

Investing in Integrity for Productivity

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INVESTING IN INTEGRITY FOR PRODUCTIVITY

Corruption undermines productivity growth. Fundamentally, these negative effects of corruption on productivity operate through the corruptly biased decisions in both the public and the private sector over the use of resources. More specifically, this paper argues that corruption affects three key determinants of productivity growth: innovation and diffusion of new technologies, an enabling market environment, and resource allocation. The available evidence suggests that investing into the mitigation of corruption risks through reforms of the public integrity system contributes to offset these negative effects of corruption and ensures a country's path towards sustainable and inclusive development. In particular, governments can strengthen their public integrity systems by reducing the scope for corrupt practices initiated by public officials, e.g. the extortion of bribes to obtain licences or permits, by mitigating corruption in public procurement, by ensuring meritocratic hiring processes in order to avoid favouritism and nepotism, by averting policy capture by narrow interest groups through adequate levels of transparency and stakeholder engagement, managing conflicts of interest situations, and instilling transparency in lobbying activities and political finance, as well as by providing guidance to public officials, e.g. through clear codes of conduct and guidance.

(...) if the institutional framework rewards piracy then piratical organizations will come into existence; and if the institutional framework rewards productive activities then organizations - firms - will come into existence to engage in productive activities.

Douglass C. North (1993) – Nobel Prize Lecture

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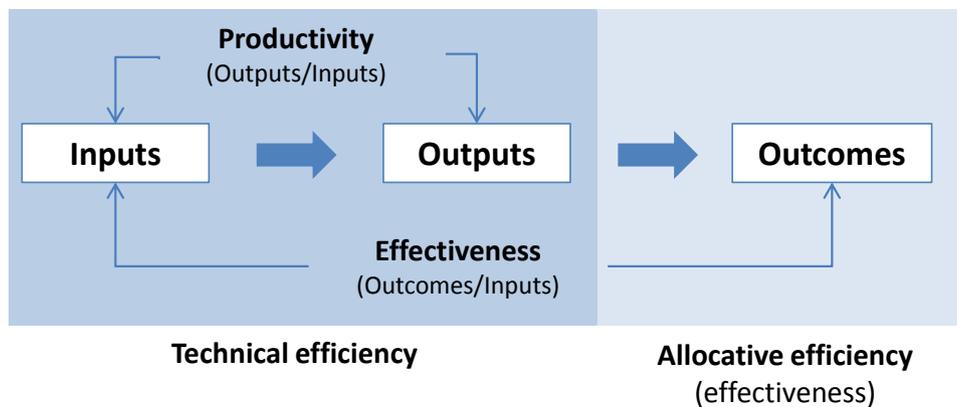
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1. GOVERNANCE AND PRODUCTIVITY

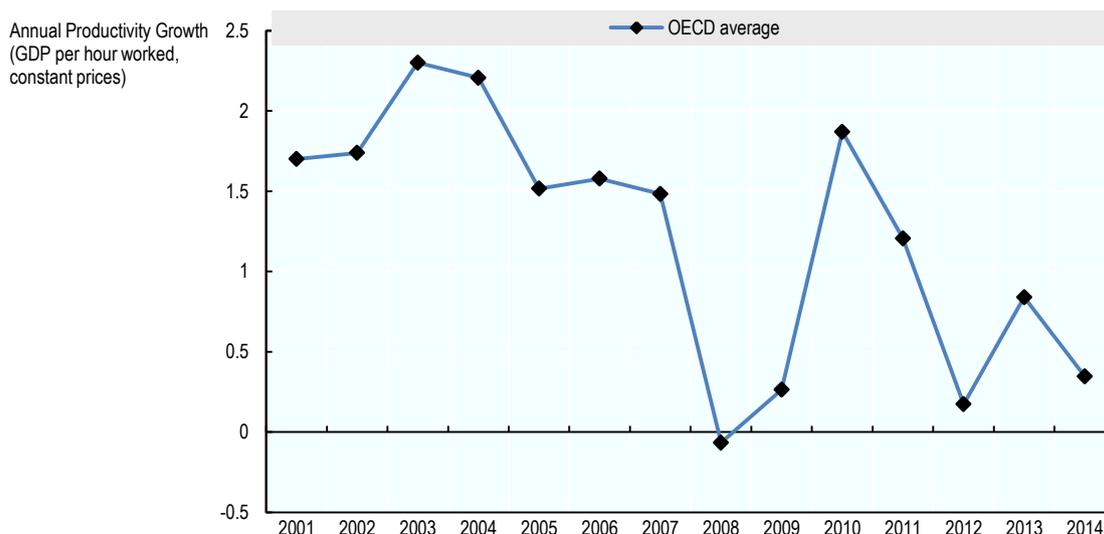
Productivity is defined as a ratio between the output volume and the volume of inputs. In other words, it measures how efficiently specific production inputs, such as labour and capital (single-factor productivity), or combinations of inputs (multi-factor productivity), are being used to produce a given level of output. Productivity is about outputs, not outcomes, and is therefore a concept related to technical efficiency, not allocative efficiency or effectiveness (Figure 1). In essence, productivity is about doing more with less, or doing more with the same amount of inputs; it is not about the question whether the right or desired outcome has been achieved.

Figure 1. The difference between productivity and effectiveness



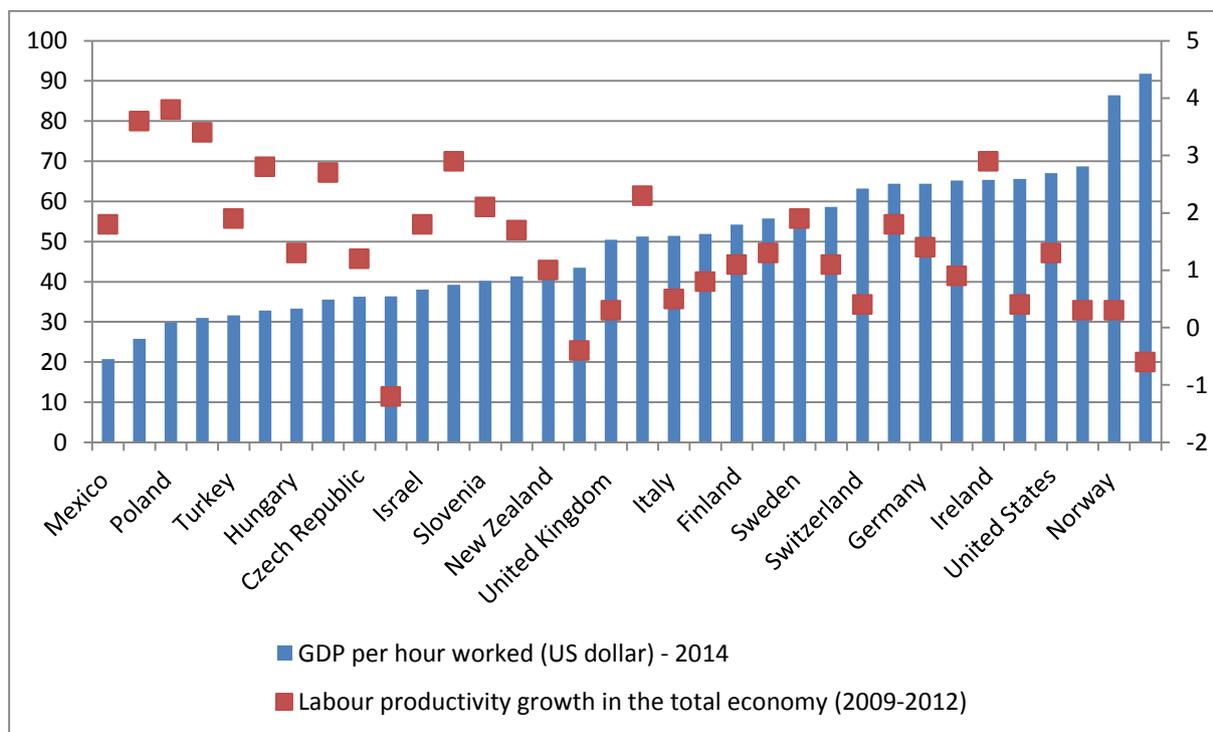
Labour productivity growth has increased globally since 1990 until at least the global financial crisis in 2007. The growth is evident in mostly emerging and developing countries, whereas since the early 2000s productivity growth has declined for many OECD countries. The average labour productivity growth across OECD countries decreased from 2% in 1990s to 1.4% in the 2000s (Mann, OECD, 2017). Figure 2 shows the decline in annual productivity growth from 2001 to 2014 for the OECD average. The decline is especially apparent since the crisis, with productivity growth lower in the past decade than in the past 60 years (Mann, OECD, 2017).

Figure 2. Productivity Growth, 2001 – 2014



Note: Figure 2 shows the OECD country average for trends in productivity growth measured as GDP per hour worked from 2001 to 2014. The figure illustrates that productivity growth has been on the decline in the past decade in OECD countries.
 Source: Based on data from OECD Annual National Accounts.

Figure 3. Labour productivity levels across OECD countries in 2015 in USD (constant prices 2010 and PPPs), and labour productivity growth rates in the total economy (2009-2012).



Source: Based on data from OECD Annual National Accounts.

Increasing productivity is not only an important target in times of budget constraints and economic crisis when resources are particularly scarce. Indeed, the growth literature has pointed out early that productivity gains are one of the major drivers of economic growth and development. From a policy

perspective, understanding the determinants of productivity gains is therefore a key question to ensure sustainable development.

Behind productivity gains are direct drivers such as innovation, accumulation of skills, and technological change. The question arises, however, what in turn drives innovation, skill accumulation and diffusion of technology. One of the key framework conditions are institutions (Rodrik et al., 2004, Acemoglu and Robinson, 2012). Formal and informal institutions are the rules of the game structuring political, economic and social life. Together with their enforcement mechanisms, they provide the broader governance framework of an economy. Institutions thus provide the environment in which productivity gains can be made. Nobel-prize winner North (2005: 134) writes that, historically, “*Growth has been generated when the economy has provided institutional incentives to undertake productivity-raising activities (...)*.” The idea is supported by empirical evidence showing that the differences in productivity are driven by differences in institutions, including informal ones such as the level of social trust, and government policies (Box 1). These empirical results highlight the importance of promoting sound governance that provides the right incentives and shapes an environment for productivity gains and development.

Box 1. The link between governance and productivity - an overview of research findings

Empirical evidence from the literature exploring the relationship between governance and productivity emphasizes the importance of quality of institutions when analysing productivity. Overall, better governance is associated with higher level of productivity.

Hall and Jones (1999) argue that differences in productivity correspond to differences in social infrastructure across countries. The authors define social infrastructure as the institutions and government policies that determine the incentives for individuals and firms in a given economy. These incentives can result in productive activities (e.g. accumulation of skills, development of new production techniques) or in predatory activities (e.g. rent-seeking and corruption). The authors produce empirical evidence across 127 countries that social infrastructure enables countries to invest in human and physical capital at a higher rate and to use these inputs more productively to produce high levels of output per worker. In general, countries with policies that favour productive activities produce more output per worker. For example, the findings suggest that the observed difference in the social infrastructure between Niger and United States is enough to explain the 35-fold difference in output per worker. Overall the empirical evidence suggests that countries with weak social infrastructure, corrupt government officials, severe barriers to trade, poor contract enforcement, and government interference in production will not reach the levels of output per worker such as in countries in western Europe, northern America and eastern Asia.

Olson et al. (2000) argue that differences in governance can explain why most low-income countries do not grow faster than the high income countries, while at the same time there are some low-income countries that do in fact grow faster than high income countries. The authors highlight the importance of economic policies and institutions that differ across countries. The authors use the Cobb-Douglas production function and assume that differences in productivity growth rates are due to differences in quality of governance. The authors carry out regression analysis using panel data for 58 countries and institutional variables such as risk of expropriation, risk of repudiation, corruption in government, quality of bureaucracy, rule of law and a constructed variable ICRG which is the average of the aforementioned five variables scaled from 0 to 10. The results show that countries with better governance have higher productivity growth.

Islam (2008) conducts cross country analysis of the determinants of productivity, which are organized into four broad categories: economic factors (e.g. size of government, openness of economy), institutions (e.g. political stability, democratic rights), social base (e.g. ethnic and religious composition of population), and physical base (e.g. location of country, climate, access to sea). The author measures productivity by using total factor productivity index and measures quality of institutions by using political stability, democracy, risk of appropriation, and rule of law variables. Using a regression approach to establish causality, the author finds that among the institutions variables, democratic rights have a direct effect on productivity.

Zak and Knack (2001) examines why generalized trust varies across countries and evaluates the effect of different levels of generalized trust on economic performance. They do this by using a principal-agent model where consumers are randomly matched with an investment broker. Given the broker's and the consumer's own characteristics, the consumers decide the degree that they place trust in the brokers who are the only way for

consumers to access the capital market. The authors show that trust is dependent on social, economic and institutional circumstances where the transactions take place. They conclude that trust is higher in societies that are deemed fair. Their model also predicts that trust is higher where there are legal and social mechanisms to constrain opportunism. Societies with higher trust also show higher rates of investment and growth.

Bjørnskov and Méon (2010) return to earlier literature on whether social trust affects total factor productivity (TFP). The authors find significant evidence supporting the causal effect of trust on level and growth of TFP using a cross-section of 67 countries in the early 2000's. The positive relationship between social trust and TFP is robust when adding relevant control variables. Furthermore, using three-stage least-squares method the authors show that trust affects TFP through property rights institutions rather than political institutions.

Egert (2016) analyses the impact of quality of institutions as well as product and labour market regulations on country-level multi-factor productivity (MFP) using a panel of 34 OECD countries over 30 year period. Egert measures MFP as the residual of the output once all inputs have been accounted for and uses the purchasing power parity exchange rate (constant 2005) to control for the different levels of economic development across countries. The results of the study show that cross-country variation in MFP can be explained by the quality of institutions, and other factors such as labour market regulations, barriers to trade and investment. Specifically, quality of institutions, more business friendly environment and lower barriers to trade increases the positive effect of research and development spending on MFP.

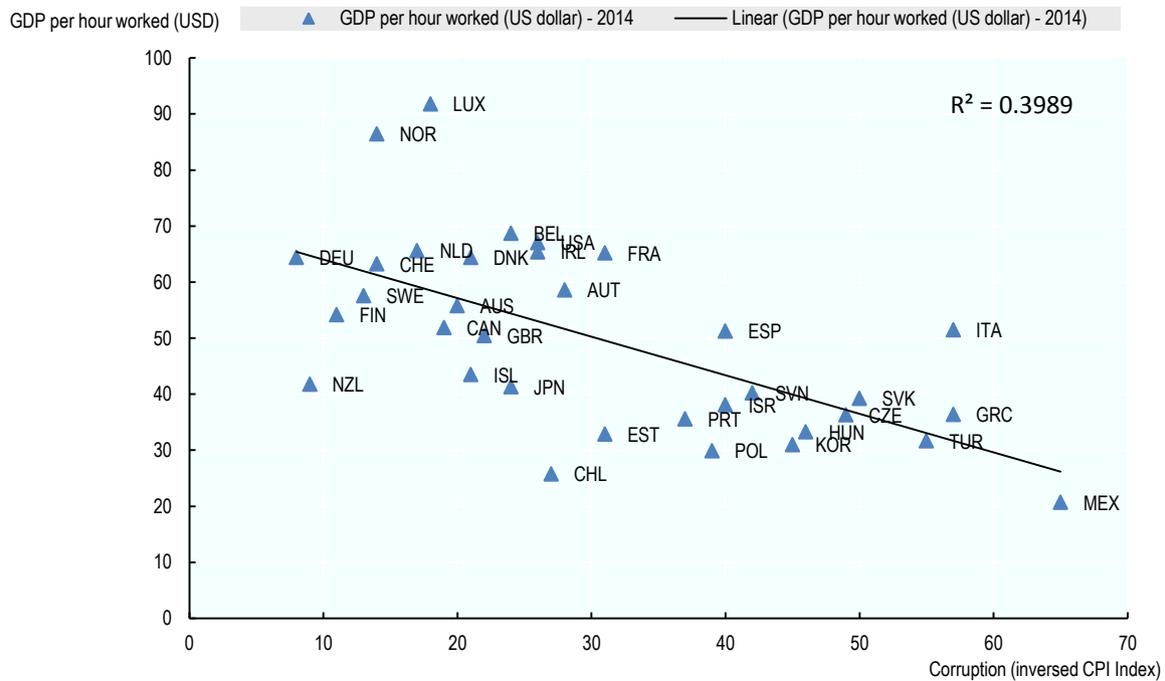
Source: Bjørnskov, C., P-G Méon (2010), The productivity of trust, Centre Emile Bernheim. Egert, B. (2016), Regulation, Institutions, and Productivity: New Macroeconomic Evidence from OECD Countries, *American Economic Review: Papers and Proceedings*, 106(5): 1-6. Hall, R., C. Jones (1999), Why do Some Countries Produce So Much More Output Per Worker than Others? *The Quarterly Journal of Economics*, 114(1): 83-116. Islam, N. (2008), Determinants of Productivity across Countries: An Explanatory Analysis, *Journal of Developing Areas*, 42(1): 201-242, College of Business, Tennessee State University. Olson, M. et al. (2000), Governance and growth: A simple hypothesis explaining cross-country differences in productivity growth, *Public Choice* 102: 341-364, the Netherlands. Zak, P., S. Knack (2001), Trust and Growth, *The Economic Journal* 111: 295-321, Blackwell Publishers, Oxford, UK and Malden, MA, USA.

In addition and in line with the previous results highlighting the importance of the overall institutional environment for productivity, the OECD recommends three policy areas that appear to be of key importance to sustain productivity growth (OECD, 2015a):

1. fostering innovation and facilitating the diffusion of new technologies;
2. creating a market environment where the most productive firms are allowed to thrive; and
3. reducing resource misallocation.

An important assumption behind these and other policy recommendations is that the laws and regulations on which these policies are based are made in the public interest and are effectively implemented. However, undue influence and corrupt practices can lead to decision-making processes and policies being captured, eluded or bent in favour of narrow interests imposing harm upon the others. Corruption can affect productivity and effectively tackling corruption and promoting integrity in society therefore should be a key component of such a set of policies.

Overall, the devastating effects of corruption are by now well researched and documented (e.g. Lambsdorff, 2006; Aidt, 2011). One of the established negative consequences of corruption is precisely its effects on productivity. In fact, the absence of corruption might well be regarded as a factor of production comparable to human capital (Lambsdorff, 2003: 458). Figure 4 below plots the inversed Corruption Perception Index 2015 (CPI) from Transparency International against productivity, as measured by GDP per hour worked, for the 34 OECD countries. Without making any inference with respect to causality, the figure shows that higher levels of corruption are indeed observed with lower levels of productivity, even for the small subset of OECD countries.

Figure 4. Corruption and Productivity in OECD Countries

Note: Figure 4 above plots the inversed Corruption Perception Index 2015 (CPI) from Transparency International against productivity, as measured by GDP per hour worked, for the 34 OECD countries

Source: Data from Transparency International 2014 (inversed), and OECD 2014

While this graph suggests that levels of corruption and productivity could be related, the relationship has to be controlled for with other potential explanatory variables. With data from 69 countries, Lambsdorff (2003) shows that despite including more control variables, an increase in corruption perception as measured by the Corruption Perception Index by one point lowers productivity of capital, as measured by the ratio of GDP to the capital stock, by 2%. The author provides further evidence that the results are not driven by regional characteristics (i.e. from African and Asian economies). More recent data confirms the relationship between different corruption indicators and multifactor productivity levels, defined as the overall efficiency with which labour and capital inputs are used in the production process, in OECD countries (Box 2).

Box 2. Corruption and Multifactor Productivity (MFP) in OECD countries

This box presents empirical results for a large number of OECD countries on the effect of corruption on the cross-country variation of MFP. Corruption affects MFP via a misallocation of public and private resources; in other words, inputs are not given their best use to produce outputs. Corrupt governments and administrations will pursue rent seeking, which will introduce distortions by reducing the level playing field and increase overall uncertainty. To test this hypothesis, three measures of corruption are used: i.) the corruption perception index (CPI) of Transparency International; ii.) the control of corruption sub-indicator of the World Governance Indicators of the World Bank; and iii.) the corruption index developed by Dreher et al. (2007).

The corruption indicators are plugged into a traditional reduced-form MFP equation in which MFP is linked to variables capturing the creation and diffusion of new and existing technologies (R&D spending and trade openness) and the business and regulatory environment (product and labour market regulations). The reduced-form of the estimated model is as follows:

$$MFP_{j,t} = f(OPENNESS_{j,t}, INNOVATION_{j,t}, ETCR_{j,t}, EPL_{j,t}, ALMP_{j,t}, BTI_j, CORRUPTION_j)$$

where OPENNESS measures the levels of trade openness, business expenditures on research and development (R&D) are used as a proxy for INNOVATION, ETCR is the level of product market regulation, ALMP measures active market labour policies, and BTI is the sub-component of the overall PMR barriers to trade and investment indicator, calculated as a country average. BTI and CORRUPTION are used as constants as they do not have time variation. Hence, the estimated equation does not include country fixed effect but has year fixed effects.

The coefficients on all three corruption indicators, entering the estimations one at a time, are statistically significant at the 5% level. Their signs show that a lower (higher) level of corruption is associated with a higher (lower) level of MFP for our sample of OECD countries. This is fairly robust evidence on the harming effects of corruption on cross-country MFP levels.

Estimation results on the effect of corruption on MFP levels

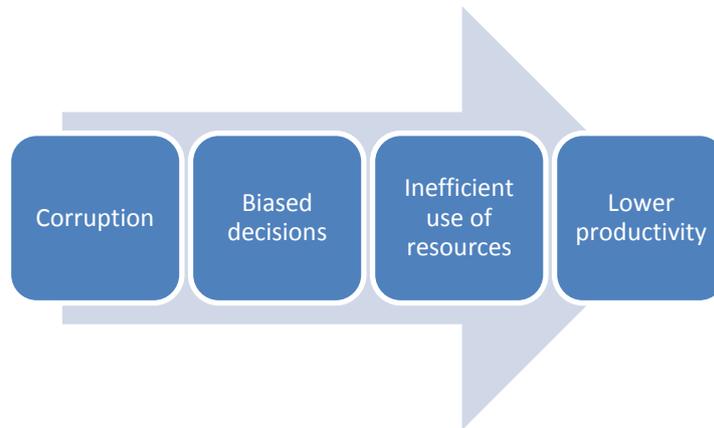
	(1)	(2)	(3)
constant	10.593**	10.994**	10.59**
product market regulation (ETCR public ownership)	-0.021**	-0.021**	-0.005
trade openness (size adjusted)	0.002**	0.001*	0.003**
business expenditure on R&D (% of GDP)	0.035**	-0.003	0.051**
output gap	0.013	0.014	0.015
log human capital	-0.055	-0.065	-0.158
employment protection legislation (EPL)	-0.183**	-0.195**	-0.18**
active labour market policy (ALMP)	0.004**	0.005**	0.003**
PMR barriers to trade & investment (cross country)	-0.292**	-0.315**	-0.207**
cross country variables			
corruption perceptions index (Transp. Inter)	0.005**		
corruption index		-0.241**	
control of corruption (WGI)			0.207**
adjusted R-squared	0.665	0.665	0.718
No. of observations	550	548	550
No. of countries	32	30	32

Source: Égert (2016).

Note: * and ** denote statistical significance at the 10% and 5% levels, based on robust standard errors. An increase in the corruption perceptions index and the WGI's control of corruption indicators imply less corruption. By contrast, a lower corruption index of Dreher et al. (2007) means less corruption.

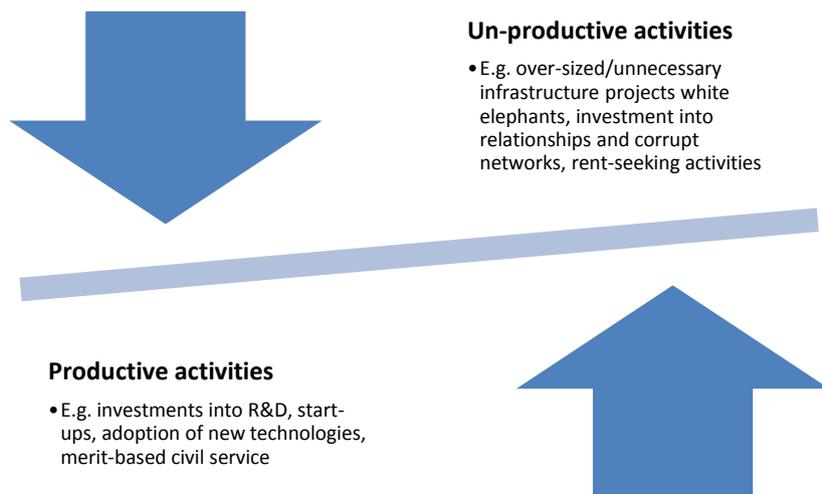
However, it is still necessary to understand the causal mechanisms through which corruption affects productivity, especially to inform policies. Almost all corrupt practices happen at the interface between the public and the private sector. Therefore, corruption is also likely to impact both public and private sector productivity. Fundamentally, these negative effects of corruption on productivity operate through the corruptly biased decisions in both the public and the private sector over the allocation of resources (see Figure 5).

Figure 5. How corruption leads to lower productivity



More precisely, corruption affects decisions in the sense that efforts are placed into un-productive activities instead of productive activities (Figure 6). For instance, corrupt public officials have incentives to create artificial bottle-necks and red tape to enable rent extraction which results in bureaucratic inefficiencies in the first place, thereby impacting productivity levels (Lambsdorff, 2002a). Another example relates to public contracting, where corrupt public officials are likely to prefer contracts where bribes are easier to obtain, shifting thereby the investments towards these types of projects. Sometimes the bribe is a percentage of the contract awarded corruptly, which in turn sets incentives in favour of oversized but not necessarily the most productive projects. In the private sector, in turn, corrupt managers have incentives to extract rents that are unrelated with the productive capacity of their company, such as undue favours or obtain privileged information and/or treatment from politicians or government officials, through the use of corrupt practices, political finance, lobbying activities, or corrupt intermediaries.

Figure 6. How corruption affects the decisions over allocation of resources



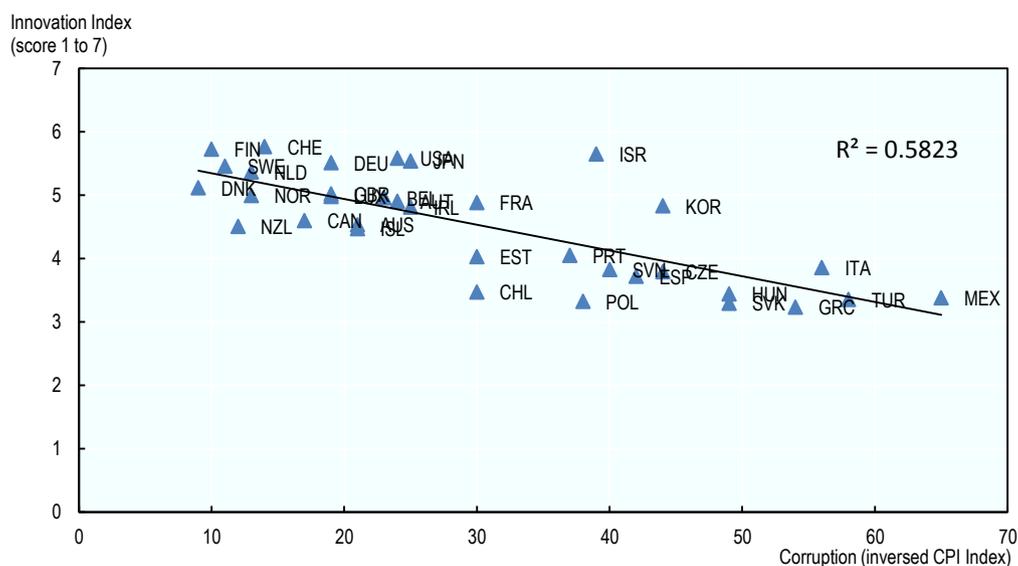
Summing up, corruption leads to an inefficient use of resources, which undermines productivity. Particularly in a context of austerity, governments have an interest in fostering their integrity systems and controlling corruption, not alone from an ethical standpoint but also from an economic point of view. Countries wishing to improve or maintain productivity growth therefore are encouraged to look beyond standard policies aimed at improving productivity and resource allocation and to consider their institutional underpinnings.

2. CORRUPTION AFFECTS KEY DETERMINANTS FOR SUSTAINED PRODUCTIVITY GROWTH

2.1. Corruption undermines innovation and diffusion of new technologies

Corruption undermines innovation across OECD countries (Figure 7), controlling for other drivers such as real GDP per capita, trade openness, student skills and political stability (Box 3).

Figure 7. Corruption and Innovation in OECD Countries



Note: Figure 7 plots the World Economic Forum Global Competitiveness Report index for innovation (2015) against the inversed Corruption Perception Index in OECD countries for 2015.

Source: World Economic Forum Global Competitiveness Index (2015) and Transparency International (2015)

Box 3. Corruption and innovation in OECD countries - results from a simple regression

Table 1 shows the empirical results for a cross sectional analysis regressing innovation with corruption controlling for relevant explanatory variables. Innovation is measured using the World Economic Forum Competitiveness Report index for innovation. The score ranges from 1 to 7, where 7 means most innovative. Corruption is measured by the inversed Corruption Perceptions Index from Transparency International. Higher values indicate higher perception of corruption. The control variables include real GDP per capita, student skills, political stability and trade openness. All data is for the year 2015 for 34 OECD member countries.

The regression results show that with a unit increase in perception of corruption, innovation decreases by .04. The results are statistically significant at the $p=.001$ level. Political stability, student skills and real GDP per capita are also statistically significant. Only the variable for trade openness is not statistically significant. The results provide support for the negative effect of corruption on innovation beyond the simple correlation shown in Figure 7. However, it is important to note that the regression results cannot be interpreted as causal.

Estimation results on the effect of corruption on innovation

	(1) Innovation Index
Corruption	-0.0419*** (0.00709)
Real GDP per capita	0.0000202* (0.00000784)
Student skills	0.00993** (0.00353)
Political Stability	-0.766*** (0.204)
Trade Openness	-0.00209 (0.0224)
Constant	0.830 (1.974)
R^2	0.788
N	34
Standard errors in parentheses	
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$	

Source: Own analysis using data from World Economic Forum, Executive Opinion Survey, OECD (2016), *OECD Factbook 2015-2016: Economic, Environmental and Social Statistics*, OECD Publishing, Paris. <http://dx.doi.org/10.1787/factbook-2015-en>, World Bank Worldwide Governance Indicators.

Note: * and ** denote statistical significance at the 10% and 5% levels, based on robust standard errors.

A corrupt environment is not conducive to innovation. Evidence for 22 OECD countries suggests that the negative impact of corruption on Total Factor Productivity (TFP) growth over the period from 1980 to 2000 is due to corruption undermining technological change and companies' incentives to invest in innovation and research and development (Salinas and Salinas, 2007). Also, where contracts and employment are based on favouritism or nepotism, instead of merit and knowledge, "*science and research are marginalized because those in power fear that talent threatens their main aim — controlling access to public and private resources*" (Mungiu-Pippidi, 2015). It is more difficult to obtain political favours through public investments in education and science than through big and visible infrastructure projects. Scholarships awarded thanks to political connections and not based on merit are also unlikely to drive

innovations. Corrupt countries tend to invest less in education (Mauro, 1998), with consequences on the quality of human resources available in both the public and the private sectors.

There is also a link between trust, innovation and productivity. Where respect for the rules is low, distrust and uncertainty are likely to spread, and individuals will invest more into safeguarding themselves and their businesses than into developing innovations or assets that could be robbed, extorted or expropriated. There is empirical evidence based on longitudinal data from 64 countries that corruption undermines the foundations of institutional trust that are needed for the development of trade and entrepreneurial and innovative activity (Anokhin and Schulze, 2009). There is also evidence from the United States that living in states with increased corruption lowers generalised social trust by using state-level data on convictions for governmental corruption with American National Election Studies (NES) panel survey data in 2000, 2002, and 2004 (Richey, 2010). Using survey data from four Latin American countries one study shows that exposure to corruption erodes belief in the political system and reduces interpersonal trust (Seligson, 2002). In addition to these general findings, a causal positive effect of social trust on the level and growth of Total Factor Productivity have been confirmed (Bjørnskov and Méon, 2010). Corruption may thus also lower productivity through the channel of lower social trust. The evidence seems to show that the general effect of trust on productivity operates through legal and regulatory governance.

2.2. Corruption prevents the creation of an enabling market environment where most productive firms can thrive

The emergence of new companies, the process of creative destruction and the pressure of competition are known to drive productivity. At the same time, evidence seems to show that more competition is related with less corruption, therefore suggesting that enhancing competition could both reduce scope for corruption opportunities and promote productivity growth (Box 4). Taking into account the negative effects corruption have on productivity, a sound and enabling market environment promoting sound competition is therefore a key ingredient to enhance productivity gains. Such an environment is characterised by more innovation-friendly regulation, lower barriers to trade, easier and cheaper access to inputs, and greater market discipline. This ensures better competition as well as a better flow of technology and knowledge (OECD, 2007).

Indeed, various OECD studies have found a negative link between restrictiveness on economic regulations in product and labour markets and productivity growth. In a restrictive product market, when suppliers face limited competition this leads to an increase in cost of inputs and in turn makes the products less innovative. This can discourage innovation, make it costly to develop innovative products or for firms to defend their intellectual property. Restrictive labour markets can limit a firm's capability to implement changes in the workforce to obtain benefits from use of new technology. There is empirical evidence showing that competition restraining regulations slow down the rate of catch up with the technological frontier, where labour productivity is at the highest (OECD, 2007).

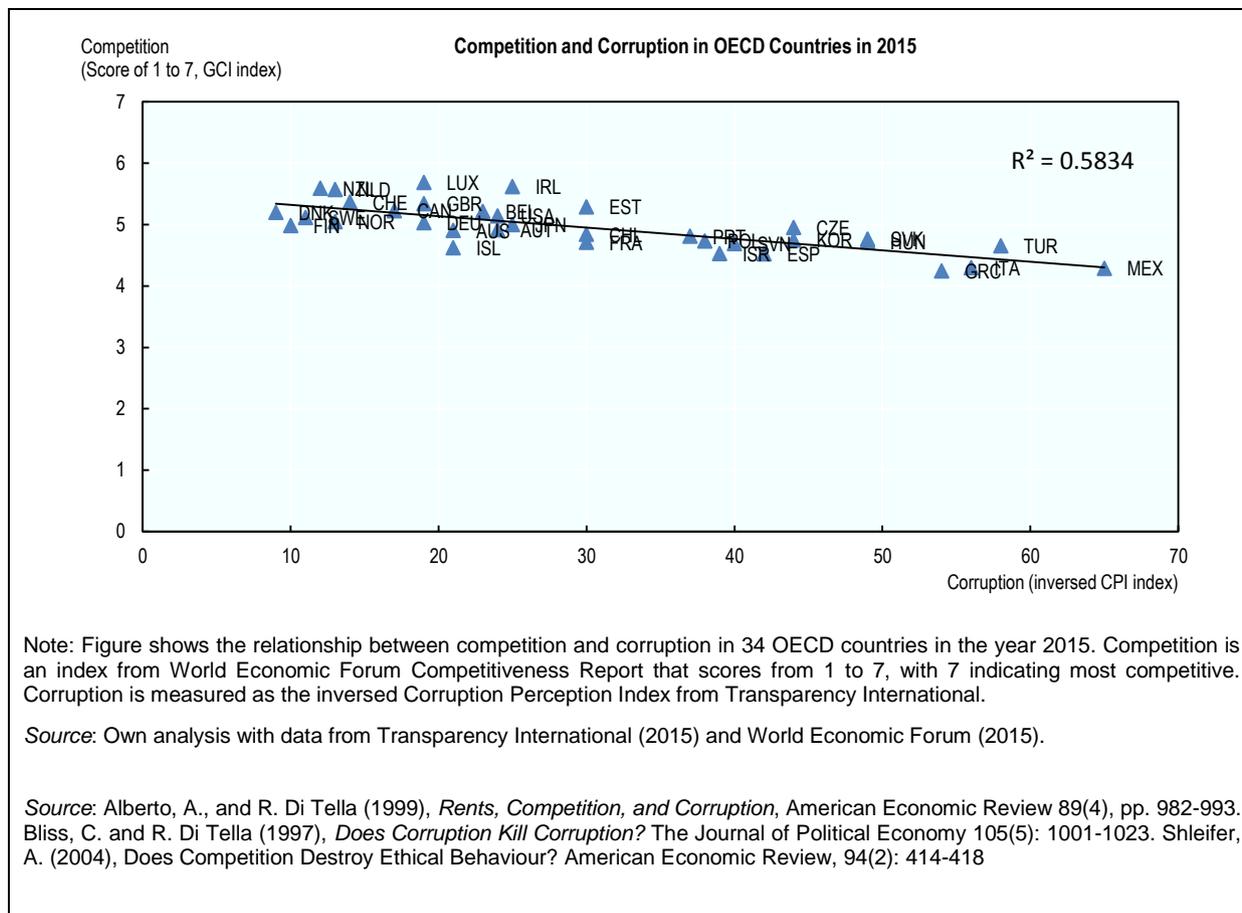
Box 4. Results from literature on the relationship between corruption and competition

Ades and Di Tella (1999) provide one of the first empirical studies for the causes of corruption across countries. Specifically, the authors test the hypothesis that natural rents (i.e oil) and rents created from lack of product market competition foster corruption. In theory, less competition indicates that bureaucrats can extract more rent from the firm they control. Less competition also may indicate that it may be in the public's interest to avoid corruption and thus, try to control the bureaucrat. The empirical results from the study show that countries that have higher rents also have higher corruption. Corruption is especially higher in countries where domestic firms are protected from foreign competition due to barriers to trade, monopoly of a few firms dominating the economy, and ineffective antitrust regulations that do not prevent anticompetitive behaviour from the firms. The study claims that the effects are significant, citing big gap differences in corruption between Italy and Austria, where about one third of the gap between the countries is due to Italy's lower foreign competition. The study concludes that policies that focus on creating more competitive markets can be effective in controlling corruption.

Bliss and Di Tella (1997) argue that economists have not identified the correct conditions where an increase in competition reduces corruption. This is so because competition is not an exogenous parameter that can be varied in a model to determine how corruption levels change, because corruption itself can have impact on competition. The empirical analysis does not lead to a concrete answer whether an increase in competition leads to an increase in corruption. The study explains that the ambiguity of the results is due to the "uncertainty about the costs that the corrupt official faces." Additionally, the model in the study also explains why it can be rational for the corrupt official to have the firm under his control exit the market stating that, "increasing product market competition may limit the adverse effects of corruption on the abundance of producers."

Shleifer (2004) shows how competition can result in unethical or "greedy" conduct using five examples: employment of children, corruption, excessive executive pay, corporate earnings manipulation and involvement of universities in commercial activities. The paper differentiates between two types of corruption: with and without theft. Corruption with theft means that the government official takes money in exchange for reducing the payments (e.g. taxes, tariffs) that the briber owes to the government. Corruption without theft means that a government official can take additional money in exchange for giving the briber goods (e.g. permits) which the briber is entitled to without bribing. Compared to the case of no corruption, corruption without theft raises costs, while corruption with theft reduces costs. As a result, corruption with theft becomes more common with competitive markets. Thus, in a competitive market a firm has to be corrupt and pay bribes or risk going out of business. The paper concludes that when competition is higher, then there is higher pressure to reduce costs, which results in higher corruption.

Testing the theory with empirical evidence from OECD countries, higher levels of corruption are associated with lower level of competition; the correlation is significant, and remains significant when controlled for GDP per capita and trade openness (see graph below).



It can therefore be expected that corruption affects the emergence of new companies. Theory suggests that in a corrupt environment, new companies may be confronted with difficulties (Murphy et al., 1993). New companies are credit constrained and may not afford to pay bribes, and at the same time they are dependent on getting government licences and permits to start their business. They are also more exposed to the extortion of bribes and favours in exchange. Innovators often lack the connections to the established elite, the public administration, and they are likely to lack their own lobbies or “protectors” in the government. In turn, the established companies may have an interest in creating entry barriers to the markets with help through governmental regulations, exacerbating the negative effects of corruption on emergence of new companies. For instance, a study in Spain found that young companies, the innovators, are indeed facing higher market distortions than established companies (García-Santanas et al., 2015).

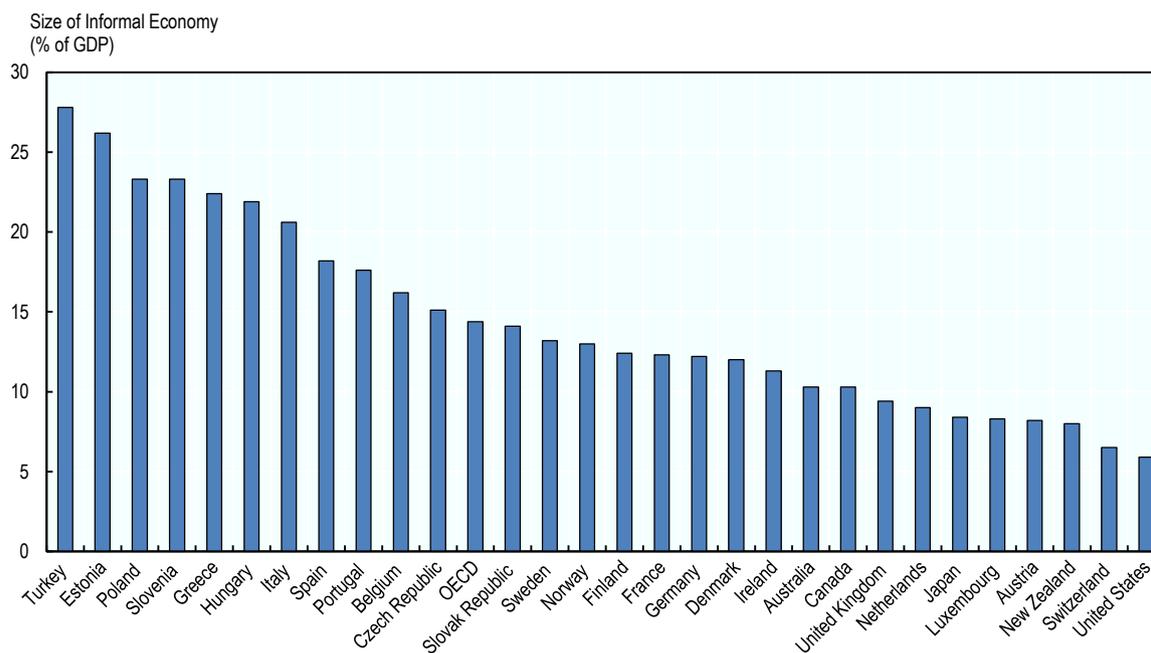
Corrupt practices help to create entry barriers to markets or influence regulations. This idea is not new; capturing regulations in order to obtain ‘legal’ protection against competitive pressure may well be a more efficient way to obtain monopolistic rents compared to ‘traditional’ mechanisms, such as product differentiation, limit-pricing strategies, or vertical integrations (OECD, forthcoming, Stigler, 1971). Krueger (1974) introduced the famous concept of rent-seeking and the costs this implies for social welfare; a concept later generalized by Bhagwati (1982), who coined the well-taken expression of *Directly Unproductive, Profit-Seeking (DUP) Activities*. There are also studies that argue rent-seeking is particularly detrimental for growth (Murphy et al., 1993) since an increase in rent-seeking activities makes investing into more rent-seeking activities even more attractive, generating a vicious cycle.

In turn, where corruption and undue influence is possible, companies are likely to invest into lobbying, building and maintaining networks of reciprocity with the public administration, contributions to

political finance, and specific corrupt know-how. Indeed, corruption can be understood as “contracting in the shadow of the law” and requires investments into very specific corrupt skills to deal with the transaction costs arising from the fact that corruption is usually illegal (Lambsdorff, 2002b). These costs include the costs of searching for partners, determining the conditions of the corrupt contract, and enforcing the contract terms. Being an efficient corruptor may under certain conditions indeed facilitate access to more business opportunities than more conventional business strategies.

On a slightly different but related level, corruption can lead to an increase or informal economy, or enable its existence. The informal sector can be defined as the hidden economic activities and transactions that result in them being unmeasured or untaxed (OECD, 2011). Figure 8 shows the size of the informal economy in OECD countries. Variation in informality ranges from close to 40% of GDP in Estonia to 10% in the United States and Switzerland. Corruption can increase the informal economy if entrepreneurs are avoiding the official economy because of corruption related to administrative procedures, such as obtaining operating licences or permits. Corruption can also be a tool used by informal entrepreneurs to escape from detection through bribes and fraud, e.g. because they are wishing to avoid paying taxes.

Figure 8. The size of the informal economy in OECD Countries, 2015

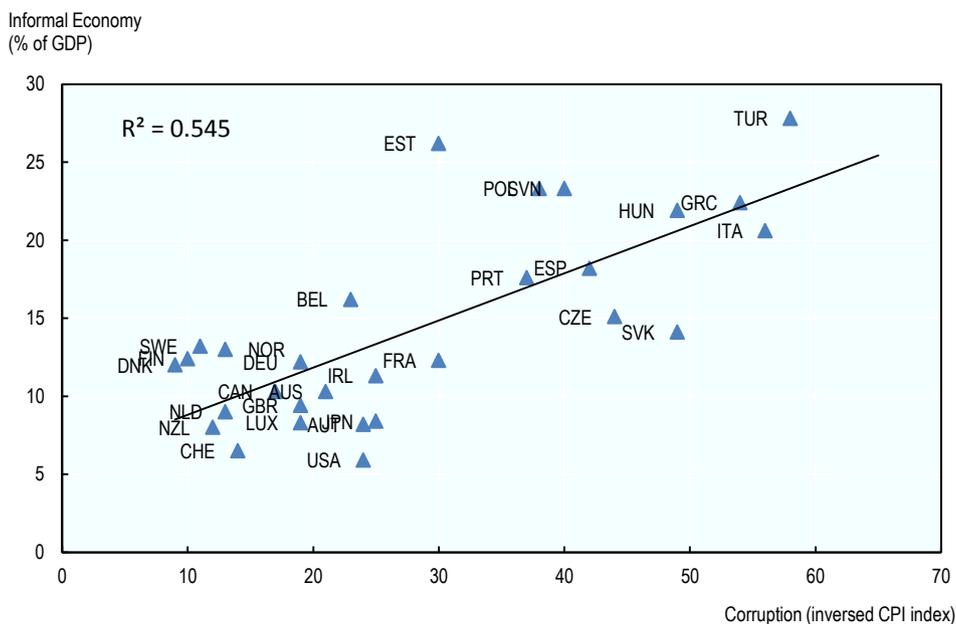


Source: Data from Schneider, F. (2015).

Through its relationship with the informal economy, corruption indirectly contributes to a low-productivity trap. Indeed, production in the informal sector is inefficient because informal firms are credit constrained, limit their size below the optimal level, and typically use backward technologies. Informal firms can also avoid complying with intellectual property rights which weakens the incentives for the formal sector to innovate and create new products. By evading taxes and avoiding the costs of regulatory compliance, informal firms can stay in business but yet their low productivity can cause inefficient competition (OECD, 2011). Additionally, it will be more difficult for firms in the informal sector to get finance through traditional methods (which results in underinvestment in physical capital as well as in research and development) and to hire highly qualified employees. Figure 9 below seems to provide empirical evidence concerning a positive relationship between informality and corruption in OECD countries: countries exhibiting a higher level of perceived corruption also have higher levels of informality.

Informality and corruption therefore seem to reinforce each other and are likely to have a joint impact on productivity.

Figure 9. Informality and corruption



Source: Data from Schneider, F. (2015) and Transparency International (2015).

2.3. Corruption leads to resource misallocation in the private and public sector

There are various reasons why resources can be misallocated, among them barriers to exit and skill mismatch. The cost of resource misallocation is high since trapping scarce resources in unproductive firms slows down the growth opportunities of the more productive and innovative firms. For example, there is a negative relationship between skill mismatch and labour productivity through allocative efficiency, (Adalet McGowan, M. and D. Andrews, 2015). Since skilled labour is scarce, trapping resources in low productivity firms makes it more difficult for the more productive firms to hire skilled labour.

A recent study investigates why Spain's GDP grew above the EU average between 1995 and 2007 and at the same time total factor productivity (TFP) fell at an annual rate of 0.7%, while it increased at 0.4% in the EU and 0.7% in the US (García-Santana et al., 2015). In general, the authors argue that the source of negative TFP growth was the increase in the within-sector misallocation of production factors across firms; in other words, unproductive companies use too much capital and labour, while productive companies are too small. Interestingly, they find that this misallocation is significantly worse in sectors where the influence of the public sector is larger, e.g. through licensing or regulations. In turn, skill intensity, innovative content or financial dependence are unrelated with such misallocation of production factors. A potential explanation of these empirical findings is that in areas with an important public sector influence, political connections are more significant than being productive; this could indicate rent seeking behaviour as described above.

Ongoing research confirms this link between corruption and input misallocation also for nine countries in Central and Eastern European countries (CEE) (Gamberoni et al., 2016). This link seems to be stronger the smaller the country, the lower the degree of political stability and of civil liberties, and the

weaker the quality and effectiveness of its regulations. The authors are able to show that this input misallocation is indeed at the root of lower total factor productivity (TFP) growth.

The negative impact of corruption on private sector productivity seems to be driven mainly by bureaucratic corruption (Lambsdorff, 2003). Indeed, studies have provided evidence illustrating that complex administrative procedures and bureaucratic inefficiency create opportunities for corruption undermining companies' productivity, and refuted that corruption could actually "grease-the-wheels" of business (Box 5). Of course, bureaucratic inefficiency also directly affects productivity. For Italy, a study exploits in-country differences of public sector efficiency and data from 400,000 firms across Italy to show that lower levels of efficiency in the public sector are significantly reducing labour productivity of private companies (Giordano et al., 2015). The findings make a particularly compelling case for the causal impact of government effectiveness on firm productivity. This, in turn, would imply that public sector reforms, amongst others those that contribute to reducing corruption risks, may be particularly important when aiming at improving productivity and could yield large economic benefits. The findings from the study show that when Italian provinces work efficiently, output per employee for the average company increases by nine per cent (Girodano et al., 2015).

Box 5. The grease-the-wheels hypothesis: Why is it refuted

It has been argued that corruption may help to elude ineffective bureaucracies and regulations, and actually improve productivity in a corrupt environment. This "grease-the-wheels hypothesis" presented by Leff (1964), Huntington (1968) and Leys (1965) suggests that corruption may be beneficial when there are inefficient institutions that can act as barriers to investment. Thus, "grease" money can serve as a "trouble-saving device" to help sidestep inefficient bureaucracies and as a result it can increase efficiency, raise investment and in the end, promote growth.

Kaufmann and Wei (1999) refute the grease the wheels hypothesis by evaluating the relationship between bribe payments, management time wasted dealing with the public administration, and cost of capital. Using data from three firm-level surveys (Global Competitiveness Report and World Development Report surveys), the authors show that firms that pay more bribes also spend more management time with bureaucrats to negotiate regulations, and, as a result, face higher costs of capital. In fact, when doing cross-country comparisons, the study shows that with a unit increase in average management time wasted, bribery increased by 0.29 (statistically significant at 5% level). The positive relationship remains significant when conducting a within country analysis of the relationship at the firm level of time wasted and bribe burden. The results have important policy implications, among them that it can be beneficial to have laws that help businesses commit to no-bribery, resulting in less bribe payments and lower capital costs.

The grease-the-wheels hypothesis also has been proven wrong more recently by Gamberoni et al (2016) and De Rosa et al (2010) for the region of Central and Eastern Europe. The former finds that the effect of bribery on resource misallocation does not depend on the intensity of the regulatory burden in starting up a business. The latter study even finds evidence that companies that do not pay bribes are experiencing higher productivity levels, indicating that while the context matters, managers of private companies may still have some degree of autonomy in deciding whether to resort to bribery or not and that this decision affects the level of productivity.

Nevertheless, there is evidence in a panel of 69 both developed and developing countries that corruption seems to be less detrimental to efficiency in countries where institutions are less effective (Méon and Weill, 2010). This might indicate the possibility of a trade-off between corruption and productivity in environments of weaker governance. The authors emphasize that these findings are, of course, not suggesting that countries should let Consequences of Corruption at the Sector Level and Implications for Economic Growth and Development corruption grow in order to enhance productivity. Rather, the results show the importance of comprehensive and multifaceted reforms of the overall country system, while narrower reform programmes focusing on corruption may even be counterproductive in certain circumstances.

Source: De Rosa, D., N. Gooroochurn and H. Görg (2015), Corruption and Productivity. Firm-level Evidence from the BEEPS Survey, *Journal of Economics and Statistics* 235(2):115-138. Gamberoni, E., et al. (2016), Is corruption efficiency-enhancing? A case study of nine Central-Eastern European countries, Unpublished manuscript. Huntington, S.S. (1968), Political order in changing societies, New Haven: Yale University Press. Kaufmann, D. and S.-J. Wei (2000), Does 'Grease Money' Speed Up the Wheels of Commerce?, *IMF Working Papers*, Vol. 00(64); Leff, N.H. (1964), Economic development through bureaucratic corruption, *American Behavioral Scientist*, 8: 8-14. Leys, C. (1965), What is the problem about corruption? *Journal of Modern African Studies*, 3: 215-230. Méon, P.-G. and L. Weill (2010), Is Corruption an Efficient Grease? *World Development* 38(3), pp. 244-259.

Corruption also leads directly to misallocation of government resources (Mauro, 1998, Tanzi and Davoodi, 1997, Box 6 and 7). For example, public procurement accounts for a substantial portion of the taxpayers' money: approximately 12% of GDP and 29% of government expenditure in OECD member countries (OECD, 2015b). Therefore, governments are expected to carry it out efficiently and with high standards of conduct in order to ensure high quality of service delivery and safeguard the public interest. Corruption, however, is the opposite of efficient procurement with integrity. Corruption lowers productivity of infrastructure investments, setting incentives for building white elephants, i.e. infrastructure that nobody needs, or oversized energy or water treatment plants. By lowering the quality of the capital stock of an economy, there are also likely to have indirect effects on productivity, e.g. because of higher transport costs due to badly designed, constructed and maintained roads. In public procurement, corruption favours contracting based on kickbacks and relationships rather than value-for-money. The European Commission estimates that EUR 120 billion are lost each year to corruption in the EU member countries. Studies suggest that up to 20-25% of the public contracts' value may be lost to corruption. However capacity and skills are insufficient to mitigate risks of waste and corruption (OECD, 2015b).

Box 6. Corruption in public infrastructure costs

The Netherlands

In December 2002, following a television documentary providing evidence of collusive behaviour, bid rigging and corrupt practices among construction companies and public officials, several investigations were carried out by the Parliament, the Cabinet, the Department of Justice, and the Dutch Competition Authority. It was found that there was a widespread use of cartels and structural bid rigging within the Dutch construction industry. The media suggested that these malpractices robbed taxpayers of about 0.5 billion euros each year in approximately 3500 projects. The investigations and allegations have had a major impact on trust, and the relationship between public sector clients and the construction industry.

Source: A.G. Dorée, 2004

Canada

On 19 October 2011, the Commission of Inquiry on the Awarding and Management of Public Contracts in the Construction Industry, known as the Charbonneau Commission, was established by the Government of Quebec to investigate the scale of collusion and corruption on public construction contracts including, in particular, organisations and businesses of the Government of Quebec and the municipalities, including possible links with political party financing. Witnesses described different practices in connection with the award of public contracts involving officials, consulting engineering firms, building contractors and political organisations in the municipal and provincial level, such as:

- market allocations schemes;
- undue payment of a percentage of the value of contracts awarded in certain municipalities to public officials;
- collusion between some engineers and contractors;
- corruption of some officials in the municipal and provincial level;
- presence of organized crime in the construction industry;
- the financing of political parties in connection with the award of public contracts in the construction industry;
- use of false invoicing.

Source: Commission d'enquête sur l'octroi et la gestion des contrats publics dans l'industrie de la construction, 2014

Source: OECD (2015), *Curbing Corruption Investing in Growth*, OECD, Paris.

Box 7. How public procurement strategies contributed to fight fraud and increase productivity in the health sector in Mexico

One of the most important tasks of Governments in the health sector is to ensure high-quality and efficient goods and services. Those tasks are often made more complex by corruption risks related to public procurement processes, which are exacerbated in the health sector given the uncompetitive nature of the pharmaceutical industries. Corruption practices and fraud in the health sector procurement include for example collusion and bribing public officials by suppliers. These fraudulent practices have health impacts, such as the purchase of expensive, non-essential or even dangerous products; economic impacts, such as waste of budget because of over-priced products; as well as impacts on government image and trust.

Against that background, the Mexican Social Security Institute (IMSS), an autonomous government institution that provides health and social security services to private sector workers, cooperated with the Mexican Competition Authority (CFC) in investigations into possible bid-rigging practices occurring in its tenders. The CFC's investigations revealed that several firms adopted a coordinated behaviour at the time of bidding for contracts put out to tender by IMSS, e.g. by submitting identical bids and allocating contracts among themselves. These practices effectively removed rivalry among bidders and resulted in higher, artificially inflated, prices for IMSS. These investigations resulted in fines against various firms, including six pharmaceutical companies in January 2010 for a total of USD 12 million, the maximum amount allowed by the competition law at that time.

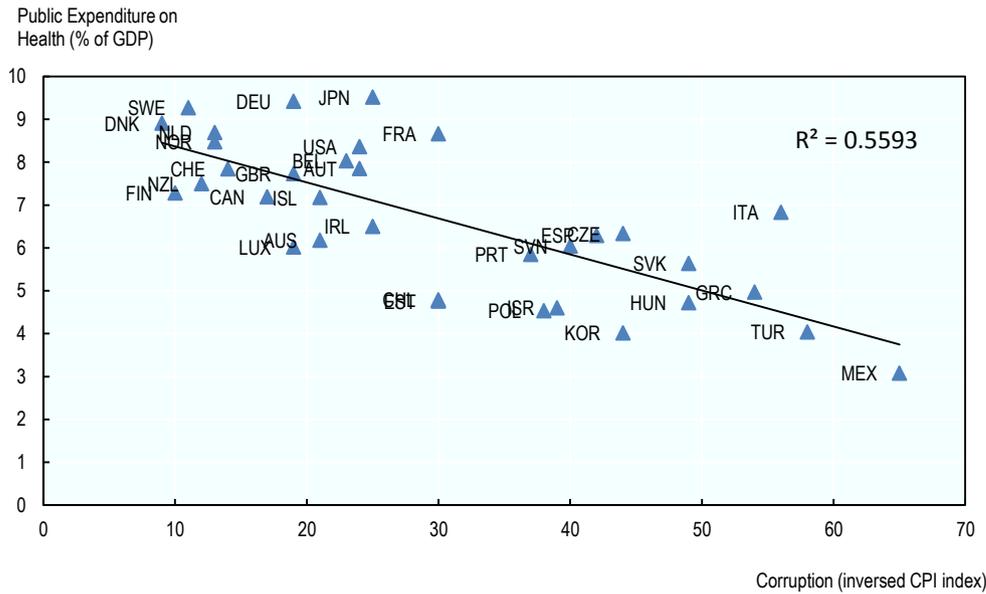
Beyond financial sanctions imposed on companies convicted of fraudulent practices, IMSS addressed this longstanding issue by developing specific procurement strategies. One of the strategies implemented by IMSS was the centralisation of public procurement processes, including the centralization of the purchase of therapeutic goods, which was previously undertaken by various dispersed units. Centralization reduced opportunities for collusion practices and resulted in the reduction of fraud as well as in the reduction of prices for goods through increased competition. Another measure was to aggregate procurement needs and streamline procurement processes. The consolidation of therapeutic goods and the use of reverse auctions resulted in US\$700m savings per year (which corresponded to approximately 13% of IMSS total budget in 2011).

Generating savings for the purchase of medicines necessary to deliver on its public mandate, IMSS succeeded in implementing procurement strategies which reduced opportunities for corruption and fraud while reducing the input to output ratio, thus improving productivity of its public service delivery.

Source: OECD (2011), Fighting bid-rigging in public procurement in Mexico, OECD Publishing; OECD (2012), Public Procurement Review of the Mexican Institute of Social Security - Enhancing Efficiency and Integrity for Better Health Care, Highlights, OECD Publishing; OECD (2015), Government at a Glance - Size of public procurement, OECD Publishing; OECD (2015), Fiscal Sustainability of Health Systems, Bridging Health and Finance Perspectives, OECD Publishing

Corruption not only means that scarce public resources are not spent in a productive way, but also that the intended impact of public policies is likely not achieved as intended. Then, productivity might still be affected indirectly. In particular, corruption in the health and education sectors can have indirect impacts on productivity as they can affect workers' health and skills (OECD, 2015b). For instance, when money for school grants is embezzled and therefore not reaching the target population, or when teachers are moonlighting and are not attending classes, there probably will be an impact on quality of education indicators and thus on the quality of human capital. Also, corruption can undermine health policies and therefore affect health care access and outcomes (Vian, 2008). Figure 10 shows that countries with higher corruption levels spent less public resources on health across OECD countries. In turn, public expenditure on health is one of the major factors in health outcomes, and one of the main sectors of the economy in OECD countries (9.3% of GDP in 2011) (OECD, 2015b). By investing into mitigating corruption risks in the health and education sectors, a country therefore not only ensures health and education for its citizens, but is also taking an important step in ensuring productivity and increasing long term GDP growth.

Figure 10. Public expenditure on health and corruption



Source: Data from OECD and Transparency International (2015)

Finally, corruption is likely to affect labour productivity. Corruption, especially practices such as favouritism, nepotism or clientelism, creates distortions in the labour market that can lead to a mismatch between needs and skills. If selection of personnel is not based on quality and talent but primarily on social networks, e.g. political connections, old boys' networks, clan or family relationships, then there will likely be a mismatch between the skills that are needed at the workplace and the skills brought in by the appointee. In the private sector, market competition can provide the required check to such kind of practices: companies hiring not based on skills but on relationships may find it more difficult to survive in the market. In markets where competitive pressure is lower, skill mismatch due to non-merit based hiring may be an issue even in the private sector. In the public sector, where accountability and performance of civil servants are typically more difficult to measure, the risk of practices like favouritism, nepotism and clientelistic is higher if no clear regulations for meritocratic hiring are in place and enforced. Also, the incentives to further develop their capacities on the job through training and education may be lower in such a setting, where skills are not the determinant aspect of hiring and promotion. In turn, skills mismatch in general is known to lower productivity, and does correlate positively with corruption levels (Box 2). Recent research has also shown that corruption risks are significantly lower where the careers of public officials do not depend on political connections (Charron et al, 2016).

3. LESSON FOR POLICY: INTEGRITY IS A CONDITION FOR PRODUCTIVITY GROWTH

Productivity gains are an important driver for growth and development. However, some policies aimed at fostering productivity, e.g. promoting technological change or investments into skills, could lose in effectivity if the need for improving the overall governance and integrity framework is overlooked. This framework is the one that drives the decisions made by individuals from the public and private sector in an economy. It decides whether resources are invested into productivity-enhancing activities or into unproductive – but lucrative – activities such as rent-seeking, lobbying or straightforward corruption at the cost of the public interest, innovation and sustainable growth.

As such, if governments are able to address corruption risks through public integrity policies, this would be a key contribution to enable higher productivity growth. Public integrity refers to the consistent alignment of, and adherence to, shared ethical values, principles and norms for upholding and prioritising the public interest over private interests in the public sector (OECD, 2017). There are various complementary policy options and tools to strengthen an institutional setting to tackle corruption and promote trust.

The recent OECD Recommendation on Public Integrity recognises explicitly that integrity risks exist in the interactions between the public and the private sector at all stages of the political and policy process, and that this interconnectedness requires a whole-of-society approach to enhancing public integrity and reducing corruption. Specifically, Principle 6 promotes such a whole-of-society approach and invites countries to engage the private sector on the benefits to public integrity that arise from upholding integrity in business, and invites countries to share and build on lessons learned from good practices.

Through promoting integrity and mitigating corruption risks in the whole of society, governments can contribute to productivity growth both directly and indirectly. Governments can strengthen their own public integrity systems, in particular with the aim to:

- reduce scope for corrupt practices initiated by public officials, e.g. the extortion of bribes to obtain licences or permits;
- mitigate corruption in public procurement and contracting;
- ensure meritocratic hiring processes in order to avoid favouritism and nepotism;
- avert capture by narrow interest groups by ensuring accountability through adequate levels of transparency and stakeholder engagement, through managing conflicts of interest situations, and instilling transparency in lobbying activities and in the financing of political parties and election campaigns ; and in general to
- increase the resilience of public officials against corrupt practices initiated by private companies, e.g. through clear codes of conduct and guidance.

Beyond increasing their own productivity in delivering public services, governments are indirectly influencing companies' behaviour, and therefore their productivity, by creating a business environment where companies are facing incentives to engage in fair competition instead of recurring to corrupt practices and intents of capture. Overall, it is the governance framework that can make corruption a bad business practice that is simply not paying-off for companies. Therefore, ensuring a coherent and comprehensive public integrity system not only directly contributes to an efficient public administration, but also to paves the way for productivity gains in the private sector.

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