CAUSES AND EFFECTS OF CORRUPTION: WHAT HAS PAST DECADE'S EMPIRICAL RESEARCH TAUGHT US? A SURVEY

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Abstract. Corruption has fierce impacts on economic and societal development and is subject to a vast range of institutional, jurisdictional, societal, and economic conditions. It is this paper's aim to provide a reassessment and a comprehensive state-of-the-art survey of existing literature on corruption and its causes and effects. A particularly strong focus is put on presenting and discussing insights resulting from empirical research and contrasting recent with older findings.

Keywords. Bribery; Causes of corruption; Corruption; Effects of corruption; Survey

1. Introduction

Corruption has fierce impacts on economic and societal development and has permeated through entire portions of society and the economy. Corruption is a complex social phenomenon and the motivations to engage in corrupt behavior are multifaceted and is the result of interactions at the micro-, meso-, and macrolevel (Bicchieri and Ganegonda, 2016; Dimant and Schulte, 2016). Surprisingly, corruption has rarely been the focus of attention, but rather has been analyzed in a broader context of crime. Until the 1980s, corruption was mainly a topic of political, sociological, historical, and criminal law research and just recently came to the fore in the fields of economics. With the increasing quality and availability of data, empirical research on corruption has taken off since the late 1990s, whose insights help us to generate better targeted and more effective anticorruption policy measures (Lambsdorff and Schulze, 2015). Policy makers can only be best informed if both the extent of existing research is known and the generated insights are robust.

Following a number of influential and frequently cited surveys on the economic analysis of corruption published by, among others, Rose-Ackerman (1999), Tanzi (1998), Jain (2001), Aidt (2003), Lambsdorff (2006), Seldadyo and de Haan (2006), and Treisman (2007), it is this paper's aim to provide a comprehensive, state-of-the-art overview of existing literature on and an ample discussion of the antecedents and effects of corruption. The strong focus on presenting and discussing recent empirical work on the antecedents and effects of current corruption research sets this paper apart. The comprehensive breakdown of both lines of research into a wide number of distinct categories is overdue and largely facilitated by the increasing amount of (more reliable) data on corruption. Hence, light is shed not only on recent developments on the role of corruption in areas that had already been discussed by previous literature (e.g., bureaucracy, economic development and income), but also on areas that lacked attention

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in previous studies (e.g., brain-drain). A survey of this kind is particularly important in light of recent developments in terms of both data availability and quality.

The purpose of this paper is to examine the existing literature surrounding the determinants and the effects of corruption. It is a systematic categorization of both determinants and effects of corruption as they have been discussed in empirical literature.[1] We aim to discuss both the main theories that would imply the presence of a relationship, and also the relevant empirical evidence that has been previously published to assess this relationship. In particular, it seems that in the past decade, the literature has often found different empirical results to what had been published in earlier studies. We will, therefore, split up the evidence from before and after 2006 and examine whether the discrepancies arise due to the use of different data, or if the evidence is simply conflicting.[2] An overview table that collects the empirical findings and indicates the causal direction with corruption follows each section. This systematic approach allows the interested reader to quickly grasp new developments in the empirical research on corruption and identify areas in which empirical research on corruption is still lacking.

One result of this exercise is that the empirical results of older and more recent studies contradict each other. This contradiction can be attributed to a number of factors, such as different econometric approaches or more extensive data sets. We do not attempt to solve the debate but instead focus on reporting the empirical results and highlighting the differences in methodology.

We structure this paper as follows: we discuss the empirical causes of corruption in Section 2 and the effects of corruption in Section 3. We conclude in Section 4. We present an overview of the empirical papers that are being discussed in the respective sections in tables 1 and 2, respectively.

2. Causes of Corruption

2.1.1 *Bureaucracy and Inefficient Administrative and Political Structure*

There are a few main theories that suggest that higher levels of inefficiency increase the levels of corruption. First, as pointed out by Tanzi, "the existence of regulations and authorizations gives a kind of monopoly power to the officials who must authorize or inspect the activity" (Tanzi, 1998). Thus, the more regulations there are, the higher the frequency of interactions with members in the private sphere, and thus, the higher the probability that a member will engage in corrupt practices. Tanzi also points out that in an inefficient bureaucracy, regulations tend to be less transparent (reducing accountability), and that authorizations tend to be given by specific individuals (reducing competition)—both these factors suggest higher levels of corruption. Kaufman and Wei also find empirical evidence to support this in their 1999 paper, predominantly using data from 1997. Later empirical evidence has continued to support this, it was found using different data that "government intervention in the economy, namely in the regulatory area, does promote corruption" (Goel and Nelson, 2010).

2.1.2 *Civil Participation/Press Freedom*

From a theoretic standpoint, it has been argued that the freedom of the press plays a role in the spread of anticorruption norms, as well as increasing the potential social cost of being publically shamed for corrupt behavior. Further, civil participation, in the form of democracy, can combat corruption, as regular elections give the public the option of removing corrupt politicians. Earlier empirical studies confirmed this hypothesis, stating that a long exposure to democracy predicted lower corruption (Treisman, 2000). Later studies concurred, using panel data covering 126 countries from 1980 to 2007, that both democratization and media freedom have a negative effect on corruption (Bhattacharyya and Hodler, 2015).

2.1.3 *Economic Freedom*

High levels of economic freedom, or the freedom to choose how to produce, sell, and use your own resources, should in theory be associated with lower levels of corruption. With fewer economic controls, such as permit requirements, there is a lower chance that corrupt behavior is seen as necessary for engaging in business. This theory was supported by early empirical studies, which showed that increased economic freedom leads to lower corruption levels (Paldam, 2002). Later empirical studies also affirm this hypothesis; using data from the heritage foundation to measure economic freedom, it was found that there is a negative association between economic freedom and corruption (Saha *et al.*, 2009).

2.1.4 *Economic Growth*

Arguably, corruption imposes distortionary effects on a country's economic growth through its detrimental effects on the private sector, the quality of institutions, and the policy makers (Pellegrini and Gerlagh, 2004). While the effects of corruption have been widely studied, there is less literature on the effects of economic growth on corruption. One early study that attempted to find a causal link between growth and corruption, and found that there was no such statistically significant relationship (however, it was also found that corruption decreased growth levels; Ali and Isse, 2003). Pellegrini and Gerlagh (2004) analyze the direct and indirect channels of the effect of corruption on economic growth. Their findings suggest that corruption slows down growth through its effect on investments and trade policies. More recently, a study that used data from the World Bank during the period 1970–2000 found evidence to support that growth reduces corruption in the presence of strong institutions, but has no effect when there are weak institutions (Aidt *et al.*, 2008). A later study that used data from 13,000 firms between 2006 and 2010 in Vietnam found that higher levels of growth rates reduced corruption levels, in particular when there were strong land rights and cross-province activities (Bai *et al.*, 2013).

2.1.5 *Ethnic Diversity*

In theory, a large ethnic division (proxied by ethnolinguistic fragmentation) will increase corruption triggered by in-group favoritism. In particular, if members of one ethnicity are elected to a public position, they are more likely to maintain that position even if they display corrupt behavior. This is because they are more likely to allocate resources favorably to members of their same ethnic group who will reciprocate by helping to keep them in office. An initial empirical study that assessed a host of possible causes of corruption found that ethnic diversity had at best a weak effect on increasing the levels of corruption (Treisman, 2000). A later empirical study that assesses exclusively this relationship however finds that this hypothesis is confirmed when using US data from the justice department over the periods 1980–1989 and 1990–1999 (Dincer, 2008).

2.1.6 *Gender*

From a theoretical standpoint, it has been argued that women are less individually oriented (selfish) than men (Dollar *et al.*, 2001). In his paper, Dollar points to various studies, which have shown that women tend to exhibit more "helping" behavior, vote based on social issues, and take stronger stances on ethical behavior. It would thus follow that women would be less likely to exhibit corrupt behavior. This has largely been shown to be true in empirical studies. One empirical study shows how parliaments with a greater representation of women tend to be less corrupt (Dollar *et al.*, 2001). This relationship was also found to be true in another empirical study that observed that government bureaucracies with larger female representation, and countries that have a larger share of women in their workforce, tend to be

less corrupt (Swamy *et al.*, 2001). Later studies performed empirical studies on the matter in laboratory settings to try and neutralize the effect of other factors, however women were still found to be less corrupt (Frank *et al.*, 2011; Rivas, 2012).

2.1.7 *Globalization*

Theoretically it is believed that higher levels of globalization lead to reduced levels of corruption. As Charron points out growing interdependence amongst states, both politically through international organizations and socially through media should have an impact on spreading better quality of governments and anticorruption norms (Charron, 2009). Earlier empirical studies found this relationship to be true: in their study, Sandholtz and Koetzle found that the lower the degree of integration in the world economy, the higher the levels of corruption (Sandholtz and Koetzle, 2000). Later studies have questioned this relationship for countries of low income, in a study that uses cross-sectional data for 127 countries from the year 2006, no linear relationship is found between corruption and globalization for poor countries (Lalountas *et al.*, 2011). However, when using an unbalanced panel of 102 countries over the period 1995–2005, another study found that globalization was in fact a significant variable in reducing corruption particularly for developing countries (Badinger and Nindl, 2014). Both studies found the relationship to hold for developed economies.

2.1.8 *Government Size*

One would expect that the larger the size of a government, the higher the levels of corruption. Typically, in larger governments, there is less individual accountability, more layers of bureaucracy, and more state intervention in the economy; all these factors would be expected to increase corruption. An early empirical study that used state-level data over the period 1983–1987 found that government size, in particular spending by state governments, had a significant influence on increasing corruption (Goel and Nelson, 1998). However, a later paper that used data from transition countries from 1998 to 2002 found that in fact larger governments reduced the levels of corruption (Goel and Budak, 2006). Similarly, another empirical study that used data sets from 100 countries over the time periods 1995–1997, 1998–2000, and 2001–2003 found that larger governments in fact led to lower levels of corruption (Goel and Nelson, 2010). Another study that uses data for both OECD and developing countries over the period 1996–2003 however found there to be a strong causality between large governments and corruption (Arvate *et al.*, 2010). In an attempt to explain these ambiguous results, a later study used annual data from 82 countries between 1995 and 1998 while controlling for the levels of democracy. It was found that size of government increases corruption when there are low levels of democracy and decreases corruption when there are high levels of democracy (Kotera *et al.*, 2012).

2.1.9 *Governmental Structure*

Theoretically, decentralization should reduce corruption. This is because decentralized governments increase competition between regions, mitigates government-induced distortions, and give individuals the option of changing district rather than engaging in corrupt practices. An early empirical study gave credence to this theory, finding that fiscal decentralization in government expenditure is strongly and significantly associated with lower corruption (Fisman and Gatti, 2002). This was supported by a later study that found there to be a negative relationship between decentralization and shadow economies and corruption (Dell'Anno and Teobaldelli, 2015). Other studies have looked beyond the relationship between fiscal decentralization and corruption to examine the effects of physical and political decentralization. A recent study observed that in countries with a larger number of governmental tiers, levels of corruption

were much higher. Additionally, larger subnational bureaucracies were found to be associated with greater corruption (Fan *et al.*, 2009).

2.1.10 *Government System*

A democratic system should, in theory, produce lower levels of corruption. In a democracy, individuals must be re-elected, and it thus follows that if there are regular and fair elections, there should be a lower level of corruption due to this increased accountability. This relationship was found to be empirically true in a study that hypothesized corruption to be higher in countries with weaker democratic norms and institutions (Sandholtz and Koetzle, 2000). This was supported by a later study that observed that exposure to medium- to long-term, uninterrupted democracy was associated with lower levels of corruption (Pellegrini and Gerlagh, 2008).

2.1.11 *Historical Drivers*

Several theorists have noted the potential that different historical factors, including colonial histories, can play in determining levels of corruption in different countries. While few studies solely dedicated to the effects of colonialism have been published, an empirical study from 2000 found that former British colonies had significantly lower levels of perceived corruption (Treisman, 2000). Such correlations were not consistent with the examination of former French, Portuguese, or Spanish colonies and conveyed a unique result with regard to Britain. These findings were reproduced by Swamy *et al.* (2001). A more recent empirical study has countered Treisman's findings and argued that European settlement and colonization has a positive effect on corruption (Angeles and Neanidis, 2015). Angeles *et al.* assert that that where Europeans were able to settle in large numbers, they were abler to establish themselves as powerful elites, capable of acting corruptly with impunity. In a similar vein, some studies have noted that historical factors such as religion, legal systems, and political stability also play a role in determining levels of corruption. These factors are elaborated on in subsequent sections.

2.1.12 *Legal System*

Theoretically, it has been argued that the kind of legal code in a country will affect the quality of the government, which in turn affects the level of corruption. An initial empirical study found that countries with common law had lower levels of corruption (Treisman, 2000). However, an empirical study that aimed to determine the effects of common law on corruption found no significant relationship after controlling for other factors (Pellegrini and Gerlagh, 2008). A later study however found that using data from 100 countries in the time periods 1995–1997, 1998–2000, and 2001–2003, common law is in fact correlated with lower levels of corruption (Goel and Nelson, 2010).

2.1.13 *Market and Political Competition*

Increasing market and political competition reduces the probability that an individual, or small group of individuals will have a monopoly of a public good, thereby reducing the likelihood of corruption. An empirical study using data from both the early 1980s and late 1980s found evidence to support the hypothesis that political competition decreases corruption, though in a nonlinear way (a dictatorship is likely to be less corrupt than a partially democratized country), and inconclusive evidence regarding the effect of market competition (Montinola and Jackman, 2002). Later studies reached more nuanced conclusions, one study found evidence that greater political competition only reduced certain types of

corruption (Sharafutdinova, 2010). Another study that looked at market competition using firm-level data to try to overcome difficulties from looking at cross-country data found that stronger product market competition is associated with an increase in the levels of corruption (Alexeev and Song, 2013). This finding was also supported in a different empirical study that also used data from exclusively one state (New York 2007–2010), and one industry (Bennett *et al.*, 2013).

2.1.14 *Natural Resource Endowment*

Commonly referred to as a "resource curse," many theorists have argued that having a high concentration of natural resources in a country may increase the frequency of corrupt behavior due to increased opportunity. An early empirical study found this relationship to be true, with higher levels of corruption in countries with higher abundances of natural resources (Sachs and Warner, 1997; Leite and Weidmann, 1999). Later research using data from 1980–2004 across 124 countries confirms this finding, though it also finds that the extent of the effect depends on the quality of the democratic institutions present in that country (Bhattacharyya and Hodler, 2010). Interestingly, some theorists have contended that the type of resource effects the level of impact on corruption. A 2004 study indicated that a nonfuel raw resource endowment had the greatest effect on perpetrating corruption and limiting growth (Korhonen, 2004). Meanwhile, a 2005 study countered Korhonen's findings and asserted that an abundance of fuel, ore, and mineral resources had the greatest effect on increasing corruption (Damania *et al.*, 2005).

2.1.15 *Political Instability*

From a theoretical standpoint, there are two effects that are of note in this topic, as pointed out by Campante. The first is the horizon effect, where if an individual has low stability his short-term decision-making horizon could increase the likelihood that he engages in corrupt behavior. On the other hand, some forms of corruption (e.g., infrastructure projects) require a large amount of time to complete, and thus only in extreme political stability (i.e., until the completion of the project) will there be a possibility for an incumbent and private sector to develop a corrupt relationship. The theory would thus suggest a U-shaped relationship between political stability and corruption. This theory was given some empirical support from an initial study that examined the role of political institutions and found that political stability is associated with lower corruption (Lederman *et al.*, 2005). A later study, which exclusively examined the relationship between corruption indices and various measures of political stability found that, after controlling for the level of democracy, there was in fact a strong U-shaped relationship, as expected by the theory (Campante, 2009).

2.1.16 *Poverty*

From a theoretic standpoint, one would expect corruption to increase with the rate of poverty. First, poorer countries are less likely to be able to dedicate the necessary resources to building an effective legal system. Second, as Justesen and Bjornskov (2014) point out the main motivation for paying bribes in this case would be to obtain access to basic public services (such as education, water, permits, and licenses), which the government has a monopoly on, a strong motivation to break the law. This link was first hinted at in a paper that studied multiple causes and consequences of corruption (Mauro, 1998), and then later supported by empirical evidence in a multilevel regression in 18 countries that showed poor individuals are much more likely to experience having to pay bribes (Justesen and Bjornskov, 2014).

2.1.17 *Property Rights*

Lower levels of property rights are believed to increase the levels of corruption. This is because the lack of property rights constitutes a risk to individuals in the private sector, who are thus more likely to engage in corrupt behavior to mitigate or take advantage of such a risk. One of the initial studies that explored this relationship found that, following a general equilibrium model, less developed economies might opt for lower levels of property rights and higher levels of corruption (Acemoglu and Verdier, 1998). A later study provided more empirical evidence, finding that property rights protection contributes significantly to the reduction of corruption (Dong and Tongler, 2011).

2.1.18 *Religion*

Theoretically, it is possible that religion would have an effect on the levels of corruption. As suggested by La Porta *et al.* (1999), religion can shape cultural attitudes toward social hierarchy and in particular whether or not one should question those in power. Further certain religions, such as Catholicism and Islam, are often intertwined with the state, and thus more likely to have an effect on levels of corruption. Initial empirical evidence for the argument finds that countries with a protestant background were associated with lower levels of corruption (Treisman, 2000). This link was further supported by a paper which, after accounting for the effect of the economy, found that reformed Christianity (i.e., Anglican and Protestant) and tribal religions decreased levels of corruption, whereas Catholicism and Islam increased levels of corruption (Paldam, 2001). A later study that utilizes a 207-country sample finds that orthodox Christianity in a country in 1900 is associated with higher levels of corruption today, whereas Protestantism in 1900 is associated with lower levels of corruption today (North *et al.*, 2013).

2.1.19 *Trade (Openness)*

Greater levels of openness and trade, or integration in the world economy should reduce the levels of corruption. That is because, as Sandholtz and Koetzle (2000) point out, greater integration could alter both the political–economic structure of the country and the cultural norms. In addition, increased levels of free trade would remove some administrative goods (such as licenses and permits) from bureaucratic monopolies, reducing the likelihood of corrupt behavior. This relationship received support from an empirical study, using data from 54 countries in 1996, that found both higher levels of state control in the economy and lower levels of integration in the world economy increase corruption (Sandholtz and Koetzle, 2000). This received further empirical support in 2006 when a paper using data from 133 countries in 2003 found that both higher quality and higher levels of openness have a significant effect in reducing corruption (Gokcekus and Knörich, 2006). A later study provided even more evidence by finding that the relationship between corruption and GNP per capita is strongly negatively correlated only in open economies (no relationship otherwise). This was an extremely robust relationship across different time periods and different country samples (Neeman *et al.*, 2008).

2.1.20 *Transparency*

Theory suggests that increased transparency should be associated with lower levels of corruption. With increased transparency, the probability of detecting wrongdoing increases, as does the accountability of each decision maker. This theory received some initial support by a paper that showed a strong association with possible causation between greater freedom of the press and lower levels of corruption based on data from 145 countries during the period 1972–1996 (Brunetti and Weder, 2003). A later study that used data from the same source (Freedom House's political rights index), but from 1972 to 2004 found evidence

that transparency is not enough. Transparency is only significant when accompanied by free and fair elections, and the ability to impose sanctions on corrupt individuals (Lindstedt and Naurin, 2010).

2.1.21 *Urbanization*

Meier and Holbook argued in 1992 that urbanization fosters the conditions necessary for corruption by loosening social controls of family and religion and also by concentrating government programs and resources. The paper then goes on to provide empirical evidence that suggests strong positive correlations between urbanization and corruption using US data from 1986 to 1987 (Holbook and Meier, 1992). A later study by Goel and Nelson (2010) uses data from 100 countries and three time periods (1995--1997, 1998–2000, and 2001–2003) and suggests that the opposite relationship is true, proposing that corrupt practices are easier to detect and stigmatize in urban population.

2.1.22 *Wages*

Theory suggests that public officials with a higher wage are less likely to engage in corrupt practices. Higher wages reduce the engagement in corruption due to need (supporting one's family), however they are unlikely to completely eliminate it as individuals may still take bribes due to greed. This theory was given empirical support by a paper that found corruption to be negatively associated with wages across developing countries (Van Rijckeghem and Weder, 1997). A later paper that employed newly released data sets on low-income countries provided further evidence for an economically significant relationship between civil-service pay and corruption, although it was suggested that a very high increase in pay would be required to eradicate corruption (Van Rijckeghem and Weder, 2001). This theory received further support by a later study that also found that increasing government wages reduces corruption levels, based on an experimental game (Azfar and Nelson, 2007).

2.2 New Developments in Causes of Corruption

2.2.1 *Contagion Effects*

Many theorists argue that the propagation of corruption is contagious and that the level of corruption in a given country is largely dependent on the level of corruption in neighboring nations. An empirical study focused on the United States added merit to this theory and found that an increase in the levels of corruption in neighboring states of 10% led to increased levels of corruption in a state by 4%–11%, seemingly confirming the contagious nature of corruption (Goel and Nelson, 2007). Similarly, a 2008 multicountry study found that corruption can be viewed as a regional phenomenon and that any attempts at decreasing corruption in one nation will lead to decreased levels of corruption in neighboring countries (Becker *et al.*, 2009).

2.2.2 *Economic Prosperity*

Intuitively, it would seem that richer countries would have lower levels of corruption. Less developed countries typically have weaker legal institutions, more inefficient governments, lower levels of education, and suboptimal government systems—all of which are associated with higher levels of corruption. This relationship was given some empirical backing in a paper that, using data from 62 countries over the period 1990–1998, found richer countries to have lower levels of corruption (Serra, 2006). A later study investigating the relationship between income inequality and corruption using data from 1980 to 2004 for 50 US states found that both in the short run and in the long run, there is bidirectional causality

between income inequality and corruption (Apergis *et al.*, 2010). A 2008 study instrumented the measure of income and corruption with biogeographical considerations to assert that while decreased corruption generally leads to higher levels of income in the short term, a long-term analysis shows that increased income is the driving cause of lower levels of corruption (Paldam and Gundlach, 2008).

2.2.3 *Education*

Theoretically higher levels of education should reduce the levels of corruption in a country. Individuals with higher levels of education tend to be more committed to civil liberties and less tolerant of government repression (Truex, 2011). Further, higher levels of education tend to lead to higher awareness of international standards, and thus in theory should reduce a person's tolerance for corruption. Initial empirical studies found that higher levels of education are correlated with lower levels of corruption (Glaeser and Saks, 2006). In a later empirical study that analyzes this relationship using data from Nepal, this hypothesis is confirmed once again (Truex, 2011).

2.2.4 *eGovernment*

Access to the internet and the existence of an eGovernment should in theory reduce corruption levels. eGovernment allows the transactions for permits or civil applications to be done online, thus increasing efficiency, transparency, and accountability, all of which inherently reduce corruption. A study found evidence to support the link between eGovernment and reduced corruption using a panel of 149 countries in two time observations, 1996 and 2006 (Andersen, 2009). A later empirical study also reached the same conclusion and determined a unidirectional causality from eGovernment to reduced corruption (Elbahnasawy, 2013).

2.2.5 *Immigration*

As Dimant *et al.* (2015) point out, immigration from a highly corrupt country could have an effect on the levels of corruption. First, large-scale emigrations due to strong push factors do not only apply to a handful of honest citizens, but rather to the entire population, corrupt or not corrupt. In addition, if corruption is part of their cultural beliefs, this will emigrate with them. Further, it might take some time for individuals to fully adapt to their host country, and in this transitory period, they may be more prone to corrupt behavior due to greater need (Dimant *et al.*, 2015). Recent empirical evidence based on data from 207 countries for the period 1984–2008 indicates that while immigration in general has no significant impact on corruption levels, immigration from highly corrupt countries indeed increases corruption in the destination country in the short run, with the effect vanishing in the medium run (Dimant *et al.*, 2015).

2.2.6 *Internet*

From a theoretic standpoint, it has been argued that the advent and increased use of the internet can led to decreased levels of corruption, as the internet enables the expedient dissemination of information regarding corrupt practices. A more aware and informed population is better able to report and counter corrupt actions. An empirical study from 2011 supported this theory and found that increased awareness of corruption via the internet, measured through corruption-related internet searches, correlated with decreased incidences of corruption in a number of countries (Goel *et al.*, 2012). Similarly, a 2010 study found that the increased use and availability of the internet was correlated with lower levels of corruption (Andersen *et al.*, 2011). There are few studies before 2006 that assess internet adoption and its effects on corruption.

Table 1. Causes of Corruption.

Bureaucracy and inefficient administrative and political structure Tanzi, 1998 (+)*; Kaufman and Wei, 1999 (+)*; Goel and Nelson, 2010* (+)	Legal system Treisman 2000 (+)*; Pellegrini and Gerlagh, 2008 (–)*; Goel and Nelson, 2010 (+)*
Civil participation/press freedom Treisman, 2000 (–)*; Bhattacharyya and Hodler, 2015 (–)*	Market and political competition Montinola and Jackman, 2002(+)*; Sharafutdinova, 2010 (+/–); Alexeev and Song, 2013 (–)*; Bennett et al., 2013 (–)
Economic freedom Paldam, 2002 (–)*; Saha and Gounder, 2009 (–)*	Natural resource endowment Leite and Weidmann, 1999 (+)*; Bhattacharyya and Hodler, 2010 (+/–)*; Korhonen, 2004 (+/–)*; Damania et al., 2005 (+/–)*
Economic growth Ali and Isse, 2003 (+/–)*; Aidt et al., 2008 (–)*; Bai et al., 2013 (–)	Political instability Lederman et al., 2005 (+)*; Campante et al., 2009 (+/–)*
Ethnic diversity Treisman, 2000 (+)*; Dincer, 2008 (+)	Poverty Justesen and Bjørnskov; 2014 (+)*
Gender Dollar et al., 2001 (+)*; Swamy et al., 2001 (+)*; Frank et al., 2011 (+); Rivas, 2012 (+)	Property rights Acemoglu and Verdier, 1998 (+)*; Dong and Torgler, 2011 (+)*
Globalization Sandholtz and Koetzle, 2000 (–)*; Charron, 2009 (–)*; Lalountas et al., 2011 (–)*; Badinger and Nindl, 2014 (–)*	Religion La Porta et al., 1999 (+)*; Treisman, 2000 (+)*; Paldam, 2001 (+)*; North et al., 2013 (+)
Government size Goel and Nelson, 1998 (+); Goel and Budak, 2006 (–)*; Arvate et al., 2010 (+)*; Goel and Nelson, 2010 (–)*; Kotera et al., 2012 (+/–)*	Trade (openness) Sandholtz and Koetzle, 2000 (–)*; Gokcekus and Knörich, 2006 (–)*; Neeman et al., 2008 (–)*
Government structure Fisman and Gatti, 2002a, 2002b (+)*; Dell'Anno and Teobaldelli, 2015 (+)*; Fan et al., 2009 (+) k	Transparency Brunetti and Weder, 2003 (+)*; Lindstedt and Naurin, 2010 (+)*
Governmental system Sandholtz and Koetzle, 2000 (+)*; Pellegrini and Gerlagh, 2008 (+)*	Urbanization Meier and Holbrook, 1992 (+); Goel and Nelson, 2010 (–)*
Historical drivers Treisman, 2000 (–)*; Swamy et al., 2001 (–)*; Angeles and Neanidis, 2015 (+)*	Wages Van Rijckeghem and Weder, 1997 (+)*; Van Rijckeghemand Weder, 2001 (+)*; Azfar and Nelson, 2007 (+)*

(Continued)

Table 1. Continued

New developments in causes of corruption	
Contagion effects	eGovernment
Goel and Nelson, 2007 (+); Becker *et al.*, 2009 (+)[*]	Andersen, 2009 (−)[*]; Elbahnasawy, 2013 (−)[*]
Economic prosperity	Immigration
Serra, 2006 (+)[*]; Apergis *et al.*, 2010 (+); Padlam and Gundlach, 2008 (+/−)[*]	Dimant *et al.*, 2015 (+)[*]
Education	Internet
Glaeser and Saks, 2006 (−); Truex, 2011 (−)	Andersen *et al.*, 2011 (−); Goel *et al.*, 2012 (−)[*]

Note: [a]A plus (minus) sign indicates that the relationship between corruption and its respective cause was found to be positive (negative). An asterisk (*) denotes that a cited study considers multiple countries, lack of one notes that the study only assessed one nation.

As a result, we find that, for the most part, empirical research has been active in addressing and replicating various topics concerned with the causes of corruption. With better availability of reliable data, future emphasis should be put on addressing the current findings within the research on new developments within the field. We will now turn to the literature on the effects of corruption.

3. Effects of Corruption

3.1.1 *Bureaucratic Inefficiency*

Corruption, in theory, should increase bureaucratic inefficiency. From a game theory perspective, those who are benefitting from the inefficient system by engaging in corrupt activities have no incentive to streamline the system. Thus, similarly to cultural values, corruption and bureaucratic inefficiency may be a viscous cycle. This theory received some initial empirical support in a paper found that firms that pay bribes are more likely to spend more management time with bureaucrats (Kaufman and Wei, 1999). The theory received further support after 2006 in a paper that finds the presence of corrupt officials can lead to bureaucratic delay in allocating licenses to productive individuals (Ahlin and Bose, 2007).

3.1.2 *Business and (Local) Investment Climate*

It has been argued that high levels of corruption will reduce a country's growth levels by affecting the investment climate or investment quality. This can occur due to inefficient public investment—even though investment levels may increase in absolute terms, the absolute productivity may be reduced due to inefficient allocation of funds. Corruption can also lead to lower levels of infrastructure, thus deteriorating the investment climate of a nation. Early empirical evidence to support both these hypotheses was found in a paper that uses data from 69 countries in the period 1980–1983 (Tanzi and Davoodi, 1998). This was supported by a later study that also provided evidence to support the theory that corruption modifies the structure of public expenditure (De la Croix and Delavallade, 2009). A different study found that, using data from different districts in Liberia in 2010, corruption reduces the willingness to contribute to public goods, thus damaging the local investment climate (Beekman *et al.*, 2014). Reduction in investment quality was further evidenced in a paper, that using Italian public works data form the period 2000–2005, found higher levels of corruption resulted in less efficient infrastructure expenditure (Castro *et al.*, 2014). Another study that used data from 80 municipalities in the Philippines also found that corruption affects the local investment climate via deteriorating the health outcomes of its population (Azfar and Gurgur, 2008).

3.1.3 *Civil and Political Rights*

Theoretically, corruption is believed to affect institutions in such a way that the protection and promotion of human rights is reduced, one would thus expect a negative relationship between the two. A paper, using cross country data, focusing on human rights and governance found that countries with higher levels of corruption have lower levels of political and civil liberties (Kaufmann, 2004). A later study that focused more specifically on corruption and human rights found that, using data from 186 countries for the period 1980–2004 and three measures of corruption, there was a positive relationship between corruption and human rights. However, not all the measures of corruption were statistically significant (Landman and Schudel, 2007).

3.1.4 *Economic Growth*

Theoretical arguments have been made for the effects of corruption on economic growth via lower levels of investment, lower quality of investment, higher levels of indirect taxation, and misallocation of resources due to distorted incentives. Large amounts of empirical studies have been published to support these theories. One paper provided evidence that there was a significant relationship between the allocation of talent to unproductive activities and corruption, as well as higher levels of indirect taxation and corruption, thereby reducing growth rates (Tanzi and Davoodi, 2001). A later paper that focused on the effects of corruption on economic growth in the United States found that states with higher levels of corruption had lower levels of economic development (Glaeser and Saks, 2006). A Later study that used data from 60 countries and accounted for a country's level of economic freedom found slightly different results: their results indicate that corruption reduces (increases) economic growth in countries in which economic freedom is low (high) (Swaleheen and Stansel, 2007). A later paper countered this study by suggesting that evidence for the "grease the wheel hypothesis" is very weak, and that there is a very strong negative correlation between wealth per capita and corruption, and that the effect of corruption on GDP per capita will lead to unsustainable development (Aidt, 2009).

3.1.5 *Foreign Direct Investment*

Attempting to invest in a foreign country often requires some form of public permit. In corrupt countries it is more likely that obtaining such a permit may require a form of bribe, thus increasing the cost of engaging in such activities and reducing the overall levels of FDI. In addition, some individuals or firms will simply choose not to engage in such corrupt practices and, thus, may simply avoid economic relations with such countries, again reducing levels of foreign direct investment in absolute terms. An empirical study that used data from the World Bank in 1997 found evidence to support that higher levels of corruption were significantly associated with lower levels of investment, though this relationship was much weaker when the levels of corruption were considered to be very predictable (Campos *et al.*, 1999). One popular exception for the relationship between corruption and FDI is the study by Egger and Winner (2005). They use data for a sample of 73 developed and less developed countries for the time period of 1995–1999. Their results support a clear positive relationship between corruption and FDI. More recent studies, however, support the negative impact of corruption on FDI. Exemplarily, a study used data from 20 OECD source countries and 52 host countries over the period 1996–2003. It was found that even though corruption reduced FDI overall, this was not the case if the country had previously received high levels of FDI (such as China), but especially the case if the country had low levels of FDI (such as Venezuela) (Barassi and Zhou, 2012). Other more recent studies confirmed this negative relationship (cf. Busse and Hefeker, 2007; Al‑Sadig, 2009; Mathur and Singh, 2013).

3.1.6 *Income Inequality/ Poverty*

It has been argued that corruption increases income inequality and poverty by lowering growth levels, having a biased tax system, poor quality social programs, education inequality and asset ownership bias (Gupta *et al.*, 2002). Gupta's empirical study provides evidence that an increase in corruption results in both higher inequality (measured using the Gini coefficient) and an increase in the percentage of poverty (Gupta *et al.*, 2002). Gyimah-Brempong and de Camacho (2006) use panel data from 61 countries over a 20-year period investigating regional differences in the effect of corruption on income distribution. Their results suggest that corruption indeed breeds income inequality, with the largest effects being found in Latin American and African countries. However, more recent research is at odds with these findings, although mostly for Latin America in particular. Dobson and Ramlogan-Dobson (2010) and Andres

and Ramlogan-Dobson (2011) find an inverse relationship of corruption and income inequality in Latin America, suggesting that institutional reform policies that are in place are misguided.

3.1.7 *International Trade*

In a similar manner to engaging in foreign direct investment, international trade most often requires some form of publically issued license or permit. In nations with higher levels of corruption, the costs associated with the acquisition of the necessary licenses and permits may be especially high due to the need to pay bribes etc. Thus, it is theorized that higher levels of corruption have a negative effect on levels of international trade. Oftentimes, the levels of corruption within institutions associated with trade have an impact on levels of trade. This assertion has been reinforced empirically by a study that found that the increased perceived uncertainty of a country's institutions relevant to trade is negatively correlated with the level of international trade (Bügel, 2010). An analysis of the relationship between corruption and trade in African nations, similarly found there to be a negative relationship between corruption and trade (Musila and Sigue, 2010). This is strengthened by another paper that found that corruption insecurity acts as a hidden tax on trade (Anderson and Marcouiller, 2002). Interestingly, some studies have looked at the effect of corruption, not only on the importing state but also on the exporting state. A 2011 study found that corruption generally has a more robust impact on the exporting country.

3.1.8 *Political Legitimacy*

From a theoretical standpoint it has been argued that for a political system to function, it must be considered legitimate, both nationally and internationally. A theoretical assessment by Bo Rothstein and Jan Teorell asserts that people determine and value political legitimacy through lack of corruption, lack of discrimination, and the quality of governance (Rothstein, 2008). Thus, corruption undermines such legitimacy. An early study found empirical support for this theory; when using data from 16 mature economies, it was found that individuals residing in more corrupt economies expressed more negative reviews on the performance of their political system (Anderson and Tverdova, 2003). Another study found some evidence to support this theory using data from studies conducted by Vanderbilt University (Seligson, 2006). A different study, which sought to determine what makes a state legitimate, using data from 72 different countries, found that general governance was a highly significant element, of which corruption was a factor (Gilley, 2006).

3.1.9 *Shadow Economy*

In theory, corruption can be viewed as a measure of taxation that might make it an economically rational decision for entrepreneurs to go underground. However, as Dreher and Schneider (2010) point out, one should differentiate between high- and low-income countries: countries with high incomes have a wealth of public goods (such as legal institutions) that may lead corruption to be a substitution to the shadow economy whereas in low-income countries the two may be compliments. A similar examination looks at the relationship between corruption and the shadow economy with regard to income to reveal that the shadow economy reduces corruption in high income countries, while increasing corruption in low-income states (Schneider and Buehn, 2009). An early study created a model that suggested that corruption and shadow markets are substitutes (Choi and Thum, 2005), this received support in a later paper that re-examined the relationship (Dreher *et al.*, 2009). A later empirical study finds that, using cross-sectional data for 98 countries, there is in fact no robust relationship when perception-based indices are used. However, when using an index based on a structural model, shadow economies and corruption are compliments in countries with low incomes (Dreher and Schneider, 2010). More evidence was found

in a later paper that focused on the effects of decentralization on both corruption and the shadow economy. This paper found a positive relationship between the two using data from a number of indices for corruption and the shadow economy from 145 countries (Dell'Anno and Teobaldelli, 2015).[3]

3.2 New Developments in Effects of Corruption

3.2.1 *Brain Drain*

Higher levels of corruption could theoretically increase a country's brain drain problems. Corruption is associated with a number of unfavorable outcomes, which might act as push factors to potential migrants. It has been argued that returns on education would be particularly affected (high levels of unemployment, lack of social advancement, slower economic growth etc.), thus those particularly sensitive to such a push factor (highly skilled individuals) would be more likely to emigrate due to this (Dimant *et al.*, 2013). Few empirical studies were done prior to 2006, however this theory has received strong support in more recent years. Empirical evidence using data from 111 countries in the period 1985–2000 found that corruption was indeed particularly significant in fueling skilled emigration (Dimant *et al.*, 2013). Further empirical evidence was provided from a paper that found that high levels of corruption effect emigration levels of skilled labor far more than unskilled labor using data from 20 OECD destination countries in the period 1980–2010 and 115 origin countries in the period 1995–2010 (Cooray and Schneider, 2014). Even more empirical evidence was provided from a paper that, using data from 230 countries, found corruption to be a significant push factor in emigration (Poprawe, 2015).

3.2.2 *Fiscal Deficit*

Theoretically it has been argued that as corruption reduces public income (lower levels of growth, higher levels of inequality) and increases public expenditure (more inefficient spending), it thus follows that it will also increase fiscal deficits. Some initial empirical evidence to support this was found in a paper that showed that, after controlling for multiple variables, US states with higher levels of corruption have lower bond ratings, and thus taxpayers need to pay more to borrow, increasing the likelihood of fiscal deficit (Depken and Lafountain, 2006). A later paper provided further evidence that showed that corruption leads to deviations from the optimal public expenditure structure, reducing growth and thus public income (De la Croix and Delavallade, 2009). More evidence is provided in a later study that, using data from Italian public works during the period 2000–2005, shows that public contracts execution is more inefficient in areas with higher corruption, thus increasing government expenditure (Castro *et al.*, 2014).

3.2.3 *Human Capital*

One would expect corruption to have a negative impact on human capital. Higher levels of corruption are associated with lower levels of education, health, socioeconomic development, and hence lower levels of human capital. Initial empirical evidence was found in support of this argument in a paper that, using a sample of 63 countries, found a statistically significant negative relationship between corruption indices and levels of human development (Akçay, 2006). A later study that was based in the Philippines and focused on the effects of corruption on health also found that corruption negatively affected the health levels (Azfar and Gurgur, 2008).

Our comprehensive review of the literature suggests that topics such as business and investment climate, FDI, income inequality have received considerable scholarly attention over the past decade, although often with conflicting results and thus demand further research. On the other hand, other topics such as human capital, political legitimacy, and political rights, which are of particular importance at the present time, have been widely overlooked by recent research. A direct comparison with the breath of topics discussed

Table 2. Effects of Corruption.[a]

Bureaucratic inefficiency
Kaufman and Wei, 1999 (+)*; Ahlin and Bose, 2007 (+)*

Business and (local) investment climate
Tanzi and Davoodi, 1998 (–)*; Azfar and Gurgur, 2008 (–); de la Croix and Delavallade, 2009 (–)*; Beekman et al., 2014 (–); Castro et al., 2014 (–)

Civil and political rights
Kaufmann, 2004 (–)*; Landman and Schudel, 2007 (–)

Economic growth
Tanzi and Davoodi, 2001 (–)*; Glaeser and Saks, 2006 (–); Swaleheen and Stansel, 2007 (–/+)*; Aidt, 2009 (–)*

Foreign direct investment
Campos et al., 1999 (–); Egger and Winner, 2005 (+)*; Busse and Hefeker, 2007 (–)*; Al-Sadig, 2009 (–); Barassi and Zhou, 2012 (–)*; Mathur and Singh, 2013 (–)

Income inequality/poverty
Gupta et al., 2002 (+)*; Gyimah-Brempong and de Camacho, 2006 (+)*; Dobson and Ramlogan-Dobson, 2010 (–)*; Andres and Ramlogan-Dobson, 2011 (–)*

International trade
Anderson and Marcouiller, 2002 (–)*; Bügel, 2010 (–)*; Musila and Sigue, 2010 (–)*

Political legitimacy
Anderson and Tverdova, 2003 (–)*; Seligson, 2006 (–)*; Gilley, 2006 (–)*

Shadow economy
Dreher et al., 2009 (+)*; Dreher and Schneider, 2010 (–/+)*; Dell'Anno and Teobaldelli, 2015 (+)*

New developments in effects of corruption

Brain drain
Dimant et al., 2013 (+)*; Cooray and Schneider, 2014 (+)*; Poprawe, 2015 (+)*

Fiscal deficit
Depken and Lafountain, 2006 (+); de la Croix and Delavallade, 2009 (+)*; Castro et al., 2014 (+)

Human capital
Akçay, 2006 (–)*; Azfar and Gurgur, 2008 (–)

Note: [a]A plus (minus) sign indicates that the relationship between corruption and its respective cause was found to be positive (negative). An asterisk (*) denotes that a cited study considers multiple countries, lack of one notes that the study only assessed one nation.

in Section 2 indicates that the research on the effects of corruption needs to be substantiated in the future. We are hopeful that this survey triggers the interest within the relevant scholarly communities. We provide suggestions for future venues of research in our conclusion.

4. Conclusion

Thanks to the more convenient and better availability of data, empirical research on corruption has advanced vastly over the last decade. More sophisticated approaches now allow for a better understanding of the antecedents and effects of corruption, eventually explaining the disparity of the effects of corruption that are more detrimental in some countries rather than in others. These innovations have enabled this paper to survey newer developments with regard to both the causes and effects of corruption, which have not previously been measured empirically, such as the role of the internet and corruption's effect on human capital. The greater part of the literature overviewed in this paper ultimately supports the idea that corruption is more likely to impede economic and societal prosperity.

From a scholarly perspective, the challenge remains to deal with noisy data that try to capture behavior that is hidden from plain sight. The purpose of this paper is to shed light on the development of empirical corruption research and shed light on the (non) robustness of older empirical findings. While some of the more recent empirical research is in line with previous empirical findings, our examination also indicates that plenty of recent research has produced evidence that is in stark contrast to prior conventions. Exemplarily, recent empirical findings on the interrelation between corruption and bureaucracy, press and economic freedom, poverty, wages, or the shadow economy are in line with both theoretical assumptions and older empirical research. On the flipside, however, recent research has produced conflicting results on the interrelation of corruption with market and political competition, foreign direct investment, as well as income inequality and poverty. While one can only speculate about the exact reasons for such discrepancies, arguably more sophisticated econometric approaches and different and/or larger data sets are at least part of the story.

On the bright side, the constant progress in the research on corruption and the combination of different empirical approaches using both observational and experimental data, has given rise to the study of topics that had remained unexplored before. In particular, the research on the interrelation between corruption and gender, brain drain, and migration has benefited from this development.

We still struggle to understand the multifaceted nature of corruption and its interactions on the micro, meso, and macrolevel (for a discussion, see Dimant and Schulte, 2016). Beyond doubt, the quality of empirical research on corruption is still advancing and has to settle important issues, such as the *right* way to measure corruption, before being able to both settle the debate of conflicting empirical findings and answer the plethora of still open questions (for an important discussion, see Goel and Nelson, 2011). One promising approach is the use of more objective microdata instead of using subjective perception-based data. A number of recent seminal studies have paved the way for a more reliable attempt to measure corruption (cf. Gorodnichenko and Peter, 2007; Ferraz and Finan, 2011; Chatterjee and Ray, 2012). Capitalizing on microdata to overcome the shortcomings of cross-country macrodata is most likely the future of empirical work on corruption. However, such microdata are usually hard to obtain, thus reducing the area of application of such an approach (cf. Heywood and Rose, 2014). It will be the respective government's responsibility to be more transparent and provide the much needed data in order to facilitate future research.

This paper's exercise has been to convey a deeper understanding of the underlying issues and provide the status quo of the research on corruption. During the last decades, scholars helped a great deal to dissect causation from simple correlation, consequently allowing for more sophisticated and promising anticorruption measurements. Research on this topic and the implementation of an effective regulatory policy, suitable codes of conduct, political and bureaucratic transparency, and effective anticorruption measures can help to mitigate the dissemination of corruption.

Acknowledgments

Notes

1. In analyzing both the causes and effects of corruption, scholars point to the problem of endogeneity. "Interestingly, the same sets of antecedents used to explain corruption (i.e., economic, political-legal and socio-cultural) have also been used to evaluate the effects of corruption. This suggests that there may be feedback loops between antecedents and effects." In consequence, some of the corruption's consequences discussed below can also be seen as a cause of corruption itself. Therefore, we mainly focus on well-published studies that made the effort to address potential endogeneity issues in order to extract the direct determinant or consequence of corruption.
2. In this paper, we will mainly focus on empirical research using observational data. For an overview of research on corruption using an experimental approach, see Abbink and Serra (2012).
3. Although the shadow economy has been included herein as an effect of corruption, the authors recognize and acknowledge the role that it may also play as a cause of corruption.

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