



Lessons from principal-agent theory for public expenditure management in Pacific island countries

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The paper discusses how the principal-agent theory of economics may provide a suitable analytical framework and interesting lessons for the targeting of public expenditure management reforms in Pacific island economies.

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The public sector in Pacific island countries is usually of critical importance, with public expenditure accounting for a large part of each country's GDP. Therefore, the quality of public expenditure management (PEM) systems is an important determinant of their economic prosperity. However, despite considerable efforts to reform public financial management systems in the Pacific island countries in the past decade, they remain plagued with many problems in dealing with the three objectives traditionally attributed to the budget, that is, aggregate fiscal discipline, allocative efficiency and technical efficiency (World Bank 1998a; Diamond 2003).

The reforms attempted since the 1990s have relied heavily on external technical assistance, and have often tried to import cutting-edge PEM techniques that had been developed in Australia and New Zealand. However, these reform attempts have often proved disappointing, perhaps predominantly because they were not suited to local capacities and institutions. Budgetary 'best practices', such as the delegation of decision making power and performance orientation, are conceptually aimed at improving public outcomes. But, like all models, they should be implemented with care, taking account of domestic constraints. A good analysis of the local



setting is therefore necessary in order to identify what PEM reforms are potentially fruitful. The prioritisation of reforms is even more important, considering the lack of financial and human resources in the Pacific island countries.

This article discusses how the principal-agent theory of economics may provide a suitable analytical framework and interesting lessons for the targeting of PEM reforms in small economies like the Pacific island countries. It deliberately does not focus on the technical details, but tries to give an intuitive idea of the main results from the theory and their application to PEM realities. The article is structured around key questions. It first presents the principal-agent theory and then explains why it can be usefully applied to PEM concerns. Some characteristics of Pacific island countries are presented, which should be included into the analysis in order to reflect reality—possibly departing from the models found in the literature. A series of insights from the theory are then presented, which may support the prioritisation and sequencing of PEM reforms.

What is principal-agent theory?

Principal-agent theory emerged in the 1970s in opposition to neo-classical economics, which essentially ignores incentive problems and postulates that all economic agents are perfectly informed.¹ The principal-agent theory tackles 'agency' problems emanating from diverging interests and information asymmetry between one (or several) agent(s), who perform(s) tasks on behalf of another self-interested party (the principal). Agents may be of different 'types', according to their characteristics, or because they are confronted with different situations. The relationship between agents and principals is traditionally spelt out in a menu of

contracts specifying the transfer to be granted to each type of agent, according to the output produced. Two major types of information problems may arise: (pre-contractual) hidden information (for example about the agent's productivity or a firm's cost function), which gives rise to so-called adverse selection problems; and (often post-contractual) hidden actions (for example the agent's effort, or consumption of perquisites), which give rise to moral hazard. In most models, the agent possesses the informational advantage; but some models deal with privately informed principals. The fundamental agency problem thus stems from the privately informed party taking an unfair advantage of its superior information in order to extract so-called 'informational rents'. The principal-agent theory searches for 'second-best' contracts; that is, contracts that minimise agency costs (whereas the 'first-best' allocation of resources can only be reached under perfect information). The theory has been applied in several fields, such as insurance, delegation of decision-making by shareholders to managers, labour and agrarian contracts, and the regulation of monopolies.

Agency problems may be mitigated in two ways: either on an *ex ante* basis, by providing the agent with the right incentives and induce him to behave in the principal's interests—which generally takes the form of informational rents (which, in some cases, may refer to performance premiums); or, on an *ex post* basis, through supervision and an appropriate system of sanctions. It is often optimal for the principal to rely on both types of incentives.

The principal-agent literature considers that the principal designs a menu of contracts and makes a take-it-or-leave-it offer to the agent(s), anticipating that he (they) will react according to his (their) own best interest. The principal's problem is typically subject to two sets of constraints. First, the 'individual rationality' (or participation) constraints



ensure that agents receive at least their 'reservation utility' (a minimum level of utility), so that they are at least indifferent to accepting the contract. Second, the 'incentive compatibility' constraints ensure that it is in the agents' interest to act truthfully and not to take unfair advantage of their private information: because they are paid more and/or because they face a penalty when cheating. When the principal is able to credibly commit to the terms of the contract, a solution to finding the optimal contract is through the use of the 'revelation principle' (Myerson 1979; Dasgupta, Hammond and Maskin 1979). The commitment assumption is necessary, because this solution technique allows finding contracts that are *ex ante* optimal, but are generally inefficient *ex post* because they cause allocative inefficiencies. When the principal is unable to commit not to renegotiating the contract *ex post*, a 'renegotiation-proofness' constraint must be added to the problem (see, for example, Bolton 1990). The traditional results from basic adverse selection models with commitment are the following. The first-best (full information) contract, grants agents their reservation utility and they produce the efficient output level (equating the marginal cost of effort with the marginal value of its product). Under asymmetric information, the second-best solution entails granting an informational rent to 'efficient' agents and requiring 'inefficient' agents to under-produce—hence the well known rent extraction-efficiency trade-off.

The informational rent means that incentive schemes rely on providing efficient agents with superior transfers (above the compensation of their effort) in order to induce them into behaving truthfully (or not cheating). However, incentive compatibility constraints may be very costly to fulfil. Therefore, other instruments may be used to relax these constraints, such as supervision and sanctions. The issue of supervision has

been studied within the framework of three-tier hierarchy principal-agent models; that is, relationships between one principal, one agent and one supervisor (see, for example, Baron and Myerson 1982; Baron and Besanko 1984; Kofman and Lawarrée 1993; and Khalil 1997). Such models rely on the usual principles of the principal-agent theory. If the principal cannot credibly commit to an audit policy, audit must be *ex post* optimal, which means that some penalties must be collected to justify the cost of audit, so that cheating and conviction emerge at equilibrium. However, with commitment, audit deters cheating and relaxes the incentive compatibility constraint *ex ante*, and will not be optimal *ex post*. The decision to audit depends on the trade-off between its costs and benefits; audit may be used in conjunction with other incentives (rents and distortions).

An important issue studied in recent models involving supervision is the possibility of collusion between the agent and the supervisor. Technically, collusion may be solved by adding a 'collusion-proofness constraint' into the principal's problem in order to dissuade the supervisor and the agent from colluding (Tirole 1986). But the potential for collusion may cause the principal to modify the contract (notably, through granting the supervisor a rent), thus further distorting economic activity.

Finally, it should be mentioned that two types of principal-agent models are encountered in the literature: static (one-period) models and dynamic ('repeated game') models. The latter often better reflect reality by allowing emphasis on the further costs and benefits due to the repetition of a contract (for instance, even if the contract is not optimal in the first period, it may be in the interest of the actors to respect it, because future gains are secured in subsequent periods; cheating may thus be more easily avoided in a repeated game). Repetition also



allows the guarantee of, for instance, a certain commitment to the terms of the contract, because the relationship is valuable in the long term. However, static models are often sufficient for explaining the features of a principal-agent relationship.²

Why is the principal-agent theory applicable to public expenditure management?

As it is mostly based on hierarchical relationships with delegation of tasks, and as information is asymmetric between the different parties, the public sector has many principal-agent relationships. One can think, for instance, of the relations between the parliament and the government, between the Ministry of Finance and line ministries, between central and decentralised authorities, and the relationships within these agencies.³ As an example, spending agencies may be seen as agents of a superior authority (representing the public interest), as they are required to produce a certain amount of output (public goods and services) in exchange for their budgetary allocation. This principal-agent relationship entails both hidden actions (for example on the agency's 'effort', or possible corruption and misspending) and hidden information (for example on the 'productivity' facilitating or hampering the provision of public goods and services). Due to their better knowledge of their sector and actions, spending agencies have obviously the informational advantage over the superior authority, which will therefore want to control and provide adequate incentives to its agents. The principal-agent approach may thus be very helpful in studying this kind of problem, because it provides a set of tools to align agents' interests with their principal's.

Leruth and Paul (2006) provide a formal attempt to apply the principal-agent theory

to PEM issues. Their paper applies a standard model with audit to the relationship between a Ministry of Finance acting as the principal, and a representative line ministry, acting as the agent. The pair 'expenditure program-budget appropriation' is thus viewed as the two components of a contract between the Ministry of Finance and the line ministry. This simple model can be applied to various PEM systems (for example relying on strong internal controls, or more decentralised systems), and allows for comparisons between institutional settings. For instance, they analyse the benefits derived from the use by the Ministry of Finance of two control instruments: *ex post* audits and *ex ante* controls. Their value is assessed in terms of their ability to deter cheating by the line ministry at a reasonable cost. But often, additional incentives, such as informational rents, are necessary to deter cheating. A set of possible 'control regimes' that can be used by the Ministry of Finance are derived. The choice of regime is determined by the agency costs incurred by the Ministry of Finance—these depend on a number of country-specific parameters.

This principal-agent model of PEM systems allows interpreting of corruption and misspending as informational rents captured by line ministries at the expense of the principal.⁴ As an example, one can imagine a situation where the Ministry of Finance can observe the output produced by the line ministry, but cannot disentangle the factors that contribute to production—say, the line ministry's 'effort' (in terms of programming and carrying out its activities), its possible misspending or corruption, and exogenous productivity factors—unless it exerts some controls (for example, financial and operating audits). Thus, a low output could be explained by the line ministry's negative actions (low effort, misspending or corruption) and/or by unfavourable exogenous factors (for example, bad weather



conditions, epidemics, or social unrest). An agency problem occurs when exogenous conditions are good, but as the line ministry is the only one to know it precisely, it takes an unfair advantage of its superior information and 'cheats' (that is, slap-dash work, spending in unproductive areas or diverting monies), so that the final output is low.⁵

The Ministry of Finance can use various instruments to control line ministries and prevent such cheating. It can use supervision (audits to verify the line ministry's actions *ex post*, or *ex ante* controls—internal or external—and monitoring to prevent it from cheating before it chooses its actions) and also incentive premiums. Indeed, the informational rents referred to in the principal-agent literature may be viewed, in PEM practice, as kinds of performance premiums (that is, rewards given in addition to the compensation of inputs and effort, to give an incentive to the agent for exerting a higher effort). This interpretation also allows one to link the principal-agent theory with program and performance budgeting.

Finally, the choice of the appropriate mix between the different types of control and incentive tools should be based on efficiency grounds; that is, by maximising the effectiveness/cost ratios of these tools. This approach is implicitly followed by principal-agent models through the maximisation of the principal's problem.

Characteristics of Pacific island countries

Theoretical studies, belonging in particular to the principal-agent theory, but also to other disciplines (for instance, political, social, and administrative sciences), may be helpful in the design of PEM institutions in the Pacific island countries. However, the bulk of theories and empirical studies on govern-

mental institutions have been developed in the context of advanced Western countries. A crucial lesson from experience, now allegedly recognised in the discourse of the international community, is that the blind application of theoretical, 'one-size-fits-all' solutions is to be proscribed, and that policies imposed from the outside—and not 'owned' by national constituencies—have little chance of succeeding (see, for example, World Bank 1998b). On the contrary, policies and institutions should be adapted in order to suit local settings and peculiarities—perhaps especially in countries where 'indigenous' norms (Dia 1996) or informal constraints (North 1990) largely diverge from official norms inherited or imposed from outside. Forgetting the country-specific characteristics may lead to damaging consequences. For example, the attempt made by the Cook Islands to implement accrual accounting and program budgeting quickly showed the limits of the absorptive capacity at the Ministry of Finance. With all the staff available (and that is very few) busy trying to implement the new budgeting rules, bookkeeping virtually disappeared and accounts were no longer produced (Leruth 2004).

The principle of modelling is to simplify reality and to use restrictive assumptions. However, Pacific island countries—and more generally developing countries—are subject to particular constraints, which are important to take into account in designing realistic models, and therefore should be added to traditional models encountered in the 'western' literature. Some important constraints and characteristics of Pacific island countries are presented below.

First, a series of special features arise from the very small size of these economies, such as high sensitivity to external shocks (lack of resilience), weak absorptive capacity, the crucial importance of the public sector in the economy, the lack of resources and



capacity, and very tight cash constraints. In terms of PEM, the small size of the government may make it easier to have a comprehensive overview of public expenditure, but it also comes with tight capacity and budget constraints. Therefore, it is often argued that small economies do not have sufficient resources to implement and sustain substantial reforms requiring a lot of highly skilled human resources. Moreover, the shortage of skilled human resources in the public sector increases the opportunity cost of these resources.

Second, the poor state of statistics, the more general lack of reliable information, and the general lack of transparency worsen agency problems by increasing information asymmetries between the various stakeholders, and complicate the control of governmental agents. Moreover, most Pacific island countries are archipelagos composed of remote islands, for which information is very difficult to obtain on a real-time basis.

Third, the ineffectiveness of the legal and judicial systems (combined with societal characteristics) may undermine enforcement mechanisms. In particular, it may be very difficult to enforce civil servants' financial responsibilities. If contracts cannot be easily enforced through a judicial procedure, the value of *ex post* accountability mechanisms is reduced, which calls for other types of controls (say, *ex ante* controls) and/or self-enforcing contracts.

This last point relates to a very interesting feature of Pacific island countries, and more generally of close-knit societies. In addition to formal or official institutions, which have often been inherited from colonial history or external partners, Pacific island countries are also characterised by informal, 'indigenous' norms and institutions. This informality covers all segments of the economy and public sector, from civil servant hiring to budgeting (with an official budget, plus an informal one that defines bills to be effectively

paid) and control (Schick 1998). Informality is associated with high costs to the economy, but in some instances helps contribute to the public order. Therefore, in addition to formal accountability systems, close-knit societies like the Pacific island countries are characterised by informal, indigenous accountability systems, whereby people have to comply with various obligations to one another. In that vein, Dabla-Norris and Paul (2006) introduce a 'minimum requirement constraint' into their analysis, on the assumption that the relationship between civil servants and the population is informally ruled through a social consensus, such that the population implicitly accepts a certain degree of rent capture from public agents, in exchange for them providing at least a certain level of public goods. This assumption is justified by empirical evidence and seems to reflect the situation in many developing countries. It therefore must be taken into account in analysis of the public functioning in Pacific island countries.

Finally, other features and constraints further characterise Pacific island countries, such as high dependence on aid flows,⁶ and therefore attached conditionality and externally imposed constraints; and the high discount rate of economic agents, because of high risk and cultural factors (preference for the present).

Because of all these factors, public management solutions designed in western settings might not prove adequate in Pacific island countries. In particular, the scarcity of resources and capacity calls for cost-effectiveness considerations. Moreover, as PEM systems in Pacific island countries are heterogeneous—they vary from highly centralised (for example, Fiji) to highly decentralised (for example, Micronesia)—careful analysis should be undertaken in order to elicit the most suitable reforms. These constraints are important to keep in mind throughout the rest of the article.



What insights can agency theory bring to PEM in the Pacific?

The list of PEM reforms needed in Pacific island countries, based on a comparison with international standards and best practice, is probably very long (see, for example, Diamond 2003). However, serious constraints rule out the possibility of implementing all recommendable reforms and forgetting these constraints may have damaging consequences. The principal-agent theory provides a useful analytic framework within which to identify the factors that are most likely to provide appropriate incentives for agents, while some needed reforms should be deferred until further institutional changes are realised. We extract some lessons from the principal-agent theory to help define the most efficient PEM systems according to local conditions and constraints, and thus sequence reforms.

This article is limited to PEM systems, in particular to the control of implementing agents and agencies (say, line ministries) by a superior entity, which represents the collective interest. Very few papers have directly targeted this issue. However, some results from standard principal-agent models, in particular those with audit, can support our reflections, provided that they are adapted to Pacific island country constraints. The rest of the section is organised following a few key themes.⁷

The value of *ex post* audits⁸

The value of audit lies in its ability to deter cheating (and/or corruption in PEM contexts) through the threat of being caught *ex post* and incurring a penalty. From the principal's perspective, it is optimal to use audit only if its benefits (in preventing cheating, and possibly in terms of collected penalties if the latter are monetary) at least equal its (opportunity) costs.⁹ A general result from the literature is that, when he can

commit to audit, the principal can use the auditor even if it is not *ex post* optimal, because it enables him to prevent cheating *ex ante*. Indeed, a characteristic of optimal audit contracts—when the principal can commit to a certain audit probability—is that audit deters cheating, so that the principal knows that the agent has chosen to behave loyally and, therefore, *ex post* audit is a pure cost (not associated with a direct benefit). However, when the principal cannot commit to an audit strategy, the decision to audit *ex post* is taken only if the principal expects to collect some penalty, to compensate for the cost of audit.¹⁰ Various measures may be used to make the audit commitment credible. The most relevant for our purpose are legal commitments (for instance, if the Organic Law requires the Ministry of Finance to perform specific audits) and repeated relationship considerations (the principal could be tempted not to audit at the end of one period, but this would harm him in future periods by reducing the credibility of the audit threat).

From the agent's perspective, if the size of the expected penalty—that is, the discounted penalty times the probability of it being imposed—is high enough, the threat is sufficient to prevent him from cheating. A traditional result from the literature is that, when the penalty is high enough, audit is optimal and sufficient to deter cheating. In developed countries, expected penalties can indeed act as a serious deterrent. For example, in France, the system of *mise en débet* means that agents of the Ministry of Finance are financially and personally responsible for the wrongdoing they are supposed to prevent. As their salary is comparatively high and the judicial system is performing well, the threat is taken seriously. On the contrary, the same seriousness may not apply in Pacific island countries, where salaries in the civil service are often very low to start with, and where various factors limit the possibility of



enforcing public agents' financial responsibility. The legal and judicial systems may be performing poorly; the size of penalties is usually low (all the more so if discounted at a high rate); there may be a shortage of skilled auditors; the opportunity cost of audit may be comparatively higher; and various cultural factors may prevent the prosecution of public agents (who are often relatives of those whose duty it is to enforce the sanctions). For these reasons, the probability of civil servants being caught cheating and prosecuted may be very low in Pacific island countries, so that expected penalties are negligible—and, as a result, the value of *ex post* audits as a deterrent threat is very limited.¹¹ As long as this is the case, other tools should be used to control public agencies and induce them into behaving in the public interest.

Finally, note that a general result from the literature is that, when the quality of audit (in terms of identifying cheating—and not accusing compelling agents) is too small, auditors are not used, and other incentive tools must be relied upon. On the contrary, when audit is efficient and the penalty is high, random audits may be optimal (which means that the threat is sufficient, so that the principal may economise on the cost of audit).

In sum, it appears that penalties for misbehaving public agents are often very low in Pacific island countries, or rarely enforced. Therefore, the value of *ex post* audits is considerably reduced and other incentive and control tools should be used.

Collusion between the auditor and the agent¹²

An important issue dealt with in the recent literature on audit is the possibility of collusion between the auditor and the agent. That is, where the auditor detects cheating, the agent could use a bribe incentive so the auditor would not transmit that information

to the principal, and the two would share the amount of the avoided penalty. In terms of PEM systems, collusion may occur between a series of agents and their respective supervisors. It is important to understand that the effects of collusion can extend beyond cases when it is detected and prosecuted, because the potential for collusion may cause the principal to modify the agent's contract and, in turn, distort economic activity (Baiman et al. 1991). In particular, the traditional result that audit is always optimal when the penalty is high enough is no longer valid when collusion may occur. There is also more cheating when collusion needs to be deterred.

The principal can prevent collusion in several ways: granting the auditor a reward when cheating is detected and reported (the 'carrot' strategy); threatening the auditor with a credible punishment—for instance, if another auditor is sent, or if external signals may reveal collusion and act as a collusion-detering threat (the 'stick' strategy); reduce the stake of collusion (the penalty) and thus the potential bribe; and increase the transaction costs of side-contracting (Kofman and Lawarrée 1993; Laffont and Rochet 1997).

A critical result from the literature is that, even if corrupt, an auditor may still be useful to the principal if transformed into a 'bounty hunter' (that is, the auditor would be granted the total amount of the agent's penalty, which is also the maximum bribe level), because this would increase the cost of cheating for the agent. According to the situation, it may be optimal for the principal to deter collusion, notably when the agent's punishment (and thus potential bribe and reward) is small. On the other hand, it may be preferable to allow some collusion (and save on associated incentives), notably when the agent's punishment is higher (Kofman and Lawarrée 1996). However, this 'carrot' solution to deter collusion may not be adaptable to PEM settings.



In PEM settings, deterring collusion between, for instance, an internal supervisor and an agent, could be better achieved through sending in supposedly more honest external auditors. Kofman and Lawarrée (1993) provide such a model, where the external auditor costs more than the internal one, but never colludes. They show that the strategy of sending the external auditor after the internal one, dominates that of sending the external auditor alone. Their results suggest that the external auditor's role is explained by collusion-deterrence. This result appears valid, all the more so when considering that external auditors might have less information than internal ones. The optimal auditing policy would thus result from a trade-off between the low-cost, accurate information of the internal auditor, and the high-cost external auditor with poorer information, but free from collusion.¹³ Note that, within individual Pacific island countries, it may be questioned whether it is possible to find a truly external auditor. A solution could be found in 'pooling' external auditors for the whole Pacific region, and sending auditors to countries they do not originate from.

The threat of collusion may have even worse effects when the principal cannot commit to auditing. In that case, an increase in the penalty for the agent (which may be seen as a penalty on cheating) is more effective than an increase in the penalty of the auditor (which may be seen as a penalty on collusion). But if there is no collusion cost in such a situation, auditing may not be effective (Khalil and Lawarrée 2003).

It has been argued that in many Pacific island countries penalties for misbehaving are very low or rarely enforced. This could be good news, if it means that the stake of collusion between agents and auditors is low, so that collusion will not be a major concern. However, a particularity of PEM systems deals with our interpretation of cheating as

possibly encompassing some corruption—and not solely in reducing effort as in most traditional principal-agent models. Therefore, one could argue that the collusion stake (and thus the bribe) can be extended beyond the agent's penalty to include part of the rent captured through corruption. For instance, if the auditor discovers that a public agent has diverted funds for his private benefit, the auditor could blackmail the agent and agree not to report, provided she receives some part of the diverted funds. In a 'repeated game' framework, by regularly bribing the auditor, the agent would be able to keep his position. Collusion would therefore still be an important issue in Pacific island countries, and principal-agent models should thus be adapted to take account of that possibility.

The choice of the variable to be audited

Principal-agent models have been used to compare the value of auditing different kinds of variables, in particular the choice between input and output monitoring. For instance, Khalil and Lawarrée (1995) show that the principal prefers input monitoring when he is the residual claimant for the output. Where there is both moral hazard and adverse selection, Kessler (2000) suggests that it is strictly better for the principal to audit the agent's actions rather than the agent's report on his private information. However, the results from these models are very dependent upon their assumptions—which reduces their practical applicability—or, at least, calls for caution in using them in a PEM context. In particular, models rarely take account of the fact that, in reality, information is costly (in addition to being imperfect). Therefore, they are not suitable for comparing, say, line item versus performance budgeting, which are associated with very different information bases.

Nevertheless, an important result, which is relevant for PEM, is the following. Kofman



and Lawarrée (1996) show that when there are several performance measures to screen the agents and provide incentives, the principal could gain by choosing *ex post* which variables will be monitored. Indeed, if it is costly for the agent to mimic signals that do not reflect the actual situation (be it on its inputs or outputs), increasing the number of signals raises the agent's cost of misrepresenting reality. Therefore, when signals are costly, the principal can save on auditing cost by only observing a subset of signals, while deriving benefit from all of them. In the basic model, it is optimal to monitor both input and output randomly, but input monitoring is used more frequently (because the agent can capture more rent under output monitoring). If the available instruments are associated with different costs or efficiency, one has to take it into account; but the main message from the model remains, that is, the principal benefits from an increase in the dimension of the signalling space.

The value of *ex ante* controls

Principal-agent models have also been used to compare the value of different supervision timings, that is, comparing monitoring (supervision at the moment when the agent performs actions) versus auditing (supervision after actions have been performed). Strausz (2006) argues that if both supervision techniques are equally efficient, auditing is (weakly) superior when the principal can commit to a verification strategy—as auditing can extract additional information. However, when the principal's verification behaviour is non-contractible, monitoring may be optimal. This model is interesting to guide intuition, but once again, it should not be used literally because of its assumption that both supervisions rely on the same technology and are thus equally efficient, which is probably not the case in reality.

In terms of PEM, the principal (for instance, the Ministry of Finance) can rely on a series of monitoring tools or *ex ante* controls, such as delegating agents in line ministries to check financial operations before they take place, or automatic safeguards like computerised systems checking appropriations before allowing expenditure. We have already argued that in many Pacific island countries *ex post* audits are probably not very efficient as a deterrent—hence, *ex ante* controls may be more effective, at least as long as judicial systems are performing poorly. For instance, placing financial comptrollers within spending agencies could prevent the latter from being corrupt. Leruth and Paul (2006) interpret *ex ante* controls as increasing the cost of cheating (or the transaction costs of corruption) for the agent, and assess the value of these controls by comparing their cost to their ability of deterring cheating.

Several arguments play in favour of relying on *ex ante* controls in situations such as those faced in Pacific island countries. First, *ex ante* controls may be more effective in preventing cheating, as they act directly and do not rely on external enforcement mechanisms. Second, financial comptrollers placed within spending agencies probably have access to most 'internal' information, which is not the case for external auditors. However, in reality, they are also strategic actors, so that the issue of collusion may also arise, and should be prevented—be it through 'sticks', 'carrots', or the limitation of their discretionary power. Moreover, *ex ante* controls may be quite costly as they may involve not only a direct cost, but also indirect economic costs, if they slow down the expenditure process. At the bottom line, as Leruth and Paul (2006) explain it, the principal should not increase controls above the point where their total costs equal their benefits, in terms of reducing cheating. When used together with *ex post* audits, the optimal



combination of controls should seek to equalise their relative efficiency.

Other incentive tools

When audits are not efficient, the principal-agent theory predicts that the optimal contract is the second-best one, which grants an informational rent to 'efficient' agents to induce them into producing more (in turn, this reduces the required production of 'inefficient' agents, compared to optimal effort levels, in order to decrease the rent). As already mentioned, in PEM, informational rents may be understood as performance premiums, granted in addition to the compensation for the agent's effort. Models with audits (for example, Kofman and Lawarrée 1993) show that in many situations (depending on exogenous parameters) the optimal contract encompasses a combination of audit and informational rents.

In terms of PEM, informational rents can be envisaged in a performance budgeting system, where spending agencies are offered contracts which specify that a certain level of output must be reached with a global appropriation, and can choose the appropriate mix of inputs (as is the case in New Zealand, for instance). In such a situation, the Ministry of Finance could grant line ministries quite large transfers to induce them to produce a high level of output. By comparison, an input-based budgeting system typically allows for compensation of inputs—among which is the agent's effort—but not to grant additional rents.

As informational rents often constitute part of the optimal contract, this could apparently plead in favour of installing performance budgeting systems. But this would miss two critical points. First, the cost and capacity requirements for setting up and sustaining a performance budgeting system may be very high: all the more so in resource-constrained environments such as Pacific island countries. Second, most principal-

agent models are based on the strong assumption that the output is perfectly observable, at no cost, by the principal. This of course does not reflect the reality at all. On the contrary, public agencies' 'outputs' are typically difficult to measure, and potential (imperfect) measures are probably manipulable by the agent. It is only when these problems can be solved at a reasonable cost that performance budgeting may be useful.

As a consequence, basing the choice of a PEM system on the blind application of traditional principal-agent models, without taking account of the existing context, is to be vehemently proscribed. The principal-agent theory is useful in guiding intuition, but should be complemented by an accurate identification of existing constraints and practical problems that may occur during implementation.

Finally, the principal-agent theory may also be used to assess the value of other possible PEM reforms aimed at reducing agency costs (in particular, through reducing the agents' informational advantage) in indirect ways. For instance, such reforms could be targeted at improving the audit technology (that is, the quality of control), at generally improving information systems (because information can potentially provide 'external signals' and act as a deterrent threat to corruption), or increasing the economic resilience (indeed, the agent's informational advantage partially stems from uncertainty over external productivity factors). The decision on which reform to be implemented should be based upon a cost-benefit analysis, that is, comparing the cost of the planned reform with its benefits in terms of improving the public outcome.

Limits of principal-agent theory

Principal-agent theory may provide interesting insights to guide the design of PEM systems, but it has inherent limits. We have already insisted on the importance of



taking account of realistic constraints when interpreting the results of the models (notably, the lack of effectiveness of the judicial system) and when considering implementation (notably, hard budget constraints, lack of capacities or the possibility of the agent manipulating output measures). But in some instances, additional constraints (compared to those found in traditional models) may be so binding that it is not possible to provide agents with appropriate incentives so that they will behave in the principal's interests. For instance, it may be the case that the judicial system performs so poorly that *ex post* audits are inefficient, that *ex ante* controls have reached their limits (that is, they are unable to prevent cheating at a reasonable cost), and that it is impossible to grant agents informational rents (for instance, in an input-based budgeting system, or if tight cash constraints prevent it). In such a situation, the principal has no effective tool to meet the agent's incentive compatibility constraint. One could even imagine a situation where the agent's participation constraint is not met through its official compensation (for instance, if public wages are very low, or if a spending agency's appropriation is not sufficient to cover its costs). In such a case, the agent's participation could only be ensured through an implicit contract tolerating a certain degree of rent capture.

If traditional incentives fail, as in the example above, the principal-agent theory is of no help. However, Dabla-Norris and Paul (2006) argue that under such circumstances, acting on factors usually considered as exogenous—in particular transparency and relevant information diffusion, together with the means to use it—may help relax some constraints and, as a result, contribute to improved public outcomes. This argument is based on the idea that besides official accountability systems (say, *vis-à-vis* the Parliament, the Ministry of Finance, or other

official bodies), public agents are subject to informal, 'indigenous' accountability mechanisms, *vis-à-vis* the general population. That is, the population will tolerate a certain degree of rent capture on the part of public officials (because of redistribution concerns), but on the condition that at least a certain level of public outcome is produced. If that assumption reflects reality, increased transparency in public affairs could raise the population's requirements in terms of public services, thus relying on informal accountability systems to improve public outcomes.

Conclusion

It has been argued that principal-agent theory may be useful in designing efficient and adaptable PEM systems. This article has mostly tried to adapt traditional supervision models to PEM concerns (in particular, the control of spending agencies through *ex post* audits and/or *ex ante* controls and/or performance premiums), taking account of Pacific island country specificities. This situation calls for taking account of additional constraints compared to those encountered in the theoretical literature, such as the lack of effectiveness of official enforcement mechanisms and tight budget constraints. As Pacific island countries are confronted by a shortage of human and financial resources, it is particularly important to conceive efficient systems and to undertake reforms only if their expected benefits (in terms of increased effectiveness) at least equal their total costs (including 'hidden' costs due to the high opportunity cost of scarce skilled human resources). Revamping PEM systems in Pacific island countries is of course not achievable in a single step, because it would involve diverting all staff from their day-to-day necessary tasks (and it could not be delegated to external consultants, because of



the lack of ownership and sustainability as well as budget constraints). Therefore, PEM reforms ought to start from the functional (though non-optimal) systems and consist of incremental measures, doable at the margin. They should be based on existing capacities and aimed at improving most badly needed shortfalls in a sequenced way.

The models presented above should be used with caution, especially at the implementation stage. For instance, the principal-agent theory generally assumes that output is publicly observable at no cost—which is totally unrealistic in the public sector. It would thus be misleading to follow the recommendations from the theory blindly (say, relying on sole performance premiums to try and replicate the theoretical second-best contract) without taking account of the cost, imperfections, and manipulability of information. Moreover, the implementation stage comes with its own problems. For instance, if a reform aims to reduce rent capture from civil servants, and the latter have to implement the reform, it is common sense that they will try to make it fail. Adequate incentives must be given to implementing agents for reforms to succeed.

Following are the main lessons from the theoretical framework presented, which can help in sequencing PEM reforms.

- It is clearly demonstrated that, as long as the judicial system is performing poorly, *ex post* audits do not present a sufficient threat to deter cheating (and corruption). Therefore, reforms aimed at improving the quality of audit techniques are useless, and their cost should be avoided.
- In theory, performance premiums may provide agencies with self-enforcing incentive schemes, however, in practice, it may not be possible to grant such premiums in some PEM settings (say, line-item budgeting) and, more importantly, such schemes entail the risk of manipulation (if the agency can alter the performance measure) and may be very costly. Adopting performance-oriented schemes can thus be useful only if managed with care, notably if there exists reliable (and not too costly) performance measures (see Robinson (forthcoming) on these issues).
- Starting from a case where *ex post* audits are ineffective and performance premiums are not possible (or entail the risk of manipulation), the control of public agencies should probably rely on *ex ante* controls (like automatic safeguards on expenditure or financial comptrollers delegated within spending agencies). However, they may not be efficient enough to deter cheating—and it would be wrong to increase them beyond their efficiency limit, that is, the point where their benefits (in terms of reduced cheating) equal their costs.
- In a situation where traditional incentives fail, we have argued that one could rely on informal accountability mechanisms. Increasing transparency and providing means to use information for all constituencies, would help mobilise these accountability mechanisms.
- In the meantime, PEM reforms should be targeted at 'getting the basics right' (Schick 1997), that is, improving the functioning of the basic PEM tools (for example, line-item budgeting processes, accountancy, internal controls aimed at first ensuring fiscal discipline). Among these, a crucial point is to improve the information basis, not only to facilitate informal accountability mechanisms but also to prepare the field for resorting to external accountability systems and performance-oriented schemes—which both crucially need good information. In Pacific island country settings, a



minimum (and urgent) device of information exchange could be to connect all relevant agents (even those in remote islands) to the Internet, and require them to regularly send financial information in order to centralise it.

- It is only when basic tools are performing well that more decentralised management systems, with external and *ex post* accountability mechanisms, should be envisaged. (In the same vein, Schick (1998:127–9) states that '[i]t would be foolhardy to entrust public managers with complete freedom over resources when they have not yet internalised the habit of spending public money according to prescribed rules', and that '[n]o country should move directly from an informal public sector to one in which managers are accorded enormous discretion to hire and spend as they see fit'.) Indeed, when official accountability mechanisms perform reasonably well, relying on *ex post* control can be very efficient (as it does not weigh on the expenditure process, and is used only according to needs and not in a systematic manner like *ex ante* controls).
- If *ex post* audits are used, the decision on what type of auditor to use should be based on a trade-off between internal auditors, who are probably better informed but more likely to collude with agents, and external auditors, who have less knowledge of the local situation but have less room to collude. Note however, that within individual Pacific island countries, it may be questioned whether it is possible to find a truly external auditor. A solution could be found in 'pooling' external auditors for the whole Pacific region and sending auditors to countries that are not their home countries. This could be facilitated, for instance, by the recent creation of the

Pacific Islands Financial Management Association (PIFMA). Another solution may be to rely on donor agencies' own auditors.¹⁴

Finally, principal-agent models may be used to guide PEM reforms in Pacific island countries as follows. First, the specificities of the existing PEM system, together with the constraints faced in the country, should be identified (among other things, the number and skills of the existing labour force, the level of centralisation of the functional PEM system, the existence of a Court of Audit, the capacities and performance of the judicial system for example). Second, an adequate theoretical framework should be designed, according to the ultimate objective searched for (for instance, increasing the production of some public services, or reducing the cost of the public expenditure process). Then, possible implementation problems (and associated measures) should be identified; and finally an operational plan of reform should be designed and carried out.

Notes

- ¹ For a good technical introduction to principal-agent theory, see Laffont and Martimort (2002). As the authors state, neoclassical economics postulates rational individual behaviour in the market, and thus profit maximisation for firms and exogenous market prices. Yardstick competition provides firms with effective incentives for cost minimisation (and thus solves adverse selection problems), and the fixed price contract associated with exogenous prices provides consumers with appropriate incentives for maximising their utility levels (thus solving moral hazard problems). However, treating the firm as a black box proved to be rather limiting, and economists turned to the study of how to manage information flows and to provide the appropriate incentives to individuals within the firm. Moreover, markets fail for public



- goods and public intervention is therefore necessary. This poses the problem of designing mechanisms for collective decisions, which must solve the incentive problem of acquiring the private information that agents have about their preferences for public goods. The theory of incentives thus emerged from the need for dealing with situations where markets are imperfect and information is asymmetric, whether in the private or public sector (Laffont and Martimort 2002:1–17).
- ² Notably, if private information remains constant over a repeated game framework, the optimal long-term contract is the replica of the one-shot (static) optimal contract (Laffont and Martimort 2002).
- ³ In aid-recipient countries, another agency relationship is to be found between donors and the recipient government (see Paul 2006a).
- ⁴ This interpretation allows one to link the principal-agent approach with the empirical literature on corruption. Indeed, the latter identifies various factors contributing to corruption, among which the overall level of potential benefits from corrupt behaviour, the cost of bribery (including penalties and sanctions), and the bargaining power and extent of discretionary powers of the various actors (Chand and Moene 1999). These factors are equivalent to those pointed out by the principal-agent literature.
- ⁵ In the remainder of the article, we mainly use the general term ‘cheating’ to refer to all these negative actions.
- ⁶ Aid constitutes a large proportion of government expenditure in most Pacific island countries, with an aid to GDP ratio of more than 20 per cent and sometimes as high as 70–80 percent (see the various Pacific island country reports on www.imf.org).
- ⁷ Note that the conclusions drawn are limited to simple principal-agent models. More elaborate models, notably those relying on game theory, have also been applied to particular PEM issues. These are not dealt with here. See, notably, Ahmad et al. (2002) and Ahmad and Martinez (2004) on the delegation of targeted expenditure programs to sub-national governments.
- ⁸ The main sources for this subsection are Kofman and Lawarrée (1993) and Leruth and Paul (2006).
- ⁹ Note that this is true whatever type of auditor is used: internal auditors, a Court of Audit or private auditing firms.
- ¹⁰ As an extreme case, this means that when the principal cannot commit to audit and the penalty is very low, or non-monetary, the principal should not audit at all.
- ¹¹ While ‘formal’ penalties for cheating and rent capture may be very low, some informal sanctions may be taken more seriously and act *in favour* of rent capture. Think of the pressure for redistribution exerted by civil servants’ relatives. As Mummert (2002) expresses it, for *de jure* reforms to be effective, legal sanctions must be strong enough to penetrate the inhibitive layer of informal non-legal sanctions.
- ¹² The literature on collusion in three-tier hierarchies has been developed following Tirole (1986).
- ¹³ Notwithstanding different types of auditors, Laffont and Martimort (1999) also show that one way to reduce collusion is to divide up supervision among several supervisors, so as to introduce a coordination problem among them. However, that solution may be costly in practice, and therefore not efficient in Pacific island settings.
- ¹⁴ It should be recalled that reforms prompted by external conditionality, and not owned by recipient constituencies, have often proved to perform poorly. On the contrary, conditionality may serve as a commitment technology to support reforms initiated by a committed government.

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