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Litina, Anastasia and Varvarigos, Dimitrios

University of Ioannina, Leicester University

12 February 2020

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Anastasia Litina†
University of Ioannina

Dimitrios Varvarigos‡
University of Leicester

Abstract

We study the relation between conjugal family ties and corruption. Our theoretical model shows that the population share of people who have a desire to retain close ties with their families (i.e., the extensive margin) has an ambiguous effect on the level of corruption, due to the presence of conflicting mechanisms. However, the strength of this desire among people who want to retain close ties with their families (i.e., the intensive margin) has an unambiguously negative effect on corruption. The latter outcome finds support from our empirical analysis: Using micro-level data, we show that, in contrast to conventional wisdom and cross-country reflections, stronger family ties are negatively correlated with a broad set of activities that measure corruption.

Keywords: D73, Z10

JEL Classification: Corruption, Family values

† **Anastasia Litina.** Department of Economics, University of Ioannina, University Campus, Ioannina 45110, Greece.
✉ alitina.uoi@gmail.com
☎ +30 265 100 5970

‡ **Dimitrios Varvarigos.** School of Business, Division of Economics, University of Leicester, Mallard House (Brookfield campus), 266 London Road, Leicester LE2 1RQ, United Kingdom.
✉ dv33@le.ac.uk
☎ +44 (0) 116 252 2184

1 Introduction

Corruption is a phenomenon whose adverse social and economic effects can be wide-ranging (e.g., Mauro 1995; Tanzi and Davoodi 1998). For this reason, the identification of various factors that fuel corruption has held a prominent place in the research agenda of many fields, including economics. As a result, a large body of work has pinpointed several factors that are responsible for high levels of corruption – factors that include economic, administrative, historical, and cultural ones.[1] Our study contributes to a further understanding of the cultural sources behind high corruption, as it aims at examining the role of family ties. Specifically, it focuses on *conjugal (or nuclear) family ties* – rather than *extended kinship ties* - and aims at investigating, both theoretically and empirically, their impact on people's willingness to engage in corrupt behaviour and, therefore, the level of corruption.[2]

The results from existing empirical work on the link between corruption and family ties is rather mixed: While the study by Marè *et al.* (2016) finds that family ties are associated with higher levels of corruption, Ljunge (2015) reports that family ties promote civic virtues – among them, the disapproval of corruption. In general, while the link between family ties and corruption has already attracted the interest of empirically-oriented work, the existing literature lacks a systematic theoretical study that identifies possible mechanisms through which family ties affect people's attitudes towards corruption. One of our study's aims is to fill this gap in the literature.

Given its focus on conjugal family ties, our theory borrows elements from Alesina *et al.* (2015) – the agents' locational preference contingent on their desire to retain close ties with their families – and expands them by incorporating public sector employment, which gives the opportunity of illegal rent-seeking through corruption. From a certain perspective, our theoretical model delivers mechanisms that explain why

[1] This literature is very extensive and has traced several factors, such as opportunities for rents and discretionary power (Klitgaard 1988); regulation, taxation and below market-price provision of goods (Tanzi 1988; De Soto 1989); and the level of public sector wages (Haque and Sahay 1996) among others. Treisman (2000) explores a series of determinants that are correlated with corruption, such as legal origin and institutions, whereas Hauk and Sáez-Martí (2002) and Barr and Serra (2010) emphasise the role of culture and norms.

[2] The difference between conjugal family and extended kinship is that the former considers the nucleus of parents and children whereas the latter considers an extended network of relatives, clans etc. See Enke (2019) for a study that investigates the economic implications of extended kinship ties.

the effect of family ties on corruption can be ambiguous. On the one hand, people's desire to retain strong family ties reduces the range of high-productivity opportunities to which they can be employed, due to their reluctance to reside away from their parents, hence tempting them to compensate for this shortfall through the ill-gotten gains of corrupt behaviour. On the other hand, however, the utility cost that emanates from the chastisement and the stigma attached to the revelation of corrupt behaviour, has a more pronounced effect on people who possess a sense of strong family ties, thus acting as a counter-incentive for them to seek illegal rents through corruption. Overall, when the measure of family ties is the population share of those who abide by them, family ties may be associated with either more or less favourable attitudes towards corrupt behaviour – and, therefore, with either higher or lower incidence of corruption – depending on which of the two opposing mechanisms prevails.

Our theory also offers another perspective that involves the potential measure of the strength of family ties. The argument is that, in addition to the share of people who have a desire to retain close ties with their conjugal families, what is also important is how strong this desire is. In other words, our point of view is that both the extensive and the intensive margins of family ties' measurement merit consideration. For that reason, besides the prevalence of different family values among the population, our model also pinpoints another measure of family ties – i.e., the component that quantifies the utility accruing as a result of retaining close ties with one's family. Under this measure, the relation between the strength of family ties and corruption is unambiguously negative. In other words, when the desire to retain close ties with the family increases, the incentive to be corrupt declines.

This latter mechanism is actually the focus of our empirically strategy in investigating the interplay between corruption and family ties. We do not attempt to establish causality, a task that is rather demanding with survey data. Instead, we focus primarily in highlighting the correlation between the two variables, and in uncovering the underlying mechanisms. Methodologically, we test our reduced-form hypothesis using micro-level data from the European Values Study (EVS) and a variable developed by Alesina and Giuliano (2010) as a means of measuring the strength of family ties. Our empirical results support the hypothesis that stronger family ties are associated with

attitudes less favourable to corruption, thus they accord with the empirical outcomes in Ljunge (2015) and with broader arguments that stress the importance of familial experiences in determining civic values (e.g., Wilson 1993). Our results are robust to several different specifications, such as controlling for region fixed effects that captures even more unobservables, and to the use of different samples, e.g., the World Value Survey (WVS) instead of the EVS.

Despite the fact that there are reasonable arguments to support an outcome whereby family ties reduce the incidence of corruption, still conventional wisdom and casual observation may be at odds with this view. After all, a simple observation of the European continent, for example, can reveal that corruption is more widespread among countries in Southern Europe – in which strong family ties are also more pervasive among the population – compared to Northern European countries – in which strong family ties are not as pervasive. How can this observation reconcile with our theoretical and empirical results? To see this, recall that, in our theoretical framework, it is possible that while the share of agents with preferences for maintaining close ties with their conjugal families – a population measure – is positively related to corruption, at the same time the strength of the desire to maintain close family ties is inversely related to corruption. In this respect, our micro-level empirical approach is primarily capturing outcomes that are consistent with the latter mechanism, given that our main source of variation is across-individual variation, without being necessarily at odds with cross-country reflections on the issue. Indeed, we conduct an individual-level analysis and our results are derived after accounting for a wide range of individual and country controls such as country and year fixed effects, thus we obtain within-country estimates. In other words, we do not ignore other factors – on the contrary, they are an important part of the story and they are implicitly captured by the fixed effects. Our approach, however, is to highlight the micro-level factors. Therefore, our results should be primarily interpreted as suggesting that if two individuals live in the same county and are thus faced with the same institutional/historical/cultural background of the country, then those who have stronger desire for close family ties will be less favourable towards corruption.

Overall, our study contributes to two strands of the literature. First, it contributes to the literature that investigates the determinants of corruption. As we stated earlier, this literature is extensive and has identified several economic, institutional, historical and cultural factors (e.g., Klitgaard 1988; Tanzi 1988 De Soto 1989; Haque and Sahay 1996; Treisman 2000; Barr and Serra 2010). Second, it contributes to the literature that investigates the impact of family ties on various economic and social outcomes.[3] This literature has identified the implications of strong family ties for labour market outcomes (Alesina and Giuliano 2010; Alesina *et al.* 2015), geographical mobility (Giuliano 2007; Alesina and Giuliano 2010), education (Duranton *et al.* 2009), gender roles (Alesina and Giuliano 2013), economic systems and reform (Esping-Andersen 1999; Brumm and Brumm 2017; Galasso and Profeta 2018), trust (Alesina and Giuliano 2011), as well as ideology and political participation (Todd 1983; Alesina and Giuliano 2011).

At this point, it should be noted that there is also a literature on the broader measure of kinship, as described and studied in the seminal paper of Enke (2019). However, in his study he highlights the fact that *"…Alesina and Giuliano's variable of nuclear family ties is conceptually distinct from anthropologists' concept of extended kinship ties…"* (Enke 2019, p.974). Moreover, the kinship variable in Enke (2019) comprises four different elements, i.e., extended family, joint residence, unilineal descent and clans – all of which are applicable primarily to an ethnic group analysis, hence they differ from the type of family ties modelled and empirically tested in our paper. We view the distinction between the two types of family ties as instrumental since each definition and approach captures different aspects of the topic and thus different mechanisms associated with it.

Our study is structured as follows: In Section 2 we develop a theoretical model to study the underlying mechanisms that link corruption with the strength of family ties. Section 3 presents our empirical analysis and findings, and Section 4 concludes.

[3] There is also a newly emerging literature on the long-run determinants of family ties. For example, see Ang and Fredriksson (2017).

2 Theory

The model draws on Alesina *et al.* (2015) with regard to its focus on conjugal family ties (rather than extended kinship ties) and their aspect of locational preference. We consider an economy that is populated by a constant mass (normalised to 1) of couples who live for three periods – childhood, youth and maturity. The individuals who comprise a couple are distinguished solely on the basis of occupational characteristics, the details of which will be discussed shortly. Nevertheless, each couple shares the same personality traits and preferences, and make all their decisions jointly. The demographic structure is simple, as each couple gives birth to a couple, and so on. Henceforth, we shall be referring to couples as 'agents'.

Agents form their personality traits and adopt values and norms, which will ultimately determine their desire to maintain close ties with their families, in their childhood. In this study, we are not going to be explicit about the process whereby agents adopt these cultural traits. Instead, we shall assume that a fixed fraction $f \in (0,1)$ of agents wish to retain strong family ties, whereas the remaining fraction $1-f$ do not have such a desire. This is a scenario where children simply adopt their parents' cultural characteristics, hence allowing us to ignore any dynamics and to consider a static framework that focuses purely on the decisions made by agents when they are young. In what follows, agents are going to be distinguished by $j = \{s, w\}$ where s stands for agents who have a preference for strong family ties, while w stands for agents whose preference for family ties is rather weak (or even absent).

Young couples earn income, enjoy the consumption of (private and public) goods, and rear their children. There are two sources of income for each couple because the activity to which each individual will be engaged, with the purpose of earning income, differs. Particularly, one of them will operate as a perfectly competitive supplier of a privately-produced good; the other will be employed by the public sector (e.g., as a civil servant) contributing to the procurement of a utility-enhancing public good.

Private Production

The producer of the private good will supply Y units of it, meaning that this is also the amount of income that accrues to agents as a result of private production. We follow Alesina *et al.* (2015) in assuming that the productivity of private sector producers is a function of the location in which agents decide to reside. If agents are willing to move to any location away from their parents' place of residence, private production will result in $Y_h = (1+\omega)y$ units of output with certainty, where $\omega, y > 0$. If, however, agents restrict themselves in residing to the location of their parents, private production will result in the same amount of output, i.e., $Y_h = (1+\omega)y$, only with probability $\pi \in (0,1)$, whereas with probability $1-\pi$ private production will generate $Y_l = y$ units of output. One way to justify this assumption is to think that people can have a greater set of productive opportunities, and a better match for their skills, if they are more mobile in terms of location.

Public Sector

The government distributes an amount of output to each civil servant, with the condition that these funds should be used as an input in the operation of a project that contributes to the procurement of a utility-enhancing public good. In return, civil servants receive a salary $B > 0$ for their services. Contrary to private sector producers, we assume that the productivity of individuals who work as civil servants is not affected by the location where agents reside. We will also assume that the production of public goods occurs prior to private production.[4]

The government also levies a (lump-sum) tax $T > 0$ from each agent, and uses the proceeds to finance its expenses for public sector salaries and for the provision of public goods. Using $G > 0$ to denote the amount devoted to public goods' provision, and taking account the unit mass of agents, it follows that the government's budget is given by $T = G + B$. We also assume that all items in the public budget are tied to the economy's output by setting

$$B = by\,,\ G = gy\,,\ T = \tau y\,, \tag{1}$$

[4] This assumption is innocuous for our results. See Footnote 9.

where $b, g, \tau \in (0,1)$. Therefore,

$$\tau = g + b. \tag{2}$$

With the purpose of introducing the moral hazard problem that will ultimately generate the incidence of corruption, we follow Varvarigos and Arsenis (2015) in assuming that the delivery of public goods is possible through two types of projects. Type-H projects return either $\gamma > 0$ units of public goods with probability $p \in (0,1)$ or $\beta \in (0,\gamma)$ units of public goods with probability $1-p$, for each unit of output invested in them. Note that the realisation of the state of nature is independently distributed across all Type-H projects. Type-L projects, on the other hand, return $\delta \in (\beta,\gamma)$ units of public goods with certainty, for each unit of output invested in them. As long as $p\gamma + (1-p)\beta > \delta$, a condition that is assumed to hold hereafter, the expected return of Type-H projects is strictly higher compared to the return of Type-L projects. For this reason, the government imposes a condition on the employment contracts of civil servants, obliging them to operate only Type-H projects. Nevertheless, some civil servants may have the incentive to invest only a fraction $\frac{\beta}{\delta} \in (0,1)$ of the funds allocated to them in the operation of a Type-L project, resulting in an overall return of $\delta\frac{\beta}{\delta} = \beta$ units of public goods per unit of funds allocated to the civil servant. They do so while making the false claim that all the funds available to them were invested in the operation of a Type-H project, which eventually had a bad realisation of the state of nature. Doing so allows them to gain private rents, amounting to a fraction $1-\frac{\beta}{\delta}$ of the funds that they should have invested in the first place.

Nevertheless, the authorities may detect their malfeasance. In the event that the authorities detect and prosecute a case of corruption, the civil servant's penalties involve the loss of his salary, in addition to the loss of his ill-gotten gains. Furthermore, the punishment, stigma and shame associated with the revelation of a civil servant's misconduct is an impediment to the couple's prospects of enjoying activities such as consumption and – for those with preferences for strong family ties – being close to their parents. For example, legal proceedings, the stigma of being a convicted fraudster and

the possible imprisonment can impinge on the number and the quality of interactions with the nuclear family. As we shall see shortly, these emotional costs entail a proportional loss in utility.

A counter-argument could be that interactions with the close family may be less affected by issues such as legal proceedings, imprisonment, reputational damage etc., than interactions with acquaintances and friends, hence living near parents may be an attenuating factor to these costs. Our focus, however, is on people who have an increased desire to be close to – and to interact with – their parents. As long as the number of such interactions and the circumstances/environment under which these occur are affected by these issues, then they will surely impinge on the utility increment that people with strong family ties enjoy from being close to their parents.

Let us assume that the probability of a Type-j civil servant being apprehended and punished for his transgression, denoted M_j, is uniformly distributed on $[0,1]$ across all civil servants of the same type (i.e., $j=\{s,w\}$). Similarly to Varvarigos (2017), this form of heterogeneity captures the varying abilities of corrupt civil servants in avoiding the revelation of their misdemeanour. For example, it may capture varying degrees of vigilance and care in avoiding lifestyle choices and behaviour that could signal their excessive income. It may also capture varying degrees of networking with people who can assist them in eluding detection and punishment.[5] With the purpose of simplifying the analysis, we shall employ the following functional form for the probability that a Type-j civil servant's nefarious activities will be eventually revealed:

$$\mathrm{M}_j=\frac{\mu_j}{F_j}, \tag{3}$$

where

$$\mu_j\in\begin{cases}[0,f] & \text{if} \quad j=s\\ [0,1-f] & \text{if} \quad j=w\end{cases}, \quad F_j=\begin{cases}f & \text{if} \quad j=s\\ 1-f & \text{if} \quad j=w\end{cases}. \tag{4}$$

If we denote the number of civil servants who will decide to be corrupt by Θ, it follows that the amount of public goods offered by the public sector, denoted a, can be

[5] Another underlying assumption here is that the probability of detection is independent of the civil servant's type (i.e., $j=s$ or $j=w$). This is done purely as a means of analytical simplicity, with minimal cost to generality (if any).

expressed as $a = G\{(1-\Theta)[p\gamma + (1-p)\beta] + \Theta\beta\}$. Taking account of (1), this expression can be rewritten as

$$a = gy[(1-\Theta)p(\gamma - \beta) + \beta]. \tag{5}$$

Preferences

As we indicated previously, the decision to reside in the close vicinity of the agents' parents will entail a productivity cost, manifested in the potential loss of income from private production. The reason why agents may still decide to do so however, relates to their preferences on the issue of family ties. Particularly, agents who have a desire for maintaining close family ties will either enjoy a utility gain if they reside in their parents' location, or incur a utility cost if they move away from it. On the contrary, agents who have not adopted values that are supportive to family ties, do not gain nor lose any utility as a result of their choice of residence when they become adults. Formally, the Type-j agents' utility is given by

$$U_j = (c_j + \Phi_j)(1-S) + a, \tag{6}$$

where c_j denotes consumption of private goods and

$$\Phi_j = \begin{cases} \varphi & \text{if } j = s \text{ and agents reside in their parents' location} \\ -\varphi & \text{if } j = s \text{ and agents reside away from their parents' location} \\ 0 & \text{if } j = w, \text{ irrespective of the agents' location} \end{cases} \tag{7}$$

such that $\varphi > 0$.[6] Furthermore, note that S captures the proportional loss in utility, due to the chastisement, stigma and shame attached to the revelation of a corrupt civil servant's wrongdoing. Given this, we assume that

$$S = \begin{cases} \sigma \in (0,1) & \text{if the civil servant is corrupt, and eventually revealed as such} \\ 0 & \text{if the civil servant is corrupt, but avoids detection} \\ 0 & \text{if the civil servant is honest} \end{cases} \tag{8}$$

Note that the specification in (6) assumes that the deleterious effects of stigma and punishment do not impinge on the utility from public goods. From a technical point of view, this assumption eliminates strategic considerations on the incentives to be

[6] When we present our main results in Section 2.3, we briefly consider an extension where agents who uphold strong family ties make income transfers to their parents. The main results remain qualitatively identical, meaning that the absence of transfers from the main framework is not such a critical factor for the model's results and implications.

corrupt among Type-w and Type-s civil servants.[7] Such strategic effects would impose significant mathematical complication, thus obscuring the clarity of our analysis without adding anything to its main implications.

2.1 The Decisions of Type-w Agents

Let us consider agents who do not have a desire to retain close ties with their families (i.e., $j = w$). Taking account of (6)-(8), it follows that they will choose to move away from their parents' location, thus earning $Y_h = (1+\omega)y$ units of income from private production. As a result, if the civil servant is honest in his involvement with public goods delivery, the agents' utility will be

$$U_w^{honest} = c_w^{honest} + a\,, \tag{9}$$

where

$$c_w^{honest} = Y_h + B - T = (1+\omega-g)y\,, \tag{10}$$

is the agents' budget constraint. If the civil servant is corrupt, the agents' income will be augmented by the amount of ill-gotten gains that emanate from his rent-seeking. In the event that he is detected, however, he will lose all the gains from his employment in the public sector – the salary and the proceeds from illegal rent-seeking – while he and his partner will face the utility-reducing consequences of the revelation of his fraudulent behaviour. Under such circumstances, the Type-w agents' (expected) utility is:

$$U_w^{corrupt} = (1-\mathrm{M}_w)c_w^{corrupt,not\ detected} + \mathrm{M}_w c_w^{corrupt,detected}(1-\sigma) + a\,. \tag{11}$$

Defining the composite term $z \equiv \frac{\beta}{\delta} \in (0,1)$, we can substitute (1) and (2) to express the budget constraints as follows:

$$c_w^{corrupt,not\ detected} = Y_h + B + (1-z)G - T = (1+\omega-gz)y\,, \tag{12}$$

$$c_w^{corrupt,detected} = Y_h - T = (1+\omega-g-b)y\ . \tag{13}$$

Next, we can combine (3), (4), (10), (12) and (13) to rewrite the utility functions in (9) and (11) as

[7] Specifically, strategic considerations would emerge because each person's incentive to be corrupt would depend on the provision of public goods, thus on the actions of all other agents who decide whether to be corrupt or not.

$$U_w^{honest} = (1+\omega-g)y + a\,, \tag{14}$$

and

$$U_w^{corrupt} = \left(1-\frac{\mu_w}{1-f}\right)(1+\omega-gz)y + \frac{\mu_w}{1-f}(1+\omega-g-b)y(1-\sigma) + a\,, \tag{15}$$

respectively.

The Type-w civil servant will be corrupt and engage in illegal rent-seeking as long as the agents' (expected) utility from doing so is at least equal to the utility that applies if he decides to abscond from any wrongdoing, i.e., if $U_w^{corrupt} \geq U_w^{honest}$. Therefore, equating (14) and (15) defines a critical value

$$\widehat{\mu_w} = \frac{g(1-z)}{g(1-z)+\sigma(1+\omega-g-b)+b}(1-f)\,, \tag{16}$$

such that civil servants for whom $\mu_w \leq \widehat{\mu_w}$ will be corrupt, whereas those for whom $\mu_w > \widehat{\mu_w}$ will decide to remain honest. In other words, $\widehat{\mu_w}$ is also the number of corrupted Type-w civil servants.

2.2 The Decisions of Type-*s* Agents

Now, let us consider agents who have a preference for retaining close ties with their family (i.e., $j = s$). Given the characteristics of the model, these agents may actually have the incentive to stay in the location of their parents, despite the potential loss of income from such a decision. If they do so, the agents' budget constraint, following the substitution of Eq. (1) and (2), will be given by

$$c_s^{honest} = \begin{cases} Y_h + B - T = (1+\omega-g)y & \text{with probability} \quad \pi \\ Y_l + B - T = (1-g)y & \text{with probability} \quad 1-\pi \end{cases}, \tag{17}$$

if the civil servant does not engage in the pursuit of ill-gotten gains, or

$$c_s^{corrupt,not\ detected} = \begin{cases} Y_h + B + (1-z)G - T = (1+\omega-gz)y & \text{with probability} \quad \pi \\ Y_l + B + (1-z)G - T = (1-gz)y & \text{with probability} \quad 1-\pi \end{cases}, \tag{18}$$

$$c_s^{corrupt,detected} = \begin{cases} Y_h - T = (1+\omega-g-b)y & \text{with probability} \quad \pi \\ Y_l - T = (1-g-b)y & \text{with probability} \quad 1-\pi \end{cases}, \tag{19}$$

if he does. In the scenario where Type-s agents move to new locations, their budget constraints will be identical to those of Type-w ones, i.e., $c_s^{honest} = (1+\omega-g)y$, $c_s^{corrupt,not\ detected} = (1+\omega-gz)y$ and $c_s^{corrupt,detected} = (1+\omega-g-b)y$. Together with (3), (4), (6)-(8) and (17)-(19), it follows that the agents' (expected) utility from consumption, depending on whether the civil servant is honest or corrupt, can be written as

$$U_s^{honest} = (1+\pi\omega-g)y+\varphi+a, \tag{20}$$

$$U_s^{corrupt} = \left(1-\frac{\mu_s}{f}\right)[(1+\pi\omega-gz)y+\varphi]+\frac{\mu_s}{f}[(1+\pi\omega-g-b)y+\varphi](1-\sigma)+a, \tag{21}$$

if they stay in their parents' location, and

$$U_s^{honest} = (1+\omega-g)y-\varphi+a, \tag{22}$$

$$U_s^{corrupt} = \left(1-\frac{\mu_s}{f}\right)[(1+\omega-gz)y-\varphi]+\frac{\mu_s}{f}[(1+\omega-g-b)y-\varphi](1-\sigma)+a, \tag{23}$$

if they move away from it.

With the purpose of improving the focus of our analysis, henceforth we shall adopt the approach of Alesina *et al.* (2015) by imposing a condition which guarantees that the agents who have preferences for maintaning family ties will find optimal to reside close to their parents. It should be noted that this assumption accords with evidence showing that strong family ties reduce geographical mobility (Giuliano 2007; Alesina and Giuliano 2010). Formally, a sufficient condition is

$$\varphi > \frac{[g(1-z)+(1-\pi)\omega+\sigma(1+\pi\omega-g-b)+b]y}{2-\sigma} \equiv \hat{\varphi}. \tag{24}$$

Given the condition in (24), agents with a desire for strong family ties will always choose to remain in their parents' location, meaning that their utility will be given by either (20) or (21).[8] As a result, we can use these expressions to examine the civil servant's conduct while in public office. In other words, the critical value $\widehat{\mu_s}$ for which $U_s^{corrupt} = U_s^{honest}$ can be obtained as follows:

[8] The condition in (24) guarantees that the lowest level of utility associated with staying in the parents' location (i.e., when a civil servant is corrupt but apprehended with certainty) exceeds the highest level of utility associated with residing to a different location (i.e., when a civil servant is corrupt and evades detection with certainty).

$$\widehat{\mu_s} = \frac{g(1-z)}{g(1-z)+\sigma(1+\pi\omega-g-b)+b+\dfrac{\sigma\varphi}{y}} f \,. \tag{25}$$

According to (25), civil servants for whom $\mu_s \le \widehat{\mu_s}$ will engage in the effort to extract illegal rents through their involvement with the public sector, whereas civil servants for whom $\mu_s > \widehat{\mu_s}$ will remain honest. Alternatively, $\widehat{\mu_s}$ is also the number of Type-s civil servants who will be corrupt.

2.3 The Impact of Family Ties on the Level of Corruption

We can combine (16) and (25) to express the total number of corrupt civil servants as

$$\Theta = \theta_w(1-f) + \theta_s(\varphi) f = \Theta(f,\varphi)\,, \tag{26}$$

where

$$\theta_w \equiv \frac{g(1-z)}{g(1-z)+\sigma(1+\omega-g-b)+b}\,, \quad \theta_s(\varphi) \equiv \frac{g(1-z)}{g(1-z)+\sigma(1+\pi\omega-g-b)+b+\dfrac{\sigma\varphi}{y}}\,. \tag{27}$$

Substitution of (26) in (5) yields

$$a = gy\{[1-\theta_w(1-f)-\theta_s(\varphi)f]p(\gamma-\beta)+\beta\} = a(f,\varphi)\,. \tag{28}$$

Next, we define the composite term

$$\tilde{\varphi} \equiv (1-\pi)\omega y\,, \tag{29}$$

which allows us to get the following results:

Lemma 1. *Suppose that* $\hat{\varphi} > \tilde{\varphi}$. *Then* $\dfrac{\partial\Theta(f,\varphi)}{\partial f} < 0$.

Proof. From (26) it is straightforward to establish that $\dfrac{\partial\Theta(f,\varphi)}{\partial f} = \theta_s(\varphi) - \theta_w$. Using the expressions in (27) and (29), we see that $\theta_w > \theta_s(\varphi)$ holds as long as

$$\varphi > (1-\pi)\omega y \Leftrightarrow \varphi > \tilde{\varphi}\,.$$

Since the condition in (24) holds, $\hat{\varphi} > \tilde{\varphi}$ also implies that $\varphi > \tilde{\varphi}$, thus completing the proof. ■

Lemma 2. *Suppose that* $\hat{\varphi} < \tilde{\varphi}$. *Then:*

i. $\dfrac{\partial \Theta(f,\varphi)}{\partial f} > 0 \quad if\ \varphi \in (\hat{\varphi},\tilde{\varphi})$;

ii. $\dfrac{\partial \Theta(f,\varphi)}{\partial f} < 0 \quad if\ \varphi > \tilde{\varphi}$.

Proof. Use the proof of Lemma 1 to establish that $\varphi < \tilde{\varphi} \Rightarrow \theta_w < \theta_s(\varphi)$ and $\varphi > \tilde{\varphi} \Rightarrow \theta_w > \theta_s(\varphi)$. ■

We can formalise the implications on the impact of preferences for strong family ties among the population on corruption through

Proposition 1. *The impact of an increase in the population share of people with a desire to retain close family ties has an ambiguous (i.e., either negative or positive) effect on the incidence of corruption.*

Proof. It follows from Lemma 2. ■

The ambiguity emanates from the fact that, for agents whose values are conducive to strong family ties, the utility costs associated with a civil servant's misconduct generate two conflicting effects on the incentive to be corrupt. On the one hand, the possible income loss incurred because of their desire to reside close to their parents, while relinquishing more productive opportunities elsewhere, mitigates the loss in the marginal utility of consumption induced by chastisement and stigma. This is a mechanism through which strong family ties cause a higher incidence of corruption.[9] An alternative interpretation is that, for agents who abide by strong family ties, the ill-gotten gains of corruption are also viewed as the means of covering the shortfall in

[9] Qualitatively, our results would be similar in a scenario where the civil servants' decisions and the delivery of public goods materialise after the production of private goods. This is because, with a fraction $1-\pi$ of Type-s agents earning y from private production, instead of $(1+\omega)y$, the average (private) income of this group would still lack behind the average (private) income among Type-w agents.

productivity and income. On the other hand, however, the utility costs that stem from the revelation of a civil servant's wrongdoing, also mitigate the agents' enjoyment from residing close to their parents. This expected loss in utility acts as a disincentive to engage in nefarious activities while in public office, hence generating a mechanism through which family ties cause a lower incidence of corruption.

Note, however, that in addition to distribution of different types of family values among the population, our model includes an additional measure of the strength of family ties. This is captured by the parameter φ, i.e., the utility value for agents who enjoy retaining close ties with their families. In other words, this is a measure of how strong is the feeling of family boding among the people who possess preferences for retaining ties with their conjugal family. In order to investigate its implications on the model's main outcomes, consider the result in

Lemma 3. *It is* $\frac{\partial \Theta(f,\varphi)}{\partial \varphi} < 0$.

Proof. Given (27), we have $\frac{\partial \theta_s(\varphi)}{\partial \varphi} < 0$. Therefore, from (26) it is straightforward to establish that $\frac{\partial \Theta(f,\varphi)}{\partial \varphi} = \frac{\partial \theta_s(\varphi)}{\partial \varphi} f < 0$. ■

Now, we can establish the impact of this measure of family ties on corruption by means of [10]

[10] On a side-note, it should be clear that the impact of family ties on corruption also dictates the impact on the economy and welfare through the effect on the provision of public goods a. After all, corruption is manifested through the deliberate choice of less productive projects for the procurement of utility-enhancing public goods. Consequently, any factor that fuels corruption is bound to reduce the effectiveness of the public sector's production activities, by limiting the amount of goods delivered per unit of public investment. To see this, use Eq. (28) and combine with the previous results to verify that $\frac{\partial a(f,\varphi)}{\partial f} = -[\theta_s(\varphi) - \theta_w] gyp(\gamma - \beta) > 0 \quad (<0)$ if either $\hat{\varphi} > \tilde{\varphi}$ or $\hat{\varphi} < \tilde{\varphi}$ and $\varphi > \tilde{\varphi}$ $(\hat{\varphi} < \varphi < \tilde{\varphi})$ whereas $\frac{\partial a(f,\varphi)}{\partial \varphi} = -\frac{\partial \theta_s(\varphi)}{\partial \varphi} fgyp(\gamma - \beta) > 0$.

Proposition 2. *The impact of a stronger desire for family ties, among those with preferences for retaining close ties with their families (i.e., a higher φ), on corruption is unambiguously negative.*

Proof. It follows from Lemma 3. ■

In terms of intuition, the higher is φ, the stronger is the expected utility loss for agents who contemplate the ill-gotten gains of corruption, but who also consider the possible repercussions, including the non-pecuniary ones (e.g., imprisonment, shame etc.), from the revelation of this wrongdoing. For this reason, the strength of the desire to maintain close ties with the conjugal family alleviates the incentive to engage in corrupt behaviour.

A counter-argument to the negative effect of strong family ties on the incentive to be corrupt has to do with the redirection of economic resources (including the 'spoils' of illegal rent-seeking) towards the immediate family. In the context of our model, consider agents who care for their parents through the provision of financial resources, as long as they abide by strong family values. The argument is that, in this case, family ties may increase the incentive to be corrupt because this will increase their ability to provide for their families. Although this could be a valid mechanism, the extent to which it can completely revert our existing results is questionable. For example, consider a modification where the agents' utility component $c_s = \tilde{c}_s^{1-\kappa(\varphi)} t^{\kappa(\varphi)}$ ($\kappa(\varphi) \in [0,1)$, $\kappa(0) = 0$, $\kappa'(\varphi) > 0$) includes own consumption ($\tilde{c}_s$) and a financial transfer to their old parents (t) – with corresponding modification to the budget constraint(s). If I denotes the agents' total resources (income from employment plus ill-gotten gains – if any) then $\tilde{c}_s = (1-\kappa(\varphi))I$, $t = \kappa(\varphi)I$ and $c_s = \varsigma I$ ($\varsigma \equiv \kappa(\varphi)^{\kappa(\varphi)}(1-\kappa(\varphi))^{1-\kappa(\varphi)}$) in equilibrium. In other words, agents optimally give a fraction $\kappa(\varphi) \in [0,1)$ of their total economic resources to their parents – a fraction that is increasing in the strength of family ties – and keep the remaining fraction $1-\kappa(\varphi)$ for their own consumption. In comparison to the model presented in this study, the utility term c_s is $c_s = \varsigma I$ instead of $c_s = I$, thus the mechanisms and results will survive with little change to the model's implications.

There are some important implications from the preceding analysis. Firstly, our model provided a theoretical foundation for circumstances when – contrary to the conventional wisdom that would view strong family ties as a fillip for corruption - factors that are relevant to strong family ties reduce the incidence of corruption. The second, and equally important in our opinion, can be clarified through

Proposition 3. *The measure of family ties can be crucial in determining its impact on corruption. It is possible that a higher population share of people with preferences for retaining family ties increases the willingness to be corrupt, whereas, at the same time, a stronger desire for family ties, among those with preferences for retaining such ties with their families, reduces the willingness to be corrupt.*

Proof. It follows from the implications of Proposition 1, Proposition 2, and Lemma 2 for $\varphi \in (\hat{\varphi}, \tilde{\varphi})$. ■

In other words, the ambiguity with respect to the impact of family ties on corruption is not only related to the conflicting underlying mechanisms, but it may extend to the measure of family ties as well. This is because what matters is not only whether people have a desire to retain close ties with their families, but also how strong this desire is. The next section presents an empirical analysis that uses micro-level data to test the reduced-form hypothesis of a relation between the strength of family ties and the approval of corrupt behaviour.

3 Empirical Analysis

Our empirical analysis focuses on testing outcomes that are more closely related to the underlying message of Proposition 2. Furthermore, the micro-level of our analysis allows us to discuss several other elements of the model as well.

3.1 Individual-Level Data and Empirical Strategy

In this section, we estimate the impact of family ties on corruption-related attitudes at the individual level. We employ the measure employed in Alesina and Giuliano (2010) that captures the strength of conjugal family ties. As already highlighted above, we totally abstract from kinship and in-group interaction considerations. Our measure is actually capturing the degree of love, affection and respect as shaped within families. We thus use data from the European Values Study (EVS). The EVS is a large-scale cross-national survey with four waves covering the 1981-2008 period. In our study we use data from all four waves wherever available. Overall, a total of 48 countries are included in the cumulative dataset based on the four EVS waves.

Family Ties

In line with the benchmark studies that study the role of family ties (e.g., Alesina and Giuliano 2010) we use three questions to construct the family ties index. The first question asks how important family is for the respondent's life. Answers vary from 1-4 with "1" indicating that it is not important at all and "4" indicating that family is very important. The second question asks whether love and respect to parent is taken as given or whether it should be earned: The value of "1" indicates that it should be earned while the value of "2" indicates that it should always be taken for granted. The third question asks whether parents should fulfil their responsibilities towards their children at the expense of their own well-being: The value of "1" indicates that they should not sacrifice their own well-being whereas "2" indicates that they should do the utmost best for their children.

It should be noted that, in the original data from the EVS, answers with higher scores indicate a lower strength of family ties. To avoid confusion and misunderstanding, we have transformed the variables in the manner described previously. Hence, in all three questions, higher values correspond to stronger family ties. Furthermore, note that, in order to reduce the number of variables and to combine the three components to a single variable, our approach is to conduct a principal component analysis and to employ the first component as the explanatory variable.

Corruption-Related Attitudes

In order to measure corruption-related attitudes at the individual level, we use four different questions whereby respondents are asked whether they justify the following acts: cheating on taxes; claiming state benefits (without being entitled to); accepting a bribe; and avoiding paying fare on public transport. Each variable takes values from 1 to 10 with 1 corresponding to "*never*" and 10 corresponding to "*always*". Thus higher values of these variables are associated with more favourable views – and, therefore, a greater inclination – towards corruption.[11]

A crucial point concerns the use of these measures as proxies for corruption. We justify this approach on the basis of the existing literature and our own correlations. As far as the existing literature is concerned, there are a number of studies that have also employed similar measures, extracted from the EVS and the WVS, as proxies for corruption. For example, Torgler and Valev (2010) and Litina and Palivos (2016) associate corruption with measures of bribe acceptance and tax cheating, while Azariadis and Ioannides (2015) do the same with unentitled benefits claims. With regard to our own correlations, we have found that, in most cases, these measures (when aggregated at the country level) have a positive correlation with cross-country measures of corruption, such as the Corruption Perceptions Index or the ICRG Corruption Index.[12,13] There are a few comments worth making here. Although the avoidance of paying for public transport is not an obvious signal of corruption, it still seems to

[11] It is important to note that our results are the same if we use any other question related to cheating or corruption, e.g., how justifiable it is to buy stolen goods, and how justifiable it is for people to keep money they found. However, we view these questions as less relevant to our study and we thus do not incorporate them in our analysis.

[12] The following table reports correlation coefficients between each measure of attitudes and two widely known measures of corruption, i.e., the ICRG index and the CPI index, averaged over the period we examine. Note that the ICRG and CPI indices are inverse ones, i.e., lower values indicate more corruption.

	Cheat on taxes	Claim State Benefits	Avoid Fare on Public Transport	Accepting a Bribe	ICRG 1984-2008	CPI 1995-2008
Cheat on taxes	1.0000					
Accepting a Bribe	0.4078	1.0000				
Avoid Fare on Public Transport	0.6613	0.4494	1.0000			
Accepting a Bribe	0.5545	0.3997	0.6420	1.0000		
ICRG 1984-2008	-0.0061	-0.1798	-0.3316	-0.3011	1.0000	
CPI 1995-2008	-0.0242	-0.2290	-0.3756	-0.3832	0.9549	1.0000

[13] These proxies for corruption are also based on corruption perceptions. However they are aggregated at the country level and they combine information from several different sources. As such they are generally perceived as country-wide measures that proxy corruption as closely as possible.

correlate positively with actual measures of corruption. Perhaps, it reflects a general mindset whereby it is acceptable to promote private gains at the expense of the 'public' good. It is exactly for this reason that we also find the lack of a significant correlation between the attitudes towards tax cheating and the corruption indices (despite the correlation coefficient having the correct sign). This may reflect the fact that, when considering tax morale, corruption is only one of its many facets that include personal views on the fairness of the tax system, the need for redistribution etc. Nevertheless, we still retain this measure in our analysis, since the link between tax morale and corruption is widely documented and accepted in the literature (e.g., Togler 2014).[14]

Reduced-Form Specification

Our main empirical analysis focuses on testing a hypothesis that is conceptually closer to the underlying message of Proposition 2, as it considers the impact of the intensive margin of family ties. We estimate the reduced-form specification term

$$CA_{ict} = a_0 + a_1 FT_{ict} + a_2 Controls_{ict} + I_c + R_t + \varepsilon_{ict}. \quad (30)$$

where CA_{ict} denotes the attitudes towards corruption of an individual i who lives in country c and participates in round t, and FT_{ict} is the measure of family ties, i.e, the principal component of the previously mentioned variables. The variable $Controls_{ict}$ is a vector of individual-level controls including age, age squared, gender, education, religion and employment status. The term I_c denotes country fixed effects and aims to capture unobservables associated with the country in which individuals reside, and R_t denotes EVS round fixed effects, thus capturing unobservables related to the timing of the interview that are common across countries. Finally, ε_{ict} is the error term.

Naturally, our coefficient of interest in Eq. (30) is a_1. This will identify the impact of family ties on the proxies of corruption-related attitudes, accounting for other individual characteristics as well as country and year effects. A point worth mentioning is that the country fixed effects absorb elements that are explicitly mentioned in the model, such as the role of government and the level of public goods. This does not imply

[14] In the same line of reasoning, we also confirmed our results using other measures of misbehaviour (related to stolen goods or lost money). As mentioned previously, these are not reported here as they are not particularly relevant to our study.

that these factors do not play a role in our empirical analysis. On the contrary country fixed effects are crucial in terms of identification, precisely because they capture the important role played by differences across countries in all these respects. We just net out these effects via the use of fixed effects so as to uncover the role played by family ties on corruption, conditional on all these controls.

"Should I Stay or Should I Go?"

Once we obtain the reduced form results, we make a further attempt to nail down one of the important characteristics of our theoretical model, i.e., the proximity to the family in terms of location. We argue in the model that people who have stronger ties with their family may choose to stay close to them at the expense of their productivity, while those with looser family ties are more likely to change location – which ultimately results in higher productivity as already argued in Alesina and Giuliano (2010).[15]

According to Proposition 2, the impact of the strength of family ties on corruption is unambiguously negative. Based on this prediction, we expect that if we split the sample into those who stay *vs* those who leave their parents' location, the former will be the ones who are primarily driving the result of the decline in corruption. The EVS allows us to identify people who move across NUTS regions. There is one question asking them in which NUTS region they lived when they were aged 14 and in which NUTS region they currently live. We thus assume that the NUTS region at age 14 is the region in which they lived with their parents and the current one is the new residency most likely chosen for occupational reasons. Of course, we cannot preclude the family moving along with the respondent. Nevertheless, we treat these deviations as non-systematic as we do not see any plausible arguments to suggest anything systematic in such cases. Furthermore, we restrict our sample of movers and stayers to working age population aged 18-65.[16]

[15] As mentioned previously, the adoption of this characteristic in our theoretical framework follows Alesina *et al.* (2015).

[16] Below we present the table of the summary statistics for stayers *vs* leavers for the family ties variable and for the strength of family ties variable. We observe than, in line with our model assumptions, stayers manifest both stronger family ties and have lower income as compared to leavers.

Given the above, we estimate the following equation:

$$CA_{ict} = a_0 + a_1 FT_{ict} \times I_{stayers} + a_1' FT_{ict} \times I_{leavers} + a_2 Controls_{ict} + I_c + R_t + \varepsilon_{ict} . \quad (31)$$

The notation is exactly as in Eq. (30). The only difference lies in the terms $a_1 FT_{ict} \times I_{stayers}$ and $a_1' FT_{ict} \times I_{leavers}$ which are the interaction terms obtained for the measure of family ties in each regime, i.e., staying in the same NUTS or moving to a different NUTS. In line with our theory, we expect to obtain a different coefficient for each group. Moreover, we expect these differences to appear in the magnitude of these coefficients – not in their sign.

3.2 Empirical Results

Benchmark Specification

Table 1 reports estimates on the impact of the measure of family ties on attitudes towards corruption. The dependent variable in Column (1) is *"Justifiable: Cheating on taxes"*; in Column (2) is *"Justifiable: To claim state benefits (without being entitled to them)"*; in Column (3) is *"Justifiable: Accepting a bribe"*; and in Column (4) is *"Justifiable: Avoiding fare on public transport"*. The analysis controls for the full set of relevant demographic, socio-economic and household characteristics (i.e., age, age squared, gender, education, religion and employment status), as well as the EVS round and country fixed effects. In all four columns we find that stronger family ties are associated with less favourable attitudes towards corruption. In Table 1 Line II reports the logit model coefficient whereas, in terms of magnitude, the coefficients reported in Line I are standardised beta coefficients. Their range of values lies mostly around -0.1 suggesting that a unitary change in the standard deviation of the family ties measure is associated with a standard deviation change of around -0.1 in most of the measures of corruption. Overall, these are

	Obs	Mean	Std	Min	Max
Stayers					
Family Ties	44,028	0.034	1.083	-5.156	0.865
Income	44,028	4.466	2.660	1	12
Leavers					
Family Ties	3,706	-0.035	1.131	-5.156	0.865
Income	3,706	5.171	2.681	1	12

not very strong effects, at least not for the full sample (as we shall see shortly, they will become stronger once we distinguish between people who leave their parents' location and people who stay in it). Nevertheless, they are systematic and emerge in all different specifications, even after having controlled for several demographic, country and time-invariant characteristics.

Table 1. Benchmark specification: The impact of family ties on attitudes related to corruption

	(1)	(2)	(3)	(4)
		Justifiable to:		
	Cheat on Tax	Claim State Benefits	Accept a Bribe	Avoid Transport Fare
I. Family Ties (PC)	-0.093***	-0.057***	-0.094***	-0.099***
	(0.018)	(0.020)	(0.018)	(0.017)
Age	-0.216***	-0.229***	-0.273***	0.404***
	(0.005)	(0.005)	(0.003)	(0.007)
Age Sq.	0.099**	0.113***	0.176***	0.246***
	(0.000)	(0.000)	(0.000)	(0.000)
Gender	-0.055***	-0.016***	-0.040***	0.037***
	(0.030)	(0.020)	(0.018)	(0.028)
Obs.	69,021	68,858	69,432	57,847
R-Sq.	0.094	0.129	0.082	0.134
II. Family Ties (Logit)	-0.097***	-0.071***	-0.147***	-0.096***
	(0.016)	(0.021)	(0.021)	(0.021)
EVS Round FE	Yes	Yes	Yes	Yes
Country FE	Yes	Yes	Yes	Yes
Other Controls	Yes	Yes	Yes	Yes

Summary: This table establishes that stronger family ties are associated with less favourable attitudes towards corruption. The analysis controls for individual characteristics such as age, age squared, gender, educational level, employment status, religious denomination as well as for EVS round and country fixed effects.
Notes: (i) the attitudes-related variables ("justifiable to: cheat on tax; claim state benefits; accept a bribe; avoid transport fare") take values from 1-10 with 10 indicating "always justifiable"; (ii) the "family ties" variable is the principal component of three variables, "how important in family in your life", "love and respect parents: always/earned", "parents' responsibilities to their children: at expense of/not sacrifice own well-being". Higher values of the variable indicate stronger family ties; (iii) Robust standard error estimates, clustered at the dimension of the country of origin, are reported in parentheses; (iv) *** denotes statistical significance at the 1% level, ** at the 5% level, and * at the 10% level, all for two-sided hypothesis tests.

Table 1A reports the coefficients when we distinguish between each group explicitly. We observe that in all four columns the coefficient is negative for both groups. Moreover, with the exception of Column (2), where we have the measure for claiming state benefits, in all other cases it is the group of people who never moved away from

their family's location that has a stronger effect on corruption. The coefficients are expressed in standardized beta units and are around the value -0.20 for those who stay and -0.12 for those who leave (always with the exception of the measure of state benefits). In other words, a unitary standard deviation increase in the principal component of family ties is associated with up to a 0.20 standard deviation reduction in our measure of corruption. This is a rather non-trivial effect. To make it more comprehensible, think that a unit change in the measure of family ties, which ranges between -5 and 0.8 (negative values appear due to the use of principal component analysis), is associated with a 0.9 change in the measure of corruption, which ranges between 1 and 10.

Table 1A. Stayers *vs* Leavers

	(1)	(2)	(3)	(4)
		Justifiable to:		
	Cheat on Tax	Claim State Benefits	Accept a Bribe	Avoid Transport Fare
Family Ties (Stayers)	-0.191***	-0.125***	-0.150***	-0.207***
	(0.026)	(0.001)	(0.022)	(0.022)
Family Ties (Leavers)	-0.127***	-0.194***	-0.117***	-0.191***
	(0.050)	(0.003)	(0.004)	(0.033)
EVS Round FE	Yes	Yes	Yes	Yes
Country FE	Yes	Yes	Yes	Yes
Other Controls	Yes	Yes	Yes	Yes
Obs.	30,026	34,947	35,203	35,119
R-Sq.	0.082	0.135	0.094	0.130

Summary: This table distinguishes the effect of family ties on corruption based on the status of individuals, i.e., it separates leavers from stayers. The analysis shows that the effect of stayers is stronger than that of leavers. The analysis controls for individual characteristics such as age, age squared, gender, educational level, employment status, religious denomination as well as for EVS round and country fixed effects.
Notes: (i) the attitudes-related variables ("justifiable to: cheat on tax; claim state benefits; accept a bribe; avoid transport fare") take values from 1-10 with 10 indicating "always justifiable"; (ii) the "family ties" variable is the principal component of three variables, "how important in family in your life", "love and respect parents: always/earned", "parents' responsibilities to their children: at expense of/not sacrifice own well-being". Higher values of the variable indicate stronger family ties; (iii) Robust standard error estimates, clustered at the dimension of the country of origin, are reported in parentheses; (iv) *** denotes statistical significance at the 1% level, ** at the 5% level, and * at the 10% level, all for two-sided hypothesis tests.

Robustness

Table 2 replicates the analysis in Table 1 by adopting a more stringent specification. Specifically, we employ a full set of regional fixed effects at the NUTS 2 level. The reason

why we do not adopt this specification from the outset is because we have significantly fewer observations. Importantly though, the results remain highly significant and similar to the benchmark specification.

Table 3 tests the robustness of the explanatory variable by employing another measure that is widely used in this literature. This is the sum of the three variables that are used as measures of the strength of family ties, as opposed to their principal component. To do this, we first make the three variables similar in terms of scale – in this case, we bring them to a scale from 1 to 2 – with higher values still indicating stronger family ties. Subsequently, we use their sum instead of the first component. Columns (1) to (4) refer to the same dependent variables as in Table 1 and they use the same full set of controls. The results are – qualitatively and quantitatively – very similar. It should be noted that, although not reported here, similar results are also obtained if, instead of their sum, we use each of the three measures that are incorporated in the family ties index separately.

Table 4 tests the robustness of the benchmark analysis, using the sample from the WVS instead. All the variables and the controls are defined in the same exact way, given that the two surveys (EVS and WVS) are standardised in terms of questions. The results are strikingly similar both qualitatively and quantitatively.

Table 2. Robustness: Regional fixed effects

	(1)	**(2)**	**(3)**	**(4)**
		Justifiable to:		
	Cheat on Tax	**Claim State Benefits**	**Accept a Bribe**	**Avoid Transport Fare**
Family Ties	-0.169***	-0.057***	-0.112***	-0.176***
	(0.021)	(0.017)	(0.016)	(0.021)
EVS Round FE	Yes	Yes	Yes	Yes
Regional FE	Yes	Yes	Yes	Yes
Other Controls	Yes	Yes	Yes	Yes
Obs.	23,092	23,038	23,248	13,172
R-Sq.	0.160	0.174	0.135	0.204

Summary: This table establishes the robustness of the results in Table 1 by controlling for regional fixed effects.
Notes: (i) the attitudes-related variables ("justifiable to: cheat on tax; claim state benefits; accept a bribe; avoid transport fare") take values from 1-10 with 10 indicating "always justifiable"; (ii) the "family ties" variable is the principal component of three variables, "how important in family in your life", "love and respect parents: always/earned", "parents' responsibilities to their children: at expense of/not sacrifice own well-being". Higher values of the variable indicate stronger family ties; (iii) Robust standard error estimates, clustered at the dimension of the country of origin, are reported in parentheses; (iv) *** denotes statistical significance at the 1% level, ** at the 5% level, and * at the 10% level, all for two-sided hypothesis tests.

Table 3. Robustness: Alternative measures of family ties

	(1)	(2)	(3)	(4)
		Justifiable to:		
	Cheat on Tax	Claim State Benefits	Accept a Bribe	Avoid Transport Fare
Family Ties (Sum)	-0.169***	-0.090***	-0.111***	-0.213***
	(0.015)	(0.017)	(0.016)	(0.019)
EVS Round FE	Yes	Yes	Yes	Yes
Country FE	Yes	Yes	Yes	Yes
Other Controls	Yes	Yes	Yes	Yes
Obs.	77,718	77,495	78,239	64,971
R-Sq.	0.091	0.125	0.080	0.134

Summary: This table establishes the robustness of the results to the use of an alternative measure for family ties. The analysis controls for individual characteristics such as age, age squared, gender, educational level, employment status, religious denomination as well as for EVS round and country fixed effects.
Notes: (i) the attitudes-related variables ("justifiable to: cheat on tax; claim state benefits; accept a bribe; avoid transport fare") take values from 1-10 with 10 indicating "always justifiable"; (ii) the "family ties" variable is the principal component of three variables, "how important in family in your life", "love and respect parents: always/earned", "parents' responsibilities to their children: at expense of/not sacrifice own well-being". Higher values of the variable indicate stronger family ties; (iii) Robust standard error estimates, clustered at the dimension of the country of origin, are reported in parentheses; (iv) *** denotes statistical significance at the 1% level, ** at the 5% level, and * at the 10% level, all for two-sided hypothesis tests.

Table 4. Robustness: World Values Surveys

	(1)	(2)	(3)	(4)
		Justifiable to:		
	Cheat on Tax	Claim State Benefits	Accept a Bribe	Avoid Transport Fare
Family Ties (WVS)	-0.161***	-0.116***	-0.101***	-0.146***
	(0.022)	(0.014)	(0.016)	(0.017)
EVS Round FE	Yes	Yes	Yes	Yes
Country FE	Yes	Yes	Yes	Yes
Other Controls	Yes	Yes	Yes	Yes
Obs.	103,077	100,783	105,095	101,508
R-Sq.	0.107	0.080	0.094	0.130

Summary: This table establishes the robustness of the results to the use of an alternative sample, i.e., the World Values Survey. The analysis controls for individual characteristics such as age, age squared, gender, educational level, employment status, religious denomination as well as for EVS round and country fixed effects.
Notes: (i) the attitudes-related variables ("justifiable to: cheat on tax; claim state benefits; accept a bribe; avoid transport fare") take values from 1-10 with 10 indicating "always justifiable"; (ii) the "family ties" variable is the principal component of three variables, "how important in family in your life", "love and respect parents: always/earned", "parents' responsibilities to their children: at expense of/not sacrifice own well-being". Higher values of the variable indicate stronger family ties; (iii) Robust standard error estimates, clustered at the dimension of the country of origin, are reported in parentheses; (iv) *** denotes statistical significance at the 1% level, ** at the 5% level, and * at the 10% level, all for two-sided hypothesis tests.

4 Conclusions

This purpose of this paper was to contribute to a further understanding of issues surrounding the relation between family ties and corruption. Our theoretical model showed that the overall effect of family ties on the incentive to be corrupt – and, therefore, on the incidence of corruption – can be ambiguous due to the presence of conflicting mechanisms. Our theory also pinpointed the possibility that the impact on corruption may be quite different, depending on the what measures family ties – either the population measure of the share of agents who abide by a desire for maintaining close family ties, or the micro-level measure of how strong the desire for close family ties actually is. This is a point with major implications, as it offers a theoretical foundation on why the conventional wisdom entailing cross-country reflections may be at odds with the outcomes of micro-level empirical investigations.

The empirical approach we adopted belongs to the latter category, as it used micro-level data to examine the effect of family ties on the approval of activities that proxy for corruption – activities such as bribery, tax evasion etc. Our empirical results verified that, at the individual level, stronger family ties are associated with reduced corruption, thus offering credence to the relevant result from our theory.

Naturally, our theoretical model is stylised in many respects, in order to ensure its analytical tractability and the clarity of the intuition. As a result, while it directs attention to some intuitive mechanisms, unavoidably it does not incorporate other examples that can identify additional links on the relation between family ties and corruption. One such example is nepotism. It should be noted, however, that this is not a major shortcoming since our focus is on the strength of conjugal family ties. Issues pertaining to nepotism would be more relevant to an investigation of extended kinship ties and their relation to corruption. Another issue on which our theory is not explicit is the cultural transmission process for characteristics such as the preferences for retaining strong family ties or the attitudes towards corruption. Given the underlying empirical motivation, we opted for a simple static model that focuses on the relation between the two variables of interest (family ties and corruption) without undermining the clarity of the mechanisms through the addition of cultural transmission dynamics. This by no

means imply that the issue of cultural transmission is less important. On the contrary, it certainly represents a worth-pursuing avenue for future research.

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Appendix A: Variable Definitions and Sources

A.1 EVS and WVS Variables

Family Ties

Family Ties (Principal Component): We use three questions to construct the family ties index. The first question is *"How important is family in your life?"*. Answers vary from 1-4 with 1 indicating *"not at all important"* and 4 indicating *"very important"*. The second question asks whether love and respect to parent is taken as given or whether it should be earned. 1 indicates that it should be earned and 2 that it should always be taken for granted. The third question asks whether parents should fulfil their responsibilities towards their children at the expense of their own well-being. 1 indicates that they should not sacrifice their own well-being and 2 that they should do the utmost best for their children.

Overall, in all three questions higher values indicate stronger family times. In order to reduce the number of variables and to combine the three components to a single variable we conduct a Principal Component Analysis.

Family Ties (Sum): This alternative measure of family ties is the sum of the same three questions. To take the sum we give the same scale to all the variable, i.e., from 1 to 2, with higher values indicating stronger family ties.

Attitudes Related to Corruption

Justifiable: To Cheat on Taxes: This variable answers to the question *"To what extend do you find it justifiable to cheat on taxes?"* The variable takes values from 1 to 10 with 1 denoting *"never"* and 10 denoting *"always"*.

Justifiable: To Claim Benefits: This variable answers to the question *"To what extend do you find it justifiable to claim benefits one is not entitled to?"*. The variable takes values from 1 to 10 with 1 denoting *"never"* and 10 denoting *"always"*.

Justifiable: To Take Bribes: This variable answers to the question *"To what extend do you find it justifiable to take bribes?"* The variable takes values from 1 to 10 with 1 denoting *"never"* and 10 denoting *"always"*.

Justifiable: To Avoid Fare on Public Transport: This variable answers to the question *"To what extend do you find it justifiable to avoid fare on public transport?"* The variable takes values from 1 to 10 with 1 denoting *"never"* and 10 denoting *"always"*.

Individual Controls

Age: The age of the respondent.

Female: A binary variable taking the value of 1 if the individual is female and 0 if the individual is male.

Education: Education is an ordered variable taking values from 1-3 with 1 denoting *"tertiary completed"*, 2 denoting *"secondary completed"* and 3 denoting *"primary completed"*. The same classification is used for the controls of paternal, maternal and spouse education.

Religion: Religion takes nine different values each associated with a different religious denomination.

Employment Status: The employment status of the respondent is a categorical variable taking values from 1-4 as follows: 1 is *"full-time"*, 2 is *"part-time or self-employed"*, 3 is *"not participant (student, retired, other)"* and 4 is *"unemployed"*.

Stayers vs Leavers: The EVS allows us to identify people who move across NUTS regions. There is one question asking them in which NUTS region they lived when they were aged 14 and in which NUTS region they currently live. Based on this variable we construct an index that takes the value 0 if the individual lives in the same NUTS as the one he lived when they were 14 years old and the value 1 otherwise.

A.3 Country-level Variables

Corruption

CPI: We use the Corruption Perception Index (CPI) as a proxy for corruption at the country level. The variable takes values from 1 (least corrupt) to 10 (most corrupt). We have rescaled the original index for consistency with the individual measures of corruption.

ICRG. We use the ICRG measure of corruption as a proxy for corruption at the country level. The variable takes values from 1 (least corrupt) to 6 (most corrupt). We have rescaled the original index for consistency with the individual measures of corruption.