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**Consequences and Causes of Corruption
– What do We Know
from a Cross-Section of Countries?**

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Es wird gebeten, sich mit Anregungen und Kritik direkt an den Autor zu wenden.

Consequences and Causes of Corruption — What do We Know from a Cross-Section of Countries?

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Abstract

Data on the perceived levels of corruption from a cross-section of countries has been introduced fruitfully into recent empirical research. This chapter reviews studies on the consequences and causes of corruption. It includes research on the impact of corruption on investment, GDP, institutional quality, government expenditure, poverty, international flows of capital, goods and aid. Causes of corruption focus on absence of competition, policy distortions, political systems, public salaries as well as an examination of colonialism, gender and other cultural dimensions.

JEL-Classification: H3, K42, O57

I. Using Survey Data on Corruption

There is currently a wave of empirical investigations on the causes and consequences of corruption. These investigations by and large relate to cross-country analyses, based on comparative assessments of the extent of corruption in various countries. Such assessments are sometimes compiled by agencies to determine country risks and the data gathered are sold to investors. Other sources are surveys of the general public or elite businesspeople. The data on corruption are thus based on subjective perceptions and expertise, but considered to be good indicators of real levels of corruption. They allow to bring empirical research on corruption beyond the anecdotal descriptions that previously dominated.

Instead of using perceptions data, Goel and Nelson [1998] and Fisman and Gatti [2002] employ objective data: the number of public officials convicted for abuse of public office in various states of the USA. They assume that high conviction rates are an indicator of actual high levels of corruption. Goel and Nelson [1998] relate this variable to the real per capita total expenditures of the local government, arguing that state intervention and public spending give rise to rent-seeking activities and hence corruption. The authors report a significant, positive association between these variables. However, the correlation might be explained differently. As governments increase their spending, the judiciary branch may also be allocated more funding, resulting in higher conviction rates. In this case, conviction rates are not an adequate indicator for the actual incidence of corruption. Rather, they reflect the quality of the judiciary. The appropriateness of such data as a proxy for corruption has thus been widely disputed. Due to this, most researchers have used subjective indicators.

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The corruption index applied in the subsequent studies was very often that by Transparency International (TI). This is a composite index based on a variety of different assessments made with the help of elite business surveys or expert panels. Some studies used data from these individual assessments, i.e. the Institute for Management Development (IMD) or the World Economic Forum (WEF). For a description of these sources see Lambsdorff [2004]. Older sources that are sometimes used in research are the World Bank's Business Environment Survey from 2000, the data by the World Bank and University of Basel (WB/UB) or from Business International (BI; described in Mauro [1995]). Other studies have used the Political Risk Service's International Country Risk Guide (PRS/ICRG). These results must be taken with a grain of skepticism, as this variable does not depict corruption itself but the political instability that increases with corruption but also with the public's intolerance towards corruption. In this regard, instability is assumed to increase with the time a government has been in power continuously – a theoretical assumption that not all observers are willing to follow. Another composite index sometimes used is that by Kaufmann, Kraay and Zoido-Lobaton [1999a]. It has the disadvantage of also including the PRS data alongside with other sources of less validity. However, it arrives at results very close to the TI-Index.

This review includes all studies that were conducted with a sound level of academic rigor. With less sophistication, the media has been engaged in suggesting various correlations between perceived levels of corruption and human development, competitiveness, judicial quality, credit ratings or the spread of newspapers. For an overview see Galtung [1997]. Since many other explanatory variables are absent, however, such correlations risk reporting spurious relationships.

Whether corruption causes other variables or is itself the consequence of certain characteristics is sometimes difficult to assess. Some types of poor government quality and corruption are sometimes two sides of the same coin. In this case, it can be helpful to observe the correlations that are reported, but one should refrain from drawing iron-clad conclusions with respect to causalities.

II. The Consequences of Corruption

1. Total Investment

The first investigation on the impact of corruption on investment in a cross-section of countries was undertaken by Mauro [1995]. He makes use of an older corruption index provided by Business International (BI), a private firm that sold this and related indicators of country risks to banks, multinational companies, and other investors. The author finds that in a sample of 67 countries, corruption impacts negatively on the ratio of investment to GDP. He claims that if Bangladesh were to improve its level of integrity to that of Uruguay, its investment rate would increase by almost five per cent of GDP.

Mauro's finding is supported by similar investigations that use other indices of corruption and differing samples of countries. Knack and Keefer [1995] incorporate corruption among other explanatory variables into one single index of "institutional quality" and reveal a negative impact on the ratio of investment of GDP, however, using the data from PRS. Referring to a corruption index by WB/UB for a sample of 41 countries, Brunetti, Kisunko and Weder [1998: 369] also reinforce the Mauro results. They find that corruption significantly reduces the ratio of investment to GDP. Mauro [1997] provides further backing for his results by presenting a larger sample of 94 countries and by also making use of the corruption data by PRS. The data by PRS was also used by Brunetti and Weder [1998] to show that corruption has a significant negative impact on the ratio of investment to GDP in a sample of 60

countries. A negative impact of corruption on the ratio of investment to GDP in African countries is reported by Gymiah-Brempong [2002].

Different types of corruption may lead to different outcomes. One approach to determining different types of corruption was expressed by the World Bank [1997: 34]: "There are two kinds of corruption. The first is one where you pay the regular price and you get what you want. The second is one where you pay what you have agreed to pay and you go home and lie awake every night worrying whether you will get it or if somebody is going to blackmail you instead." This idea was picked up in the survey by the World Bank and the University of Basel. In addition to an overall level of corruption, its predictability and absence of opportunism was also determined. This embraced, first, whether the costs of corruption are known in advance and, second, whether after making the payment the service is delivered as promised. The resulting impact of these variables on the ratio of investment to GDP was investigated by the World Bank [1997]. In a sample of 39 industrial and developing countries, it was concluded that for a given level of corruption, countries with more predictable and less opportunistic corruption have higher investment rates. This approach has been extended and elaborated further by Campos, Lien and Pradhan [1999], who make use of the same data by WB/UB in a cross-section of 59 countries. While controlling for GDP per head and secondary school enrollment, the authors find that low predictability, high opportunism and the overall level of corruption reduce the ratio of investment to GDP. The authors conclude that the nature of corruption is also crucial to its economic effects.

As corruption increases the risks associated with making investments, e.g. by lowering the security of property rights, economic theory predicts that corruption will have a clear negative impact on the ratio of investment to GDP. But if corruption affects the productivity of capital, an adverse impact on the ratio of investment to GDP will result, as outlined in Lambsdorff [2003a; 2003b]. This derives from the fact that as the productivity of capital declines, total output — that is GDP — drops in relation to the capital stock, meaning that the ratio of investment to GDP is likely to increase in reaction to corruption. As a result, studies on the ratio of investment to GDP might easily underestimate the total adverse impact of corruption on investment.

2. Foreign Direct Investments and Capital Inflows

Corruption may not only be an obstacle to domestic investors, but also render a country unattractive to foreign investors. This effect should be observed by making use of data on foreign direct investments (FDI). In an early study, Wheeler and Mody [1992] did not find a significant correlation between the size of (FDI) and the host country's risk factor — which included corruption among other variables and was highly correlated with corruption. Another insignificant finding is reported by Alesina and Weder [1999], however, the authors make use of the variable by PRS that does not determine levels of corruption but the political instability due to corruption. The insignificant finding should thus not be overrated. The authors briefly state estimates using different data on corruption. Due to the brevity it is difficult to judge on the findings. The data on FDI refer to 1970-1995. But awareness towards corruption and levels of FDI increased considerably after 1995. Insignificance for data prior to 1995 should thus not be overrated. Equally inconclusive are regressions provided by Okeahalam and Bah [1998] and Davidson [1999], but for a small sample of countries.

More recent studies provide evidence in favor of corruption deterring foreign investors. Focusing on bilateral flows between 14 source and 45 host countries in 1990 and 1991, Wei [2000b] detects a significant negative impact of corruption on FDI. He finds that an increase in the corruption level from that of Singapore to that of Mexico is equivalent to raising the tax

rate by over twenty percentage points.² Aizenman and Spiegel [2003] reveal a negative impact of corruption, measured by the BI-data, on the ratio of FDI to total capital accumulation for a variety of regressions. The coefficient is robust to the inclusion of other any other independent variables. Lambsdorff and Cornelius [2000] show an adverse impact of corruption on FDI for African countries. Abed and Davoodi [2002: 523] obtain a negative impact of corruption on the US-Dollar per capita value of FDI for a cross-section of 24 transition countries. Doh and Teegen [2003] show that investments in the telecommunications industry (as reported in the World Bank's Private Participation in Infrastructure database, PPI) are adversely affected by the extent of corruption. Smarzynska and Wei [2000] provide evidence in a similar vein for corruption to reduce firm-level assessments of FDI in Eastern Europe and the former Soviet Union. An increase in corruption from the (low) level in Estonia to the (high) level in Azerbaijan would reduce the probability of foreign investment by 15 percentage points.

Henisz [2000], who uses the Conference Board Manufacturers database, provides a similar result. This database is a collection of data on foreign market entry for more than 1000 US corporations. Henisz finds that a variable on "unexpected" corruption deters market entry. The variable on "unexpected" corruption is the difference between "actual" corruption as measured by PRS/ICRG and expected corruption as determined by data on the political system. Given the problems with the PRS data on corruption, the results must be taken with some scepticism.

In another publication, Wei [2000c] and Wei and Wu [2001] also hint at corruption reducing foreign direct investments. Interestingly enough, they argue that an impact of corruption on incoming bank loans cannot be obtained. Thus, corruption distorts capital inflows in corrupt countries towards bank loans. Similar findings are reported by Straub [2003]. This distortion might reduce economic welfare, because loans can be withdrawn more easily in case of economic problems. This makes corrupt countries more vulnerable to currency crises. This effect might be amplified, because, as argued below, corruption increases bond spreads and thus makes loans dearer.

Habib and Zurawicki [2001; 2002] also provide evidence in the line of corruption deterring foreign direct investments. They find the impact of corruption on FDI to be larger than that on local investment. They conclude that foreign investors are more sensitive to corruption than their local counterparts. In sum, the evidence of an impact of corruption on FDI now appears sufficiently well established to argue in favor of a significant negative effect.

² A further contribution by Wei [1997] argues that in addition to the overall level of corruption it is arbitrariness that harms capital inflows. As those who pay bribes have no legal recourse, contracts obtained through bribery cannot be enforced. This is why corruption, while not necessarily more expensive, is more harmful than taxes. Wei derives a measure of arbitrariness from the survey by WEF. While the question posed relates to the overall level of corruption, Wei argues that the variance in the replies represents a form of arbitrariness. This can be considered valid if the insecurity among respondents about the true costs of bribes is reflected in the variance. Arbitrariness, thus defined, significantly enters into the regressions on FDI. But it has been questioned whether arbitrariness is adequately measured by this variable. Particularly, the variance among respondents could also reflect heterogeneous conditions in a country or be related to subjective difficulties among respondents in judging the right score on the questionnaire. Arbitrariness may be better measured by the predictability of corruption, e.g. as determined by WB/UB.

Lambsdorff [2005] provides more detail by determining different types of corruption. It employs seven subcomponents of corruption for a sample of 102 countries that appear in the 2003 Global Competitiveness Report of the WEF. The second principal component of this data depicts a grand, political type, embracing corruption in government policymaking and in judicial decisions as opposed to a petty type of corruption that can be found in public utilities and loan applications. It is shown that grand corruption less deters investors. This might relate to smaller organizational effort and investors' feelings of belonging to an inner circle of insiders that can profit from hidden arrangements. The study rejects the finding by Campos, Lien and Pradhan [1999], cited on page 4. It claims that investors are not deterred by unpredictable corruption but by petty corruption.

Another strand of research has been concerned with firm's entry mode decision. Smarzynska and Wei [2000] observe an impact of corruption. Being faced with corrupt requests investors would prefer a joint venture to a wholly-owned foreign firm because a local partner might be better acquainted with local practice. This effect prevails where a simple production technology is employed. In case of a more sophisticated technology investors would fear for the leakage of technological know-how to local partners. Uhlenbruck et al. [2005] investigate data for the telecommunications industry (as reported in the World Bank's Private Participation in Infrastructure database, PPI). They show for a sample of 220 telecommunications development projects in 64 emerging economies that firms adapt to a country's level of corruption by avoiding the holding of equity and preferring to merely partner with local firms or by entering a country on a short-term basis. The authors do not find a significant difference between joint-ventures and wholly owned subsidiaries. Employing the findings by Smarzynska and Wei [2000] this might be due to the high level of technological sophistication prevalent in the telecommunications industry. In a spirit similar to that by Campos, Lien and Pradhan [1999] the authors also investigate the impact of arbitrariness, that is, whether the costs of bribes are arduous to predict and whether the delivery of the corrupt service is uncertain. They provide evidence that firms prefer joint-ventures to wholly owned subsidiaries in reaction to low levels of predictability, the likely reason being that local partners have an edge over their international competitors in monitoring local office holders and exploiting trusted local relationships. Their results are robust to the inclusion of crucial explanatory variables.

FDI represent only a minor fraction of a country's total capital inflows. In order to ascertain the negative welfare consequences of corruption, it is vital to prove its adverse effect on total capital inflows. In this context it is noteworthy that Fons [1999] reports a significant correlation between the TI index and Moody's country ceiling ratings. This variable relates to the default risk for debt obligations issued by a national government. Fons argues that poor transparency and high levels of corruption increase credit risks. In a more systematic investigation Ciocchini, Durbin, and Ng [2003] show that countries perceived as more corrupt pay a higher risk premium when issuing bonds. Hall and Yago [2000] provide evidence for a small sample of countries that corruption increases sovereign bond spreads, making it more costly for countries with high levels of corruption to obtain loans. Wei and Sievers [1999] report a correlation between corruption and weak bank supervision. Those holding deposits or granting loans to banks are likely to react to allegations of corruption and withdraw their engagement. As a consequence of these findings a negative impact of corruption on a country's capital inflows becomes likely.

The impact of corruption on these total net capital imports is shown in Lambsdorff [2003b]. In a cross-section of 64 countries, corruption is shown to decrease capital inflows at a high confidence level, controlling for various explanatory variables such as GDP per head,

domestic savings rates and raw material exports. These results are robust to the use of alternative indices of corruption, tests of linearity and issues of sample selection. An increase in Tanzania's level of integrity to that of the United Kingdom is found to increase net annual capital inflows by 3 percent of GDP. This coefficient falls when controlling for an index depicting countries' tradition of law and order. This suggests that investors are deterred because corruption undermines a country's legal tradition. Such a tradition otherwise provides investors with the confidence that the political elite would not exploit arising opportunities after investors have entered a country.³

3. Gross Domestic Product and Inequality

There is a strong correlation between GDP per head and corruption reported in many empirical studies. But there is equal agreement that no unambiguous causality can be derived from this. While corruption is likely to lower GDP per head, poorer countries lack the resources to effectively fight corruption, [Husted 1999: 341-2] and [Paldam 2002]. A simple regression would not provide a causal link between corruption and GDP but report some correlation of unknown origin. Above, cultural determinants are likely to drive both, income and absence of corruption. Likely candidates of such cultural determinants are individualism and

One attempt to disentangle this simultaneous relationship is provided by Hall and Jones [1999]. The authors regress output per worker on an indicator of social infrastructure, which includes a measure of corruption among other variables. There exist a variety of potential simultaneity problems that are addressed by the authors. One of them is related to the fact that the indicator of corruption is based on perceptions. If countries of equal stage of development differ in the extent of corruption, perceptions are undisturbed and may be particularly informative. But in case countries widely differ in their development, perceptions may be overshadowed by these differences and be less reliable. The idea advanced by the authors is that these problems of simultaneity can be solved by instrumental variables technique. The approach by Hall and Jones [1999] is applied by Kaufmann, Kraay and Zoido-Lobaton [1999b: 15] to the relationship between corruption and GDP per head. This appears to be a fruitful path for future research. Of particular relevance for this approach is whether the instruments applied can be shown to adequately impact on corruption but not directly on GDP per head. Given that income and corruption are so highly intertwined the instruments have to carry a heavy burden. Not all readers can easily be convinced that a chosen instrument satisfies these requirements. Due to this, other researchers have focused their effort rather on variables where endogeneity issues appear less pressing.

Efforts have been made to ascertain the influence of corruption on the **growth** of GDP — initially with ambiguous results. Knack and Keefer [1995] report a variable of institutional quality by PRS, which incorporates corruption among other factors, to exert a significant negative impact. Tanzi and Davoodi [2001] provide evidence for corruption (measured by the CPI) lowering growth for a cross-section of 97 countries. Brunetti, Kisunko and Weder [1998: 369] as well as Li, Xu and Zou [2000] produced insignificant results. Abed and Davoodi [2002: 507] obtain insignificant results for a cross-section of 25 transition countries once including an index of the success with respect to structural reforms. Mauro [1995] found a slightly significant impact in a bivariate regression. But as soon as the ratio of investment to

³ In a more recent update of this study, rather than the legal tradition it is the extent of civil liberties that explains part of the impact of corruption.

GDP was included as an explanatory variable, this impact disappeared.⁴ Another approach is provided by Wedeman [1997]. Based on simple cross tabulation of growth and corruption he observes many corrupt countries exhibiting high growth rates. He concludes that certain kinds of corruption might have more significance for growth rates than the overall level of corruption as such. This proposition requires further empirical research, particularly a sound empirical determination of types of corruption in addition to average numbers. In sum, earlier investigations provide mixed evidence on the relationship between corruption and growth of GDP.

More recent investigations are more favourable to corruption lowering growth. Making use of data on corruption provided by PRS, Mauro [1997] produced significant results at a 95 per cent confidence level. Leite and Weidmann [1999: 24] and Poirson [1998: 16] also report a significant positive impact. An adverse impact of corruption on growth in African countries is reported by Gymiah-Brempong [2002].

Mo [2001] finds a significant impact of corruption on growth between 1970 and 1985 for a cross-section of 45 countries, controlling for initial GDP, population growth and political rights. He modifies the regression by successively including further explanatory variables in the regression. In particular these are the ratio of investment to GDP, the level of political stability (measured by the number of assassinations per million population per year and the number of revolutions) and human capital formation (measured by average schooling years). By adding these variables the impact of corruption on growth becomes insignificant. Mo traces this to the multicollinearity of corruption with these variables and argues that the results help to identify the channels by which corruption impacts on growth. He finds that more than half of corruption's impact runs via its effect on political stability, more than 20 percent via its impact on the ratio of investment to GDP, another 15 percent via its adverse impact on human capital formation and the rest is of a direct nature.

In a similar spirit Pellegrini and Gerlagh [2004] trace the impact of corruption on growth of GDP to the ratio of investment to GDP and to a country's openness. Méon and Sekkat [2005], equally detect an adverse impact of corruption on growth. This impact survives the inclusion of a variable on the ratio of investment to GDP. The impact becomes even stronger in countries with a low quality of governance. For the latter, indicators of "rule of law", "government effectiveness" and "lack of violence" have been used. This contradicts the "grease the wheels" view of corruption, which postulates that corruption may help compensate bad governance.

The issue of whether corruption should affect levels of GDP or its growth has not been addressed extensively in the literature. In line with Paldam [2002; Lambsdorff 2003a] argues that lack of corruption is a factor for the production of GDP. If this holds, growth of GDP should not be explained by absolute levels of corruption but by a change in these levels. In an unpublished study, I used responses to a 1998 WEF survey question on whether corruption has decreased in the past 5 years. This variable is shown to better explain growth of GDP as opposed to absolute levels of corruption. But since issues of endogeneity are difficult to assess these are not iron-clad results, but should rather be interpreted as suggestive to the issue at hand. Lambsdorff [2003a] uses the ratio of GDP to capital stock as a macroeconomic proxy for a country's average capital productivity. The capital stock is determined by a perpetual inventory method. A significant negative impact of corruption on this ratio is found in a cross-

⁴ Mauro thus argues that the impact of corruption on growth is largely via its impact on the ratio of investment to GDP.

section of 69 countries, controlling for the total capital stock and testing for various other variables. These results are robust to the use of different indicators of corruption, the inclusion of further governance indicators, sample selection, and endogeneity issues. It is concluded that a 6-point improvement in integrity on the TI index — for example an increase in Tanzania's level of integrity to that of the United Kingdom — would increase GDP by 20 per cent. This coefficient falls when controlling for an index depicting countries' bureaucratic quality, suggesting that productivity is reduced because corruption goes along with bureaucratic inefficiency.

The benefits from corruption are likely to accrue to the well-connected at the expense of the poor. Gupta, Davoodi and Alonso-Terme [2002] therefore argued that corruption increases income inequality, as measured by the Gini coefficient. In a cross-section of 37 countries, a significant positive impact of corruption on inequality was found, while taking into account various other exogenous variables. When controlling for GDP per head, this impact remains significant at a 10 % level. It was concluded that a deterioration in a country's corruption index of 2.5 points on a scale of 0 to 10 is associated with the same increase in the Gini coefficient as a reduction in average secondary schooling of 2.3 years. The authors test various instrumental variables to ascertain that the causality runs from corruption to inequality and not vice versa. The authors find further evidence that corruption increases inequality in education and land distribution. Since these variables contribute to income inequality (and had been controlled in the first regression) the overall impact of corruption on income inequality is likely to be even stronger. An impact of corruption on the inequality of income has also been found by Gymiah-Brempong [2002] for a sample of African countries. Also Li, Xu and Zou [2000] find corruption to increase inequality. They show that this effect is even stronger the higher the level of corruption. Unfortunately, they base their finding on the data by PRS – the usual caveats apply.

Gupta, Davoodi and Alonso-Terme [2002] also investigate the income growth of the bottom 20 per cent of society. Controlling for various influences, they report that growth of corruption exerts a significant and negative impact on this variable. However, research on actual trends in levels of corruption has not really started yet and the current perceptions data may not relate well to changes in real levels. In this perspective the results might be regarded with some skepticism.

But whether or not the causality actually moves in a direction from corruption to inequality has been questioned by Husted [1999: 342-3], who argues that inequality also contributes to high levels of corruption. This has also been suggested by Swamy et al. [2001]. Moreover, both variables might be driven by cultural determinants. Acceptance of authority and low accessibility of people higher in hierarchy may increase inequality and corruption at the same time, [Husted 1999].

You and Khagram [2005] provide evidence for reverse causality. They argue that the poor are not able to monitor and hold the rich and the powerful accountable, enabling these to misuse their position. The authors convincingly argue that a large fraction of inhabitants between 40 and 59 is a good instrument for inequality. People at that age tend to obtain the largest wages, causing inequality. But their wages would be adjusted downwards the higher the proportion of these inhabitants, thus reducing inequality. The authors show that inequality, as instrumented by this variable, increases corruption. This effect is found to be stronger in democracies: The rich and the powerful can oppress the poor in autocratic regimes while in the context of democracy they must employ corruption when seeking to maximize their wealth. Their results hold controlling for a battery of control variables. Considering both well established effects,

corruption increasing inequality and inequality escalating corruption, the authors conclude that societies can fall into vicious circles of inequality and corruption. One part of this vicious circle also relates to social norms and intolerance towards corruption. A country's level of inequality increases the likelihood that respondents to the World Values Survey regard cheating on taxes and accepting bribes as a justifiable types of behavior.

4. Government Expenditure, Revenues and Services

There has been extensive debate on whether or not corruption "greases the wheels" by enabling individuals to avoid bureaucratic delays, or whether it is "sand in the wheels", mainly by lowering the security of property rights and misallocating resources. A direct method for disproving the notion that corruption greases the wheels can be derived by investigating the impact of corruption on the quality of public institutions. One approach is presented by Kaufmann and Wei [1999]. Making use of data by WEF and WB/UB, the authors compare respondents' assessments of the level of corruption with the time managers waste with bureaucrats. The resulting regressions do not relate to a cross-section of countries but compare firm-specific responses, resulting in thousands of observations to enter into the regressions. The authors produced a highly significant positive association for various specifications of the regressions. Also an indicator of the predictability of corruption from the survey by WB/UB has been introduced into the regressions. Higher levels of predictability were found to lower the time managers waste with bureaucrats.

Tanzi and Davoodi [1997] examine the impact of corruption on the quality of public investments. Referring to panel data on corruption from PRS for 1980–95, the authors suggest that corruption lowers the quality of the infrastructure as measured by the condition of paved roads and power outages. They support their hypothesis by reporting a high significance in their statistical results. However, based on own regressions for a cross-section of countries using the TI index for 1998 it was not possible to reproduce the significant results. This sheds some doubt on the robustness of the findings to different methodologies.

Gupta, Davoodi and Tiongson [2001] show that countries with high levels of corruption are associated with inefficient government services and a low quality of public health care provision, as subjectively assessed by respondents. Such subjective associations may certainly relate to respondent's impressions rather than reality. The authors therefore proceed their investigation with more objective proxies for the quality of government services: child and infant mortality as well as the percent of low-birthweight babies in total births as a proxy for the quality of public health care provision and student drop-out rates as a proxy for the quality of public education. All these variables react significantly to levels of corruption. Child mortality rates in countries with high levels of corruption are about one-third higher than in countries with low corruption; infant mortality rates are percent of low-birthweight babies are almost twice as high, and dropout rates are five times as high.

Those who allocate resources may have better opportunities to extract illegal income from large investment projects than from small labor contracts. Public investments are particularly susceptible to this kind of misallocation. Mauro [1997] thus suggests that corruption may increase public investments. But the subsequent regressions provide no significant evidence. This is in contrast to Esty and Porter [2002] and Tanzi and Davoodi [1997] who claim significant evidence for over-investment in public infrastructure. The latter investigation refers to panel data on corruption provided by PRS for 1980–95. Given the nature of this data on corruption and the mixed results the evidence for this link appears to be rather poor.

However, there is convincing evidence that corruption lowers government spending on education. This result is analyzed in detail in Mauro [1998], the argument being that other expenditures offer public servants better opportunities to collect bribes. Mauro's results hold for various specifications but suffer a little from the low explanatory power of the regressions.⁵ Gupta, Davoodi and Alonso-Terme [2002] and Esty and Porter [2002] confirm the finding, providing us with some more comfort.

Corruption may also lead to higher spending on the military. Mauro [1998] provided rather insignificant evidence on this link, contrary to anecdotal evidence. Gupta, de Mello and Sharan [2000] investigate this relationship more intensively, basing the regressions on four different sources for corruption and up to 120 countries during 1985-1998. They claim that corruption is significantly associated with higher military spending or higher arms procurement (as a share of either GDP or total government spending). The evidence for cross-section regressions is now significant and robust.⁶

A positive correlation between corruption and the size of the unofficial economy is presented in Johnson, Kaufmann and Zoido-Lobaton [1998: 391]. This suggests that corruption acts as sand in the wheels by negatively impacting on the smooth operation of the official economy. But whether the causality might actually be reversed, i.e. poor institutions being the cause of corruption, is difficult to answer. A clear consequence of the association between corruption and a low official economy are reduced government revenues. Tanzi and Davoodi [1997], Johnson, Kaufmann and Zoido-Lobaton [1998] and Friedman, Johnson, Kaufmann and Zoido-Lobaton [2000] provide evidence that countries with high levels of corruption tend to have a lower collection of tax revenues in relation to GDP, controlling the regressions for income per head. This evidence is further investigated in Tanzi and Davoodi [2001] with a focus on the composition of tax revenues, assuming that different types of taxes respond differently to corruption. They claim that a 1-point increase in corruption is associated with a 1.5 percentage point decline in total revenue relative to GDP, and a 2.7 percentage point decline in the ratio of taxes to GDP. Direct taxes suffer more from corruption than indirect taxes, suggesting that countries with high levels of corruption should rely more on indirect taxation – a feature that seems to be in line with current practice.

5. International Investors and Exporters

Indices on corruption relate to the extent as practiced within the respective countries. But in a global economy the impact of corruption reaches across borders. It affects exporters and international investors. But its effects may differ, depending on where the exporter or investor comes from.

In a first inquiry Beck, Maher and Tschoegl [1991] found that corruption had a small negative but significant impact on the export competitiveness of the USA. Similar conclusions are reported by Hines [1995], showing that US aircraft exports after 1977 decreased in countries perceived to be corrupt. He also shows that US investors differed from others in preferring to locate their FDI in less corrupt countries after 1977. Hines relates this to the imposition of the Foreign Corrupt Practices Act (FCPA). A related effort was undertaken by Wei [2000b] to find out whether Japan has a tendency to invest more in corrupt countries, the implication being a possibly higher Japanese propensity to pay bribes. But the author did not find any

⁵ The R^2 is as low as 0.13, indicating that either too much noise is affecting this relationship or too little is known about other influencing factors.

⁶ Panel regressions are claimed to provide a more robust picture. However, in this case the authors employ the data by PRS/ICRG.

differences between the investment pattern of Japan and the United States. Hines' findings would also not suffice to claim a competitive disadvantage of the USA, because they could just as well indicate that competitive advantages in corrupt marketplaces before 1977 had been neutralized thereafter.

In order to adequately address this question in a broad study, Lambsdorff [1998] examined bilateral trade data between 1992 and 1995 for the leading 18 exporting and 87 importing countries. While controlling for common languages, geographic distance, export composition and trade blocks, he concludes that Belgium, France, Italy, the Netherlands and South Korea have competitive advantages in countries perceived to be corrupt. Disadvantages exist for Australia, Sweden and Malaysia. The USA also has significantly less market share in corrupt countries than the first group of countries. It is concluded that these differences should be explained by differences in exporters' willingness to offer bribes and that the results indicate that exporting countries must share part of the responsibility for the level of bribery in international trade. An update of this study, including more countries and trade data, is presented by Lambsdorff [2000]. While the underlying model has been modified further, the above mentioned results are largely reproduced.

Habib and Zurawicki [2001; 2002] investigate whether all investors are deterred equally. Referring to bilateral FDI data, they find that investors coming from countries with a high perceived level of corruption are deterred less when entering a corrupt host country than their clean competitors. Investing countries that are more exposed to corruption in their home markets are relatively less sensitive to corruption in foreign markets. This might relate to the psychological distance separating the home and the host countries. Organizational or moral issues might be at play, because investors who obtained local experience with corruption might know better how to arrange corrupt deals and be less scrupulous.

Alesina and Weder [2002] investigate whether corrupt governments attract or deter aid from OECD countries. The authors make use of a variety of different measures of corruption and investigate different samples of countries. Testing for various specifications of the regressions, they do not find evidence that foreign donors discriminate against corrupt countries. Quite to the contrary, some results suggest that corrupt countries are even more apt to attract foreign aid from OECD countries. Alesina and Weder [2002] also investigate bilateral aid flows. Scandinavian countries and Australia have a significant tendency to avoid providing aid to corrupt countries. At the opposite extreme is the US, where a significant negative coefficient of the corruption variable indicates that the US tends to favor corrupt countries in providing aid. Unfortunately, regressions on bilateral aid flows were run using only the corruption variable provided by PRS. The authors did not cross-check their results by employing other indices, leaving a grain of skepticism regarding these controversial insights.

In a similar spirit, Sandholtz and Gray [2003] show that IMF credit in the late 1990s was influenced positively by a country's level of corruption. This must certainly not imply negligence towards corruption among the IMF, but rather point to the prevalence of payments crises in countries with higher levels of corruption. However, a similar influence was not encountered concerning World Bank loans.

6. Further Variables

Building on the insight that corruption increases the size of the unofficial economy, Al-Marhubi [2000] argues that the optimal level of inflation should increase with corruption, because the larger the size of the unofficial economy, the easier it is to raise government

revenue by increasing the money stock (seignorage) rather than by distortionary taxation. He provides evidence for corruption increasing inflation for a cross-section of countries for a variety of specifications. Braun and Di Tella [2000], however, argue in favor of reverse causality: They suggest that inflation tends to go along with a higher price variation. This increases the costs for monitoring agents, suggesting that moderate levels of agent's corruption will be condoned. As a result, inflation increases corruption. The authors provide empirical evidence, however only for the PRS data. Gerring and Thacker [2005] support this finding with more valid data. Overall, it appears difficult to disentangle the puzzle and to ascertain which direction of causality is stronger.

The adverse environmental effects of corruption are investigated by Welsch [2004] for a cross-section of more than 100 countries. The author argues that corruption increases pollution. This is attributed to both a direct impact of corruption, reducing the effectiveness of environmental regulation, and an indirect impact, through which corruption lowers income. An adverse impact on emissions cannot be found. The author suggests that this may relate to corruption adversely impacting on the truthful reporting of this data. But, significant results can be found for ambient pollution of air (the urban sulphur dioxide and suspended particulate concentration) and water (dissolved oxygen demand and suspended solids). These results hold controlling for income (which is assumed to have a non-linear, U-shaped impact on pollution). Only the direct effect is depicted in this case.

In line with these findings, Esty and Porter [2002] also provide evidence that highly corrupt countries tend to have lower levels of environmental quality. Smith et al. [2003] investigate the impact of corruption on biodiversity, arguing that corruption limits the success of conservation projects. They show that countries with high levels of corruption tend to experience decreases in the population of elephants and black rhinoceroses, a lower variety of species and a reduced total coverage of forest.

Anderson and Tverdova [2003] investigate the impact of corruption on the trust in civil servants and the evaluation of the political system. For this purpose they employ survey data from the 1996 International Social Survey Program. They find that corruption significantly reduces trust in civil servants, as reported by respondents. Another finding relates to respondents' evaluation of the political system: "all in all, how well or badly do you think the system of democracy in (country) works these days?" The authors find that this assessment is significantly worse in countries with high levels of corruption. Interestingly, they report that both these impacts are significantly attenuated among supporters of the incumbent political authorities.

Corruption is also seen to increase crime levels. Corruption has been shown to increase theft [Azfar and Gurgur 2004], the amount of homicides [Azfar 2004] and human trafficking [Azfar and Lee 2003]. All these studies claim that this result holds the use of instrumental variables for corruption, hence making sure that it is not only the reverse causality (crime increasing corruption) that accounts for the findings.

III. The Causes of Corruption

Part II investigated the consequences of corruption. But it was observed that some variables are so highly intertwined with corruption that they might just as well be the cause, and not only the result. Just to name a few, GDP per head, inequality, inflation and crime were among those variables. It was also shown that levels of corruption had an impact on flows of bilateral trade and donor assistance. This gave rise to the argument that the large exporting countries

and donors in question exhibit a different propensity to pay bribes, and to accept illegitimate payments. This, in turn, suggests that these international actors cause corruption. But, without doubt, there also exist a variety of domestic causes for corruption. These will be investigated subsequently.

1. Government Size and Decentralization

Government involvement in private markets is commonly seen as a source of corruption. This impact appears almost tautological: the misuse of public power will increase with the extent of public power. Such a tautological correlation would be obtained if the Corruption Perceptions Index is distorted towards countries with a large government share, assessing more corruption in countries with a larger public sector. With large governments, bribes to public servants might increase relative to firms' revenues. This might induce respondents to surveys on corruption to assess higher levels of corruption in countries with a larger public sector. It has thus been suggested that the overall size of the government budget relative to GDP may be positively correlated with levels of corruption. This is shown by LaPalombara [1994: 338] who used a sample of countries in which Scandinavian countries were disregarded by assuming them to be an exception. The reverse finding is reported by others. Elliott [1997: 182-3] reports for a sample of 83 countries that the size of the government budget relative to GDP decreases with levels of corruption. This is supported by Adsera, Boix and Payne [2000]. Gerring and Thacker [2005: 245-246] report insignificant results. Thus, the CPI does not appear to favor small governments. It does not assess total bribes relative to firms' income, but rather the likelihood of corruption and the average size of bribes to be encountered when dealing with the government. Thus, a merely tautological correlation is not obtained.

There is no straightforward empirical reason to propose that governments should be reduced in order to cut down on corruption. Elliott [1997] concludes that types of government activities may be more important than the size of their budgets. Regressing corruption on the government's budget (relative to GDP) might also be affected by reverse causality: corrupt governments have difficulties in obtaining funding, be it through taxation or loans. See page 11 for respective evidence. This lack of resources then forces them to operate on a rather small budget. Another criticism of the hypothesis by LaPalombara is provided by Husted [1999: 342, 350 and 354]. He argues that governments are larger in societies characterized by a greater acceptance of authority. As discussed below, this cultural variable may determine both, corruption and the size of the government budget.

These considerations suggest that a more promising focus would be on particular types of government expenditures in their potential to cause corruption. In this respect it was suggested that redistributive activities as opposed to other government activities are more likely to cause corruption. La Porta et al. [1999: 242] show a positive correlation of the total government transfers and subsidies relative to GDP with corruption. However, the variable correlates too closely with the total government expenses, bringing about the aforementioned problems. In sum, no convincing evidence has been produced on government expenses as a cause of corruption.

Some authors observe a positive correlation between corruption and a country's size, measured by total population, [Root 1999; Fisman and Gatti 2002; Treisman 1999]. These correlations are robust to the inclusion of further variables. This might be taken as an indicator in favor of decentralization. Smaller countries might be in a better position to establish a decent administration and to monitor their politicians. Using the results from a cross-section of

countries might be taken as an indicator that decentralizing government power could be a means to curb corruption.

Another variable for measuring the extent of decentralization is presented by Huther and Shah [1998] and Fisman and Gatti [2002]. The authors interpret the share of subnational expenditures in total public spending as a measure of decentralization. In a sample of 80 countries, this index correlates positively with various measures of good governance. Huther and Shah report a correlation with lack of corruption larger than 0.5.⁷ The approach by Fisman and Gatti [2002] makes use of the same variable on decentralization, but tests whether the outcome is robust to the inclusion of further variables. For a wide range of specifications they find a strong negative relationship between fiscal decentralization in government expenditure and corruption.⁸

But Knack and Azfar [2003] provide a clear warning against these findings. They show that the correlation between corruption and population size results from sample selection problems. Ratings on corruption are only provided for those countries in which multinational investors have sufficient interest. These tend to be large nations and among the small nations only those which are well governed. Knack and Azfar [2003] conduct regressions for larger samples of countries and observe that the relation between corruption and population disappears.⁹

Treisman [1999] takes a more direct approach to investigating the effect of decentralization. Rather than regressing corruption on total population, he distinguishes between federal and centralized states. He reports significant evidence that federal states are more corrupt than centralized ones. But Treisman [1999] argues that this relationship falls to insignificance when other variables had been included.¹⁰ Adsera, Boix and Payne [2000] and Panizza [2001]

⁷ Huther and Shah do not include further explanatory variables. One cannot exclude that more developed countries are less corrupt and more decentralized at the same time. This could introduce an omitted variable bias.

⁸ The authors also suggest that corruption may be larger when spending is decentralized while revenue collection remains in the responsibility of the central government. The argument appears plausible. But in the related regressions the authors proxy the level of corruption in local states of the USA by the number of convictions for abuse of office. However, this variable can easily grow with the effectiveness and effort of the judicial system rather than with actual incidents of corruption.

⁹ The results by Knack and Azfar [2003] point to a general problem of sample selection in regression analysis. Their suggestion is to employ indicators which cover as many countries as possible. However, in regressions where corruption is used as an explanatory variable such indicators must include countries where little data on corruption is available. This implies that measures of corruption are less reliable and measured with large error. Imprecision among explanatory variables will bias regression results. Thus, there is no straightforward solution to the problem identified by Knack and Azfar. Lambsdorff [2003b] suggests to use an indicator of "media interest" for a country to assess the relevance of this problem.

¹⁰ At first, part of the negative impact of a dummy variable for federal states on corruption is explained by a country's overall size as measured by total population. This comes about as federal states are commonly larger than centralized ones. Another dummy variable tested by Treisman indicates whether separate police forces exist both at central and subnational levels. Treisman argues that in this case regulatory authorities overlap, providing incentives for the police to "overgraze" by excessively extorting bribes. This variable significantly increases the level of corruption. Another side-aspect of decentralization can be that the number of veto-

also fail to obtain a significant impact. On the contrary, Goldsmith [1999: 878], Kunicova [2002] and Kunicova and Rose-Ackerman [2005] claim significance of this variable even controlling for GDP per head. In a more recent publication, Gerring and Thacker [2004] are also supportive of a significant adverse impact of federalism on corruption. They distinguish between non-federal (1), semi-federal (2) and federal states (3), and mix this characteristic with the extent of bicameralism where no or only a weak upper house exists (0), where the upper house is not dominated by a lower house (1) and where non-dominance goes along with a different partisan distribution between the houses (2). The authors find evidence against federal states and in favor of unitary governments throughout a variety of regressions.

In sum, simple conclusions with respect to government involvement and corruption are hard to find. Arguments pertaining to decentralization seem to be dependent on how decentralization is precisely quantified. Apart from this, one cannot exclude that certain cultural determinants drive both variables. Countries characterized by civic cooperation and trust among people as well as those with well developed subnational units may be in a position to decentralize and lower corruption at the same time.

2. Institutional Quality

Broadmann and Recanatini [1999] show for a sample of transition economies in Europe and Central Asia that higher barriers to market entry lead to higher corruption. Djankov et al. [2002] are equally concerned with the nature of entry regulation. They determine the number of procedures required for starting a new business for a cross section of 71 countries, alongside with the necessary time and official costs. The authors find a strong correlation of these variables with a country's level of corruption for a variety of specifications and control variables. This impact of corruption supports the argument that entry regulation often does not serve to correct for market failure but brings about problems of its own.

Treisman [2000] finds a positive impact of "state intervention" on corruption. The former variable is measured by a subjective index compiled by IMD. But as other explanatory variables enter into the regression, the relationship is reported to break down. Another correlation between corruption and a measure of policy distortion for 39 countries is presented by the World Bank [1997: 104 and 168]. Unfortunately, a precise definition of policy distortions is absent there. Also, the robustness of the results is not tested by including further explanatory variables. Also Gerring and Thacker [2005] report a positive correlation between regulatory quality and absence of corruption. A more detailed analysis of policy distortions is presented by Ades and Di Tella [1999 and 1997]. The authors make use of an index that measures "the extent to which public procurement is open to foreign bidders" and another index that measures "the extent to which there is equal fiscal treatment to all enterprises". Both variables, and also a corruption variable are taken from the survey by IMD. Explaining the level of corruption, both variables enter significantly into the regressions, even controlling for other explanatory variables. This leads the authors to conclude that policy intervention causes corruption. But, the authors acknowledge that corruption may cause policy distortions and not vice versa, bringing about problems of simultaneity bias. Ades and Di Tella [1997] claim that their instruments for policy distortions ascertain the direction of causality.

players who can block central governments decision increases. Corruption can emerge for buying off these veto-players or because corrupt regional governments will have far greater leverage to protect their ill-gotten gains. Treisman shows that if a regionally elected upper house can block non-financial legislation by the central government this can increase corruption. But the coefficient reported for this variable is less significant.

Certainly, policy distortions and corruption are quite often just two sides of the same coin. In this case, instruments have to carry a heavy burden.

Corruption is a form of rent-seeking behavior where human capital is allocated to redistributive tricks rather than productive activities. Seeking loopholes in public laws or searching for windfall profits due to preferential treatment by public decision makers would distract students from studying engineering – alternative disciplines such as law might equip them better for future challenges. This misallocation would go along with economic welfare losses. Tanzi and Davoodi [2001] determine the ratio of college enrollment in law relative to college enrollment in engineering in 1980 and report a significant impact on the level of corruption. Corrupt societies, they claim, need more lawyers.¹¹

A simple correlation for a sample of 26 African countries is provided in Lambsdorff and Cornelius [2000]. They show that corruption is positively associated with the degree to which “government regulations are vague and lax”. These results are interesting in shifting the focus away from the total burden of regulation to their application. Vague and lax application of regulation is required for public servants in order to have sufficient bureaucratic discretion in their application. As long as rules are clear, they might present a burden to business, but would not trigger corruption. However, the findings have not yet been controlled by further variables, neither have they been extended to a broader sample of countries.

In a similar spirit Gatti [1999] argues that a highly diversified trade tariff menu fuels bribe-taking behavior, whereas uniform trade tariff rates limit public officials' ability to extract bribes from importers. She reports a positive association between the standard deviation of trade tariffs and the level of corruption for a small sample of 34 countries. Causality may be difficult to ascertain, because corrupt public servants may impose diversified tariffs so as to be in a better position to ask for bribes. Gatti reports that her conclusions survive endogeneity tests where terms of trade shocks and the Gini-coefficient for income inequality are used as instrument.

3. Competition

Concerning the causes of corruption, studies have been made on the extent to which corruption can be explained by a low level of competition among private firms. Competition is commonly assumed to lower supplier's prices. In public procurement, e.g., the resulting rents for private firms decrease. As a consequence, public servants and politicians have less to “sell” in exchange for bribes, reducing their motivation to start with a corrupt career. To the contrary, where competition is restricted profits increase and politicians can grasp the opportunity to assign these profits – in exchange for a share.

Government restrictions on economic freedom are likely to reduce competition and thus encourage corruption. Henderson [1999] argues that corruption is negatively correlated with different indicators of economic freedom. This result is largely supported by Goldsmith [1999: 878] for a sample of 66 countries, where the regression is controlled for GDP per head and by Paldam [2002] in multivariate regressions that include further explanatory variables for a sample of 77 countries. Such arguments, however, might be tautological. The Heritage Foundation's Economic Freedom measure, e.g., includes an assessment of corruption. This implies that a measure of the dependent variable is placed on the independent variable side of the equation, [Sandholtz and Gray 2003].

¹¹ They also claim that this variable has a (weakly) significant impact on growth of GDP.

As an alternative indicator of competition Ades and Di Tella [1995, 1997 and 1999] suggest a country's openness. The authors argue that openness, defined as the ratio of import to GDP, is negatively associated with corruption. They apply corruption data from BI (in cross-section of 55 countries) and IMD (in cross-section of 32 countries). With both approaches the results are robust to the inclusion of further explanatory variables. The authors conclude that economic competition as measured by the degree of a country's openness reduces corruption. A similar finding is reported by Sung and Chu [2003] and Gerring and Thacker [2005].

However, Treisman [2000] did not find significant evidence for such an impact using the TI-index. Apart from the mixed evidence, the ratio of import to GDP is a distorted indicator of competitive pressure. This variable depends to a large extent on the size of a country, measured for example by its total population. This is because large countries can compensate for a low ratio of import to GDP by more competition within their own country. The usefulness of this variable has, therefore, been put in question. Wei [2000a] provides an approach to disentangle the various facets by which openness affects corruption. He determines a measure of "natural openness" as the extent of openness which is caused by a country's total population, and its remoteness from world trading centers. Both these measures tend to lower a country's openness, the former because large countries tend to trade less with the outside world, and the latter because transport costs make foreign trade less attractive. These indicators are independent of a country's trade regime, and thus exogenous to a regression. He finds that natural openness significantly lowers a country's level of corruption, pointing to the helpful role of competition in reducing corruption.¹² The residual openness (i.e. that part which is not explained by country size and geography) is a measure of a country's trade regime and its policy decision in favor of global competition. Yet, Wei does not find a significant impact of this variable, casting doubt on trade policy as a cause of corruption.

Another possible measure of the extent of competition in a country can be derived from the number of years it has been open to trade, as assessed by Sachs and Warner [1995]. Treisman [2000] and Leite and Weidmann [1999] provide evidence that this variable negatively and significantly impacts on the level of corruption. Another measure of the lack of competition is the trade distance to major exporters, since transportation costs limit the competitive pressure. Ades and Di Tella [1999] provide evidence that corruption increases with the trade distance. Sandholtz and Gray [2003] report that the more international organizations a country belongs to, and the longer it has been a part of the major international institutions such as the United Nations, GATT/WTO and the IMF, the lower its level of corruption. They relate this also to the degree of openness. Furthermore, they report that corruption decreases with other factors of openness, such as International Telephone Minutes per capita and Air Freight per capita. They show that their results are not affected by sample selection criteria, responding to the criticism by Knack and Azfar [2003].

Ades and Di Tella [1995] test the influence of two other indicators of competition. These are taken from the survey by IMD. A subjective index of "market dominance" measures the extent to which dominance by a limited number of firms is detrimental to new business development. Another index of "anti-trust laws" measures the effectiveness of these laws in checking non-competitive practices. The authors conclude that the less competitive a market

¹² The finding by Knack and Azfar [2003], cited on page 15, casts doubt on Wei's conclusion. They argue that the correlation between population size and corruption is merely an artifact of sample selection. The "natural openness" by Wei would be affected by this criticism, because it depends on population size.

environment, the higher will be the extent of corruption. However, the authors are aware of the problems of causality, and acknowledge that corruption may provide incentives for politicians to support monopolies.

4. Recruitment and Salaries

The impact of merit-based recruitment on corruption in 35 developing countries has been investigated by Evans and Rauch [2000]. Higher values in the merit-based recruitment index are associated with a greater proportion of higher-level officials in the core economic agencies to be either in possession of a university degree, or to enter the civil service through a formal examination system. Controlling for income, this index is negatively associated with corruption.

To what extent the level of public sector salaries is linked to the amount of corruption was examined by van Rijckeghem and Weder [2001]. They argue that low salaries force public servants to supplement their incomes illicitly. At the same time, high salaries are a premium that is lost if a public servant is caught and fired. In a small sample of 31 developing countries, they find a significant negative influence of civil service wages relative to manufacturing wages on the level of corruption. Doubling the civil service wage will improve the corruption index by the order of 1 point of the TI index.¹³ However, they employ the corruption data by PRS, bringing about our repeated concern. The authors also point out that the association may be driven by reverse causality: Corrupt countries tend to have a poor budgetary performance or may subscribe to the view that civil servants earn sufficient income from corruption, and may reduce civil service pay as a consequence. Such endogeneity problems diminish the prospects of fighting against corruption by increasing wages. Even disregarding these issues, it becomes apparent that pay increases turn out to be a costly approach to fight corruption.

Other studies provide equally poor results for the impact of wages on corruption. Swamy et al. [2001], [Treisman 2000] and Manow [2005] investigated the ratio of average government wages to per capita GDP, controlling for a variety of other influences. The results are ambiguous, and mostly insignificant, depending on the indicator for corruption employed and the inclusion of control variables. Manow notes that government wages (relative to GDP per head) are higher in poor countries, which also makes wages an improbable cause of corruption.

5. Press Freedom and the Judiciary

By regressing various indices of corruption on indicators of press freedom, Brunetti and Weder [2003] show that a free press effectively deters corruption. The latter variables consist of "laws and regulations that influence media content", "political influence over media content", "economic influence over media content" and "repressive actions" as compiled by Freedom House. These four separate indices and an aggregate index of press freedom all impact negatively on the level of corruption in various specifications. This negative association between freedom of the press and corruption is also confirmed by Lederman, Loayza and Reis Soares [2001]. Also Sung [2002] reports this result, albeit missing to control for income per head. A free press appears to be a solid deterrent to corruption. However, the corruption index used in both studies has been that of PRS. But, Brunetti and Weder [2003] corroborate their findings also by using alternative indicators, providing us with some more

¹³ The authors refer to a 0.5-point improvement in a corruption index by the Political Risk Service. This index has about half the standard deviation of the relevant subsample of countries in the TI index.

confidence with respect to their findings. Corrupt authoritarian regimes may restrict press freedom, suggesting that part of the causality may run the other way. Nevertheless, Brunetti and Weder [2003] show that their findings survive the use of instruments, claiming that a good share of the causality runs from a free press to less corruption. Adsera, Boix and Payne [2000] employ data on daily average newspapers per person. These figures vary from 0.7 daily copies per person in Hong Kong to 0 in Mauritania. They show that the amount of newspapers per person is negatively associated with corruption. This equally suggests that a successful media is a strong impediment to corrupt politics by making it difficult for elites to get away with corrupt behavior.

An approach by the World Bank [1997: 104 and 168] focuses on the quality of the judiciary. While controlling for other explanatory variables, an index of the predictability of the judiciary from WB/UB significantly influences the level of corruption in 59 countries. A similar correlation between corruption and the independence of the judicial system is proposed in Ades and Di Tella [1996]. Also Sung [2002] reports this result, albeit missing to control for income per head.

Voigt, Feld and van Aaken [2004] investigate the impact of prosecutorial independence on corruption. They provide data on independence with a help of a questionnaire sent to supreme court judges, law professors, lawyers and anti-corruption activists. The authors distinguish between *de jure* independence (e.g. life tenure, appointment and promotion by others than politicians, lack of executive power to substitute prosecutors working on a specific case), and *de facto* independence (dependence would be assumed, for example, in case of forced retirement, frequent changes in legal foundations, and decreasing income and budget of prosecutors). They find that *de facto* independence decreases corruption, and relate this to the disciplining effect on the executive, and on influential politicians. Interestingly, *de jure* independence increases corruption. This surprising finding might be related to endogeneity: The more the corruption among the executive, the more the willingness to pay lip service to prosecutorial independence.

6. Democracy and the Political System

The impact of the Gastil index (Freedom House) for political rights, i.e. democracy, on corruption is tested by Paldam [2002]. While the correlation between these variables is large, in multivariate regressions this relationship breaks down as soon as GDP per head enters into the equation. Similar results are reported by many others, [Sandholtz and Koetzle 2000; Goldsmith 1999; Persson, Tabellini and Trebbi 2003]. But Treisman [2000] finds a significant impact for a selection of 64 countries, including only those countries which have been democracies without interruption since 1950. He argues that while the current degree of democracy is not significant, a long period of exposure to democracy lowers corruption. Gerring and Thacker [2004; 2005] provide significant results using the cumulative number of years a country has been democratic since 1900. Montinola and Jackman [2002] employ a broader measure of democracy, where the Gastil index enters besides an assessment of 1) freedom of group opposition and 2) the effectiveness of the legislative body. They find a non-linear impact on corruption. As compared to autocratic regimes moderate levels of democracy do not decrease corruption. Only after a certain threshold is passed do democratic practices inhibit corruption. Manow [2005] supports this finding with the help of more topical data. Manow concludes that corruption in medium-democratic regimes is even (slightly) higher than in totally authoritarian countries. Once this threshold is passed, he provides evidence for democracy reducing corruption. Sung [2004] tests different functional forms for the relationship between corruption and democracy and finds that a cubic form best fits the data. This form reveals an ambiguous impact for countries scoring between 7 and 2 in the Freedom

House index. Only the good score of 1 brings about decreased corruption. However, he fails to control for income per head, making it difficult to judge on the robustness of the findings. Adsera, Boix and Payne [2000] obtain significant results for electoral participation. Countries with higher participation elicit lower levels of corruption. This also provides a more intricate picture of democracy.

Persson, Tabellini and Trebbi [2003] test the impact of electoral rules on corruption in a cross section of more than 80 democracies. They argue that smaller voting districts, characterized by few representatives being elected in each district, increase corruption, because they impede the entry of new candidates. Small voting districts require increased effort for a candidate or a political party to adapt to local requirements and needs, lowering competition among candidates and their accountability towards their constituency. In contrast, larger districts imply lower barriers to entry for new parties, or new candidates, and the increased competition helps reduce corruption. They report a significant negative impact of the size of voting districts on corruption. However, this impact is significant only at a 10 percent significance level, and not robust throughout different specifications. Also Panizza [2001] reports less significant findings. Another more significant finding by Persson et al. relates to party lists. The authors find that corruption is higher in countries whose parliamentarians are elected from party lists, rather than as individual candidates. The likely reason is that such election systems go along with less individual accountability. The authors suggest that the good score of Chile might to a considerable degree be attributed to its electoral rules, which avoids small districts and limits party lists.

These findings are challenged by Manow [2005] who argues that political scientists commonly propose the opposite association. A political party's time horizon is typically longer than that of individual candidates, suggesting that the malfeasance of a single party member brings about severe damage to the reputation of the political party. This explains their willingness to discipline their members. The favorable role often played by established political parties and their capacity in containing corruption, he argues, deserve to be reconsidered. Manow shows that the negative impact of party lists by Persson et al. breaks down (with respect to significance and magnitude) when restricting the sample to more mature democracies or countries with a high level of political freedom. He assumes that effects other than those identified by Persson et al. might be at play.

Chang and Golden [2004] criticize the simplified variable on party list voting in the approach by Persson et al.. They argue that closed-list voting, where voters only cast votes for parties, should be distinguished from open-list voting, where voters both select a party and rank candidates given the party's selection of candidates. The two types fare differently, depending on the size of voting district. Chang and Golden [2004] find that in the case of large voting districts closed-lists contain corruption while in small voting districts candidates should come from open lists so as to limit corruption. They argue that politician's need to amass (possibly illegal) resources to out-campaign their opponents in open-list voting. This effect becomes stronger in large voting districts, suggesting that closed lists turn out to be superior.

Persson, Tabellini and Trebbi [2003] observe a positive correlation between the size of the voting district and the prevalence of voting from party lists. A voting system tends to be either characterized by plurality rule, where seats are awarded to the individual candidates receiving the highest vote shares in small voting districts, or by proportional representation systems where political parties compete in larger voting districts. These large voting districts are preferable with respect to lowering corruption, but the prevalence of candidates coming from party lists would increase corruption. The disadvantage, they find, is stronger so that

proportional election increases corruption. The disadvantage of larger voting districts in plurality rule is more than outbalanced by an advantage from avoiding party lists.

This finding is empirically supported by Kunicova and Rose-Ackerman [2005]. They also employ a related index of “particularism”. This variable is more complex than the dummy variable that describes electoral systems as either plurality voting, or proportional representation. It embraces party influence with variables as to which candidate uses the party’s label, whether votes relate to candidates or pools of candidates, and whether voters can voice preferences for parties or candidates. Although skeptical of this data, Kunicova and Rose-Ackerman [2005] confirm that corruption increases when elections are more party-centered for a sample of 93 democracies (countries scoring better than 5.5 in the freedom house index). This result corroborates the unfavorable findings on proportional representation.

Manow [2005], however, claims significance for the opposite finding once restricting the sample to 47 countries that score at most 3 in the freedom house index. He claims that political parties’ influence in elections reduces corruption. An explanation to these puzzling findings might be found in Panizza [2001: 326, 336 and 338]. He finds no statistical linear impact of “particularism” in regressions for 101 countries. However, he obtains a non-linear impact: Countries with moderate party influence, and some limited power among individual candidates fare best, Panizza [2001: 336 and 338]. Particularly in the light of this non-linearity, the selected sample of countries can seriously affect the results. For example, disregarding African, Latin American and Eastern European countries where elections are rather party-centered and corruption is rife, would provide results that are rather favorable to political parties, in line with Manow’s findings. Assuming that, for example, Germans may attribute more validity to comparisons with other mature democracies, there is no simple right or wrong with respect to choosing the sample – and no iron-clad advice to be obtained from the existing studies on particularism.

Gerring and Thacker [2004] investigate the capacity of parliamentarism in containing corruption as opposed to presidential systems, where policymaking power is divided between the legislature and the president. They find evidence for parliamentary systems, determined as a dummy variable, being associated with less corruption. A similar result is reported by Lederman, Loayza and Reis Soares [2001] and Panizza [2001]. Kunicova [2005] reports the same finding for a sample of more than 100 countries and controlling for a battery of further variables. She extends her analysis by introducing a dummy variable for presidents with term limits. She reports that presidentialism increases corruption significantly where when it goes along with term limits. She argues that this is likely to result when incumbents have little to lose at the end of their term. In addition, she shows that corruption increases where presidents are more powerful, that is, where their range of power expands across both legislative and non-legislative functions. For a sample of 43 presidential countries she shows that corruption increases with this indicator of power.

Kunicova and Rose-Ackerman [2005] jointly investigate parliamentarism versus presidentialism and plurality voting versus proportional representation. They confirm both previous findings: the systems most prone to corruption are presidential systems with closed-list proportional representation. Their results on closed-list versus open-list voting are less significant – the more complex interaction found by Chang and Golden [2004] might be at play.

Adsera, Boix and Payne [2000] obtain an unexpected positive impact for presidentialism on the absence of corruption. This might result from their different quantification of

presidentialism. This variable is no longer determined as a dummy variable, but takes on the values of 0 if the president is elected directly, 1 if the president is elected by the assembly, but has substantial powers, and 2 if the system is purely parliamentary. The different finding might also result from their inclusion of a variable on political instability, which increases in corruption.¹⁴ More empirical research is needed on this front. The quality of political parties, along the theoretical reasoning provided by Shugart [1999], may be worthwhile considering here. He argues that presidentialism might be a second best alternative in countries where political parties are not devoted to broad national interests. Avenues of future research may focus on introducing Shugart's hypothesis into the existing research.

In sum, democracy reduces corruption, but not the lukewarm type, not the type with little electoral participation and not immediately after its implementation. Before transforming authoritarian systems into halfhearted democracies it is worthwhile considering whether such systems have established their peculiar methods of honoring integrity and how these might be endangered during transition. Thinking about an ideal type of democracy, there is evidence that presidential systems fare worse with respect to corruption as compared to parliamentarism. But it remains to be seen whether presidentialism might be a second best option where political parties are of poor quality. Finally, but less strong in magnitude, electoral systems of proportional representation are associated with higher corruption than plurality rule with single-member districts. Westminster democracy would be the model best capable in reducing corruption. This result survives the inclusion of dummy variables of British colonialism and British legal origin. It really seems to be the electoral system that is at play. However, Kunicova and Rose-Ackerman [2005] point out that these effects of electoral rules are rather small as compared to that of other variables. Also, some influence of political parties has been found to be helpful in containing corruption. Considering that changing the electoral system can be a costly thing, even going along with transitional insecurity and corruption, the disadvantage of proportional representation might be too small to suggest an abandonment of this voting system. Proportional representation might be acceptable, in particular because it tends to go along with more favorable large voting districts. Once accepting large voting districts there is also no reason to reject closed-list voting.

7. Cultural Determinants

Some societies are characterized by a high level of trust among its people, while in others people tend to have misgivings about each other. Investigating the consequences of such forms of "social capital" has been made possible with data from the World Values Survey, which surveys 1000 randomly selected people since the 1980s in an increasing number of countries. One question has been: "Generally speaking, would you say that most people can be trusted or that you can't be too careful in dealing with people?" La Porta et al. [1997: 336] argue that trust can be helpful in fighting corruption, since it helps bureaucrats to better cooperate with each other and with private citizens. In a sample of 33 countries, the authors show that trust has a significant negative impact on corruption, while controlling for GDP per head. This finding is corroborated by Adsera, Boix and Payne [2000]. Uslaner [2004] supports the negative association between trust and corruption. Concerned with the causality, he claims that trust lowers corruption while the opposite causality is less robust. Björnskov and Paldam [2004] undertake a first attempt to construct time series with the Transparency

¹⁴ A possible interpretation could be that parliamentarism reduces corruption because it goes along with political stability. In this case, once controlling directly political stability the positive affect of parliamentarism is no longer obtained.

International data on corruption. Seeking explanatory variables, they find that trust is about the only one with significant impact.¹⁵

Also the role of religion in contributing to the level of corruption was examined by La Porta et al. [1997: 337]. The authors consider the Catholic, Eastern Orthodox and the Muslim religion to be particularly hierarchical — and that such hierarchical forms of religion are detrimental to civic engagement, a factor which should help reduce corruption. For the same sample of 33 countries mentioned above, the authors report a positive association between the percentage of population belonging to a hierarchical religion and corruption, controlling for other influences. For a larger section of 114 countries this relationship is reproduced by La Porta et al. [1999: 251-2]. But, here the relationship becomes rather weak as soon as GDP per head is included. A strong association between religion and corruption is obtained by Treisman [2000]. He relates corruption to the percentage of Protestants in the total population in a sample of up to 64 countries and obtains a highly significant negative impact of this index on corruption, controlling for other variables such as GDP per head. This is corroborated by Lipset and Lenz [2000] and Gerring and Thacker [2005: 245-246]. In contrast to these studies, however, Sandholtz and Gray [2003] claim that Protestantism loses significance both in larger samples, and when one controls for a variety of indicators on openness. A more in-depth analysis of the impact of various religions is provided by Paldam [2001]. He identifies 11 different groups of religions and tests their impact on corruption, controlling for other variables. While in countries with a large fraction of Reform Christianity and tribal religions corruption is lower, higher levels of corruption can be found in countries with a large influence of Pre-Reform Christianity, Islam, Buddhism and Hinduism. However, the impact is only significant for Reform Christians (Protestants and Anglicans).

In line with the argument by La Porta et al., the idea that hierarchies contribute to corruption has been supported by Husted [1999], who uses a totally different dataset. Based on the surveys by Hofstede [1997], he employs the resulting data on cultural values. One variable defined there is called "power distance" which measures "the extent to which the less powerful members of institutions and organizations within a country expect and accept that power is distributed unequally", [Husted 1999: 343]. This variable is shown to have a positive impact on the level of corruption in a sample of 44 countries in various regressions, while controlling for other explanatory variables. Concomitant with this indicator, two further cultural variables positively and significantly impact on the level of corruption: first, the extent to which the quest for material success dominates over a concern for the quality of life¹⁶ and, second, the extent to which members of a culture feel threatened by uncertainty or unknown situations. The latter variable must clearly be distinguished from risk avoidance, which might be expected to lower corruption. The idea is that corruption may give its beneficiaries the hope of reducing the level of uncertainty they face.

Tracing the level of corruption to cultural determinants should not suggest that corruption is by and large inevitable. Culture can explain only a certain fraction of the level of corruption, and there remains sufficient room for improvements of a country's integrity. But a clear

¹⁵ As pointed out repeatedly, the time series value of the Transparency International data is distorted because of annual changes in the composition of sources. Bjørnskov and Paldam [2004] refer only to ordinal changes in the data over time, i.e. whether a country improves in rank relative to others. Due to this approach, it might be possible that one-shoot changes that are of purely methodological nature play a minor role as compared to actual trend information.

¹⁶ This variable is called masculinity-femininity. I avoid this misleading term.

conclusion drawn by Husted [1999] is that effective measures to fight corruption are dependent on culture. Countries with a large power distance, or a strong desire for material wealth will require different treatment than others.

In contrast to the positive impact of trust on the absence of corruption, some types of trust can also be a facilitator for corrupt transactions. Since corrupt deals cannot be legally enforced, it requires trust among the partners that their favors will be reciprocated. This resembles a strategic type of trust that clearly differs from “generalized trust” as assessed by the World Values Survey. Lambsdorff and Cornelius [2000] provide a correlation indicating that countries, where bribers are confident that favors will be reciprocated, also exhibit higher levels of corruption. A more detailed investigation of this relationship is provided in Lambsdorff [2002]. Throughout various specifications and different indices of corruption, it is shown that opportunism among corrupt partners, although potentially troublesome to investors, reduces a country's level of corruption. Instrumental variable technique ascertains the hypothesized causality. It is concluded that the adverse effects of corruption cannot be avoided by divesting it of its unpredictability.¹⁷ The term "trust", on the other hand, requires a precise definition before sound conclusions vis-à-vis its impact on levels of corruption can be derived.

Sandholtz and Taagepera [2005] determine two cultural dimensions from the World Values Survey conducted between 1995 and 2001. A first dimension measures traditional versus secular-rational authority attitudes. This contrasts traditional religious values and secularism. A second dimension relates to survival versus self-expression. This measures the extent to which people are focused on personal and economic security, or on personal self-expression and quality of life. African and Muslim countries have traditional attitudes, and a high extent of “survival” due to their low income. Protestant countries are oriented towards self-expression and have secular attitudes. Former communist countries have a secular tradition, but again a high level of “survival” due to their low income. They give up on God while still feeling insecure and unhappy. Respondents from Latin America, USA, Ireland, Canada and Australia are committed to self-expression, but have some traditional attitudes towards authority. These countries combine belief in god with the feeling of security and happiness. The authors show that a strong “survival” orientation contributes twice as much as a strong “traditional” orientation to higher levels of corruption. The authors, unfortunately, are not very concise in explaining how these dimensions have been determined. They also do not control their regression for some standard variables, such as GDP per head. In light of this, the significant result for tradition appears more interesting than the one for survival, which is likely to fare less significant once controlling for income per head. The higher level of corruption in post-communist countries is also reported by Gerring and Thacker [2005: 245-246] who show that a socialist legal tradition increases corruption.

Lipset and Lenz [2000: 120] create a scale to measure “familism” and then test the relationship between familism and corruption. Their data on familism is the percentage of respondents from the World Values Survey agreeing that regardless of the qualities and faults of one’s parents, a person must always love and respect them. A second item measures the percentage of people who think that divorce is unjustifiable. In regression analysis, the measures of familism is strongly related to corruption, even when controlling for per capita income.

¹⁷ This conclusion is in contrast to Wei [1997] and Campos, Lien and Pradhan [1999] and other researchers who consider the lack of predictability of corrupt deals to add to its adverse welfare effects.

8. Further Variables

The impact of gender on corruption has been investigated recently by Swamy et al. [2001] Dollar et al. [2001]. The authors determine the percentage of women in the labor force and in parliament. Both indicators negatively impact on the level of corruption in a cross-section of up to 66 countries. The influence is large in magnitude, highly significant and robust throughout a large variety of regressions, controlling for various variables. These findings are in line with some micro-evidence reported by Swamy et al., and suggest that policies designed to increase the role of women may help lower the level of corruption. Similar results are reported by Sung and Chu [2003].

On the other hand, there are also reasons for the presence of reverse causality. Low levels of corruption may impose restrictions on male dominated networks, provide women with legal recourse, and improved access to higher positions. Furthermore, both female participation and corruption might be driven by other factors. This is the argument advanced by Sung [2003]. He shows that the impact of gender on corruption decreases considerably once controlling for further variables such as rule of law, press freedom and democracy. His results are robust to the inclusion of standard control variables. He concludes that it is largely these institutions that simultaneously help women and integrity, rather than female participation lowering corruption.

There are still no full-fledged studies about the impact of colonialism on the level of corruption. But variables of colonial heritage sometimes enter as control variables in studies investigating the causes of corruption. This is the case in Swamy et al. [2001] and Treisman [2000]. According to Treisman, former British colonies exhibit lower levels of corruption than other countries, controlling for the level of income per head and various other variables, such as the existence of a common law legal system. This result is reproduced by Swamy et al. [2001].¹⁸ Both studies found that colonies of other countries do not exhibit the same reduction in the level of corruption.

It is surprising that colonialism does not increase the level of corruption, as suggested by anecdotal evidence. But as outlined above, these studies did not primarily intend to investigate the impact of colonialism on corruption. To arrive at sound conclusions, further analysis is required, which should go beyond the use of dummy variables and take into consideration certain characteristics of colonial rule, as was done by Treisman [2000] for British colonies.

Ades and Di Tella [1999] and Leite and Weidemann [1999] argue that abundance of natural resources creates opportunities for rent-seeking behavior, and gives rise to corruption. Both studies measure the first variable as a country's exports of fuels and minerals as a share of GNP. Throughout various specifications this variable is found to significantly increase the level of corruption. These results are robust to the inclusion of various explanatory variables, different samples of countries and the use of different indicators of corruption. A similar finding is reported by Kunicova [2002]. Montinola and Jackman [2002] argue similarly, but employ a dummy variable for OPEC member states instead, which relates to abundance of oil. This variable also significantly increases a country's level of corruption. Another study by Gylfason [2001] argues that the abundance of natural resources can be measured by the proportion of the labor force employed in primary production. He reports a positive association of this proxy with corruption, controlling for income per head.

¹⁸ Lederman, Loayza and Reis Soares [2001], however, disagree. In their regressions the British legal tradition did not lower corruption. This may relate to their use of the PRS data on corruption.

Sandholtz and Gray [2003] show that countries surrounded by corrupt neighbors exhibit higher levels of corruption. Neighbors may share similar cultural affinities and norms; attitudes towards corruption may spill over from one country to another due to strong regional exchange. Gerring and Thacker [2005] observe that corruption decreases with a country's distance from the equator.

8. Conclusions on Consequences

In a recent wave of empirical studies the causes and consequences of corruption have been investigated at large. It can be concluded that corruption clearly goes along with a low GDP, inequality of income, inflation, increased crime, policy distortions and lack of competition. The direction of causality for these indicators, however, is controversial. Corruption may cause these variables but is at the same time likely to be their consequence as well. This suggests that countries can be trapped in a vicious circle where corruption lowers income, increases inequality, inflation, crime, policy distortions and helps monopolies at the expense of competition. These developments in turn escalate corruption. There is a heavy burden placed on instrumental variable technique in trying to disentangle these mutual dependencies.

There is strong evidence that corruption lowers a country's attractiveness to international and domestic investors. This reduces capital accumulation and lowers capital inflows. Also the productivity of capital suffers from corruption. There is equally strong evidence that corruption distorts government expenditure and reduces the quality of a wide variety of government services, such as public investment, health care, tax revenue and environmental control. This corroborates that large welfare losses result from corruption.

With respect to the causes of corruption, not all empirical results were consistent with our expectations. For example, the disciplining and motivating effect of higher official wages was found to be rather limited. Also the impact of colonialism on corruption was ambiguous. Press freedom and the (de facto) independence of the judiciary and prosecutors appeared to be important elements in reducing corruption. Increased corruption also resulted from complicated regulation of market entry and tariffs. Corruption was found to increase with the abundance of natural resources and with the distance to the major trading centers. However, these two latter results provide no direction for reform. The same is largely true of cultural dimensions. In particular, a mentality of accepting hierarchies was found to increase corruption.

Democracy obtained the expected positive impact on absence of corruption. However, this impact was more complex. Only countries with high levels of democracy, or electoral systems with high rates of participation, are able to reduce corruption. Medium levels of democracy can even increase corruption. The effect of democracy is also not immediate but takes decades rather than years. Thus, democracy reduces corruption in the long run, but not the lukewarm type of democracy.

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