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**WORLD BANK-BORROWER RELATIONS
AND PROJECT SUPERVISION**

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World Bank-Borrower Relations
and
Project Supervision

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Abstract

This paper compares an adversarial view of World Bank-borrower relations with a cooperative view. The adversarial view leads to a principal-agent model where a portion of implementation problems arise because World Bank information about borrower actions is incomplete. The importance of information links the monitoring component of World Bank supervision to project performance. In contrast, asymmetric information plays no role in the cooperative view; implementation problems are purely technical and hence the role of World Bank supervision is less clear. The paper outlines the different empirical predictions of the two views and highlights policy implications for the design and supervision of development projects.

The past decade has witnessed both an expansion in the number of World Bank funded projects and a decline in the performance of these projects. This apparent trend has renewed the focus on project performance and its determinants and with some urgency since the performance of World Bank funded projects -- some 1,850 representing \$140 billion dollars in lending -- is of no small consequence to the prospects for less development countries. The degree to which a project achieves its potential contribution to a country's economic development is critically dependent on how well the project is implemented. Although implementation is the responsibility of the borrowing government or its agencies, one quarter of World Bank operational staff time, at a cost of roughly \$170 million a year, is spent supervising projects under implementation.

This paper examines the sources of implementation problems by comparing an adversarial view of World Bank-borrower interaction with a cooperative view. These views have different implications for project performance and, specifically, for the role of World Bank supervision in determining project performance. The emphasis of this paper is on identifying empirically testable differences between the two views.

The adversarial model identifies an agency problem between the World Bank and its borrowers. Borrowers face a moral hazard. Their objectives differ from those of the World Bank, which are embodied in the project plan on which lending is based. The borrower thus has an incentive to deviate from the plan to the extent possible given the World Bank's limited ability to observe borrower actions. From the World Bank's point of view, these deviations cause implementation problems and lower project performance. World Bank disbursement mechanisms and project supervision can be seen as attempts to mitigate this agency problem. The degree to which World Bank and borrower objectives

differ (and the extent to which World Bank preferences dominate the project selection and design process) varies across countries and project types. These characteristics may measure the severity of the agency problem. The monitoring component of World Bank supervision is expected to improve project performance by reducing the incentive to deviate; hence, World Bank supervision may have a greater impact when incentives to deviate are greater.

In the cooperative model of World Bank-borrower interactions, there are no intentional deviations from the project plan. Differential information about borrower actions is irrelevant. In this setting, implementation problems are purely technical difficulties; performance is determined by how many such difficulties arise and how well they are solved. World Bank supervision is characterized as assistance and is expected to have a positive (though variable) impact on project performance. However, in contrast to the supervision-as-monitoring interpretation, substitutes exist for World Bank supervision-as-assistance. Since such assistance improves borrower welfare (again in contrast to monitoring), the borrower will supplement World Bank supervision. The overall level of assistance is not determined by the level of World Bank supervision. As a result, there may be no observable link between the assistance components of World Bank supervision and project performance.

Section I provides a brief description of World Bank lending procedures and the project cycle. Section II presents the adversarial interpretation, identifying World Bank-borrower interactions as those of a principal and an agent. Section III outlines the cooperative interpretation. Both sections II and III enumerate implications for project performance in general and for the role of supervision in particular. The concluding section summarizes the differences between the two views and the

two sets of implications. I close with a broader view, suggesting methods for minimizing implementation problems by reducing the scope of agency problems in World Bank project lending.

I. World Bank Procedures and the Project Cycle

This section presents a simplified description of World Bank lending procedures and the project cycle and discusses measures of project performance. I draw on Baum (1982) most heavily but also on other sources and on conversations with World Bank staff. The description of World Bank procedures is cursory, only providing details which are critical for understanding arguments presented later in the paper. I focus on mechanics and how the World Bank influences project selection and design, gathers information, and attempts to control implementation. The order of presentation follows the standard project cycle chronology: planning, implementation, and evaluation.

Planning

Planning is further subdivided into identification, preparation, appraisal, negotiation and board approval. These stages are best explained with an example.¹

Suppose a region of the borrowing country experiences periodic floods and draughts. A dam and irrigation system may be identified as beneficial because it provides protection from floods and increases agricultural output. In addition, the project may fit well with World Bank economic and sectoral plans for the country and with World Bank lending targets. During the identification phase, costs and benefits are based on preliminary engineering and cost estimates.

The preparation phase involves more detailed planning, engineering feasibility studies, determination of costs to 20 percent accuracy, estimation of benefits and their distribution (via sectoral studies), and identification of

¹ For a better example, see Encarnacion et al. (1982), an informative case study of World Bank project preparation.

sources of financing.² Timetables for project implementation are prepared using scheduling and critical path techniques. In the proposed irrigation project, preparation includes determining the exact location and size of the dam and irrigation system, the costs of construction and maintenance, and the benefits from reduced flooding and increased output. An engineering firm would complete a plan for constructing the dam and irrigation system. Studies would be commissioned to determine the rate of salinization and its potential effect on output, the adaptability of local crop varieties to irrigation, the market for the increased output, etc. All the details of project implementation are spelled out in a project brief which the borrower officially submits to the World Bank though there is substantial involvement of World Bank staff throughout identification and preparation.

The third phase of planning is project appraisal, a critical evaluation of the project plan by World Bank staff and consultants. Projects are analyzed on technical, institutional, economic and financial grounds. Appraisal often includes cost-benefit analysis and the calculation of an expected economic rate of return. The expected economic rate of return must be above a threshold (a minimum of ten percent in most cases) for the project to be recommended; risk or sensitivity analysis should also be carried out though in practice often is not. Originally, when identification and preparation did not involve the World Bank, appraisal was an "outside" evaluation which could reject the proposed project. Currently, "because of the [World] Bank's close involvement in identification and

² The World Bank typically finances all foreign exchange needs including the estimated foreign exchange content of domestic goods and services. The World Bank may provide additional financing for poorer countries. Thirty-six percent of World Bank funding is disbursed locally (average for 1948 to 1991; World Bank, p.80, Table 4-4). Some projects include financing from other international institutions. The majority of domestic funds come from the domestic government budget.

preparation, appraisal rarely results in rejection of a project; but it may be extensively modified or redesigned during this process to correct flaws that otherwise might have led to its rejection." (Baum, 1982, p. 17) Appraisal results are presented in a staff appraisal report which places the project in the context of domestic economic conditions and on-going World Bank involvement. The staff appraisal report is a starting point for negotiations with the borrower.

The negotiation phase usually establishes key legal covenants and timetables for important aspects of project implementation. Negotiations are described in Baum:

Negotiations are a process of give and take on both sides of the table. The [World] Bank, for its part, must learn to adapt its general policies to what can reasonably be accomplished in the country, the sector, and the particular setting of the project. The borrower, for its part, must recognize that the [World] Bank's advice is generally based on professional expertise and worldwide experience, and that the [World] Bank's requirement that its funds be invested wisely is compatible with the best interests of the project. (Baum, 1982, p.18)

In our irrigation example, the World Bank and the borrower might discuss the charge for water, the timing of progress reports, the distribution pattern and region covered, the inclusion of a hydro-electric station and fishery, etc. Any changes are incorporated in the staff appraisal report and reflected in legal agreements. These documents rather than the borrower's project brief are presented to the World Bank board of directors for approval.³

Throughout the planning process, the World Bank has considerable input and hence considerable influence on the

³ Board approval is almost certain due to a pre-selection process which eliminates or modifies projects. The board expresses opinions while considering projects; managers pay close attention to these comments and tailor subsequent projects accordingly.

resulting project plan. As indicated earlier, the World Bank has gradually become more involved in identification and preparation. Baum writes:

In the earlier years, project identification was done *ad hoc*, largely in response to proposals by governments and borrowers. Over the years, the [World] Bank has encouraged and helped borrowing countries to develop their own capabilities and has also strengthened its own methods of project generation. Economic and sector analyses carried out by the [World] Bank provide a framework for evaluating national and sectoral policies and problems and an understanding of the development potential of the country. (Baum, 1982, p. 6)

The process of identification is described as complex, involving both World Bank and borrower input. Similarly, in the preparation of the project plan documents, "experience has shown that the [World] Bank must have an active role in ensuring a timely flow of well-prepared projects... There are even exceptional circumstances in which the [World] Bank itself does preparatory work." (Baum, 1982, p. 8) Appraisal, which involves only World Bank staff and consultants, also influences the project plan since the resulting staff appraisal report serves as the basis of negotiations and is the main blue-print during project implementation and evaluation. Considering all the stages together, it is clear that the World Bank has significant input into the selection and design of projects.

Implementation

The implementation period officially begins with World Bank board approval. An account for the amount of the loan is created; funds are disbursed from that account on verification of acceptable statements of expense. Borrowers must adhere to guidelines for purchases, contracting, and international competitive bidding. Most

World Bank project loans disburse gradually rather than as a lump-sum.

All World Bank staff and consultant time spent administering the project during implementation is termed supervision. Supervision includes monitoring, management advising and technical assistance, though monitoring is the main activity. Monitoring takes place both in Washington, D.C. (where staff examine progress reports, statements of expense, and requests for disbursement) and during "missions" to the borrowing country (where staff gather information and discuss implementation issues with government officials). World Bank operations staff spend about one quarter of their time on supervision; the average project receives twelve staff weeks of supervision annually.⁴

Each year during project implementation, the World Bank manager in charge of overseeing a project (the task manager) rates the project's performance on a scale of 1 (good) to 4 (bad). Ratings are reviewed by higher management and country teams, then submitted to the Central Operations Department for its Annual Review of Implementation and Supervision (ARIS).⁵ At about the same time, staff must estimate supervision requirements for the following year. Allocation of supervision is guided by historical coefficients and the specific needs of the project.⁶

⁴ An estimated one third of supervision is procurement related (i.e., related to processing requests for disbursement of loan funds following procurement of project inputs or providing assistance in complying with World Bank procurement procedures such as international competitive bidding). Seventy percent of supervision time is logged at the World Bank headquarters in Washington, D.C., and thirty percent "on mission" in the borrowing country.

⁵ Prior to 1986, the rating was on a scale of 1 to 3. Starting in fiscal 1992, the title has been changed to Annual Review of Portfolio Performance (ARPP).

⁶ Historical coefficients are guidelines based on the past average levels of supervision for projects by region, sector, and stage of implementation.

Evaluation

The ex post evaluation phase actually begins before the end of implementation as staff involved with implementation prepare a project completion report.⁷ The report summarizes implementation experiences and may include a recalculated expected economic rate of return. These reports are submitted to the Operations Evaluation Department, a semi-autonomous ex post auditing unit which reports to the board of directors. Operations Evaluation may "pass-through" the project completion report or audit the project. The audit rate is approximately 40 percent, though the rate varies by type of project (e.g., the audit rate is 100 percent for structural adjustment operations). Audits do not specifically target unsatisfactory projects.

Regardless of passed-through or audit, the Operations Evaluation Department issues an official rating of satisfactory or unsatisfactory for every project. The rating may differ from that in the project completion report if the evaluators' opinion differs from the implementors'.⁸ A ten percent expected economic rate of return rule is the primary rule for determining the rating when such a return has been calculated, though, in practice, the reported expected economic rate of return may not agree with this rule.⁹

⁷ All supervision figures exclude time allocated for preparation of project completion reports.

⁸ In the most recent Annual Review of Evaluation Results, ten percent of project completion report ratings were switched from satisfactory to unsatisfactory. (Operations Evaluation Department, 1993)

⁹ This is the case in electrification projects, for example, where actual electric tariffs are used in cost-benefit calculations even though the value of electricity is clearly higher. Rather than correct this practice, a lower rate of return threshold is used. If the economic rate of return in the project completion report appears inflated, Operations Evaluation may simply give an unsatisfactory rating without explicitly recalculating the economic rate of return. For this reason, ratings tend to be better measures of performance and are more widely used for assessing overall World Bank performance.

The procedures described above apply to most World Bank project lending regardless of the source of funds or the terms of the loan agreement.¹⁰ Somewhat less than one-third of World Bank lending is funded by money from the International Development Association (IDA). "IDA credits" typically have very concessionary terms: 50 year repayment period, 10 year grace period, and no interest. Availability of IDA credits is limited; eligibility for IDA borrowing depends primarily on the level of GDP per capita. The other two-thirds of World Bank lending is funded by the International Bank for Reconstruction and Development (IBRD). The typical terms for IBRD loans are: 20 year repayment period, 5 year grace period, and 8 to 10 percent interest. Some countries are eligible for both types of funding and may have "blend" or "hybrid" projects funded by both sources.

When all fees and interest payments are considered, the cost of borrowing IBRD funds is about ten percent and the cost of IDA funds is one to two percent. Despite this difference, the ten percent economic rate of return rule for rating projects is applied to both IDA and IBRD funded projects. This universal application of the 10% rule is to prevent the IDA portfolio from becoming "worse" than the IBRD portfolio.

Finally, whether considering interim performance ratings or final performance, project performance is independent of loan performance. Two features insure this independence. First, loan repayment is contractually separated from project performance: the borrowing country must guarantee repayment regardless of project outcome. Failure to repay has broad implications for the borrowing

¹⁰ The staff are also the same. Special programs such as disaster relief may follow accelerated procedures. Structural adjustment operations disburse in two or more tranches. Tranche disbursement is based on satisfying policy conditionalities or macroeconomic goals. Projects in the financial sector (such as export banks and development finance corporations) may have different disbursement procedures.

country. Re-enforcing this separation, project performance is assessed before substantial loan repayment begins. The ex post evaluation is typically before the ten year mark at which point only a small fraction of the loan has come due. For these reasons, project performance is distinct from loan performance.¹¹

¹¹ Implementation takes an average of 7 years; OED evaluation is usually within two or three years of project completion. Up to evaluation, relatively little is repaid because of a lengthy grace period, long amortization, and low interest rates. Repayment and performance statistics underscore the separation of project and loan performance: over the past two decades, nearly 25 percent of projects were judged unsatisfactory while less than 5 percent of loans were non-performing. Non-performing loans are linked to countries rather than projects, i.e., countries which default on World Bank loans typically default on their entire portfolio at once. Countries which do not repay World Bank loans are excluded from IMF facilities and international commercial loans, including import/export financing.

II. The Adversarial Model

This section takes an adversarial view of World Bank-borrower relations and describes the interactions of the World Bank and its borrowers as those of a principal and an agent. I first identify necessary and sufficient conditions for the existence of an agency problem and then illustrate how World Bank-borrower interactions fit these conditions, drawing on the description in Section I. The existence of an agency problem provides an explanation of the role of World Bank supervision and how it improves performance as well as predicting a relation between several other country / project characteristics and project performance.¹²

The two actors in a principal-agent contract are the principal who wishes to have something done and the agent who agrees to do it. An agency problem is the result of three conditions: 1) the contracting parties have different objectives; 2) the principal's information about the agent's action is incomplete or imperfect; and 3) "extreme" contracts are excluded. Incomplete information may be the optimal choice because the cost of collecting additional information outweighs the expected benefits or may be the result of exogenous institutional constraints on monitoring. Similarly, extreme contracts may be dominated by "interior solutions" or may be outside the institutional bounds.

All three elements of an agency problem are evident in the familiar case of a sharecropping contract between a landlord and an agricultural laborer. Both are depicted as maximizing their utility, the landlord by maximizing his share of the harvest net of monitoring costs, the laborer

¹² Although I examine the World Bank and its borrowers, the discussion applies to any aid donor-aid recipient relationship. In addition, all references to supervision in this section should be equated with donor monitoring of recipient actions.

by balancing the marginal utility of his share of the harvest against the marginal disutility of expending effort in cultivating the crop. Even with a sharing contract which aligns income objectives, additional differences arise from the laborer's dislike of effort. The landlord can only imperfectly observe the laborer's actions (via the relative size of the harvest or some limited direct monitoring) because monitoring the laborer's actions precisely is prohibitively expensive or contrary to social norms. Finally, extreme contracts -- renting or selling land, wage labor, and landlord labor -- are excluded: the first is inefficient due to the landlord's superior risk-bearing ability and the laborer's capital constraints; the second is dominated by a sharing contract because of the cost of information; and the final contract (no contract) may be dominated by some contract involving hired labor or may be restricted by social norms (the extreme case being a caste system).

If any of the three conditions do not hold, the agency problem vanishes. Again, in the case of a landlord and an agricultural laborer, if the landlord and the laborer have the same objectives (e.g., the laborer likes to work), a first best optimal can be reached. If the landlord has complete information, a forcing contract can be written. Finally, if the landlord sells the land or provides his own labor, there is no principal-agent contract (though the outcome may be inferior to a full information outcome). Conversely, if all three conditions hold, an agency problem exists.¹³

World Bank lending contracts can be viewed as principal-agent contracts where the World Bank is the

¹³ I.e., these are the necessary and sufficient conditions. There are certainly other formulations of these conditions. The third condition makes explicit assumptions which are implicit in most agency discussions.

principal and the borrowing government is the agent.¹⁴ The World Bank has certain objectives and chooses to "employ" the borrower as an agent to implement (some of) these objectives. The World Bank's objectives include a high level of performance in the project and a low cost while the "payment" to the borrower is disbursement of funds and possibly continued interaction in the future. The borrower maximizes project performance and funds disbursed but has other potentially conflicting objectives -- such as diversion of project resources or a different distribution of project benefits -- which arise from a different assessment of performance. Following the vocabulary of the literature, I refer to this as minimizing effort.

This is a standard agency model.¹⁵ But does the World Bank-borrower relationship satisfy the three conditions of a principal-agent relationship? I address each condition in turn, starting with differences in objectives.

II.1 World Bank, Borrower and Project Objectives

Why might World Bank and borrower objectives differ? Equivalently, why might World Bank and borrower rankings of

¹⁴ At the most abstract level, the agent is the nexus of control in the borrowing country: the electorate, the dictator, or the military. However, there are agency problems at all levels of project implementation. Rather than attempting to describe a hierarchical system of principals and agents, I view machinations below the top level as an uncertain implementation technology, the outcome of which is affected by the agent's effort level. This argument is reminiscent of Edith Penrose's central tenet in *The Theory of the Growth of the Firm*: any outcome is ultimately the responsibility of the highest level of management regardless of the circumstances.

Likewise, I treat the World Bank as a single actor. I assume that the "head" of the World Bank has designed incentives for individual employees which are compatible with implementing World Bank goals. For this analysis, I assume that internal agency problems are less important than the agency problem between the World Bank and its borrowers. Gauthier (1990) and Mosely et al. (1986) also treat the World Bank and borrowers monolithically.

¹⁵ There are, however, two unusual features about the World Bank-borrower relationship that distinguish it from a classical agency model. First, consumption of performance is non-rivalrous. Second, institutional constraints and limited access to capital markets rather than risk aversion motivate the contract.

potential projects differ? In a stylized world with perfect markets and costless redistribution, all projects can be ranked in terms of their net present value using the international interest rate as the discount rate and market prices for inputs and outputs. The choice between competing projects is simply a production decision; the only connection between projects and social welfare is via the intertemporal budget constraint since all other effects of the project can be altered by buying and selling goods on the international market and costlessly redistributing goods or income domestically. Assessing project performance and ranking projects is straightforward under these conditions.

As we move away from the stylized world, this simplicity breaks down: consumption and production decisions become intertwined. If access to international capital markets is limited, the appropriate discount rate in the net present value calculation is the social rate of time preference of consumption since investment means less consumption today. Similarly, if the government cannot redistribute costlessly because of transactions costs, non-tradeable goods and public goods, then the actual distribution of project costs and benefits may influence social welfare. If market prices are distorted due to market imperfections or government intervention or if the project provides a public good, opportunity costs must be used in the net present value calculation.

This points out that the ranking of projects by net present value will depend on preferences and that systematic differences in preferences will lead to systematic differences in rankings. The most systematic difference between World Bank and borrower preferences is the rate of time preference. The World Bank is typically more far-sighted than its borrowers, lending for investment rather than current consumption. It is concerned with a narrower range of problems than is the borrowing

government, namely long term investment. Other issues such as current consumption, government budget shortfalls, and foreign exchange shortages rank much lower on the World Bank's list of priorities since they are "the government's problem" not "the World Bank's problem." For exactly the same reasons, the borrowing government places more importance on current issues and less on long term investment.

In addition to its responsibility to address current issues, the borrowing government may have less admirable motives for promoting current consumption at the expense of future consumption. Such policies as urban food subsidies and protection for certain industries may be politically motivated. Even if benefits are to be distributed evenly, short run benefits have great appeal since the political life of the government of a less developed country is often short and uncertain. There is a temptation to let the next government pay the price.¹⁶

Bargaining and Project Objectives

Differences between World Bank and borrower objectives are relevant for project outcomes only if World Bank objectives are reflected in the contract (the project plan). Although projects are officially the borrowers' and the World Bank does not force projects on unwilling countries, the World Bank clearly does influence the identification and design of projects (see Section I).¹⁷

¹⁶ See Mosley (1987, chapter 4) for a discussion of the relative preference of borrowers for consumption over investment, political short-sightedness, and how the substitution of foreign aid-funded investment for domestically-funded investment may increase consumption.

¹⁷ Recently, the World Bank has been concerned with a lack of "borrower ownership." The lack of ownership directly reflects the incorporation of World Bank objectives (as opposed to borrower objectives) in the project plan.

The entire project approach to lending can be seen as a method of promoting World Bank objectives. Loans with no conditions, immediate disbursement, and no attached project plan provide a more

The degree to which a project reflects World Bank rather than borrower preferences depends on the relative bargaining power of two parties. The World Bank has lending targets for individual countries, regions, and sectors. If lending is "behind schedule" or if other sources of capital are available, the borrowing country may have an advantage in negotiations. For example, the Republic of Korea might accept only projects which conform exactly to its preferences. Countries with poor access to international financial markets and with greater borrowing needs (those with low GDP per capita levels, low growth, and large deficits) have a weaker position and may compromise on some projects.

In general, projects plans impose World Bank preferences on the borrower, the degree of imposition depending on the closeness of objectives and the relative bargaining positions. At one extreme, the borrower may be indifferent to the project and agree to the contract only because of the "payment" of disbursed funds and the aid component of the loan. At the other extreme, the borrower may heartily endorse the project and would undertake it even if World Bank funding were perfectly fungible.¹⁸ The typical case is between these extremes with some divergence between the actual project and the borrower's ideal. The severity of the agency problem (i.e., incentive the borrower has to deviate from the project plan) will depend on how closely project goals align with borrower goals and how well the World Bank can discern borrower actions.

efficient method of transferring resources. In principle, World Bank project activities need not be tied to financial aid.

¹⁸ This raises the general issue of fungibility. If the World Bank funds a project which the borrower would have done without outside funds, some other "marginal" project or activity may be undertaken with the freed resources. This may influence the World Bank's choice of projects; it might only fund projects which would not have been undertaken otherwise.

II.2 The Cost of Information

The second element of a principal-agent problem, incomplete or imperfect information, is also apparent in World Bank projects. World Bank staff are generally of the opinion that information about projects is imperfect despite monitoring of implementation and loan conditionality compliance. This impression is confirmed by ex post audits which often uncover new problems and by the failure to cancel projects which are later judged unsatisfactory. Of 465 projects rated unsatisfactory in the past two decades, only 25 percent had substantial cancellation.¹⁹ Though not all unsatisfactory projects should have been canceled (since sunk costs enter the rating process but are irrelevant when considering cancellation), the cancellation rate would certainly be higher if information about project implementation were complete.

Why is information incomplete? Assuming it is an unconstrained choice, incomplete information is the result of balancing the marginal cost and the expected marginal benefit of supervision. The balance should be reached before full information if information is costly since marginal cost is constant and the expected marginal benefit is declining.²⁰

¹⁹ Calculated from a sample of 1796 projects for which all data were available between 1972 and 1990. Four hundred and sixty-five projects were rated unsatisfactory; 115 of these had 25 percent or more of the loan amount canceled, 47 had 50 percent or more canceled. Projects with a small percentage of the loan canceled may have been under-budget (usually due to favorable changes in the exchange rate) or may have dropped minor project components.

²⁰ The marginal benefit of supervision should decline, at least past some level of supervision, for two reasons. First, the "amount" of new information generated by additional supervision will decline since the most flagrant violations will be easily detected. Second, the value of additional information will decline past some point since the World Bank has only a limited ability to "punish" the borrower. In the terminology of the principal-agent literature, the participation constraint binds. Although Radner and Stiglitz (1984) and Singh (1985) discuss increasing returns to information, these arguments only apply close to no information. The Holmstrom and Milgrom (1991) multi-task principal-agent model implies that the marginal value of information increases with its breadth. In the

However, incomplete information may be the result of a direct limit on supervision rather than from a project-level marginal condition. There are two reasons the World Bank might limit supervision: domestic sovereignty and borrower ownership. Beyond a certain point, additional monitoring may interfere with the domestic affairs of the government or be interpreted as over-stepping allowed bounds. Excessive World Bank involvement also may weaken the borrower's sense of responsibility for and commitment to the project. In a repeated setting, excessive supervision on one project may set a precedent, one which shifts more of the responsibility for management to the World Bank. To prevent setting precedents, the World Bank may impose supervision limits which are not optimal in a one project setting.

To summarize, World Bank information about borrower actions appears to be incomplete or imperfect. This may be a project-by-project optimal choice given the costs and benefits of information or may arise from externally imposed constraints. In either case, incomplete information may be a rational choice, not simply a mistake. Policy advice, therefore, may not be so simple as "Collect more information."

II.3 Extreme Contracts

The final "existence" condition for an agency problem is the exclusion of extreme contracts, namely unconditional loans, no lending, and implementation by the World Bank. The first two are clearly suboptimal within the framework of the problem. Because World Bank and borrower preferences over projects differ, unconditional lending with lump-sum loan disbursement and no World Bank

current example, this argument has less force since the borrower's objectives are not orthogonal to the World Bank's. If World Bank supervision begins with the areas where objectives differ most and then extends to less contested aspects of the project, diminishing returns will occur.

involvement in project planning or administration would lead to projects which do not satisfy the World Bank's objectives. No lending is suboptimal for both parties since that option is always available and, in the cases we examine, is not chosen. Lending with conditions is revealed preferred to no lending.

Implementation by the World Bank may appear to be preferable to both parties since implementation might proceed more smoothly. However, the World Bank does not consider implementation as one of its roles. The institutional lexicon carefully denotes projects as "World Bank funded" rather than simply "World Bank" and the phrase "borrower ownership" is oft repeated.

There are three main reasons why the World Bank does not implement projects. First, the World Bank was chartered as a lending institution; it provides advice and oversight to ensure that funds lent are used to promote development but cannot take charge of implementation.²¹ Second, development of the borrower's domestic capabilities to plan, implement and manage is one of the benefits of the project. Finally, by maintaining some distance from the project, the World Bank absolves itself of responsibility for the outcome, re-enforcing the government's obligation to repay the loan regardless of project performance. As currently structured, the project concept and plan are theoretically the borrower's and implementation is ultimately the borrower's responsibility; hence, poor outcomes are irrelevant to repayment. For these reasons direct World Bank implementation is ruled out and the principal-agent contract, with its second best outcome, cannot be avoided.

²¹ This must be viewed as a temporary impediment, however. If there were a strong motive for taking a more active role in implementation, the charter could be amended or re-interpreted (as is the case with structural adjustment lending).

II.4 Implications of the Agency Framework

According to the principal-agent framework, the degree of the agency problem -- the extent to which information is incomplete and the degree to which project and borrower objectives diverge -- affects project performance through its influence on borrower actions. The completeness of information depends on the level of supervision together with the inherent difficulty in detecting violations. The divergence between project and borrower objectives depends on the divergence between World Bank and borrower objectives and on the relative bargaining power of the two parties (i.e., their reservation utility levels). Thus, the agency model predicts links between performance, on the one hand, and the level of supervision, the divergence of objectives and the bargaining power of the borrower, on the other. In addition, the impact of supervision will depend on the divergence of objectives and the bargaining power of the borrower. When data measuring these variables are available, the predictions may be testable.

In the principal-agent model, supervision generates information about borrower actions or effort by uncovering deviations from project plans, schedules, procurement regulations, and legal covenants. More supervision increases the probability of detecting violations. Information about violations is used to determine disbursement and to set standards for correcting problems. In turn, the actual or anticipated implications of supervision influence borrower actions. If the level of supervision is high, violations are more likely to be detected and the expected cost of violations rises, inducing the borrower to exert more effort (i.e., commit fewer violations). Borrower effort, in turn, influences project performance. Thus, with other variables fixed, high supervision will lead to improved performance on average. The empirical test of this statement is the central focus of Kilby (1994).

The greater the divergence between project and borrower objectives, whatever the source, the lower performance is likely to be. When project objectives do not align well with borrower objectives, the borrower has less incentive to apply the appropriate level of effort and more incentive to deviate from the project plan. Although the desire for full and timely disbursement and continued good relations with the World Bank may have a somewhat offsetting effect on the effort level, imperfect information limits the effectiveness of these countervailing factors since the probability of detection is less than one. Thus, controlling for the impact of supervision and other factors, performance is likely to decline as project and borrower objectives move apart.

Some observables may measure the disparity between project and borrower objectives. These may be direct, reflecting the closeness of project and borrower objectives, or indirect, providing information about either the proximity of World Bank and borrower objectives or relative bargaining strength. Examples of the first variety are the percentage of the implementation period completed and the percentage of the project financed domestically. Examples of the second variety are the level of development and the rate of growth of the borrowing country.

World Bank and borrower objectives will tend to converge as implementation progresses. Once resources are fixed and immobile, the incentive to divert them to other uses is weak because the cost of diversion is high. The incremental cost of completing the project (and receiving the benefits) declines once these initial investments are sunk. Likewise, as the benefit stream draws nearer, differences in objectives due to different discount rates

diminish.²²

The convergence of objectives is illustrated by the following numerical example. Consider two projects, project NOW and project LATER. Project NOW requires an investment of \$1 each year for the first three years and delivers benefits of \$4 each year for the subsequent five years. Project LATER requires an investment of \$1 each year for the first five years and delivers benefits of \$4 each year for the subsequent ten years. Suppose that the World Bank's discount rate is ten percent and the borrower's is twenty percent. Before the either project starts, the net present values of projects NOW and LATER to the World Bank are

$$NPV_{WB,0}^N = \sum_{t=0}^2 -\$1 * \left(\frac{1}{1.1}\right)^t + \sum_{t=3}^7 \$4 * \left(\frac{1}{1.1}\right)^t = \$9.80$$

$$NPV_{WB,0}^L = \sum_{t=0}^4 -\$1 * \left(\frac{1}{1.1}\right)^t + \sum_{t=5}^{14} \$4 * \left(\frac{1}{1.1}\right)^t = \$12.60$$

Hence, the World Bank prefers project LATER. However, the borrower's preferences are the reverse:

$$NPV_{b,0}^N = \sum_{t=0}^2 -\$1 * \left(\frac{1}{1.2}\right)^t + \sum_{t=3}^7 \$4 * \left(\frac{1}{1.2}\right)^t = \$5.80$$

$$NPV_{b,0}^L = \sum_{t=0}^4 -\$1 * \left(\frac{1}{1.2}\right)^t + \sum_{t=5}^{14} \$4 * \left(\frac{1}{1.2}\right)^t = \$4.50$$

Suppose that the World Bank requires that its funds be spent on project LATER. After one year of investment, the borrower's net present value of continuing project LATER is

²² Experience in developed countries suggests an additional reason for the convergence of objectives: political commitment to a project may build as it progresses from plan to product.

$$NPV_{B,1}^L = \sum_{t=0}^3 -\$1 * \left(\frac{1}{1.2}\right)^t + \sum_{t=4}^{13} \$4 * \left(\frac{1}{1.2}\right)^t = \$6.60$$

Project NOW has not been started; its net present value is still \$5.80. The World Bank and the borrower's objectives are now the same -- both wish to continue project LATER. The increase in the net present value of project LATER is due to two factors: sunk costs do not enter the calculation (a locking-in effect) and project benefits are discounted less since they are one year nearer (so that differences in discount rates are less important). In this example, the sunk cost accounts for a \$0.50 change in the NPV and less distant benefits account for a \$1.60 change in the NPV.

Project and borrower objectives are also closer in projects with a high percentage of domestic financing. This is clear in the limit when all financing is domestic. In general, when more of the borrower's own money is at stake, the aid component of the project is lower and the borrower's opportunity cost is higher because funds come from the current budget. Since less benefit is derived from disbursement but the project is still acceptable to the borrower (i.e., it satisfies the participation constraint), the borrower must place more weight on project performance and thus has a greater incentive to promote performance. Therefore, borrower effort and hence performance are expected to be higher in projects where the percentage of domestic financing is higher.

World Bank and borrower objectives are likely to be closer for borrowers with a higher level of development and a faster growth rate of GDP per capita. These countries are better able to postpone consumption and resist budget pressures than countries with less robust economies; as a result, the government's rate of time preference is likely

to be lower, more nearly matching that of the World Bank.²³

The level of development and rate of growth also indicate the bargaining position of the borrower. Countries with strong, growing economies are likely to have better access to international capital markets (or can generate domestic investible surplus) and hence will be less dependent on World Bank funds. The existence of outside options strengthens their bargaining position and hence such countries as less likely to accept projects which do not fully reflect their own objectives.

The agency framework also elucidates conditions in which supervision will have a greater effect on performance: the greater the agency problem, the greater the effect of supervision. When the agency problem is more extreme, the number and degree of violations is likely to be higher and hence a given level of supervision is likely to identify more violations. This implies that supervision will have a greater impact on performance early in the implementation period, when the percent of domestic financing is low, or when the level of development and the growth rate of GDP per capita are low. In estimations, the relative impact of supervision on performance under different conditions would be investigated by interacting the supervision variable with other variables.²⁴

When the severity of the agency problem does not vary systematically, the impact of supervision will not vary systematically. The component of supervision emphasized by the agency model is monitoring; the actual task of monitoring is relatively constant between projects since

²³ The type of government (democracy, autocracy) and its life expectancy might also be useful indicators.

²⁴ The link between the effectiveness of supervision and the severity of the agency problem assumes that the ability to "punish" the agent does not decline as objectives diverge. This is the case if punishment means withholding disbursement. This may not be the case if, for example, punishment includes limiting future access to funds. If objectives are sufficiently different, the borrower may care very little about future interactions.

much of it takes place at World Bank headquarters and involves paperwork (checking expense statements against plans and projections, auditing accounts, etc.). Thus, unless the agency problem varies across region and sector, the impact of supervision is likely to be constant across these dimensions.

III. The Cooperative Model

A cooperative view of World Bank-borrower interaction may be appropriate since the interaction is purely voluntary and clearly premised on a commonality of interests. At the most direct level, the World Bank's charter is altruistic and hence borrower welfare is a central concern. However, cooperation can be pushed one step further. Gauthier (1990) and James (1995) stress a commonality between the immediate institutional interests of the World Bank and the bureaucratic objectives of implementing agencies within the borrowing government. The result may be collusion, possibly to the detriment of the interests of the World Bank's shareholders or the citizens of the recipient country.

Even excluding collusion, there are many possible variants of cooperative behavior. The World Bank and the borrower may have the same objects or the two parties may simply select project objectives (as outlined in a project plan) and follow these. In the latter case, the process of selecting a project may involve compromise on one or both sides; this compromise may be based on "fair sharing rules" or on the relative bargaining strengths of the parties. Similarly, the costs of the project may be divide according to different mechanisms. The costs to the World Bank are the percentage of the project's cost financed by the World Bank loan, the amount of preparation done by the World Bank, and the amount of supervision done by the World Bank.²⁵

The common element of all these interpretations of cooperative behavior is that once a project plan is

²⁵ The loan amount may not enter negatively in the World Bank's objective function since it may prefer more lending to less lending. However, given a fixed loan amount, it prefers larger projects to smaller projects as is evident from the required borrower contribution and the expansion of projects co-financed with other international institutions. The percentage of the project financed captures these two considerations.

selected, both parties follow it.²⁶ As a consequence, there is no role for asymmetric information during implementation and only technical issues influence project performance. In effect, the layer of incentive problems and information asymmetries is stripped away, leaving only the influence of "fundamentals." In a cooperative model implementation is a series of technical problems while in a noncooperative model there are, in addition, incentive problems.

The role of supervision is very different in the two models. As was discussed in the previous section, in a noncooperative principal-agent model the monitoring component of World Bank supervision influences project performance. However, in a cooperative model, asymmetric information during implementation has no function and hence the monitoring aspect of supervision is irrelevant to project performance. Instead, the emphasis of supervision should be on assistance (management advising and technical assistance); if supervision has a positive impact, it should be from these elements.

This section proceeds in two stages. First, I examine the possible impact of project characteristics and economic factors on project performance. This discussion is cursory since these are largely technical aspects of implementation on which I have little to add. The main purpose is to re-examine factors considered in the previous section from a technical rather than incentive angle. Second, I consider the impact of the assistance component of World Bank supervision on project performance. From an empirical point of view, the key distinction is between the impact of supervision on performance (which is likely to be positive) and the *measurable* impact of *World Bank* supervision on performance (which may be negligible).

²⁶ As in cooperative game theory, the agreement is binding though no individually rational reason or enforcement mechanism is offered.

III.1 Technical Determinants of Performance

Projects are complex and diverse; enumerating the technical factors that influence their performance is not the goal of this section. Rather, I revisit those factors discussed in the previous section so as to compare technical implications with incentive implications. I consider the stage of implementation, the source of project funds, the level of development and the growth rate.

Even from a purely technical point of view, performance may vary with the stage of implementation. The early stages of a project are generally the most crucial since much of the activity and investment happens early on. With more happening, more problems can arise at this stage than at later stages. Once a problem is identified, efforts will be made by both the World Bank and the borrower to correct the problem. If initial problems are solved faster than new problems arise, the resulting pattern is declining performance at the early stages of a project and gradual improvement thereafter.

There is no clear reason why the source of funds (e.g., the percentage of World Bank financing) would be linked to performance. Since the cooperative model assumes that project plans are followed, the source of funds cannot influence implementation. It may be related to the type of project but so long as other project characteristics (region and sector) are considered, we do not expect any technologically induced link between performance and the source of funds.

Both the level of development and the growth rate of the economy are likely to be positively link to project performance. Development projects share many attributes with other investment activities. For example, both types of investments perform better when markets function well, when physical and social infrastructure are developed, and when the government deficit is low. Since both the level of development and the growth rate give an aggregate

measure of how other investments perform in a particular environment, they should also have some predictive power for the performance of development projects.

There are many other possible generalizations about expected patterns in project performance; however, the purpose of this section is to compare technical implications and incentive implications about the influence of four factors. There is agreement on three of these: on average, project performance will be higher in the later stages of implementation and in countries which are relatively developed or experiencing rapid growth. However, there is no technical reason why the source of funds should be related to performance.

III.2 Supervision as Assistance

Two factors determine the observable relation between the assistance components of World Bank supervision (management advising and technical assistance) and project performance: technical issues and substitutability. Arguments about technical issues are similar to those presented above and will be sketched only. Substitutability of other sources of assistance is, however, an important concern since data on this assistance are not available.

The positive impact of management advising and technical assistance is self-evident: within reasonable bounds, more inputs result in more output. The conditions under which such assistance has a greater impact on performance are governed by technical characteristics of the project and hence there may be considerable heterogeneity across projects. While monitoring is a relatively homogeneous activity, management advising and technical assistance incorporate a much wider range of activities. Furthermore, these activities are likely to vary dramatically across sectors and regions. Technical assistance in a financial sector project in Southeast Asia may require only a review of books and procedures in a very

centralized location but have a marked impact on subsequent project performance. In contrast, technical assistance for a veterinary extension project for nomadic herdsmen in North Africa may involve extensive travel and difficulties in communication. Though also quite useful, this type of assistance work is considerably more time consuming. Thus, we expect the impact of management advising and technical assistance to vary by region and by type of project.

As with monitoring, early assistance is likely to have a greater impact than later assistance. The purpose of assistance is to identify problems and solutions. Although the identification of problems is still possible late in a project, fixing these problems becomes more and more difficult. The later in the project, the more irreversible are the previous decisions. Hence, the effectiveness of assistance in solving problems is likely to decline over time.

Assistance is also likely to have a smaller impact in large projects though this prediction is somewhat clouded. Simply because of their size, large projects require more assistance to improve their performance than otherwise identical small projects. However, large and small projects may differ systematically even in the same region and sector. Small projects more often embody newer, less well-known approaches; expert advisors may be learning as they advise.

We can also venture a generalization about the how the effectiveness of assistance varies with the project's external environment, e.g., the country's level of development and economic growth rate. In a conducive environment, a greater percentage of project problems will be internal and hence fixable. However, in a more difficult environment, a greater percentage of project problems will be externally caused and cannot be completely remedied. Hence, assistance will have a greater impact in relatively developed, growing economies.

While all these statements are reasonable, none of them may be evident when analyzing World Bank project data. The above discusses the impact of management advising and technical assistance on project performance as distinct from the *observable* impact of *World Bank* management advising and technical assistance. Although the positive influence of assistance is self-evident, the link between World Bank assistance and project performance is not. Because substitutes exist, more World Bank inputs do not necessarily indicate more overall inputs. Substitutes include the services of international consultants and the government's own staff.²⁷

If the level of World Bank input is low, a rational borrower would seek supplemental assistance from other sources. Under this rational agent hypothesis, World Bank assistance acts as a lump-sum subsidy: it is provided without charge and substitutes for a costly input. The distribution of this subsidy need not be related to the overall level of assistance a project receives. Instead, distribution may depend on the project manager, on other demands on fixed resources, on trends within the World Bank, on the amount of experience the World Bank has with that type of project, or on the ability of the borrower to do its own supervision. If the level of borrower supervision is observed in advance, World Bank assistance may be a residual. Hence, there is no necessary correlation between World Bank assistance and project performance.

²⁷ Some borrower self-supervision may be complementary to World Bank supervision if government staff or consultants serve as intermediaries between World Bank supervisors and the actual implementors of the project. The relevant point is that governments can obtain substitutes for World Bank supervision when the benefits of additional supervision outweigh the costs.

IV. Conclusion

The two models of World Bank-borrower relations developed in this paper paint very different pictures of project implementation. In the cooperative model, technical factors rather than incentive problems determine project performance. The only twist added by the existence of two parties is one of measurement due to the lack of data on management and technical assistance activities of the borrower. In contrast, the existence of two parties plays a critical role in the adversarial model. Divergent incentives and incomplete information generate additional implementation problems. Both the evolution of performance over time and the relation between project characteristics and performance are influenced by these agency problems. The adversarial model links the monitoring component of World Bank supervision to project performance; this link should be measurable since no substitutes (observable or otherwise) exist for World Bank monitoring.

The adversarial model proposes *additional* sources of implementation problems since all characteristics of the cooperative model are still present. Thus, both views agree that, for technical reasons, performance improves during the latter part of project implementation and performance is better in stronger economies (those with a high level of development and a high growth rate). Both suggest that the influence of the assistance component of World Bank supervision on performance may not be measurable; however, if it is, it will be heterogeneous, varying with region, sector, size of project, level of development and stage of implementation. The additional implications of the adversarial model are that the source of project funding will influence performance and that the monitoring component of World Bank supervision will have an measurable impact on project performance. This impact will be stronger in the initial stages of the project and in

projects with a higher proportion of non-domestic financing but will be relatively homogeneous otherwise. The adversarial model also proposes additional reasons why performance will be better in the later stages of implementation and in countries with a high level of development and economic growth.

The best test of the cooperative model against the adversarial model is to examine the impact of World Bank monitoring on project performance. The cooperative model implies that there is no impact while the adversarial model implies a measurable positive impact. Unfortunately, current World Bank practices do not explicitly distinguish between types of supervision. If such a test is to be carried out, some indirect method of separating types of supervision must be attempted.

A second approach is to examine how the influence of World Bank supervision varies across projects. The influence of the assistance component of World Bank supervision on performance will be heterogeneous across region, sector and macroeconomic conditions if it is measurable. A less variable connection between supervision and performance indicates that the influence of World Bank assistance is not measurable and that the measured influence should be attributed to monitoring. Again, if monitoring influences performance, agency model stemming from an adversarial view is supported.

A final indicator of the applicability of the agency model is the relevance of the source of funds. Controlling for the influence of project characteristics, the source of funds should have no influence on project performance according to the cooperative model. In contrast, the adversarial model suggests that domestic incentive problems are proportional to the percentage of funding provided by international sources. The key issue here is adequately controlling for other project characteristics since these may depend on the negotiation process which also determines

the international contribution.

In addition to the above implications for empirical research, several of the ideas developed in this discussion have direct policy relevance. Perhaps the most useful aspect of the discussion of management advising and technical assistance is that it clarifies the nature of this type of World Bank supervision: it is a lump-sum subsidy. Recognizing it as such should influence the choice of the type, level and distribution of World Bank supervision.

The existence of an agency problem is almost certain based on the evidence presented in Section II. The real question for empirical research is the importance of this incentive problem -- is it minor or does it have a substantial impact on project performance? If the incentive problem is substantial, attention should be focused on reducing it.

One method is to reduce the gap between project and borrower objectives. Section I identified various attributes of the preparation process which allow World Bank rather than borrower objectives to shape project plans. Section II outlined reasons why objectives might be different, some of which are fundamental but others are arbitrary. Better communication between the World Bank and its borrowers might result in better agreement on objectives. Modification of the preparation process to allow greater borrower influence on project selection and design would reduce agency problems during implementation and thereby improve performance.²⁸

A second method of reducing agency problems is to improve World Bank gathering and use of information about project implementation. Section II examined the link between monitoring and performance and derived conditions

²⁸ This is by no means an unprecedented conclusion; many observers of development aid advocate increased recipient involvement in selection and design of projects.

under which monitoring would be more effective. In addition, the World Bank must use that information effectively. A tighter link between the findings of monitoring and actions taken by the World Bank would result in better performance since borrower actions are based on expected costs rather than simply on the probability of detection. Enforcement of loan conditionalities and project schedules is crucial for maintaining the effectiveness of monitoring.²⁹

A third method is radical institutional reform. As noted in Section II, institutional constraints are ultimately the source of the agency problem. Limits on supervision and the prohibition of direct World Bank implementation, at one extreme, and the project format of lending, at the other, exclude alternative arrangements which would eliminate incentive and informational problems. Radical institutional reform might reduce agency problems and improve project performance but would only be warranted if agency problems are extreme.

²⁹ Mosley et al. (1991) document many cases in Structural Adjustment programs where violations are detected but tranches released nonetheless.

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