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**DETECTING CORRUPTION AND EVALUATING  
PROGRAMS TO CONTROL IT:  
SOME LESSONS FOR MENA**

**Jeffrey B. Nugent**

**Working Paper No. 738**

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## Abstract

This paper attempts the following tasks. First, it attempts to examine the seriousness of corruption in the MENA region as a whole as well in individual countries of the region or even sectors or regions thereof and how this may have changed over time. Second, it takes advantage of a stylized simple principal agent model to help identify both various determinants of corruption as well as possible policies to control corruption. Third, it summarizes some relevant findings from around the world with anti-corruption policies and programs, and of methods for their evaluation so as to serve as a guide for future anti-corruption efforts and research in MENA. The results of the first task are (1) that, while earlier corruption in MENA had not been as serious compared to other regions of developing countries, more recently it has been on a sharp rise in most MENA countries and especially in those which earlier were reported to have the lowest levels of corruption, (2) that from firm surveys in MENA countries, ordinary (or micro-level) corruption seems to be positively associated with certain other obstacles to doing business, such as tax administration, crime, political instability and competition from the informal sector, and (3) that, because of the vulnerability of natural resource revenues to insufficiently transparent accounting, MENA seems to be the region with the greatest apparent corruption in the form of international payments leakages. The result of the second task is a list of ten potentially important anti-corruption measures. From the third task we identify empirical and experimental evidence from around the world assessing the appropriateness and applicability of each of the ten anti-corruption measures identified. Since most of this research comes from other parts of the world, further research will be needed in MENA country conditions to determine the applicability and comparative cost-effectiveness of alternative corruption-reducing treatments. For this reason, special attention is given to some of the assessment methods that have proved useful in other countries but also to several measures that would seem especially appropriate in the conditions of MENA countries.

**JEL Classification:** D7, P1

**Keywords:** Corruption, Evaluation, Measurement, MENA Region

## ملخص

تسعى هذه الورقة لتأدية المهام التالية. الأولى، تحاول أن تفحص مدى جدية الفساد في منطقة الشرق الأوسط وشمال أفريقيا ككل وكذلك في كل بلد على حدة في المنطقة أو حتى القطاعات أو المناطق منها وكيف أن هذا قد تغير مع مرور الوقت. ثانياً، تستفيد من نموذج كيل بسيط للمساعدة في توضيح المحددات المختلفة للفساد وكذلك السياسات الممكنة لمكافحته. ثالثاً، تلخص بعض النتائج ذات الصلة من جميع أنحاء العالم لمكافحة الفساد مع السياسات والبرامج، وأساليب تقييمها وذلك لتكون بمثابة دليل لجهود البحث المستقبلية على مكافحة الفساد. ونتائج المهمة هي كالتالي: الأولى هي (1) أنه على الرغم من أن الفساد في وقت سابق في منطقة الشرق الأوسط وشمال أفريقيا لم يكن خطيراً بالمقارنة بمناطق أخرى من البلدان النامية، إلا أن الأونة الأخيرة شهدت ارتفاع حاد في معظم بلدان المنطقة وخاصة في تلك التي كانت في وقت سابق لديها أدنى مستويات الفساد، (2) أن من مسوحات الشركات في بلدان المنطقة، عادية (أو على المستوى الجزئي) يبدو أن الفساد يرتبط بشكل إيجابي مع غيره من العوائق المعينة لممارسة الأعمال التجارية، مثل إدارة الضرائب، والجريمة، وعدم الاستقرار السياسي والمنافسة من القطاع غير الرسمي، و (3) أنه بسبب ضعف إيرادات الموارد الطبيعية والمحاسبة ليست شفافاً بالقدر الكافي، فيبدو أن المنطقة تعاني من فساد أعظم يتضح في شكل تسرب المدفوعات الدولية. نتيجة المهمة الثانية هي قائمة من عشرة تدابير لمكافحة الفساد والتي قد تكون هامة. من المهمة الثالثة نحدد الأدلة التجريبية من مختلف أنحاء العالم لتقييم مدى ملاءمة وتطبيق كل التدابير لمكافحة الفساد العشرة المحددة. وبما أن معظم هذه الدراسة تأتي من أجزاء أخرى من العالم، فسوف تكون هناك حاجة إلى إجراء مزيد من البحوث لظروف بلاد المنطقة لتحديد مدى انطباق ومقارنة فعاليتها من حيث التكلفة البديلة وعلاجات الحد من الفساد. لهذا السبب، نولى اهتمام خاص لبعض أساليب التقييم التي ثبتت فائدتها في بلدان أخرى ولكن أيضاً لعدة تدابير من شأنها أن تبدو مناسبة وخاصة في ظروف بلدان هذه المنطقة.

## **1. Detection of Corruption in MENA Countries and Links to Determinants and Policies**

In view of (1) the very uncertain policy and institutional environments lying ahead for MENA countries, especially of those going through rather fundamental economic and political transitions, (2) the importance of predictable futures to business firms and households, and (3) the relevance of corrupt acts as a means of reducing uncertainty about the future institutional environment, corruption is likely to pose a serious challenge to the quality of governance and economic success throughout much of the MENA region for some time to come. Moreover, unacceptably high levels of corruption at the highest levels of government have been cited as one of the main causes for the revolutions that have taken place between 2010 and 2012 in several MENA countries. For this reason, controlling corruption deserves priority attention. But, since it varies in form and seriousness from place to place, to know how best to attack corruption in any particular country it is imperative to learn where it is most serious, and either its determinants or at least the circumstances that are most closely linked to it.

One mean of identifying areas in which corruption seems to be most endemic would be to conduct comprehensive reviews at the country level of national legislation and related enforcement for dealing with corruption. Such reviews should be able to identify areas in which national laws and/or their enforcement are lagging behind those of other countries and/or of regional and international standards in anti-corruption efforts. An important mechanism for doing just this is the United Nations Convention against Corruption (UNCAC), initiated in 1996 and officially signed in the UN General Assembly in 2003 by 140 countries. Its importance can be attributed to the fact it is the first legally binding system for committing countries to anti-corruption measures and holding individual countries to live up to the international standards set by UNCAC.

Unfortunately, to date such assessments have been completed in only a few MENA countries and those completed assessments are not yet available to researchers and the general public. All MENA countries should allow this to happen as soon as possible. In the meantime, in what follows we attempt to make use of some scattered information from existing surveys.

First in Table 1, we provide country-specific scores on various alternative indexes of freedom from corruption from three different sources identified in the table. Each such source uses a different scoring system but in each case, a higher number indicates that corruption is perceived to be a less serious problem. Generally speaking, these sources rely heavily on investor opinions and reports. Perhaps as result of this, with the possible exception of the International Country Risk Guide's (ICRG) score for Iraq in 2009, the scores from the different sources are fairly consistent. At present, Qatar, UAE, Jordan, Kuwait, Bahrain, Oman and Turkey seem to be among the least serious corruption, and Iraq, Libya, Lebanon, Iran, Sudan, Syria and Yemen among the countries with the most serious corruption problems. The table, however, reveals two rather alarming findings: (1) In recent years, at least, no MENA country comes even close to the freedom from corruption score of Singapore which has colonial, historical and some geographic characteristics not unlike some of the smaller MENA countries and which has long been held as a model by at least one of them (Bahrain). (2) With the possible exception of Egypt and especially Turkey (which improved substantially on all three indexes), virtually every MENA country with comparable scores in both 1990 and a more recent year experienced a substantial decline in at least one of its freedom from corruption scores. The indexes show that the averages for MENA as a whole also declined whereas the already high scores for Singapore increased further on two of the three indexes.

While Table 1 alerts us to the apparently growing seriousness of the corruption problem in most MENA countries, a low freedom from corruption index tells us nothing about where in

the country to look for that corruption, such as problematic sectors or types and sources of the corruption. One small step in that direction is taken in Table 2 which shows the percentages of firms saying they would be expected to give gifts to officials for each of 10 different purposes as well as the size of the gift for securing a government contract and the percentage of firms identifying corruption as a major constraint. These percentages are computed from data taken from the most recent World Bank's Enterprise Surveys (between 2006 and 2011). Such information is available for only nine MENA countries plus the West Bank and Gaza and nearby Mali and Mauritania. While several MENA countries have lower percentages of firms responding positively to these questions than those responding in all survey countries combined (labeled "All" in this table), it should be considered that few such surveys have been undertaken in high income countries where corruption is generally low. The countries where the surveys have been undertaken are with a few exceptions limited to developing and transition countries in which corruption is generally quite serious. Yet, from the most comprehensive indicator given in the final column of the table, the only MENA country with a lower than average "percent of firms identifying corruption as a major constraint" is Morocco. The overall MENA average of such scores is over 20% higher than that of the world as a whole. Once again, corruption seems to be most common in Yemen, Syria, West Bank and Gaza, Lebanon, Algeria and Iraq. The value of the gift required to secure a government contract relative to the value of that contract is highest for Egypt, followed closely by Lebanon, Yemen and Syria. Over 90% of the firms in Egypt and Lebanon and about two-thirds of those in Syria and Yemen say that gifts are necessary to obtain government contracts.

These results, therefore, would seem to identify the countries and sources or types of corruption that would seem more serious and thus deserve priority attention in the attempt to reduce corruption. For example, corruption in obtaining government contracts would seem to deserve priority attention in Egypt, Lebanon, Yemen and Syria. On the other hand, corruption with tax officials would seem to be most serious in Syria and Yemen. The percentage of firms saying that firms are expected to give gifts to get an operating license in Yemen is far higher than that in any of the other countries or regions. Iraq and Yemen would seem to deserve priority for dealing with corruption in getting access to electrical connections and Syria priority for corruption by users of courts. In the case of "speed money" or "the need for firms to give gifts to public officials to get things done," as shown in the table, this is again a very pervasive problem for firms in Syria, Yemen and Algeria but not in the other countries. Naturally, answers to such a question do not identify the exact reasons lying behind affirmative answers in these cases but regulations and the delays in getting things done in relation to these regulations would seem like good candidates. To the extent that this is true, and perhaps similarly for many of the other columns in the table, the culprit may be the cumbersomeness of regulations of the type indicated, be it getting a license of a particular type or gaining access to electricity or water.

Unfortunately, not all questions on gifts were asked in all surveys. Table 3 presents the answers to somewhat similar questions from the Enterprise Survey for Egypt for 2006 but with an added item, namely payments to labor administrators (representatives), normally the employees of the Ministry of Labor who are responsible for worksite inspections concerning labor laws and regulations. Note from the first column of this table that almost 85% of Egyptian firms reported the need to make such payments, slightly higher even than the percent indicating the need to make gifts to tax officials. The remaining columns of this table do a little more detective work showing how these percentages vary by location and ownership of the firms. With respect to location, industrial zones are often looked at as convenient places for firms to locate to make it easier to gain access to the services they need. Note, however, that in this case the average percentage of firms located inside these zones

making gift payments to officials are in many cases higher.<sup>1</sup> A shortcoming of Tables 2 and 3, however, is that, because they do not give the magnitudes of these payments, they do not necessarily translate into the overall cost to the firm of total gifts.

Closely related to the questions given in Tables 2 and 3 is the question posed to each sampled firm in most of these Enterprise Surveys concerning the relative importance (usually on a 0-4 scale) of a particular “obstacle” to the current operations of this firm’s business. Among the obstacles firms were asked to evaluate are: access to telephone lines, to land, to electricity, to licenses and permits, or to finance, crime, competition from the informal sector, political instability, labor regulations, tax rates, tax administration, inadequately educated workforce, and finally corruption. Given the extent to which corruption is seen to be pervasive in most MENA countries from Table 1, we attempt to make use of the firm-specific responses to these questions to link the various more specific problem areas (obstacles) of firms to the firm-specific evaluation of the relative importance of corruption. Relatively complete responses to the relevant questions on the obstacles including the corruption obstacle are available for the eight MENA countries listed in Table 4 and for some 45 non-MENA countries. In the case of Syria we make use of two different surveys (those of 2003 and 2009) since both were based on reasonably large numbers of firms and were taken with a considerable number of years apart, potentially allowing us to detect possible changes in the determinants of corruption between the two years.

In Table 4, for each of these countries and a pooled cross section of countries as a whole we present the results of regressions of the following form:

$$CORRUPT_i = \alpha + \beta_{jk} OBST_{ik} + \gamma_{ij} X_{ij} + \varepsilon_i$$

where for each country  $CORRUPT_i$  represents the importance of corruption as an obstacle to the current operations of establishment  $i$ ,  $OBST$  is the vector of  $k = 14$  other subjective indexes of the degree of severity of each of the obstacles identified above, and  $X_{ij}$  represents the vector of  $j = 12$  other controls (for location, size, ownership, age, technological characteristics, the perceived consistency of government policy, unionization and use of an external auditor identified in the top portion of the table), and  $\varepsilon$  represents the error term. The values of the constant terms are not included in the table.

In the top part of the table are the parameter estimates and statistical significance levels of the various controls and in the bottom part of the table are those for the various aforementioned obstacles to doing business. In both parts of the table one can see some heterogeneity in the direction of the effects from one country to another, but also some general patterns. For example, in the top half of the table, location in the capital city tends to be more positively related to  $CORRUPT$  and both size and age of firm and government ownership are negatively related to  $CORRUPT$ . Firms with external auditors, however, are likely to have significantly higher  $CORRUPT$  scores in Egypt, Jordan, Morocco and Turkey but lower ones in Algeria. Of particular importance may be the fact that firm perceptions concerning the consistency of government regulations are significantly negatively associated with  $CORRUPT$  in most of the countries where this question was asked (Algeria, Jordan, Syria (2009) and Turkey). This could be interpreted to reflect that corruption tends to be more serious in environments where firms are led to believe that the regulations are not consistent across time and areas of the economy, perhaps prompting a firm to bribe officials to gain greater assurance about its own treatment and the future stability of such treatment.

More important, however, are the parameter estimates for the different obstacles to doing business in the bottom part of the table. Most of these relate to specific types of regulations or access to public sector supplied services. With the minor exception of access to transport

<sup>1</sup> None of these differences, however, is statistically significant.

(which has a coefficient -0.121 which is significant at the 10% level in Jordan, there are no cases of the seriousness of these obstacles being negatively related to CORRUPT and at least one country for which the association is positive and significant for each of the other obstacles. Not surprisingly, the largest number of MENA countries (seven) with significant positive associations with CORRUPT is for tax administration. But, the obstacles for political instability, crime and the informal sector have positive and significant parameter values for five MENA countries while those for labor regulations and licenses and permits are positive and significant for three countries. The only other obstacle without a positive and significant relation to CORRUPT in at least one country is access to an educated and skilled workforce (which is hardly a service directly supplied by government).

While we can certainly not claim that these relationships demonstrate causality from these other obstacles to CORRUPT, it would generally seem more plausible that the direction of influence is more from them to CORRUPT rather than the other way around. In any case, it is those firms reporting greater problems with tax administration, political instability, crime, “unfair” competition from the informal sector, labor regulations and licenses and permits that subjectively rate corruption to be more serious than those for whom these obstacles are less severe. While the coefficient for crime on CORRUPT tends to be larger than those for the other obstacles (especially in Morocco, Oman and Turkey), one should probably not make too much of this since for this obstacle reverse causality from CORRUPT to crime may be quite plausible.

In any case, the positive and significant relationships revealed in the obstacles portion of Table 4 may well serve as additional signals as to areas on which the individual MENA countries might do well to focus in their anti-corruption activities. For example, despite the previously stated qualification for the magnitude of the coefficient of crime on CORRUPT, attempts to identify further the reasons lying behind this relation deserve serious scrutiny in every country where this relationship could be estimated. Similarly, the results of the relation between tax administration and CORRUPT would seem to suggest that all countries included in the table except Turkey might do well to investigate corruption in tax administration. The results also suggest that all countries except Oman and Turkey could do well to do the same with policies and other changes that might influence perceptions of political instability. Similarly, all countries except Jordan and Morocco could benefit from carefully investigating the various kinds of regulations giving rise to informality and making firms which do abide by the regulations feel that competition with firms in the informal sector represents a serious obstacle to their business. The activities in enforcing labor regulations and in granting licenses and permits for various activities would seem to deserve priority attention in Egypt, Morocco and Syria (though note that in the 2009 Enterprise Survey this association has seemingly disappeared). Access to electricity would seem associated with corruption in Jordan, Lebanon and Syria and also access to telephone lines in Oman and again until recently in Syria. The findings for access to land obstacle would seem to indicate that the process of gaining access to land could be a source of corruption only in Syria.

The above analysis is based on those rather explicit forms or manifestations of corruption between identifiable agents and their clients. But beyond this, there is another category of corruption that is especially hard to identify but can be measured at the country level in terms of balance of payments. Global Financial Integrity (a program of a US-based NGO, the Center for International Policy) has been measuring illicit financial flows worldwide since 2000 based on data and methods first developed by The International Monetary Fund and The World Bank. They use two different methods to construct measures of these illicit financial flows. The first method (labeled GER for Gross Excluding Reversals has been in use for some time and derives from the over-invoicing of imports, and under-invoicing of exports, a common method of sending capital out of developing countries illegally. The second method,



based on the change in external debt (CED), net FDI inflows, the current account balance (CAB) and the change in international reserves ( $\Delta R$ ), is measured by:  $(CED + \text{net FDI}) - (CAB + \Delta R)$ . The terms inside the first parentheses represent the country's source of funds during a specific period and those inside the second parentheses represent the use of funds. The two sets of computations can be carried out for each country over time and compared with each other as well as each of these across countries. When the recorded uses of funds outweigh the sources of funds from the country's international accounts, it implies illicit outflows of funds. These outflows presumably reflect illegal transfers and other unrecorded transactions.

Actually, for MENA countries, the computations of Global Financial Integrity reported in Kar and Freitas (2011) show that, while the first measure (GER) proves to be a major source of illicit capital flows for China and other developing countries of Asia and Africa, it is actually not very important in MENA, constituting no more than 4% of the total of the two measures for this region. However, the CED-based calculations revealed this source of capital outflows to be unusually large (those accumulated over the 2000-2009 period are valued at US \$1.33 trillion) and growing over time. Despite a sharp decline in the level of these outflows in MENA during the year 2009 due to the financial crisis, MENA's share in the world total in 2009 was 18.6%, a share that was higher than all regions except Asia. The growth of the illicit financial outflows by this method in real terms over the period 2000-2009 for the world as a whole was 10.2% whereas for MENA it was 19.6%, only slightly lower than that of Africa. It was noted that most of these illicit capital outflows in MENA were in the oil exporting countries, indeed with Saudi Arabia, UAE, Kuwait and Qatar being ranked the 4<sup>th</sup>, 6<sup>th</sup>, 7<sup>th</sup> and 12<sup>th</sup> largest in the world in terms of the accumulated flows over the period 2000-2008. While these flows reflect unrecorded transactions that cannot easily be tied to certain types of agents, as Kar and Freitas noted, it seems due to the incomplete accounting of transactions between oil producers and host country governments.

## 2. Model of Principal and Agent

Now that there is at least some, albeit admittedly crude, evidence on at least some of the various determinants or types of corruption, we turn to identifying possible ways of dealing with them. As has been noted by many analysts in the past, one can obtain at least an intuitive understanding of the essential features of the forces giving rise to corruption as well as potentially useful insights into how to deal with it from the perspective of a simple principal-agent analysis. The following simple account illustrates this.

The principal (the president, a governor or minister) hires an agent to collect taxes, provide *client firms* with licenses to operate, construct, buy land or imported machinery or raw materials and provide *client households* with access to electricity, jobs, health facilities, food subsidies or schools. Both agents and clients are assumed to make rational choices as to whether to be honest or corrupt based on the expected benefits and costs of each alternative. The agent's reward for being honest and avoiding the temptation to be corrupt is the utility obtained from his base salary ( $S$ ) plus that obtained from the moral satisfaction of (or reputation for) being an honest person ( $M$ ), i.e.,  $U(S, M)$ . On the other hand, the agent's benefit of being corrupt depends on the size of the bribe  $B$ , the probability of being caught accepting the bribe ( $p$ ), the fine (in monetary or utility terms) imposed if caught ( $F$ ), and the loss of  $M$ , i.e.,  $U(S+B(1-p), -F)$ . In turn, the size of the bribe  $B$  may depend on the extent of the benefit that the client might derive from the exchange. Thus, if markets were highly competitive and hence the benefit that the client firm might obtain from an additional license to produce, or that a client household might obtain from access to a special health facility were very small,  $B$  would presumably be small as well. The overall benefit to the corrupt agent would be  $U(S+B)$  if not caught receiving a bribe and  $U(S+B-F)$  if caught. The rational agent will choose to be honest only if  $U(S, M) > U(S+B(1-p), -F)$ . Clearly, the higher is  $S$  and

M for given  $p$  and  $F$ , the more likely the agent will be honest. So too, the agent will be more likely to be honest, the lower the bribe ( $B$ ) and the higher the probability of being caught taking a bribe ( $p$ ).

Knowing this, and assuming that the principal was interested in limiting corruption in government, the principal may want to choose among several options according to the benefits and costs of each. These options might well include: (1) offer the agent a high  $S$ , (2) offer moral training so as to raise  $U(M)$ , (3) increase his monitoring of the agent to increase the probability of detection of a corrupt agent ( $p$ ), and (4) raise the fine  $F$ , or (5) any combination of (1)-(4). The particular action (if any) chosen by the principal would presumably depend on the costs to the principal as well as the benefits anticipated from each of these actions in terms of both his own distaste for corruption and any threats to his continued term as principal that might arise from adverse sentiment of the public with the appearance of corruption. It is quite possible that some of the constraint-relaxing benefits that his client might extract from the corrupt agent could be welfare-increasing for the public. It is also quite possible that each of the aforementioned alternative actions that the principal might take (higher  $S$ , training for  $M$ , etc.) might be subject to diminishing returns. If so, a combination of such actions might be optimal, rather than any single most cost-effective method.

As experience in MENA has shown, principals are not necessarily free from corruption, and indeed the magnitude of the corruption from which they benefitted has constituted one of the several major motives for the revolutions that have comprised the “Arab Spring.” In any such case, the principal could be thought of as an agent with monopoly power, so that the same framework could be applied to the case of a principal extracting corruption payments directly from the clients.

The more ambiguous the rules that the principal asks the agent to administer and enforce and hence the more discretion that is given to the agent, the more likely the agent will be able to obtain a larger bribe and avoid being caught violating the rules. Ambiguity in the rules, therefore, will increase the incentive for the agent to be corrupt. By the same token, the agent, either independently or in collusion with the principal, may try to design or amend the rules in such a way as to make them more ambiguous and serve as a magnet for rent-seeking behavior on the part of clients. The above four examples of actions that might be taken to reduce corruption could be supplemented by a variety of complementary activities. For example, Lambsdorff and Nell (2005) advocates that the bribe givers are also penalized (indeed more severely than the bribe takers if the bribe is rewarded with a favor) and further that some agents be induced to fail to deliver on the expectations of a benefit in return for their bribe, both actions intended to discourage clients from approaching agents for favors.<sup>2</sup>

Political and other institutions can also play an important role in determining the particular way in which principals, agents and their clients interact. For example, principals may be more likely to exercise greater monitoring over their agents when they are being encouraged to do so by international agencies or foreign donors upon which they may depend. They also may be more likely to do so in democratic contexts in which incumbent corruption-ridden regimes may be voted out when citizens feel adversely affected by corruption. Likewise, it may be easier to detect corruption in countries characterized by freedom of the press and other media. So too, honest agents and clients might be more likely to “blow the whistle” on their corrupt counterparts the more that they feel protected by whistle blower protection measures and honest well-functioning and independent courts.

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<sup>2</sup> The reasons for this is their belief that major social cost arises from distortions to competitive resource allocation that would result from the agent delivering on the request of the rent-seeking client and that any agent that reneges after not delivering the favor to the client is already likely to be in danger of retaliation by the client.

Given the obvious plausibility of several of the aforementioned policy actions that might be taken to limit corruption, for several of these possible options there has emerged a considerable literature on the experience to date. In Section III, we take up a number of the proposed actions, one at a time, drawing primarily on empirical analyses and especially recent experimental evidence.

### **3. Methods of Fighting Corruption and Relevant Evidence**

From the insights of the principal-agent model and related literature on corruption, in this section we consider ten different common proposals for fighting corruption. Several of them may be considered naïve and there is no claim that the list is exhaustive. The ten anti-corruption actions are:

- (1) limiting the size of the public sector and privatization,
- (2) stimulating competition and openness,
- (3) decentralizing the government,
- (4) simplifying regulations, limiting variations over time and space, and lessening the room for discretion and ambiguity in program rules and increasing transparency and information,
- (5) raising the salaries (both present and future) of the agents (bureaucrats),
- (6) increasing the extent and adequacy of monitoring agents and clients,
- (7) firing and replacing the endemically corrupt agents,
- (8) establishing an anti-corruption agency,
- (9) allowing free access to media and creating an effective and free press, and making greater use of international standards.

In several cases, various complementary measures are identified that could make the particular action under consideration more likely to succeed. As a result, in effect, the list of policy actions goes beyond the ten mentioned above. For each of the ten proposed actions, some relevant evidence is cited.

#### ***3.1 Limit the size of the public sector and privatize***

Since much of the corruption that households and business firms are concerned with is that involving government, a common view of businessmen and the general public is that corruption increases with the size of the public sector. The larger the public sector, the more bureaucracy is likely to invade the private space of households and business firms and the more permits and regulations that are likely to be required. This view is buttressed by the idea that services provided by the government are less likely to be priced by the forces of supply and demand and hence when priced too low, they may have to be rationed. Clients with close connections to either the principal or agents may like this. To maximize the rents and bribes that they may be able to collect, agents may deliberately distort rules and regulations.

This rationale leads to policy proposals that corruption can be and should be reduced by reducing the size of the government sector. This would seem especially relevant in MENA countries where governments often play a larger role in the economy than in other countries at their respective income levels. Methods of accomplishing this might include reducing the share of government expenditures in GDP (LaPalombara 1994), reducing the share of state-owned enterprises in both investment and non-agricultural GDP (Elliott 1997), privatization, or more generally minimizing the scope for “grabbing hand” in the economy (Shleifer and Vishny 2002). Nevertheless, as the experience with massive and very rapid privatization in transition countries showed, the process was often characterized by large scale corruption. The MENA region has had the experience of a number of substantial privatizations. It might be useful to search for evidence of diminished or increased corruption resulting from privatizations in individual countries.

### ***3.2 Increase competition and openness***

Closely related to the rationale for privatization and reducing the size of the public sector is that of decreasing the incentives for rent-seeking behavior (Krueger 1974). Means of accomplishing this would include greatly reducing licensing, non-tariff barriers and the incentives to create monopoly power (Klitgaard 1988) and more generally opening up each product market to competition by deregulating product markets and liberalizing trade (Ades and di Tella 1997/1999; Gerring and Thacker 2005), and committing to international trade liberalization agencies like the WTO and IMF which also provide enforcement (Sandholtz and Gray 2003) with respect to each of several dimensions of openness to trade (Sachs and Warner 2001). ***Decentralize Government***

Instead of the excessive size or competition-reducing character of government, another common complaint in developing countries in general and MENA countries in particular is the high degree of government centralization, with all key decisions being made by centralized ministries or even higher level decision makers. Since these central decision makers are far from the problems of households and businesses in different parts of the country, decentralization is seen as a possible way of aligning incentives of government with the needs and capabilities of its citizens, thereby limiting the need for getting around the misaligned incentive system through corruption and bribes. This would suggest that, in small countries or in large countries with more decentralized government, citizens may be in a better position to monitor their governments and thereby control corruption than those in large countries with centralized government administrations.<sup>3</sup>

### ***3.3 Simplify regulations and lessen discretion and ambiguity in program rules and increase transparency and information***

Still another popular fix for corruption is to limit the complexity, quantity, time and cost of regulations. Some at least crude indications of the link between regulations and corruption for MENA countries was presented in Section I. Corruption was seen to be related to those obstacles to business having to do with tax regulations, labor regulations and product and process regulations in the form of permits and licenses. It is both the number of regulations and their complexity and ambiguity that matter. The more steps involved, the more costly they are in time for both clients and agents and the more willing firms are to pay “speed money” to speed up the processing.

Naturally, regulations can provide benefits such as protection from a variety of dangers (to health, accident and so on) but Broadman and Recanatini (1999) and Djankov et al. (2002) have provided evidence suggesting that rent-seeking effects (corruption, creation of barriers to competition) seem to vastly outweigh the benefits to safety, health and other conditions. On the other hand, deregulation of safety, building codes, financial regulations and so on has often resulted in calamities. So, what to do? One useful approach seems to be eliminating ambiguity and the scope for discretion by the potentially corrupt agent, such as by unifying rates on taxes and customs duties and eliminating vagueness in the rules while not eliminating them.<sup>4</sup> Another complementary approach is to raise transparency regarding the existing rates and rules, not only about taxes and tariffs but also about government decisions and programs. In situations where information about service availability or the means of gaining access to public services is limited, such services can more easily be diverted from the poor (their intended users) to the elites with better informational access. Hence, in such situations lack of transparency about regulations and programs can give rise not only to

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<sup>3</sup> Empirical evidence in favor of this policy approach has been provided by Root (1999) and Fisman and Gatti (2002), although Knack and Azfar (2003) and Shleifer and Vishny (1993) suggested that when the size of the bribe would be endogenously determined by the individual agents, they would not be likely to take into consideration externalities such as the effect of their bribe setting on the revenues to be captured by other agents.

<sup>4</sup> Impressive evidence in support of this approach was provided by Gatti (1999) and Lambsdorff and Cornelius (2000).

corruption but also to greater inequality. Publicizing the programs and regulations in a simple way through open village meetings, local newspapers, mailed and emailed announcements can help mitigate the capture of such programs and regulations by the rich, including public sector officials.<sup>5</sup>

Another demonstration of the relevance and importance of information availability for controlling corruption is provided by Yang (2005). In this case, information in the form of pre-shipment evaluations of imports (PSI) was provided by a private firm to each of 19 different countries at some time between 1980 and 2000. The information supplied by the private firm was the appropriate trade classification and tariff code number applied for each shipment of imports in the country of origin (i.e., the exporting country). PSI programs do not replace local customs officials in the importing country, but the availability of this information was shown to limit the extent to which an individual customs official would depart from that classification and associated tariff rate supplied by the PSI, and would solicit bribes from the clients. The cross-country panel results in the study showed that, on average, tariff revenues increased by somewhere between 15 and 30% in the first five years after the introduction of the PSI programs and that the revenue gains were 2-3 times as large as the costs.<sup>6</sup>

### ***3.4 Raise the salaries (both present and future) of the bureaucrats***

As noted in Section II, many economists and administrators have derived from the principal-agent model the policy prescription that, when the salaries of the agents are low, e.g., near subsistence, and hence bureaucrats may be virtually forced to accept bribes to survive, agent salaries should be increased. Empirical evidence on this, however, is quite mixed. Van Rijckeghem and Weder (2001) made use of data on the wage rates in government relative to those in manufacturing from a cross section of 31 low income countries to show that countries with relatively higher government salaries tended to have lower corruption (measured by the ICRG's corruption index) but that the effect was rather small. While the authors attributed this to the higher opportunity cost of being detected as corrupt when salaries are high relative to when they are low, they admitted that alternatively this could be due to the perception of fairness as might well be the case when the increase in wage rates is viewed as correcting a previous inequity with respect to the pay of others. The opportunity cost explanation was also confirmed in a laboratory setting by Abbink (2004). On the other hand, Grindle (1997) reported the results of a study across some 29 organizations and countries in which it was shown that, by itself, higher wages did not improve performance unless a corruption-free culture and leadership was first established through training and leadership in reducing corruption (Bridi, 2010).

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<sup>5</sup> Reinikka and Svensson (2004/2005) documented the success of an information campaign in Uganda in the late 1990s which called attention to the rules that were used by the government in allocating funds to individual public schools. Prior to the information campaign none of the relevant decision makers at the local school and village level knew that each local school was entitled to funds from the central Ministry of Education depending strictly on the number of students in the school and given per student. As a result, neither the teachers nor parents (who were paying most of the costs) nor even the school administrators were aware that they were almost invariably not receiving the funds to which they were entitled and which were in fact disbursed by the Ministry. After this was discovered, a public sector tracking survey (PETS) was undertaken to measure the extent to which each school was actually receiving the disbursements to which it was entitled. Rather shockingly, the survey's results showed that less than 13% of the funds allocated actually reached the schools. This angered members of the local parent teacher associations (PTAs), teachers and others. It led to a newspaper campaign carrying reports about the diversion of funds and the subsequent indictments of numerous officials, but above all, about the information on what the rules were. Another PETS study was done after the information campaign, in this case also collecting information about access to newspapers and rules of the grant program and even about the means by which such information became available. The results showed that by then the percent of disbursed funds had risen to more than 80%, with larger increases in the poorer school districts than in the better off ones demonstrating that the information program was both corruption-reducing and equity-increasing. A two-step estimation procedure was used, the first stage for information access (instrumented by distance to a place where newspapers were delivered) and the percentage of disbursed funds actually received by each school in the second stage.

<sup>6</sup> Notably, Yang went to some effort to distinguish the PSI treatment effects from other simultaneous changes in tax collection elsewhere in PSI-treated countries which might have reflected the influences of other policy or program changes, but found that none of these factors influenced the results. The evidence showed that PSI both decreased undervaluation of import values and reduced the coefficient of variation of the classification differences. For additional corroborative evidence of the effects of PSI information programs in a more experimental setting see Yang (2006).

Barr et al (2004) applied the salary-raising experiment to a different setting, an experimental one involving both health workers who had an opportunity to embezzle some funds and monitors (either elected or appointed) whose task was to prevent them from doing so in Ethiopia. They found (1) that health workers with higher salaries embezzled less, but once again only slightly less and, (2) that monitors facing elections were more diligent in monitoring than appointed ones. Abbink and Ellman (2004) added some wrinkles to the analysis, showing that, if an intermediary is requested by the donor to help in getting the resources to the poor in the community, the benefits of the monitor being elected tended to disappear because of collusion between the intermediary and community elite.<sup>7</sup>

Since the threat of future fines and loss of salary could play an even more important role in the decision of agents to be honest or corrupt, the prospect of higher future salaries of bureaucrats could be even more important than the level of current ones. Mayors of cities often have higher salaries than others in government and average citizens. As a result, Ferraz and Finan (2011) argued that when audits were conducted to detect possible misuse of funds by the mayors, those mayors with the possibility to remain in power at least one more term would have greater incentive to avoid misuse of funds than mayors without that possibility. To test this hypothesis, the authors made use of data from such audits to compare the extent of missing funds between those Brazilian cities with first term mayors who were eligible for an additional term and those where they were already in their last terms. The finding was that there were 27% less misappropriated funds in those cities where the mayors could run for an additional term. Further, they showed that these effects were greater in those communities where information access was weakest and judicial punishment for embezzled funds was lower. Hence, these results suggest electoral rules could be particularly important when other conditions for dealing with corruption are especially weak and in those MENA and other countries moving toward democracy at local and national levels.

A quite common form of dereliction of duty, and perhaps corruption, is absenteeism from work without good reason. This is a particularly serious problem in India. Duflo et al (2012) report the results of a randomized experiment in which teacher's pay was changed to reward presence in the classroom in randomly selected subset of sample schools. Apparently, monitoring was pretty good as it was, so that, even without extra monitoring tools, teachers with the incentivized pay schedules had average absence rates only half those of the non-incentivized teachers (which were 42%). Moreover, when more intensive monitoring (with photograph verification) was added to the higher pay treatment, there was no additional increase in teacher attendance. Perhaps even more importantly, the authors also showed that student test scores increased over time in those schools with the incentivized pay schemes.

Another issue in the design of incentive pay schemes to reduce corruption or increase performance is whether the incentives should be on a group basis or an individual basis. One can easily think of reasons (such as peer pressure) which might favor group-based incentives but on the other hand the group system could also lead to greater free-riding and hence lower effectiveness. Muralidharan and Sundaramian (2009) compared the effectiveness of these two types of pay incentives in improving student test scores in government-run rural primary schools in India. They found statistically significant positive effects of approximately equal magnitude for the two incentive types in the first year of operation but by the second year the

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<sup>7</sup>Other circumstances may affect the effectiveness of wage increases to agents in diminishing corruption. Di Tella and Schargrodsky (2003), e.g., investigate the effects of higher wages on the extent of corruption in the procurement of material supplies by hospitals in Buenos Aires in two different time periods: first, during a time in which there was a big crackdown on paying excessive prices and then again somewhat later. Immediately after the crackdown on such corruption when monitoring was at its maximum, hospital purchase prices were reduced by 15% but with no difference between the hospitals receiving the higher pay treatments and the untreated ones. On the other hand, somewhat later, when such monitoring was less intense and the price reductions were no longer as large, hospitals treated with the higher wages were associated with a significant reduction in prices compared to the untreated ones, indeed the changes reflecting a wage elasticity of prices paid, of more than - 0.2.

group incentive seemed to be less effective in raising test performance than the individual one.

Naturally, in evaluating the effects of wage incentives for teachers designed to improve student performance, e.g., student test scores, attention should be given to the extent to which teacher and student efforts are merely diverted from another dimension of performance to test scores via “teaching to the test.” Indeed, Glewwe et al. (2010) reported the outcome of a study showing that student performance increased as a result of the incentives only on those specific measures on which the incentive pay program was concentrated.

### ***3.5 Increase Monitoring to Detect Corruption***

As indicated in the previous section, higher wages to agents are unlikely to reduce corruption very substantially without effective monitoring and enforcement. Olken (2007) reported the outcome of an ingenious way of finding out how best to do this in the context of over-invoicing of reimbursable costs on Indonesian village road projects. Villages were eligible to propose local road projects for funding and when their projects were selected the projects were assigned to village teams which bought the materials, hired the labor and other inputs to complete the projects. The teams then reported costs to the funding agency for reimbursement. These reports with receipts were subject to a randomized auditing procedure, which in principle could result in someone being indicted for overbilling. Whereas in the baseline only 4% of the executed projects were audited, after treatment in one group of villages all projects were audited. Corruption, measured as the gap between the expenditures reported for each project and the estimates of an independent engineer in the treated group of villages was reduced on average by 8% (or by one third of the average gap of 24% of total cost in untreated villages). The author also reported the outcome of some alternative treatments. In one treatment in which the local citizens were empowered to do the monitoring instead of the central auditor, this had the effect of reducing the more easily observed over-invoicing of labor costs, but these benefits were small relative to the total costs. In another treatment, anonymous comment forms were distributed to the local citizenry which allowed the local citizens to express their concerns without fear of reprisal from the powerful elites. In this case, two different means were used for distributing the forms to the citizens, namely, neighborhood leaders and school children. The largest reduction in over-invoicing was obtained when the forms were distributed by the school children because when distributed by the leaders, the forms were distributed primarily to those closely related to the elite.

In another study making use of the variation in misuse of funds across Brazilian municipalities Ferraz and Finan (2008) showed that conditional on the number of fund use violations, those mayors whose cities were audited prior to an election were less likely to be reelected than those audited after the election. As Olken and Pande (2011) noted, this demonstrates an important complementarity among monitoring activities, information availability and electoral accountability. The effectiveness of monitoring can be increased when information about the outcome of such monitoring is made available prior to election.

Since monitoring is costly, an important practical issue is the choice of what to monitor. Shleifer and Vishny (1993) develop a very simple model for helping to answer that question. Their analysis focuses on the incentives of the agents offering a particular permit and those of their customers and the role of competition among both agents and customers. Competition among agents is likely to increase the ability of agents to price discriminate so as to maximize their revenues (and perhaps be able to bribe the top tier of government for the job). Competition among the customers for the permits is also important. The keener the competition becomes, the more it will push up the demand for permits and the bribe price. But whether or not this happens depends on the payment (if any) that the government gets for the issuance of the permit by the corrupt agent. If he can avoid having to pay anything to the

government for selling the permit to his customer, the profit maximizing interests of the corrupt agent and the customer are aligned (but at the expense of the government), since the customer can get the permit at a price below what he would otherwise have to pay had the agent paid the stipulated price to the government. Otherwise, the corrupt agent will charge the customer a price above that which would maximize the agent's own profits but thereby introducing a built-in conflict between the agent and his customer. The absence of such a conflict would mean that it would be in neither the agent's nor the customer's interest to turn the other to the authorities. The stronger the competition for permits, the more this corrupt system would continue to spread. As a result, priority should be given to monitoring the payment of the permit fee of the agents to the government, rather than their illegal receipt of bribes.

An equally important issue in the case of monitoring is the way in which the permit-granting agents are organized. Typically many different permits are required to start a business, e.g. a building permit, a health permit, a labor permit, permits to obtain electricity and water, an investment permit and property rights permit of some sort. Since the services provided from all these permits are complementary, the pricing of each exerts external effects on the value of the other. Again under endogenous bribe or fee-setting, Shleifer and Vishny (1993) demonstrates that, if this were done independently by each agent, the bribe prices might well be set so high as to make the activities economically infeasible. On the other hand if they were provided in a single one-stop shop, the prices of the different permits would be lower and coordinated in such a way that social welfare (agents plus customers) would be maximized. Further, if competition among the providers of each different service/permit is fostered (as in a federalist system), this may minimize the bribes but not the fees for the government as long as these payments are properly monitored.

### ***3.6 Rotate, fire and replace the endemically corrupt agents***

From the principal-agent problem and the actions identified above, taking away the salary and imposing a steep fine on the corrupt agent would be another and rather straight-forward strategy for lowering the incidence of corruption. However, this may not be appropriate or feasible under weak monitoring and enforcement. In particular, the principal may have little evidence of corruption on the part of an individual agent, just overall indications of leakage of funds and anecdotes about corruption. So what can be done under such circumstances?

Abbink (2004) investigated in his computer laboratory an action that had been introduced by the German government a few years earlier, namely, the regular rotation of staff in corruption-prone activities. He did this by investigating the outcome of dictator-type sequential transfer games between individual agents and clients over a sequence of 30 sequential plays of the game. The key feature was that in one experimental group each pair played each sequential game with the same partner whereas in the other group the pairs were rotated at each stage. When the pairs were rotated, the average bribe was reduced by almost 50% relative to that when the pairs remained the same throughout the plays. Moreover, the likelihood of a bribe was reduced by about two-thirds.

In practice, however, staff rotation alone may be less productive. For example, if nothing is done except for the agents' being replaced by similar ones and then they once again repeat their interactions, the same behavior may arise with the new agents as long as the clients are still interested in getting favors from the agents. A common response to this situation is to supplement staff rotation with providing "moral training" for the new agents. However, Lambsdorff (2007, 55-56) cites an account of this supplementation being put into practice in Tanzania: it didn't work. All that happened was that the clients made use of those same dismissed agents they had learned to trust; in this case as middlemen between the new agents and the clients, but with the same corruption-induced distortions on resource allocation.



Sometimes the collective firing of existing corrupt agents has been accompanied by their replacement by a very different set of agents, e.g., with a new set of experienced agents from another country with no links whatsoever to existing clients. The new hires may have worked with NGOs or other organizations outside the government. Such an approach was somewhat successful with respect to customs agents in Indonesia. Yet, Bridi (2010) reported that since employing outsiders is very expensive and eventually the government needs to reinstate a national staff the benefits are unlikely to be lasting. This was true of Mozambique in part because there was little transfer of knowledge from the foreign staff to the nationals at the time of returning the operation to government officials.<sup>8</sup>

### ***3.7 Establish a high profile anti-corruption agency***

Several countries (e.g., Hong Kong, Singapore and Botswana) have received attention for having introduced—with considerable fanfare—high-level anti-corruption agencies that have been deemed very successful (deSpeville 1995; Doig and Riley 1998; Quah 1989/2000).<sup>9</sup> The creation of these agencies has been said to send a message to both agents and clients in the home country as well as abroad, the principals' (renewed) commitment to fighting corruption. Huther and Shah (2000), however, suggested that these agencies work best in countries where they are needed the least, i.e. in countries with relatively low corruption and other strong governance institutions. Moreover, Pope (2000) showed that in other countries with greater corruption and poor governance, the creation of such agencies has been much less successful. One way in which they fail is by having incomplete support from various parts of government and the private sector. When this is the case, those benefitting from corruption can usually find some basis for discrediting the new agency and hence setting back its mission, perhaps forever.

In an interesting attempt to compare the effectiveness of high level anti-corruption agencies with other anti-corruption strategies such as new laws and signing onto international conventions in the transition countries of Central and Eastern Europe, Rousso and Steves (2006) showed that anti-corruption agencies were on average perhaps slightly more effective, though not in a statistically significant way because of the limited number of observations and the time period under study.<sup>10</sup> In their conclusion, Rousso and Steves (2006) draws the following inferences from the experience with Anti-Corruption Agencies: (1) the effects of such actions take time to become effective, (2) they will not be effective if they are not sustained, (3) they are more likely to be successful the more well-coordinated they are within the country and the more they involve NGOs.

### ***3.8 Grant freedom of the press and media access***

Another implication easily derivable from the principal-agent problem outlined above, and an immediate derivative of Policy 4 above, concerning the importance of simplifying regulations and providing information and transparency for reducing corruption, is the usefulness of granting freedom of the press and of media access. Indeed, one interesting finding from the Rousso and Steves (2009) study mentioned in the previous paragraph was that the only variable with a statistically significant negative effect on at least one corruption measure was an index of Media Freedom (from Freedom House). Their analysis treated media freedom as

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<sup>8</sup> As suggested in policy suggestion 3 above, with or without collective firing and replacement, a more productive complement may be to provide greater transparency in all the actions taken. Among such measures would be to require that all the transactions between individual agents and clients be recorded digitally as well as computerizing information on total revenues collected by agents during a particular shift, day or type of client and to make it publicly available. As Bridi (2010) explained, the client will be less inclined to pay bribes not only because of the greater risk of getting caught but also by virtue of seeing that others are paying the full amount of the taxes and that the tax revenues are being channeled into their provision of infrastructure and other public goods desired by the client.

<sup>9</sup> Note from Table 1 above that Singapore has, for many years now, been among the least corrupt countries in the world (#5 in the world in the Corruption Perception Index of Transparency International 2011). Hong Kong was #12 and Botswana #32 in the same index. This placed Singapore and Hong Kong as the top 2 rated countries in Asia and Botswana as the top country in Africa.

<sup>10</sup> This was done by quantifying the cross-country relation between anticorruption measures of different types in one period to changes in various bribe intensity measures in a subsequent period.

a control variable having only a direct effect on the change in corruption, whereas one might also think that there could be an indirect effect by making some of the other actions more transparent to the public at large.

More generally, among institutional factors that could be expected to deter corruption which have received empirical support from cross-country empirical analyses, the negative effect of various measures of press freedom on corruption has been found quite consistently (Adsera et al. 2000; Lederman et al. 2001; Sung 2002; Brunetti and Weder 2003; Besley and Prat 2006). Press freedom may act to reduce corruption through several channels. One is by simply exposing corruption; then, once corruption has been detected, a free press can damage the reputations of the corrupt agents, and further it can pressure governments to enforce the penalties on the corrupt agents and reveal the extent of their diligence in trying to detect corruption. Naturally, freedom of press and media access could be expected to diminish the incentive of agents to be corrupt and increase the interest of the principal in dealing with corruption.

Yet, especially since press freedom and media access might be deemed to be more effective in democratic countries with well-educated populations than in autocratic ones. And since autocratic regimes tend to have more corruption and less educated populations, an important issue is whether the causality in this relation goes from lack of press freedom to corruption or the other way around. Since most of these studies are based only on cross section analysis, most are potentially vulnerable to both omitted variable biases and reverse causality.

In an especially impressive paper, Brunetti and Weder (2003) tried to tackle this problem by using an instrumental variable approach and panel data. They instrumented press freedom in several alternative ways: (1) by a measure of the level of political rights (2) with an index of democracy and (3) by the fraction of the country's population which adhered to the Protestant religion and spoke a European language. The key characteristic of a valid instrument is of course that it has a significant effect on the variable instrumented but **no** effect on the dependent variable (in this case the average score of the corruption index produced by the ICRG) **other than** that through the variable instrumented (press freedom). While the authors pointed to a previous study by Ades and DiTella (1999) showing that political rights had no significant effect on corruption, they offered no formal test results to support their claim there was no direct influence in this case. What they did, however, was to conduct a number of sensitivity tests showing the results, even with respect to magnitudes, to be quite robust to the use of different measures of both corruption and press freedom, to the inclusion of alternative control variables, time periods and estimation procedures (OLS, TSLS, Ordered Probit, and panel estimates with and without fixed effects). In particular, they showed that an increase in press freedom from the average score to highest value would increase freedom from corruption from its cross-country mean to about 30% above this level, irrespective of choice of sample, specification, measures and estimation procedure. While their analysis did not include access to cellphone, Facebook, Twitter or other technologies which would seem increasingly important in recent years, they found virtually equal effectiveness in almost every component of the press freedom index they used (the absence of newspaper censorship, the independence of newspapers, independence of book publishers, and independence of broadcasting).

Nevertheless, the interdependency between press freedom and these other institutional measures led Lambsdorff (2007, 46) to suspect that increasing press freedom, by itself at least, would be insufficient to significantly reduce corruption. Of particular relevance here is the quality and independence of the judiciary.<sup>11</sup> It is not always the case that everything in the

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<sup>11</sup> Lambsdorff (2007) cites a study by Voight et al. (2004) indicating that de facto judicial independence may be more important than de jure judicial independence, but suspecting that the lack of a significant relation between de jure judicial independence and corruption could be

press is true and hence inaccuracies, especially about corruption, can be misleading. If libel charges can be filed by individuals and groups which feel that they have been incorrectly blamed for corruption, the press will have an incentive to be truthful. However, if the judiciary is corrupt, inefficient or not independent of the executive and legislative branches of the government officials can easily discredit the press or prevent it from being aggressive in its investigation of corruption and other issues.

### ***3.9 Make greater use of international standards and monitoring***

While monitoring would seem to be one of the most important means of both detecting and reducing corruption, monitoring can be very costly and in many cases very difficult to accomplish even with the best of intentions. Yet, it is important not to lose sight of the fact that international organizations and institutions can also be called into the fight against corruption in any particular country. Such institutions provide useful standards which can enhance transparency in transactions of all kinds, both commercial and governmental. These international agencies or conventions can either monitor directly or, more commonly, train nationals in how to organize anti-corruption activities, identify existing laws and regulations that may allow corruption to flourish and point to other activities and institutional mechanisms that could be used to advantage in the fight against corruption.

In that respect, at the beginning of Section I, we already identified the United Nations Convention Against Corruption (UNCAC) as a major international institution that could be put to good use. By the end of 2011, 158 countries had ratified this convention, but several countries in the MENA region, such as Oman, Saudi Arabia, Sudan and Syria, had not yet done so. This convention includes chapters specifying various means of dealing with corruption, such as those concerning prevention, criminalization and law enforcement, international cooperation, asset recovery, technical assistance and perhaps most importantly monitoring each country's compliance to UNCAC standards. Several regional organizations have been organized to coordinate monitoring efforts in their respective regions, to provide the training needed to assure the validity of the monitoring and to translate the findings of shortcomings into remedial actions. The Arab Governmental Expert Group (AGEG) is the relevant organization for Arab countries, set up by the UNDP's Regional Program on Governance for the Arab Region (UNDP-POGAR). Arab nationals with experience in these activities were nominated by their governments and appointed to AGENG which has already carried out several region-wide training programs and then subsequently assisted others at the national level to help conduct the self-assessments mandated by UNCAC. These self-assessments are carried out in three stages. First, a country does its own self-assessment, then it is subjected to a desk review by all relevant organizations within the country and eventually as amended and supplemented it goes to a full, formal evaluation by an outside committee of evaluators from two different countries. Jordan and Algeria were the first two MENA countries to go through such reviews.

As Repucci (2009) indicated, the assessments in these countries demonstrated rather clearly the importance of broad participation and coordination among as many relevant public agencies and NGOs as possible. This study also identified the learning benefits derived from these first self-assessment exercises for subsequent exercises in Kuwait, Iraq, Morocco and Yemen. Several of them were especially innovative, Kuwait's being the first in the world to have formally involved NGOs, and Morocco's for the breadth of ministries and other agencies engaged in its self-evaluation process. Early experience in the MENA region and elsewhere is generally said to have demonstrated how important it is to involve NGOs and the private sector, especially in those countries where governments are not strongly

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due to reverse causality, i.e., where corruption is rampant it leads to laws and regulations strengthening the judiciary's hand in dealing with the issue.

committed to anti-corruption activities and the goals of UNCAC. In any case, even if initially less than perfect, these self-evaluations should be of great use in identifying problem areas, encouraging greater monitoring of corruption and stronger coordination among government agencies in assessing penalties, coordinating actions and strengthening enforcement against corruption. Comparisons over time should also yield lessons on actions that work and actions that don't.

But there are many other international agencies and conventions that could also be important. For example, the aforementioned study on corruption changes in 26 transition countries by Rousso and Steves (2006) created an index of participation in such conventions based on seven different conventions involving different aspects of the fight against corruption such as civil and criminal law, anti-bribery, anti-corruption, money laundering and so on. Recall also that their regressions showed at least some indication that countries whose indexes of participation in these conventions increased tended to have larger declines in their corruption measures than did other transition countries.

One important international organization that can help or even force countries to improve monitoring of corruption, introduce a wide variety of policies designed to lower the incentives for corruption and to undertake new anti-corruption measures is the International Monetary Fund (IMF). Wolf and Gurgun (2002), for example, pointed to a number of actions with respect to corruption that the IMF had pushed on borrowing countries in their stand-by agreements with the IMF as well as in other programs. This was subsequent to the IMF adopting a new set of guidelines on governance issues in 1997 which also called for technical assistance from the World Bank on how best to deal with corruption. They provided many examples of specific IMF programs in specific countries that pushed anti-corruption actions like those identified in the preceding subsections.

In fishing, an industry of some importance to a number of MENA countries, there are several international standards which MENA countries might do well to sign onto, especially given how poor the information on various aspects of fishing is and how much illegal fishing seems to take place. Information on the management of fisheries, number of fishing boats with licenses, government expenditures on fisheries, fisheries agreements with other countries,<sup>12</sup> and transparency in policy making are all very weak. Though seriously understudied in most regions where it has been investigated such as in Asia and Africa (Standing 2011), revenues have been shown to be seriously underreported and the embezzlement of these revenues and license fees to be quite serious (Tsamenyi and Hanich 2009; Standing 2011). A study commissioned by the British aid agency (DFID), MRAG (2005) documented the extent to which the lack of transparency in fishing had resulted in illegal fishing. But there are international conventions that could help and others that could be developed. For example the FAO has developed an international agreement on port state measures to prevent, deter and eliminate illegal fishing as well as the Global Record, an ambitious protocol in which every fishing vessel in the world would be assigned an ID number, and information on vessel characteristics, ports used, inspections and catches would be recorded and made publicly available.

Of all the industries in the world, the one which has been associated most strongly with corruption is the oil industry (e.g., Hsieh and Moretti 2006; Ross 2012). This is attributed to several factors. One is the lack of transparency in relations between the producers of oil and host governments on the one hand (which involve licensing, exploration, development, production, trade and transport through refining and marketing) and the distribution of those revenues among citizens in general, users of oil and the welfare of those living in the areas

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<sup>12</sup> According to Standing (2011), some of these agreements are with European Union (EU) countries but even in these cases, the EU refuses to make these agreements public, compounding the degree of secrecy in the industry.

near the production sights. This was reflected by the fact that as discussed in Section I above it was the oil exporting countries of MENA that were ranked so high in terms of illicit capital outflows through the CEB method used by Global Financial Integrity reported by Kar and Freitas (2011). Another problem associated with oil exporting countries is excessive economic volatility (Gelb and Associates 1988) which can lead to very serious inefficiencies in resource allocation as well as to alternating cycles of inflation and unemployment. For the latter problem and following the lead of Norway, Sovereign Wealth Funds have become an important institutional mechanism for pulling out revenues during boom times for use during bad times and more importantly by future generations after oil reserves have been used up. Even here, however, inter-country comparisons of sovereign wealth funds have generally shown the operations of those in MENA countries to be much less transparent than those of Norway and others. Given the importance of oil and gas and other natural resource industries in the MENA region, the ability to make use of sector-specific international standards for dealing with corruption and other problems in this sector could be of great use to citizens of MENA countries. Le Billon (2011), among others, has identified a number of such mechanisms, divided into the different kinds of functions served, namely, (1) contract and revenue transparency, (2) certification, and (3) broader governance standards.

With respect to contract and revenue transparency the aforementioned Extractive Industries Transparency Initiative (EITI) is perhaps the most impressive initiative available, though still only in its early stage of development. Participation in EITI is voluntary. To gain compliance status a government must first gain candidate status. Then, on the basis of annual reports submitted, it has two and a half years to achieve compliance status from the EITI Board. To achieve compliance status a government must require firms operating in the industry to publish their payments to governments and the latter must publish what they receive from the companies with which they deal and provide an independent audit to reconcile differences. EITI compliance also requires that civil society should be involved in the design, monitoring and evaluation of the audits. According to EITI's website, at present 13 countries have achieved compliance status and 21 others have achieved candidate status. Only two MENA countries have achieved either of these (Iraq as a candidate and Yemen as a compliant country, although Yemen's compliance status has been suspended because of concerns that the involvement of civil society with respect to the auditing process was inadequate). While EITI participation may be a step in the right direction as far as disclosure and transparency are concerned, there remain loopholes. The EITI doesn't require publication of expenditures by firms which could be another way for funds to disappear and to get into corrupt hands, it doesn't require sufficient detail in the accounts that governments and firms must submit and until recently at least its civil society engagement requirement is too vague. There seems to be no evidence that compliance status has yet lowered corruption. But the main problem is that governments and firms have preferred keeping their accounts hidden so as not to tip off competition, and existing EITI members have resisted making the requirements for compliant status more stringent (Le Billon 2011).

Another initiative with promise in this area is the Dodd-Frank Wall Street Reform and Consumer Protect Act turned into law in July 2010 in the United States. Among the financial reforms required by this act is disclosure of payments by issuers of financial instruments in resource extraction industries to the SEC of the U.S. This would include payments made by the firm and by any of its subsidiaries to a foreign government. The SEC, however, has not yet issued its final guidelines and U.S. oil companies have objected that drafts of this treatment would be discriminatory since it would apply only to those firms regulated by the SEC and by their greater stringency of its disclosure requirements relative to those of EITI. However, since a number of other countries with financial markets in which oil and other

natural resource firms are involved are currently considering similar developments, the discrimination critique could be weakened over time.

Since eventual success in reducing corruption through any of these international initiatives is likely to hinge on the effectiveness of the involvement of civil society in these audits and processes, however, to accomplish this may require major improvements in a much broader set of governance institutions.

#### **4. Conclusions**

In Section I we provided various kinds of data measuring the extent of corruption in MENA countries relative to other regions. Two alternative data sets were presented, first, survey-based data reflecting the opinions based on a variety of sources suggesting a number of specific types and sources of corruption, and second, aggregate statistical data calculating illicit financial flows calculated as a residual from the recorded international transactions.

Data from both sources indicates that a couple of decades ago, corruption was less serious in MENA than in most other regions of developing countries. On the other hand, the data also indicated that corruption in MENA has been on the rise and that in some respects MENA seems to stand out for having more corruption than other regions of developing countries, and much higher corruption than the world average in general.

On both dimensions of corruption we have seen much variation across countries. From the survey-based data sources on both firm and household levels and for most types or forms of corruption, countries like Syria, Egypt, Morocco and Tunisia would seem to be countries where corruption is most evident and serious while the oil exporting countries of the GCC would seem to be among the most corruption-free. On the aggregate measure of illicit financial flows, however, the picture is reversed with several GCC countries having some of the largest illicit flows in the world, in some cases despite their small size, with little evidence of such problems in other MENA countries.

To a great extent, these inter-country, cross-corruption type differences are explainable. First, in terms of regulations of international trade, finance, and product markets, the non-oil countries are more heavily regulated than the oil exporting countries. Second, as suggested by the principal agent model of Section II, even though there are regulations in countries of the GCC, because government salaries and fringe benefits are extremely high, there is little incentive for bureaucrats to be corrupt. This may not be the case in the non-oil countries with large, poorly paid bureaucracies. Third, as indicated in subsection 10 of Section III above, the monopolistic and secretive character of oil operations, the non-transparent relations with host governments (some with royal families in which it may be difficult to distinguish between private and public accounts), and the rather dominant role of oil in the GCC countries makes them especially susceptible to unrecorded transactions and therefore illicit financial outflows.

For identifying corruption within MENA, Section 1 pointed to a variety of types of surveys that can and should be used to further pinpoint where specific types of corruption occur. These surveys can also monitor changes over time as might be relevant in evaluating the effects of various anti-corruption programs and strategies. In Section III above we have identified a wide variety of policies and programs that might be taken against corruption, reviewing evidence from different countries around the world of the degree of success that various countries have had in implementing them. Clearly, local circumstances are very relevant so that any claims that “one size will fit all” with respect to anti-corruption programs should be viewed with great skepticism.

It is our hope and recommendation that the designers and evaluators of anti-corruption efforts will take advantage of the methods noted in the cases referred to in the studies for measuring specific types and sources of corruption and for evaluating the effectiveness of various

alternative programs to reduce it. Indeed, given the growing importance of corruption in MENA, and the extent to which its persistence seems to have been an important trigger for the Arab Spring, existing governments, donors, and research networks like the ERF would do well to initiate anti-corruption programs and related research activities taking advantage of these studies and methods. Many of these are designed to deal with specific types of corruption.

Yet, there are apparently two other activities at the government or international levels that will also be essential for success in dealing with corruption in MENA countries. First, MENA governments should participate largely, and more effectively and openly, in the United Nations Convention Against Corruption (UNCAC) and in Arab Governmental Expert Group (AGEG) activities fostered by the United Nations Development Program. As noted in subsection 10 of Section III, the first of these is a potentially important way of very comprehensively identifying corruption and weaknesses in existing means of detection and reduction. Yet until recently—as the end of 2011 at least—Oman, Saudi Arabia, Syria, and Sudan had not yet ratified this convention and thereby failed to take advantage of the self-assessment and review mechanisms it afforded. Even among the signatories to UNCAC, not all have made use of the training and related assessment mechanisms of AGEg. In view of the large size of the public sector in most MENA countries and the understandable desires of the private sector for stable policy and regulatory regimes, it will be very important to have the private sector better represented in these activities, perhaps through NGOs.

Second, given the importance of illicit financial outflows in the GCC countries, and the vulnerability of oil revenues to these illicit outflows, further activities to control illicit financial outflows in oil and other natural resource exporting countries in the region would seem warranted. Such activities are especially needed given the apparent desire for secrecy by each government and each oil country. Again, as indicated in subsection 10 of Section III above, each resource exporting country would be advised to sign onto the Extractive Industries Transparency Initiative (EITI) initiated by former British Prime Minister Tony Blair and to go through the steps needed to become compliant with the standards that have been established under that initiative. These include requiring all firms operating in these industries to publish their payments to governments, and governments to provide a full account of what they receive from the firms. Taking advantage of this mechanism and going on to investigate discrepancies could go a long way toward reducing the enormous illicit financial outflows that currently exist in GCC countries. Beyond this, the international community can be useful in forcing all firms wishing to have shares traded in the stock exchanges to publish the sources of their oil and all other payments to host countries. Such efforts would have the additional and very desirable effect of increasing the transparency of budgetary policies, consequently encouraging the use of fiscal rules that could greatly reduce the volatility and pro-cyclicality of government spending in natural resource exporting countries, excessive volatility being a well-known cause of slower growth in the long run.

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**Table 1: Indexes of Freedom from Corruption MENA and Singapore Compared**

	ICRG		Heritage Foundation		Transparency International	
	1990	2009	1990	2009	1998	2011
Algeria	3.9	1.5	50	30	2.6 <sup>a</sup>	2.9
Bahrain	2	2	70	50	6.1 <sup>a</sup>	5.1
Egypt	2	2	30	33	2.9	2.9
Iran	3	2	n.a.	25	3.0 <sup>a</sup>	2.7
Iraq	2	4.4	n.a.	n.a.	2.2 <sup>a</sup>	1.8
Jordan	3.8	3	n.a.	47	4.7	4.5
Kuwait	3	3	70	43	5.3 <sup>a</sup>	4.6
Lebanon	1	1	50	35	3.0 <sup>a</sup>	2.5
Libya	1	1.5	10	25	2.1 <sup>a</sup>	2
Morocco	3	3	50	35	3.7	3.4
Oman	3	2.5	70	47	6.3 <sup>a</sup>	4.8
Qatar	2	2.5	90	60	5.6 <sup>a</sup>	7.2
Saudi Arabia	2	2	70	34	4.5 <sup>a</sup>	4.8
Sudan	2	1	n.a.	30	2.3 <sup>a</sup>	1.6
Syria	2	2	n.a.	24	3.4 <sup>a</sup>	2.6
Tunisia	3	2	50	42	5	3.8
Turkey	2	2.5	10	41	3.4	4.2
UAE	3	2.5	90	57	5.2 <sup>a</sup>	6.8
Yemen	3	2	10	25	2.6 <sup>a</sup>	2.1
MENA Average	2.46	2.23	51.42	38.5	4.1	3.72
Israel					7.1	5.8
Singapore	5	4.5	90	93	9.1	9.2
USA					7.5	7.1

Notes: (1) a indicates data is from 2003, the earliest year possible from this source. n.a. indicates data not available.

Sources: for ICRG: ICRG International Country Risk Guide: [www.prsgroup.com/icrg.aspx](http://www.prsgroup.com/icrg.aspx). For Heritage Foundation: <http://www.heritage.org/explore> for Transparency International: <http://www.cpi.transparency.org/cpi20112011/results>

**Table 2: Percentages of Firms Responding Positively to Questions in Enterprise Surveys about Corruption**

Economy	Year	Percent of firms expected to give gifts to public officials "to get things done"	Percent of firms expected to give gifts to get an operating license	Percent of firms expected to give gifts to get an import license	Percent of firms expected to give gifts to get a construction permit	Percent of firms expected to give gifts to get an electrical connection	Percent of firms expected to give gifts to get a water connection	Percent of firms expected to give gifts in meetings with tax officials	Percent of firms identifying the courts system as a major constraint	Bribery index (% of gift or informal payment requests during public transactions)	Percent of firms expected to give gifts to secure government contract	Value of gift expected to secure a government contract (% of contract value)	Percent of firms identifying corruption as a major constraint
All		25.7	15.2	14.4	23.1	16.0	15.4	15.7	19.1	15.1	23.9	2.3	36.1
EECA		24.9	14.3	16.7	25.3	13.0	10.5	14.2	20.6	14.9	18.0	1.5	34.5
MENA		37.0	16.5	22.9	25.1	22.0	14.4	23.4	28.2	20.4	37.9	3.6	56.5
SSA		36.2	20.1	16.3	25.9	21.6	21.5	18.3	14.8	18.7	35.0	3.3	37.5
Algeria	2007	66.6	7.3	34.9	12.0	13.2	7.5	15.0	29.3	14.2	34.8	4.1	64.3
Egypt	2007	6.5	11.7	10.1	6.1	13.1	9.2	23.8	17.2	22.1	92.4	9.2	59.3
Egypt	2008	15.2	13.4	20.0	40.0	31.1	27.8	5.3	6.5	6.6	32.0	1.2	45.2
Iraq	2011	31.8	24.2	41.0	29.1	48.7	17.3	29.1	14.0	33.8	31.0	1.8	62.3
Jordan	2006	18.1	3.1	1.3	11.8	8.8	4.5	0.9	16.6	1.8	2.3	0.1	40.7
Lebanon	2009	22.9	12.5	0.0	27.5	8.9	9.1	19.2	40.2	17.2	97.7	8.8	66.5
Morocco	2007	13.4	0.0	20.0	15.3	5.0	4.2	10.7	30.1	8.4	6.4	0.3	27.3
Mali	2010	19.4	42.4	35.2	39.9	39.5	40.2	20.2	15.9	23.4	22.8	2.5	24.8
Mauritania	2006	82.1	33.2	32.8	53.0	39.9	76.4	48.2	10.8	46.6	76.2	8.1	17.1
Syria	2009	83.8	25.2	25.2	25.8	28.5	9.3	61.0	60.8	34.3	66.4	7.2	67.1
Turkey	2008	18.0	10.7	0.3	14.0	3.1	3.9	4.0	19.8	5.8	23.1	2.3	42.3
WB and Gaza	2006	13.3	1.6	2.9	2.6	7.1	5.9	2.7	17.1	2.5	4.7	0.5	66.5
Yemen	2010	68.2	60.8	61.1	62.3	46.2	44.1	66.7	39.0	65.2	66.2	8.3	68.3

Notes: EECA represents Eastern Europe and Central Asia, MENA = Middle East and North Africa, SSA = Sub Sahara Africa

Source: World Bank: Enterprise Surveys; <http://www.enterprisesurveys.org>, World Bank

**Table 3: Percentage of Egyptian Firms Giving Gifts to Officials by Location and Owner**

<b>Purpose of Gift to Officials</b>	<b>Overall</b>	<b>Location</b>		<b>Domestic</b>	<b>Ownership</b>		<b>Government</b>
		<b>Outside of Zone</b>	<b>Inside Industrial Zone</b>		<b>Arab</b>	<b>Foreign</b>	
Customs for Imports	12.5	11	17	11.6	33.3	32.1	16
Registration	10.6	12	7.1	11.1	0	10.7	2
Obtain License	15.9	15.4	17.3	16.3	27.8	17.8	6
Obtain Contract	9.6	9.2	10.6	9.7	5.5	3.6	10
Tax Administration	84.2	82.5	86.9	83	91.8	83.6	94.8
Labor Representative	84.6	83.1	90.4	84.7	90.7	82.1	94.2
General	14.9	15.4	13.6	15.4	11.1	17.8	6

Source: Enterprise Survey of Egypt for 2006, N = 985

**Table 4: OLS Regression Results: Dependent Variable The Importance of Corruption as an Obstacle to the Firm's Business**

Country	Algeria	Egypt	Jordan	Lebanon	Morocco	Oman	Syria	Syria	Turkey	45 Countries including Non-MENA
Year	2002	2004	2006	2006	2004	2003	2003	2009	2005	
<b>Control Variables</b>										
Capitol City		0.066 **	0.024		-0.028			0.209 *	0.244 ***	0.121 **
Multi-plant Size	0.042				-0.292 *		-0		-0.004	0.424 ***
Foreign 1	-0.164	-0.178 **	0.01	-0.019	0.018	0.031	0.05	-0.209	-0.084	0.054 ***
Foreign 2	-0.004	-0.116	-0.44	0.157	0.146	-0.24	0	0.15	-0.371 *	-0.082 **
Government	-0.176	-0.373	0.127		-1.048	0.177	1.31	0.34	-0.028	-0.361 **
Age of Firm	-0.009 **	-0.002	-0.01	-0.002		-0.01 *	0.01	-0.006	-0.003	0
Quality Certificate		0.016	0.281	0.064	0.078		0.21	-0.04	-0.052	-0.019
New Technology		-0.018		0.108	0.046	-0.42 *	-0.36 *		-0.145 **	-0.097 ***
Email	-0.051	0.476 ***	-0.13	-0.026	-0.112	-0.22	0.96 **	0.066 **	0.2 *	0.027
Website	0.037	0.09	-0.34	-0.187	0.093	0.19	-0.58	-0.214	-0.031	0.026
Capacity Utilization	0.001	-0.006 **	-0	-0.004 *	-0.001	-0	-0		-0.002	-0.001 **
Age of Exporting	0.01 *	0.005			-0.006	-0.02	-0.04 **	0.018 **	0.004	
Consistent Government Regulations	-0.15 ***		-0.23 ***	0.011	-0.034			-0.091	-0.048 **	-0.018 ***
Union Percent	-0.001	0.001	-0.01 *	-0.002	0.001		0		0.001	-0.001 ***
External Auditor	-0.228 *	0.301 **	0.456 **	0.016	0.412 ***	0.066	-0.01	0.129	0.141 *	0.013
<b>Obstacles to Business (Strength)</b>										
Telephone	0.009	0.092	0.031	-0.022	-0.035	0.131 *	0.15 **	0.029 **	0.003	0.222 ***
Electricity	0.036	0.014	0.25 ***	0.094 *	0.029	-0.01	0.11 **	0.023 **	-0.037	-0.014 **
Transport		0.034	-0.12 *	-0.077	0.062	-0.08	-0.03	0.012	0.022	0.091 ***
Land	-0.016	-0.032	0.064	0.052	-0.024	0.015	0.12 **	0.08 **	-0.009	0.136 ***
Tax Rates	0.02	0.014	0.072	0.022	-0.016	0.022	-0.08	-0.018	0.12 **	0.003
Tax Administration	0.158 ***	0.068 *	0.132 **	0.153 **	0.068 **	0.106 *	0.14 **	0.089 **	0.031 **	0.123 ***
Customs	0.024	0.056	-0.01	0.036	0.035	0.017	0.05	0.156	0.061 **	0.16 ***
Labor Regulations	0.06	0.057 *	0.045	0.064	0.212 ***	-0.04	0.14 **	0.011 **	-0.045	0.005
Education/skills of workers	0.023	0	-0.08	-0.002	0.048	0.053	-0.08	0.056	0.034	0.025 **
Licenses, Permits	-0.021	0.067 *	0.028	0.045	0.157 ***	-0	0.24 ***	0.052 ***	0.032 ***	0.035 **
Access to Finance	0.015	0.071 **	-0.02	0.053	0.013	0.099 *	0.04	0.025	0.017	-0.183 **
Political Instability	0.301 ***	0.264 ***	0.282 **	0.187	0.187 ***	0.085	0.16 **	0.069 **	0.027	0.013 **
Crime			0.207	0.231 ***	0.512 ***	0.506 ***	***	0.089	0.512 ***	0.059 ***
Informal Sector	0.167 **		-0.07	0.144 ***	0.073 ***	0.162 ***	0.1	0.096 *	0.19 ***	-0.013
N	530	905	348	353	834	283	319	493	1139	408,297
R2 (Adjusted for degrees of freedom)	0.276	0.168	0.421	0.368	0.47	0.489	0.28	0.265	0.47	0.362