The Economics of Development Lending: Evidence from Manager-Country Assignment in World Bank Projects

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Abstract

How does the World Bank allocate its internal resources and how to improve its effectiveness? I study the effect of World Bank managers and countries on project success through the value-added method, by matching the World Bank Project Database with the respective manager and country information. Their effects correlate positively with determinants of productivity (schooling and experience for managers, institutions for countries) and provide evidence of a negative assortative matching, with high productivity managers assigned to low productivity countries. Furthermore, allocative shocks determined by World Bank board access lead to a significant manager premium. These results are consistent with the World Bank behaving as a risk-averse planner assigning its project managers to client countries, who face some rent-seeking or technological opportunity. In the last part, I analyze a core reform assigning the 10% worst-performing managers to non-project tasks and hiring average managers as replacement. This increases treated projects success by 50% and adds 0.8 billion dollars to the economic returns generated by the World Bank, a 3.7% increase. A conservative cost-benefit analysis confirms this reform as viable.

Keywords: Development Lending, Personnel Economics, International Organizations, Cost–Benefit Analysis

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The World Bank is a key player in international development. It is the largest multilateral development organization and has been lending more than 900 billion USD in the past 40 years. This corresponds to 12 Marshall Plans (72 billion USD at 2005 prices), accounting for 15% of all yearly long-term debt of low and middle income countries, as Figure 1 shows. Despite this, its ability to shape policy-making and global debate has far exceeded the mere financial capacity (Besley et al, 2015; Deaton et al, 2006). Therefore as a primal contributor both in terms of size and knowledge (Chioda, De La Torre and Maloney, 2013), studying the World Bank can help answering some long-standing questions on development lending and aid (Qian, 2014).

The normative debate on the *raison d'etre* of aid and its effectiveness has been heated and long-standing, with eminent contributions both on its support (Chenery and Strout, 1966; Sachs, 2005...) and criticism (Bauer, 1971; Easterly, 2003; Deaton, 2013). In this work, I propose a positive contribution grounded on new empirical findings, explained by an essential theoretical framework. While Besley and Persson (2011) provide a comprehensive model, which gives insights on recipient countries response to aid; in this paper I focus on explaining how the World Bank, as a donor, organizes its resources and propose a mechanism to understand its allocation problem.

Project managers are the only resource that I study in this setting: they are employed by the World Bank, who can assign or promote them to work in particular countries over certain periods. Their talent in shaping the project from infancy, collecting technical expertise on the subject and guiding the project through board approval and implementation are probably the most important input available to the World Bank. In order to understand what determines such assignment, first I quantify manager and country productivities, by regressing a measure of project success collected by the World Bank[1] on several covariates, including manager and country fixed-effects. These are then extracted to define the vector of Manager Value-Added (manager VA henceforth) and of Country Fixed-Effects (country FE), which are the core of this work and are methodologically borrowed from the Teacher-Pupil literature[2]. After this step, I empirically verify the plausible interpretation of these effects as project productivities by noting the relation between predetermined manager curricula and manager VA[3] and countries institutional variables with the country FE[4].

[1]The key measure of project performance is available for most projects and over more than 30 years: it is called "project outcome rating". It represents a qualitative evaluation of the success of each project against its ex-ante stated objective. This is explained with greater detail in section 2.

[2]In this work I establish a parallel between "teachers affecting student outcome in certain schools" and "managers affecting projects in certain countries". As a results I apply the teacher-pupil framework to the World Bank project setting.

[3]As shown in a later section, the Manager VA effect is correlated positively with holding an MBA, completing a degree in his/her own country and the number of publications, negatively with having work experience at the IMF, experiencing a downgrade (ie. a demotion from a higher hierarchical position to a lower) and having graduated in natural sciences (ie. medicine, mathematics...). I also verify that manager VAs do not correlate with gender, experience, promotions or spoken languages. These regressions and others can be found in Appendix D.

[4]As shown in a later section, the country Fixed Effect is correlated positively with "good" institutional measures like parliamentary democracy, constraints on the executive and an index of public infrastructure

At this stage, I can inquire into the nature of the central economic problem and answer two questions: through which rule are managers assigned to countries? Are there allocative shocks which prevent such rule from being implemented? The empirical analysis delivers two central results. First, there is evidence of a negative assortative matching of managers to countries, which is verified by correlating the average manager VA in a country with the corresponding country FE. Secondly, among the possible allocative shocks, I focus on the presence of a country in the World Bank board, highlighted as core by the "value of the seat literature" (Kuziemko and Werker (2006), Kaja and Werker (2010)...). In so doing I find that when a country enjoys a board seat, its assigned manager types increase significantly. Because there may be reverse causality or third factors affecting both, I exploit a unique feature of World Bank board elections[5] to provide some plausibly exogenous source of board access and verify that this allocative shock is indeed relevant, significant and stronger than in the OLS estimate.

After the empirical analysis, I provide an essential theoretical framework, motivated by existing institutional evidence, which explains and encompasses the empirical results. My model centers on a planner, for example the World Bank President (ie. Vice-Presidents, Directors...), which generates projects by allocating managers to countries, both being heterogeneous in terms of their type (ie. project productivity). I focus on the optimal allocation of a specific resource managed by the planner (ie. human capital as manager type) to another input (ie. country type). A key feature stands out as central in this setting: the risk attitude of the planner. I show that a risk-averse planner chooses a negative assortative matching and assigns high-type managers to low-type countries. This allocation is not perfect and there can occur "allocative shocks", which perturb the optimal allocation: for example in some periods a country may be assigned a better manager, because it sits on a board which supervises the World Bank President. Such change may be due to the country type increasing/decreasing during its board term or because the decision body provides more opportunities for rent extraction (ie. lobbying for a better manager)[6].

management, and negatively with ethnic fractionalization, slave trade and legal origins.

[5]The World Bank board is composed by 25 members, 8 of which are nominated by single countries (US, UK, JAP, DEU, FRA, CHN, SAR, RUS) and the remaining 17 are elected by simple majority in fixed groups of countries, so-called constituencies. While the initial assignment of countries to constituencies depends on easily-observable patterns (ie. geography, timing of WB access, country's international status), within each constituency there emerges different long-term diplomatic agreements which guide the re-election probability of a country. In section 4, I argue that such re-election norm heterogeneity across constituencies can be used to instrument for board access.

[6]On the presence of allocative shocks related to a country joining the board, the Zedillo Report (2006) highlighted that "the current (World Bank) governance arrangements create strong incentives for (board) Directors to prioritize only their duties as the representatives of governments." (Zedillo et al, 2006, p. 32) and especially on the possible transfer of resources aimed at securing for the World Bank President and Senior Management a strong support in the board, "senior Management has a strong incentive to ensure that the board approves Management proposals quickly and with few changes" (Zedillo Report, 2006, p. 31). Analogous incentives seem to be in place at the IMF, where a 2008 survey (not taken at the World Bank) shows that 68% of former board members admit a conflict of interest in decisions between government interest and IMF institutional mission.

The Zedillo report is available at `http://siteresources.worldbank.org/NEWS/Resources/`

As well as a positive analysis to understand the economics of resource allocation, I move to a normative part and propose a core reform to boost World Bank effectiveness in the spirit of Hanushek (2009): re-assign the worst 10% managers to non-project bureaucratic tasks and replace them with an average manager. Differently from the teacher literature, all economic indicators are available for this exercise and, therefore, I can directly estimate that such reform leads to the creation of additional 800 million dollars of returns generated by the World Bank over the sample in analysis, in a confidence interval of $[414,\ 1,189]$, corresponding to a 3.7% increase. Furthermore, using World Bank documentation I evaluate the viability of this reform and conclude that this delivers net gains of 624 (426) million dollars under a moderate (extreme) cost scenario, with a wide range included between 38 and 1,011 millions.

Among the possible settings in development economics to extend the teacher-pupil work, the World Bank is ideal for at least three reasons. First, because it is one of the largest and oldest development institutions, with methodologically consistent databases dating back for more than 40 years. To exploit this feature, I join the World Bank Project Ratings database with information on project managers and other financial details and, in so doing, I have access to 10,000 projects over a long span of time (from 1970 onward), comprising of more than 15 sectors, 140 countries and 2000 managers. Secondly, World Bank project managers can be considered inputs in project success and in order to verify the plausibility of the manager VA correlations, I collect their corresponding CVs and information using a variety of online sources (ie. report bios, resumes, LinkedIn profiles...). Last, but not least, the World Bank institutional design and its governing board can be exploited to provide some a plausibly exogenous source of "allocative shock", as it is shown at a later stage.

This paper contributes to various debates. First to the institutional perspective in the aid debate, which documents a relation between recipients institutional quality and aid effectiveness (Isham, Kaufmann and Pritchett (1997), Isham and Kaufmann (1999), Burnside and Dollar (2000), Easterly, Levine and Roodman (2003)), with some recent studies supporting the existence of a positive link (Casey et al 2012; Olken et al 2012). Here the focus is switched on donors and their organization, both in a theoretical and empirical perspective. Secondly, this advances the debate on the economics and organization of not-for-profit and mission-oriented institutions (Besley and Ghatak 2005; Besley, 2007; Alesina and Tabellini, 2007; Ashraf, Bandiera and Lee, 2014), especially for what concerns development lenders[7] and the presence of political equilibria in resource allocation

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However in this work, I take a normative-free stance on the role of boards and only explore the allocation change that may arise when a country is simultaneously a client and a controller of the lender.

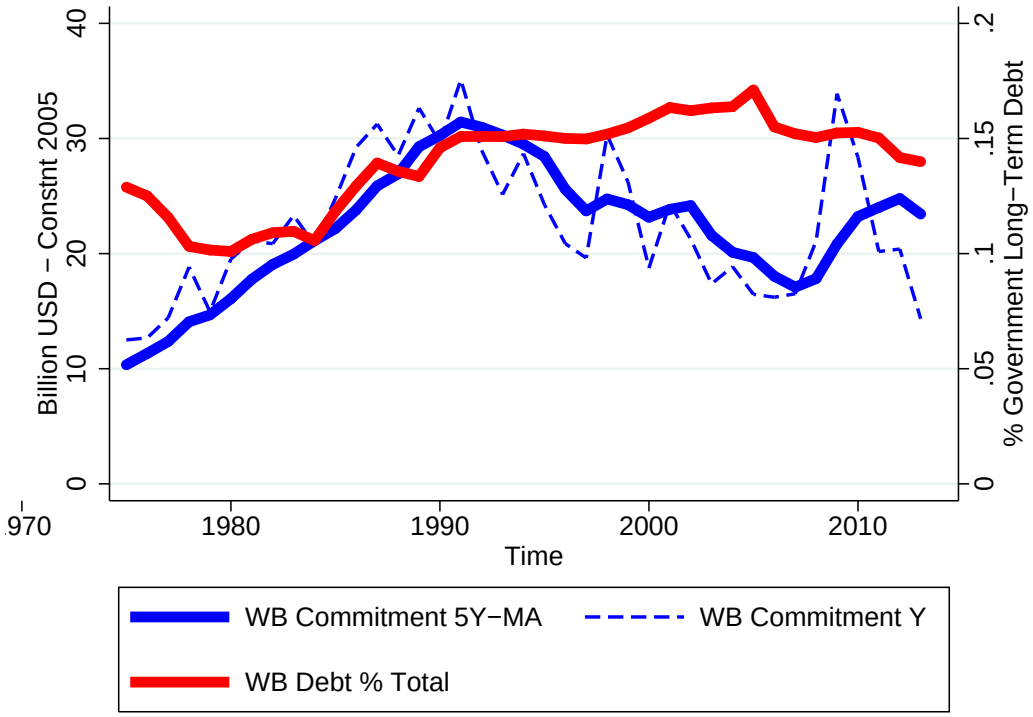
[7]Development Lenders have been experiencing unprecedented growth and relevance in the aftermath of the Great Recession, both multilaterally with the founding of new players (AIIB in 2015, BRICS Bank in 2012), and domestically as national development banks stepped up in their asset growth. In the UK, the Growth Report elaborated at LSE (Aghion et al, 2013), proposes the creation of an Infrastructure Bank with all duties of a proper development bank to "to facilitate the provision of stable, long-term, predictable, mostly private sector finance for infrastructure". While in

(Grossman and Helpman (1994, 2002), Coate and Morris (1995), Krishna (1998), Besley (2007), Dreher, Sturm and Vreeland (2009)). In this respect, my work joins a sizable literature on World Bank projects, that has already explored these data and provided useful insights on public policy and aid effectiveness (Chauvet, Collier and Duponchel (2010), Kilby (2013), Kilby (2015)). In particular, Denizer, Kaufmann and Kraay (2013) are the closest in spirit and aim to my work: they carefully explore macro and micro determinants of project success, establishing that within-country variation exceeds the between-country component and are the first to verify that project managers are a key factor in success. Furthermore, these results contribute to the extensive body of research using the teacher value added framework (Hanushek, 1971; Gordon, Kane and Staiger, 2006; Kane and Staiger, 2008; Chetty, Friedmand and Rockoff, 2013) and applying it to a management perspective (Betrand and Schoar (2003), Bloom and Van Reenen (2007, 2010)). Particularly, this work recalls the results on management and its performance-enhancing effects, and in line with the findings of Bloom et al (2013) in Indian firms, Bandiera, Barankay and Rasul (2013) for team incentives or Bennedsen, Pérez-González and Wolfenzon (2012) for CEOs. Last but not least, this work adds to another literature on the provision of public goods, the role of incentives and bureaucrats selection (Besley and Ghatak (2003), Besley (2005), Rasul and Rogger (2013), Cruz and Keefer (2013), Keefer (2013)).

In the next section I present the data and type estimates, including an analysis of their main correlations. In section 2 I explore the core result of this paper by correlating manager VA and country FE and discuss the instrument for board access. In the next section, I present a theoretical framework to discuss the manager-country assignment from a planner perspective. Section 4 explores a core reform in which the World Bank replaces the bottom 10% managers with their mean. Section 5 offers some robustness checks and finally section 6 some concluding remarks.

emerging economies development banks are on the rise: China's CDB, Brazil's BNDES and South Africa's DBSA have been all growing rates exceeding 20% in the last years. For Brazil, refer to The Economist (2013), available at `http://www.economist.com/news/finance-and-economics/21588133-politically-inspired-surge-lending-weakening-state-owned-banks-latin` ; for China to North (2015), available at `http://www.digitalfinanceanalytics.com/blog/massive-capital-injection-to-chinese-banks-is-credit-positive-moodys/` ; for South Africa, refer to `http://www.dbsa.org/EN/About-Us/Publications/Pages/default.aspx` .

Figure 1: World Bank Lending and Low and Middle Income Countries' Debt, 1975-2014



Notes: This figure reports the overall amount of World Bank lending per year to Low and Middle Income countries between 1975 and 2014 on the left axis and the proportion of World Bank debt over total Long-Term Government Debt on the right axis. The thick blue line reports a 5 year moving average of the amount of World Bank lending in 2005 constant Billion USD, while the dashed blue line reports the yearly lending figure. It is possible to notice that World Bank lending boomed at the beginning of the '90s, when former USSR countries joined the World Bank, it slows declines in 2000 until the financial crisis in 2010. The right axis reports a different story: the World Bank is always a major provider of government finance, roughly 15% of all debt issued since early '90s.

1 Data and Type Estimation

In this section I identify the contribution of managers and countries to World Bank project success. For this purpose, I define the success of a project through the "Project Outcome" measure from the World Bank Project Rating database (from the "IEG historical project evaluations"), which is a collection of ratings assigned by World Bank managers to all financed projects since the early 1970s. This is the key database used in this analysis and represent the starting point of this project: in order to characterise manager VAs and country FEs, I integrated each project in this database with the respective financial information and manager identity, by consulting all project archival documentation.

The project evaluations are organized by the corresponding World Bank regional office, which in consultation with the project manager, appoints a team of evaluators. These work with other internal World Bank units and local authorities (ie. borrower, implementing agency, etc...), all of whom provide comments and participate to shaping the evaluation. This results in a document, the "Implementation Completion Report", which assesses the project and provides the synthetic ratings in a six scale measure ranging from highly

satisfactory (6) to highly unsatisfactory (1).[8]. Project outcome is defined as "the extent to which the operation's major relevant objectives were achieved", a synthetic measure of project success (IEG, 2013)[9].

In order to test the theoretical proposition, the following additional databases were collected:

- Manager Characteristics - this is a collection of manager characteristics, mostly based on individual CVs, which were collected using all available online resources (ie. own websites, LinkedIn profiles, book bios...). In this way I can observe for more than 200 managers few predetermined characteristics (nationality, gender, experience, joining year, number of promotions/downgrades, advanced degrees, previous work experience, spoken languages and country of study, number of publications, discipline studied) and characteristics during their job at the World Bank (number of country changes, sector changes, total number of projects, average size of a project). This database allows to verify the correlations between manager type and its individual characteristics.

- Countries Institutional measures - here I group up some of the most common variables capturing countries institutional features: parliamentary democracy and constraints on the executive (Besley and Persson, 2011), ethnic fractionalization (Easterly and Levine, 1997; Alesina et al., 2003), legal origins (Acemoglu et al, 2011), slave trade (Nunn, 2008) and a public infrastructure management index (Dabla-Norris et al, 2013). Through this database I can verify whether the country type correlates with measures of institutions, which would be natural predictor country types.

- World Bank board composition - using all World Bank annual reports since 1980, I digitize the composition of the board for all years, verify the evolution of constituency groups, the number of countries belonging to each in each year and how new countries are assigned to constituencies.

In terms of methodology, the most recent literature has proposed two alternatives: an empirical Bayes procedure, following Kane and Staiger (2008) and Chetty, Friedman and Rockoff (2013), and a fixed effect estimation, in the spirit of Betrand and Schoar (2003) and Gordon, Kane and Staiger (2006). Because of the relatively short manager panel, I estimate the manager VA using a simple fixed effect model[10]: this has obvious drawbacks because I cannot remove the measurement error component from the manager VA.

[8]More information can be found in Denizer et al (2013) or at the following link `http://web.worldbank.org/WBSITE/EXTERNAL/PROJECTS/EXTPOLICIES/EXTOPMANUAL/0,,contentMDK:23071941~menuPK:4564187~pagePK:64709096~piPK:64709108~theSitePK:502184,00.html`

[9]According to the Independent Evaluation Guidelines for Project Evaluation, IEG (2013), project outcome includes an assessment for the relevance of the project to the mission of the World Bank and the need of the country, the efficiency with which resources are used for the realization of the project and the efficacy of the project in achieving the stated objectives.

[10]The Empirical Bayes approach has the advantage of disentangling the estimate of the manager effect, using a minimum variance unbiased estimator (MVUE), from the reliability of the information, expressed

However this estimation is more tractable and has a clear interpretation. In addition to this, as I show in in Appendix A where I provide estimates using the Empirical Bayes approach, there is high correlation (0.63-0.76) between the estimates of these two models when possible. Furthermore, as shown in the next section, by looking at the standard errors of the manager VA estimate, there is no systematic evidence of good or bad managers presenting higher variability.

From an essential empirical framework, based on Todd and Wolpin (2001) and illustrated in Appendix B, I can introduce a general model of project success which permits to identify the Manager VAs and Country FEs through the following regression

$$y_{imcst} = \alpha + \iota_m + \iota_c + \iota_s + \iota_t + \beta_1 \bar{y}_{ct-1} + X_{1imcst}\beta_2 + X_{2ct}\beta_3 + \varepsilon_{imcst} \tag{1}$$

where y_{imcst} is the project outcome variable indicating the success of project i, lead by manager m, in country c, of sector s, at time t; $\iota_m, \iota_c, \iota_s, \iota_t$ are the respective fixed effects of manager, country, sector and time, X_{1imcst} and X_{2ct} are project and country-level controls, while $\bar{y}_{ct-1}$ is the average project success of country c in period $t-1$ and emerges from the project success model as a catch-all term of country time-varying heterogeneity.

In order to be able to give a level interpretation to the fixed effects I introduce four normalizations

$$\bar{\iota}_m = \sum_{k=1}^{N_m} \frac{\iota_{mk}}{N_m} = 0 \ , \ \bar{\iota}_c = \sum_{w=1}^{N_c} \frac{\iota_{cw}}{N_c} = 0 \ , \ \bar{\iota}_s = \sum_{j=1}^{N_s} \frac{\iota_{sj}}{N_s} = 0 \ \ and \ \ \bar{\iota}_t = \sum_{y=1}^{N_y} \frac{\iota_{ty}}{N_y} = 0$$

which impose that the average manager, country, sector and year fixed effects, $\bar{\iota}_m, \bar{\iota}_c, \bar{\iota}_s, \bar{\iota}_t$, are equal zero.

At this stage, two fundamental features of the dataset need to be discussed. First, the identification of the manager and countries fixed effects demands managers changing countries, countries changing managers and multiple managers operating at any point in time. If this was indeed absent, the two effects would perfectly collinear and their information indistinguishable. Secondly, because I am interested in exploring an "allocative shock" related to board access and verify whether countries sitting in the World Bank board are assigned better managers, I exclude from my sample all projects during which a country sits on board. In this way I measure the manager VA and country FE only for the years in which none of them operates through the board. Otherwise this may lead to mechanically find a correlation between these two variables, if the presence of board alters the technology of project returns.

For these two reasons from the universe of World Bank projects, 10,000, I extract a sample such that each country and manager presents at least 3 projects, which offers

through a "shrinkage" parameter accounting for the signal to noise ratio. This procedure is however extremely data-intensive and relies on observing a very large number of projects per manager, over countries and time. Unfortunately my sample is not large enough to support this estimation and a VA figure would be available for less than 15% of the total.

support for the FE estimation: this restriction catches 3,385 projects from the initial 10,000 and in this I observe that a manager changes on average 3.19 countries and 2.11 sectors; while a country experiences 25.03 managers and 10.26 sectors. This is the main sample that I use for the analysis. However in estimating manager VA and country FEs, I further restrict to exclude projects performed while a country sits on the World Bank board. In line with the theoretical model if there are changes in technology or rent extraction when a country sits on board, then I would partially assign it to managers and countries and this would mechanically bias the fixed effect estimates toward finding a correlation, especially when a country sits on board. This additional restriction leads to a further reduction and the final sample shrinks to 2,240 projects. In this sample however I cannot consider countries that are always sitting in the World Bank board, which tend also to be some of the geo-politically more relevant (China, India, Russia, Bangladesh, Argentina).

Therefore I proceed in the following order:

1. I use the 2,240 restricted sample to calculate each manager VA and country FE;
2. I match each manager VA and country FE to the corresponding managers and countries in the 3,385 sample, which contains also the countries sitting on the World Bank board;
3. I aggregate the project-level data to country-year level and test the main proposition.

Table 1 reports results of the empirical model described in (1). It is useful to note that both the country and manager fixed effects are jointly statistically different from zero, while this is not the case for the sector fixed effects. For this reason no policy experiment is conducted by varying the number of sectors. It is also interesting to note that the lag of mean project outcome of country c correlates negatively with the current project outcome, but is not significantly different from zero and very close to zero in point estimate. This may seem surprising, however in alternative regressions this changes as country fixed effects are suppressed. Therefore the information content of this variable seems to be country-specific time-invariant and absorbed by the country fixed effects.

An immediate concern from this estimation may be the relation between managers and countries: I may artificially find that a manager operating in a highly-performing country gets a high VA estimate. However, this is not the case, indeed there are large within-country variations in manager VAs. Figure 1 provides graphical evidence: the y-axis reports manager VAs, the x-axis the country FE and each dot is a project, therefore the negative correlation and the substantial spreading out of managers for a country address possible concerns on whether the manager effect might be indistinguishable from countries own.

Another argument against my estimates could highlight the high Manager VA standard deviation, 0.807, and consider my estimates as a mere consequence of sampling error. Though I cannot fully rule out this, I believe this a minor part of the story. In order to

counter this, the upper panel of Table 2 reports the summary statistics of Manager VAs for the whole sample and, in the lower panel, only for those managers with more than 8, 6 or 4 projects. By comparing the standard deviations in these different samples (0.448, 0.468, 0.571), it is clear that 0.807 might contain some noise due to managers with few projects, however there seems also to be some relevant information.

Finally two sources of bias could be claimed to affect my estimates. The first is the Hurwicz-Nickell bias (Hurwicz, 1950; Nickell, 1981), provoked by the presence in model (1) of a lagged dependent variable combined with fixed effects. Two arguments can assist in addressing these claims. First, the Hurwicz-Nickell bias shrinks the fixed effects toward zero, analogously to an attenuation bias, and therefore pushes against the results that I present. Secondly, because the panel is relatively large both in $N = 125$ and in $T = 31$, it is known that such bias converges to a process $O\left(\frac{1}{T}\right)$, is bound not to be larger than relatively few percentage points. The second source of bias may be due to the omission of a dynamic manager-country allocation rule. The theoretical model expresses the manager-country allocation as being a repetition of static problems, therefore the simple fixed effect estimation catches this aspect if manager VAs are constant and country FEs present an additive idiosyncratic component. However a dynamic manager-country allocation rule may bias the fixed effects, as the error component would be correlated with the estimated VAs and FEs. In Appendix C I explore the existence of a dynamic manager-country allocation rule exploring the time-series dimension of manager assignments, where I use country and manager performances at time $t-1$ to predict their assignment at time t and I do not find evidence of dynamic matching.

Table 1: Estimating the Value-Added of World Bank Managers

Variables	(1) Project Outcome
Lag Project Outcome	-0.005
	(0.042)
Constant	4.213***
	(0.387)
FE Country	Yes
Number of Countries	125
FE Sector	Yes
Number of Sectors	15
FE Manager	Yes
Number of Managers	642
FE Year	Yes
Number of Years	31
Controls	Yes
Number of Controls	24
Obs.	2,240
P-value of F Test on Country FE	0.000***
P-value of F Test on Sector FE	0.655
P-value of F Test on Manager FE	0.000***
P-value of F Test on Controls	0.000***
R squared	0.462
Mean Dep. Var.	4.124
S.D. Dep. Var.	1.199

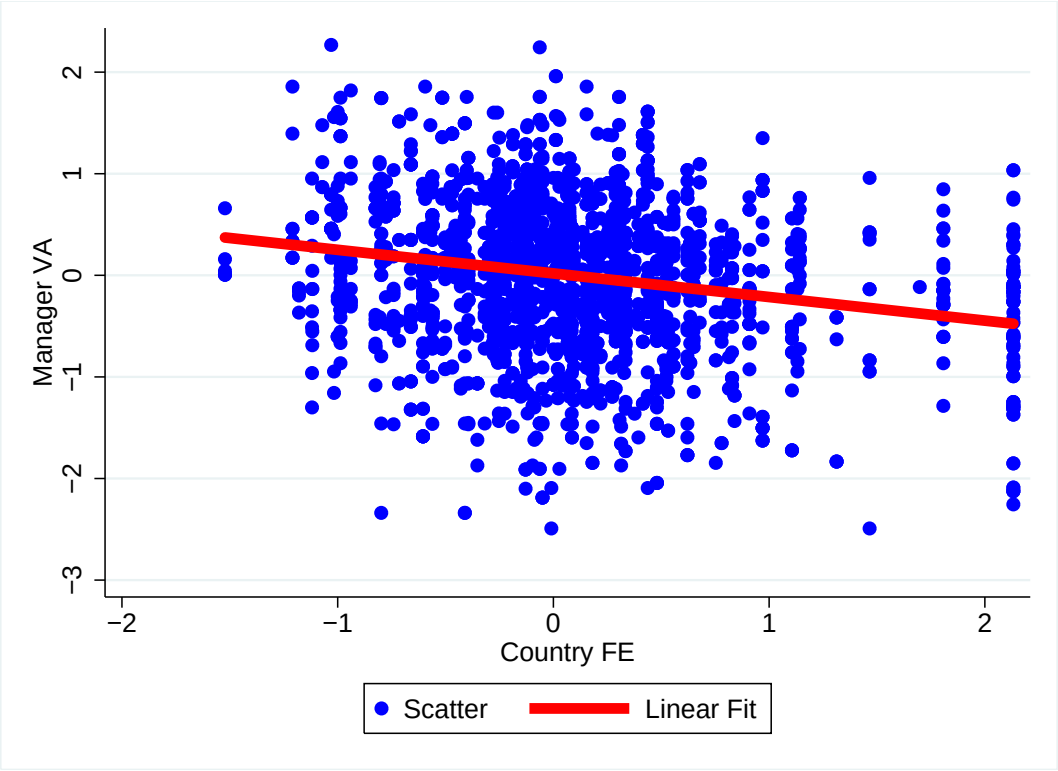
Notes: This table reports OLS estimates, the unit of observation is project level and country, sector, manager and year fixed effects are included. Standard errors are clustered at country-level, with 125 units. Four normalizations are applied to this regression and impose that the mean of the country, sector, manager and year FE are equal to zero, to simplify the level interpretation of the fixed effects. "Project Outcome" reports an ordinal rating assigned by the World Bank project manager to the outcome of the project and is interpreted as a measure of and project success. The variable ranges from 1 (highly unsatisfactory) to 6 (highly satisfactory) and its mean is reported in the row "Mean Dep. Var.". The rows beginning with "FE" indicate the presence of the Fixed Effect at country, sector, manager and year level, the row beginning with "Number of" reports the number of available countries, sectors, managers and years available in the database. The rows beginning with "P-value of F test on" provides the results on a test of joint significance on all fixed effects at country, sector and manager level and also a test on controls. The included controls are: 1) at country level - population, exchange rate, real GDP per capita at constant prices; 2) at project level - the size of the project in constant USD, the interest rate on the loan, the month of approval, 2 lending type dummies, 15 lending instrument dummies. The 2 mentioned lending types are specifically: "Investment", for projects characterized by funding for governments to cover specific expenditures related to economic and social development projects; Development Policy operations are type of projects aimed at the provision of direct budget support to governments for policy and institutional reforms aimed at achieving a set of specific development results. There exist 15 mentioned lending instruments, which characterize different financial packages in which the projects are designed and delivered to countries, for example APL - Adaptable Program Loan, FIL - Financial Intermediary Loan or SAL - Structural Adjustment Loan. The Adjusted R square of these regressions comes from an unconstrained OLS regression. All the country level controls, the size of the project and interest rate are measured in continuous units, approval month ranges in integers between one and twelve, while the remaining are dummy variables. ***, **, and * indicate significance at the 1%, 5%, and 10% levels.

Table 2: Summary Statistics on Manager VA and Country FE

Row	Variables	Obs.	Mean	St. Dev.	Median	Max	Min
(1)	Manager VA	642	0	0.807	0.062	2.268	-2.491
(2)	Country FE	125	0	0.651	-0.033	2.132	-1.522
(3)	Project Outcome	2,240	4.124	1.199	5	1	6
	Manager Level - Different Number of Projects						
(4)	Manager VA (Number of Projects>8)	16	0.142	0.448	0 .173	.868	-1.063
(5)	Manager VA (Number of Projects>6)	46	0.033	0.468	0.130	.868	-1.063
(6)	Manager VA (Number of Projects>4)	162	-.006	0.571	0.030	1.394	-1.595

Notes: This table reports the summary statistics of Manager VA estimated in Table (1) and Project Outcome. Manager VAs are the fixed effects (FE) extracted from a regression of Project Outcome presented in (1). In the upper panel such summary statistics are presented for all Manager VA, Country FE and Project Outcome; the lower panel reports the summary statistics for all the managers with more than 8 projects (row 3), 6 (4) and 4 (5). "Project Outcome" reports an ordinal rating assigned by the World Bank project manager to the outcome of the project and is interpreted as a measure of and project success. The variable ranges from 1 (highly unsatisfactory) to 6 (highly satisfactory) and its mean is reported in the row "Mean Dep. Var." of Table (1).

Figure 2: The Scatter of Country FE and Manager VA - Project Level



Notes: This figure reports the scatterplot, in which each dot is a project and reports the associated Country Fixed effect and Manager VA estimated in Table (1), column (1). Country and Manager VAs are the fixed effects (FE) extracted from a regression of Project Outcome over country, sector, manager and time FE.

1.1 Inspecting Manager VAs

In this section I explore Manager VAs and verify their correlation with project and individual characteristics. Before this exercise, it is interesting to notice from Table 2 that the manager VA is volatile, st. dev. 0.807, especially when compared to standard deviation of country FE, 0.651.

It is also interesting to provide a descriptive assessment of the manager VA by studying the upper panel of Figure 3: this reports a bar chart, where each blue dot represents a manager VA with the upper and lower bound of its estimate reported in green and red respectively. Because of the short manager panel, manager standard errors are not small: however both the bottom 10% and top 10% manager VAs are statistically different from zero in their 5th or 95th percentile. A graphical portrait of the existence of several "exceptionally bad manager" is clear the lower panel of Figure 3, which reports the Manager VA density and shows a noticeable left-tail of low-performing managers.

In Tables 3 and 4, I present some findings which support the interpretation of Manager VAs as the types introduced in the theoretical model. Table 3 correlates the manager value-added to his/her project characteristics: the length of a project in years (column 1), the number of countries changed over the career (column 2), the number of sectors (column 3), the number of managed projects (column 4), the average initial year in which a manager worked on its projects (column 5) and the average financial size of projects (column 5). It is interesting to notice that with the exception of column 1, there is almost no action across the other margins: hence this correlation states that more successful managers tend to complete projects more quickly than others. From anecdotal evidence this seems sensible and, in fact, time to completion for this relatively comparable set of projects, may be considered an alternative measure of success.

The next step is to relate manager VAs to individual characteristics. Because not all CVs of the 642 managers are publically available, I am only able to analyze a subsample of 210 managers for whom I can observe all variables reported in Table 4 and Appendix D. From this analysis, I find that manager VA does not correlate with gender, number of promotions, World Bank joining year, years of experience and number of spoken languages, all of these results being shown in in Appendix D. In Table 4 I report only the characteristics that are significant: hence high manager VA do not hold a degree in Natural Sciences (ie. Medicine, Mathematics, Biology, Chemistry...), took an MBA, studied in their home countries (rather than US, UK...), did not work for the IMF, present more publications and did not experience a downgrade.

The first four variables may be considered relatively pre-determined. For column (1), it may be possible that the World Bank is unable to attract the best candidates from natural sciences (especially medicine, mathematics...) compared to other subjects given that it offers a relatively uniform benefit package. Concerning the MBA variable, there may be a couple of alternative stories in place, especially in terms of motivation: MBA students have access to higher salaries and fast careers, hence those choosing to

work for the World Bank may hold a particularly strong motivation for working in the development field. The third variable is particularly interesting and counter-intuitive, because this positive and significant correlation is found also when including dummies for "degree in US" and "degree in UK": managers that studied in their own countries, rather than abroad, tend to be associated to higher VAs. Finally, work experience at the IMF is associated with lower VAs. The remaining two variables are less pre-determined and may be consequences of being successful: higher manager VA is positively associated to the number of publications and negatively to a downgrade (being promoted from a hierarchically high to a lower position).

Table 3: Manager VA and Project-Level Correlates

Variables	(1) Manager VA	(2) Manager VA	(3) Manager VA	(4) Manager VA	(5) Manager VA	(6) Manager VA
Project Length	-0.0370**					
	(0.0163)					
Num. of Countries		-0.0353				
		(0.0314)				
Num. of Sectors			-0.0300			
			(0.0338)			
Num. of Projects				-0.00954		
				(0.0138)		
Average Year					-0.00867	
					(0.00542)	
Average Project Size						0.000445
						(0.000368)
Obs.	642	642	642	642	642	642
Mean Dep. Var.	0	0	0	0	0	0
St.Dev. Dep. Var.	0.807	0.807	0.807	0.807	0.807	0.807

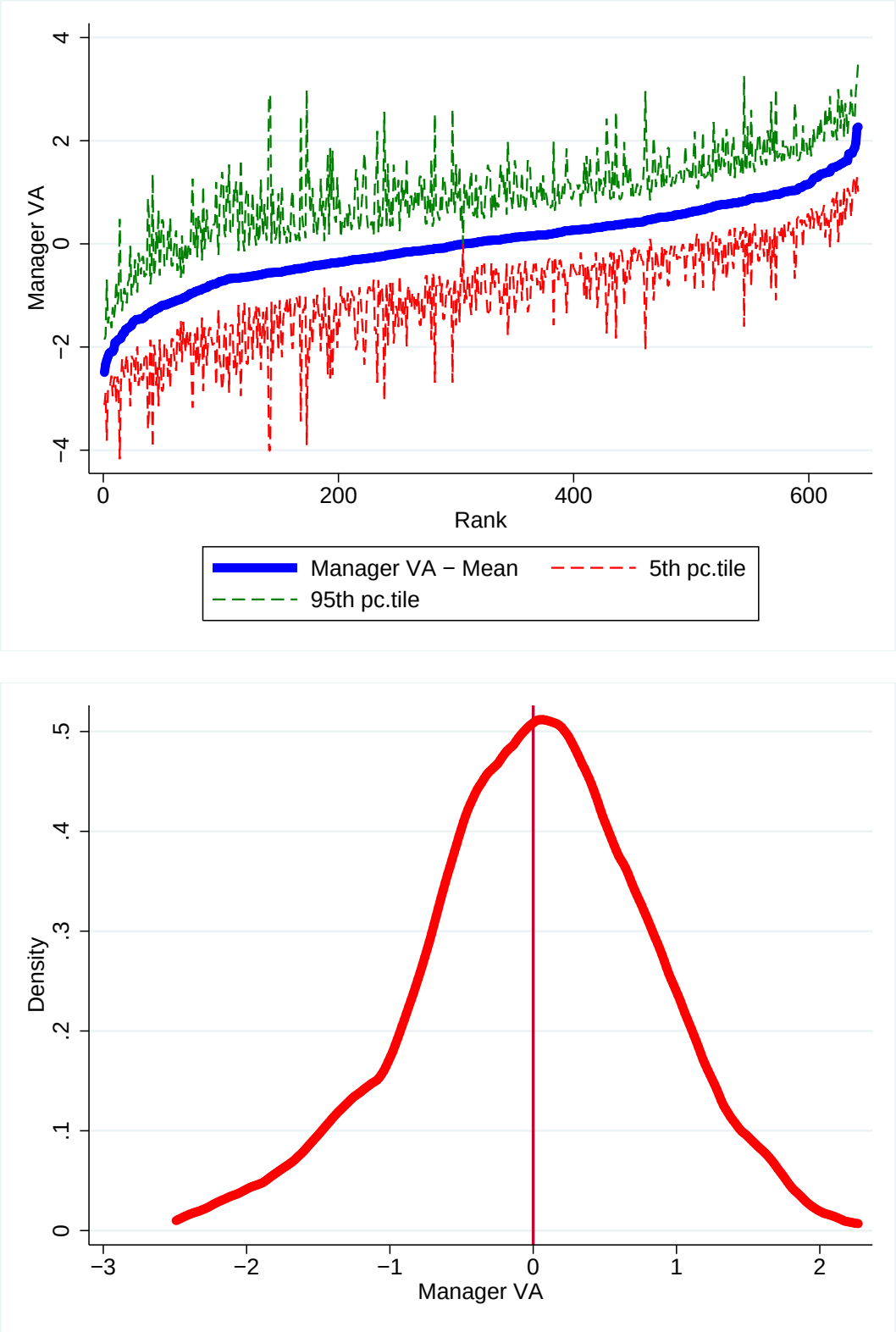
Notes: This table reports OLS estimates, the unit of observation is manager level and robust standard errors are in brackets. Manager VA is the vector of fixed effects (FE) extracted from a regression of Project Outcome over country, sector, manager and time FE, including 24 controls and the mean lag project outcome, as presented in Table (1) column (1). Its mean and standard deviation are reported in the row "Mean Dep. Var." and "St. Dev. Dep. Var.". Project Length measures the average number of years a project takes per manager. Num. of Countries is a continuous discreet variable, reporting the number of countries over which a manager has shifted over its career. Num. of Sectors is a continuous discreet variable, reporting the number of sectors over which a manager has shifted over its career. Num. of Projects is a continuous discreet variable, reporting the total number of projects executed by a manager over its career. Average Year is a continuous variable measuring the average year in which the projects of a manager took place. Average Loans is a continuous variable, reporting the average loan in constant USD held by a manager over its entire career; ***, **, and * indicate significance at the 1%, 5%, and 10% levels.

Table 4: Manager VA and Individual Correlates

Variables	(1) Manager VA	(2) Manager VA	(3) Manager VA	(4) Manager VA	(5) Manager VA	(6) Manager VA
Natural Sciences	-0.317*					
	(0.172)					
MBA		0.257*				
		(0.145)				
Degree in Home Country			0.0978*			
			(0.0501)			
Former IMF				-0.316*		
				(0.197)		
Publications					0.00534*	
					(0.00327)	
Downgrade						-0.353***
						(0.132)
Obs.	210	210	210	210	210	210
Mean Dep. Var.	0.03	0.03	0.03	0.03	0.03	0.03
St.Dev. Dep. Var.	0.745	0.745	0.745	0.745	0.745	0.745

Notes: This table reports OLS estimates, the unit of observation is manager level and the standard errors in brackets are clustered at nationality level. Manager VA is the vector of fixed effects (FE) extracted from a regression of Project Outcome over country, sector, manager and time FE, including 24 controls and the mean lag project outcome, as presented in Table (1) column (1). Its mean and standard deviation are reported in the row "Mean Dep. Var." and "St. Dev. Dep. Var.". The right-hand side variables are collected from manager CVs: Natural Sciences is a dummy taking unit value if a manager studied in his bachelor Medicine, Mathematics, Biology and Chemistry. MBA is a dummy taking unit value if a manager completed a Master in Business Administration. Degree in home country is a count variable which counts the number of degrees a manager took in his/her own country. Former IMF takes unit value if a manager has past work experience in the International Monetary Fund. Publications is a count variable for the number of publications. Downgrade is a dummy variable and takes unit value if a manager has been downgraded in his career to a hierarchically lower position. ***, **, and * indicate significance at the 1%, 5%, and 10% levels.

Figure 3: 95% Confidence Interval and Density of Manager VAs



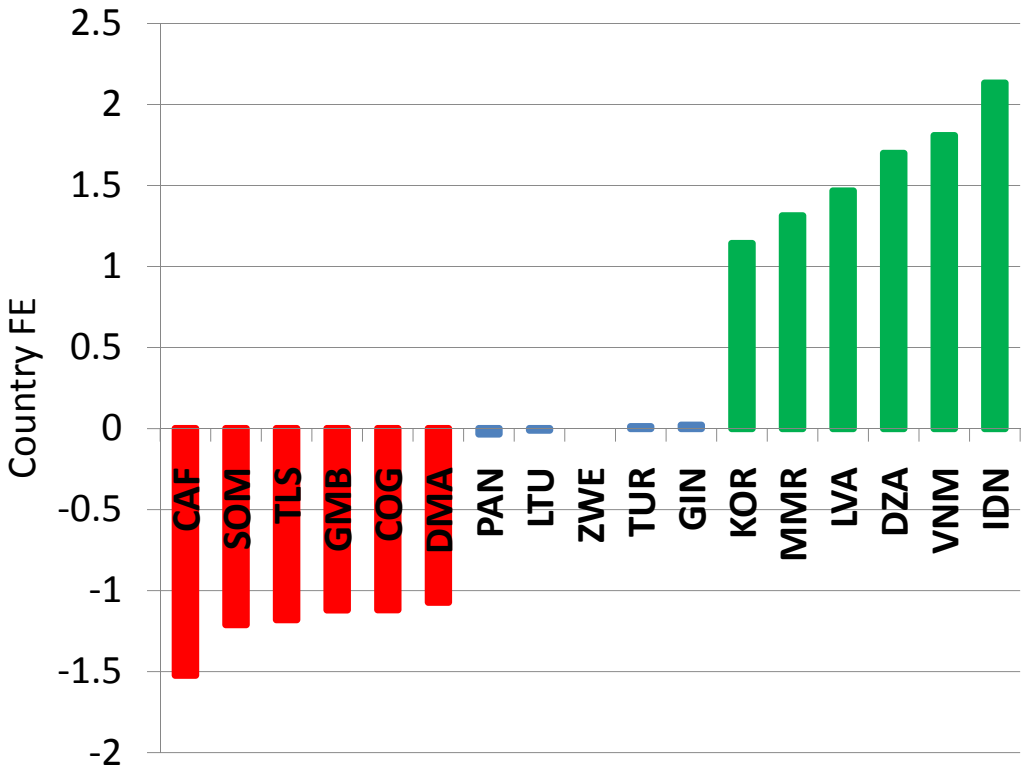
Notes: This figure reports a bar chart of the full sample of Manager VA in the upper panel and the density of Manager VA in the lower panel. In the upper panel, the y axis reports the point estimate of the Manager VA from Table (1), the x axis the rank of the manager. The thick blue line reports the point estimates; the upper dashed line colored in green and the lower dashed line colored in red represent the 95% confidence interval of the point estimates. In the lower panel, the y-axis reports the density of the distribution and it is clearly noticeable the existence of a thick left-tail of lower performing managers.

1.2 Inspecting Countries FEs

In this section I inquire into the determinants of country types and understand their main correlates at institutional level. If such types are to be interpreted as project productivity or indices of public good provision, given that the World Bank funds the construction of public goods, then they should be correlated with institutional variables at country level.

First, it is interesting to provide a descriptive assessment of country FEs. Figure 4 reports a bar chart, where I include the countries classified in top 5, the bottom 5 and the 5 countries around the mean, while Figure 5 reports the whole rankings including the 95% confidence interval around each estimate and their density. Figure 4 shows in green that countries characterized by a high country FE are generally considered development successes: Indonesia, Vietnam, Algeria, Latvia, Myanmar and Korea. The bottom 5 countries, indicated in red, are countries with severe conflict problems and still with large poverty gaps: Central-African Republic, Somalia, Timor-Lest, The Gambia, Congo and Dominica. The group of countries around the mean are mainly low-middle income countries: Panama, Lithuania, Zimbabwe, Turkey and Guinea. From the upper panel of Figure 5 it is possible to verify that even if, also in this case, the confidence intervals are not small, the top 20% and bottom 20% (with few exceptions) can exclude a zero in their 5th or 95th percentile. The lower panel shows the distribution of country FE, highlighting a substantial group of top performing countries, corresponding to a fat right-tail.

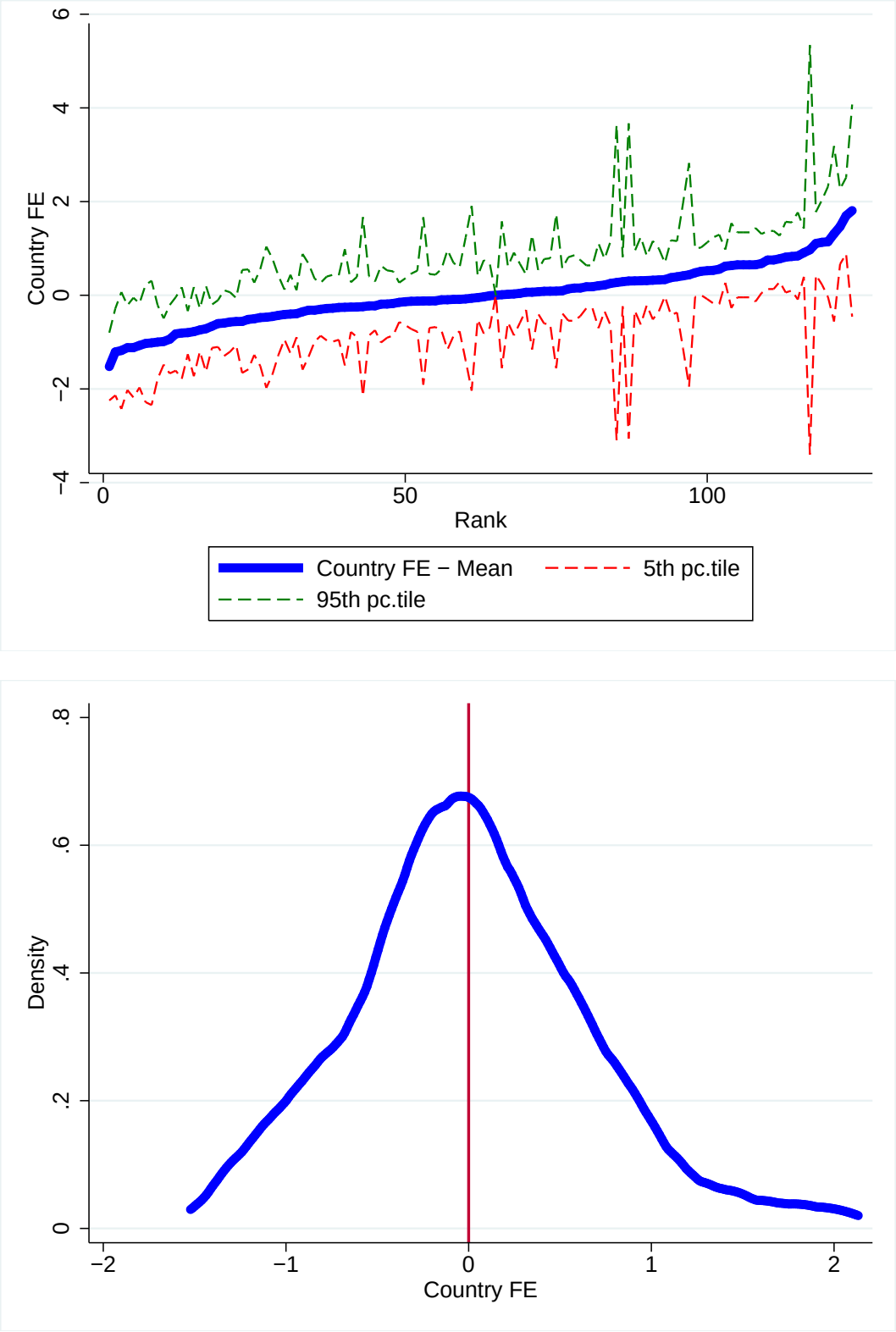
Figure 4: A Bar Chart of Selected Country FE



Notes: This figure reports a bar chart of a selected sample of the Country FE distribution. The y axis reports the point estimate of the country VA from Table (1), column (1), the x axis the rank of the country. The rightmost countries, coloured

in green, classify in the 5 top countries and are respectively: Indonesia, Vietnam, Algeria, Latvia, Myanmar and Korea. The mid countries, coloured in blue, are the 5 countries around the mean and respectively: Panama, Lithuania, Zimbabwe, Turkey and Guinea. The leftmost countries, coloured in red, represent the bottom 5 and are in order: Central-African Republic, Somalia, Timor-Lest, The Gambia, Congo and Dominica.

Figure 5: A 95% Confidence Interval and Density of Country FEs



Notes: This figure reports a bar chart of Country FEs in the upper panel and their distribution in the lower panel. In the upper panel, the y axis reports the point estimate of the country FE from Table (1), the x axis the rank of the country. The top chart reports the Country FE mean, indicated with a thick blue line showing the point estimates; the upper dashed

line coloured in green and the lower dashed line coloured in red represent the 95% confidence interval of the point estimates. The two countries with a spike in their standard errors are Iran and Ivory Coast, that have a respective FE (and st.err of FE) of -0.310 (1.379) and 0.213 (1.792), their standard errors are twice as large as those of the the other countries with the largest st. errors. In the lower panel, the y axis describes the density and it is noticeable a fat right tail of high-performing countries.

At this point I inspect the long-run determinants of country FE. In Table 5 I regress the country FE estimates over some of the most common institutional variables: a parliamentary democracy and high executive constraint dummy (Besley and Persson, 2011); slave trade (Nunn, 2008); ethnic fractionalization (Easterly and Levine, 1997; Alesina et al., 2003), legal origins (Acemoglu et al, 2001) and the public infrastructure management index, PIM Index (Dable-Norris et al, 2012). It is interesting to note that the country FE correlates as expected with all these variables: positively with parliamentary democracy in column (1), high executive constraints in (2) and the PIM Index in (4), while negatively with slave trade in (3), ethnic fractionalization in (4), and legal origins in (5). These results are in line with the expectation that countries with a high type (productivity in public projects) present better institutions in a broad sense.

Table 5: Country VA and Institutional Correlates

Variables	(1) Country VA	(2) Country VA	(3) Country VA	(4) Country VA	(5) Country VA	(6) Country VA
Parl. Democracy	0.0803					
	(0.181)					
High Constr. on Exec.		0.246*				
		(0.153)				
Slave Trade			-0.0285***			
			(0.0107)			
Ethnic Fraction.				-0.467*		
				(0.255)		
English Leg. Orig.					-0.605***	
					(0.162)	
French Leg. Orig.					-0.399**	
					(0.159)	
PIM Index						0.414***
						(0.103)
Observations	125	125	125	107	118	56
Mean Dep. Var.	0	0	0	0	0	0
St. Dev. Dep. Var.	0.651	0.651	0.651	0.651	0.651	0.651

Notes: This table reports OLS estimates, the unit of observation is country level and robust standard errors are in brackets. Country VA is the vector of fixed effects (FE) extracted from a regression of Project Outcome over country, sector, manager and time FE, including 24 controls and the mean lag project outcome, as presented in Table (1) column (1). Its mean and standard deviation are reported in the row "Mean Dep. Var." and "St. Dev. Dep. Var.". Parliamentary Democracy and High Constr. on Exec. are the average of two dummy variables, which respectively take unit value if a country is characterised as a parliamentary democracy in a given year or if it presents high constraints on the executive, from Besley and Persson (2011) - these dummies are averaged over the time period of this analysis (1980-2012). Ethnic

fractionalization is a continuous variable between zero and one, defined as one minus the Herfindahl index of ethnic group shares, as in Alesina et al (2003). The legal origin variables (English, French, Socialist and German) are dummies taking unit value if a country's legal and judicial system are based on one of the countries in bracket, as in Acemoglu et al (2001), the omitted dummy is English Legal Origins. Slave Trade is the measure of slave trade intensity of a country, defined as the natural logarithm of slave exports normalized by countries historic population, as in Nunn (2012), interacted with a dummy taking unit value for the 49 countries for which this variable is available. Finally PIM Index reports the public infrastructure management index elaborated by Dabla-Norris et al (2013). ***, **, and * indicate significance at the 1%, 5%, and 10% levels.

2 Empirical Analysis

Before diving into the core analysis, I need to mention some key institutional features. World Bank countries, both donors (ie. high income) and clients (ie. middle and low income), are allowed to supervise the operations of the World Bank President and senior management. For this purpose, they are joined in relatively small groups, called constituencies, which meet every two years, hold a simple-majority election and vote two countries for a board seat: one as Executive Director and another as Alternate Executive Director[11]. At least one of them participates in board meetings, with the Alternate enjoying voting power only if the Executive Director is absent. In this work I do not distinguish between the two, as both may supervise and provide their inputs on a variety of World Bank internal affairs. By looking at the composition of constituencies, it is clear that the allocation of a country to a group is not random, because there are some clear determinants of constituency selection (ie. geography, WB access year, international status...). As clear from the next paragraph, in this analysis I exploit only variation at the level of a country within a constituency. Indeed there is no country fixed effect, because this absorb the estimated country FE, preventing to understand the assignment rule.

At this point, given that the manager and country types are estimated I can move forward and answer the main question on manager-country assignment. To do so I join the manager VAs and country FEs from the 2,240 sample to the 3,385 sample which includes projects for countries sitting on the World Bank board and aggregate the manager VAs at country-year level and analyse the following expression

$$VA_{cgt} = a_1 + b_1\, Board_{cgt} + c_1\, FE_{cg} + X_{2cgt} d_1 + \iota_g + \iota_t + \varepsilon_{cgt}$$

where the average manager VA of country c, belonging to constituency group g in year t, VA_{cgt}, is regressed over a board dummy taking unit value when a country c in constituency g in year t sits on board, $Board_{cgt}$, the country FE which is time-invariant at country level, FE_{cg}, few country time-varying controls (GDP per capita, Population, Exchange Rate), X_{2cgt}, and a constituency and year fixed effect, ι_g and ι_t. The core coefficients, which shade light on assignment, are b_1 to explore whether allocative shock matter and

[11]It is also possible that one country enjoys both positions, though this is generally unlikely. For more details on the procedure, refer to `http://web.worldbank.org/WBSITE/EXTERNAL/EXTABOUTUS/ORGANIZATION/BODEXT/0,,contentMDK:20124813~pagePK:64020054~piPK:64020408~theSitePK:278036,00.html`

c_1 to understand the direction of the assignment.

2.1 Instrument

As mentioned in the introduction I exploit board election procedures to provide some plausibly exogenous variation in board access. Constituencies are characterised by a differing number of countries and different long-term agreements governing the rotations in the World Bank board (Martinez-Diaz, 2008). While in all countries belonging to the 17 voting constituency groups can competitively campaign to reach a board seat, a completely different scenario emerges once a country who served on board in the past term tries to be re-elected.

Serving for a second term can be particularly valuable both to influence decision making and because procedural knowledge of board functioning can provide a strong comparative advantage over "board new-comers". For example it is explicitly acknowledged that the longest serving executive director enjoys the title and duties of "Dean of the board"[12]. In such capacity the Dean enjoys strong ties with the President, for example he is responsible to negotiate the terms of his contract and has strong agenda-setting power in central board committees.

Given the important role emerging from re-election, constituency groups have established some diplomatic norms through long-term agreements on what extent countries are allowed to run for a second consecutive term. Figure 6 shows the probability that country c belonging to constituency g sits on board at time t given that it was sitting on board during the previous year (-1), two years before (-2) and so on. Because of the two-year board mandate, it is clear sitting on board at time $t-1$ predicts well period t[13]. It is also expected that being on board four and three years ago has a negligible effects on sitting today. However it is less obvious that if a country was actually sitting on board in the previous term, time $t-2$, then it is 10% less likely to sit on board compared to other countries belonging to the constituency group. I argue that such negative correlation is due to the different diplomatic norms at constituency level, indeed once I control for the

[12]Further information from the Dean of the board are provided through the page of the current Dean, Kuwait Executive Director, Mr Merza Hussain Hasan. "Our Executive Director is the Dean of the board of Executive Directors. The Dean of the board of Executive Directors is by practice the longest serving, full-time Executive Director. The responsibilities of the Dean include the negotiation of the terms and conditions of the contract of the President along with the Co-Dean. In addition, the Corporate Secretary consults with the Dean during the process of informal consultations to select members of the board Ethics and Standing board Committees. The Dean also chairs the meetings of the Steering Committee, which is the meeting of Executive Directors with Senior Management to set the board's work program and organizes meetings for Executive Directors among themselves or with Management, the UN or other high level experts to exchange views informally. The Dean and Co-Dean of the board also coordinate with the Dean of the Fund's board on matters of mutual interest such as the Annual Meetings, the remuneration of the heads of the two institutions, and corporate governance issues.". This information has been accessed on October 2nd, 2015 and is available at `http://www.worldbank.org/en/about/leadership/directors/eds11`.

[13]The point estimate of this probability is 0.6, rather than 1, because there occurs cases in which a board member may step down: some members are recalled to join own countries governments or other organizations, some voluntarily quit.

heterogeneity of re-election norms at time $t-2$, the negative effect becomes positive in point estimate but not statistically different from zero as shown in columns (3) and (4) of Table 6. The heterogeneity in board re-election is well expressed in Figure 7, showing that the negative effect is fully given by few constituencies that present lower probabilities of re-election for their countries: there are 5 constituencies in which a country previously sitting on board is 50% less likely than others to be elected, in other 6 this probability is 20%, while for the remaining 6 the election is open and competitive at all times.

Therefore my first stage to instrument board access is given by the following equation

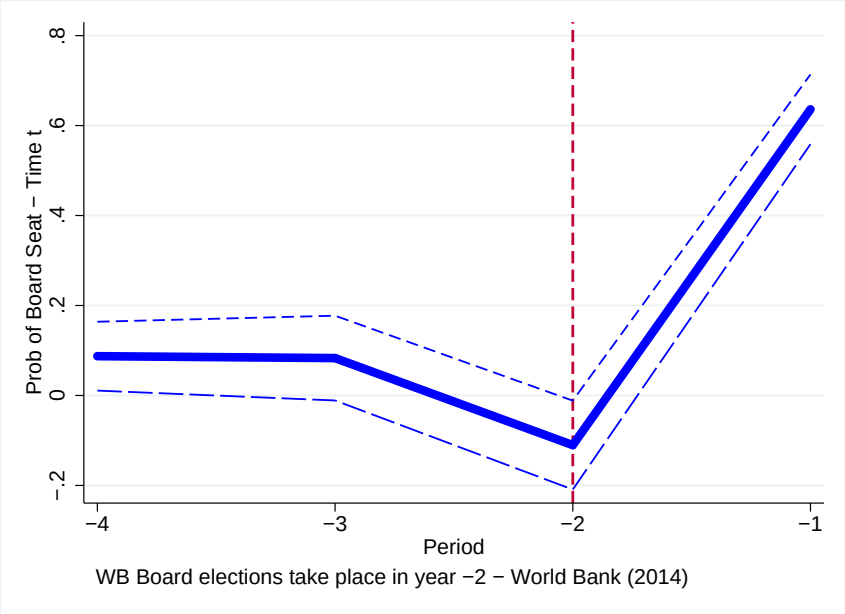
$$Board_{cgt} = \alpha + \beta\, Board_{cgt-2} + \sum_{g} \gamma_g Board_{cgt-2} \times \iota_g + X_{2cgt} d + \iota_g + \iota_t + \varepsilon_{cgt}$$

in which the probability that a country c in constituency group g sits on the World Bank board at time t, $Board_{cgt}$, is regressed over a dummy describing whether it was serving as board member in the previous term, $Board_{cgt-2}$, and an interaction between this variable and the constituency group fixed effect, $Board_{cgt-2} \times \iota_g$, to account for the heterogeneity in re-election norms and then clearly the set of country time-varying controls, a constituency group and year dummies, ι_g and ι_t.

My exclusion restriction rests on the assumption that conditional on a country's assignment to a constituency and other controls, the heterogeneous diplomatic norms in a constituency have no effect on the current manager assignment to a country, except than through the re-election probability this country enjoys in the constituency. A major concern here would be that the heterogeneous re-election probabilities in a constituency are correlated with its bargaining power with the World Bank and, hence, I am simply capturing its impact on managers assignment. I believe this unlikely for at least three reasons. First, constituencies do not have other formal ways of voicing their opinion to the World Bank administrative bodies, except that through their board members. Second, among the 25 constituency groups, those holding elections enjoy, generally, less bargaining power with the World Bank. In fact, the strongest constituencies in terms of voting power are the 8 single-country ones, which appoint directly their board members: these enjoy a total vote share of 46.59%[14], equivalent to an average share of 5.8% per country. On the contrary the remaining 17 constituencies enjoy a substantially lower vote share, 3.1% per constituency group, which then is further diluted in single country vote shares. Third, because in the computation of the country FEs I am excluding all countries that are permanently sitting on the World Bank board, this analysis excludes countries that may have strong bargaining power with the World Bank (China, India, Russia, Bangladesh, Argentina).

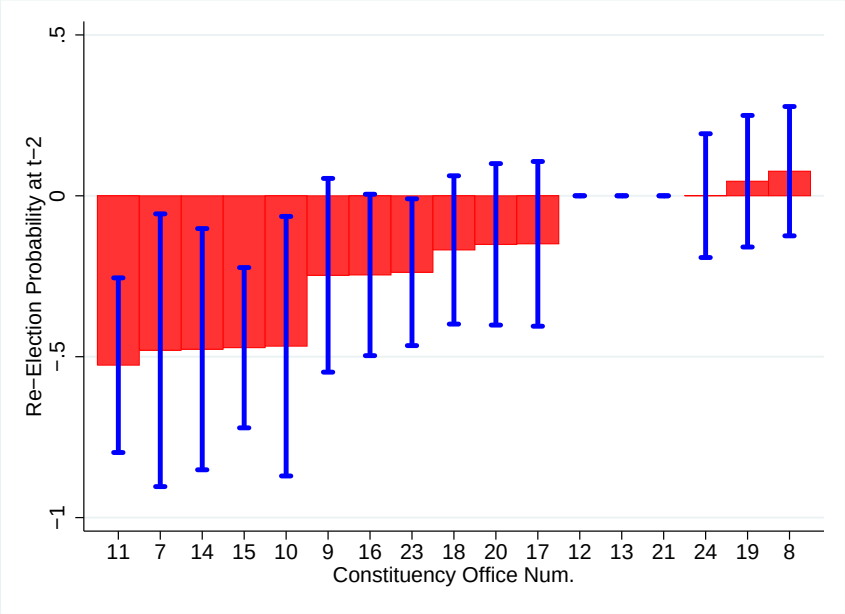
[14]These countries are the United States of America (16.12%), Japan (7.47%), China (4.82%), Germany (4.37%), France (3.92%), United Kingdom (3.92%), Saudi Arabia (3.02%) and Russia (2.95%). These are the data for IBRD vote share in 2013, refer to `http://siteresources.worldbank.org/BODINT/Resources/278027-1215524804501/IBRDEDsVotingTable.pdf`

Figure 6: Probability of Board Election given Previous Board Experience



Notes: This figure reports the probability that a country c belonging to constituency group g sits on board at time t given that it served on board in the previous year, -1, two years before, -2, and three and four years earlier, -3 and -4. These probabilities emerge from a regression where I control for a constituency and year fixed effect and country-year controls (GDP per capita, Population, exchange rate).

Figure 7: Board Re-Election and Constituency Heterogeneity



Notes: This figure reports the probability of election for a country c belonging to constituency group g which sat on board at time $t-2$. This emerges by regressing the country board dummy at time t over the corresponding dummies at $t-1$, $t-2$, $t-3$ and $t-4$ and an interaction between the $t-2$ dummy and constituency group fixed effects, plus constituency and time fixed effects. As clear from the text, the probability of re-election is partitioned in 3 groups: the left-most group (being constituency numbered 11, 7, 14, 15 and 10), a country who sat on board at $t-2$ is 50% less likely of sitting on board at time t; the central group (being number 9, 16, 23, 18, 20, 17 and 12) this probability drops to 20% and for the remaining group there is no statistically detectable difference between countries who sat on board at $t-2$ and those who did not.

Table 6: Board Access and First Stage - OLS

Variables	(1) Board t	(2) Board t	(3) Board t	(4) Board t
Board t-1	0.647***	0.617***	0.604***	0.569***
	(0.0380)	(0.0394)	(0.0403)	(0.0417)
Board t-2	-0.113**	-0.130***	0.145	0.189
	(0.0484)	(0.0474)	(0.124)	(0.121)
Board t-3	0.0975*	0.0774	0.0639	0.0423
	(0.0504)	(0.0498)	(0.0510)	(0.0495)
Board t-4	0.105***	0.0751**	0.0695*	0.0356
	(0.0391)	(0.0382)	(0.0390)	(0.0379)
Board t-2 × Constituency FE			Yes	Yes
Constituency FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Controls		Yes		Yes
Observations	1,347	1,347	1,347	1,347
Test			0.000***	0.000***
Adj. R sq.	0.426	0.441	0.442	0.459
Mean Dep. Var.	0.182	0.182	0.182	0.182
S.D. Dep. Var.	0.386	0.386	0.386	0.386

Notes: This table reports OLS estimates the unit of observation is country-year level and standard errors in brackets are clustered by country × year. Columns (1) and (3) reports unconditional results, while in columns (2) and (4) I control for population, gdp per capita and exchange rate. Board t takes unit value if country c in constituency g sits on the World Bank board in year t, analogously board $t-1$, $t-2$, $t-3$ and $t-4$. In all regressions I control for constituency and year fixed effects. In columns (3) and (4) I include an interaction between board $t-2$ and the constituency fixed effect to measure the heterogeneous probability in board re-election, established by diplomatic norms. The estimates of columns (4) of such interactive fixed effects are reported in Figure 7. ***, **, and * indicate significance at the 1%, 5%, and 10% levels.

2.2 Results

Table 7 presents the core results, with columns (1) and (2) reporting the OLS estimates, while (3) and (4) IV; columns (1) and (3) report unconditional results, while in (2) and (4) I also report controls. First, it is evident that a country sitting on the World Bank board seems to enjoy managers with a higher type under all cases. Secondly, there emerges evidence of negative assortative matching with the sign of the Country FE variable being unambigously negative and statistically different from zero.

Concerning the difference between the OLS and IV estimates, the latter are 40-70% larger than the OLS and this may be entirely due to a LATE effect: this IV is capturing variation in assigned managers for countries enjoying a Board seat for a second period. Because institutional experience may give a stronger leverage for countries in manager assignment, then this coefficient is expected to be larger. The board and Country FE magnitudes highlight that for a country with a full point of FE above the average can eliminate the negative assortative matching by sitting in the World Bank board. As a relatively secondary point, it is important to highlight that because the Country FE is a

generated regressor, I use the Murphy and Topel (1985) correction for the standard errors through a bootstrapping procedure[15].

Table 7: Manager-Country Assignment - Country Level Evidence

	OLS	OLS	IV	IV
	(1)	(2)	(3)	(4)
Variables	Manager VA	Manager VA	Manager VA	Manager VA
Board	0.182***	0.152***	0.317***	0.215*
	(0.033)	(0.031)	(0.083)	(0.094)
Country FE	-0.238***	-0.261***	-0.252***	-0.262***
	(0.037)	(0.037)	(0.037)	(0.036)
Constituency FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Controls		Yes		Yes
Observations	1,347	1,347	1,347	1,347
First Stage AP F			45.63***	23.11***
Adj. R sq.	0.0721	0.0764	0.0663	0.0753
Mean Dep. Var.	0.0107	0.0107	0.0107	0.0107
S.D. Dep. Var.	0.661	0.661	0.661	0.661

Notes: This table reports OLS estimates in column (1) and (2) and IV estimates in columns (3) and (4), the unit of observation is country level and standard errors in brackets are corrected using the Murphy and Topel (1985) procedure through bootstraps. Columns (1) and (3) reports unconditional results, while in columns (2) and (4) I control for population, gdp per capita, exchange rate, interest rate, IBRD projects and approval month. Manager VA is the vector of fixed effects (FE) extracted from a regression of Project Outcome as presented in Table (1) column (1), the manager effects are then aggregated at country-year level, while the country FE are country-specific and time-invariant. The mean and standard deviation of the left-hand side variables are reported in the row "Mean Dep. Var." and "St. Dev. Dep. Var.". Board is a dummy variable taking unit value if a country c belonging to constituency group g sits on board in year t and zero otherwise. In the IV estimates, this is instrumented through the probability of re-election in the previous term, $t-2$, interacted with the constituency fixed effects as presented in section 4.1. Constituency group fixed effects and year fixed effects are included throughout this analysis. ***, **, and * indicate significance at the 1%, 5%, and 10% levels.

3 Theoretical Framework

After having explored the empirical results and studied the relation between manager and country FE, I propose a theoretical explanation focusing on the role of "institutional

[15]The generated regressor problem emerges when a right-hand side variable is generated through a previous regression. Because this regressor includes a point estimate and a standard error, the OLS estimator yields consistent estimates but invalid standard errors, as highlighted by Pagan (1984) and Murphy and Topel (1985). Statistical inference based on such standard errors tend to reject the null hypothesis. For this reason I follow the approach proposed by Murphy and Topel, using a two-step boostrapping algorithm to compute the standard errors of this regression, in line also with the work of Ashraf and Galor (2013). The bootstrap procedure follows: 1) in the first stage, a random sample with replacement is extracted, containing 90% of the observations; 2) this sample is used to derive a vector Manager VA and Country FE, as shown in Table 1; 3) points 1) and 2) are repeated 1,000 times, leading to 1,000 vectors of Manager VAs and Country FEs; 4) for each manager VA and Country FE vectors, the second stage regression presented in Tables 5 and 6 is run on a random sample, containing 90% of the observations, and these coefficients are stored; 5) this procedure is repeated 1,000 times also in the second stage; 6) the standard deviation of each coefficient from the second stage stored distribution is used as the bootstrapped standard error for each variable.

risk aversion". This is not the only possible explanation in line with the empirical results: other explanations are admissible and possibly co-existent, for example submodularity in the project return production function with respect to manager and country types. However I believe that my model captures a first order feature of the manager allocation problem.

There is indeed substantial documental evidence on the existence of an institutional culture at the World Bank of risk aversion and projects being designed as "bullet-proof"[16], which underpins the following theoretical framework.

3.1 Environment

A Planner has access to N managers and decides their assignment to N countries. All of these are endowed with a type, which represents their productivity in generating project returns and is perfectly observable to the planner. Manager types are described with m_i and ordered so that the N-th manager is more productive that the $N-1$th, the $N-1$th is more productive than the $N-2$th and so on, hence $m_N > m_{N-1} > ... > m_1$. Analogously country types are described by c_j and the same normalization follows $c_N > c_{N-1} > ... > c_1$: however the planner observes in every period a noisy type for countries, therefore $c_{jt} = \widetilde{c}_j + \varepsilon_{jt}$ and $\varepsilon_{jt} \sim iid(0, \sigma^2)$. I simplify the dynamic allocation as a repetition of static problems and therefore in the theoretical section I omit the subscript t, which turns useful in the empirical section. In addition to this, I normalize both types so that the average manager and country type equals zero: $\overline{m} = \sum_i \frac{m_i}{N} = 0$ and $\overline{c} = \sum_j \frac{c_j}{N} = 0$. This assumption simplifies the modeling and allows an interpretation of manager VAs and country FEs in the next sections.

There are two stages in this game: first, the planner assigns manager i to country j, indicated as $m_{i,j}$; secondly, the project is successful with probability π, hence they generate returns in a project with a linear technology $y_{i,j} = m_{i,j} + c_j$, otherwise the project fails and with probability $1 - \pi$ such returns are zero.

Planner preferences are described by a quadratic Bernoulli with risk parameter β over total returns, $Y = \sum_j y_{i,j}$, $U(Y) = Y - \beta Y^2$. Because manager and country types are normalized to zero, this expression simplifies only to the variance component of project returns, and in Appendix A I show that this is described by $V(Y) = \frac{1}{N} \sum_j \pi y_j^2$. Therefore

[16]For example, the 2014 World Development Report specifically addresses the issue. In fact: "The World Bank Group is currently undergoing a transformation, which calls for shifting the institutional culture regarding risk from one of extreme risk aversion to one of informed risk taking". Refer to World Development Report. (2014). Risk and Opportunity: Managing Risk for Development. World Bank Group, Washington DC, available at `http://econ.worldbank.org/WBSITE/EXTERNAL/EXTDEC/EXTRESEARCH/EXTWDRS/EXTNWDR2013/0,,contentMDK:23459971~pagePK:8261309~piPK:8258028~theSitePK:8258025,00.html`. This is indeed consistent with anecdotal evidence on the internal bureaucratic practices, which encourage risk aversion from an institutional perspective "as the (project approval) process has evolved over time, it has accrued layers of bureaucracy that require staff to "bullet-proof" their projects before these even make it to the approval stage". Refer to DEVEX, 2014, Is the World Bank too focused on project approval?, available at `https://www.devex.com/news/is-the-world-bank-too-focused-on-project-approval-82792`

the optimal allocation of manager i to country j emerges from

$$\max_{m_i} -\beta \, \pi \, \frac{1}{N} \sum_j (m_{i,j} + c_j)^2$$

in this essential setting, the planner risk attitude, β, governs the assortativity of the allocation

$$\{m_{i,j}, c_j\} \, : \, i,j = \begin{cases} i, N+1-i & if \;\; \beta > 0 \;\; (negative \; assortative \; match) \\ i, \forall j & if \;\; \beta = 0 \;\; (undetermined \; match) \\ i, i & if \;\; \beta < 0 \;\; (positive \; assortative \; match) \end{cases}$$

so that the couple $\{m_{i,j}, c_j\}$ is assigned through a negative assortative matching rule if the planner is risk averse, $\beta > 0$; through an undetermined rule if the planner is risk neutral, $\beta = 0$; and through a positive assortative matching if risk lover, $\beta < 0$. In this context, I proceed under the assumption that the planner is risk averse and shall verify this prediction empirically.

The board is introduced as a set B of $\frac{N}{2}$ countries, which are randomly assigned to oversee the planner (Ferreira et al, 2012). Access to the board changes the incentives for the planner and I model it in a reduced form through a lump-sum transfer, τ, going from countries not on board, B^C, to countries in B. The parameter τ can have two interpretations:

1. rent-seeking - the planner needs to purchase board support to implement his actions and this generates a menu-auction problem (Grossman and Helpman, 1994; Bernheim and Whinston, 1986), which leads to transfer resources toward countries sitting on board;

2. technology - countries on board may be more open to work with the planner and such increase in communication\type may lead to an change in returns, justifying the alteration in the optimal allocation.

Given this transfer, whichever justification is taken, the problem presents an important change: the new overall returns are still equal to the previous because of linearity, $\widetilde{Y} = Y$, however the variance of project returns differs and the new problem can be written as

$$\max_{m_i} -\beta \, \pi \, \frac{2}{N} \sum_{j \notin B} (m_{i,j} + c_j + \tau)^2 - \beta \, \pi \, \frac{2}{N} \sum_{j \in B} (m_{i,j} + c_j - \tau)^2$$

this makes the new allocation dependent on whether a country sits on board. Therefore

under the risk-aversion assumption, the new allocation is described by

$$\{m_{i,j}, c_j\} \ : \ i,j = \begin{cases} i, f(\tau, N+1-i) & if \quad c_j \in B \\ \\ i, f(-\tau, N+1-i) & if \quad c_j \notin B \end{cases}$$

it is still negative assortative, however the transfer τ generates a board premium in manager's assignment, described by the parameter τ and the function $f(.)$. To clarify the intuition behind this result, the next paragraph sums up the main proposition and Appendix E reports a short example.

Proposition

The optimal allocation of a Planner assigning manager i to country j results in:

1. a negative assortative matching rule if risk averse, $\beta > 0$;
2. a manager board premium for countries sitting on board, $j \in B$;
3. such premium being increasing in the extent of the transfer, τ.

3.2 An Additional Prediction of the Model

While the points 1 and 2 of the main proposition reproduce results presented in section 3, in this short section I extend point 3 to the data. Conceptually I shall assume that the transfer decreases in the number of countries belonging to the constituency, $\tau(n_g)$. This is based on the fact that the leverage of a board member in extracting better managers may increase in its voting power, which is a positive function of the number of constituents: at the same time, this implies that not-on-board constituents have more to lose and therefore may implement a stronger monitoring on their board member.

Therefore the slightly richer equation reported here embodies this story and presents an interaction between board access with the number of countries present in a constituency group, $Num.Countries_{gt}$:

$$VA_{cgt} = a_2 + b_2\, Board_{cgt} + c_2\, FE_{cg} + d_2\, Board_{cgt} \ \times \ Num.Countries_{gt} +$$

$$+ e_2\, Num.Countries_{gt} + X_{2cgt} d + \iota_g + \iota_t + \varepsilon_{cgt}$$

the increasing nature of the manager premium in the extent of the transfer is caught by the term d_2, which I expect to be negative and statistically different from zero given the previous argument. As clear from Table 5, this is indeed the case and the interaction is negative and statistically different from zero. The main coefficient on board increases substantially, while the number of countries per se do not affect manager assignment. Conceptually the two tables are not very different and also in terms of magnitude this

is the case: if the interactive coefficient is multiplied by the average number of countries in a constituency (13.67), then it is clear to observe that the average point estimate on the board dummy is indeed unchanged. However it is interesting to notice that countries sitting on board in small constituencies tend to receive substantially higher type managers than others, while countries in large constituencies (the historical maximum is 25), tend to get no statistically different increase in their management assignment.

Table 8: Manager-Country Assignment - Country Level Evidence

	OLS	OLS	IV	IV
	(1)	(2)	(3)	(4)
Variables	Manager VA	Manager VA	Manager VA	Manager VA
Board	0.430***	0.383***	1.038***	0.938***
	(0.075)	(0.072)	(0.176)	(0.199)
Board × Num. Countries	-0.0210**	-0.0191**	-0.0697***	-0.0655***
	(0.005)	(0.005)	(0.013)	(0.015)
Num. Countries	0.00873	0.0111	0.0240	0.0240
	(0.010)	(0.011)	(0.010)	(0.011)
Country FE	-0.245***	-0.265***	-0.266***	-0.274***
	(0.037)	(0.037)	(0.035)	(0.035)
Constituency FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Controls		Yes		Yes
Observations	1,347	1,347	1,347	1,347
Mean Dep. Var.	0.0107	0.0107	0.0107	0.0107
S.D. Dep. Var.	0.661	0.661	0.661	0.661

Notes: This table reports OLS estimates in column (1) and (2) and IV estimates in columns (3) and (4), the unit of observation is country level and standard errors in brackets are corrected using the Murphy and Topel (1985) procedure through bootstraps. Columns (1) and (3) reports unconditional results, while in columns (2) and (4) I control for population, gdp per capita, exchange rate, interest rate, IBRD projects and approval month. Manager VA is the vector of fixed effects (FE) extracted from a regression of Project Outcome as presented in Table (1) column (1), the manager effects are then aggregated at country-year level, while the country FE are country-specific and time-invariant. The mean and standard deviation of the left-hand side variables are reported in the row "Mean Dep. Var." and "St. Dev. Dep. Var.". Board is a dummy variable taking unit value if a country c belonging to constituency group g sits on board in year t and zero otherwise. In the IV estimates, this is instrumented through the probability of re-election in the previous term, $t-2$, interacted with the constituency fixed effects as presented in section 4.1. Num. countries reports the number of countries belonging to constituency group g at time t. Constituency group fixed effects and year fixed effects are included throughout this analysis. ***, **, and * indicate significance at the 1%, 5%, and 10% levels.

4 Evaluating a Core Reform

In this section I abstract from the resource allocation problem and explore the gains that the World Bank would achieve by replacing the 10% worst performing managers with average managers and place these in other administrative tasks. Before discussing any reform affecting project success, I need to present the benchmark against which any

alternative may be compared. For this purpose, I use the results from Table 1 and construct the predicted outcome of a project, $\hat{y}_{imcst}$,

$$\hat{y}_{imcst} = \hat{\alpha} + \hat{\iota}_m + \hat{\iota}_c + \hat{\iota}_s + \hat{\iota}_t + \hat{\beta}_1 \bar{y}_{ct-1} + X_{1imcst}\hat{\beta}_2 + X_{2ct}\hat{\beta}_3 \tag{2}$$

this indicates the success of project i predicted in presence of a manager m, in country c, sector s, at time t and by all project and country observables. In (4), the vector of manager VAs, $\hat{\iota}_m$, is key because embeds the average manager contribution to a project. Therefore, a reform which affects the success of project i replacing manager m with an alternative m^* results only in a change of the manager VA vector $\hat{\iota}_m$ only for the row with project i. In this specific case, the row i of the manager VA vector $\hat{\iota}_m$ is replaced with the VA of the new manager m^*.

In this way I can construct alternative project success measures by introducing different manager rules. In this paragraph I focus only on one core reform, CR, meant to increase the average rate of project success. This assigns all managers with a VA in the bottom 10% to a generic non-project bureaucratic task and imposes hiring in those projects new managers with an average VA. Managers in the bottom 10% of the VA distribution add to the success rating of a project between -1.08 and -2.49 points: considering the project outcome average being 4.1, then a bottom 10% manager reduces success by roughly 25-60%.

The "reform treatment group" is composed only by those projects with a bottom 10% manager: in the counterfactual analysis, only these projects are passed on an average manager, who presents a normalized VA of zero. Such core reform affects just 190 projects out of 2,240 (8.4%). All projects with a manager in the remaining part of the VA distribution are unaffected and I am implicitly assuming that there are no general equilibrium effects of hiring new managers, moving old managers to other departments and no externalities in effort and motivation for existing managers. Therefore the predicted outcome of a project in presence of a core reform, $\hat{y}^{CR}_{imcst}$, is given by

$$\hat{y}^{CR}_{imcst} = \hat{\alpha} + \hat{\iota}^{CR}_m + \hat{\iota}_c + \hat{\iota}_s + \hat{\iota}_t + \hat{\beta}_1 \bar{y}_{ct-1} + X_{1imcst}\hat{\beta}_2 + X_{2ct}\hat{\beta}_3 \tag{3}$$

where (3) differs from (2) only for the vector $\hat{\iota}^{CR}_m$, which equals its estimated counterpart $\hat{\iota}_m$, with the sole exception that I am substituting the lowest 10% values (between the 10th percentile, -1.08, and the lower end of the support, -2.49) with a zero, the average. Using this method, the gains in project outcome for those projects i under the core reform, CR, are

$$\Delta\hat{y}^{CR}_{imcst} = \hat{y}^{CR}_{imcst} - \hat{y}_{imcst}. \tag{4}$$

Table 9 provides the summary statistics of such gain for the treated projects only, keeping in mind that the untreated record no change. Row (1) presents the summary statistics of these projects before the core reform, row (2) after and (3) the difference between the two (the "gain"). The most important result is given by the substantial

extent of the increase: on average a project increases it success score by 1.476 points out of a pre-reform mean of 3.073, almost a 50% boost.

Table 9: Summary Statistics of a Core Reform - CR

Row	Variables	Obs.	Mean	St. Dev.	Median	Min	Max
(1)	Project Outcome Predicted	190	3.073	1.582	2.960	-0.249	6.727
(2)	Project Outcome Core Reform	190	4.550	1.584	4.416	1.305	8.161
(3)	Project Outcome Gain Core Reform	190	1.476	0.340	1.407	1.075	2.491

Notes: This table reports the summary statistics of gains in the outcome of those projects involved in the core reform, CR_i. The Project Outcome Gain is defined as the difference between the new counterfactual project outcome minus the project outcome predicted by model (3). The core reform, CR, simulates what would happen if the World Bank would re-assign the 10% worst performing managers to non-project tasks and replace them with an average manager; The description of the experiment can be found in the text.

4.1 Calculating the Economic Gains of a Core Reform

In the remaining part of this section, I propose a calculation for the economic gains of the core reform. Until this point, I focused my attention on the project rating measure, y_{imcst}, as an ordinal measure of success and estimated the extent through which this variable would vary by reassigning managers/countries. In this section, I go a step further and exploit information from the economic rate of return of the project (ERR). These two variables are conceptually and intimately related: Table 10 highlights that each additional point in the project outcome rating, indicating a more successful project, indeed translates in roughly 4 extra points of ERR. Therefore, once the ERR definition is taken seriously, I can evaluate the economic gains of the two reforms and provide some million-dollar measure estimates. As Duvigneau and Prasad (1984) formalize in a World Bank technical publication[17], the ERR measures the internal return of a project accounting for the costs incurred and the gains generated by its realization, adjusting market prices to reflect the effects of the project[18].

[17]This document is available at the following link `http://econ.worldbank.org/external/default/main?pagePK=64165259&theSitePK=469372&piPK=64165421&menuPK=64166093&entityID=000178830_98101904153514` for more details also refer to Squire and Van der Tak (1975).

[18]Specifically Duvigneau and Prasad (1984) indicate that the ERR "treats import duties, sales taxes, profit taxes, and other government levies (or subsidies) as internal transfers within the country and disregards them, since they do not affect the overall wealth of that economy. It also uses "shadow prices" (see para 6.03 below) instead of domestic input and output prices, in case they do not adequately reflect the opportunity costs to the economy. For traded goods shadow prices (or economic prices) are international (or world) prices at the border of the country (border prices) (...). For non-traded goods

Using the results presented in Table 9, I can calculate how the core reform affects ERR generation. Recalling that replacing managers (core reform, CR) brought an increase of the project success rating for each project (on average 1.476 points), then the average increase in ERR for the 190 projects j treated by this core reform is:

$$\triangle \overline{ERR}^{CRj} = \triangle \overline{ERR} \times \triangle \overline{Succes}^{CR}$$

exploiting the result of Table 10, I can construct this counterfactual ERR gain as the product of the marginal effect of an increase in project success on ERR (3.706 from column (3) of Table 10), $\triangle \overline{ERR}$, times the average gain in project success generated by the core reform, $\triangle Success^{Tj}$. This leads to the following

$$\triangle \overline{ERR}^{CR} = 3.706 \times 1.476 = 5.470 \in [2.829,\ 8.111]$$

therefore the "core reform" increase the average ERR of treated projects by 5.470 points, with a 95% confidence interval shown in brackets (which accounts for the standard errors of the impact of project outcome on ERR). Recalling that the average ERR of a project is 23.6 percentage points, this implies a 23% increase.

Table 10: ERR and Project Outcome

Variables	(1) ERR Ex Post	(2) ERR Ex Post	(3) ERR Ex Post
Project Outcome	4.803***	4.776***	3.706***
	(0.841)	(0.846)	(0.913)
Country FE	Yes	Yes	Yes
Sector FE	Yes	Yes	Yes
Year FE	Yes	Yes	Yes
Manager FE		Yes	Yes
Controls			Yes
Mean Dep. Var.	23.6	23.6	23.6
Obs.	840	840	840
Adj. R-sq.	0.361	0.369	0.873

Notes: This table reports OLS estimates, the unit of observation is project level and country, sector, manager and year fixed effects are included. Standard errors are clustered at country-level. The Economic Rate of Return at the end of a project, ERR ex post, is a continuous variable, defined in a World Bank technical paper by Duvigneau and Prasad (1984)

(for example, land), the economic cost is defined as the value of net output foregone (when using that good in the best alternative use) as a result of using that good in the project. Use of shadow prices enables one to see beyond the effects of tariffs, exchange rates, interest rates, and wage rates, as well as administered prices, subsidies and surcharges that distort a product's true scarcity value. It enables one to measure an investment's efficiency of using the resources of an economy, priced at border prices".

The economic rate of return differs from the financial rate of return, FRR, because this supposedly reflects the general equilibrium effects of a project. For this reason the ERR of a project can largely exceed its FRR, if it alleviates some binding development constraints.

as the economic merit of a project by accounting for the gains and costs caused by the project, in section 4.1 I provide additional details on ERR calculations. Its mean is reported in the row "Mean Dep. Var.". Columns (1), (2) and (3) report the results of a regression of the ERR over country, sector, manager and year fixed effects, including all the 24 previously used controls; columns (4), (5) and (6) replicate the same results, replacing the country, sector and manager FE with the their VA estimate from Table (1) column (1). The included controls are: 1) at country level - population, exchange rate, GDP per capita, the GDP share of consumption, government spending and investment, population density; 2) at project level - the size of the project in constant USD, the interest rate on the loan, the month of approval, 2 lending type dummies, 15 lending instrument dummies. The 2 mentioned lending types are specifically: "Investment", for projects characterized by funding for governments to cover specific expenditures related to economic and social development projects; Development Policy operations are type of projects aimed at the provision of direct budget support to governments for policy and institutional reforms aimed at achieving a set of specific development results. There exist 15 mentioned lending instruments, which characterize different financial packages in which the projects are designed and delivered to countries, for example APL - Adaptable Program Loan, FIL - Financial Intermediary Loan or SAL - Structural Adjustment Loan. ***, **, and * indicate significance at the 1%, 5%, and 10% levels.

I can also define the economic gains of project i led by manager m in country c in sector s at time t, $Gain_{imcst}$,

$$Gain_{imcst} = (ERR_{imcst} - Int.Rate_{imcst}) \times Amount_{imcst}$$

as the product of its economic rate of return, ERR_{imcst}, minus the interest rate of the project, $Int.Rate_{imcst}$, times the constant million dollar amount of the project, $Amount_{imcst}$. It is important to highlight that because in the definition of ERR given by Duvigneau and Prasad "interest charges are excluded", I subtract them from the definition of gains.

Unfortunately ERRs are only available for a 840 of the projects in my sample (37.5%), for this reason I cannot extend the previous calculation without further work. Under the assumption that the projects with the available ERR are a representative sample, I can construct a predicted ex-post ERR using the coefficients of Table 6, column (3), and hence have an empirical analogue available for all projects, $\widehat{ERR}_{imcst}$.

Since all the required information is available I can calculate the overall economic gains of the core reform CR by summing each individual project economic gains

$$Gain^{CR} = \sum_{i} (\widehat{ERR}^{T}_{imcst} - Int.Rate_{imcst}) \times Amount_{imcst} \tag{5}$$

where the ERR of project i varies for those projects that are treated by the reform CR. This calculation gives rise to the figures reported in Table 11. Row (1) reports the aggregate economic gains by using the observed interest rates, project amounts and predicted ERRs; while Row (2) shows the aggregate gains once the 10% worst performing managers are replaced with their means. The "Total Gain" column indicates a figure in billion constant dollars of the economic returns generated by World Bank projects in my sample, with its 95% confidence interval presented in the next column. In order to have some quantitative interpretation of these reforms, the column "% Increase" shows the percentage increase in the total gains by introducing the reform: 3.7%. As a reference I also present the column "Total Spending", which shows an aggregate figure of the whole resources spent by the World Bank, comparing the gains with the spending, we can define

ratio interpreted as "how many dollars the World Bank produces by lending one dollar to a country". In this case, it is possible to notice that from my sample the World Bank produces 12.8 constant dollars of net returns for every 100 dollars lent to a country, which increases to 13.3 after the reform.

Table 11: The Economic Gains of a Core Reform

Row	Variables	Projects	Total Gain	95% Interval	% Increase	Total Spending
(1)	Economic Gains Predicted	2,240	21.895			170.216
(2)	Economic Gains Core Reform	2,240	22.697	[22.309, 23.084]	3.7%	170.216

Notes: This table reports the economic gains generated by the World Bank, using equation (4). Row (1) reports the observed economic gains, Row (2) and (3) report the counterfactual gains by respectively replacing the 10% worst performing managers and countries with their respective means. The column "Total Gain" expressed in billion dollars of constant USD reports the aggregate sum of economic gains in all World Bank projects, the column "95% Interval" reports the 95% confidence interval of the Total Gain, where instead of multiplying the project outcome gain by the point estimate of Table 9, column (3), I use the 95% confidence interval of this estimate; the column "% Increase" reports the percentage increase in economic gains by applying experiment 1 or 2; "Total Spending" accounts for the aggregate World Bank spending on all projects, in billion dollars of constant USD.

One possible concern may emerge by noting that by using the predicted ERR for projects without a published rate, I may be treating analogously very different projects. Indeed looking at Figure E1 in Appendix E, it is noticeable that most of the projects with an unpublished figure tend to record negative rates of return. For this reason, I perform the same exercise in Appendix E, Table E1, under two alternative assumptions for projects with a missing ERR: in the upper panel I replace all projects with a negative ERR with a zero; in the lower panel I replace all negative figures with the mean ERR. These produce an obvious effect of inflating the figure of the total gains produced by the World Bank by 3 and 5 times respectively. Correspondingly this reduces the percentage extent of the core reform, from a 4% increase in Table 11 to an increase between 3 and 0.2% in Appendix E - clearly the absolute estimate of the increase in the gains generated by the World Bank does not change, whichever accounting device is used: 0.8 billion dollars.

4.2 Cost-Benefit Analysis

In this section I report a cost-benefit analysis of this intervention, comparing the gains of the core reform with its cost. While the gains were explained in the previous sections, its costs comprise of two components: the hiring and search cost of 66 additional average

managers. From the 2013 World Bank Annual Remuneration Disclosure Note[19] I can see that a manager costs roughly 300,000 dollars per fiscal year, composed by a tax-free average salary 188,958 and other benefits (health insurance, termination benefits, family allowances...) amounting to 108,027.

In order to provide a lower-bound (and upper-bound, in brackets) estimate of hiring costs, I consider for all managers a payment period of 8 (16) years: which means that they are hired at age of 54 (46) and kept paying until the mandatory World Bank retirement age of 62. This leads to a lower (upper) bound scenario of hiring costs for all the 66 managers totaling 178 (376) million dollars.

Regarding the search costs, I assume that in the lower (upper) bound case the search for an average manager costs one (three) full yearly manager salary. This leads to 19.8 (59.4) million dollars dedicated only to search costs. In Table 12 I report a synthetic summary of the overall cost-benefit analysis of this reform, considering the 95% confidence interval bounds (in the upper and lower bound columns): on average this reform delivers 624 million dollars under a moderate scenario and 426 under an extreme scenario, under no circumstances the reform is not viable and the gains are always strictly positive and included in a range between 38 and 1,011 million constant dollars.

Table 12: A Cost-Benefit Analysis of a Core Reform

Row	Variables	Projects	Average	Upper Bound	Lower Bound
	Panel A: Lower-Bound Scenario of Hiring Cost				
(1)	Gains of the Core Reform	2,240	802	1189	414
(2)	Costs of the Core Reform	2,240	178	178	178
(3)	Total		624	1,011	236
	Panel B: Upper-Bound Scenario of Hiring Cost				
(4)	Gains of the Core Reform	2,240	802	1189	414
(5)	Costs of the Core Reform	2,240	376	376	376
(6)	Total		426	813	38

Notes: This table reports the cost-benefit analysis gains of the core reform affecting the World Bank. Panel A and B report different scenarios on the costs of the reform, respectively under a moderate and extreme scenario. Rows (1) and (4)

[19]Refer to the following World Bank document `http://siteresources.worldbank.org/EXTANNREP2013/Resources/9304887-1377201212378/9305896-1377544753431/Remuneration.pdf`

report the gains of the reform, as calculated in the previous sections, Rows (2) and (5) the costs of the reform expressing both the hiring and search costs, while Rows (3) and (6) the sum of these two. The average column expresses the average costs and benefits of the reform, in the upper and lower bound columns I introduce the 95% confidence interval bound estimates for the gains. All figures are expressed in constant international 2005 million dollars.

5 Robustness Checks

[TO BE UPDATED]

In this section I provide additional evidence on the estimated manager VAs, by proposing an exercise analogous to Kane and Staiger (2008). By extracting the manager fixed effects from (1), I define a "manager value added" vector, $VA_m = \widehat{\iota_m}$, which now I use as a regressor in my analysis. Recalling the original model, (1),

$$y_{imcst} = \alpha + \iota_m + \iota_c + \iota_s + \iota_t + \beta_1 \overline{y}_{ct-1} + X_{1imcst}\beta_2 + X_{2ct}\beta_3 + \varepsilon_{imcst}$$

now I define the manager value-added vector $\widehat{\iota_m}$ which assigns to each manager a rating emerging from (1) and define it as VA_m. In the next checks I use this as a regressor and verify how it changes at different levels of variation and introducing different controls. Therefore the model employed for robustness checks follows

$$y_{imcst} = \theta VA_m + C_{imcst}\eta + u_{imcst} \tag{6}$$

where the project success indicator, y_{imcst}, is run over the VA estimates, VA_m, and a vector of controls, C_{imcst}, which includes all the previous ($\overline{y}_{ct-1}, \iota_c, \iota_s, \iota_t, \Psi_{i0}$) as well as new variables. Under the hypothesis that manager VAs estimated in Table (1) column (1) are consistent, then my null hypothesis is $\theta = 1$ for a vector C_{imcst} and deviations of θ from the unit value can provide some insights on the direction of this bias.

Conceptually this exercise has a simple interpretation: suppose I am effectively measuring managers' contribution to project success, then introducing additional controls or exploiting different source of variation should not affect the main results. If the VA estimate measure the net effect of the manager on a project and not the result of other factors, then this should have a one-to-one correlation with project performance whichever level of variation is studied.

Hence in this section I run (6) and test the null hypothesis $\theta = 1$ for the following cases:

1. Country-sector-year specificites: the manager VA may be contaminated by an assignment which brings good managers to be exposed to good countries/sectors in good years or good countries for good sectors. This selection would bias my estimates, because I would confound the manager effect with an assortative matching effect. For this reason I propose a set of regressions where I control for country × year, country × sector and sector × year interactions, in different combinations;

2. Within-country specificites: the previous concern may apply also within a country, hence managers may be assigned to projects run in more successful sub-national units or sectors. For this reason I offer a case study for India, where I am able to match project information with states and managers.

3. Control for compensating effort at manager-country level: suppose that managers' effort in a project depend on the past project performance of a country, for example there may be political pressure or career concern arguments for which a manager would vary its contribution to a project as a best response to previous failing projects. For example by exerting higher effort than usual after a failing project, a manager may increase its probability to receive a promotion; or after a failing project a country may make pressure on the World Bank to receive a better manager. To address these claims, I control for an interaction between manager fixed effect and lag project outcome, because a standard omitted variable bias would arise. For this reason I propose a set of regression where I control for manager $\times$ lag project outcome and the introduce successive interactions (sector $\times$ project outcome, year $\times$ project outcome);

4. Control for country-manager and sector-manager pairwise fixed effects: as a further robustness check I run the standard regression replacing country fixed effects with country$\times$manager and in another form with sector fixed effects $\times$manager FE. For the pairwise country-manager FE, I am verifying the within-country-manager cross-sector average contribution of a manager, while in the pairwise sector-manager FE, I verify the within-sector-manager cross-country variation.

The following tests are applied to 3 databases:

- the original sample: which comprises of 3,385 project executed in 127 countries, 15 sectors, 31 years and 697 managers - in this database I can apply check 1. and check 3., I do not have sufficient observations to check 4. for all countries. The standard errors are clustered at country level.

- a large-country sample: where I select the 10 largest recipients of World Bank operations, whom overall register 1,037 of all projects and 311 managers. This permits to test both 1., 3. and 4. through a country-manager pairwise fixed effect, which is non empty for 413 cases. The selected countries (and their number of World Bank Projects) are: China (198) , India (151), Brazil (124), Indonesia (122), Mexico (82), Pakistan (78), Colombia (74), Argentina (74), Bangladesh (72) and Ghana (62). In this case I do not cluster at country level, because of the low number of clusters, but at country-manager level.

- an India sample: this sample is very small and presents only 50 observations, where I am able to connect manager information, project ratings and a assign a specific state to a project, using project documentation. For this very specific case I can also test 2. In this case robust standard errors are presented.

In all of these three tests I cannot reject the null hypothesis that $\theta = 1$, in some estimations the point estimates lies below one (0.8) and in others above (1.3), however the results are generally in line with the VA literature. All the plausible biases which I presented in 1., 2., 3. and 4. are likely to be in place, however they might not affect the estimates too severely and hence invalidate the previous findings. All the tables can be found in Appendix F.

6 Conclusion

In this paper I explore the resource allocation problem of a development lender, focusing on one lender (the World Bank) and one resource (its project managers). In order to understand the manager-country allocation rule and disentangle the role of possible allocative shows, I take a few steps. First I adapt the teacher-value added empirical framework to identify manager and country effects, which embody types as project productivities. Secondly, on the data side, I join the World Bank project ratings database with information on manager identities and their corresponding CV characteristics. I verify that manager effects correlate with some individual pre-determined characteristics, which may be considered predictors of a high type (ie. study field, advanced degrees, work experience). Similarly I verify that country effects are correlated with institutional measures (ie. parliamentary democracy, constraints on the executive, ethnic fractionalization, slave trade, legal origins and a public infrastructure management index). Third, I present a plausibly exogenous source of variation in access to the World Bank board. This is given by the diplomatic norms governing countries re-election and show that different constituency groups are characterized by heterogeneous rules which prevent or allow a country to run for re-election. At last, I can present the main results and find evidence of negative assortative matching and of a manager premium emerging for those countries sitting on the World Bank board.

These results are explained through an essential theoretical framework, which highlights two components as key in affecting resource allocation: the planner risk attitude and the occurrence of allocative shocks. I show that a risk averse planner intends to minimize the variance of project returns, hence adopts a negative assortative matching and allocates higher type managers to lower type countries. Allocative shocks can emerge for a variety of reasons, here I focus on the simultaneous role of countries as clients and supervisors in the board. While taking a normative-free stance on the role of boards, I acknowledge

that there can be at least two reasons why this induces an allocative shock: 1) countries on board can be more capable of extracting rents from the planner; 2) technological, countries on board can improve their communication/relation with the planner.

After having focused on a positive analysis, I move on suggesting a core reform to improve the World Bank effectiveness by assigning the worst 10% managers to non-project bureaucratic tasks and replace them with an average manager. This exercise is made possible by the availability of several economic indicators at project level: the USD amount of each project, its interest rate, the economic rate of return (ERR) among others. By combining the manager VA information with these indicators, I can estimate the gains achievable by replacing few (66) under-performing managers without an explicit firing operation, which might induce general equilibrium effects. Overall my results suggests that such reform leads to the creation of additional 800 million dollars of returns generated by the World Bank over the sample in analysis, corresponding to a 3.7% increase. At the same time, by consulting World Bank documentation I am able to provide plausible cost scenarios to evaluate the viability of the core reform and this would deliver net gains of 624 (426) million dollars under a moderate (extreme) cost scenario, with the range included between 38 and 1,011 millions.

All in all, this work contributes to the development literature with a clear message: understanding donors organization can provide valuable policy lessons and reforming donors may be as powerful as recipients countries reforms. Over the past thirty years the debate has often highlighted the poor institutions of recipients and their inability of taking advantage of the aid and development lending resources. Numerous academics, policy makers and commentators suggested radical reforms toward the institutional setting of countries, regardless these being largely top-down, possibly undemocratic and probably destined to fail. In this work I revert the focus of this debate and give an argument toward the need to reform the organization of donors, showing through an essential cost-benefit analysis that this seems to be a low, and delicious, hanging fruit.

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Appendix

Appendix A : Empirical Bayes and Fixed Effect Estimates

In this section I derive an alternative measure of manager VA following closely the work of Kane and Staiger (2008). Instead of equation (3), I estimate an analogous regression without manager fixed effects, focusing on the residuals of this expression:

$$y_{imcst} = a + b\bar{y}_{ct-1} + d\iota_c + e\iota_s + f\iota_t + X_{1imcst}g + X_{2ct}h + v_{imcst} \tag{7}$$

$$v_{imcst} = \mu_m + \theta_{mc} + \epsilon_{imcst} \tag{8}$$

equation (7) is identical to (3) with the sole exception that manager fixed effects are missing. Instead of providing an explicit modeling, I focus on the residual of this expression, v_{imcst}, and implicitly consider it in equation (8) as composed by three components: a time-invariant manager effect, μ_m; an idiosyncratic manager-country component, θ_{mc}, and a project idiosyncratic component, ϵ_{imcst}. In developing these estimates I follow the three steps recommended in the literature:

1) Variance-Covariance Estimation: by using the residuals of equation (7), I am able to estimate the variances of all elements in equation (8). The within-country within-year in v_{imcst} is used as an estimate of project variance

$$\widehat{\sigma}^2_{\epsilon} = Var(v_{imcst} - \overline{v}_{mc});$$

the covariance between the average residual in manager's projects in year t and $t-1$ estimates the manager variance component

$$\widehat{\sigma}_m^2 = Cov(\overline{v}_{mct}, \overline{v}_{mct-1})$$

this covariance is weighted by the number of projects per country-manager slot, n_{mct}; while the variance of the manager-country component is simply the remainder of this expression

$$\widehat{\sigma}_\theta^2 = Var(v_{imcs}) - \widehat{\sigma}_\epsilon^2 - \widehat{\sigma}_m^2.$$

2) Project Residual: I report a weighted average of the manager-country residual per manager, $\overline{v}_{mct}$, as a minimum variance unbiased estimate of μ_m for each manager. Data from each manager-country bin are weighted by their precision (inverse of the variance), with bins containing more projects receiving more weight:

$$\overline{v}_m = \sum_c w_{mc}\overline{v}_{mc} \;\; with\, w_{mct} = \frac{h_{mc}}{\sum_t h_{mc}} \;\; and\, h_{mct} = \frac{1}{\widehat{\sigma}_\theta^2 + \frac{\widehat{\sigma}_\epsilon^2}{n_{mc}}}.$$

3) Manager VA estimate: the empirical Bayes estimator of the manager VA emerges by multiplying the weighted average of manager residuals, $\overline{v}_m$, with the estimate of its reliability

$$VA_m = \overline{v}_m \frac{\widehat{\sigma}_m^2}{Var(\overline{v}_m)} \;\; with\, Var(\overline{v}_m) = \widehat{\sigma}_m^2 + \left(\sum_t h_{mct}\right)^{-1}$$

where the term multiplying $\overline{v}_m$ reports the reliability of the estimate and the estimation of the variance of $\overline{v}_m$ can be shown to equal the last term. These permit not only to compute a manager average effect, analogous to the FE, but also to correct for a Bayesian reliability parameter, which weights such estimate given the weight of the signal (manager VA) and the measurement error (noise).

Unfortunately this exercise is very data intensive, because I would need multiple country-manager changes per manager with a sizeable amount of projects in each case. This is not the case and for this reason, in many cases it is impossible to calculate the variance for a manager in a country if he only did one project in such country. Therefore of all 3,412 projects, only 508 permit to estimate a manager VA using the Empirical Bayes approach. The results of this exercise are shown in Table A1: the point estimates of the VA approach (MVUE estimates) replicate the fixed effect results in terms of standard deviations, as evident from Panel A of Table A1: 0.515 for FE versus 0.580 for MVUE. These are also highly correlated as Panel B and C shows, the correlations of these two elements is 0.67 if all observations are considering, with this figure raising to 0.76 if I only focus on those negative VA (which are used in the policy experiment).

However the shrinkage parameter, $\frac{\widehat{\sigma}^2_m}{Var(\overline{v}_m)}$, represents the problem here. Because of the low number of projects per manager, this term is really small and this pushes down significantly the final VA estimates: their standard deviation collapses from 0.580, MVUE, to 0.228. Also the correlations drop remarkably, from 0.62 to 0.33 and 0.76 to 0.31. The reason behind this is evident in Figure A1, while in the top panel it is clear that the MVUE and FE manager VA estimates are almost placed on a 45 degrees line, this is not the case for the MVUE and the Emp. Bayes estimates, mainly because these last are shrunk around zero.

Table A1: Correlations and Summary Statistics of Value Added Estimates

Summary Statistics - Project N=212 and Manager Number = 48

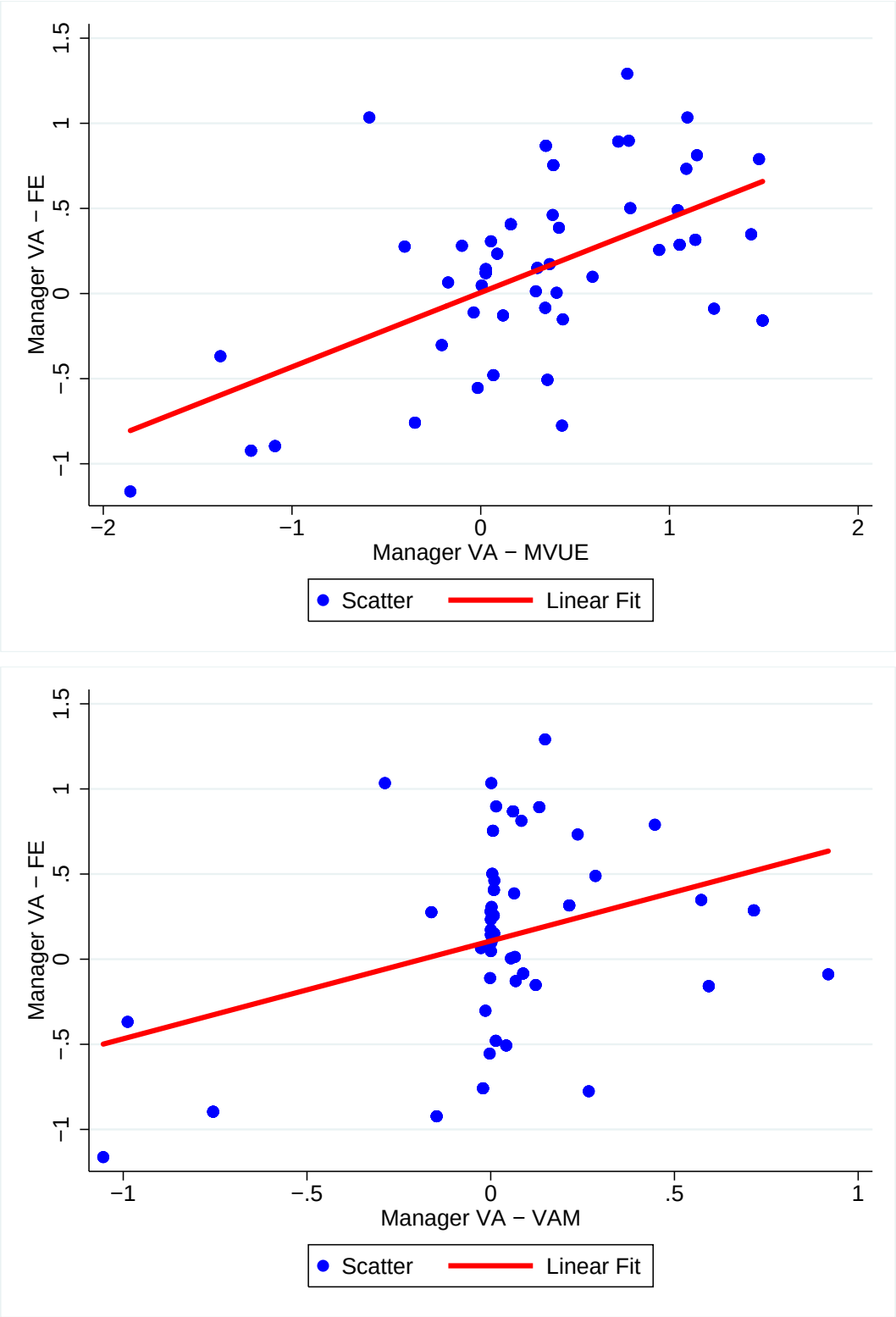
	Mean	St. Dev.	Min	Max
FE estimate	0.136	0.543	-1.162	1.291
MVUE estimate	0.299	0.706	-1.856	1.493
Emp. Bayes estimate	0.051	0.320	-1.054	.918

Correlations - Project N=212 and Manager Number = 48

	FE	MVUE	Emp. Bayes
FE	1		
MVUE	0.567	1	
Emp. Bayes	0.338	0.843	1

Notes: This table reports the summary statistics and correlations between the VA estimates using different methods: fixed effects (indicated with FE estimate), minimum variance unbiased estimator (MVUE estimate) and Empirical Bayes estimate (Emp. Bayes). Panel A reports the basic summary statistics across all 212 projects, for which the Emp. Bayes estimates are available and Panel B reports the correlations between these estimates for all 212 projects.

Figure A1: Correlations of Value Added Estimates



Notes: This figure reports the scatterplot and linear fit between the VA estimates using different methods: fixed effects (indicated with FE estimate), minimum variance unbiased estimator (MVUE estimate) and Empirical Bayes estimate (Emp. Bayes). The top panel plots the fixed effect (Manager VA - FE) and the minimum variance unbiased estimator (Manager VA - MVUE) estimates, while the bottom panel plots the fixed effect (Manager VA - FE) and the Empirical Bayes estimates (Manager VA - Emp. Bayes) estimates.

Appendix B: Empirical Framework

In this section, I propose an empirical framework to back the manager and country project productivities (types) and describe a model of project success focusing on the contribution

of manager, country and sector inputs, based on a general cumulative model of student achievement used in labour economics (Todd and Wolpin, 2001). I indicate with y_{imcst} the success of project i , led by manager m, in country c, of sector s and at year t and model it through the following function

$$y_{imcst} = y_{imcst}[M_i(t), C_i(t), S_i(t), \Psi_i, \varepsilon_{imcst}]$$

where $M_i(t)$, $C_i(t)$ and $S_i(t)$ represent the entire histories of manager, country and sector specific inputs into project i respectively, whereas Ψ_i embeds time-invariant characteristics of an individual project and ε_{imcst} is an i.i.d. mean zero error.

While this model is difficult to estimate because of the high-dimensionality problem, it can be simplified and brought to a simpler expression through five assumptions.

Assumption 1: the project success function is additive and separable in its arguments.

This leads to the following expression

$$y_{imcst} = \alpha_1 M_{mt} + \alpha_2 M_{mt-1} + ... + \alpha_t M_{m1} + \beta_1 C_{ct} + \beta_2 C_{ct-1} + ... + \beta_t C_{c1} +$$

$$+\gamma_1 S_{st} + \gamma_2 S_{st-1} + ... + \gamma_t S_{s1} + \delta \Psi_i + \varepsilon_{imcst}$$

where the success of project i depends both on the contribution of manager m on i at time t, but also on its past history and similar story applies to country and sector inputs. This model could not be plausibly estimated, unless information on past manager m inputs on project i would be available, this leads to the following assumption.

Assumption 2: manager's inputs into the success of project i are constant over time and captured by a manager specific effect ι_m.

This assumption is fundamental and shuts down any possibility for manager's compensating poor country or sector inputs. Therefore now the project success model can be rewritten as

$$y_{imcst} = \alpha \iota_m + \beta_1 C_{ct} + \beta_2 C_{ct-1} + ... + \beta_t C_{c1} +$$

$$+\gamma_1 S_{st} + \gamma_2 S_{st-1} + ... + \gamma_t S_{s1} + \delta \Psi_i + \varepsilon_{imcst}$$

however this model relies still on unavailable information, therefore in order to reach a more compact expression the following assumption is made.

Assumption 3: past inputs of country c and sector s into the project i decay at a geometric rate λ.

Such simplification permits to summarize the model as follows

$$y_{imcst} = \alpha\iota_m + \beta C_{ct} + \beta\lambda C_{ct-1} + ... + \beta\lambda^{t-1}C_{c1} +$$
$$+\gamma_1 S_{st} + \gamma_2 S_{st-1} + ... + \gamma_t S_{s1} + \delta\Psi_i + \varepsilon_{imcst} \quad (9)$$

at this stage I can define the success of a project j by manager n in country c in period $t-1$ as

$$y_{jncst-1} = \alpha\iota_n + \beta C_{ct-1} + \beta\lambda C_{ct-2} + ... + \beta\lambda^{t-2}C_{c1} +$$
$$+\gamma S_{st-1} + \gamma\lambda S_{st-2} + ... + \gamma\lambda^{t-2}S_{s1} + \delta\Psi_j + \varepsilon_{jncst-1}$$

and describe the average project success in country c at time $t-1$ by summing over all N_{t-1} projects j

$$\sum_j \frac{y_{jmcst-1}}{N_{t-1}} = \sum_j \frac{\alpha}{N_{t-1}} \left(\sum_h \iota_{nh} \right) + \beta C_{ct-1} + \beta\lambda C_{ct-2} + ... + \beta\lambda^{t-2}C_{c1} +$$
$$+\gamma S_{st-1} + \gamma\lambda S_{st-2} + ... + \gamma\lambda^{t-2}S_{s1} + \sum_j \frac{1}{N_{t-1}} \left(\delta\Psi_j + \varepsilon_{jmcst-1} \right)$$

this expression can be simplified by recalling that the project specific characteristics average a constant

$$\sum_j \frac{\delta\Psi_j}{N_{t-1}} = P$$

while relying on a weak law of large numbers the previous period error term mean converges to the population mean of zero

$$\sum_j \frac{\varepsilon_{jmcst-1}}{N_{t-1}} = 0$$

finally, if the number of managers operating in country c at time $t-1$ are sufficiently large and describing it via N_{ht-1}, the following assumption is useful.

Assumption 4: the average manager ability input is zero. Therefore, if the country experienced a sufficiently high number of managers, then by the weak law of large numbers

$$\sum_h \frac{\iota_{nh}}{N_{ht-1}} = 0.$$

Therefore the previous period average project success can be rewritten as

$$\overline{y}_{ct-1} = \beta C_{ct-1} + \beta\lambda C_{ct-2} + ... + \beta\lambda^{t-2}C_{c1} +$$

$$+\gamma S_{st-1} + \gamma\lambda S_{st-2} + ... + \gamma\lambda^{t-2} S_{s1} + \sum_j \frac{1}{N_{t-1}} (\delta\Psi_j + \varepsilon_{jmcst-1})$$

premultiplying by λ and subtracting this expression from (1), then

$$y_{imcst} = \lambda \overline{y}_{ct-1} + \alpha\iota_m + \beta C_{ct} + \gamma_1 S_{st} + \delta\Psi_i + P + \varepsilon_{imcst}.$$

ASSUMPTION 5: inputs by country c and sector s into the project i at time t can be expressed through three additive components: a country specific, a sector specific and a time varying one.

$$\beta C_c + \gamma S_s = \beta\iota_c + \gamma\iota_s + \zeta\iota_t$$

All of these assumptions lead to the following empirical model

$$y_{imcst} = \lambda \overline{y}_{ct-1} + \alpha\iota_m + \beta\iota_c + \gamma\iota_s + \zeta\iota_t + \delta\Psi_{i0} + \varepsilon_{imcst} \tag{10}$$

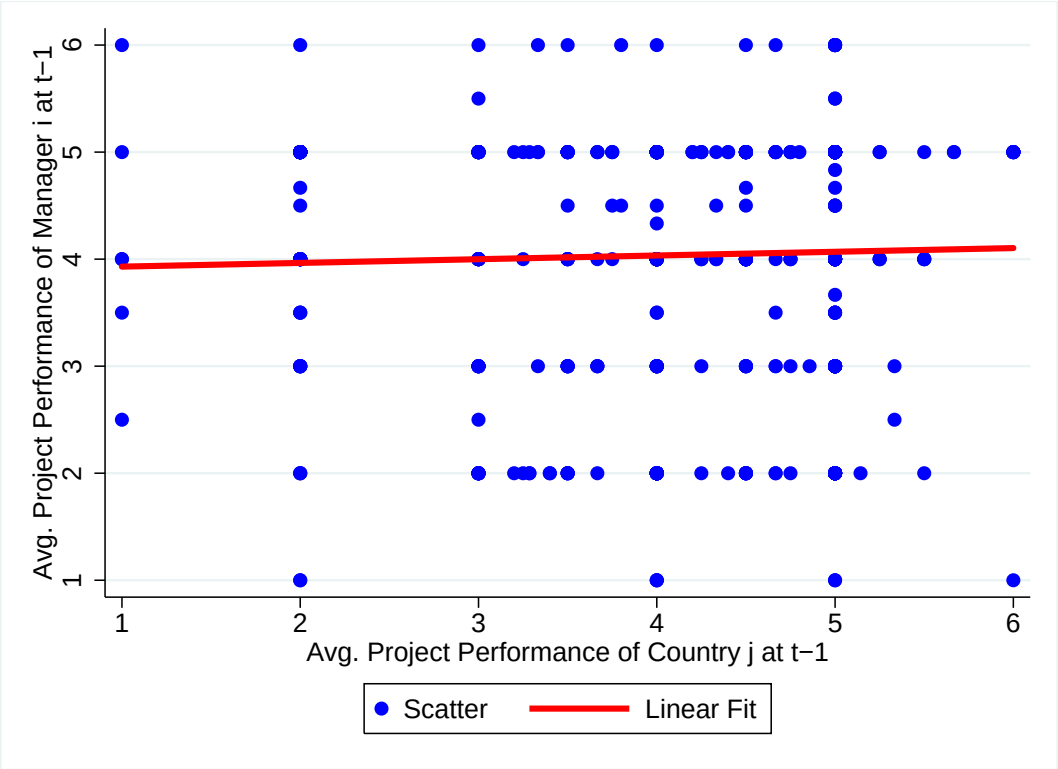
this compact model offers two central advantages: it is possible to be estimated with the available data and presents an intuitive interpretation for most of its parameters.

Appendix C: Manager-Country Allocation

In considering the manager VA vector emerging from (1) as a consistent measure of managers' contributions to project performance, I am relying on the assumption that the manager-country allocation rule is a repetition of static problems and there is no dynamic adjustement for managers and countries past performanced. If such dynamic allocation would exist, then this would bring higher performing managers to higher (lower) performing countries. This fact would confound the manager and country fixed effects, invalidating this analysis. In this work, I argue that the static problem is the most important and that the dynamic allocation is secondary, if existent.

In order to provide some statistical evidence for the fact that the allocation of managers to countries does not respond to dynamic performances, I report in Figure B1 the correlation between the average performance of a manager in country i at time $t-1$ with the average performance of country j, where he actually operates, at time $t-1$. The null hypothesis is that such correlation is not statistically different from zero, impliying that the performance of the country where the manager is operating today is uncorrelated with the performance of the same manager in another country in the previous period. As clear from Figure 1 such correlation is positive, very small (0.02) but not statistically different from zero.

Figure C1: Assignment of Managers to Countries



Notes: The figure reports a scatterplot and linear fit between the average performance of a manager at time $t-1$ and the average performance of the country, where she/he is assigned at time t. Each point is a current project, where a manager is matched to a country, and it shows that the past performance of the country where he is assigned at time t is not correlated with the past performance of the manager. This scatterplot is conditional on a manager changing country at from time $t-1$ to time t.

Appendix D: Manager VA and Other Covariates

Table D1: Manager VA and Careers

Variables	(1) Manager VA	(2) Manager VA	(3) Manager VA	(4) Manager VA	(5) Manager VA
Female	-0.0722				
	(0.125)				
Promotions		-0.00178			
		(0.0527)			
Joining Year			-0.00998		
			(0.00943)		
Experience in Years				0.00824	
				(0.00960)	
Languages					-0.0165
					(0.0435)
Obs.	210	210	210	210	210

Notes: This table reports OLS estimates, the unit of observation is manager level and the standard errors in brackets are clustered at nationality level. Manager VA is the vector of fixed effects (FE) extracted from a regression of Project

Outcome over country, sector, manager and time FE, including 24 controls and the mean lag project outcome, as presented in Table (1) column (1). Its mean and standard deviation are reported in the row "Mean Dep. Var." and "St. Dev. Dep. Var.". The right-hand side variables are collected from manager CVs: Female takes unit value if the the manager is of female gender, Promotions counts the number of promotions received by a manager, Downgrade is a dummy variable and takes unit value if a manager has been downgraded in his career, Joining Year is the year in which a manager entered the World Bank, Experience measures the number of years a manager has been at the World Bank. ***, **, and * indicate significance at the 1%, 5%, and 10% levels.

Appendix E: Optimal Manager Allocation Problem and Example

From Section 1, it is known that planner preferences are described by a quadratic Bernoulli with risk parameter β over total returns $Y = \sum_j y_j$, $U(Y) = Y - \beta Y^2$. This leads to the classical expected utility result

$$EU(Y) = E(Y) - \beta\, E(Y)^2 - \beta\, V(Y)$$

recalling that by linearity, $E(Y) = E(m_i) + E(c_j) = 0$, then this simplifies to $EU(Y) = -\beta V(Y)$. Now I derive the variance of projects for this type of distribution: as mentioned in Section 1 projects have Bernoulli returns , in fact $y_{i,j} = m_{i,j} + c_j$ is realized wp π and zero wp $1-\pi$. Probability of success is Bernoulli and all projects are identically independently distributed.

Therefore the variance of Y can be described as

$$V(Y) = E\left[(y_j - E(Y))^2\right] = \frac{1}{N}\sum_j (y_j - E(Y))^2 \cdot prob(y_j)$$

$$V(Y) = \frac{1}{N}\sum_p \left[(y_p - \pi\overline{y})^2 \cdot \pi + (0 - \pi\overline{y})^2 \cdot (1-\pi)\right]$$

This expression does not have a closed form. Let me first describe the typical Bernoulli textbook example before deriving the main mesure.

Bernoulli Example

In the textbook Bernoulli distribution, the event/project takes unit value when it is realized successfully and is constant, hence $y_j = 1$ constant, hence $E(y) = \pi$. Therefore, replacing terms

$$V(y_p) = \frac{1}{N}\sum_p \left[(1-\pi)^2 \cdot \pi + (0-\pi)^2 \cdot (1-\pi)\right] = \pi(1-\pi)$$

Section 1 Derivation

The only difference between this case and section 1 is given by the returns of project, which are not constant but given by $y_{ij} = m_{i,j} + c_j$ when there is success. However given

that $E(Y) = 0$, then

$$V(Y) = \frac{1}{N}\sum_j \left[(y_j - 0)^2 \cdot \pi + 0 \cdot (1-\pi)\right] = \frac{1}{N}\sum_j y_j^2 \pi = \frac{1}{N}\pi \sum_j (m_{i,j} + c_j)^2$$

which is indeed the object of maximization presented in section 1.

Manager Assignment and board - An Example

There are 4 managers and countries with types $2 > 1 > -1 > -2$, these satisfy our assumptions as both have a zero mean and therefore the expected returns are exactly zero. In the benchmark case, with no country being on board the risk averse planner solves

$$\max_{m_i} -\beta\, \pi\, \frac{1}{4}\, \sum_j (m_{i,j} + c_j)^2$$

which leads to the following negative assortative matching maximizing the objective function, $\{m_{i,j}, c_j\}\forall j : (\{2,-2\},\{1,-1\},\{-1,1\},\{-2,2\})$, as $V(Y) = 0$.

Now I suppose that two countries sit on board: country with type -1 and 2, which enjoy a transfer $\tau = 1$. The new problem is

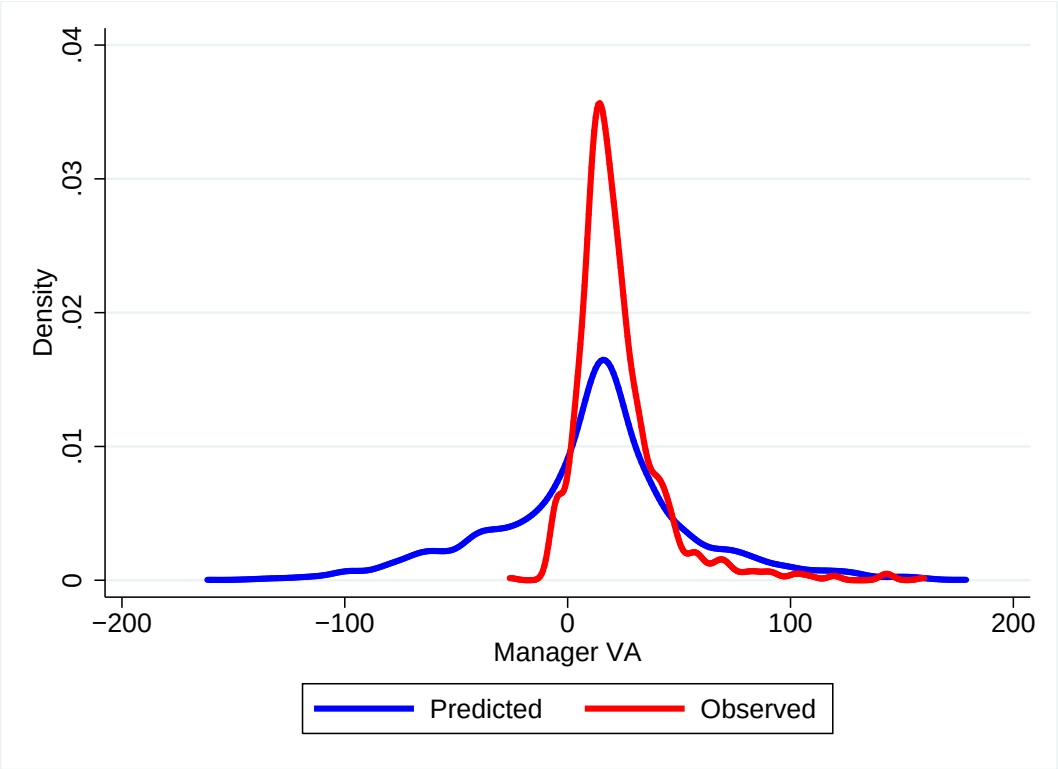
$$\max_{m_i} -\beta\, \pi\, \frac{1}{2}\, \sum_{j \notin B} (m_{i,j} + c_j + 1)^2 - \beta\, \pi\, \frac{1}{2}\, \sum_{j \in B} (m_{i,j} + c_j - 1)^2$$

because of linearity the new allocation leads to returns not changing, $\widetilde{Y} = Y$. However both the variance and allocations are affected, $\{m_{i,j}, c_j\}\forall j$: $(\{2,-1\},\{1,-2\},\{-1,2\},\{-2,1\})$. By definition the countries sitting on board, -1 and 2, are receiving a more productive manager than othewise, respectively 1 unit more productive. The planner is indeed maximizing the modified objective function, as the "transfer-adjusted" variance is indeed zero, while excluding the transfer this is positive and higher than one.

Concerning the relation between the main model and this example, including the board does not change the sign of the assortativity, it simply creates a wedge, τ, which does not make it perfect. In the first case the correlation between managers and countries is -1, while in this second case it drops to -0.8.

Appendix F: Alternative Setting of Missing ERR

Figure F1: Observed and Predicted ERR



Notes: This figure reports the densities of observed ERR (in red) and predicted ERR (in blue). it is notable a fat left tail of projects with a negative predicted ERR, which might lead to think that project with a negative ERR are either published with an ERR of zero or the ERR may not be published altogether.

Table F1: The Economic Gains of a Core Reform, Two Alternatives

Row	Variables	Projects	Total Gain	95% Interval	% Increase	Total Spending
			Alternative 1 - Negative Predicted ERR set to zero			
(1)	Economic Gains Predicted	2,240	35.35			170.216
(2)	Economic Gains Core Reform	2,240	36.16	[35.77, 36.54]	2.3%	
			Alternative 2 - Negative Predicted ERR set to mean ERR			
(3)	Economic Gains Predicted	2,240	40.22			170.216
(4)	Economic Gains Core Reform	2,240	41.02	[40.64, 41.41]	1.9%	

Notes: This table reports the economic gains generated by the World Bank, using equation (4). Row (1) reports the observed economic gains, Row (2) and (3) report the counterfactual gains by respectively replacing the 10% worst performing managers and countries with their respective means. The column "Total Gain" expressed in billion dollars of constant USD reports the aggregate sum of economic gains in all World Bank projects, the column "95% Interval" reports the 95% confidence interval of the Total Gain, where instead of multiplying the project outcome gain by the point estimate of Table 9, column (3), I use the 95% confidence interval of this estimate; the column "% Increase" reports the percentage

increase in economic gains by applying experiment 1 or 2; "Total Spending" accounts for the aggregate World Bank spending on all projects, in billion dollars of constant USD; while the column "Ratio" divides Total Gains by Total Spending.

Appendix G: Robustness Checks Tables

Manager VA - Original Sample

In this section I validate the model expressed in (5) for the original sample, by adding several fixed effects interactions. In Table F1 I can take into account country time-varying, sector time-varying and country sector-varying unobserved variation and the point estimates of the Manager VA variable are very close to 1 in all specifications. In Table F2 and F3 I explore a test to account for compensating effort at manager-country level: now the point estimates jump above one, indicating that this might be in place, however the estimate is still not statistically different from one. Therefore this first check provides some support to the previous exercise.

Table F1: Manager VA and Country, Sector and Year Interactions - Original Sample

	(1)	(2)	(3)	(4)	(5)	(6)
Variables	Project Outcome	Project Outcome	Project Outcome	Project Outcome	Project Outcome	Project Outcome
Manager VA	0.999***	0.960***	0.979***	0.974***	0.971***	0.975***
	(0.0263)	(0.0470)	(0.0388)	(0.0803)	(0.0423)	(0.0959)
Lag Project Outcome	Yes	Yes	Yes	Yes	Yes	Yes
Country Controls	Yes	Yes	Yes	Yes	Yes	Yes
Project Controls	Yes	Yes	Yes	Yes	Yes	Yes
Country FE	Yes	Yes	Yes	Yes	Yes	Yes
Sector FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Country × Year FE		Yes		Yes		Yes
Country × Sector FE			Yes	Yes	Yes	Yes
Sector × Year FE					Yes	Yes
Obs.	3,406	3,406	3,406	3,406	3,406	3,406
R-sq.	0.407	0.702	0.554	0.806	0.606	0.850

Notes: This table reports OLS estimates, the unit of observation is project level and country, sector, manager and year fixed effects are included. Standard errors are adjusted for 127 country clusters. "Project Outcome" reports an ordinal rating assigned by the World Bank project manager to the outcome of the project and is interpreted as a measure of and project success. The variable ranges from 1 (highly unsatisfactory) to 6 (highly satisfactory). Country and Manager VA are derived from a regression of project outcome over all FE, including 24 controls and the mean lag project outcome, as shown in Table (1) column (1). Column (1) reports the result of a regression of project outcome over the manager VA and all controls used in Table (1) column (1); Column (2) also adds a Country × Year FE interaction; Column (3) adds a Country × Sector FE interaction; Column (4) both a Country × Year and a Sector × Year FE interaction; Column (5) both a Country × Sector and a Sector × Year FE interaction; Column (6) both a Country × Year, a Country × Sector, and a Sector × Year FE interaction. Lag Project Outcome is the mean project outcome in country c at time $t-1$

across all executed projects. The included controls are: 1) at country level - population, exchange rate, GDP per capita, the GDP share of consumption, government spending and investment, population density; 2) at project level - the size of the project in constant USD, the interest rate on the loan, the month of approval, 2 lending type dummies, 15 lending instrument dummies. The 2 mentioned lending types are specifically: "Investment", for projects characterised by funding for governments to cover specific expenditures related to economic and social development projects; Development Policy operations are type of projects aimed at the provision of direct budget support to governments for policy and institutional reforms aimed at achieving a set of specific development results. There exist 15 mentioned lending instruments, which characterize different financial packages in which the projects are designed and delivered to countries, for example APL - Adaptable Program Loan, FIL - Financial Intermediary Loan or SAL - Structural Adjustment Loan. All the country level controls, the size of the project and interest rate are measured in continuous units, approval month ranges in integers between 1 and 12, while the remaining are dummy variables. ***, **, and * indicate significance at the 1%, 5%, and 10% levels.

Table F2: Manager VA and Country Lag Project Outcome Interactions - Original Sample

Variables	(1) Project Outcome	(2) Project Outcome	(3) Project Outcome	(4) Project Outcome	(5) Project Outcome	(6) Project Outcome
Manager VA	1.007***	1.086***	1.085***	1.081***	1.079***	1.039***
	(0.163)	(0.171)	(0.171)	(0.172)	(0.178)	(0.180)
Lag Project Outcome	Yes	Yes	Yes	Yes	Yes	Yes
Country Controls	Yes	Yes	Yes	Yes	Yes	Yes
Project Controls	Yes	Yes	Yes	Yes	Yes	Yes
Country FE		Yes	Yes	Yes	Yes	Yes
Sector FE			Yes	Yes	Yes	Yes
Year FE				Yes	Yes	Yes
Manager FE × Lag Project Outcome	Yes	Yes	Yes	Yes	Yes	Yes
Sector FE × Lag Project Outcome					Yes	Yes
Year FE × Lag Project Outcome						Yes
Obs.	3,406	3,406	3,406	3,406	3,406	3,406
R-sq.	0.342	0.406	0.409	0.415	0.418	0.428

Notes: This table reports OLS estimates, the unit of observation is project level and country, sector, manager and year fixed effects are included. Standard errors are adjusted for 127 country clusters. "Project Outcome" reports an ordinal rating assigned by the World Bank project manager to the outcome of the project and is interpreted as a measure of and project success. The variable ranges from 1 (highly unsatisfactory) to 6 (highly satisfactory). Country and Manager VA are derived from a regression of project outcome over all FE, including 24 controls and the mean lag project outcome, as shown in Table (1) column (1). Column (1) reports the result of a regression of project outcome over the manager VA and all controls used in Table (1) column (1) with no fixed effects but an interaction between Manager FE and the lag of Project Outcome; in Column (2) I add a country FE, in Column (3) a sector FE, in Column (4) a year FE, in Column (5) also an interaction between sector FE and the lag of Project Outcome; in Column (6) also an interaction between year FE and the lag of Project Outcome. Lag Project Outcome is the mean project outcome in country c at time $t-1$ across all executed projects. The included controls are: 1) at country level - population, exchange rate, GDP per capita, the GDP share of consumption, government spending and investment, population density; 2) at project level - the size of the project in constant USD, the interest rate on the loan, the month of approval, 2 lending type dummies, 15 lending instrument dummies. The 2 mentioned lending types are specifically: "Investment", for projects characterised by funding for governments to cover specific expenditures related to economic and social development projects; Development Policy

operations are type of projects aimed at the provision of direct budget support to governments for policy and institutional reforms aimed at achieving a set of specific development results. There exist 15 mentioned lending instruments, which characterize different financial packages in which the projects are designed and delivered to countries, for example APL - Adaptable Program Loan, FIL - Financial Intermediary Loan or SAL - Structural Adjustment Loan. All the country level controls, the size of the project and interest rate are measured in continuous units, approval month ranges in integers between 1 and 12, while the remaining are dummy variables. ***, **, and * indicate significance at the 1%, 5%, and 10% levels.

Table F3: Manager VA and Manager Lag Project Outcome Interactions - Original Sample

Variables	(1) Project Outcome	(2) Project Outcome	(3) Project Outcome	(4) Project Outcome	(5) Project Outcome	(6) Project Outcome
Manager VA	0.847***	1.094***	1.100***	1.112***	1.101***	1.102***
	(0.0432)	(0.0424)	(0.0419)	(0.0425)	(0.0467)	(0.0477)
Lag Project Outcome	Yes	Yes	Yes	Yes	Yes	Yes
Country Controls	Yes	Yes	Yes	Yes	Yes	Yes
Project Controls	Yes	Yes	Yes	Yes	Yes	Yes
Country FE		Yes	Yes	Yes	Yes	Yes
Sector FE			Yes	Yes	Yes	Yes
Year FE				Yes	Yes	Yes
Manager Mean Lag Project Outcome	Yes	Yes	Yes	Yes	Yes	Yes
Country FE × Manager Mean Lag P. Out.					Yes	Yes
Sector FE × Manager Mean Lag P. Out.						Yes
Obs.	2,693	2,693	2,693	2,693	2,693	2,693
R-sq.	0.270	0.399	0.407	0.415	0.445	0.448

Notes: This table reports OLS estimates, the unit of observation is project level and country, sector, manager and year fixed effects are included. Standard errors are adjusted for 127 country clusters. "Project Outcome" reports an ordinal rating assigned by the World Bank project manager to the outcome of the project and is interpreted as a measure of and project success. The variable ranges from 1 (highly unsatisfactory) to 6 (highly satisfactory). Country and Manager VA are derived from a regression of project outcome over all FE, including 24 controls and the mean lag project outcome, as shown in Table (1) column (1). Column (1) reports the result of a regression of project outcome over the manager VA and all controls used in Table (1) column (1) with no fixed effects but the lag of mean project outcome at manager level; in Column (2) I add a country FE, in Column (3) a sector FE, in Column (4) a year FE, in Column (5) also an interaction between country FE and the lag of mean manager project outcome; in Column (6) also an interaction between sector FE and the lag of mean manager project outcome. The lag of manager mean project outcome is the mean project outcome for manager m at time $t-1$ across all executed projects. The included controls are: 1) at country level - population, exchange rate, GDP per capita, the GDP share of consumption, government spending and investment, population density; 2) at project level - the size of the project in constant USD, the interest rate on the loan, the month of approval, 2 lending type dummies, 15 lending instrument dummies. The 2 mentioned lending types are specifically: "Investment", for projects characterised by funding for governments to cover specific expenditures related to economic and social development projects; Development Policy operations are type of projects aimed at the provision of direct budget support to governments for policy and institutional reforms aimed at achieving a set of specific development results. There exist 15 mentioned lending instruments, which characterize different financial packages in which the projects are designed and delivered to countries, for example APL - Adaptable Program Loan, FIL - Financial Intermediary Loan or SAL - Structural Adjustment Loan. All the country level controls, the size of the project and interest rate are measured in continuous units, approval month ranges in integers

between 1 and 12, while the remaining are dummy variables. ***, **, and * indicate significance at the 1%, 5%, and 10% levels.

Manager VA - Large-Country Sample

The following tables provide another empirical test off the model expressed in (5) for the big country sample, by adding several fixed effects interactions. The advantage of this smaller sample is given by the possibility to propose more detailed tests. Table F4 confirms that there is no big-country bias as it shows by studying the country time-varying, sector time-varying and country sector-varying unobserved variation and the point estimates of the Manager VA variable are very close to 1 in all specifications. Also in this case Table F5 and F6 propose a test for compensating effort at manager-country level, without finding statistically relevant differences. In addition to the previous section, in Table F6 I can introduce manager-country pairwise fixed effects and check within-time within-country-manager cross-sector variation, which once again does not reject the one coefficient on the Manager VA variable. Therefore also this second check supports the previous findings.

Table F4: Manager VA and Country, Sector and Year Interactions - Large-Country Sample

	(1)	(2)	(3)	(4)	(5)	(6)
Variables	Project Outcome	Project Outcome	Project Outcome	Project Outcome	Project Outcome	Project Outcome
Manager VA	0.990***	0.933***	0.968***	0.918***	0.914***	0.835***
	(0.0341)	(0.0487)	(0.0473)	(0.0641)	(0.0603)	(0.0936)
Lag Project Outcome	Yes	Yes	Yes	Yes	Yes	Yes
Country Controls	Yes	Yes	Yes	Yes	Yes	Yes
Project Controls	Yes	Yes	Yes	Yes	Yes	Yes
Country FE	Yes	Yes	Yes	Yes	Yes	Yes
Sector FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Country × Year FE		Yes		Yes		Yes
Country × Sector FE			Yes	Yes	Yes	Yes
Sector × Year FE					Yes	Yes
Obs.	1,037	1,037	1,037	1,037	1,037	1,037
R-sq.	0.385	0.529	0.411	0.570	0.576	0.707

Notes: This table reports OLS estimates, the unit of observation is project level and country, sector, manager and year fixed effects are included. Standard errors are adjusted for 413 country-manager clusters. This large-country sample is restricted on the 10 largest-recipient countries of World Bank projects, their names (and number of projects) are respectively: China (198) , India (151), Brazil (124), Indonesia (122), Mexico (82), Pakistan (78), Colombia (74), Argentina (74), Bangladesh (72) and Ghana (62). "Project Outcome" reports an ordinal rating assigned by the World Bank project manager to the outcome of the project and is interpreted as a measure of and project success. The variable ranges from 1 (highly unsatisfactory) to 6 (highly satisfactory). Country and Manager VA are derived from a regression of project outcome over all FE, including 24 controls and the mean lag project outcome, as shown in Table (1) column (1). Column (1) reports the result of a regression of project outcome over the manager VA and all controls used in Table (1) column (1); Column

(2) also adds a Country × Year FE interaction; Column (3) adds a Country × Sector FE interaction; Column (4) both a Country × Year and a Sector × Year FE interaction; Column (5) both a Country × Sector and a Sector × Year FE interaction; Column (6) both a Country × Year, a Country × Sector, and a Sector × Year FE interaction. Lag Project Outcome is the mean project outcome in country c at time $t-1$ across all executed projects. The included controls are: 1) at country level - population, exchange rate, GDP per capita, the GDP share of consumption, government spending and investment, population density; 2) at project level - the size of the project in constant USD, the interest rate on the loan, the month of approval, 2 lending type dummies, 15 lending instrument dummies. The 2 mentioned lending types are specifically: "Investment", for projects characterised by funding for governments to cover specific expenditures related to economic and social development projects; Development Policy operations are type of projects aimed at the provision of direct budget support to governments for policy and institutional reforms aimed at achieving a set of specific development results. There exist 15 mentioned lending instruments, which characterize different financial packages in which the projects are designed and delivered to countries, for example APL - Adaptable Program Loan, FIL - Financial Intermediary Loan or SAL - Structural Adjustment Loan. All the country level controls, the size of the project and interest rate are measured in continuous units, approval month ranges in integers between 1 and 12, while the remaining are dummy variables. ***, **, and * indicate significance at the 1%, 5%, and 10% levels.

Table F5: Manager VA and Lag Country Project Outcome Interactions - Large-Country Sample

Variables	(1) Project Outcome	(2) Project Outcome	(3) Project Outcome	(4) Project Outcome	(5) Project Outcome	(6) Project Outcome
Manager VA	1.049*	1.307**	1.300**	1.299**	1.313**	1.325**
	(0.603)	(0.589)	(0.586)	(0.588)	(0.617)	(0.589)
Lag Project Outcome	Yes	Yes	Yes	Yes	Yes	Yes
Country Controls	Yes	Yes	Yes	Yes	Yes	Yes
Project Controls	Yes	Yes	Yes	Yes	Yes	Yes
Country FE		Yes	Yes	Yes	Yes	Yes
Sector FE			Yes	Yes	Yes	Yes
Year FE				Yes	Yes	Yes
Manager FE × Lag Project Outcome	Yes	Yes	Yes	Yes	Yes	Yes
Sector FE × Lag Project Outcome					Yes	Yes
Year FE × Lag Project Outcome						Yes
Obs.	1,037	1,037	1,037	1,037	1,037	1,037
R-sq.	0.457	0.471	0.481	0.501	0.508	0.529

Notes: This table reports OLS estimates, the unit of observation is project level and country, sector, manager and year fixed effects are included. Standard errors are adjusted for 413 country-manager clusters. This large-country sample is restricted on the 10 largest-recipient countries of World Bank projects, their names (and number of projects) are respectively: China (198) , India (151), Brazil (124), Indonesia (122), Mexico (82), Pakistan (78), Colombia (74), Argentina (74), Bangladesh (72) and Ghana (62). "Project Outcome" reports an ordinal rating assigned by the World Bank project manager to the outcome of the project and is interpreted as a measure of and project success. The variable ranges from 1 (highly unsatisfactory) to 6 (highly satisfactory). Country and Manager VA are derived from a regression of project outcome over all FE, including 24 controls and the mean lag project outcome, as shown in Table (1) column (1). Column (1) reports the result of a regression of project outcome over the manager VA and all controls used in Table (1) column (1) with no fixed effects but an interaction between Manager FE and the lag of Project Outcome; in Column (2) I add a country FE, in Column (3) a sector FE, in Column (4) a year FE, in Column (5) also an interaction between sector FE and the lag of Project Outcome; in Column (6) also an interaction between year FE and the lag of Project Outcome. Lag Project

Outcome is the mean project outcome in country c at time $t-1$ across all executed projects. The included controls are: 1) at country level - population, exchange rate, GDP per capita, the GDP share of consumption, government spending and investment, population density; 2) at project level - the size of the project in constant USD, the interest rate on the loan, the month of approval, 2 lending type dummies, 15 lending instrument dummies. The 2 mentioned lending types are specifically: "Investment", for projects characterised by funding for governments to cover specific expenditures related to economic and social development projects; Development Policy operations are type of projects aimed at the provision of direct budget support to governments for policy and institutional reforms aimed at achieving a set of specific development results. There exist 15 mentioned lending instruments, which characterize different financial packages in which the projects are designed and delivered to countries, for example APL - Adaptable Program Loan, FIL - Financial Intermediary Loan or SAL - Structural Adjustment Loan. All the country level controls, the size of the project and interest rate are measured in continuous units, approval month ranges in integers between 1 and 12, while the remaining are dummy variables. ***, **, and * indicate significance at the 1%, 5%, and 10% levels.

Table F6: Manager VA and Manager Lag Project Outcome Interactions - Original Sample

Variables	(1) Project Outcome	(2) Project Outcome	(3) Project Outcome	(4) Project Outcome	(5) Project Outcome	(6) Project Outcome
Manager VA	0.902***	1.059***	1.077***	1.063***	1.087***	1.094***
	(0.0569)	(0.0579)	(0.0579)	(0.0627)	(0.0633)	(0.0632)
Lag Project Outcome	Yes	Yes	Yes	Yes	Yes	Yes
Country Controls	Yes	Yes	Yes	Yes	Yes	Yes
Project Controls	Yes	Yes	Yes	Yes	Yes	Yes
Country FE		Yes	Yes	Yes	Yes	Yes
Sector FE			Yes	Yes	Yes	Yes
Year FE				Yes	Yes	Yes
Manager Mean Lag Project Outcome	Yes	Yes	Yes	Yes	Yes	Yes
Country FE × Manager Mean Lag P. Out.					Yes	Yes
Sector FE × Manager Mean Lag P. Out.						Yes
Obs.	851	851	851	851	851	851
R-sq.	0.312	0.349	0.374	0.398	0.405	0.415

Notes: This table reports OLS estimates, the unit of observation is project level and country, sector, manager and year fixed effects are included. Standard errors are adjusted for 127 country clusters. "Project Outcome" reports an ordinal rating assigned by the World Bank project manager to the outcome of the project and is interpreted as a measure of and project success. The variable ranges from 1 (highly unsatisfactory) to 6 (highly satisfactory). Country and Manager VA are derived from a regression of project outcome over all FE, including 24 controls and the mean lag project outcome, as shown in Table (1) column (1). Column (1) reports the result of a regression of project outcome over the manager VA and all controls used in Table (1) column (1) with no fixed effects but the lag of mean project outcome at manager level; in Column (2) I add a country FE, in Column (3) a sector FE, in Column (4) a year FE, in Column (5) also an interaction between country FE and the lag of mean manager project outcome; in Column (6) also an interaction between sector FE and the lag of mean manager project outcome. The lag of manager mean project outcome is the mean project outcome for manager m at time $t-1$ across all executed projects. The included controls are: 1) at country level - population, exchange rate, GDP per capita, the GDP share of consumption, government spending and investment, population density; 2) at project level - the size of the project in constant USD, the interest rate on the loan, the month of approval, 2 lending type dummies, 15 lending instrument dummies. The 2 mentioned lending types are specifically: "Investment", for projects characterised by funding for governments to cover specific expenditures related to economic and social development projects; Development Policy

operations are type of projects aimed at the provision of direct budget support to governments for policy and institutional reforms aimed at achieving a set of specific development results. There exist 15 mentioned lending instruments, which characterize different financial packages in which the projects are designed and delivered to countries, for example APL - Adaptable Program Loan, FIL - Financial Intermediary Loan or SAL - Structural Adjustment Loan. All the country level controls, the size of the project and interest rate are measured in continuous units, approval month ranges in integers between 1 and 12, while the remaining are dummy variables. ***, **, and * indicate significance at the 1%, 5%, and 10% levels.

Table F7: Manager VA and Country-Manager Interactions - Large-Country Sample

Variables	(1) Project Outcome	(2) Project Outcome	(3) Project Outcome	(4) Project Outcome	(5) Project Outcome	(6) Project Outcome
Manager VA	1.442***	1.483***	1.412***	1.415***	1.913**	1.628*
	(0.117)	(0.198)	(0.399)	(0.395)	(0.815)	(0.907)
Lag Project Outcome	Yes	Yes	Yes	Yes	Yes	Yes
Project Controls		Yes	Yes	Yes	Yes	Yes
Country Controls			Yes	Yes	Yes	Yes
Sector FE				Yes	Yes	Yes
Year FE					Yes	Yes
Country × Sector FE						Yes
Manager FE × Country FE	Yes	Yes	Yes	Yes	Yes	Yes
Obs.	1,037	1,037	1,037	1,037	1,037	1,037
R-sq.	0.504	0.509	0.527	0.542	0.565	0.599

Notes: This table reports OLS estimates, the unit of observation is project level and country, sector, manager and year fixed effects are included. Standard errors are adjusted for 413 country-manager clusters. This large-country sample is restricted on the 10 largest-recipient countries of World Bank projects, their names (and number of projects) are respectively: China (198) , India (151), Brazil (124), Indonesia (122), Mexico (82), Pakistan (78), Colombia (74), Argentina (74), Bangladesh (72) and Ghana (62). "Project Outcome" reports an ordinal rating assigned by the World Bank project manager to the outcome of the project and is interpreted as a measure of and project success. The variable ranges from 1 (highly unsatisfactory) to 6 (highly satisfactory). Country and Manager VA are derived from a regression of project outcome over all FE, including 24 controls and the mean lag project outcome, as shown in Table (1) column (1). Column (1) reports the result of a regression of project outcome over the manager VA and all controls used in Table (1) column (1) with no fixed effects but an interaction between Manager FE and the lag of Project Outcome; in Column (2) I add a country FE, in Column (3) a sector FE, in Column (4) a year FE, in Column (5) also an interaction between sector FE and the lag of Project Outcome; in Column (6) also an interaction between year FE and the lag of Project Outcome. Lag Project Outcome is the mean project outcome in country c at time $t-1$ across all executed projects. The included controls are: 1) at country level - population, exchange rate, GDP per capita, the GDP share of consumption, government spending and investment, population density; 2) at project level - the size of the project in constant USD, the interest rate on the loan, the month of approval, 2 lending type dummies, 15 lending instrument dummies. The 2 mentioned lending types are specifically: "Investment", for projects characterised by funding for governments to cover specific expenditures related to economic and social development projects; Development Policy operations are type of projects aimed at the provision of direct budget support to governments for policy and institutional reforms aimed at achieving a set of specific development results. There exist 15 mentioned lending instruments, which characterize different financial packages in which the projects are designed and delivered to countries, for example APL - Adaptable Program Loan, FIL - Financial Intermediary Loan or SAL - Structural Adjustment Loan. All the country level controls, the size of the project and interest rate are measured in continuous units, approval month ranges in integers between 1 and 12, while the remaining are dummy variables. ***, **, and * indicate significance at the 1%, 5%, and 10% levels.

Table F8: Manager VA and Sector-Manager Interactions - Large-Country Sample

Variables	(1) Project Outcome	(2) Project Outcome	(3) Project Outcome	(4) Project Outcome	(5) Project Outcome	(6) Project Outcome
Manager VA	0.995***	0.630***	0.693***	0.817**	0.812	1.717***
	(0.0552)	(0.219)	(0.227)	(0.379)	(0.494)	(0.553)
Lag Project Outcome	Yes	Yes	Yes	Yes	Yes	Yes
Project Controls		Yes	Yes	Yes	Yes	Yes
Country Controls			Yes	Yes	Yes	Yes
Country FE				Yes	Yes	Yes
Year FE					Yes	Yes
Country × Sector FE						Yes
Manager FE × Sector FE	Yes	Yes	Yes	Yes	Yes	Yes
Obs.	1,037	1,037	1,037	1,037	1,037	1,037
R-sq.	0.533	0.537	0.555	0.567	0.586	0.610

Notes: This table reports OLS estimates, the unit of observation is project level and country, sector, manager and year fixed effects are included. Standard errors are adjusted for 413 country-manager clusters. This large-country sample is restricted on the 10 largest-recipient countries of World Bank projects, their names (and number of projects) are respectively: China (198) , India (151), Brazil (124), Indonesia (122), Mexico (82), Pakistan (78), Colombia (74), Argentina (74), Bangladesh (72) and Ghana (62). "Project Outcome" reports an ordinal rating assigned by the World Bank project manager to the outcome of the project and is interpreted as a measure of and project success. The variable ranges from 1 (highly unsatisfactory) to 6 (highly satisfactory). Country and Manager VA are derived from a regression of project outcome over all FE, including 24 controls and the mean lag project outcome, as shown in Table (1) column (1). Column (1) reports the result of a regression of project outcome over the manager VA and all controls used in Table (1) column (1) with no fixed effects but an interaction between Manager FE and the lag of Project Outcome; in Column (2) I add a country FE, in Column (3) a sector FE, in Column (4) a year FE, in Column (5) also an interaction between sector FE and the lag of Project Outcome; in Column (6) also an interaction between year FE and the lag of Project Outcome. Lag Project Outcome is the mean project outcome in country c at time $t-1$ across all executed projects. The included controls are: 1) at country level - population, exchange rate, GDP per capita, the GDP share of consumption, government spending and investment, population density; 2) at project level - the size of the project in constant USD, the interest rate on the loan, the month of approval, 2 lending type dummies, 15 lending instrument dummies. The 2 mentioned lending types are specifically: "Investment", for projects characterised by funding for governments to cover specific expenditures related to economic and social development projects; Development Policy operations are type of projects aimed at the provision of direct budget support to governments for policy and institutional reforms aimed at achieving a set of specific development results. There exist 15 mentioned lending instruments, which characterize different financial packages in which the projects are designed and delivered to countries, for example APL - Adaptable Program Loan, FIL - Financial Intermediary Loan or SAL - Structural Adjustment Loan. All the country level controls, the size of the project and interest rate are measured in continuous units, approval month ranges in integers between 1 and 12, while the remaining are dummy variables. ***, **, and * indicate significance at the 1%, 5%, and 10% levels.

Manager VA - India Sample

Also in this last sample I explore the model reported in (5), adding an important within-country component, which is available for India, where I can reclassify projects using state-level variation. This very small sample, composed of only 50 observations, permit to provide an alternative test for the previous findings. In Column (1) I regress

project outcome on the Manager VA variable, state and year fixed effects; in Column (2) I drop year fixed effects and introduce three-year periods, classified as Time FE; in Column (3) I also add state-time FE to acccount for state-varying unobserved variation; in Column (4) sector fixed effects are added and finally in Column (5) and (6) I report state and project controls. The point estimates of this exercise lie strictly above one, between 1.2 and 1.7, but statistical tests do not reject the equality with 1 at 10% - therefore also this last test supports the finding of this work.

Table F9: Manager VA and FE Interactions - India Sample

Variables	(1) Project Outcome	(2) Project Outcome	(3) Project Outcome	(4) Project Outcome	(5) Project Outcome	(6) Project Outcome
Manager VA	1.287***	1.439***	1.224***	1.403***	1.365***	1.783***
	(0.267)	(0.310)	(0.423)	(0.399)	(0.476)	(0.425)
State FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes					
Time FE		Yes	Yes	Yes	Yes	Yes
State × Time FE			Yes	Yes	Yes	Yes
Sector FE				Yes	Yes	Yes
State Controls					Yes	
Project Controls						Yes
Obs.	50	50	50	50	50	50
R-sq.	0.234	0.495	0.735	0.519	0.722	0.917

Notes: This table reports OLS estimates, the unit of observation is project level and country, sector, manager and year fixed effects are included. Robust standard errors are in brackets. The India sample is restricted to those projects where information on project manager is available and project documentation clearly states that the project is executed within a given Indian state. The states available in my sample are: Andhra Pradesh, Bihar, Gujarat, Haryana, Jammu & Kashmir, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Orissa, Tamil Nadu, Uttar Pradesh and West Bengal. The years available are 1980 to 1993. In order to propose more tests using this within-India sample I define a Time variable: which measures three-year periods, one for 1980-1982, two for 1983-1985, three for 1986-1989 and four for 1990-1993. "Project Outcome" reports an ordinal rating assigned by the World Bank project manager to the outcome of the project and is interpreted as a measure of and project success. The variable ranges from 1 (highly unsatisfactory) to 6 (highly satisfactory). Country and Manager VA are derived from a regression of project outcome over all FE, including 24 controls and the mean lag project outcome, as shown in Table (1) column (1). Given the low number of observations the regressions are very parsimonious in their number of controls: in Column (1) I report the result of a regression of project outcome over the manager VA and State and Year FE, in Column (2) the same regression replacing Year FE with Time FE, in Column (3) I add also a State × Time FE interaction, in Column (4) I introduce add Sector FE, in Column (5) and (6) I introduce respectively State and Project Controls - both cannot be added because exceed the number of available observations. The included controls are: 1) at state level - population, population density, ratio of urban to rural population and GDP per capita; 2) at project level - the size of the project in constant USD, the interest rate on the loan, the month of approval, 2 lending type dummies, 15 lending instrument dummies. The 2 mentioned lending types are specifically: "Investment", for projects characterised by funding for governments to cover specific expenditures related to economic and social development projects; Development Policy operations are type of projects aimed at the provision of direct budget support to governments for policy and institutional reforms aimed at achieving a set of specific development results. There exist 15 mentioned lending instruments, which characterize different financial packages in which the projects are designed and delivered to countries, for example APL - Adaptable Program Loan, FIL - Financial Intermediary Loan or SAL - Structural Adjustment Loan. All the country level controls, the size of the project and interest rate are measured in continuous units, approval month ranges in integers between 1 and 12, while the remaining are dummy variables. ***, **, and * indicate significance at the 1%, 5%, and 10% levels.