variable. Year dummies and country-level fixed effects are included in the models, though not reported in this table. Estimates are based on multiple imputation into 50 data sets using chained equations.

Table S3: ICRG results using system GMM dynamic panel data model[*]

	(1) press freedom	(2) presidentialism	(3) personalism
lag ICRG	0.822***	0.799***	0.838***
	(8.03)	(7.37)	(8.26)
lag (2) ICRG	-0.0326	-0.00672	-0.0563
	(-0.34)	(-0.07)	(-0.60)
% women in lower house	-0.00890	-0.000194	0.00207
	(-0.96)	(-0.03)	(0.27)
press freedom	0.0000397		
	(0.01)		
% women * press freedom	-0.000447		
	(-1.71)		
presidential system		0.202	
		(1.21)	
% women * presidentialism		0.0138	
		(1.45)	
personalism			-0.00230
			(-0.13)
% women * personalism			0.000899
			(0.74)
FH Freedom	-0.0762	-0.0898	-0.112*
	(-1.42)	(-1.73)	(-2.10)
log GDP per capita	0.00395	0.00663	-0.0117
	(0.10)	(0.16)	(-0.30)
trade imbalance (% of GDP)	0.00311*	0.00340*	0.00298*
	(2.10)	(2.30)	(2.09)
women's economic rights	0.0654*	0.0628*	0.0599
	(2.00)	(1.97)	(1.86)
N	1322	1322	1320

t statistics in parentheses
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

[*]The table reports the output of system GMM dynamic panel data models using the International Country Risk Guide corruption rating (ICRG). 78 instruments are used, with GMM-type instruments used for the ICRG variable (third and fourth lag instruments for the difference model, third lag instruments for the level model). The measure has been recoded so that higher values on the DV indicate more corruption. The data includes 76 democratic countries in each model; the time dimension spans 1992-2010 for the ICRG variable. Year dummies are included in the models, though not reported in this table. Estimates are based on multiple imputation into 50 data sets using chained equations.