

WP/02/106

IMF Working Paper

The Potential Role for Securitizing Public
Sector Revenue Flows:
An Application to the Philippines

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IMF Working Paper

Fiscal Affairs Department

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June 2002

Abstract

The views expressed in this Working Paper are those of the author(s) and do not necessarily represent those of the IMF or IMF policy. Working Papers describe research in progress by the author(s) and are published to elicit comments and to further debate.

Since the mid-1980s, the securitization of future flow receivables has grown in importance as a financing alternative for the public sector. In a world of perfect capital markets, there appears to be little rationale—in terms of reducing the average cost of public sector financing—to resort to secured borrowing. However, for many developing countries, financial markets are far from perfect. In particular, there may be an important role for secured financing where increased uncertainty or financial market volatility leads to credit rationing driven by information asymmetries. Secured financing, however, does not provide a free lunch. Such arrangements subordinate existing and future creditors and, as a result, may raise the cost of future borrowing. In addition, high transaction costs, the thin market in secured instruments, the risk of legal challenges, and reduced budget and debt management flexibility may offset the cost advantage of public sector securitization.

JEL Classification Numbers: F3, G1

Keywords: Fiscal policy, international finance, securitization

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¹ Thanks are due to James Daniel, Joshua Felman, and Richard Hemming for helpful comments.

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I. EXECUTIVE SUMMARY

Since the mid-1980s, the securitization of future flow receivables has grown in importance as a financing alternative for the public sector. By providing future revenue flows as collateral, securitization arrangements aim to mitigate the risks commonly associated with public sector borrowing—most notably transfer and convertibility risks—in order to obtain a credit rating superior to that of unsecured sovereign borrowing.

In a world of perfect capital markets, there appears to be little rationale—in terms of reducing the average cost of public sector financing—for recourse to secured borrowing. However, for many developing countries, financial markets are far from perfect. In particular, there may be an important role for secured financing where increased uncertainty or financial market volatility leads to a rationing of public sector borrowers. In such cases, public sector entities with a poor track record or low credibility, or those which are new to international capital markets, may find securitization useful to gain financial market access. Indeed, even countries viewed as reliable borrowers may need to resort to collateralized arrangements in times of financial market volatility. The segmentation of international capital markets or legal restrictions on privatization may also provide an institutional rationale to securitize.

Policymakers should be aware, however, that secured financing does not provide a “free lunch.” Such arrangements need to be used judiciously, since pledging a particular revenue source as collateral today precludes its use as collateral in the future (when the financing need may be more acute). By its very nature, securitization subordinates existing and future creditors and, as a result, may raise the cost of future (unsecured and secured) borrowing. In addition, high transaction costs, the thin market in secured instruments, the risk of legal challenges, and reduced budget and debt management flexibility all serve to offset any cost advantage to public sector securitization. Finally, such arrangements tend to be complicated, making their true cost difficult to assess accurately.

In the Philippines case, there appears to be little reason for the public sector to undertake secured financing (pledging flows either from PAGCOR or Malampaya). Such financing is unlikely to provide a cost advantage over unsecured budget financing and will suffer from many of the shortcomings highlighted in the previous paragraph.

II. BACKGROUND

Since the mid-1980s, many emerging market borrowers, in search of lower costs, have begun to look at innovative financing through the securitization of future-flow receivables. To illustrate the range of possibilities securitization offers, one only has to look at the issuance, in 1997, of \$55 million in 10-year notes by David Bowie, backed by future royalties from his album sales. This paper focuses on the role the securitization of future revenue flows may play as a financing alternative for the public sector. For the public sector, such receivables can comprise anything from future export proceeds, to tax receipts, to the government’s share of natural resource revenue. In addition, specific government nontax revenues (such as lottery earnings and property income) have also been proposed for securitization.

This paper is structured as follows. It begins by outlining the anatomy of a typical securitization of future flows and discusses how such arrangements mitigate the various risks that enter into the assessments of credit rating agencies. The paper goes on to look at the rationale behind such structured financing in perfect capital markets and in the presence of market imperfections, and outlines some possible downsides. The paper surveys several international case studies and discusses the possibilities for securitization of future receivables in the context of the Philippines.

III. STRUCTURE OF A TYPICAL SECURITIZED DEAL

Figure 1 describes the fairly well-known structure of an arrangement to securitize future flow receivables. The “originator” of the securitized deal² sells its rights to a future cash flow to a Special Purpose Vehicle (SPV) for an up-front price.³ The SPV funds the purchase price by issuing debt securities, usually in the same currency as the receivables, with the future receivables earmarked to service the issued instruments.

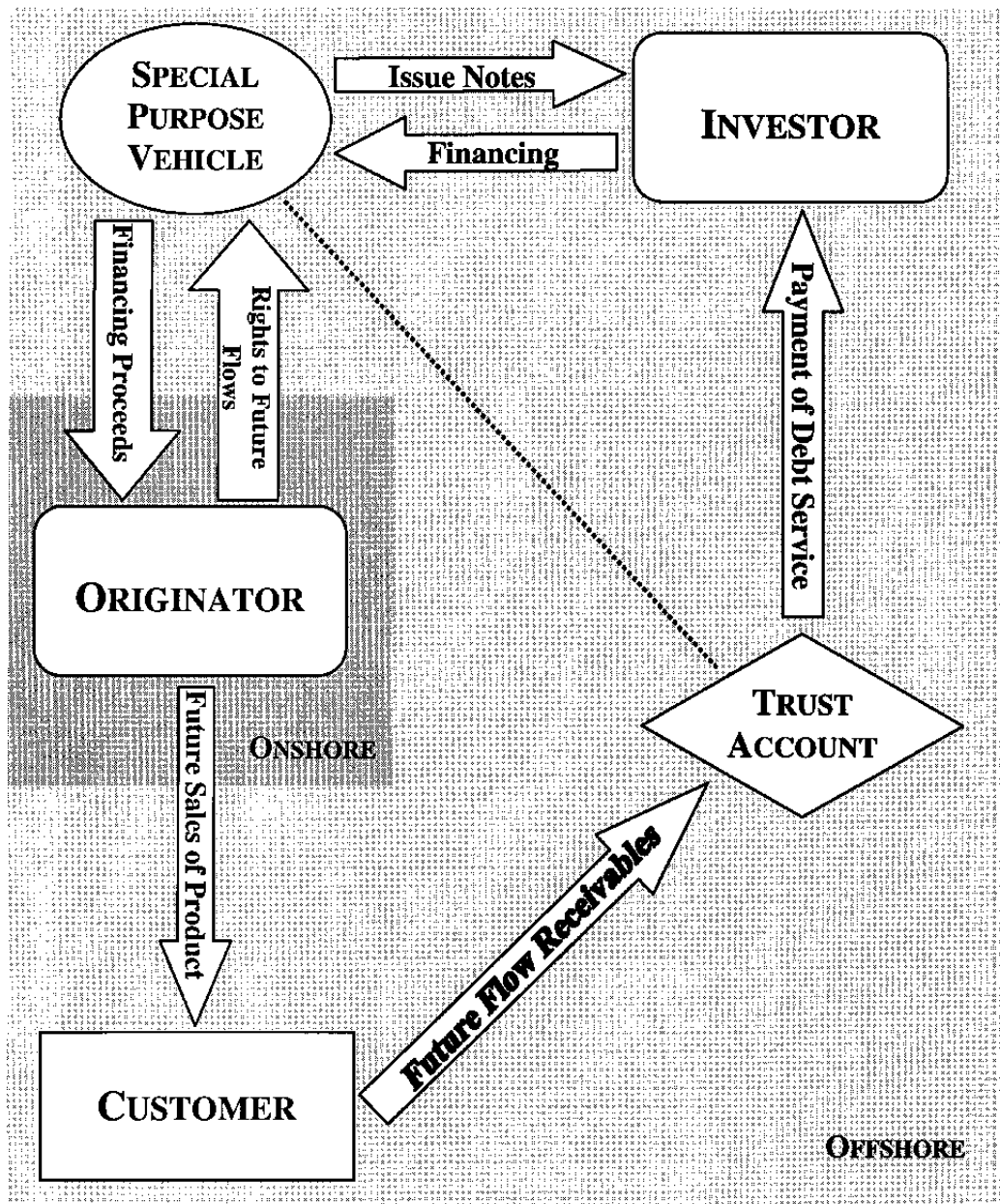
The SPV may take the form of either a trust or a corporate vehicle and is usually constituted as an offshore entity—to ensure it is under the jurisdiction of a trusted legal system and claims against it are actionable in international courts—in a tax-neutral jurisdiction. The primary aim of most securitizations is to structure the deal via an SPV in order to shield potential investors from the risk of both the sovereign and of the originator. As a result of such “bankruptcy remoteness,” the ability to meet the debt-service obligations of the SPV-issued debt becomes much more closely related to the likelihood that the payee of the future receivables (the “obligor”) will meet its contractual payment obligations (rather than to the risk characteristics of the originator). In effect, a lower-rated originator can use a securitized structure to benefit from the better credit rating of the obligor.

The sale of receivables is usually in the form of an irrevocable contractual arrangement—sometimes referred to as a notice and acknowledgement agreement—with the obligors agreeing to make payments to an offshore escrow account held by the SPV under the control of a trustee. The receivables are typically in hard currency, where the originator can demonstrate a clear track record of receiving such cash flows from investment-grade obligors

² For the purposes of this paper, the central government, a state-owned corporation, a local authority, or some other public sector entity.

³ Depending on the structure of the deal, the originator in some cases may retain a measure of ongoing liability (e.g., to repurchase the receivables from the SPV in certain specified circumstances).

Figure 1: Structure of Typical Securitization of Future Flow Receivables



located in industrialized countries. Foreign exchange accumulates in the trust account (as the obligors make their payments) until the next scheduled payment of principal and interest has been met. Once the obligation has been paid the trust may then release any excess earmarked receivables and return them to the originator. Widely traded commodities—such as oil and gas—are viewed as being the most secure of future flows. Tax revenue receivables are perceived to be the least secure of future flows, although such securitizations do exist (e.g.,

Argentine provinces have raised financing by pledging their share of federal taxes—see Section VIII).⁴

In principle, a future flow securitization can be structured to resemble either a debt or an equity claim on the receivables, depending on the treatment of excess receivables and the provisions in the contract, in case future flows are insufficient to cover debt-service obligations. Predominantly, however, the deals are structured as pure debt contracts, with excess receivables returned to the originator and a default declared if future receivables are insufficient to cover debt-service obligations.

IV. SECURITIZATION AS A MECHANISM FOR RISK REDUCTION

For rating agencies, there is a general rule that the foreign currency obligations of the issuer's home country provides a ceiling on the ratings for all other foreign debt issuance under that sovereign's jurisdiction (this is often called the "sovereign ceiling"). However, the primary motivation for entering into a borrowing program secured on future flow receivables is that it allows the borrower to obtain a credit rating that is superior to that of the sovereign (and thus allows a reduction in financing costs).

How then do the ratings agencies rationalize giving a public sector entity, or indeed, even the sovereign itself, a better-than-sovereign rating? To answer this, the various risks associated with public sector borrowing (see Box 1) that are taken into account by the credit-rating agencies need to be examined.

The general structure of a secured financing arrangement (as outlined in Section III) is designed specifically to mitigate the various risks discussed in Box 1 by

- ensuring that foreign currency flows needed to service the debt are always outside of the originator's local jurisdiction eliminates transfer and convertibility risk (and thus allows the issuer to pierce the sovereign ceiling);
- backing the securitization with sales to obligors that are investment-grade and based in industrial countries to reduce obligor risk;
- establishing the SPV in an offshore, tax-neutral jurisdiction that is outside of the tax jurisdiction of the originator's home government to eliminate tax risk; and
- ensuring that the future flow receivables and the debt service obligations are denominated in the same foreign currency to remove any exchange risk.

In addition to these general features, many secured financing arrangements contain some or all of the following special provisions, to further reduce the risks identified in Box 1.

⁴ See Ketkar and Ratha (2001) for a hierarchy of future flow receivables.

Box 1. A Taxonomy of Risks Associated with Public Sector Borrowing

Performance Risk. Is the originator capable of continuing operations and generating cash flows to service the securitized debt, even if it is in default on other debt obligations or if it is undergoing bankruptcy proceedings or a reorganization? Ratings agencies will typically look for a legal opinion from counsel in the originator home country as to whether in the event of bankruptcy, reorganization, or insolvency, the future sold cash flows would remain the property of the SPV (and thus not be drawn into any debt restructuring decision). In addition, ratings agencies will examine the structure of the securitization to see if there are safeguards in place to prevent third party claims' being placed upon the receivables used to back the SPV-issued debt.

Receivables Generation Risk. Will the originator be able to continue generating the sales necessary to meet the debt service costs? Ratings agencies expect the originator to have a strong outlook for continued sales of the goods or services generating the future flow receivables (e.g., an outlook that includes a stable international market, a product that has a robust demand, and some degree of historical stability to the cash flows). In addition, the rating will take into account any price risk associated with payments for the deliverables—such as in the case of sale of a natural resource that is payable at prevailing world market prices, or risks posed by regulatory changes—such as environmental regulation that could hamper the production and export of goods.

Diversion Risk. What is the likelihood the originator will choose to—or be forced to—divert delivery of its product to another source? Ratings agencies will look, for example, at the likelihood of sovereign interference in trade flows (e.g. by forcing the originator to sell exportables in the domestic market, or to another foreign customer), labor disturbances, terrorism, or civil unrest. In addition, the ratings will also take into account the possibility that the sovereign will be able indirectly to disrupt the generation of future receivables (e.g., by interfering with preexport financing arrangements necessary to ensure production and export).

Obligor Risk. What is the underlying risk to the performance of the end provider of the pledged revenue source? The (perhaps multiple) obligors that have contracted actually to pay the future flow to the SPV will need to have a strong financial position, a good track record, solid credit ratings, and be domiciled in a country that is unlikely to face convertibility or transfer risk.

Exchange Rate Risk. Are there currency mismatches between the receivable inflows and the debt service outflows? In cases where the future flows are denominated in local currency terms—such as domestic tax revenues—the rating will reflect the likelihood and effect of a potential currency devaluation (which usually implies the rating is capped by the sovereign rating).

Tax Risk. Will the tax treatment of various components of a securitization arrangement change? Such changes will be a relevant consideration for ratings agencies.

Transfer and Convertibility Risk. What is the risk that a government, faced with a balance of payments crisis, will impose restrictions that limit foreign currency debt repayments by domestic borrowers or recourse to measures to limit net outflows of foreign currency? Such risks include the imposition of exchange controls, multiple exchange rate practices, the freezing of bank accounts, and foreign exchange surrender requirements. Borrowers that benefit from geographical diversity in their operations and that have sizeable foreign exchange resources from offshore activities will be viewed as less vulnerable to convertibility and transfer risk. If the ratings agency can establish that the borrower will not be hampered in accessing foreign currency and transferring it to investors outside the country, then the agency will consider rating the issue above the sovereign ceiling.

Overcollateralization

Normally, to guard against fluctuations in the inflows from obligors, the financing is structured to ensure that there is a debt service coverage ratio that is significantly above one (i.e. the amounts needed to service the debt are a fraction of the pledged future inflows). In doing so, overcollateralization provides additional security to the lender and reduces receivable generation risk (such as, for example, would occur should the price of the deliverable decline).

Debt-Service Reserve Accounts

There are differing practices for cases when the inflow of receivables is insufficient to meet the debt service requirements. In some cases, the issuer is declared in default and there may be direct recourse to the originator for payment. In others, specific covenants for accelerated amortization or debt restructuring will kick in (see below). Often, to avoid declaration of default in the event of a temporary disruption to payments from the obligors, a float will be allowed to build up in the trust account—a debt service reserve account⁵—which provides partial insurance against receivables generation risk (such as, for example, from a temporary disruption in the delivery of goods).

Debt Covenants

Most deals contain various debt covenants that govern the activities of the originator and the SPV. Such covenants may include

- requirements that direct the originator to maintain the activities generating the receivables;
- conditions to prevent the originator from divesting the activities generating the receivables to a third party;
- covenants requiring the originator to comply with certain tests of credit quality (e.g., in the case of a public enterprise, to stay below a fixed debt-equity ratio); and
- clauses prohibiting the SPV from either issuing other debt backed by the receivables or from engaging in any other business.

Breaking such covenants can result in litigation and demands for immediate repayment of the principal. As such, the debt covenants primarily aim at lowering performance or diversion risk.

⁵ The minimum reserve included in such financing structures is usually three months, debt service (but it can also be much larger).

Early Amortization Triggers

Secured financing may also contain early amortization triggers, which direct all cash flows to repay investor principal in the case of an event threatening the performance of the securitization. Such events may include

- if the debt service coverage ratio falls below a certain level;
- if any part of the debt service is not paid on time;
- if the obligors fail to meet certain credit quality requirements;
- if litigation against the originator that may have a material adverse effect on the securitization is instituted; and
- if the sovereign interferes in a material way with the ability of the originator to direct cash flows to the SPV.

Like debt covenants, early amortization triggers are employed to provide investors with redress in the event of nonperformance by the originator, but also can lessen obligor risk.

Third Party Guarantees

A typical future flow securitization will often contain more than one form of credit enhancement. The overcollateralization of the deal and the debt service reserve accounts can both be regarded as credit enhancements that reduce the risk to the investors. There may also be more explicit enhancements such as third-party financial guarantees. These guarantees are provided by commercial insurance companies in return for a premium and effectively underwrite payment for all or part of the debt service.⁶ There may also be a lesser form of protection in the form of supply guarantees which, in the event of disruption to supply, agree either to deliver the underlying products or to pay the cost of the delivery. Third-party supply guarantees guard against performance or diversion risk, while financial guarantees go further to cover fully the receivables generation risk (such as, for example, in the case when the price of the delivered product falls and the receivables are no longer sufficient to cover the debt service needs).

⁶ In assessing the interest rate cost advantages to the public sector entity from securitized arrangements, one needs therefore to take into account the premium paid to the insurer; this is a comparison that is not often made and is difficult to calculate, since the costs of the guarantee are often not disclosed.

Political Risk Insurance

Political risk insurance can include a wide range of insurance products (provided both by the private sector or by multilateral organizations such as MIGA) that cover investors for risks relating to political violence or state expropriation. In future flow securitizations, the primary political risk insurance is one that insures against the sovereign imposing transfer or convertibility restrictions.

Subordinated Tranching

Sometimes the securitization arrangement will be structured to attract different groups of investors with differing preferences over risk. Several tranches of bonds may be issued against the same future flows, with the least risky giving senior creditors the right of first call on the future receivables (often accompanied by other credit enhancements such as third-party guarantees) and the most risky having a secondary claim on the receivables (without third party insurance). Clearly, the more risky the tranche, the higher the rate of return offered to the investor (for example, see the Pemex structured finance deal described in the Appendix).

V. PUBLIC SECTOR SECURITIZATION WITH PERFECT CAPITAL MARKETS

In looking at the pros and cons of securitizations of future flows, the reference point is whether they reduce the *average* cost of budget financing when compared with a simple bond issuance (which is implicitly backed by all future public sector revenues, including those that are to be offered for securitization). It would not be surprising that a particular collateralized borrowing is cheaper than regular debt issuance, but the key to its usefulness as a public sector financing tool is whether it can reduce *overall* financing costs (i.e., that the lower cost of the secured issue is not offset by the increased cost of other financing sources).

At first blush, Modigliani-Miller capital structure irrelevancy theorem—which states the way a company carves up its cash flows into debt or equity should not effect the firm’s value—would seem applicable to the public sector. In such a world, the particular instruments that the public sector uses to finance its deficits are unlikely to reduce the average cost of financing; secured debt would thus seem to offer few advantages. Since, ultimately, all public sector debt is backed by future government net revenues, it should never make sense for a sovereign borrower to partition its revenue inflows (as in Figure 2). Investors would typically prefer a claim to a portfolio of revenue streams—as with general budget financing—rather than claims to separate revenue streams.

This, however, appears to be a rather dissatisfying outcome since it leaves no role for securitization as a financing option. Such a finding would be difficult to reconcile with the increased interest in such financing tools both from the investor community and from public sector borrowers. As a result, one must look either to market imperfections or institutional factors to generate a role for the securitization of future receivables.

VI. PUBLIC SECTOR SECURITIZATION WITH MARKET IMPERFECTIONS

A. Information Asymmetries

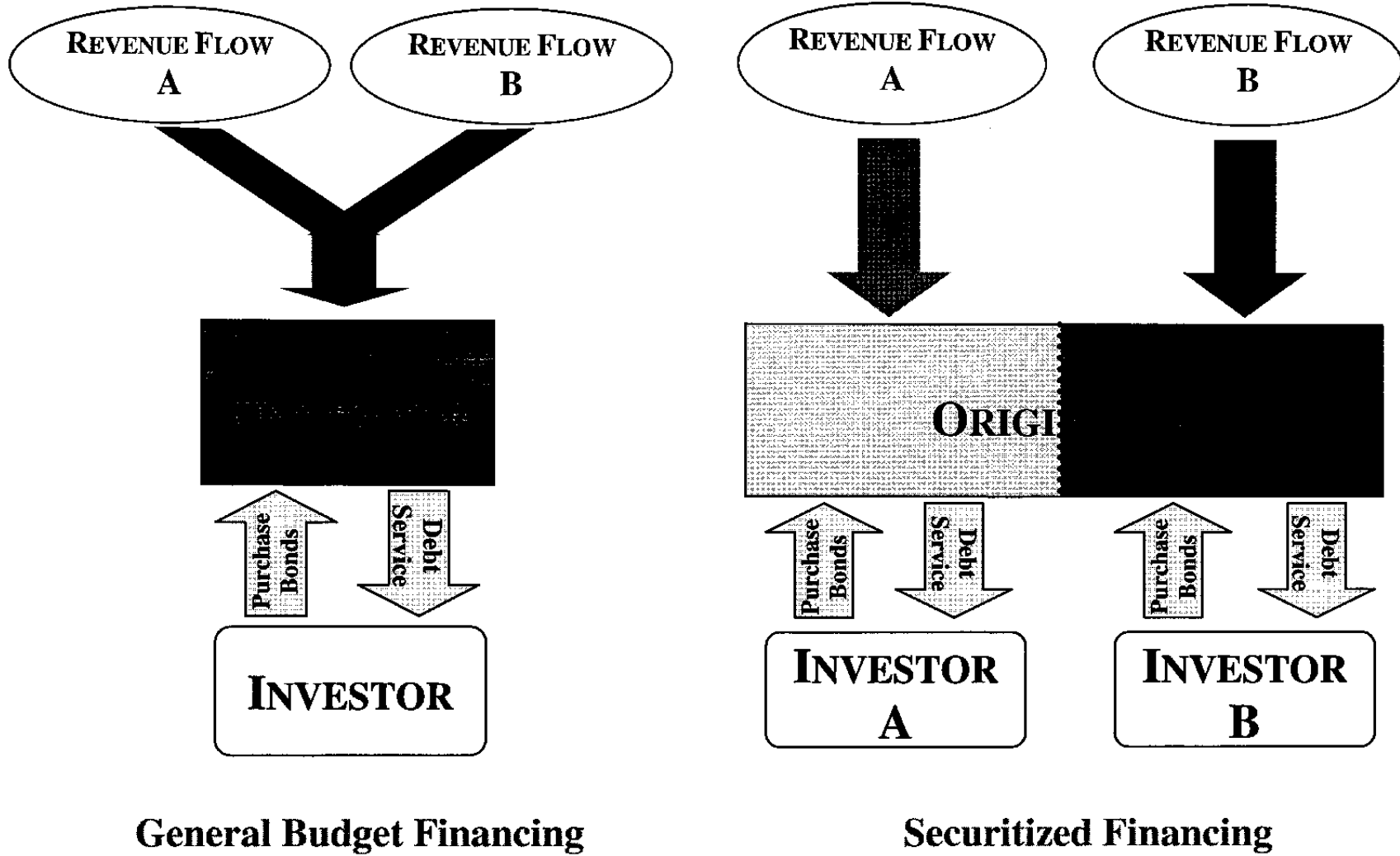
Imagine there is a pool of potential public sector borrowers, but investors are unable to distinguish good from bad sovereign risks. Stiglitz and Weiss (1981) show that where there is such imperfect information about the quality of a heterogeneous group of potential borrowers, some borrowers can be rationed from the credit markets since, as interest rates are raised, there is an adverse selection effect with only the poorer quality borrowers remaining in the applicant pool. This phenomenon may be particularly acute in a time of financial crisis and emerging market volatility, when such information asymmetries are exacerbated.

In such cases, provision of collateral may serve to break the credit rationing equilibrium and allow good quality borrowers to access international capital markets (see Bester, 1985). Therefore, securitizing may have an important function in resolving informational asymmetries by providing a guarantee to potential lenders in the form of tangible collateral that signals a borrower's creditworthiness. In addition, it is likely that the countries with the fewest financing alternatives are likely to be the ones with the largest information asymmetries; thus such countries are likely to benefit the most from securitized transactions (see Hill, 1997). Provision of collateral does not, however, guarantee a complete resolution of the informational asymmetry problem. As Stiglitz and Weiss (1986) show, when collateral and interest rates can be used simultaneously to structure a contract terms, despite the borrower's having an additional instrument to use as a self-selection device, both pooling and separating equilibria that exhibit credit rationing can still exist.

Securitization arrangements can relieve informational asymmetries in a variety of ways.

- By divorcing the debt service responsibility from the originator and placing it with the obligor, potential investors are able to make their risk assessments independently of the credit standing of the originator, by instead looking at the situation of the obligor about whom there are potentially fewer uncertainties (especially when such obligors are investment-grade companies located in industrial countries).
- In cases where there is concern over an originator's willingness-to-pay (as opposed to its ability-to-pay), the weak credibility of the borrower can be overcome by structuring a securitized deal so that payments are never actually under the control of the public sector borrower. Such structured financing can mitigate uncertainties about sovereign transfer and convertibility risks and allow for cheaper budget financing.
- Because securitization of future receivables is actionable in international courts, it provides a stronger constraint on the public sector borrower and thus may enhance fiscal credibility. This may be particularly valuable for a government or public corporation with a poor track record (e.g., where there have been past arrears on government obligations) and where considerable uncertainty exists as to whether the borrower is likely to be fiscally responsible in the future.

Figure 2: Stylized Representation of Flows from Securitized Financing



- The provision of third-party guarantees and insurance as part of the structured financing allows the investor to focus on the quality of the guarantor—about whom there may be considerably less uncertainty—rather than that of the borrower.

Information asymmetries, therefore, seem to provide a persuasive argument in favor of securitization. Indeed, it is clear that many of the structural features of securitized deals—overcollateralization, third party guarantees, offshore payments, covenants, and amortization triggers—all appear designed to mitigate the information asymmetries that lead to credit rationing of public sector borrowers. The fact that securitizations typically obtain a better credit rating than regular financing suggests such structured arrangements are successful in resolving at least some of the information problems.

The policy corollary to the information asymmetry argument is that public sector entities with a poor track record or low credibility, or who are new to international capital markets, may find securitization a useful mechanism to gain financial market access. Once such access is gained, the borrower can build (or rebuild) its reputation for being a good credit risk, which can eventually allow it access to unsecured market financing. In addition, even countries that are viewed as reliable borrowers may need to resort to collateralized arrangements in times of financial market volatility. However, it should be remembered that in using a future revenue flow as collateral, the public sector is exercising an option; this may be reasonable if there is a current financing need, but it also precludes recourse to this form of financing in the future (when the financing need or the credit rationing problem may be even more acute).

B. Risk Sharing

Another rationale for undertaking a securitized arrangement is that it has the potential to allow the sovereign borrower to pass on some of the risk of fluctuations in future revenue flows to private lenders (who may be better able to hedge that risk). As discussed in Section III, a secured arrangement could be structured to pay out either a fixed coupon or a variable return linked to future flow receivables. For example, a bond secured on future oil or gas receivables may allow the government partially to insulate itself from commodity price volatility. Of course, the same result could be achieved by the sovereign entity's purchasing derivatives to hedge its risk, but it is often the case that such markets either do not exist or are skewed toward the short end of the maturity structure (see Davis and others, 2001).

However, in practice, it is unusual for structured financing deals by the public sector to be used for such risk sharing (see Ketkar and Ratha, 2001). Indeed, to avoid the lender's having to bear any risk of volatility in the future revenue flows, it is common, as has been discussed earlier, to overcollateralize to insulate lenders from shortfalls in future receivables. In addition, other mechanisms employed to prevent such risk sharing include collateralizing revenue flows that are secured by a long-term purchase contract from a reputable buyer with a good credit rating (e.g., typical in the financing of natural gas projects) and including renegotiation clauses into bonds should the flow of future receivables be insufficient to meet

debt servicing requirements (demonstrating the lenders' unwillingness to bear downside price risk).

The most likely reason that such risk-sharing aspects are absent from secured financing is due to moral hazard. If the government simply pledges a future revenue stream to service the debt then it has little incentive to ensure that sufficient revenue is collected, to cover the debt. Imagine, for example, a bond that pays a return equal to the collection of a certain type of tax revenue; once the revenue has been pledged and the government has obtained the financing, it has little incentive to expend effort to collect the revenue. As a result, the debt is usually structured instead to make the government the residual claimant of any excess revenues and allow the lender recourse should the revenues fall below the debt service requirements. Such a structure provides incentives for the government to maximize future revenue flows but, at the same time, eliminates any risk-sharing function a securitized issue may serve.

C. Institutional Restrictions

There may be important institutional reasons for recourse to securitized financing:

- There is often an institutional segmentation of international capital markets with some potentially large investors (e.g., pension or insurance companies), facing regulatory or internal institutional restrictions that prevent them from investing in below-investment-grade assets. Because securitized financing typically carries a better credit rating than uncollateralized sovereign issues, such financing is made accessible to a wider range of investors (which should translate into reduced financing costs).
- Secured transactions can “complete markets” by introducing new categories of financial assets better matched to investors' desire to diversify and their preference for different types of risk (e.g., certain investors may be willing to take on some level of performance or receivable generation risk but not country-convertibility risk).
- Securitized deals have the potential to allow governments to avoid institutional restrictions against outright privatization. For example, a government may be prohibited from privatizing a sensitive or strategic industry. However, it can conduct a “back door” privatization by selling claims to the future revenue flows of the relevant industry. There are two problems with such an approach. First, as with the risk sharing, such an arrangement creates important incentive problems. It is unlikely an investor will be willing to purchase a securitized arrangement where the public sector no longer has a strong interest in maximizing the pledged revenues but still retains operational control of the entity. Typically the deal will only happen if the borrower is either given a government guaranteed rate of return or has an avenue for further recourse should revenues fall short of original targets (in either case it is unclear what the benefits are, relative to straight borrowing). Second, there is the broader question: If there are such legislated restrictions on privatization, should the government even be trying to evade such restrictions through financial engineering?

D. Political and Legal Factors

There may be other benefits associated with securitizing future flows (rather than having the debt backed more generally by future primary surpluses), although they should perhaps be viewed more as pleasant side effects of such arrangements rather than factors that rationalize their use. Some may argue that by securing a future revenue, that revenue can be protected from political mismanagement; this is often the rationale for earmarking certain revenues for particular spending (e.g., fuel taxes being used to construct roads). However, one could equally well argue that, by temporarily relieving the public sector financing constraint through such borrowing, governments may be tempted to delay fiscal adjustment, use the inflows for unproductive spending, and/or pursue imprudent fiscal policies financed by the collateralized issues. Indeed, one could go further and argue that collateralization itself serves to weaken market discipline on economic policy since it detaches investors from concerns about the overall macrofiscal policies pursued by the government.

Another possible benefit of securitized financing, pointed out by Ketkar and Ratha (2001), is that it typically involves a much closer scrutiny of the legal environment for a sovereign borrower. The fact that a deal goes through (and that the originator can transfer the property right to future receivables to an offshore SPV) may signal that a country has a strong legal and institutional environment (which will apply even to nonsecured lenders). In addition, the heavy scrutiny resulting from such financing may actually lead to reforms that improve the legal framework, especially as they relate to property rights and bankruptcy procedures.

VII. DOWNSIDE OF SECURITIZING

Although Section VI discussed the possible rationales for financing the public sector by pledging future receivables, there are some qualifications that may reduce or eliminate the attractiveness of such a financing option.

A. Subordination of Existing and Future Creditors

There is clearly a negative externality arising from securitized financing, because such deals must necessarily increase the riskiness of all other lenders (since less revenue is available to service their debts). This subordination of existing creditors can undermine the credibility of the government and alienate “traditional” investors. The perceived increase in risk, and the perception that there could be further subordination in the future, may not only offset the cost advantages of securitizing but may even end up *increasing* the cost of financing from both securitized and nonsecuritized sources. This of course will depend on the proportion of future financing needs relative to the size of the securitized deal and the stock of existing creditors. A country considering a securitized arrangement, however, would likely have significant financing needs (either in the form of rollovers or new deficit financing) which could quickly result in the lower costs of the securitized financing being outweighed by the higher costs of new debt issues.

On the other hand, there does not appear to be any evidence of systematic credit-rating downgrades of unsecured debt following securitized issuance (as one would expect if such financing had a strong externality effect on existing and future creditors). However, this most likely reflects the small size of the secured issues relative to the stock of outstanding debt rather than indicating the lack of an effect of structured finance on the risk borne by other investors.

B. Transaction Costs

Securitizing particular receivable flows typically bears high transaction costs (in the form of legal, banking, and management fees) since each deal is unique and less amenable to standardization. As a result, arranging such deals requires long lead times, making them less useful as financing tools in times of financial stress. In addition, securitized deals typically occupy a very thin market and are traded infrequently. This higher illiquidity (higher than, for example, plain vanilla sovereign issues) will inevitably be reflected in financing costs. However, for certain types of securitizations (such as receivables from oil or gas exports) there is less idiosyncrasy in the structure of the financing, which tends to reduce the transaction costs and to make the market somewhat more liquid (since there are close substitutes issued by other borrowers). Also, the larger the size of the debt issue, the smaller the impact fixed costs will have on the overall financing costs.

C. Legal Challenges

It is common for loan contracts to have conditions prohibiting borrowers from giving other lenders preferred-creditor status; multilateral lenders in particular have explicit preferred-creditor status. As a result, pledging revenues to service certain types of debts may lead to a breach of covenants on existing bonds. This, in turn, could precipitate legal action against the public sector that could either block or reverse the securitized arrangement. The risk premium demanded by investors will certainly reflect the possibility of such a legal challenge. In addition, if there is a lack of legal clarity on the seniority of claimants in the event of a sovereign credit event (for example, if the use of revenues as collateral will be challenged by subordinated creditors), then this will also add a premium to the interest cost of the secured issue.

D. Budget and Debt Management Flexibility

Additional disadvantages exist when a government credibly “binds itself to the mast” by securitizing. For example, from an expenditure management perspective, as with other forms of earmarking, pledging future revenue flows ultimately partitions and segments the budget and reduces overall flexibility. Indeed, securitizing is perhaps worse than simple earmarking, since such deals are typically overcollateralized and contain sizeable debt service reserve accounts. This has the effect of removing a larger portion of revenues (than would normally be required simply to service the debt) from the budget manager’s planning discretion. In addition, securitized arrangements reduce the flexibility of public sector debt management, since the existence of collateral makes any future debt restructuring extremely difficult to

implement (which is, of course, why such arrangements are preferred by creditors).⁷ This appears to run counter to the ideal of increased private sector involvement in the case of a financial crisis.

E. Fiscal Transparency

Depending on the accounting treatment, securitized transactions may be used to make the fiscal position look cosmetically healthier and improve the government's balance sheet. In addition, some countries may also choose to treat the securitization as an above-the-line transaction (i.e. the bringing forward of future revenue flows) that artificially reduces the headline deficit number used for public consumption; presumably analysts would see through such creative accounting.

However, even with a proper accounting treatment there is another important transparency issue. Securitized financing is typically quite complicated, making it difficult to value such arrangements on a comparable basis with other debt issues (for example, in calculating the yield one would need to include the higher transaction costs, the premiums paid for third party credit enhancements, etc., rather than simply the interest cost). This complexity can make it difficult for both the borrower and the general public to assess whether structured financing of this sort is actually a "good deal" from the perspective of the budget. As a result, particularly where governance issues are a problem, there could be collusion between government agents and lenders, resulting in a higher risk-adjusted cost of financing than is otherwise warranted. Alternatively, the lack of transparency may make it difficult for the government to properly price the risk-return trade-off associated with this more complicated form of financing, resulting in excess profits for the intermediary putting together the arrangement.

VIII. INTERNATIONAL CASE STUDIES

The first public sector securitization of future flow receivables was completed in 1987 when Mexico issued debt backed by future international telephone settlement payments to the government from *Teléfonos de México S.A. de C.V.* Since then Latin American issuers have dominated the market, with Mexico accounting for over one-half of all asset-backed sovereign transactions (and a further one-third coming from Argentina, Brazil, and the República Bolivariana de Venezuela).⁸ There has been relatively little such issuance in Asia,

⁷ See, for example, the recent attempts for the Argentine federal government to restructure the country's provincial debt.

⁸ See Ketkar and Ratha (2001) for a comprehensive description of the demographics of past future flow securitizations.

however.⁹ Approximately one-half of all deals concluded have been backed by oil and gas export receipts. To date, there has been no default on an asset-backed sovereign issue despite emerging market debt's being hit by several crises.

The appendix discusses several case studies in detail, including some public sector enterprises in emerging market countries—the Mexican and Venezuelan state oil companies and Pakistan Telecom—and two Argentine provinces. Here, a broad summary of the salient aspects of each case is presented along with some general lessons.

A. Overview of Case Studies

Pemex and PDVSA, the state-owned oil and gas companies of Mexico and Venezuela, are classic examples of securitized financing backed by oil exports to North America. Pemex is particularly interesting since its debts are in several tranches; some tranches carry an unconditional and irrevocable third-party guarantee (with correspondingly higher ratings) and others are subordinated with no insurance (and thus have a lower credit rating). In both the PEMEX and PDVSA cases, the debts contain a number of covenants and fast amortization triggers and are viewed as “bankruptcy remote” (and thus rated several notches higher than the sovereign).

Pakistan Telecom (PTCL) is of interest because it is one of the few cases of securitized financing by a public sector entity that has been subject to a sovereign default. PTCL floated bonds backed by tariffs paid by overseas telephone companies for the use of PTCL lines. In May 1998, Pakistan imposed capital controls and, in 1999, restructured its Paris and London Club debts. However, despite this effective sovereign default, the secured PTCL bonds have not been subject to any form of restructuring and, while the transaction has been downgraded, it remains rated above the sovereign.

Two Argentine provinces provide examples of securitized financing that take place entirely inside the Argentine sovereign territory. **Tucumán** has issued notes backed by a pledge of part of the province's revenue sharing with the federal government. **Tierra del Fuego** has issued bonds collateralized by the oil and gas royalties of the province. In both cases the issues are rated above the general obligation rating of the province but below that of the sovereign. Both arrangements are heavily overcollateralized and contain credit enhancements such as early amortization triggers and sizeable debt-service reserve accounts.

⁹ There is more activity on the private sector securitization of future receivables in Asia such as mortgage backed securities, securitizing bank card receivables, and others. See *AsiaMoney* (2000).

B. Lessons From Case Studies

Several lessons can be drawn from the case studies, substantiating the discussion in the earlier part of this paper.

- In cases where the borrower is rated above the sovereign, all the financial flows take place outside the jurisdiction of the originator's home country (unlike, for example, the debt issues of the Argentine provinces).
- In many of the cases, recourse to secured financing arrangements is prompted by restricted access to other financing alternatives (such as with PEMEX's return to financial markets following financial market volatility caused by the Russian default).
- Securitization of future receivables has proved remarkably robust (even in the face of sovereign default in Pakistan) but can cause sizeable complications in the event that the liabilities need to be restructured (as in the Argentine examples).
- In all the case studies, secured financing tends to tie up a large amount of revenue flows, in the form of both overcollateralization and large debt-service reserve accounts.
- The public sector typically remains the residual claimant on the revenue flows, with the entire arrangement structured to ensure the lenders bear the minimum of risk (i.e. secured arrangements are not used as a mechanism to share risk between borrower and lender).
- Despite the credit enhancements built in to the securitized financing structure, third-party financial assurances are still very common.

IX. THE CASE OF THE PHILIPPINES

In the Philippines there has been some interest in the use of securitization of future revenue flows to meet the financing needs of the government at a lower cost than a simple issue of bonds backed by government fiat. Only one such securitization has actually been put in place in the Philippines—that of Philippine Airlines—and this is discussed in the following section. In addition, the possibility of securitizing future revenue flows from PAGCOR (the Philippine Gaming Authority) and from the Malampaya natural gas project is discussed.

A. Philippine Airlines¹⁰

Philippine Airlines (PAL) put in place a five-year bank transaction in 1997 to securitize PAL's U.S. ticket receivables. The deal was structured to allow creditors recourse not just to

¹⁰ See Kabance (2001) for greater detail.

the receivables but also to the company itself should the receivables fall short of the required debt service. At the time the deal was put together, the company was highly leveraged and subject to considerable financial uncertainty due to the turmoil from the Asian crisis. In addition, it should be noted that the deal was unrated.

In June 1998, PAL filed a petition for rehabilitation under the Philippine bankruptcy code and suspended payments on all debts. However, the secured borrowing was not interfered with because it was considered a sale of receivables rather than a borrowing transaction. In September 1998, after the company announced it would be suspending foreign flights, US authorities seized PAL planes following a court petition by the secured creditors. However, the suspension of flights lasted only one month and, despite the suspension, there was sufficient cash flow already accrued in the SPV reserve account to cover the debt service costs during this period. As a result, following legal action by PAL, the planes were released.

In March 1999, the company submitted a rehabilitation plan and in April resumed payments on its debt obligations. Most creditors' claims were restructured but secured lenders received the most favorable treatment. In addition, during the rehabilitation period the secured creditors never chose to exercise their right of recourse to the company itself. Doing so would have jeopardized the investors' position of being the counterparty to a sale of receivables, and may have highlighted the debt characteristics of the securitized deal (making the investors subject to restructuring along with other creditors).

B. PAGCOR

PAGCOR is the Philippine Amusements and Gaming Corporation, a wholly owned government corporation that provides lotteries, casinos, and resorts in the Philippines. It operates 12 casinos, two slot machine arcades, and 85 bingo parlors across the country, and remits 52.5 percent of its gross gaming revenues to the National Government. Its gross revenues reached P14.6 billion by the end of 2000 and, for 2001, Pagcor expects to have gross revenues of over P16 billion. There are legal restrictions preventing PAGCOR from being privatized and part of the nontax revenue flows to the National Government budget are nominally earmarked for the President's social fund.

Proposals have recently been made for PAGCOR to issue P18.5 billion in three- to six-year bonds backed by revenue flows from its gaming operations. The proceeds from this bond issue would be used to purchase a 60-hectare property on the reclaimed land of Manila Bay from the state-owned Philippine Estates Authority (PEA) for development into an amusement complex; PEA would then pay a dividend to the National Government (entering the budget as nontax revenues). It is unclear what the economic advantages to such an arrangement would be, as compared to the National Government borrowing directly. Since the entire operation is onshore and peso denominated it bears all the exchange rate, transfer, and convertibility risks of a normal sovereign issue. As such, it will not receive a credit rating that is above the sovereign ceiling (indeed, it is not clear that the issue will be rated at all). It seems then that the primary rationale for the issue is to improve artificially the headline National Government deficit. Such an approach is unlikely to sway market analysts, and may

come at a price in the form of tying up part of future National Government revenue inflows, higher transaction costs in putting together the financing arrangement, and potential legal challenges (due to the existing legislated earmarking of a portion of PAGCOR revenues).

C. Malampaya Gas Project

In 1992, Shell Philippines Exploration B.V. (a subsidiary of the Royal Dutch Shell Group) discovered the Malampaya gas field 70 kilometers northwest of Palawan. Preliminary drilling confirmed about 2.7 trillion cubic feet in gas and 85 million barrels of condensate in the reserve (which should last 20 years at current production levels). Shell committed \$4.5 billion in investment in the Malampaya Deep Water Gas to Power Project to extract the natural gas from 3,000 meters below sea level and transport it by pipeline to a shallow water production platform (which separates the condensate from the gas and loads the condensate onto tankers). The dry gas then travels by a 504-km. subsea pipeline to an onshore gas plant in Tabangao, Batangas, for delivery to three power stations, with a capacity to generate 3,000 MW. In October 1999, Texaco acquired a 45 percent interest in the project in return for contributing to the remaining \$2 billion upstream construction costs, and in March 2000, the Philippine National Oil Company bought a 10 percent share from Shell. On October 1, 2001, the 1,000-megawatt Santa Rita power plant in Batangas began producing electricity with the first gas from the Malampaya field.

The government has discussed the possibility of issuing \$500 million of dollar-denominated debt backed by the future royalty flows from the Malampaya gas project. However, such an arrangement is unlikely to receive a better-than-sovereign credit rating for a number of reasons. First, the gas output of the Malampaya project is contracted for sale to the National Power Company (NPC). As such, any securitization of the gas project flows will take into account the likelihood that NPC will meet its payment obligations in a timely manner. Since NPC is rated below the National Government, the receivables generation and obligor risk are likely to weigh heavily on the risk premium attached to such a debt issue (recall that the majority of securitized deals have been associated with revenue sources that are backed by sales to entities of excellent repute). Second, the sale of and payment for the gas will be entirely within the Philippine government's jurisdiction. As such, the future flow receivables are likely to bear the same transfer and convertibility risks as those of any other domestic borrower. Third, since the transaction will be onshore it is not clear what the tax arrangements concerning the issue will be; for example, are documentary stamp tax, final withholding, and the gross receipts tax to be levied on the transaction? Fourth, there may be some legal uncertainty concerning the claim the provincial government of Palawan may have on the revenue flows derived from the gas project. Finally, there is a concern that Malampaya-secured debt would give preferential treatment to the country's other lenders and violate the "negative pledge clause" in the state's bilateral and multilateral loan agreements (thereby halting any future lending by such agencies). Therefore, any arrangement to securitize future gas royalty receivables will not benefit from the primary advantages of secured financing (since it does little to mitigate the risks discussed in Box 1), but will bear many of the downsides discussed in Section VII.

X. CONCLUSIONS

In perfect capital markets, there seems to be little rationale to partition government revenue streams to collateralize different debt issues. However, where there are informational asymmetries that prevent a public sector entity from accessing international financial markets, the securitization of future flow receivables can play an important role. Such cases may include sovereign borrowers who are new to global capital markets, or sovereigns with a poor track record for fiscal discipline or for maintaining convertibility. In periods of increased market volatility and uncertainty, securitized financing may provide a useful tool for even responsible sovereign borrowers to maintain market access. In addition, such arrangements can be useful in exploiting the institutional segmentation of credit markets and can provide a greater variety of instruments as alternatives tailored for particular investors (which, in turn, can reduce financing costs to the public sector). There appears to be little reason to view secured financing as a way to hedge the risk of future receivables or to avoid legal restrictions on privatization.

Sovereign borrowers, however, should be cautious that such structured financing is by no means a “free lunch.” By subordinating existing and future unsecured borrowers, the public sector can reduce or even reverse the cost advantages of securitizations. In addition, by compromising the preferred-creditor status of multilaterals and potentially breaching other debt covenants, the sovereign may face reduced access to official financing and perhaps open itself to litigation. In calculating the benefits of a securitized arrangement the public sector has to take into account the higher transaction costs of collateralized financing, the additional costs of third-party credit enhancements, and the difficulty the complexity of the arrangement poses in assessing the true cost of financing. Finally, securitizing future flow receivables inevitably reduces both budget and debt-management flexibility.

In the Philippines case, there appears to be little reason for the sovereign to undertake secured financing (either for flows from PAGCOR or Malampaya) as such financing is unlikely to provide a cost advantage over unsecured budget financing and will suffer many of the shortcomings highlighted in the previous paragraph.

SOME INTERNATIONAL CASE STUDIES

PEMEX

Pemex is the state-owned oil and gas company of Mexico; it is Mexico's largest company, and ranks among the world's largest petroleum enterprises as measured by reserves, assets, production, and sales.¹¹ Pemex is entrusted with the planning and strategic management of Mexico's entire petroleum industry and has exclusive authority for gas and oil production and sales in Mexico;¹² aside from part ownership of a U.S. refinery, all of Pemex's assets are in Mexico. The Mexican government itself retains ownership of the hydrocarbon reserves developed by Pemex and Pemex is subject to a substantial taxation burden amounting to approximately 60 percent of sales.

Between December 1998 and February 1999, Pemex floated \$2.6 billion in notes that were structured to come due between 2003 and 2018 and sold at spreads between 125 and 412 basis points over U.S. Treasuries (relative to spreads on unsecured Pemex debt of 462 basis points and sovereign spreads of around 570 basis points, see Table 1).¹³ The notes were issued by Pemex Finance (PF), a Cayman Islands SPV owned by a charitable trust. The notes were secured on the export of Maya crude oil from Mexico into the United States and Canada. In particular, sales of crude to 21 designated customers (mainly in the United States and Canada) were irrevocably directed to offshore PF accounts.¹⁴ Since all cash flows are captured offshore, they are effectively isolated from sovereign action and the only way for the Mexican government to force a default is to divert its sales to new customers (which is highly unlikely since only a few refineries are able to process the heavy Maya crude and almost all of these already have long-term supply agreements with other producers). In any case, in the event of Maya's production being disrupted, Pemex is required to deliver other grades of crude to the designated customers.

¹¹ Pemex currently has shown proven reserves of 45 billion barrels of oil or 29 years of production at current levels.

¹² Non-Pemex participation is, however, permitted in petrochemicals and gasoline marketing.

¹³ For a discussion of the historical properties of yields on Pemex debt relative to that of Mexican sovereign debt, see Ketkar and Ratha (2001).

¹⁴ Approximately 80 percent of such sales were to designated customers that had credit ratings of A or higher.

Table 1. Summary Indicators of Pemex Debt

Transaction	S&P Rating	Issuance size (US\$Mil.)	Average life (Years)	Spread (b.p)	Coupon (%)	Issuance date
Pemex Finance A	AAA	500	3.0	125.0	5.720	12/04/98
Pemex Finance B	BBB	350	7.0	350.0	7.000	12/04/98
Pemex Finance C	AAA	400	10.0	175.0	6.300	12/04/98
Pemex Finance D	BBB	250	18.0	412.5	9.150	12/04/98
Pemex senior unsecured corporate bond	BB	600	—	462.5	9.375	12/02/98
Mexico sovereign debt	BB	1500	—	571	9.875	12/04/98

Source: Buendía (1999).

While associated with Pemex, the debts of PF are not guaranteed either by Pemex or by the Mexican government. The “A” and “C” tranches carry an unconditional and irrevocable guarantee of full, complete, and timely payment of scheduled interest and principal provided by MBIA Insurance and Ambac Assurance (both AAA rated insurers); as a result these notes carry correspondingly higher (AAA) ratings. The “B” and “D” tranches are subordinate and without insurance and thus have a lower (BBB) credit rating.

In addition to the commercial guarantees, all the notes are overcollateralized with 3 times the debt service pledged to the SPV to protect investors from a sharp decline in both price and demand for Maya crude—even with crude at \$8 a barrel and a 10 percent decline in export volume the debt service obligations would still be honored. In addition to overcollateralizing, the debt is structured to include a fully funded three-month debt-service reserve account. As a result, the PF notes are rated several notches higher than the sovereign foreign-currency rating.

The loan contracts contain a number of covenants that are triggered if PF fails to make any scheduled payment, if the liability-to-equity ratio of PF exceeds 7, if the debt service coverage falls below 3 for more than 60 days, if PF or Pemex go bankrupt, or if Pemex’s oil producing assets are transferred to another party. Upon the occurrence of such events, receivables will be trapped in a retention account to protect the investor’s cash and a fast amortization of the notes is triggered.

Petróleos de Venezuela S.A. (PDVSA)

PDVSA was created in 1975 to manage the assets from nationalizing the República Bolivariana de Venezuela’s domestic oil industry; the republic is PDVSA’s sole shareholder. PDVSA coordinates most aspects of the petroleum and petrochemical industry in the republic and controls the largest proven oil reserves in the western hemisphere. After servicing all its foreign currency obligations, PDVSA remits its net foreign currency receipts to the central

bank where it has, by law, priority access to the bank's foreign exchange reserves. PDVSA is ranked as the third largest oil company in the world and has around 20 percent of its assets outside of the República Bolivariana de Venezuela (mostly U.S. refineries operated by CITGO).

In 1998 PDVSA incorporated a wholly owned subsidiary, PDVSA Finance Limited, which is domiciled in the Cayman Islands. In May 1998 PDVSA Finance floated \$1.8 billion of debt and in March 1999 PDVSA Finance accessed the international capital markets for a further \$1 billion and a Euro-denominated issue of €200 million. The deals were secured on receivables from exports to North America of heavy sour crude oil to certain designated customers. These export receivables were diverted to a segregated payment account in New York via irrevocable notice and acknowledgement agreements that were signed with designated customers and which are enforceable under New York law. Since PDVSA Finance is an offshore, bankruptcy-remote SPV, it receives a credit rating that is several notches above that of the sovereign.

While the República Bolivariana de Venezuela is subject to production limits by OPEC, the securitized transaction is protected from the effects to such production cuts by significant overcollateralization. The structured finance arrangements have covenants to ensure a four times debt-service coverage ratio to protect investors from price and production uncertainties.

Pakistan Telecom¹⁵

In 1997 the Pakistan government put together a sale of future-flow receivables from Pakistan Telecom (PTCL) to raise \$250 million. PTCL at the time was fully government supported and 88 percent state owned and so was tied inextricably to the fortunes of the Pakistani government. The receivables that were securitized in the deal were the net amounts generated by tariffs paid to PTCL by overseas telephone companies (MCI, AT&T, etc) for the use of PTCL's telecommunication infrastructure when completing international calls. The deal was overcollateralized by more than 100 percent and, as a result, the SPV has since accrued a debt service reserve which will be liquidated in 2003 when the transaction matures.

In order to put the deal together the international carriers signed agreements that legally obligated them to remit payments into the offshore SPV used to pay investors. In doing so, the deal was able to mitigate the sovereign transfer and convertibility risks associated with the flows (since the sums in question were never under the control of either PTCL or the Pakistani government). As a result of ensuring this bankruptcy remoteness and, given the high credit quality of the receivables payees, the transaction was rated above the foreign currency sovereign debt rating of Pakistan. The deal was also rated above PTCL's local currency rating, indicating that the secured creditors would continue to be paid even in the event of a default to local creditors.

¹⁵ Details from Kabance (2001)

However, since the transaction was consummated, there have been significant reductions in the net settlement tariffs being received by the SPV (largely due to the fact that the ratio of incoming to outgoing calls has decreased). In addition, the credit outlook for both Pakistan and PTCL have worsened considerably. In May 1998 Pakistan officially froze bank foreign currency deposits, causing Pakistani banks to default on their own debt and, in 1999, the government restructured its Paris and London Club debt obligations. However, the PTCL future flow-backed bonds have not been subject to any form of restructuring. As a result, while the secured transaction has been downgraded, it still remains rated above that of the sovereign.

Tucumán Province

The Province of Tucumán is located in the northwest part of Argentina and runs a sizeable fiscal deficit. Approximately $\frac{3}{4}$ of province revenues originate from federal transfers. On the spending side, 60 percent of revenues are allocated to pay personnel costs, with a further 31 percent going to interest and nondiscretionary transfers to municipalities. Tucumán has a heavy debt burden, which totals more than $1\frac{1}{4}$ times revenues, and which has grown 30 percent since 1997. In December 1999 Tucumán, along with eight other provinces, entered into the Financial Assistance and Fiscal Improvement Program with the federal government and made a commitment to reduce its deficits and improve the efficiency and transparency of its expenditures. In return, federal financial support of \$218 million is provided to the province to improve its debt profile.

In August 1997 the province issued \$200 million in notes, which are set to mature in 2004 and are backed by a pledge of 35 percent of the province's monthly coparticipation tax revenues and a peso claim upon the province of P12.3 million per month.¹⁶ The notes are rated above the general obligation debt of the province but are constrained on the upside by the rating of the sovereign. Additional credit enhancement is provided by a fully funded six-month debt-service reserve account. The deal contains covenants to trigger early amortization of the transaction (such as if debt-service coverage ratio falls below 1.25). In January 2002, the transaction with the province of Tucumán was downgraded to C from B- due to doubts about the federal government's willingness to remit the full value of Tucumán's coparticipation in shared tax revenues and a general downgrading of the Argentine sovereign state.

Province of Tierra del Fuego

Tierra del Fuego is an archipelago situated off the southern tip of the Americas. The province is well endowed with natural resources and hydrocarbons represent a key industry (at end-

¹⁶ Close to 100 percent of Tucumán's revenues have been pledged as collateral to creditors of one form or another.

1999 proven reserves of oil and gas were 19 cubic meters and 116 cubic meters respectively). In 1999, the province entered into an agreement with the federal government to reduce its deficit in return for assistance with its debt-service payments from the Fiduciary Fund for Provincial Development. Since then, the province has improved its fiscal position, in particular by cutting personnel spending. The province's debt burden is quite substantial and has risen rapidly (in part due to assumption of liabilities of the provincial bank); the debt currently amounts to 1.3 times total provincial revenue and equals US\$5,500 per capita.

In 1997 Tierra del Fuego issued US\$55 million in notes collateralized by the oil and gas royalties accruing to the province (such hydrocarbon revenues made up 15 percent of provincial revenues in 2000). These collateralized oil and gas royalty notes, which mature in 2003, make up a relatively small proportion (6 percent) of total provincial debt and are rated C.

The notes are structured as first-priority claims on the peso oil and gas royalty payments to the province paid by dedicated concessionaires.¹⁷ The loan contracts are heavily overcollateralized (currently royalties are 2.6 times scheduled debt service) and contain credit enhancements such as an early amortization trigger (if the debt-service coverage ratio falls below 1 ¼) and a three-month debt-service reserve. The notes are set up as a trust structure with dedicated onshore collection and debt-service accounts.

¹⁷ Royalties are determined as 12 percent of the production valued at the well head price for both oil and gas.

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