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Dynamic Relationship between Corruption and Youth Unemployment

Empirical Evidences from a System GMM Approach

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Abstract

This paper addresses the causal relationship between corruption and youth unemployment from two different perspectives. The discussion starts by asking how the corruption practices within government institutions that encourage the payment of bribes to access the job opportunities contribute to reducing the efficiency of the resources (labor force) allocations. The resources are diverted from the most productive economic sectors toward those (usually less efficient economic sectors) where self-motivated officials have more discretionary power in selecting the candidates who are less qualified for the job. The challenge is to examine how bribed bureaucrats are more concerned by their own personal interests at the expense of national welfare when positively reacting to the highest bribe payers. Second question addressed is why the resulting mismatching between supply and demand in the labor market tends to sustain its underlying causes (i.e., bribes) by giving more incentive to new agents and economic actors to adopt these practices. Using a system GMM approach that simultaneously account for the dynamic effect between perceived bribery among officials and the youth unemployment rates, the paper finds that, after controlling for various macroeconomic and institutional factors, the development of corruption practices tend to increase the unemployment rate among youth and educated job seekers which in turn contribute to sustain those unlawful practices by forcing the latter to bribe rent seeking government officials in order to secure a job.

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Dynamic Relationship between Corruption and Youth Unemployment: Empirical Evidences from a System GMM Approach

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I- Introduction

With the recent successive collapses of long-standing regimes across the Arab world, the theoretical school of thought centered on the idea that corrupt government has a tendency to be self-perpetuating has encountered a serious setback. Historically, this positive view of corruption practices as a mean to "greasing the wheels" and to fostering the virtuous circle of development, which ultimately serves to maintain local authorities in place, had received several theoretical supports starting with Nathan Leff's (1964) article "Economic Development through Bureaucratic Corruption." The underlying hypothesis defended by the partisans of this line of thought streams from the idea that in some particular circumstances where the government structures appear inefficient, "greasing the wheels" may enhance the aggregate economic efficiency by allowing certain economic actors (e.g., entrepreneurs, job seekers) to "better interact" with government officials in order to maximize the utility of the former and limit the latter's deficiency (Meon and Weill, 2008). Huntington (1968) summarizes this situation when he asserts that: "In terms of economic growth, the only thing worse than a society with a rigid over-centralized dishonest bureaucracy is one with rigid, over-centralized, honest bureaucracy."

The latest wave of popular uprisings across the Arab world that started from Tunisia, considered for a long time by prominent international organizations and economic experts as a model for economic development and prosperity among emerging economies in the region, represents a significant counter-evidence to Leff's school of thought. When hundreds of thousands of protestors in this country marched in the streets chanting with one voice "*Employment is our right, you cannot take it from us, you corrupt government!*" it became clear that the so-called "Tunisian Miracle" was in fact a very fragile and unstable miracle because it was built, to a large extent, on a deeply distorted labor market materialized by growing unemployment for educated youth. This distortion was mainly caused by the ramification of corruption practices at various levels of the government bureaucracy. In Tunisia and across the region, rent-seeking government officials have managed, over the years, to maintain the exclusive right of providing public goods (e.g., employment in the public sector) with little, if any, accountability. They were able, despite being sporadically reported to their supervisors, to stay out of the reach of the judiciary system mainly because the latter was experiencing the same corruption problems. These practices had distorted the internal equilibrium in the economy, particularly the one governing the supply and demand forces in the labor market. In many countries, this phenomenon could no longer be ignored, especially with an unemployment rate exceeding in certain cases the alarming rate of 50% among freshly graduated job seekers.

Despite numerous theoretical arguments developed on corruption's impact on social welfare, empirical contributions measuring the widespread of this phenomenon and its relationship with other economic or social dimensions remain quite sparse. Exceptions to the above are studies that have focused (sometimes exclusively) on the unidirectional link between corruption and key economic and social indicators. Treisman (2000) points out that the difficulty to measure the corruption levels in various countries remains one of the major hindrances faced by researchers interested in studying this phenomenon. Although some of these difficulties were over recent years lifted with the development by some international organizations (e.g., Transparency International, World Bank, ICPR) of "perceived corruption" indices based on independent surveys of local agents, yet very few empirical contributions have been carried out to better understand the interaction of this phenomenon with other indicators of the economic or social spheres. In this endeavor, we attempt to contribute to this empirical literature by addressing the causal relationship between corruption and youth unemployment from two different perspectives. First, we discuss how the corruption practices within government institutions that encourage the payment of bribes to access the job opportunities contribute to reducing the efficiency of the resources (labor force) allocations. The resources are diverted from the most productive economic sectors toward those (usually less efficient economic sectors) where self-motivated officials have more discretionary power in selecting the candidates who are less qualified for the job. We examine how bribed bureaucrats are more concerned with their own personal interests at the expense of national welfare when positively reacting to the highest bribe payers. Second, we ask the question why the resulting mismatching between supply and demand in the labor market tends to sustain its underlying causes (i.e., bribes) by giving more incentive to new agents and economic actors to adopt these practices.

By adopting a system GMM approach that simultaneously accounts for the dynamic effect between perceived bribery among officials and the youth unemployment rates, we intend to look at the underlying causal link running between the two variables. To the best of our knowledge, the present study is the first contribution to the empirical literature analyzing this correlation using the two-step system GMM approach (based on first difference and level equation a la Blundell and Bond (1998) to account for endogeneity (reverse causality) that might govern the relationship between these two variables. Overall, our results indicate that after controlling for various macroeconomic and institutional factors, the development of corruption practices tends to increase the unemployment rate among youth and educated job seekers which in turn contributes to sustain those unlawful practices by forcing the latter to bribe rent-seeking government officials in order to secure a job.

The rest of the paper is organized as follows; in section II, we discuss the theoretical framework of the dynamic relationship between corruption and youth unemployment. Section III outlines the key hypothesis of this research. The results of our empirical analysis are discussed in section IV. The concluding remarks are given in section V.

II- The vicious circle

Several authors have provided multiple definitions of corruption which evolved around the main and straightforward definition that, "it is the abuse of public power for personal gains."[1] While corruption exists also in the private sector, particularly when decision-makers' interests are at odds with those of shareholders, for the purpose of the present study, we assume only bribes received by government officials,[2] assuming that only the public sector creates employment opportunities in the economy.

We consider a simple framework with two actors; a government official (the agent) providing job opportunities and a job seeker whose utility function can only be maximized when he gets selected for a government position. In this model, we assume that the supply of job opportunities is limited to the public sector. Because of limited supply, rationing the human capital available (potential labor force) by filtering their applications to select the appropriate candidate becomes unavoidable (Tanzi, 1998). The government official maintains the right to apportion the limited supply and to offer the opportunity of work to a given job seeker without being accountable for this decision. In other words, while the process for job advertisement might be totally transparent allowing for free and competitive submission of applications for any government opening, the final decision to select a candidate is left to the official's discretion. We assume that in the absence of strict regulation enforcing the agent's accountability, the latter has higher incentive to grant the job to the applicant willing to pay the highest bribe. This hypothesis is supported by Ades and Di Tella's (1997) empirical evidence which showed that corruption is higher in countries with weak or non-independent judicial institutions that negatively affect the personal and the moral costs of demanding bribes for the rent-seeking officials (Svensson, 2003). A corrupt government official will try to maximize his utility function by maximizing the amount of bribes received from the job seekers who are willing to pay (Van Rijckeghem and Weder, 1997). Thus, the question one should thus ask is, given the assumed official's incentive

[1] Tanzi (1998: 8) argues that "the abuse of public authority is not necessarily for personal gains but could also be accepted for the benefit of one's party, class, tribe, friends and family".

[2] In certain circumstances, bribes are assimilated to gifts which in certain societies or local cultures remain a common practice to express one's gratitude. As numerous authors who studied this distinction (Tanzi, 1998; Shleifer and Vishny, 1993; Azfar et al., 2001) have argued, because very often the thin line separating the identification of the two aspects remains very difficult to make, local regulations have in most countries strictly prohibited both practices so as not to induce confusion.

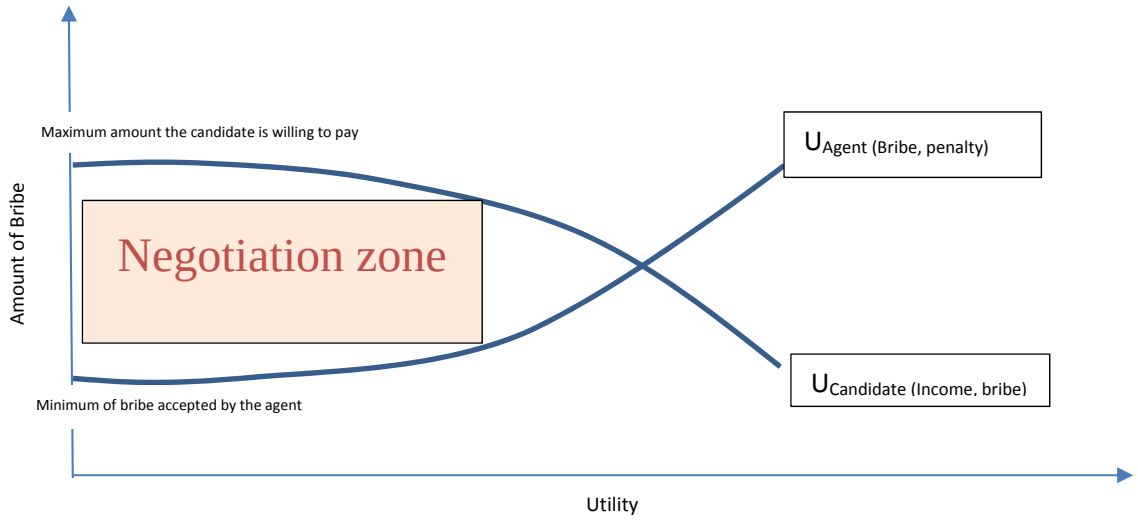
for bribery, which candidates are more likely to bribe the former to get the job? Presumably, those who consider that they cannot be selected in fair competition will be more willing to "boost" their application by an additional incentive to the government agent. In other words, all job seekers who are not willing to bribe because they consider themselves strong candidates with the best background for the advertised job have high odds to be excluded by the rent-seeking agent from the final selection stage. To simplify our hypothesis, we only consider the cases where a government official sends a clear "message" to the job seeker signaling that he is willing to take a bribe in order to consider "more seriously" the submitted application. The rent-maximizing official is in this case selling the job instead of selecting for the job.

We distinguish two case scenarios. In the first case, a weak candidate, recognizing the weakness of his application, is more likely to positively react to the signal from the corrupt official for a bribe. The amount of the bribe the candidate ultimately pays will depend upon two different factors; first, the level of satisfaction the candidate is expecting to derive from the service received (i.e., job opportunity which in a situation of growing unemployment rate might be substantially high) and; second, the amount of the bribe already offered by the previous weak candidate to the government official. Eventually, according to this scenario, the job will be offered to the candidate with the weakest skills but with the least financial constraint. In the extreme case scenario, where all government officials intervening in the process of job selection are corrupt and willing to be bribed before making their decision about who to select for the job, only the richest and the weakest candidates are ultimately selected. According to figure 1, the bribe negotiation area to secure the job opportunity can be determined based in two underlying assumptions.

First, in the absence of institutional mechanisms to monitor corrupt officials at different hierarchical levels, the bribe value cannot be accepted by an official if its amount is lower than the "bribe share" required by the supervisor in order not to reveal this abuse of authority by his subordinate. Conversely, where control mechanisms are enforced, the minimum value of bribe is established at least at the level equal to the amount of fine or penalty the corrupt official is expected to pay if unveiled. In most cases, the latter amount is much higher than the former amount. In certain circumstances, the corrupt official could maximize his utility function by lowering the probability of being uncovered when he allows for few skilled candidates to be recruited for certain government positions in compliance with established rules and thus reduces the likelihood of complaints. The selection of a few skillful candidates will limit the job opportunities for unskilled candidates and thus increase their incentives to bribe the agent by offering a higher amount. Second, this area of bribe negotiation is limited by the maximum amount of bribe above which a candidate is not willing to pay because this bribe negatively affects his expected utility which is a

function of the existence of an alternative scenario (e.g., another job opening).

Figure 1 : The negotiation zone



The amount of the bribe paid to the rent-maximizing official is also a function of the degree of competition between government agencies that are providing the public good (i.e., job opportunities). Treisman (2000) has presented evidence that the more government agencies are competing with each other to provide the good (i.e., government job), the lower is the amount of the bribe. In a perfect competition environment where a job seeker can access any government position, the bribe amount would ultimately equal zero (Ades and Di Tella, 1997). In contrast, when the self-motivated official has a monopoly on the provision of the government's work opportunities, the latter has a higher incentive to collect a bribe and to establish its amount at a higher level without running the risk of being exposed or punished for his action. The size of the government entities in the labor market has an important implication on the sustainability of the vicious circle involving government corruption and distortion in the labor market. There is a growing body of literature that highlights the mechanisms by which the size of the public sector creates monopolistic power to absorb the domestic workforce. Because competition is to a large extent eliminated, self-motivated officials find themselves in a comfortable situation to dictate the "rules of the game". Less competition in the supply of job opportunities may bring about additional incentives for officials to extract extra payments to grant the service and at the same time may push the job seekers to accept the "price" to get selected. Azfar et al. (2001: 51) argue that "corruption should decline if regulatory reform reduces the monopoly and discretionary power of officials".

In the second case scenario where rent seeking behaviors are found at different levels of the administration bureaucracy, most job seekers who

are not willing to bribe those officials will be left out of the job market. Over the long run, some of these job seekers might be inclined to bribe officials to pull out of the unemployment situation. Thus, the long term equilibrium in the labor market will be established not as a result of the matching process between the needs and the supply of particular competences but rather based on the ability but more importantly the willingness of job seekers to bribe the government officials. Corruption creates in this case a "sub-optimal" allocation of the labor force. The more the job seekers are willing to bribe the self-motivated officials, the less likely the latter will be spotted and thus punished since they can all now benefit from the "system" centered on the willingness of the officials to grant the jobs to those who bribe. The corruption process, Tanzi (1998; 7) argues "that might have appeared shocking earlier will begin to look less shocking, and they may even begin to be tolerated".

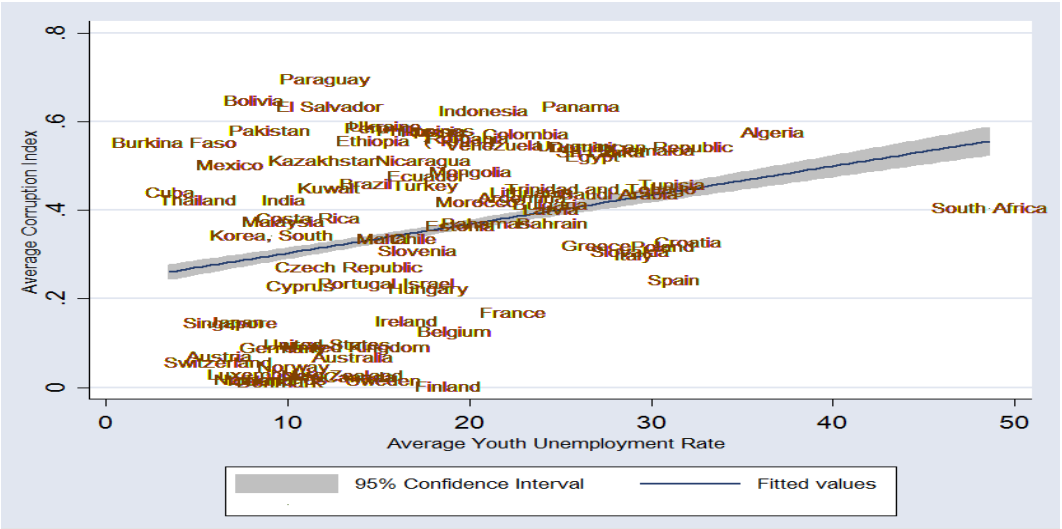
The officials might also be inclined, in their attempts to reduce the probability of being reported, to encourage the development of jobs that do not require high skills from potential candidates. Government officials know that justifying their choices of the selected candidates (who bribed them to get the job) will be much easier in case of low-scaled jobs where all candidates are expected to meet the minimum requirements of the vacancy. In contrast, jobs that require the selection of candidates with the most advanced skills increase the probability of being spotted for the corrupt official (albeit afterwards) when the selected briber is the candidate with the rudimentary skills. The resulting expansion of sectors of activities with low performing labor force (but providing multiple bribery opportunities for government officials) will reduce the productivity of the local labor force and ultimately harm the domestic economic development. This view is found in Shleifer and Vishny's (1993) work who make the case that: "Government officials will use their powers to induce substitution into the goods on which bribes can be more easily collected without detection". In a corrupt society, many candidates with skills matching particular job requirements are left outside the job market. At best, they will be rechanneled toward jobs in which their skills are under-exploited which negatively impacts their productivity and their capacity to innovate in their work. The misallocation of human capital will seriously undermine the economic development of the country. Azfar et al. (2001: 48) expand this argument and ascertain that the unfair selection of candidates based on bribery will ultimately "force the new hire to be corrupt and to ask for bribe to recover his initial payment of bribe".

On the supply side, job seekers might be inclined in certain circumstances to bribe the officials regardless of the quality of their candidacies but simply as an incentive for the government agent to expedite the selection process. Ades and Di Tella (1997) ascertain that often, a corrupt official has a personal interest in delaying the bureaucratic procedures for the public good delivery which often is regarded as a signal to the recipient (job seeker) about his expectation for bribery. While certain

authors have hypothesized that corruption might be an efficiency-enhancing mechanism in cases where bribe paid to a corrupt official serves to encourage the latter to carry out his task in a timely manner, such a practice of purposely delaying the service delivery might be counter-productive and at best neutral in terms of efficiency. The only thing the official is doing in this case is simply to perform his duty according to the expected timeline, which he decided, based on personal interests, to delay indefinitely until the bribe is paid (Van Rijckeghem and Weder, 1997). Because of the factors described above affecting the long term equilibrium of the labor market, workers who found themselves at first place out of this market are likely to remain evicted. The obsolescence of their skills makes their integration into active life very difficult. This desperate situation and the difficulty to get hired might henceforth press certain workers to bribe the self-motivated government agent to secure a job opportunity, any job opportunity available for them. The key question one might ask in this case is whether the bribery has permitted a “greasing” of the wheel by accelerating the recruitment of long term unemployed workers or on the contrary has over an extended period of time caused the “sanding” of the wheel because the government official deliberately delayed the recruitment process pending collection of bribes.

Figure 2 plots the cross sectional relationship between the average corruption index and the youth unemployment rate for 96 countries over the period from 1985 through 2008. The upward slopping fitting line confirms the positive relationship between the two variables.

Figure 2: The positive relationship between corruption and youth unemployment



This simple framework raises the far deeper questions; what determines why government officials have in certain circumstances high incentive to misuse their public office for private gains and thus putting personal utility maximization over national welfare? Why does labor market distortion motivate job seekers to positively respond to the request for a bribe to secure their selection? How do corruption and distortion in the labor market mutually enforce each other over the long run?

The next section attempts to look more closely at some of the underlying issues raised above by formulating a number of hypotheses of work which will be tested in the following section.

III - The determinants of the causal relationship

Multiple theoretical contributions have attempted to explain the reasons that make government officials more inclined to demand a bribe than other officials at similar positions. From the description above, we can already establish a number of determinants for the relationship between government corruption and youth unemployment. Shleifer and Vishny (1993) and Dreher et al. (2007) observe that where strong government institutions with a clear mandate for corruption monitoring are absent or where the rule of law and regulations allow for monopoly power for certain government agents, no incentive exists for the latter to grant the public good (the job opportunity in our case) to the best candidate. Where no mechanisms of detection and punishment are in place, officials at different hierarchical levels have strong incentives to institutionalize the bribe payment as a unique tool to ensure the provision of public goods. The likelihood of corruption practices being widespread is thus negatively affected by the expected likelihood of being unveiled and punished when

effective and transparent law enforcement is in place (Van Rijckeghem and Weder, 1997). Authors such as Lacko (1996) argue that countries that have adopted common law systems (i.e., Great Britain and former colonies) with the ultimate goal to protect propriety owners against harmful interventions by the sovereign are much more effective in this sense in preventing corruption practices than civil law systems. The latter were adopted by most continental European countries and their former colonies. They were originally developed by monarchs to be used for state building with great focus on respect of hierarchy and the authority of offices (Lacko, 1996). Failure of the internal control and monitoring system to detect and punish the self-motivated agent at an early stage provides an additional incentive for the latter to select the second or third best candidate. This situation will undermine the performance of the employees and the overall productivity of the economy causing a large segment of the active population to be pushed outside the labor market. In contrast, the presence of internal political checks and balances contributes to maintain the pressure for more transparency and accountability of government officials. In democratic societies, the opposition plays the central role in detecting any fraudulent maneuvers by officials representing the government in place. In contrast, where opposition is completely marginalized as in totalitarian regimes across the Arab world for instance, with no authority to question the practices of government officials, bribes are used to gain those officials' sympathy before they make their decisions to grant public goods (Van Rijckeghem and Weder, 1997). We use as a proxy of the domestic political pluralism and participation, the percentage of **(the opposition vote share)** in the parliament as compiled by the World Bank Database of Political Institutions (Keefer, 2009). A higher index indicates a more dynamic political environment in which opposition parties hold an important share of the legislative branch and thus have more impact on denouncing fraudulent practices of government officials and questioning the causes of the growing number of unemployed youth.

The level of wages paid to government officials, certain authors have argued, contributes to the process of sustaining corruption practices when providing public goods. Because the utility function of an official is, at its simplest form, composed of regular real income (wage) plus possible bribes received against certain services or privileges the latter provided, the attempt by the official to maximize this utility function in a situation where the public sector wage is established at a low level could only be achieved through the maximization of the bribe portion of the revenue (Van Rijckeghem and Weder, 1997). Tanzi (1998) argues that as a result of the modest government wages, the "temptation price" may be far less than the value of the potential benefit. While the theoretical assumption that high government wage levels may reduce the incentive for bribery is widely accepted among scholars and political leaders, certain authors have developed a counter-argument when distinguishing between corruption due to need that could be to a large extent reduced by the increase of the

minimum wage in the administration and the corruption due to greed which according to Tanzi (1998) would not necessarily be affected by such a measure. In the same vein, Van Rijckeghem and Weder (1997) ascertain that in a weak institutional environment with low probability of punishment, the equilibrium wage level at which the self-interested officials are less motivated to extract bribes is high. In this case, the authors argue, governments are forced to pay the "low capitulation wage" attracting only self-motivated officials rather than increasing the wage to the level that would discourage bribery (but not necessarily completely eliminate it). We use **(the inflation rate)** as an indicator of the real wage deterioration of government officials which, we hypothesize, is positively correlated with the development of rent seeking behaviors. Further, in a situation of a growing youth unemployment rate, a high inflation rate that dampens the economic conditions of marginalized segments of the population (in particular those with no regular income) could provide an additional incentive for an unemployed job seeker to increase the odds of his recruitment by providing a bribe to the government agent in order to secure the job.

As an indicator of the labor market distortion, we consider the degree of rigidity of the hiring and firing regulations. This indicator captures how corrupt officials are tempted to collect bribes when selecting candidates for jobs offering enforced labor regulations such as higher minimum salaries or rigid rules for firing workers. In other words, all rules and regulations that are often seen as beneficial to the employees once recruited will be "monetized" and used by corrupt officials to "legitimize" his request for bribes before the position is granted to the candidate. The higher the protection imposed by local labor legislation, the higher the incentives for collecting the bribes and the higher the mismatch and distortion found in the labor market. To capture the institutional characteristics of the labor market, we use the **(Worker's right)** index from the Human Rights Dataset (Cingranelli and Richards, 2010). This index is equal to 0 if workers' rights are not protected and 1 if a full or fair protection is given to workers once hired.

Several papers have investigated the economic consequences of corruption on unemployment and the labor market in general through the channel of foreign direct investment (FDI). The theoretical view is that in a highly corrupt environment, foreign actors are more reluctant to invest and to create job opportunities in the local market (corruption increases the cost of doing business (often referred to as the corruption tax). This view has received empirical support from recent research. The perception among foreign actors that due to corruption, the allocation of domestic human capital toward the most productive economic sectors is inefficient constitutes an obstacle to the inflow of foreign capital in the economy. We use the variable **(FDI/GDP)** to analyze this hypothesis of the impact of capital inflows on the development of labor market dynamics in the presence of corruption practices.

The size of the shadow economy can also have an impact on the causal relationship between corruption and labor market distortion. Buehn and Schneider (2009) have shown that in an environment where the payment of bribes to rent-maximizing officials becomes a sine qua non condition to be granted the public good (i.e., job opportunity) more and more agents will seek employment in the shadow sphere of the economy. For certain developing countries, widespread corruption practices lead a large proportion of the labor force to leave the official economy, thus reducing the income tax revenues levied on the labor force. The reduction of tax revenues will dampen the government's capacity to create new jobs, increasing the unemployment rate and the incentives for corrupt official to collect bribes. This shift of workforce from the formal sector, where job opportunities are given mostly when bribes are paid, to the informal sector will cause, Schultz (1999) argues, a segmented labor market and will entail the prevailing equilibrium wages for comparable positions in the two sectors to be established at different rates. We follow Buehn and Schneider's (2009) suggestion to use the ratio of M0 to M1 as a proxy for the size of the informal economy. Because most payments for transactions in the shadow economy are usually made in cash as a way to get around the tax system, an increase in the ratio of **(M0/M1)** should reflect growing activity in the informal economy.

Another channel through which corruption can cause and sustain distortion in the labor market is the allocation of government spending (Ades and di Tella, 1997). Corrupt government officials seeking bribes in the process of allocating human capital are less concerned with investing in the education of the labor force. Self-motivated officials face lower probability of being spotted in the selection process when the job opportunities offered do not require a highly qualified person. The more standard and basic knowledge the job requires, the more uniform the pool of candidates will be and thus the less likely the chance for the officials to be spotted. Investing in education to improve the qualifications of the labor force is in this case not a strategic goal for the government officials (Mauro, 1998). We hypothesize, following Mauro's (1998) main finding on the negative relationship between youth unemployment, corruption and government spending on education. As a measure of labor force qualifications, we use the covariate capturing the female average years of education **(EDUCATION)**.

IV- Findings

The empirical model we investigate in this paper to estimate the endogeneity and reverse causality between government corruption and youth unemployment is as follows;

$$Youth\ Unemployment_{i,t} = \alpha\ (Youth\ Unemployment)_{i,t-1} + \beta(Corrupiton)_{i,t} + \gamma(ControlVar)_{i,t} + \varepsilon_{t,i}$$

where i = 1…N and t =1….T. $Youth\ Unemployment_{i,t-1}$ represents the rate of youth unemployment at time t-1 for country i which allows to model the youth unemployment as a dynamic process and thus captures its persistent effect. $Corrupiton_{i,t}$ captures the perceived corruption variable. For the purpose of this study we rely on the results of surveys conducted by international organizations among local agents from both private and public sectors to evaluate how they perceive corruption in their countries. More specifically we use the Transparency International (TI) index, which as Treisman (2000:400) notes: "constitutes a "poll of polls" compiled by a team of researchers (…) using information from up to 12 individual surveys and ratings". $ControlVar_{i,t}$ is the vector of control variables containing macroeconomic, political and social covariates. $\varepsilon_{t,i}$ is comprised of two components; a country specific component potentially correlated with some of the explanatory variables and an independently and identically distributed vector of disturbances. We use a slightly unbalanced panel of 92 countries (both developed and developing countries) over the period 1985-2008 to account for data availability restrictions.

Table 1 provides the results of various specifications of the relationship between youth unemployment and corruption. Specifications 1 to 3 assume no endogeneity (reverse causality) between youth unemployment and corruption practices. We note that while the lagged youth unemployment variable is positive and statistically significant confirming the high persistence effect of this variable, no support can be found to the effect of lagged corruption. As pointed out by several authors, in dynamic panel models where endogeneity of certain variables is suspected, the results of OLS and fixed effects estimations will be biased upwards and downwards, respectively. To correct for this bias (finite sample bias), the specifications 4 through 9 follow Arellano and Bover (1995) and Blundell and Bond (1998) to estimate the equation above using the system GMM approach. As suggested by Roodman (2006), we will use two lags for the system GMM estimators and we will apply the Windmeijer (2005) finite sample correction for standard errors (Heid et al., (2011)). All GMM estimators use robust standard errors and assume the lagged corruption variable as endogenous. Notice that when we account for the dynamic effect, the lagged corruption displays now a positive and statistically significant coefficient suggesting a positive impact on the increase of the youth unemployment. This impact remains significant regardless of the specification we use in our model. Equally important, we note the higher persistence of the rate of youth unemployment regardless of the specification chosen. In line with the empirical literature findings, the coefficient of the system GMM falls between the coefficient of the lagged

dependent variable estimated by the OLS and the fixed effects estimation. The coefficient of foreign direct investment lends support to our hypothesis above with respect to the negative and significant impact of economic development on youth unemployment. The positive and significant coefficient of labor market regulations in 2 out of the 3 system GMM specifications is consistent with the findings of Bernal-Verdugo et al. (2012), which show that the existence of strict hiring and firing regulations has a statistically significant positive effect on youth unemployment. The coefficient of political opposition is not significant and does not provide strong evidence to our hypothesis above. The negative coefficient for inflation suggests a negative effect of higher price levels on the youth unemployment. However, the coefficient is not statistically significant in various specifications. The surprising result in table 1 comes from the negative and significant effect of the M0/M1 variable capturing the size of the informal sector in the economy. This result suggests that countries with a high ratio of liquid monetary base tend to have a lower youth unemployment indicator. While this result is counterintuitive at first glance, one could however explain this finding by the fact that the development of the informal sector in the economy pushes over the long run a growing segment of young and unemployed population to explore alternative work opportunities in the unstructured and unregulated market. As the number of new entrants to the unofficial economy increases, the officially reported number of job seekers in the formal economy will systematically decrease.

Finally, notice that across various specifications, the Hansen J-test of over-identification restrictions (with P-value 0.1) and the Arellano-Bond test for autocorrelation (first and second order serial correlation with P-value <0.1 and >0.1, respectively) both confirm the joint validity of our instrument and the consistency of our estimation.

Table 1: Youth Unemployment rate as a dependent variable

					System GMM (Two step approach)				
	(1) Pooled OLS	(2) Fixed Effects	(3) IV Regression	(4)	(5)	(6)	(7)	(8)	(9)
Youth Unemployment $_{(t-1)}$	0.913***	0.757***	0.755***	0.813***	0.820***	0.849***	0.850***	0.828***	0.857***
	(59.93)	(37.90)	(36.63)	(15.56)	(15.75)	(13.75)	(15.73)	(12.31)	(14.09)
Corruption Index$_{(t-1)}$	0.350	-0.950	-9.521	0.318	-0.296	5.289*	5.460**	6.356**	6.731**
	(0.84)	(-0.79)	(-0.69)	(0.14)	(-0.15)	(1.75)	(2.25)	(2.07)	(2.30)
Education					-0.0106	0.185***	0.118**	0.125**	0.0921
					(-0.11)	(3.15)	(2.22)	(2.29)	(1.08)
Inflation						-0.0404	-0.0363	-0.0448	-0.0656
						(-0.10)	(-0.09)	(-0.14)	(-0.17)
FDI						-0.293*	-0.279*	-0.260	-0.355*
						(-1.76)	(-1.69)	(-1.30)	(-1.81)
Monetary Aggregate						-2.023*	-2.797***	-2.692**	-4.701*
						(-1.88)	(-2.60)	(-2.34)	(-1.70)
Political Opposition							0.0114	0.00761	0.0181*
							(1.64)	(1.39)	(1.90)
Worker's Rights							0.702**	1.159**	0.300
							(2.07)	(2.33)	(0.63)
Constant	1.331***	4.288***	6.713	3.000***	3.176*				
	(5.94)	(8.87)	(1.73)	(4.20)	(2.36)				
Observations	1115	1115	1112	1115	1088	926	914	914	916
Hansen Test				0.87	0.92	0.88	0.90	0.89	0.95
AR(0)				0.00	0.00	0.00	0.00	0.00	0.00
AR(1)				0.54	0.52	0.31	0.38	0.38	0.40

Notes: Standard errors are in parentheses. All GMM regressions use robust standard errors and treat the lagged corruption measure as endogenous. In the case of two-step GMM, the Windmeijer (2005) finite sample correction for standard errors is employed. *, ** and *** denote significance at the 10%-, 5%- and 1%-level, respectively. The row for the Hansen J-test reports the p-values for the null hypothesis of instrument validity. The values reported for AR(1) and AR(2) are the p-values for first and second order autocorrelated disturbances in the first differences equations.

In order to assess the robustness of our results to alternative measures of youth unemployment, we re-estimate in table 2 our two-step system GMM model using the unemployment rate for people with secondary education as a dependent variable. Similar to the main findings above, the results shown in table 2 demonstrate that existing corruption practices has a positive and significant effect on the unemployment rate for this segment of the population. Unemployment rates continue to exhibit a positive and significant persistent effect. The coefficient of the FDI suggests a significant and negative effect on the rate of the secondary level educated job seekers. This effect seems to be consistent with the empirical literature.

The inflows of foreign capital to an open economy is likely to lead to the development of business opportunities in the country and thus to the creation of additional jobs in particular for the qualified and educated population. The coefficient capturing the development of the informal sector maintains its negative sign but does not display a statistical significance in various specifications modeling the secondary education unemployment. The political opposition variable is still insignificant similar to the initial model, suggesting that the polity in the countries has no direct effect on the distortion of the labor market as captured in our model by the growing proportion of the youth and educated job seekers.

Table2: Secondary level educated job seekers as a dependent variable

	(1)	(2)	(3)	(4)
	Secondary	Secondary	Secondary	Secondary
Secondary Unemployment $_{(t-1)}$	0.926***	0.914***	0.916***	0.920***
	(36.20)	(33.72)	(33.26)	(33.23)
Corruption Index$_{(t-1)}$	4.186***	3.382*	3.731**	3.504**
	(2.94)	(1.88)	(2.08)	(2.00)
Education	0.226**	0.254**	0.251**	0.261**
	(2.20)	(2.47)	(2.06)	(2.07)
Inflation		0.403	0.562**	0.515*
		(1.40)	(1.97)	(1.79)
FDI		0.0304	-0.0279	-0.0742
		(0.18)	(-0.16)	(-0.47)
Monetary Aggregate		-0.739	-1.286	-1.354
		(-0.52)	(-0.96)	(-0.98)
Political Opposition			-0.008	-0.0116
			(-0.79)	(-1.00)
Worker's Rights			0.389	0.495
			(0.99)	(1.08)
Observations	966	902	897	897
AR(0)	0.00	0.00	0.00	0.00
AR(1)	0.13	0.43	0.53	0.50

Notes: Standard errors are in parentheses. All GMM regressions use robust standard errors and treat the lagged corruption measure as endogenous. In the case of two-step GMM, the Windmeijer (2005) finite sample correction for standard errors is employed. *, ** and *** denote significance at the 10%-, 5%- and 1%-level, respectively. The values reported for AR(1) and AR(2) are the p-values for first and second order autocorrelated disturbances in the first differences equations.

Table 3 measures the sensitivity of the dynamic relationship between youth unemployment and corruption in various institutional contexts. Columns 1 and 2 analyze the dynamic effect in countries with different legal systems. Countries that have adopted the Common Law as a judiciary doctrine appear to suffer less from the positive impact of corruption on youth unemployment as compared to countries with Commercial Law. Our main variable of interest, corruption practices, is

found to have a robust positive and significant coefficient only in the latter group of countries. This result provides strong support to Lacko's (1996) findings we described earlier in the paper. Further, it is interesting to note that autocratic countries display a higher degree of persistence of the youth unemployment compared for instance to more democratic regimes. As expected, lagged corruption has a significant positive impact on educated job seekers particularly in totalitarian regimes. This result indicates that the absence of rule of law, institutional checks and balances and freedom of speech increase the incentive for all sorts of corruption practice which ultimately worsens the distortions in the labor market. Similarly to the tables above, various specification tests confirm the consistency of the model.

Table3: Sensitivity Analysis to alternative institutional contexts

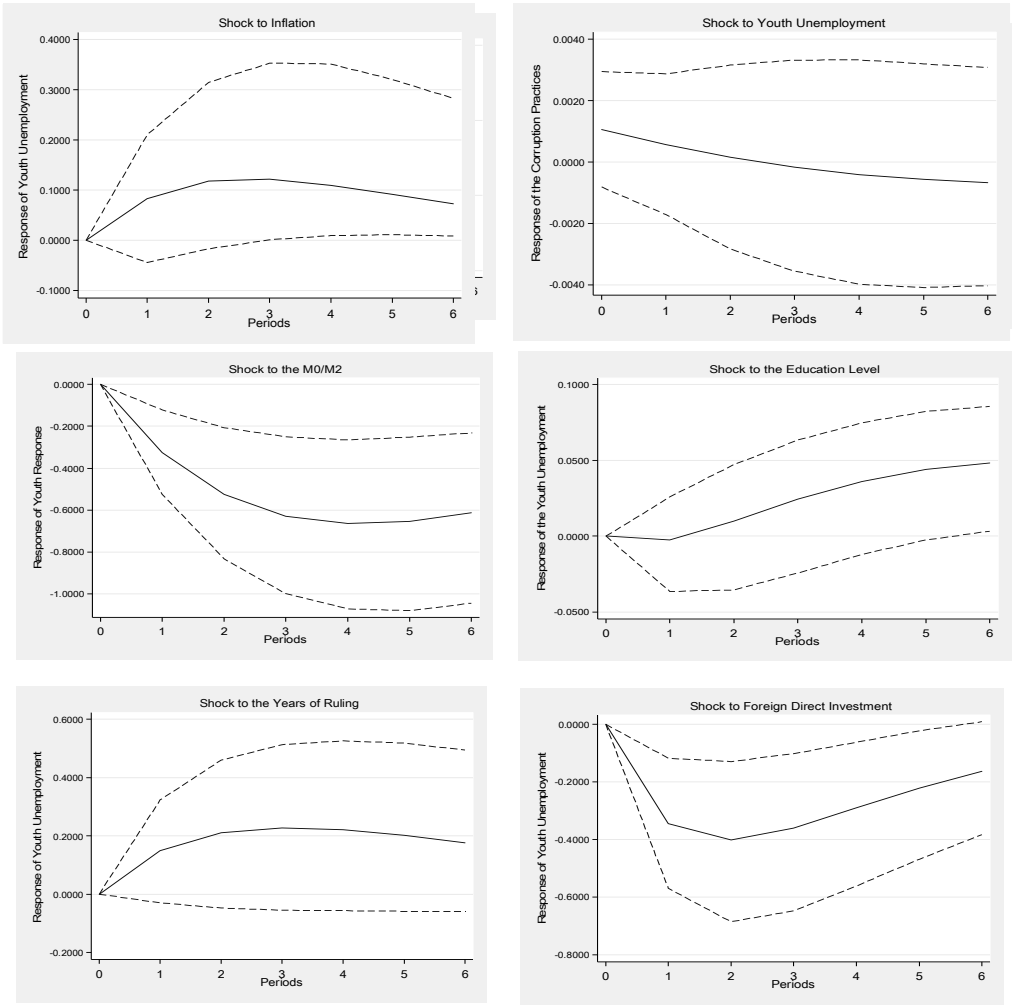
	(1) Commercial Law	(2) Common Law	(3) Democracy	(4) Dictatorship
Youth Unemployment $_{(t-1)}$	0.980***	0.864***	0.941***	0.878***
	(20.81)	(16.55)	(32.56)	(17.51)
Corruption Index$_{(t-1)}$	9.298**	6.311	-3.092	12.14**
	(2.58)	(1.57)	(-1.28)	(1.95)
Education	0.261*	0.202	0.0851	0.135
	(1.80)	(1.00)	(0.65)	(0.66)
Political Opposition	0.0149*	-0.0186	0.00302	-0.0145
	(1.94)	(-1.22)	(0.20)	(-0.66)
Log(FDI)	0.122	0.574*	0.0436	1.087*
	(0.42)	(1.95)	(0.24)	(1.68)
Inflation	-0.655**	0.0544	0.657*	-0.0532
	(-2.45)	(0.24)	(1.74)	(-0.23)
Worker's Rights	1.220**	0.0882	0.539	-1.546
	(2.29)	(0.18)	(0.66)	(-1.10)
Monetary Aggregate	-0.0457	-0.585	1.685	-1.685
	(-0.02)	(-0.31)	(1.17)	(-0.59)
Constant	-3.832	0.804	0.538	-1.386
	(-1.18)	(0.40)	(0.33)	(-0.45)
Observations	267	323	508	158
AR(0)	0.00	0.05	0.03	0.04
AR(1)	0.03	0.42	0.77	0.50

Notes: Standard errors are in parentheses. All GMM regressions use robust standard errors and treat the lagged corruption measure as endogenous. In the case of two-step GMM, the Windmeijer (2005) finite sample correction for standard errors is employed. *, ** and *** denote significance at the 10%-, 5%- and 1%-level, respectively. The values reported for AR(1) and AR(2) are the p-values for first and second order autocorrelated disturbances in the first differences equations.

Similar to Altavilla and Caroleo (2006), we extend our empirical analysis of the dynamic relationship between corruption and youth unemployment by using the PVAR applied to a six variable system to examine the impact of various shocks on youth unemployment. The results from the impulse response functions in figure 3 suggests that the shock to the corruption practices (i.e. an increase in the unlawful practices) tends to have a

persistent positive impact in increasing the rate of young job seekers. Similar to the our findings from the system GMM above, an increase of the economic activity as a result of growing inflows of foreign investments appears to reduce youth unemployment starting from the first year. The impulse response function of the nature of the political regime confirms that the less the government is accountable for its actions (with the increase of the years of the ruling leader in most totalitarian regimes), the higher is the unemployment of youth in the country. This impact is persistent throughout the years. The reaction of the response function of our dependent variable to the increase of the liquidity in the country as a proxy for the development of the informal sector confirms the absorption capacity of the unofficial sector to the workforce left out of the official economy. Finally, the result of the youth unemployment reaction to its own shock suggests that this distortion in the labor market has a great deal of inertia. The impact following the shock seems not to be absorbed in the first several years.

Figure 3: Impulse Response functions of Youth Unemployment to various shocks



V- Conclusion

The analysis in this paper provides new empirical support to the dynamic relationship between corruption practices and youth unemployment. We find that when accounting for reverse causality, an increase in the rent-seeking behavior among government officials when granting the public good (e.g., job opportunity in the public sector) increases the unemployment rate among young and educated job seekers. In the absence of efficient control and monitoring mechanisms, the proliferation of those practices forces a growing segment of the workforce either to join the crowd and pay the price to secure a job or to be left out of the official labor market and turn to the informal sector. We demonstrate that while the polity in the country does not seem to have a significant impact on the unemployment rate, other factors, such as the confidence of foreign investors, education and local labor market legislation, play a role in determining labor market equilibrium.

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