

Basic Economics of Results-Based Financing in Health

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Introduction

Results-Based Financing (RBF) for Health is a term for programs that link payments (or material rewards) to results. It encompasses a range of health initiatives that aim to achieve such things as improvements in population health indicators, greater output of specific health care services, increased use of health care services by individuals, or even changes in health-related behaviors (Eichler 2006; Oxman and Fretheim 2008). While RBF programs vary in terms of their objectives, they also differ with respect to the level on which they operate. They may involve relationships between, for example, multilateral organizations and recipient governments; federal and sub national governments; governments and public or private health facilities; district authorities and health workers; or public programs and families or individuals.

RBF programs are not new. High-income countries with health systems as varied as Spain, Sweden, the United Kingdom and the United States all use rewards to hospitals, providers, and insurers for meeting volume and quality targets. International efforts to improve health in developing countries are increasingly exploring ways to improve results through material incentives under initiatives like Output-Based Aid, Pay for Performance (P4P), Performance-Based Financing (PBF), Performance-Based Aid and Cash on Delivery (see Box 1). This growing attention and experimentation with RBF has led to increasing clarity about its main features and evidence is mounting with regard to the approach's strengths and limitations. This paper provides an economic foundation for understanding RBF programs, classifying them, and exploring their strengths and weaknesses.

Box 1: RBF and Its Relatives

The term “Results Based Financing” is often used interchangeably with other classifications such as “Pay for Performance (P4P),” “Performance-Based Financing,” and “Performance-Based Payment.” The following is a selected list of terms associated with particular programs or publications on similar or related concepts:

Output-Based Aid refers to development programs that pay for outputs instead of inputs. The World Bank’s Global Program for Output-Based Aid (OBA) is a prominent example of this approach. It is being piloted in the water, education, and grid-based energy sectors and is an increasingly important instrument in health and off-grid energy, information and communication technologies and roads. For example, OBA programs have provided funds to cover the fixed costs for expanding water service to poor underserved neighborhoods but in some cases reserves its final payments until it has verified that water service is connected and functioning some six months after installation. (Brook and Smith 2001; GPOBA 2010).

Performance-Based Incentives refer to programs that link payments to performance. In health, these programs include such things as payments to patients who complete their treatments; families that utilize preventive care services; health care facilities that provide appropriate care; and pharmaceutical firms that develop new vaccines (Eichler and Levine 2009). P4P is often used interchangeably with RBF (Oxman and Fretheim 2008).

Performance-Based Contracting has been used to refer to situations in which a financing entity purchases a defined set of services from a non-state health care provider, including “(1) a clear set of objectives and indicators, (2) systematic efforts to collect data on the progress of the selected indicators, and (3) consequences, either rewards or sanctions for the contractor, that are based on performance.” (Loevinsohn 2008).

Performance-Based Financing (PBF) is a term for results-based approaches associated with public sector contracting of health services in Cambodia (Soeters 2003) and Rwanda (Soeters et al 2006; Meessen et al 2006; Rusa and Fritsche 2007; Rusa et al 2009). The approach involves payments for provision of an explicit list of services, emphasizing preventive care, and conditions payments on the quality of care as measured with checklists or balanced scorecards. Practitioners involved in these experiences highlight the importance of features such as increasing health facility autonomy and establishing effective planning, management and administrative systems to implement and support the payment schemes.

Performance-Based Aid has been used to describe aid programs that link foreign assistance to performance, whether they are adjustment loans that disburse against policy changes or grants that pay when particular results and outputs are achieved. These programs shift away from funding inputs and increase the accountability of fund recipients by holding them accountable through performance measurement and evaluation. In the health sector, the most prominent forms of performance-based aid involve targets set in Sector-Wide Approaches (SWAps) and Budget Support programs. The European Commission has also experimented with budget support programs that include a variable tranche, conditioned on performance (Eichler and Glassman 2008).

Cash on Delivery Aid (COD Aid) refers to development programs that aim to pay only for outcomes, not inputs. It focuses donors and recipients on measuring, verifying and paying against a measure which closely approximates a desired outcome. Recipient countries then have full flexibility, responsibility and discretion to make progress in whatever way they see fit. COD Aid is aimed primarily at improving the aid relationship between foreign aid agencies and countries – not between health care service purchasers and providers – but it could also be applied between national governments and sub national authorities or involve private foundations (Birdsall and Savedoff 2010).

The Principal-Agent Model and RBF

A private foundation wants to reduce child mortality in a low-income country. It identifies an NGO that provides primary health care services in a large province and enters discussions with them about implementing specific programs aimed at childhood illnesses. The NGO provides an estimate of the budget they need to provide those services. The foundation's program officer visits the NGO and sees that they have several facilities providing health care services but notes problems with the quality of care and senses that much more could be done with the existing budget. The NGO director counters that the conditions in which they work are so difficult – from impassable roads to corrupt government officials – that this is the best they can do. The program officer is hesitant to approve a grant without some assurance that the funds will be used efficiently and considers what to do. She thinks about studying the NGO in greater detail to assess their real costs, offering a bonus in the grant for achieving targets, or withholding funds against performance indicators.

This story illustrates the typical features of arrangements that commonly occur whenever one actor delegate tasks to another. First, the objectives of the two parties are not identical. The missions of the foundation and the NGO overlap in that they both care about extending the coverage of important health care services. However, the foundation is primarily concerned with child health and the NGO provides a range of services to the entire population. Second, the information available to the two parties differs substantially. The NGO may have considerable information about its operations, context, beneficiaries and outputs that the private foundation can only learn at a significant cost.

This situation has been analyzed extensively by economists as a principal-agent model (Ross 1973). In this model, a *principal* delegates a task to an *agent*. When the conditions above occur, that is, when the principal and agent have diverging objectives and differential access to information, it becomes very difficult to find an arrangement for delegating tasks that efficiently achieves the principal's aims. To see how this occurs consider some alternatives.

If the principal and agent *have identical objectives and both have perfect information*, then the process of delegation can go smoothly. The agent will aim to achieve whatever the principal would have done in his or her place and the principal will be able to observe that performance. In the example above, if the foundation knew that the NGO was wholly committed to reducing childhood mortality and nothing else, then it could provide funds with the assurance that they would be applied to that purpose. With perfect information, it would also know the efforts the NGO made to achieve the goal and how much childhood mortality was reduced by those actions. Obviously, the real world does not quite look like this.

If, instead, *the principal and agent differ in what they would like to achieve* (i.e., divergent objectives) *but still have perfect information*, then the agent may be tempted to do what he or she prefers – even if it comes at the expense of some or all of the principal's goals. Since the agent is aware that the principal will know if efforts are being diverted to other activities, then the agent will have to concentrate on tasks requested by the principal. In the example, the NGO might be interested in any number of things beyond reducing childhood mortality – such as extending healthcare services to adults as well as children, reducing the workload on its staff, or establishing a positive reputation for its director to run for public office. Yet knowing that the foundation can see what the NGO does with its grant would still constrain the NGO to do what the foundation requested. Again, in the real world, the principal will not have such perfect information.

In most real cases, *objectives diverge and information is imperfect*. The principal and agent may have overlapping objectives but they differ in some substantive ways; and the principal rarely has access to complete information about how the agent has performed or to the conditions that made it more or less difficult for the agent to complete his or her tasks. The combination of these two features implies that agents can respond to delegated responsibilities in ways that deviate from the principal's intention. Such deviations may be well-intentioned (or even socially preferable) but they can also be self-aggrandizing. In the example, using the grant for childhood services to treat an adult with tuberculosis violates the foundation's intentions but it can hardly be faulted as abuse for personal

gain; and in many circumstances, treating tuberculosis infections may actually be the greater public health priority. By contrast, using the resources to hire unnecessary staff or promote a director's political career would clearly abuse the trust delegated to the NGO and violate social ethics.

The principal-agent model is not the only way to look at such relationships. In some cases it may be better to look at the relationship as a process of bargaining between independent parties, anonymous interactions through a market, collaborations among partners, or direct hierarchical control. Economics provides other models for issues that are relevant to health care services; for example, models of insurance markets, imperfect competition, strategic games and decisions under uncertainty. While these concepts and their associated findings are relevant to RBF, the principal-agent model is the basic foundation for analyzing RBF programs because of its insights regarding incentives in the delegation of tasks. This is particularly so in the health sector where so many relationships involve implicit or explicit contracts for performance. Testing the implications of the model against empirical evidence and experimenting with it in practice is the best way to assess its usefulness.

Principal-Agent Contracts

If principals and agents have different objectives and different access to information, how can they create agreements that will achieve the desired results? Principal-agent relationships can be structured in a variety of ways. It turns out that two features of information play a key role in selecting an appropriate arrangement: (1) the amount of information the principal has or can obtain about the processes for implementing the tasks and (2) the difficulty of specifying and measuring the outputs of the task. When the principal has a good understanding of the production process and the outputs are difficult to measure, arrangements that involve direct contracting and supervision are generally more effective. When the principal has less information about the production process but can easily measure and pay for outputs, then arrangements in which agents are contracted by piece-rates or bonus terms are preferred. A typical contrast is between assembly-line work and sales representatives. Firms with assembly-lines usually contract workers and pay them for their time, directly observing their effort and monitoring their performance. By contrast, sales representatives who are travelling, meeting clients, and making sales pitches, are difficult to monitor and are frequently paid all or in part by commission.

The range of contracts between principals and agents, from direct hiring of employees to fees paid to providers for services rendered, has an important underlying logic related to the sharing of risk. When principals know the technology of production and can perfectly monitor the agent, then they can simply instruct and observe the agent in a hierarchical, employee-style, arrangement. In this event, the principal has assumed all the risks associated with the choice of technology and supervision and has to pay agents (workers) regardless of the amount of output or the value of that output. If the foundation contracted the NGO to provide specific health care services using a predefined set of inputs, then the foundation assumes responsibility for deciding that the funding is sufficient to provide those health care services and that those services are going to achieve reductions in child mortality. When, as is usual in such contract, the foundation agrees to reimburse the NGO for a predefined set of inputs (e.g. staff salaries, medical supplies, transportation, building maintenance, training), it takes on the risk that more funding may be required or that the goals will not be reached. The NGO bears almost no risk in this arrangement because it gets paid regardless of the final value of its services and, since it has no discretion, it bears limited responsibility for any failures.

When the principal is uncertain about the production process and, in particular, when monitoring the agent is more costly than monitoring outputs, it may be better to pay the agent on the basis of performance and targets. Such arrangements typically give the agent both more discretion over his or her work *and* greater risk for cost-overruns or failing to meet performance targets. These arrangements can vary from moderate to substantial degrees of risk. For example, withholding 2 percent of a primary care physician's reimbursement to be paid out if targets for preventive care are met would pose relatively minor risk to the physician; by contrast, a payment to a primary care physician who acts as a 'fund holder' to manage all health care services for each enrolled person (i.e. "capitation," see Box 2) would impose substantial risk.

Box 2: So Many Different Ways to Make Payments

The principal-agency literature is not confined to addressing issues in the health sector. However, the health sector is characterized by increasingly varied forms of payment which has generated a sophisticated terminology (e.g., co-pays, balance billing, carve-outs, and diagnosis related groups). Four of the more common and distinct ones are defined below:

Fee-for-Service: Providers are paid a fee for each service that they render to a client.

Case-Based Payments: Providers are paid a fee for each case that is treated, independently of the type or intensity of services that are required and rendered.

Capitation: Providers are paid a fixed amount for each person enrolled in their care and are expected to render all services required by that individual during the term of enrollment.

When agents face more risk, they have a stronger incentive to achieve the contracted targets. But this does *not* mean that the best contracts put the entire burden on agents (e.g. health districts, health insurers, facilities, providers or patients). In fact, in many cases putting a small amount of funding at risk is sufficient to motivate desirable changes in performance. Furthermore, it may be difficult to find people or firms willing to accept contracts with very high amounts of funding tied to performance. For an efficient contract, the amount of risk facing the agent depends on a variety of factors related to the attitudes of both principals and agents toward risk, the degree to which the agent controls factors influencing performance, and the reliability of the performance measures. In practice, most health sector performance contracts are mixed – linking some payments to performance measures while other payments are treated as fixed or linked to inputs.

Following our example, the foundation could pay the NGO a fee for each pregnant woman who receives adequate antenatal care and assisted delivery; for each child with complete childhood vaccinations; and for appropriate curative interventions provided to children who present with diarrhea or respiratory infections. The NGO would hire staff and purchase supplies and medications without knowing for certain exactly how many services it would provide and, by extension, how much money it would receive. Rather than forcing the NGO to assume all of the risk and financing services until it gets reimbursed, the foundation might provide an upfront payment or pay a fee that covers 95 percent of the expected costs with rewards for attaining targets that would cover the remaining 5 percent of the expected budget and up to an additional 5 percent bonus if all targets are reached.¹

The NGO will have more control over certain aspects of producing outputs – such as managing staff and facilities. But it will have much less influence over other factors, such as the number of patients who will present themselves for care or how many pregnant women would appear for all required prenatal visits. Under some circumstances, these risks might be trivial or manageable. In fact, assuming risk can be seen as the other side of assuming responsibility. So, rather than offering treatments and simply waiting for patients to arrive, an NGO with related performance goals might realize it could achieve targets better if it mounted outreach efforts to encourage patients to seek appropriate care and complete their treatments. The range of factors over which the agent has control is sometimes itself a choice.

From the principals' perspective, the basic tradeoff in paying for results is that they forego some level of control in production in exchange for creating financial incentives that align the agents' interests more closely with the principals' goals. This is manifested in many health sector programs in which principals (e.g. a funding agencies) forego stipulating a predefined plan and budget and pay for performance in the belief that agents (e.g. health districts, facilities, or doctors) will know best how to

¹ Eichler, Auxila and Pollock (2001) detail exactly this risk-sharing contract as it was originally applied to NGOs providing reproductive health care services in Haiti. A more recent discussion of this experience can be found in Eichler, Auxila et al (2009).

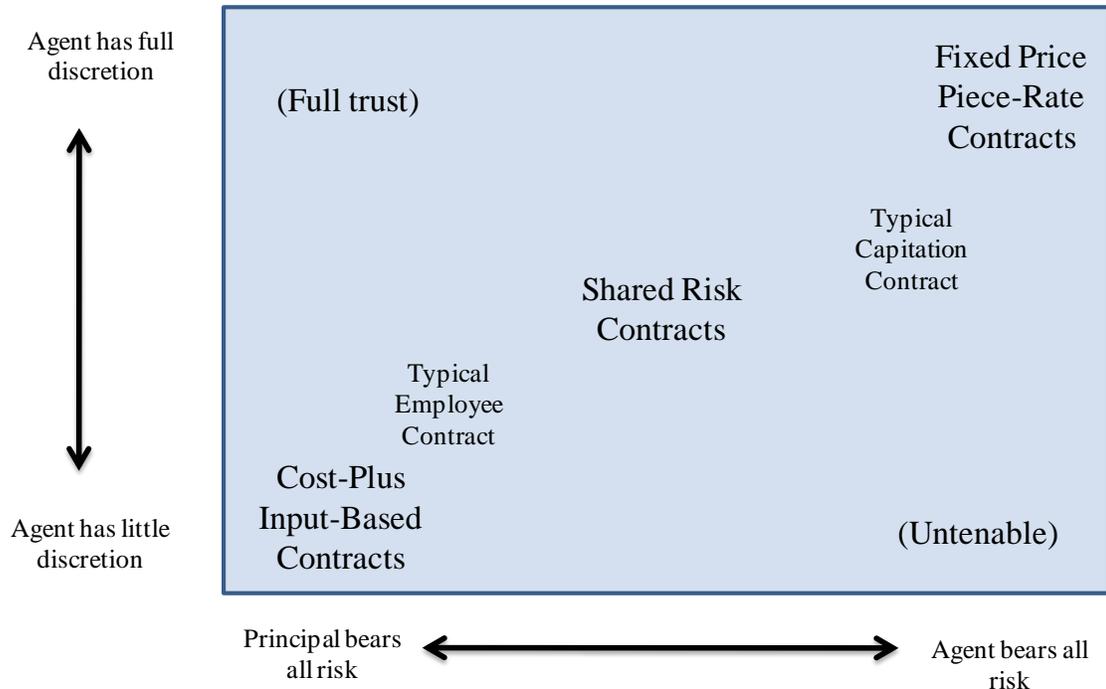
achieve these goals and can do so more effectively if they have flexibility to respond to changing conditions and needs.

From the agents' perspective, the basic tradeoff in accepting results-based payments is that they face some degree of financial risk in exchange for greater autonomy (in managing and directing the production of services) and improved accountability (for results rather than for documenting inputs). Agents may prefer the new arrangements, not only because of the potential financial gains but also because autonomy and improvements in performance have intrinsic value and contribute to job satisfaction.

Three basic contracts span the range of these mechanisms (see Figure 1). With *Cost-plus* contracts (input-based or employment contracts), the principal retains most of the risk for achieving goals and cost over-runs. In *shared risk* contracts (generally referred to as "incentive contracts" in the economic literature), the principal bears some of the risk along with the agent. In *fixed price* contracts (sometimes called piece rates, fixed payments, or prospective fee-for-service), the agent bears most of the risk and has strong incentives to be efficient with resources and expand output.

Figure 1 illustrates this range of contracts as running along two dimensions – one related to the level of risk assumed by the principal and the agent, the other related to the level of discretion delegated to the agent. Cost-plus contracts and employment relationships appear in the lower left corner of the diagram, with the principal bearing most of the risk and the agent being effectively supervised, monitored and "told what to do." Shared cost contracts appear in the middle of the diagram, with the agent assuming greater risk but also obtaining greater autonomy. Fixed price contracts appear in the upper right corner of the diagram, with the agent assuming almost all the risk and enjoying the widest range of freedom in deciding how to implement the task.

Figure 1: Types of principal-agent contracts by discretion and risk



Source: Author.

Note: The classification here is for illustrative purposes only. In practice, most contracts between two parties involve a mix of risk and discretion that will vary across a wide range of tasks and purposes.

Note that the lower right hand corner of the diagram is in many ways untenable but, in this imperfect world, such arrangements happen all the time. Programs which propose to hold agents accountable for achieving tasks but fail to grant them the authority and discretion to manage their staff and resources do not tend to function well. The involvement of the principal in directing and controlling resources makes it co-responsible for outcomes and provides agents with leverage in demanding renegotiation or softening of the risks that they have assumed. This is a common problem in public sector reforms which establish performance standards for health districts, facilities or staff without modifying managerial authority or access to resources.

The upper left hand corner is one in which agents are delegated full authority under contracts in which the principal continues to bear most of the risk. This kind of arrangement can function. Recall that the two key features of the principal-agent problem are divergent objectives and asymmetric information. Working directly on aligning objectives, even without financial incentives, can lead the agent to fulfill the principal's goals. This can be done by careful selection of agents, vocational training, and other measures. While it can be effective, aligning objectives is generally a complement rather than a substitute for risk sharing.

The new RBF approaches being adopted in developing countries and by foreign assistance organizations can be seen as moving upward and to the right on the diagram. In its purest form, RBF uses financing to pay for results – it shifts more risk onto agents (government, district, facility, staff, individual) while providing them with greater discretion in carrying out their tasks. In practice, though, RBF does two additional things that affect the efficiency of the principal-agent relationship. First, RBF approaches elicit new information (e.g. output indicators) and make it more important to have credible information on those indicators. Second, the very process of negotiating RBF programs may actually align objectives by helping principals and agents to clarify their goals relative to available resources.

RBF approaches will be preferable to input-based or cost-plus approaches under a wide range of circumstances. They are likely to be more successful when the principal has poor information about

local conditions, needs and production technologies – a common circumstance in highly decentralized and geographically dispersed health care services. In these cases, encouraging agents to utilize their local knowledge to reach the objectives for which they are being paid may be more effective. They are also likely to be more useful in contexts where agents (whether individuals, health workers, facilities or organizations) currently lack motivation and particularly when existing resources are not being used optimally.

The specific design of an RBF program and the relationships forged in designing and implementing can be quite critical to its success (Eichler and Levine 2009; Loevinsohn 2008; Meessen et al 2006; Soeters et al 2006). Some programs describe themselves as using RBF because they set targets and indicators but actually make payments that reimburse budgeted costs, thereby focusing managers on assuring that expenditures are made according to plans and authorized budgets rather than on achieving results. Appropriate design can avoid such mistakes.

The basic principal-agent model has been used to demonstrate a number of additional things about contracts between funders and implementers (see Levinthal 1988):

1. When the principal is less concerned about risk than the agent, the most effective contract is likely to include a base payment (e.g. a wage or budget support) plus an incentive related to the desired outcomes (e.g. revenues or service quality).
2. If an agent is unconcerned about risk, then principals can achieve their goals more effectively by offering a contract in which the agent bears all the risk for outcomes and costs.
3. The ability of the principal to detect when the agent is not complying with the contract and, if detected, to apply a credible and significant penalty increases the efficiency of the principal-agent contract.
4. When the principal and agent have an ongoing relationship, it reduces uncertainty and reveals more information about the production process and the agent's performance, making it possible to develop more efficient contracts.
5. When the principal and agent negotiate goals, the agent has an incentive to set lower standards that make it easier to achieve targets. Yet, using historical performance to set standards can discourage agents from producing at high efficiency because they know that better performance today will raise expectations in the future. Nevertheless, setting standards unrealistically high can also demotivate agents who may see little chance reaching targets.
6. When multiple agents are implementing similar tasks, the principal can motivate better performance by benchmarking, rewarding for above-average performance, or establishing prizes (e.g. tournaments) for which agents compete.
7. In some circumstances, self-selection can be a problem; for example, principals who offer lower risk contracts may attract less qualified agents.
8. When agents have multiple principals, the effectiveness of the incentives established by any one principal are weakened (Spiller 1990); for example, a district health office receiving funds from the federal and provincial governments, several bilateral agencies and a private foundation may have many competing and mutually inconsistent instructions attached to each resource

The dynamic of the principal-agent relationship also demonstrates pitfalls that can occur with RBF approaches. First, when financial rewards are linked to performance it can motivate overproduction of rewarded tasks. For example, fee-for-service payments can lead to unnecessary provision of care or diagnostic tests. As a corollary, rewarding certain tasks may also lead to reduced provision of tasks that are not directly remunerated. Financial incentives for one particular task may divert attention and resources from other equally important ones.

Whether an incentive becomes a pitfall or a desirable feature of a particular program is related to whether it is appropriate to a specific context. For example, in countries where excessive service provision is a problem (such as the United States), further expanding fee-for-service arrangements creates incentives that exacerbate the situation. But in countries where *under provision* is an issue, the tendency for this payment mechanism to encourage greater output may be extremely useful. Because of the complexity introduced by the incentive design as it interacts with context, many RBF approaches are regularly assessed, modified, and reshaped over time in relation to observed performance (Rusa et al 2009 and Eichler, Auxila et al 2009).

Principal-agent models are necessarily a simplification of reality, but that is exactly what helps clarify the range of mechanisms available to improve the process of delegating tasks. Properly using those insights requires testing them against empirical observations and assessing the sensitivity of the model to some of the ways it abstracts from the complexities of the real world.

One of the most important qualifications when thinking about RBF programs is to remember that people are motivated by more than financial gain. Individuals have internal motivation to do a good job or fulfill a sense of calling. They are often motivated by how other people will judge them based on their performance or success. They are also motivated by non-financial rewards such as awards and peer recognition. In designing RBF programs, it is important not to overlook or undermine other sources of motivation. For example, financial rewards may be experienced as controlling or as devaluing a task that individuals value for its own sake, its intrinsic worth (Frey 2001).

It is also important to recognize that people's judgments are systematically biased in important ways (See Box 3). People tend to misjudge risks, respond differently to potential losses than potential gains, and make decisions today based on faulty judgments of how they will value those decisions in the future. RBF programs can avoid problems and improve their designs when they explicitly incorporate knowledge about these systematic biases into their designs. For example, requiring people to pay a deposit that is only returned upon successful completion of treatment may be more effective at achieving adherence to treatment than offering a prize or bonus – an approach that has been used in tuberculosis treatment programs (Beith et al 2009).

The importance of different forms of motivation and systematic biases in judgments explain why RBF programs are, in general, quite pragmatic. While the principal-agent model is useful for examining the essence of contractual arrangements, the implementation of RBF programs requires that this economic clarity be complemented by a good sense of business negotiation, psychology and marketing. Paying attention to the choices available to agents, their motivations, and appropriate framing of opportunities are all factors that will influence the success of an RBF initiative.

In sum, principal-agent models provide an analytical basis for RBF programs, distinguishing them from approaches that rely on direct hierarchical controls and reimbursing costs. The model illustrates how providing a material incentive to an agent can motivate performance that is better aligned with the principal and demonstrates the important role played by information about productivity and effort. Furthermore, it uncovers the role played by risk-sharing under most forms of delegation, showing how performance incentives only make sense when agents are also given the discretion, authority and responsibility they need to achieve progress.

Box 3: Insights from Behavioral Economics

The predictive power of the principal-agent models relies significantly on the assumption that individuals behave rationally on average. “Rational behavior” in this context means that individuals make choices to maximize their own payoffs or welfare in light of the incentive structures posed by the model. “On average” in this context means that individuals may not optimize every moment and in every way but that, over time, they do not systematically diverge from rational behavior. That is, sometimes they will err in one direction or another but, over time, the errors cancel out.

Another branch of economics – behavioral economics – complements an understanding of RBF by demonstrating ways in which individuals *systematically* diverge from the behaviors that rational utility-maximizing models would predict. Among many findings, three are particularly relevant to RBF approaches – bias in estimating risks, asymmetric treatment of gains and losses, and time inconsistency.

Research has shown that individuals regularly overestimate the probability of events that they have heard about, confusing the availability of an associated story or memory with the likelihood of its occurrence (Kahneman and Tversky 1973). People erroneously believe that homicides are more common than suicides because the former are more widely reported in the media. Individuals tend to overestimate the risk of plane crashes and underestimate the risk of injury in road accidents. They also tend to overestimate the risk of events which are “sensational,” like dying in a terrorist attack, compared to events that may be equally probable but are discussed less, such as being struck by lightning.

This systematic bias in estimating risk has a number of implications for RBF programs because, as noted above, an important aspect of the principal-agent relationship is the relative shares of risk borne by the two parties. For example, health facilities may be unwilling to assume risk related to caring for rare events even when, in simple actuarial terms, it would appear to be to their benefit; people may be unwilling to buy insurance, even when it is highly subsidized, because they underestimate the chances of falling ill; and so on.

Research has also shown that people respond to potential losses differently than they respond to potential gains (Kahneman and Tversky 1984; Kahneman et al 1991). So, for example, individuals tend to be more concerned about avoiding penalties than they are about obtaining bonuses. In the case of RBF programs, this has direct implications for all kinds of arrangements. For example, health care providers are more likely to voluntarily enroll in a program that offers bonuses for good performance than a program which penalizes for inadequate performance. However, in those cases where providers have no alternative, they are likely to be motivated much more by the prospect of small penalties than by promises of large rewards.

Finally, individuals systematically misjudge how they are going to experience things in the future when they are making decisions. Their choices today are affected by their current moods more than by their expected moods; by factors that are currently salient and which may no longer be salient tomorrow; by misremembering past experience; and by failing to forecast how likely they are to adjust to changed circumstances (Kahneman and Thaler 2006). This kind of behavior is well-known in the health sector – manifested by observing how well-informed people nonetheless fail to take their medications or follow medical advice, trained physicians fail to take basic precautions like washing their hands between patients, and managers put off hard decisions today that may lead to even greater negative consequences tomorrow. When RBF programs introduce incentives, they need to pay attention to framing those incentives in ways that counter the effects of such biases.

RBF Applications in Health

The principal-agent relationship manifests itself in the health sector at many different levels between:

- patients and caregivers
- districts or facilities and their health care workers
- governments and their administrative districts or facilities
- national and sub national governments
- foreign aid agencies and health care providers (public or private)

RBF approaches are being implemented in a variety of ways to try to improve all of these relationships. They differ primarily in terms of the type of agent – whether an individual, a particular health care provider, or a large health care organization (see Table 1). They also differ in terms of the nature of the contract: related to how much risk is borne by the agent, the amount of discretion the agent has in achieving the outcome, and the kinds of information generated and used.

Table 1: Selected RBF programs in health by type of agent

Type of agent	Selected RBF approaches	Examples
Individuals, families, and households	Incentives for completing treatments Monthly stipends to families that seek preventive care	Bangladesh & Indonesian tuberculosis programs Conditional cash transfer programs
Health care providers (<i>e.g., health workers, health facilities</i>)	Withholds and bonuses triggered by progress on targets Fee-for-service conditional on quality of care	Haitian NGOs Rwandan health districts
Health care organizations (<i>e.g., national agencies, public health districts, private health care networks, health plans</i>)	Paying for expanded enrolment in health care plans Paying for outputs	Plan Nacer in Argentina GAVI

Note: These programs are identified with one of their prominent RBF features even though they may include other provisions that could also be characterized as RBF or non-RBF approaches.

Individuals, Families and Households

Frequently, preventive measures for addressing health problems are not taken by individuals or households. This includes failures to complete treatment for tuberculosis – which can promote the development of drug-resistant strains – or to get children vaccinated – which can lead to illness or death for the individual but also puts others at risk. Countries have experimented with RBF approaches to address both of these issues.

In the case of tuberculosis, RBF approaches have been tried in different ways. A Czech program that provides homeless people with vouchers to get tested for tuberculosis, raised detection rates by a factor of five. In Bangladesh and Indonesia, programs encouraged patients infected with tuberculosis to complete the full six-month treatment by having them pay a deposit when they start which is returned upon success. In three Russian oblasts, instead of relying on penalties, patients were

rewarded with kits that contained food or hygienic items for continuing with their treatments. While these programs have shown a range of success at increasing detection and completion of treatments, some have also generated perverse incentives. For example, in India, concerns arose that patients were prolonging their treatment by failing to take medicine in order to continue receiving incentives. The program was subsequently changed to set a maximum 6-month term for receiving treatments (Beith et al 2009).

Getting children vaccinated to prevent illness has become a condition for many conditional cash transfer programs. These anti-poverty programs have a wide range of objectives – supplementing the incomes of poor families, improving nutrition, raising educational attainment and the like – among which preventing childhood illnesses is only one. These programs aim to interrupt the inter-generational transmission of poverty by investing in the education and health of poor children. They generally establish eligibility for poor households who then will receive a periodic payment (e.g. monthly) for meeting certain conditions, such as good school attendance or consulting health clinics for preventive care. Conditional cash transfer programs treat households as the agents who decide whether children will attend school or work, visit a health care center or not. They can only work if the supply of services either exists or will respond to the demand generated by the program.

Programs in Mexico, Colombia, Nicaragua and Jamaica that made preventive health care visits a condition for receiving stipends all achieved high rates of compliance – well above 90 percent. In Mexico, preventive health care visits by beneficiary families rose by 20 percent and the likelihood of hospitalizations among participating families dropped by 2.5 percent. Colombia's conditional cash transfer program was able to demonstrate that children were breastfed longer and households consumed higher quality foods than before (Glassman et al 2009).

However, in other cases, conditions were weakly monitored and effects were smaller. Programs in Honduras and Nicaragua sought to increase vaccination rates but paid stipends based on whether or not the household had visited a health center. When immunization coverage subsequently failed to increase by a significant amount, it was unclear whether the failure was related to lack of supplies, poor performance at health facilities, or an inadequate incentive. These latter cases demonstrate the adage that “you get what you pay for” – a stipend for attending a facility is not the same as a stipend for getting vaccinated (Glassman et al 2009).

Health Care Providers

One of the most extensive areas of work using RBF is for improving the performance of health care providers. In fact, health care services probably have the widest range of complex payment arrangements of any social service. While some health care providers are just paid a salary or a fixed fee-for-service, most countries use a mix of payment systems in which salaries, capitations, fee-for-service, bonuses, withholds, and incentives for quality targets all coexist.

In low- and middle-income countries that are experimenting with RBF approaches in health care services, the programs try to be fairly simple, especially when they first start. A U.S. foreign aid program that financed NGOs to provide basic health care services in Haiti decided to try an RBF approach after documenting a wide range of performance – e.g., immunization coverage ranging from 7% to 70% – that was unrelated to costs or context. The program negotiated new contracts with three NGOs that put some of their budget at risk in return for an opportunity to receive more than originally projected. Some 95 percent of the original budget was guaranteed, with another 10 percent to be awarded in proportion to performance measured by a list of indicators. The program's success in improving performance and encouraging innovation led to its extension to more than two dozen other NGOs and now serves more than 2.7 million people.

From 2000 to 2006, a number of modifications were made to reduce the costs of measuring performance, to improve indicators, and to address issues related to quality of care, processes and effective administration. Understandably, targets that were more directly under the control of the NGO, such as vaccination coverage and attended deliveries, showed better performance than those requiring more significant patient involvement, such as pre- and post-natal visits (Eichler et al 2009).

Rwanda has been experimenting with a fee for service bonus system at local health facilities as a way to increase productivity and utilization of health care services. In 2005, the government decided to introduce incentives as a supplement to input-based budgets at primary health care centers. Bonuses were established for 14 maternal and child healthcare output indicators (e.g. children who completed vaccinations on time, women who received appropriate tetanus vaccines during prenatal care) and 10 clinical services and care indicators related to HIV. The bonuses were adjusted in proportion to each facility's progress on structural and process indicators of health care quality. Facilities reported their monthly indicators to steering committees that were responsible for authorizing payment. The reports were verified by auditors who would control the monthly invoices at the health center level. In addition, on a quarterly basis, a different team would visit each health facility and evaluate their health care quality indicators.

Payments went directly to facilities, which had full discretion in their use. Of 80 facilities surveyed in 2006-2008, the payments represented an average 22 percent increase in funds above the regular input-based budget, 77 percent of which was used to increase take-home pay for staff. A comparison of facilities that participated in the program with facilities that only received equivalent lump sum increases in funds found that the incentives had a significant impact on improving performance. The effects were larger for services that had higher incentives and for services that depended more on the provider's behavior and less on patient decisions. The explicit attention to health care quality also appears to have motivated providers to use their knowledge more effectively and, thus, improve the quality of care (Rusa et al 2009; Basinga et al 2010).

Health Care Organizations

Plan Nacer in Argentina demonstrates an RBF approach in which the principal-agent relationship between donor and national government is extended further from the national government to the sub national level. Plan Nacer aims to increase coverage of basic health care services throughout Argentina and provides the inducement of a \$10 per person per month fee (a capitation). The World Bank provided a loan that pays \$5 per person per month in eligible provinces. A first payment of 60 percent is made on the basis of the number of people enrolled, with the remaining 40 percent paid out in relation to meeting such targets as the number of women with a first antenatal visit before week 20, share of children who are vaccinated for measles, and the number of children born with healthy weight. The provinces write contracts with individual health providers, for the purchase of 72 services in all. Provinces determine their own fee schedules and administrative arrangements. The World Bank accompanied this program with traditional project aid to improve the capacity of provincial health systems. Progress on tracer indicators has been good and infant mortality appears to have declined (Eichler and Glassman 2008).

The Global Alliance for Vaccine Initiative (GAVI) is another RBF approach in health that involves donors and recipient countries. GAVI was created in 1999 as a response to evidence of declining immunization coverage. It pooled international funds and created a system of medium term agreements (5 to 7 years) to support developing countries' immunization programs. Payments during the first three years were based on the projected number of children to be vaccinated while the information reporting systems were subjected to a Data Quality Audit (DQA). Any country that passed the DQA became eligible for a payment of \$20 per additional immunized child over subsequent years of the program. Evidence on the effectiveness of this program is mixed. Coverage seems to have improved in most participating countries, particularly those that started with the lowest coverage rates; however, some countries may have also over reported coverage rates in response to the incentive (Lu et al 2006; Chee et al 2007). GAVI has reviewed its experience with this incentive and is currently modifying its approach.

RBF: Promise and Limitations

RBF is not new to aid programs in the health sector, where many experiences with paying for results are used. However, the range of RBF approaches today is much larger and diverse than ever before. Some RBF programs penalize patients who fail to complete treatments; while others provide stipends for seeking preventive care. Some RBF programs introduce small incentives on top of existing budgets that are hierarchically administered, while others contract service providers whose incomes depend on how many services they provide. Some RBF programs transfer funds on the basis of patient enrollment and face the risk of cost overruns, while others transfer funds to governments for each additional immunized child.

The success of many RBF approaches derives not just from the incentive provided by a potential financial reward (or avoiding a penalty). It also derives from the process of negotiating a program in which the decision to pay for results focuses attention on what results are really desired, how they are going to be measured, and how they are produced. Thus, successful RBF programs really change several things at the same time. They introduce a material incentive but also generally help to:

- align objectives between principals and agents
- require collecting reliable information on results
- give agents a stake in the outcome of their efforts
- give agents greater discretion and authority to carry out their tasks.

RBF approaches are not the only or best way to address problems in health care. Financial incentives can divert attention from non-measured by otherwise important tasks. They can also undermine alternative approaches that rely on intrinsic motivation. Nevertheless, more is being learned every day about the contexts in which RBF approaches are applicable and how to design effective RBF programs. There are enough positive experiences with RBF in different contexts to justify continuing to explore, assess and improve their use.

For an overview of the evidence on RBF, see:

Oxman Andrew D. and Atle Fretheim. 2008. "An overview of research on the effects of results-based financing." Report Nr 16-2008. Oslo: Nasjonalt kunnskapssenter for helsetjenesten.
<http://www.kunnskapssenteret.no/Publikasjoner/3219.cms?threepage=1>

For performance-based incentives in health, with lessons from case studies, see:

Eichler, Rena, Ruth Levine and the Performance-Based Incentives Working Group. 2009.
[*Performance Incentives for Global Health: Potential and Pitfalls*](#). Washington, DC: Center for Global Development.

For a practical guide to performance-based contracting, see:

Loevinsohn, Benjamin. 2008. [*Performance-Based Contracting for Health Services in Developing Countries: A Toolkit*](#). Washington, DC: World Bank.

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