Discussion Paper No. 0008 July 2000

Financing Private Sector Participation in Infrastructure Development: An Overview of Conditions and Options in Philippine and International Capital Markets

by

*Renato E. Reside, Jr.**

*Assistant Professor, School of Economics
University of the Philippines

Note: UPSE Discussion Papers are preliminary versions circulated privately to elicit critical comment. They are protected by the Copyright Law (PD No. 49) and not for quotation or reprinting without prior approval.

Financing Private Sector Participation in Infrastructure Development: An Overview of Conditions and Options in Philippine and International Capital Markets

Renato E. Reside, Jr.[1]

[1] Assistant Professor, University of the Philippines School of Economics. Many thanks to Annie Fernandez, Corrina Gochoco-Bautista, Lito League, Ghon Rhee, Yutaka Shimomoto, and the Securities and Exchange Commission for assistance.

Abstract

The Asian financial crisis has impaired the flow of capital financing the construction of infrastructure crucial for sustaining development in the country. As such, one of the post-crisis challenges has been the development of new and alternative financing mechanisms in light of emerging fiscal constraints of government. This paper presents an analysis of the recent trends and financing needs of infrastructure projects and explores various alternative modalities for the financing of infrastructure projects in the Philippines.

I. Introduction

Infrastructure development by nature requires large lumpy capital investments in equipment and material. The construction of power plants, toll roads, and water and sewerage treatment plants, requires massive short- and long-term commitments of equity and debt from project developers and financial institutions alike. Such large and long-term commitments of financial resources cannot be mobilized without efficient and well-functioning domestic and international financial intermediaries and capital markets. The Asian financial crisis has contributed to the international financial community's growing recognition of the need for efficient and well-functioning markets, as well as the importance of the role played by both domestic and international financial markets in economic development. The adverse shock brought about by the crisis has profoundly affected infrastructure development and project finance. The flow of wholesale and retail capital market credits has dried up for many ambitious projects in the water, power and transport sectors. Project developers have seen their credit ratings plunge along with sovereign ratings across the region. As a result, the costs of both debt and equity capital have risen for all projects, reflecting rising risk premia in all sectors.

In the Philippines, like in many developing countries affected by the crisis, sustained infrastructure development is at risk. The Asian crisis has temporarily slowed down the pace of international and domestic savings mobilization towards infrastructure. Despite these setbacks, however, demand for infrastructure finance continues to grow in spite of the crisis **(see Table 1)**. These requirements need to be filled, as there is a growing perception within the domestic and international business community that the dearth of infrastructure and the high cost of utilities undermines the Philippines' competitiveness relative to its neighbors.

Fundamental weaknesses that have characterized banking and capital markets prior to the crisis have been aggravated and magnified by financial volatility and the ensuing macroeconomic instability. The growing market for longer-term domestic credit, which had been helping finance a larger proportion of capital expenditure prior to the crisis, has shrank, the victim of reluctant lenders and high interest rates. This has left project infrastructure finance weaker than ever in the transition, as the country strives to implement the reforms necessary to restore macroeconomic stability and confidence from both domestic and foreign savers. Credit rating agencies have begun to more closely scrutinize the impact of the crisis on single project corporations and diversified project development firms alike.

Crisis notwithstanding, the pause in project finance has given market participants a chance to reflect on nascent trends and opportunities in their market. Asian countries will still require infrastructure to sustain their paths towards development. They will still require large investments in debt and equity to finance their projects, and they will still require well-functioning and well-regulated financial intermediaries to channel capital to their market. Most of all, they will need to rely on better, stronger financial structures and markets to mitigate the risks involved in project and corporate finance. The distinction between these two fields is now becoming more blurred, as we shall see later. This paper will survey the market for financing Philippine infrastructure, precisely to identify nascent trends and opportunities.

Table 2 presents indicative sources of financing for Philippine infrastructure projects. Note that at present, most of the financing modalities are dominated by traditional sources of foreign financing. These include syndicated project finance loans from international commercial banks, and multilateral institutions, as well as the use of American Depository Receipts (ADR's). ADR's have become an increasingly popular means for emerging market issuers to tap international capital markets.[1] Note also that some project structures have begun to use domestic sources of funds. However, domestic commercial banks will typically limit term lending to 7 – 8 years. Many of the existing structures will have to be strengthened or re-engineered in light of the Asian financial crisis, and rethinking the present framework for infrastructure finance in the Philippines will be the subject of the rest of this paper.

II. Trends in Infrastructure Finance in the Philippine

The choice of modalities for financing any infrastructure project will depend on the underlying nature of the undertaking itself. It is therefore necessary to examine the nature, structure, as well as trends in Philippine infrastructure projects first, to determine how best to finance them and to determine what structures are necessary or require further strengthening for further development.

Table 3 briefly summarizes the cross-sectoral financial profile of Philippine infrastructure projects. Note that investors in power projects have historically required higher rates of return (given their higher risks) compared to investors elsewhere. Given its inherent reliance on capital expenditure to improve and extend water systems, as well as build treatment and sewerage facilities, water projects will be more capital-intensive than power projects (and are more likely to rely on leverage). In contrast, power plants and transport projects will have varying degrees of capital intensity. Hydro, geothermal, and natural gas plants will tend to be more capital-intensive than coal and gas turbine plants.

In general, the following trends characterize the present infrastructure development framework in the Philippines:

(1) there is a need for the Philippine government to manage its growing volume of contingent liabilities **(The World Bank, 1998, Llanto and Soriano, 1998, Reside, et. al. 1999)**;

(2) (related to 1) the government will be much more selective in its assumption of infrastructure-related risks (so the national government will assume fewer risks and provide fewer guarantees);

[1] This was made possible when the US Securities and Exchange Commission approved Rule 144a, which granted an exemption to the registration requirement for traditional bond offerings. The form of disclosure for a Rule 144a issue is not fully determined by regulation, but its offering/disclosure document will generally contain the same information as would be disclosed in a more traditional US SEC-registered bond. US Generally Accepted Accounting Principles (GAAP) is not required for the offering, but investors will require a comfort letter from the issuer's accountants and a legal opinion on the adequacy of due diligence. The larger investor base lowers spreads for Rule 144a issues relative to traditional private placements. Arranging a rule 144a issue will take between 12 – 14 weeks.

(3) there is growing recognition that the primary financial risks in infrastructure projects are maturity mismatches and currency mismatches, and that the primary non-financial risks are market risks and legal risks **(Reside, 1999);**

(4) markets for infrastructure-related services (such as water, transport, power, etc.) will be increasingly competitive in the future;

(5) there is a need to develop and strengthen government's capacity to identify, evaluate, plan and manage projects;

(6) there is a need to diversify fund sources and develop other markets (i.e., stock and bond markets) that can augment the resources of the banking sector in mobilizing domestic savings for infrastructure; and

(7) there is a consensus that high interest rates, high inflation, and volatile financial markets and prices all stymie the demand for all types of credit, including infrastructure-related credit.

All of these trends point towards a major realignment in the structure of infrastructure-related financial transactions. (1) and (2) imply that more and more of the types of risk typically passed onto the national government in the past (e.g., market risks and foreign exchange risks) will now be passed onto other parties willing to assume them. These may include fuel suppliers (in the power sector), local government units (LGU's) and even the private project proponents themselves. It is therefore necessary to strengthen domestic capability to assess the relative credit-worthiness of these institutions. (3) implies a growing need for new financial markets, institutions, and structures to mitigate such risks. (4) implies that the viability of participants in infrastructure markets in the future will increasingly depend on their ability to lower their marginal costs (and therefore lower their operations and maintenance costs, fuel costs, and personnel costs). In this regard, ability to compete on the basis of non-price factors will also be increasingly important, along with increased emphasis on strengthening management and marketing skills. In this regard, competition should screen out poor performers and pave the way for better, stronger and more capable project developers.[2] (4) also implies that there is (slowly) increasing public awareness of the effects of price distortions on the stability and sustainability of markets. (5) implies that the risks of increased competition may be mitigated by better project-structuring and planning. Finally, (6) implies that a well-managed and stable macroeconomy is crucial for infrastructure development.

Moreover, an additional factor raising risks in infrastructure finance is the fact that project finance is traditionally and inherently non-recourse in nature. Non-recourse project finance implies that even if a project developer is undertaking several projects at the same time, the individual projects often have to rely on the strength of their own specific assets and balance sheets in order to qualify for credit.

Non-recourse project financing represents a radical departure from traditional corporate finance, since the latter is more likely to involve partial or full recourse claims on the assets of the firm as a whole (i.e., the aggregate of a firm's assets and projects) **(Standard and Poors, 1998).**

[2] This will of course work to the advantage of the government and the developer and the people.

Project finance, though is slowly evolving to respond to the challenges brought about by requirements for more equitable risk-sharing in infrastructure projects. As more project developers and market participants are called upon to share the greater burden of risks, project finance is increasingly evolving into corporate finance. **Table 4** summarizes the project life cycle. Note that project finance can augment corporate finance, or be the sole source of finance in the construction and operation phases of a typical project. **Table 5** presents issues distinguishing corporate finance from project finance. Since project finance tends to evaluate credit quality on the basis of project cash flows and assets alone, off-taker quality is crucial to the success of this mode of financing.

All of these recent developments underscore the need to find better, stronger project proponents for infrastructure development and the need for concomitant undertakings by the government to strengthen its internal capacity to evaluate projects, mitigate overall risk, and strengthen the legal and regulatory environment in increasingly competitive markets. The future and nature of infrastructure finance in the Philippines will be dictated by these fundamental factors.

III. The Basics and the Future of Infrastructure Finance in the Philippines

A. Typical Project Financing Needs

In general, infrastructure financing is characterized by the need for long-term commitments of large lump-sum amounts of bank or bond credit, as well as equity (see **Table 6** for a comparison of these three sources of financing across selected Asian countries, **Table 7** for a comparison of each of the three modalities, and Box 1 for major bond covenants). With these requirements in mind, the following would be ideal conditions for domestic and international capital markets to finance requirements for infrastructure projects:

a) stable and predictable cash flows over the life of the project;
b) pricing to reflect appropriate risk premia; and
c) to the extent possible, financing in the same currency as project revenues.

To a large extent, addressing these requirements in the future will have to be consistent with the fundamental socio-politico-economic factors influencing attitudes towards infrastructure which were discussed in Part II. In order to reduce its reliance on government guarantees and succeed in increasingly competitive markets, project finance must be characterized by the following additional features:

a) a broader spectrum of potential sources of capital, including equity and bond markets;
b) improved credit rating capability and information disclosure mechanisms;
c) flexible mechanisms and structures which mitigate and reduce risk through diversification, and hence reduce the costs of both equity and debt;
d) mechanisms and structures which encourage a more rational sharing of risks; and

e) mechanisms and structures which mitigate and reduce currency and maturity mismatches.

With these considerations in mind, this paper suggests the following requirements for financing future infrastructure development in the Philippines:

(1) a stock market that is more responsive to the needs of infrastructure markets and projects;

(2) deep and liquid long-term bond markets;

(3) increased participation of sources of long-term capital, such as pension funds, and insurance companies;

(4) mechanisms for pricing long-term debt;

(5) asset-backed securitization in the form of collateralized loan obligations (CLO's) and collateralized bond obligations (CBO's);

(6) deep and liquid markets for mitigating currency and maturity risks;

(7) stronger and more capable domestic credit rating agencies, augmented by stronger information disclosure systems; and

(8) legal and regulatory systems geared towards ensuring fairness and transparency in infrastructure markets.

In varying degrees, the Philippine government and its private sector partners have been working to address these needs. The work thus far accomplished and continuing is summarized in the following sections.

B. Developing the Domestic Stock Market to Help Address Infrastructure Financing Requirements

The Philippine Stock Exchange (PSE) has an important role to play in developing infrastructure. This is true notwithstanding the fact that debt is generally less expensive compared to equity.[3] Equity plays a role in mitigating the moral hazard that exists when too much leverage occurs. Equity ensures that owners and investors have an interests and incentives more compatible with those of the creditors of a project.

The Philippine Stock Exchange has undergone major changes in the last decade, with improvements in clearing and settlement, scripless trading and greater participation from foreign brokerages. These improvements in the PSE played a role in attracting foreign portfolio capital during boom years in 1995-1996. Although the Asian crisis undermined efforts to mobilize more

[3] This result is due to the fact that equity claims are subordinate to debt claims.

domestic capital **(see Table 8)**, the PSE is presently equipped with structures which allow and facilitate the listing of infrastructure firms.

The PSE recently approved amendments to its listing rules, granting infrastructure companies greater access to the domestic stock market. The amendments allow such firms to bypass regulations requiring a track record. In lieu of a track record, these companies must have a positive and predictable income stream and profit potential for a minimum amount of years. In spite of its potential for channeling domestic and foreign capital into Philippine financial markets, however, the PSE appears not to have made much headway in generating the type of capital vital to infrastructure projects. The problem appears to be the absence of a well-diversified firm with an intention to list. Single project IPP's, or most single-project infrastructure companies, cannot be valued under conventional valuation methods because of their limited life spans. Thus, despite the fact that many single project firms have are relatively risk-free when it comes to construction, demand, fuel price or currency risk, investors still place a premium on those companies which can secure more lucrative projects which can enhance asset value **(Parsons, 1997)**. Thus, it is unlikely that single project IPO's will ever get the attention of most investors. The key to succeeding in infrastructure IPO's appears to be diversification across projects.

In addition to structural enhancements to address infrastructure financing needs, the PSE, much like many of its counterparts in the Asian region, also needs to respond to weaknesses and concerns that have been exposed by the Asian financial crisis. A description of the recommendations in this light may be found in **Asian Development Bank (1999)**. The PSE has also taken measures to strengthen their clearing and settlement framework, to achieve increased consistency with international best practices (see **Table 9** for the recommendations of the Group of Thirty).

C. Developing Deep and Liquid Long-Term Domestic Bond Markets

On the face of it, a large majority of the infrastructure projects in the Philippines appear to be excellent candidates for domestic bond market financing.[4] Many of the projects are backed by strong and explicit undertakings of national government support, and they can also avail of government incentives and other guarantees. In addition, many of the projects (especially those in the power sector) have rates of return guaranteed by the government. Most importantly, most of the projects involve certain cash flow streams, ensuring that potential credit quality should be good. In addition, the government also has a good and improving history of keeping its financial commitments, as well as an improving credit rating.

These factors notwithstanding, numerous constraints impinge upon the performance and efficiency of the domestic bond market. These constraints are discussed in detail in **Reside (1999)**. The analysis that paper reveals that the Philippines lags behind some of its neighbors (from Table 6, notably Malaysia and Korea) in its capacity to mobilize domestic savings through its private corporate bond market. While there are shared weaknesses across nations (primarily with respect to lack of depth and lack of longer-term issues), some of the other shortcomings

[4] This should hold for traditional corporate financing, and even for non-traditional non-recourse financing.

unique to the Philippines are related to the tax and legal framework, as well as to transactions costs. More specifically, the present tax framework discourages liquidity in the domestic bond market.

D. The Ability to Properly Price Long-Term Debt

Any competitive market relies on the pricing mechanism to attain a proper allocation of resources. If this mechanism fails too work properly, allocative efficiency is not attained. In financial markets, participants rely on price signals from government securities markets to serve as benchmarks for setting appropriate risk-adjusted prices for prices of securities issued by the private sector. In the Philippines, however, long-term credit markets continue to use yields on short-term securities (in the form of the yield on the 90-day Treasury bill) to price their securities. At best, yields on long-term securities are the short-term rate plus the best estimate of the risk premium for longer tenor and for class of debtor.

In recent years, the government has taken measures to address this anomaly, gradually introducing and standardizing the issuance of zero-coupon government bonds with longer tenors **(Reside, 1998)**. It is anticipated that greater depth and liquidity in the market for these bonds will encourage active secondary market trading and a more market-determined long-term yield, to be able to guide issuers of debt in long-term credit markets, such as infrastructure credit markets.

E. Asset-Backed Securitization (ABS)

Asset-backed securitization is the process of conveying or selling a firm's assets (usually assets representing streams of future cash flows) to special purpose financial intermediaries, which pool them together, and structure financial claims on such pools, to be sold as securities in wholesale capital or bond markets. The assets may come in the form of corporate receivables and bank loans.[5] The ABS process provides an alternative for firms to raising debt or equity, which may be a more expensive way of raising finances.[6] The strength and appeal of the ABS process as an alternative form of financing essentially springs from 3 principles:

(1) The ability to pool assets in an ABS structure provides securitizers with a vehicle to structure claims against a highly-diversified pool of assets. The gains from such diversification are manifested in the reduction in the systematic risk and overall risk of a portfolio of assets relative to the risk of any single asset, enabling securitizers to raise funds more cheaply. The ability to pool assets also creates tremendous flexibility in structuring financial claims. As a result, ABS may be structured to appeal to a wide variety of investors with different appetites for risk. In addition, ABS structures may cover a wide variety of payment schemes,[7] and a wider range of

[5] And every other imaginable asset that generates a predictable stream of cash flow.

[6] The other benefits of ABS are described in greater detail in **Reside (1999)**. As a security, an ABS may be structured like a typical bond obligation. The difference though, lies in the fact that bonds are claims on broad corporate assets, while ABS are claims on pools of other financial claims.

[7] Pass-through ABS are structures where the payment profile faced by investors correspond to the payment profile of the underlying assets. Pay-through ABS are much more flexible structures where the payment profile faced by investors is independent of the payment profile of the underlying assets.

securitizable assets, further increasing its potential for use by financial and non-financial firms alike.

(2) The transaction may be structured in such a way as to sell or convey the assets to a special purpose corporation or trust that will shield the assets and thus the securities being backed by cash flows from these assets, from any sort of claims made by the securitizing institution (i.e., the assets may become bankruptcy-remote). Since the assets may be completely freed from the claims of the securitizing institution, it is then possible to structure securities in such a manner as to enable the special purpose corporation or trust as issuers of ABS to achieve a credit rating higher than that of the securitizing institution.[8]

(3) Asset-backed securitization links wholesale capital markets with retail capital markets, enabling funds to flow smoothly between the two markets.

International developments in the field of asset-backed securitization in recent years have enabled capital markets to function more efficiently to serve capital needs in infrastructure markets. This has been manifested in the increasing utilization of securities structures known as collateralized loan obligations (CLO's) and collateralized bond obligations (CBO's) **(Standard and Poors, 1998)**. Both of these structures are essentially asset-backed securities, and they represent claims on diversified pools of claims on infrastructure-related debt, usually bank or bond exposures to several project developers or projects. The CLO and CBO structures allow institutions to free up lending capacity, to reduce long-term exposure to a particular region or class of asset, and to reduce the cost of funds. ABS are also known to have financed the construction of toll roads in China (Standard and Poors, 1998).

The Philippines is one of the few Asian countries with nascent ABS markets. Comprehensive overviews of ABS markets in the Philippines, their rules and regulations, may be found in **Reside, 1998**, and more proposed applications for the use of ABS to finance infrastructure transactions may be found in **Llanto and Calina, 1999 (see their attached paper)**. The mortgage-backed securities (MBS) market has seen the greatest volume of ABS-related issues in the recent past. The issuance of MBS has been facilitated by the issuance of a guarantee from the state-owned Home Insurance Guarantee Corporation (HIGC). The guarantee covers payment to investors on the securities side. However, the crisis-related slowdown in housing construction and mortgage lending has reduced the number of MBS issues.

The issuance of ABS in the Philippines is governed by rules set forth by the BSP (for banks and other institutions under their supervision) and the Securities and Exchange Commission (SEC) (for other institutions). The original intent in developing ABS markets was to facilitate development of housing markets, but ABS structures are flexible enough to finance infrastructure markets as well.

[8] This is the case in US MBS markets. Mortgages from various originating banks (with varying credit ratings) are purchased by Fannie Mae and Freddie Mac, both rated triple-A by Standard and Poors After the mortgages are pooled, they are securitized under a variety of MBS structures and sold in financial markets with a guarantee from the two firms.

F. Deep and Liquid Domestic Financial Markets for Mitigating Maturity and Currency Risks

Given the inherently long-term nature of operations and assets of infrastructure projects, much of the credit they are provided is fraught with the risk that there is a maturity mismatch between project revenues and project credit. The extent to which domestic capital markets can address this risk is very much dependent on the commitment by the national government to build a more stable macroeconomy, with low and stable inflation. Under these conditions, the value of cash flows from projects is known with greater certainty, and creditors may be encouraged to purchase securities with longer tenors, making capital markets more responsive and consistent with infrastructure finance. **Reside (1999)** has observed that a term transformation was slowly occurring in Philippine capital markets in the mid-1990's. This phenomenon, however, was abruptly reversed by the Asian financial crisis. It is perhaps the case that much of the dearth of credit to infrastructure at the moment is caused by the reluctance to resume term lending and the reluctance to purchase term debt issues. The dearth of long-term credit to infrastructure, as well as its associated risk is perhaps most apparent in the case of the two firms operating water concessions for the MWSS **(Reside, 1999, Fabella, et. al., 1999)**.

In addition to maturity risks, currency risks also affect the nature of project financing. There have been recent calls in the Philippines for further developing domestic derivatives markets, to address a perceived need for more liquid domestic options and domestic currency futures markets. However, a key lesson provided by the Asian financial crisis is the crucial need to enhance the capacity of regulators and supervisors to adequately oversee the operations of financial markets and transactions. While there may be adequate capacity by the private sector to structure complex derivatives transactions, there appears to be a need for greater efforts to make the requisite improvements in the government's capacity to regulate such transactions. Until such improvements are undertaken, the best way to respond to the potential currency risk in infrastructure transactions is to develop and strengthen domestic modalities for naturally hedging currency and maturity risks in financing infrastructure. In addition, investment bankers have begun to recognize the limits of financial engineering as a hedge against currency risk. Attempts to structure currency risks out of infrastructure transactions have thus far proven futile **(Chew and Coughlin 1998)**.

In light of the inadequacies and limitations of allowing more complex financial transactions and markets, the government should concentrate on developing and strengthening existing modalities and institutions for mobilizing savings in light of weaknesses in these structures exposed by the Asian crisis. Broadening domestic capital markets to allow for more complex derivatives transactions can take place later. The development of strong domestic financial markets are a natural hedge against currency risk. In the same manner, the best natural hedge for maturity risks in infrastructure finance is the development of long-term domestic bond markets.

Specific recommendations and broad outlines for addressing weaknesses and reforming domestic financial markets may be found in Reside (1999) and Asian Development Bank (1999).

G. Stronger Domestic Credit Rating Agencies and Information Disclosure Systems

The importance of credit rating agencies for developing both short- and long-term capital markets cannot be ignored **(Mariano, 1999, Reside, 1998)**. The development of domestic capacity for making independent assessments of risk and credit worthiness ensures the integrity of the market for bonds and other forms of debt. At present, the Philippines has two rating agencies: Credit Information Bureau, Inc. (CIBI), and the recently-launched Thomson Rating Services (with support from the International Finance Corporation).

The development of enhanced domestic credit-rating capacity must be augmented by parallel efforts to improve information disclosure systems in the conduct of business in financial markets. In this regard, the Philippines has taken several steps in that direction:

1) strengthening audit and accounting systems;
2) strengthening corporate and bank reporting systems; and
3) strengthening macroeconomic data reporting.

The recent measures taken by financial authorities in the strengthening of audit and accounting systems involve defining and/or redefining accounting and audit standards for the treatment of newer, more sophisticated financial transactions, as well as the treatment of non-performing loans and write-offs. The SEC and the BSP have been working towards improving the transparency of corporate and bank disclosure (explain further).

The financial system that appears to be emerging suggests that regulation and supervision must now increasingly focus on less traditional and conventional methods. The increasing trend towards the use of off- instead of on-balance sheet financing, as well as the increasing sophistication of corporate structures and transactions is driving the need for better risk-based regulation and supervision methods. Increased emphasis will also be placed on off-site supervision, on-site examination, compliance and the development of an early-warning system to reduce the probability of another crisis occurring. The introduction of newer risk-based management and regulatory systems should serve to limit bank credit and trading exposures, and prevent further losses. Other weaknesses that need to be addressed include the strengthening of information disclosure and accounting standards. These measures should address the classification and definition of non-performing assets and past-due loans, loan write-off policies, as well as guidelines for the recognition of foreign exchange losses. It has even been suggested that incentives for bank owners could minimize the need for regulatory oversight.

A fuller treatment of the reforms undertaken by the Philippines in addressing the demands for domestic regulatory and supervisory reform can be found in **Gochoco-Bautista (1999, forthcoming), and Asian Development Bank (1999, forthcoming, this paper emphasizes regional approaches to reform).**

IV. Recommendations for Moving Forward

In light of the issues discussed above, the following recommendations are proposed for improving the framework for financing infrastructure in the Philippines:

1) Macroeconomic stabilization with lower inflation and lower interest rates

Macroeconomic stabilization achieves many of the goals outlined in this paper. It helps restore certainty for project cash flows, and certainty for investors. The lower inflation and lower interest rates associated with a restoration of macroeconomic stability encourages both domestic and international fixed investment, and portfolio investments in stock and bond issues in infrastructure projects.

Since the beginning of the crisis in July, 1997, the Philippine government has achieved some success in lowering both inflation and interest rates, in the hopes of inducing greater investment, and instilling confidence in the ability of the economy to withstand the crisis. However, bank and bond credits for investments, as well as investments in general, have so far failed to respond favorably to these stimuli. It would appear that major investors and infrastructure developers are still feeling the overhang of two years of economic contraction. The latest macroeconomic data, though, appears to be encouraging, with growth in investments increasing slightly.

2) Encourage the use of securitization of investment-grade infrastructure issues to develop domestic bond market.

Several conditions present in Philippine infrastructure markets suggest that securitization will be an increasingly viable financing vehicle for the sector:

a) the quality of most of the financial assets on the balance sheets of creditors and proponents alike is good to excellent;[9]
b) the financial assets and receivables are generating or are guaranteed to return market to above-market rates of return;
c) the financial assets are covered by highly restrictive covenants in favor of the creditor; and
d) infrastructure development in the Philippines is diversifying away from the power sector and into the transport, telecommunications and water sectors.

On several occasions, the Philippine government has attempted to use the mortgage loan industry as a take-off point for broadening the role of asset-backed securitization in domestic capital markets **(Reside, 1999).** However, an examination of the quality of infrastructure-related receivables, including capacity payments (owed by the Philippine government to IPP's) suggests that asset quality can be good to excellent in the infrastructure sector. The presence of sovereign guarantees given to most infrastructure developers ensures that asset quality will remain high. Another key to successful securitization, though, is to avoid investor perceptions that the

[9] Most, if not all of the financial assets carry sovereign guarantees.

underlying assets are owned by firms that are not on-going concerns. That is, diversification across projects and across assets is important.

There are numerous potential applications of ABS in infrastructure. This includes the possibility that capacity payments and other guaranteed or certain streams of cash (owed by the government or project sponsors) may be securitized. Project structures such as CLO's and CBO's may be utilized.

Securitization may also be a viable means of dealing with stranded costs in the power sector. In the United States, the future expected cash flows of California power plants expected to be stranded assets following a period of deregulation were securitized.

Claims on pools backed by high quality infrastructure-related assets should spur demand-side interest, and should also contribute to the development of the domestic bond market. However, as **Reside (1999)** suggests, a number of supply-side barriers remain to fully exploiting domestic opportunities provided by securitization.

3) **Consider the establishment of a Special Purpose Corporation (SPC) for domestic/foreign infrastructure finance-related securitizations – a facility that will allow domestic or foreign project finance loans and receivables to be pooled, hence lowering portfolio risk and making claims against the pool more attractive to investors. The SPC will earn profits by charging a pass-through fee for each transaction or a spread over the pool rate. A Special Purpose Corporation for infrastructure paper appears to be more viable than one for housing, since an SPC for infrastructure would have the ability to trade claims papers and receivables backed by sovereign guarantees.**

While majority of the ABS transactions in the Philippines to date have securitized mortgages, the tremendous potential of the ABS structure in financing other activities remains largely untapped. Warm investor receptions for collateralized bond and loan obligations attest to the appeal of diversified financial structures and to the potential for ABS to relieve financing bottlenecks in infrastructure. The Asian crisis has slowed activity in primary mortgage markets while at the same time reducing asset quality. On the other hand, infrastructure finance remains a necessary ingredient for development. Thus, the Philippine government has upheld its commitments to claims by investors in infrastructure projects. Investors may have these claims pooled and then sold in primary ABS markets. Emphasis may be placed on developing domestic bond markets by encouraging peso-denominated securitization transactions.

Despite the tremendous untapped potentials of ABS in the Philippines, the reliance by ABS on the simultaneous smooth functioning of several markets and participants, such as primary and secondary asset markets, primary and secondary ABS markets, credit rating agencies, banks, special purpose trusts and corporations makes achieving success a difficult task. Nonetheless, the existence of some domestic capacity to structure and regulate such transactions eases the task of development.

4) **Promote the project infrastructure facility at the PSE. Encourage project developers to list equity claims and bonds at the PSE. As preparation for the development of more instruments that will allow more efficient sharing of financial risks (such as futures, warrants and options), develop regulatory capacity for such transactions.**

The PSE's facility for simplifying infrastructure listings should be strengthened and encouraged. Similar facilities offered in neighboring countries (e.g., Malaysia and Thailand) may be examined to enhance the competitiveness of our rules. At the same time, regulatory agencies such as the BSP should ensure that it has sufficient internal capacity for regulating derivatives transactions prior to further broadening participation in derivatives markets.

In addition, domestic investment houses and investment banks must be able to enhance their capacity facilitate the bond or equity issuance process for firms with a diversified portfolio of projects, and even single project firms which may want to list their issues at the PSE. This will include establishing appropriate modes of company, project and asset valuation, and the computation of the cost of capital. See **Tables 10 and 11** for a summary of risks facing concessionaires operating and maintaining the MWSS network, and their implications for financing and the cost of capital.

Proper corporate valuation will also facilitate the development and implementation of market-based regulation. This is important in virtually all utilities sectors in the Philippines, such as water, power and telecommunications, where private sector participation is growing. For example, the MWSS Regulatory Office has had to respond to petitions to adjust the discount rate used in its tariff-setting process **(Reside, 1999, and Fabella, et. al. 1999)**. However, to compute the appropriate discount rate for a given stream of cash flows from a project, regulators must follow proper valuation procedures.

5) **Facilitate development of a competitive spot market for power sales.**

The development of a spot market for power is an important step in the direction of developing commodities markets in the country. Deep, liquid and competitive markets for power contracts should improve the allocative efficiency of the power sector and ensure that the best-run and best-managed plants operate. Lower power prices at the generation and dispatch level will lead to lower business costs and increased competitiveness for the country as a whole.

6) **Continue to improve project development capacity and enhance the credit-worthiness of LGU's and strengthen the market for municipal bonds.**

Continued weakness in the fiscal position of the national government suggests that municipal bonds will be more important vehicles for project finance in the future. At the same time, it is well-known in the theory of finance that the contracting of debt should improve the debtor's fiscal discipline.

In light of the risks assumed by the national government in many of the earlier BOT investments, limits in local financial capacities to guarantee risks and grant fiscal incentives must be emphasized to local government officials. Structures which allow automatic intercepts of internal revenue allotments (IRA's) of LGU's in case of default may be expected to dominate local infrastructure financing mechanisms in the future. LGU's will only be able to pledge their IRA shares as collateral to the extent that they are not heavily dependent on such shares for financing other LGU operations. Thus, the national government and multilateral financial institutions should assist LGU's in strengthening their capacities in local tax administration and fiscal management as well.

In the same manner, the nascent project development capacity at the LGU level must be enhanced. In this regard, the national government must dedicate some resources to further strengthening the capacity at the LGU level to conduct engineering and feasibility studies for water, power, telecommunications, and other infrastructure-related industries.

7) Encourage the flow of funds from the contractual savings sector into long-term capital markets.

One way to address the maturity mismatch risk many commercial banks take in providing credit to infrastructure projects is to increase the total proportion of funding sourced from domestic contractual savings institutions, such as the Government Service Insurance Service (GSIS), the Social Security System (SSS), pension funds, and insurance companies. These institutions are better able to provide long-term credit because they possess matching long-term liabilities. This will ensure that the reinvestment risks associated with funding long-term assets with short-term liabilities is minimized.

One salutary effect in utilizing GSIS and SSS funds for infrastructure lending is to enable the two institutions to diversify their exposures away from unprofitable and low-yielding investments and into good quality domestic financial claims earning market and above-market rates of return. The **World Bank (1997)** has suggested that improving the investment portfolios of both institutions will improve their actuarial soundness.

8) If possible, encourage domestic firms with sufficient domestic infrastructure experience to explore overseas transactions, especially within ASEAN and the transition economies within ASEAN.

Project firms can hedge domestic economic risks by not only diversifying across projects, but also across countries. In this regard, domestic firms with sufficient exposure and experience in Philippine infrastructure projects should be encouraged to explore opportunities in overseas infrastructure markets. In particular, such firms may be encouraged to explore opportunities within the ASEAN region, especially in transition economies such as Vietnam and Cambodia, where the pattern and sustainability of development now requires large and long-term commitments to infuse capital investment for infrastructure.

9) Reduce uncertainty with respect to the legal and regulatory system in financial and infrastructure markets.

The accompanying paper by **Reside (1999)** in this volume suggests that perhaps the single most expensive risk assumed by the national government in previous infrastructure transactions is the risk that legal and regulatory regimes change in such a way as to undermine the profitability of proponents during the cooperation period.

With a recent history of legal decisions, policy reversals and delays undermining the interest of a number of investors, the national government must ensure more consistent legal and regulatory treatment for infrastructure providers. In this way, the need for potentially expensive guarantees may be obviated. This in turn, ensures that financing risks will fall in the future, and so will the cost of funds.

V. Conclusion

As the structure of infrastructure projects evolves away from structures where the Philippine government assumes most of the key risks into one in which risks are more equitably shared, it will become increasingly crucial for domestic financing mechanisms to evolve in a manner that will allow the private sector to mitigate these risks. This will not only involve the strengthening of domestic bond and equity markets, and the strengthening of the domestic banking sector, but also the strengthening of the structure of projects themselves. Both the government and the private sector face major challenges in achieving optimal project structures this regard, but reforms in policy and capacity strengthening are presently moving slowly in the right direction. In light of the task ahead, the recommendations listed in this paper constitute a suggested roadmap for reform.

Bibliography

ABN-Amro (1998) "Debt Capital Markets – Project Bonds" June.

Asian Development Bank (1999), "Rising to Asia's Challenge: Enhanced Role of Capital Markets". March.

Chew and Coughlin (1998), "Asian Infrastructure: Risk Beyond the Current Crisis" CreditWeek, Standard and Poors, April.

Fabella, R.V., Reside, R.E., Solon, O., Abrenica, M.J., and De Dios, E. (1999), "Seemingly Stray Bids, Cognate Interests, and the Design of Regulatory Contracts." Mansucript, UP School of Economics.

Flintoff, Anthony, Wilkins, Michael, and Eddy, Jane, (1998), "Water and Wastewater Utilities, Projects and Concessions" in *Infrastructure Finance*. Standard and Poors , September.

Glen and Pinto (1998), "Capital Risk, Key Component to Power Project Financing," Private Power Executive, March-April.

Gochoco-Bautista, Corrina (1999), "The Philippine Banking System," Asian Development Bank, forthcoming.

Llanto, Gilbert, et. al. (1997),

Llanto, Gilberto M., and Soriano, Ma., Cecilia G., (1977) "Government Guarantees in Infrastructure Projects: A Second, Third Look at the Policy." Policy Notes. Philippine Institute of Development Studies, No. 97-11.

Llanto, Gilbert, and Calina, Siegfrida (1999), "Prospects of Using Asset Backed Securities To Finance Infrastructure Projects in the Philippines" Forthcoming.

Mariano, Roberto (1999), "An Assessment of Credit Rating Services in APEC Economies", Background Paper for the APEC Consultative Group Workshop, Asian Development Bank, February.

Morgan Stanley Dean Witter and Co. (1998a), "Required Infrastructure Financing".

Morgan Stanley Dean Witter and Co. (1998b), "Structuring and Credit Issues in Financing".

Parsons, (1997), (See Asian Finance Magazine)

Reside, Renato, Jr. E. (1998a), "Options for Bond Market Reform," forthcoming, in *Studies in Governance and Regulation: The Philippines.* UP School of Economics and the Institute of Developing Economies. Editors: D.B. Canlas and S. Fujisaki. December.

Reside, Renato, Jr., E. (1998b), "Country Study on Asset-Backed Securitization in the Philippines," Asian Development Bank, forthcoming.
Reside, Renato, Jr., E., Fabella, Raul V., and Solon, Orville (1999), "The Controversy Over the Appropriate Discount Rate and its Implications for Capital Budgeting and the Design of Regulatory Information Disclosure Systems; The Case of MWSS," Manuscript, U.P. School of Economics, June.

Reside, Renato, Jr. E. (1999), "Estimating the Philippine Government's Exposure to and Risk from Contingent Liabilities in Infrastructure Projects." Paper written for World Bank Infrastructure Policy Review Project, June.

The Tax Reform Act of 1997 (Republic Act. 8424) Republic of the Philippines (1997).

The World Bank (1997), *Study on Pension Fund Reform in the Philippines*.

The World Bank (1998), *Dealing With Public Risk in Private Infrastructure, T. Irwin, M. Klein, G. Perry and M. Thobani, eds.*

APPENDIX I: TABLES AND BOXES

Table 1: The Demand for Infrastructure Finance in the Philippines

Items	1999	2000	2001	2002	2003	2005
Planned outlays (PHP Billions)	99,670	117,819	145,708	171,156	199,996	249,519
(% of GNP)	3.3%	3.5%	3.9%	4.2%	4.4%	5.0%
Desired outlays	209,114	233,187	259,743	286,411	315,739	349,056
(% of GNP)	7.0%	7.0%	7.0%	7.0%	7.0%	7.0%
Gap	109,444	115,368	113,835	115,255	115,743	99,537

Source: Department of Finance, Philippines and Morgan Stanley Dean Witter and Co. (1998a and b)

Table 2: Indicative Sources of Financing for Infrastructure Projects

Examples	Bank	Bond	Equity	Multilateral and Other Bilateral
Power Quezon Power	None	American Depository Receipts (ADR's)	Internal cash generated by domestic holding firms and foreign partners	None
Water Metropolitan Waterworks and Sewerage System (MWSS)	Syndicated loans from domestic commercial banks.	None	Internal cash generated by employees of concessionaires, domestic holding firms and foreign partners	Loans from Asian Development Bank
Transport Toll Roads	Sydicated loans from domestic commercial banks with 8-year tenor	No information available	No information available	No information available

Sources: Author

Table 3: Typical Financial Profile of Philippine Infrastructure Projects

Item	Profile
Project Internal Rates of Return	Power – 15% - 25% Water – 5% - 11%[10] Transport – 15% - 20%
Debt Service Coverage Ratios	Power – 1.5x-2.0x Water – 1.5x-2.0x Transport –
Capital Structure (Debt to Equity Ratio)	Power – 65 – 35 Water – Variable Transport – Variable
Interest Rate on Debt	12% - 15% p.a.
Creditors and Other Sources of Finance	1. Proceeds of sale of project to larger developers 2. Passive equity from specialized investment funds 3. Investment bank-sourced debt and equity, including bond issues 4. Commercial bank debt and syndicated loans 5. Multilateral institutions and export credit agencies

Source: Author and Morgan Stanley Dean Witter and Co. (1998a and b)

Table 4: The Project Life Cycle

Phase	Description	Period	Financing Available
Phase 1	Development to Financing	1-5 years	Corporate credit
Phase 2	Construction	2-4 years	Corporate credit and project finance
Phase 3	Operation	10-30 years	Corporate credit and project finance

Sources: Morgan Stanley Dean Witter and Co. (1998a and b)

[10] Range of estimates for both MWSS concessionaires.

Table 5: Basic Issues Distinguishing Corporate Finance From Project Finance

Corporate Finance	Project Finance
Debt Structure Analysis: • Corporate credit for project companies benefit from greater asset diversification, but are subordinate to project level financing. • Reserve funding is not usually required • Subject to limitations on debt – creditors may raise interest rates on existing debt as leverage rises; there may also be limitations on the issuance of additional debt and also requirements that subsequent debt issued be subordinate to existing issues. • Subject to limitations on cash distribution – such as the payment of dividends	Debt Structure Analysis: • Mostly project debt without recourse to the project developer or corporate parent • May come in the form of pooled project bonds, or CBO's, project financing for a portfolio of projects with debt with a senior security interest in the assets • The debt-issuing entity usually has a single purpose and has strict covenants which limit indebtedness and prescribe reserves to protect against project events. • Debt service reserve (6 months – 1 year) and maintenance reserve • Subject to limitations on debt • Minimal limitations on cash distribution after initial coverage ratio is met and reserves are funded
Basis of Credit Quality is: • Management quality • Strategy • Quality of project assets (existing and backlog) • Diversification	Basis of Credit Quality is: • Offtaker commitment and credit quality • Country • Linkage of Revenues and Costs • Cost Competitiveness • Technology • Term of Financing relative to contract with offtaker • Permit status
Source of Credit Improvement Over Time: • Corporate seniority rises as project debt is amortized • Diversification in geographic locations, offtakers, number of projects, fuel types, technology • Maturity of regulatory framework	Source of Credit Improvement Over Time: • Debt amortization • Completion of construction (BOT/BOO) • Initial project ramp-up • Maturity of regulatory framework • Offtaker credit improvement

Causes of Credit Deterioration:	Causes of Credit Deterioration:
• Relevering of existing projects • New corporate level debt • Strategic imperative to add a new project coupled with competitive market or new projects and acquisitions may lead to portfolio dilution	• Contract-specific events • Plant/Facility performance • Regulatory decisions or threats • Construction delays, cost overruns • Mismatch of revenues with fuel and other input prices • Offtaker credit quality deterioration

Sources: Morgan Stanley Dean Witter and Co. (1998) and Glen and Pinto (1998).

Table 6: Bank Loans, Corporate Bonds and Equities in Selected Asian Countries (December 1997) In US$ Billion

Country	Outstanding Bank Loans	Outstanding Corporate Bonds	Equity Market Capitalization
PRC	965.19 (105.0)	n.a.	206.37 (22.46)
India	80.4 (23.5)	30.98 (9.1)	128.47 (37.6)
Indonesia	80.82 (60.2)	2.01 (1.5)	29.11 (21.68)
Korea	118.17 (47.6)	50.73 (20.4)	41.88 (16.86)
Malaysia	117.27 (165.8)	11.96 (16.9)	93.61 (132.3)
Pakistan	15.46 (27.2)	0.62 (1.1)	10.97 (19.3)
Philippines	43.83 (72.3)	7.60 (12.5)	31.36 (51.73)

Thailand	128.26 (125.5)	3.86 (3.8)	23.54 (23.04)

Source: Asian Development Bank (1999)
Note: Percentage of GDP in parenthesis

Table 7: Bank vs. Bond Financing

Factor	Bank	Bond	Equity
Diversification of Capital Resources	Less diversified	More diversified	More diversified
Maturity	Short- to medium-term	Long maturity can be easily achieved	Not applicable
Covenants	Restrictive	Less restrictive	Not applicable
Profile	Lower	Higher	Higher
Flexibility of Future Financing	Less flexible	More flexible	Most flexible
Call Flexibility	Higher	Lower	Not applicable
Execution Time	Shorter	Longer	Longer
Cost	Less expensive	More expensive	Most expensive

Sources: Author and Morgan Stanley Dean Witter and Co. (1998)

Box 1: Major Covenants in Project Finance

1) Limitations on indebtedness
2) Restricted payments
3) Limitations on transactions with shareholders and affiliates
4) Limitations on liens
5) Restrictions on mergers and consolidations
6) Restrictions on assets
7) Change in control

Sources: Morgan Stanley Dean Witter and Co. (1998)

Table 8: Philippine Stock Market Index and Capitalization

Item	12/31/96	6/30/97	12/31/97	12/31/98
Market Index	1354.6	2809.2 (-11.40)	1,891.3 (-32.67)	1,968.8 (4.10)
Market Capitalization (USD Billion)	80.65	74.38 (-7.77)	31.36 (-57.84)	35.09 (11.89)

Source: Asian Development Bank (1999)

Table 9: Group of Thirty Recommendations on Clearing and Settlement

Items	G-30 Recommendations	PSE
1. Comparison of Trades Among Direct Market Participants	T +1	T
2. Comparison of Trades Among Indirect Market Participants	T +1	T + 0 to T + 4
3. Central Securities Depository (CSD)	Yes	Yes
Immobilization[11]	Yes	Yes (59%)
Dematerialization[12]	Encouraged	Encouraged
Pledging with the CSD[13]	Yes	Yes
4. Trade Netting System	Yes	No
Multilateral Netting[14]	Recommended	Trade for Trade
Continuous Net Settlement[15]	Highly Recommended	Trade for Trade
5. Delivery vs. Payment	Yes	Yes
6. "Same Day" Fund Convention	Yes	Yes
7. Rolling Settlement System	T +3	T + 4
8. Securities Borrowing and Lending	Yes	Under Plan
9. International Securities	Yes	Under Plan

[11] The storage of securities certificates in a vault to eliminate physical movement of certificates/documents in transfers of ownership.
[12] The elimination of physical certificates of documents of title which represent ownership of securities so that securities only exist as computer records.
[13] A procedure within the CSD which allows securities to be used as collateral to secure loans, options/futures contracts and other forms of credits.
[14] A netting system in which all trades in the same security are grouped to a final long or short position for each participant. In this type of netting, the trading counterparty may change.
[15] A system in which daily netting is employed and all open trades at the end of a day are then offset against the next day's trades.

Identification Number System		

Source: Asian Development Bank (1999)

Table 10: Risk Profile of Typical Water Projects and Implications for Financing

Item	Implications for Financing
Water is a local service and is subject to the control of local governments, which can have weaker project development capacity and weaker credit standing than the national government.	Since projects are local, there may be significant political risks due to the limited tenure of locally-elected government officials.
Water assets are mostly located underground, so their condition is difficult to assess.	Much of the financing risk lies in non-commercial risks, especially in systems that might need extensive repairs to correct leaks.
There are health risks associated with inadequate provision, so government usually provides commitments or support for accessible service regardless of ability to pay.	If financing is contracted by local governments, they will display a higher propensity to subsidize debt payments for water projects.
Pricing of water services is a politicized process in the Philippines.	The tariff mechanism may display some rigidity.
Water projects tend to be capital-intensive	Most of the financing needs will be long-term in nature. Maturity risk may arise.
Revenues are denominated in local currencies.	Currency risk will arise.
There is little scope to introduce direct competition in treatment, transmission and distribution.	Water tends to be a natural monopoly industry, so it is possible to generate more predictable, more stable cash flows.
Greenfield BOT/BOO projects expose proponents to greater credit, political and regulatory risks compared to concessions.	Concession-type structures tend to be less risky for proponents and governments alike. Greenfield projects should be structured so as to let proponents gain control and assume more non-commercial risks.
Older, more efficiently-run systems with longer operating histories tend to have more secure and predictable cash flows and mature investment profiles, and therefore expose lenders and investors to fewer risks.	Older and better run systems have greater access to financing.
Many existing water supply projects in countries with low credit ratings have sourced debt from multileteral agencies and export credit agencies. However, countries with higher credit ratings have been able to secure debt from commercial banks.	Domestic commercial banks may tapped to finance water transactions.

Table 11: (Example) Requirements for Computing the Cost of Capital for Firms Engaged in Water and Sewerage Services[16]

Ownership Structure	Implication for Overall Risk
Implicit or explicit support from parent company?	If there is implicit or explicit support from the parent company, then the cost of capital for the project should reflect adjustments for this factor.
State of health of parent company?	If the parent company is in good health, then the risk is lower that it can misuse the firm.
Regulation	
Efficiency, adequacy and supportiveness of the regulatory, industry and legal structures to the extent that they impact revenue-raising capability.	The quality of the regulatory regime will have an impact on the risk profile of the concessionaires and their ability to raise revenues.
Transparency of regulatory policies and length of time they have been in place	A transparent system requiring legislative action to modify is viewed more favorably than one subject to the whim of discretion. Regulation in the water and wastewater sector in many emerging economies is newer than it is for the power sector, and untested. To be viewed positively, regulatory treatment should be timely and allow consistent, predictable performance from period to period.
Pricing mechanism	Under cost-plus ratemaking, utilities may be rewarded more for justifying costs than for containing them. While a utility may largely be protected from business risk under cost-based rates, the responsiveness of the rate-setting process to changes in a utility's cost structure or to discrepancies between allowed and actual revenues influences the business pressures on the company. Although performance-based rate making will become an increasingly popular form of price-setting, it will generally have a negative effect on the company's credit quality. Performance-based pricing systems are inherently more risky than cost-based systems because they are based on the

[16] This table is based on Reside, Fabella and Solon (1999).

	regulator's views on the efficiency gains the utility should achieve. The ultimate effect will depend on the assessment of the harshness and achievablility of the performance targets, and the extent to which a prudently managed utility can manage the risks. Flexible plans incorporating performance-based rewards or penalties could include market-based rates, price caps, revenue caps, index-based prices or other yardstick measures, and rates based on the value of customer service.
Environmental regulations	Mandatory compliance with environmental legislation is often quite capital intensive, especially in the areas of wastewater discharge and water quality. High compliance costs can impact a water utility's credit worthiness if their financing is up-front and their recovery is over a long period, potentially putting stress on the financial profile in the short-term. Stringent environmental rules requiring expensive upgrade and compliance costs do not necessarily undermine the firm, so long as the utility has a flexible and transparent process for passing the costs to their customers, and these customers are willing to bear these costs. In assessing the impact of environmental regulations, one should also consider whether the environmental and economic authorities are acting in isolation, or perhaps have different constituencies. Consider how current standards compare with other jurisdictions around the world. Also consider which sector of industry bears the risk.
Markets	

Water sales	Less prone to fluctuations in the economic cycle than electricity or gas sales. But they are more susceptible to weather patterns, particularly in warm climates, where a higher proportion of water is used outside. Despite the relative insensitivity of household and firm level water consumption, prospects for the stable growth of revenues and cash flow are ultimately related to the strength of the local macroeconomy. Assessment of a water utility's markets begins with the economic and demographic evaluation of the area in which water services are provided. Measure trends in investment, income, and employment as indicators of economic change within the service area. Study trends in usage to determine the sensitivity of the system to economic cycles and future capital needs.
Sustainability of increasing demand	Volatility in demand can contribute to significant and unhealthy swings in a utility's revenues. Other important factors include income levels and trends in population, employment, per capita income, and particularly in developing countries, the affordability of water and customers' ability and willingness to pay their bills.
Non-revenue water	The extent of NRW due to physical losses and NRW due to commercial losses needs to be determined.
Characteristics of the water utility's customer base	If one or a few players comprise the base, risk is heightened. Need to determine elasticity of demand of various customer classes (residential, commercial, industrial) Also need to determine sensitivity of revenues to local economic conditions.
Rates/Tariffs	Risks depend on: • Rates relative to neighboring communities or similar systems

	• Rates in relation to the service area's economic wealth and income levels; and • Rate-setting process Danger also arises if the wholesale and retail pricing mechanisms are controlled by different regulators.
Operations	
Capacity, quality, and efficiency of service	Quality of service influences the firm's ability to raise revenues.
Analysis of available safe yield of water and wastewater systems, in terms of both water storage capacity and production capacity of treatment plants, and the adequacy of delivery systems relative to the usage demands of consumers.	Dependable water yield may be affected by water rights, aquifer depletion, saltwater intrusion and commitments for wholesale delivery. With respect to the concessionaires, the impact on revenues of the non-delivery of 300 mld of bulk water must be assessed.
Examine historical usage trends to ascertain likely peak usage levels, not just long-term averages.	The need for capital spending is apparent if a system experiences, or is forecast to experience a shortfall in supply or treatment and distribution capacity.
Examine adequacy of treated water storage facilities.	Inadequate water treatment facilities limit the ability of the firms to generate revenues.
Determine legal ability of the concessionaires to access the water.	Legal constraints raise risks for the concessionaire.
Assess cost-effectiveness of concessionaires.	If utilities are not cost-effective in meeting service standards, then regulatory pressures are more likely.
Records of unaccounted-for water, burst mains, sewer overflows, inflow/infiltration measures, and capacity utilization should be examined.	More of these raise risks.
Examine the impact of climate, changes in the level and location of rainfall and difficult terrain on concessionaires.	Harsher conditions raise risks.
Examine general condition of assets and how well they are maintained.	Assets in poor condition may contribute to non-revenue water losses.
Also examine the flexibility of water and wastewater networks to manage blockages and outages (such as through the ability to divert flows through unaffected parts of the system).	Inflexibility of water and wastewater networks degrades revenues and reduces the concessionaire's ability to restore service quickly.
In addition, examine the risk borne as a result of inconsistent contract terms-between the wholesale purchase contract and the retail	For example, if the concessionaire has many fixed charges in its bulk water agreement, but charges variable charges on its retail sales, it

sales arrangements.	is at risk from volume fluctuations.
Examine the concession agreement and other documents defining the rights and obligations of the concessionaire, and the term of the contract.	Determine if the concessionaires are eligible for fiscal incentives. Determine which risks are assumed by the concessionaires.
Competitiveness	
Examine industry structure	Determine degree to which competition is limited.
Management	
Assessing management capability is important since management's decisions affect all areas of corporate operations. Assess: • Strengths and weaknesses of key members of mangement • Depth and stability of top management • Recent and prospective changes • Management strategies • Financial policies • Corporate goals • Strategies • Tactics • Plans	Management weakness may adversely impact profitability of the firm.
Financial Profile	
Examine financial ratios relative to other utilities, such as gas or power.	Strong financial ratios ensure that the firm remains viable.
Evaluate: • Profitability • Capital structure • Cash flows • Financial flexibility Review history of financial statements and pro-forma projections. Focus on real stocks and flows (i.e., levels of debt, cash and cash flow.	Do the concessionaires generate enough cash flow to service its debt? Lack of profitability hinders the concessionaire from being able to secure debt or even equity.
Evaluate coverage of fixed financial charges by cash flow and cash flow from operations to total debt.	Determine if concessionaire is able to service its debt repayments.
Profitability	
Examine profit potential of concessionaires.	A company that generates higher profits has

Also analyze operating margins to gain insight into profitability prior to depreciation, capital charges (including foreign exchange effects), reserves,/provisions, goodwill, and extraordinary items.	greater ability to internally finance capital expenditures, attract external capital and withstand business adversity. Examine treatment of depreciation since water is capital-intensive.
Determine: • Return on equity • Pretax interest coverage • Pretax return on capital	Check for favorable figures and trends.
Capital Structure	
Analyze: • total debt to total debt plus equity • debt to equity ratio	Check if leverage is normal with respect to industry standards.
Analysis covers quasi-debt items and elements of hidden financial leverage.	Conservatism demands that these items be reviewed.
Examine amount of short-term debt.	Given the long life of a water utility's assets, short-term debt exposes them to interest volatility.
Structure of debt.	Amortizing debt is less risky than bullet maturities. Sizable single-year maturities are considered a significant risk.
Asset valuation.	Asset valuation practices may result in differences in both a company's equity base and its depreciation expense. The employment of current vs. historical asset valuation practices lead to greater valuation disparities among water utilities. Water utilities which employ current valuation methods will appear to be much less leveraged compared to companies which use historical asset valuation.
Cash Flow	
Evaluate cash flows before and after dividends are paid.	High dividend payments could undermine position of creditors.
Evaluate other cash flow nuances that distinguish water-related utilities from other utilities. Specifically, assess: • Funds from operations to interest coverage • Funds from operations to average total	Because of the capital-intensive nature of water utilities, these companies require extensive and flexible capital planning systems. The ability to limit the use of debt depends on the concessionaire's skill in managing construction projects and completing any new facilities on schedule and within cost estimates.

debt • Funds from operations minus dividends to capital expenditures • Capital expenditures to debt plus equity	
Financial Flexibility	
Evaluate the concessionaire's financing needs, plans and alternatives.	Assess ability of concessionaire to tap readily available sources of funding.
Due to the capital-intensive nature of water supply, also consider a company's ability to tap capital markets on an on-going basis.	Review the concessionaire's credit rating, or that of the parent company.
Also review the concessionaire's relationships with banks and the availability of bank lines.	Increasing credit constraints could adversely affect ability to finance working capital and investment requirements.
Review debt covenants.	Determine what, how and when risks are assumed by the concessionaire.
Assess the concessionaire's capacity and willingness to issue common equity.	Inability and unwillingness to issue common equity may constrain ability of firm to raise needed capital.