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Mitigating Commercial Risks in Project Finance

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In project finance, risks are allocated to the parties best able to manage them. However, the risk mitigation instruments incorporated in the project's contractual and financial arrangements need not be all-encompassing to provide the security investors require. Commitments may be limited in scope (restricted to geological risk, labor and equipment productivity, operation and maintenance, market demand, or force majeure), amount (limited to a percentage of project debt or capital costs, contract price, or operating budget), and duration (applicable only during construction, performance testing, start-up, operation, or on failure to achieve certain milestone dates or operational or financial indicators). This Note provides a checklist of commercial risk mitigation instruments commonly used in project finance by private lenders and sometimes by equity investors. The checklist is structured around a project's development cycle, which, for simplicity's sake, is divided into the construction (including start-up and testing) and operating phases. (See tables 1 and 2 for summaries of possible risks and coverage.)

Construction period

Three main groups of instruments are used to mitigate risk during the construction period: contractual arrangements and associated guarantees, contingency funds and lines of credit, and private insurance.

Contractual arrangements

Contractual arrangements offer a broad range of possibilities for allocating risks among project participants. The construction contract, for example, assigns responsibilities to the project sponsor and the construction companies for engineering, pro-

urement, performance testing, obtaining permits and insurance, provision of required services (water, electricity, fuel), and relief under force majeure events. The contractor may be responsible only for bringing a project to mechanical completion according to the owner's design and specifications, transferring to the sponsors responsibility for start-up and testing. Under an engineering, procurement, and construction contract, however, the contractor accepts full responsibility for delivering a fully operational facility on a date-certain, fixed-price basis.

If the contractor fails to meet its obligations, it may be required to pay compensation to the project sponsors, often in the form of *liquidated damages* (LDs, typically assigned to lenders as part of their security package). Delay LDs, payable when the contractor fails to meet certain milestone dates, normally cover additional interest costs arising from the delay and may compensate equity investors for lost income and fixed costs incurred. Buydown LDs compensate a project's owners for the contractor's failure to meet project operating criteria (output, input efficiency, and emissions). Buydown LDs, used to pay down project debt to offset the expected decline in net operating cash flow, are set at a value that will allow the debt service coverage ratios (DSCR) to remain unchanged. But contractor liability under the LDs is almost always capped at some percentage of the construction contract price. LDs are often 10 to 15 percent of the contract price for many gas pipelines, for example, while for longer-gestation and more technically complicated coal-fired power generation projects they may be as high as 35 to 40 percent.

Material, workmanship, and equipment *warranties* cover defects discovered following a





TABLE 1 POSSIBLE RISKS AND COVERAGE DURING THE CONSTRUCTION PERIOD

Instrument	Cost overruns	Delays	Start-up and testing problems	Contractor payment defaults	Hidden defects	Force majeure
Liquidated damages	X	X	X			
Performance bonds				X		
Retainage accounts				X		
Warranties					X	
Contingency funds	X	X	X	X		X
Insurance		X				X

Note: Table shows principal applications of instruments.

project’s final completion. Warranties may be issued on an evergreen basis, guaranteeing the reliability of a stipulated item for a period following final completion, typically one to two years. If any repair is required, the clock starts again and the item must perform without problems for the full warranty period.

Lenders often require a *performance bond* or other type of surety instrument from third-party financial institutions to backstop the contractor’s payment obligations. In addition, because of frequent delays in collecting under LDs and performance bonds, 5 to 10 percent of monthly payments owed by project sponsors to the contractor may be escrowed in a retainage account. This cash reserve further backstops the contractor’s payment obligations.

Contingency funds and lines of credit

Construction budgets often include a 5 to 15 percent line item to cover unexpected cost increases. This financing may be provided pro rata between debt and equity or under some other sharing arrangement (for example, 100 percent equity for the first 5 percent of cost overruns and pro rata thereafter). Contingency funds can be used to cover all types of cost overruns or earmarked for specific contingencies such as environmental cleanup.

In addition to, or in the absence of, such instruments, contingent lines of subordinate debt

may be provided by third-party contractors, standby letters of credit, or sponsor guarantees. These instruments may be limited in amount (available only for the first 10 percent of overruns), scope (not callable upon a force majeure event), and time (applicable only after a project achieves mechanical completion).

Insurance

A project is generally covered by several types of insurance. Construction All Risk insurance protects against property damage and is effective from the commencement of procurement to transportation to the project site through completion of construction and performance testing. Risks covered include acts of God and standard perils (fire, lightning). Adjunct liability coverage insures against bodily injury or property damage to third parties resulting from project work. Advance Loss of Profits insurance covers income losses due to delays resulting from the same risks covered under Construction All Risk insurance. Miscellaneous coverage may include employer’s liability, architect errors and omissions, and force majeure insurance, which can cover losses due to strikes, contractor insolvency, and delays in obtaining permits.

Operating period

The instruments most commonly used to mitigate risk during the operating period are

TABLE 2 POSSIBLE RISKS AND COVERAGE DURING THE OPERATING PERIOD

Instrument	Operating efficiency problems	Increase in routine O&M	Increase in major O&M	Market demand and pricing	Input availability	Force majeure
Take-or-pay				X		
Put-or-pay					X	
Pass-through		X		X		X
Debt service reserve funds	X		X		X	X
Maintenance reserves			X			
Cash traps	X	X		X		
Insurance						X
Tracking accounts				X		
Equity kickers				X		

Note: Table shows principal applications of instruments.

contractual arrangements, contingency reserves, cash traps, insurance, and risk compensation devices.

Contractual arrangements

Of the many contractual structures that can allocate risks during the operating period, take-or-pay, put-or-pay, and pass-through structures are perhaps the most commonly applied. *Take-or-pay* arrangements require the offtaker to pay for the good or service regardless of whether it is needed. This obligation is normally conditioned on, among other things, the project's compliance with the terms of the offtake or concession agreement (for example, minimum availability factor, environmental permitting). Payments under take-or-pay contracts may be set to cover all fixed costs of the project (fixed operation and maintenance costs, debt service, after-tax equity return) or may cover only part of the project's available capacity. In the latter case, project sponsors must sell the uncommitted portion to the spot market or seek long-term offtake arrangements with third parties to achieve their required equity return.

Put-or-pay contracts provide for a secure supply of project feedstocks or raw materials. If the supplier is unable to provide the inputs,

it agrees to indemnify the project company for excess costs incurred in securing the inputs from third parties or, if third-party supply is unavailable, for revenue losses due to the project's resulting inability to comply with its offtake arrangements.

Pass-through structures often link the offtake and input agreements to shield investors from adverse changes in the prices of project inputs or outputs.¹ For a power project, fuel price escalation formulas might be tied to a basket of international reference prices. The offtake agreement, referred to as the power purchase agreement (PPA), would include an energy payment to cover the project's variable operating expenses, including fuel costs. The price escalation formula for the energy payment typically matches that of the fuel supply agreement. However, although PPA escalation formulas may include pass-throughs for fuel price changes, they typically do not include cost pass-throughs related to lower than expected fuel consumption efficiency. Thus, if the project requires more fuel than expected to produce a given amount of electricity, its net operating income would decline. This risk can be mitigated through penalty provisions in the project's operation and maintenance agreements, through sponsor guarantees, or through other mechanisms described below.



Contingency reserves

To cover cash flow shortages, a debt service reserve fund can be established through sponsor equity contributions, excess cash flow (available cash flow after debt service payments but before dividend distributions), standby letters of credit, or sponsor guarantees. A separate fund to cover extraordinary maintenance can also be created to ensure proper operation and maintenance in the future.

Cash traps

Sometimes a project can meet its debt service obligations, but not with the cash flow margins that lenders had expected. Cash traps can be used to ensure that lenders continue to receive timely payments. For example, if a project is unable to maintain a required DSCR (typically defined on a pretax basis as gross revenues minus operating expenses divided by interest and principal payments), no dividend distributions would be permitted. Until the project achieves the required DSCR, “trapped” cash flow could be escrowed or applied in inverse order of maturity to prepay debt (often referred to as a “clawback”). If noncompliance persists beyond a certain date, the project may be considered in default, and all excess cash flow would be permanently applied to prepay project debt. One possible application is as follows: If the expected DSCR is 2:1, but the actual is between 1.75 and 1.90, excess cash flow would be escrowed until the project achieves the required DSCR for two consecutive quarters, at which time dividends would once again be permitted; 50 percent of excess cash flow would be “clawed back” if the actual DSCR falls between 1.35 and 1.74, and 100 percent if it falls to between 1.20 and 1.34. An event of default may be called if the DSCR falls below 1.20 for more than two consecutive quarters.²

Insurance

Coverage for the operating period typically includes property insurance with extensions available for loss of revenue from machinery breakdown and for business interruption from

property damage. Third-party general liability insurance might include coverage for workers’ compensation, automobiles, and pollution cleanup.

Risk compensation devices

Sometimes investors and contractual participants assume certain risks in return for an opportunity to share in the project’s upside potential. *Tracking accounts* are often used to compensate input suppliers or offtakers for offering fixed price agreements, which shield project sponsors from market risk. Under an offtake agreement that provides for tracking, if the contract price exceeds spot market prices, the difference between the two would be tracked. Amounts tracked may be 100 percent of the price difference or a lower proportion, with payments owed only if the difference exceeds a certain threshold. *Equity kickers*, such as convertible debentures, stock warrants, and contingent interest payments, allow investors to share in the upside potential of the project while still providing them priority over common equity investors with regard to claims on project assets and cash flow if the project is unable to generate sufficient cash flow to meet its financial obligations.

¹ Other types of pass-through structures relate to nonprice contractual terms such as force majeure and cure period provisions. For example, if a third-party contractor is relieved from its obligations upon the occurrence of a specified force majeure event, the project will seek similar relief in its input or offtake agreements for failure to meet its contractual obligations as a result of the same force majeure event.

² Debt service reserve funds and cash traps are designed to cover very different scenarios. Debt service reserves protect against catastrophic events (for example, a turbine blade breaking) that would prevent the project from generating revenue for an extended period. Cash traps cover a scenario in which the project may be limping along, still meeting its debt service obligations but not with the cash flow margins that lenders had anticipated. This situation could arise, for example, if spot prices are below base case projections, operation and maintenance costs are higher than projected (perhaps as a result of quicker than expected system degradation), or production is below expected levels because of lower than expected plant dispatch resulting from the entry of new low-cost producers or an inability to meet required emissions standards at base case production levels.

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