

Management of Sovereign Guarantees and other Contingent Liabilities

Conceptual Framework

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Presentation Outline

- I. Key lessons from past currency crises*
- II. Classifying public liabilities*
- III. Valuation of contingent liabilities*
- IV. Managing contingent risks*
- V. Institutions*



Key Lessons from Past Currency Crises

- Debt managers should be aware of risks to the State beyond external public debt, because...
- Investors and creditors are aware of the risks of contingent liabilities and punish borrowers who have bad risk management practices with worse financial terms
- Policy decisions should reflect the true cost of contingent liabilities
- Financial engineering tools are increasingly adopted by the Governments



Lessons from Cross-country Experiences

- Turn focus from “level” of contingent liabilities to “risks” associated with them.
- Contingent liabilities may not be preferable but are a reality that all Governments have had to face.
- Issue CLs to improve efficiency of service delivery not just financial cost minimization objectives.
- Try to understand the sources of risks but also incentives guarantees/credit enhancements may create to those who get them and precedence it may cause.





Risk matrix for liabilities

| <i>Liabilities^a</i> | <i>Direct (obligation in any event)</i> | <i>Contingent (obligation if a particular event occurs)</i> |
|---|---|---|
| Explicit Government liability is recognized by law or contract | • | • |
| Implicit A “moral” obligation of the government that mainly reflects public expectations and pressures by interest groups | • | • |



Risk matrix for assets

| Sources of risk | Existing Assets (possible drop in the asset value) | Future Revenues (contingent revenue short- falls) |
|---|--|---|
| Explicit (Risk emerges from government revenue and budget laws) |  | <ul style="list-style-type: none">●●● |
| Implicit (Risk emerges from factors other than government revenue and budget laws) |  | <ul style="list-style-type: none">●●● |



III. Valuation of contingent liabilities

- **Basic principles**
- **Mark-to-market**
- **Option pricing**



Measuring contingent liabilities

- (1) Implicit subsidy of a guarantee = PV (future costs) = PV (future payments on the contingent liability + the cost of administering it - fees collected on it)

Equation (1) could be specified in actual terms, value-at-risk terms or, most useful, in the terms of expected outcomes.

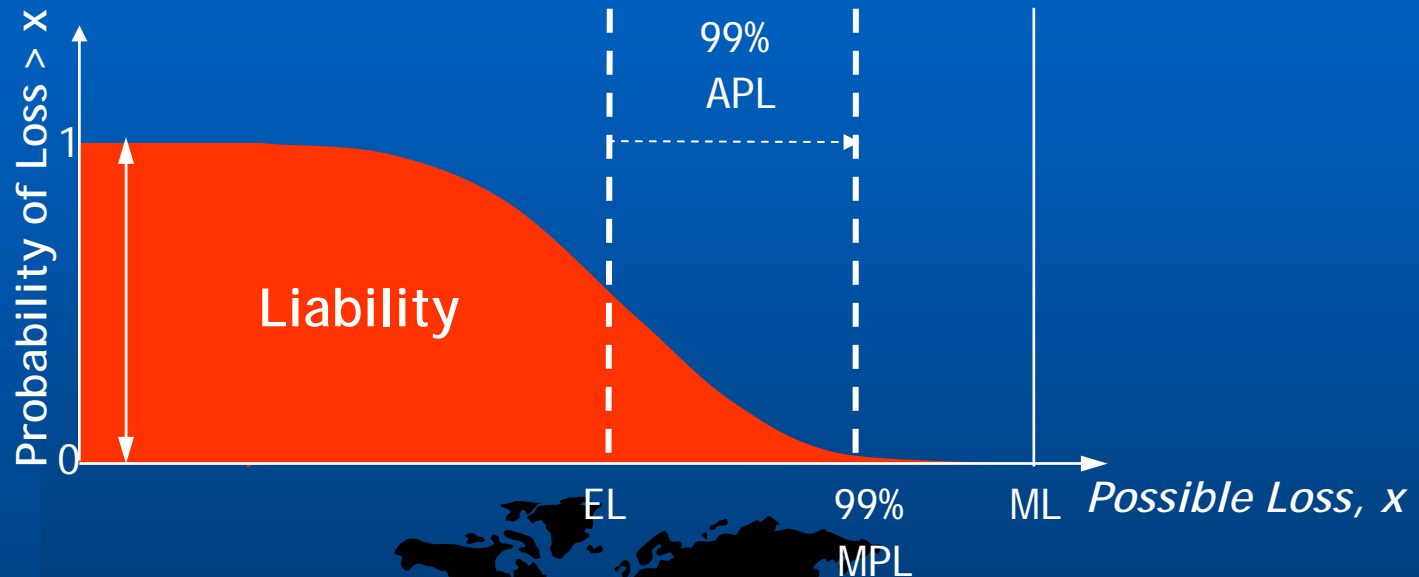
If the government builds reserves to cover the expected future cost, then:

- (2) Marginal reserve requirement on a particular contingent liability = PV (expected future cost) = PV (future expected payments on the contingent liability + expected cost of administering it - fees collected on it)



Loss from a contingent liability: a cumulative probability distribution

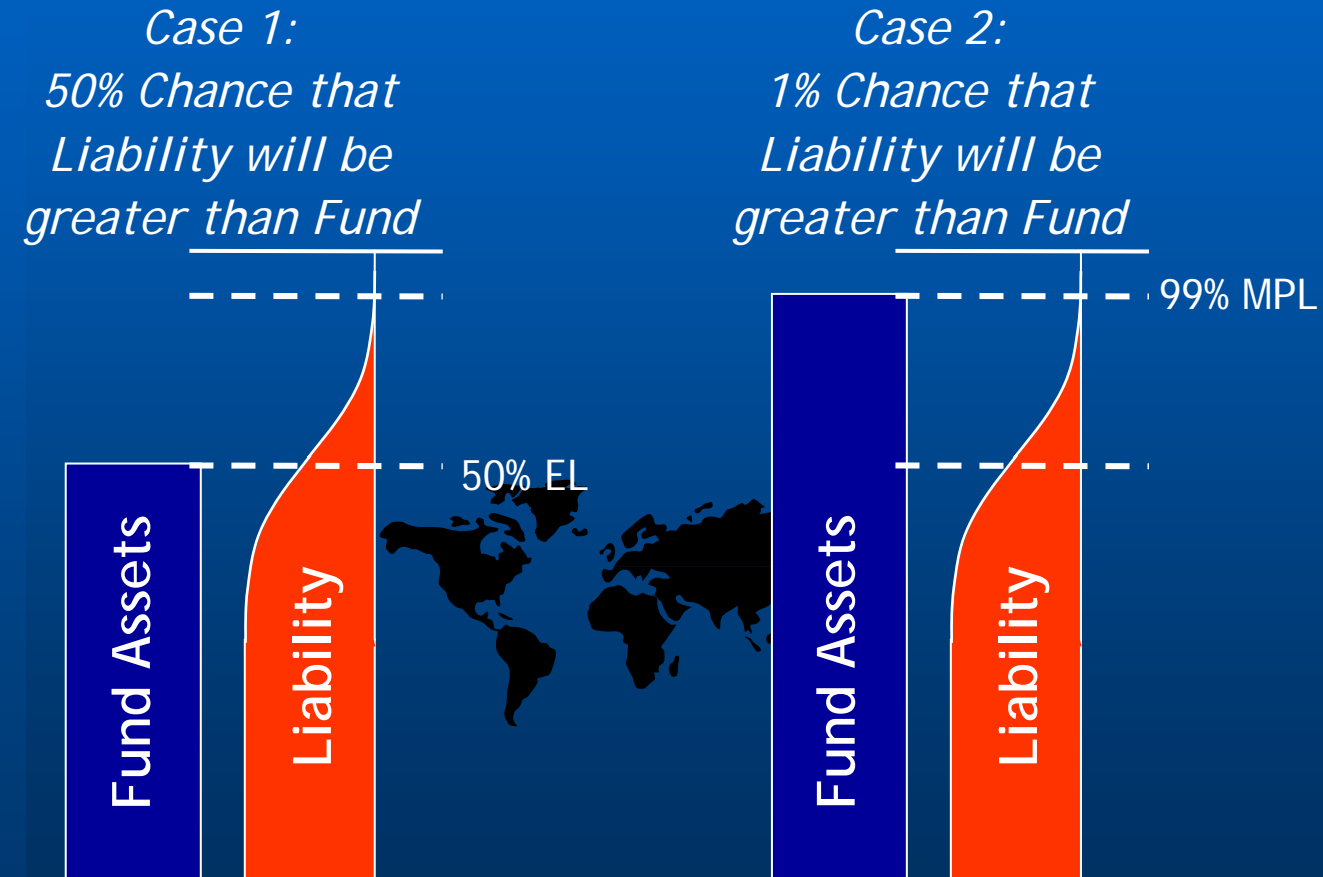
Loss Distribution and Descriptive Statistics



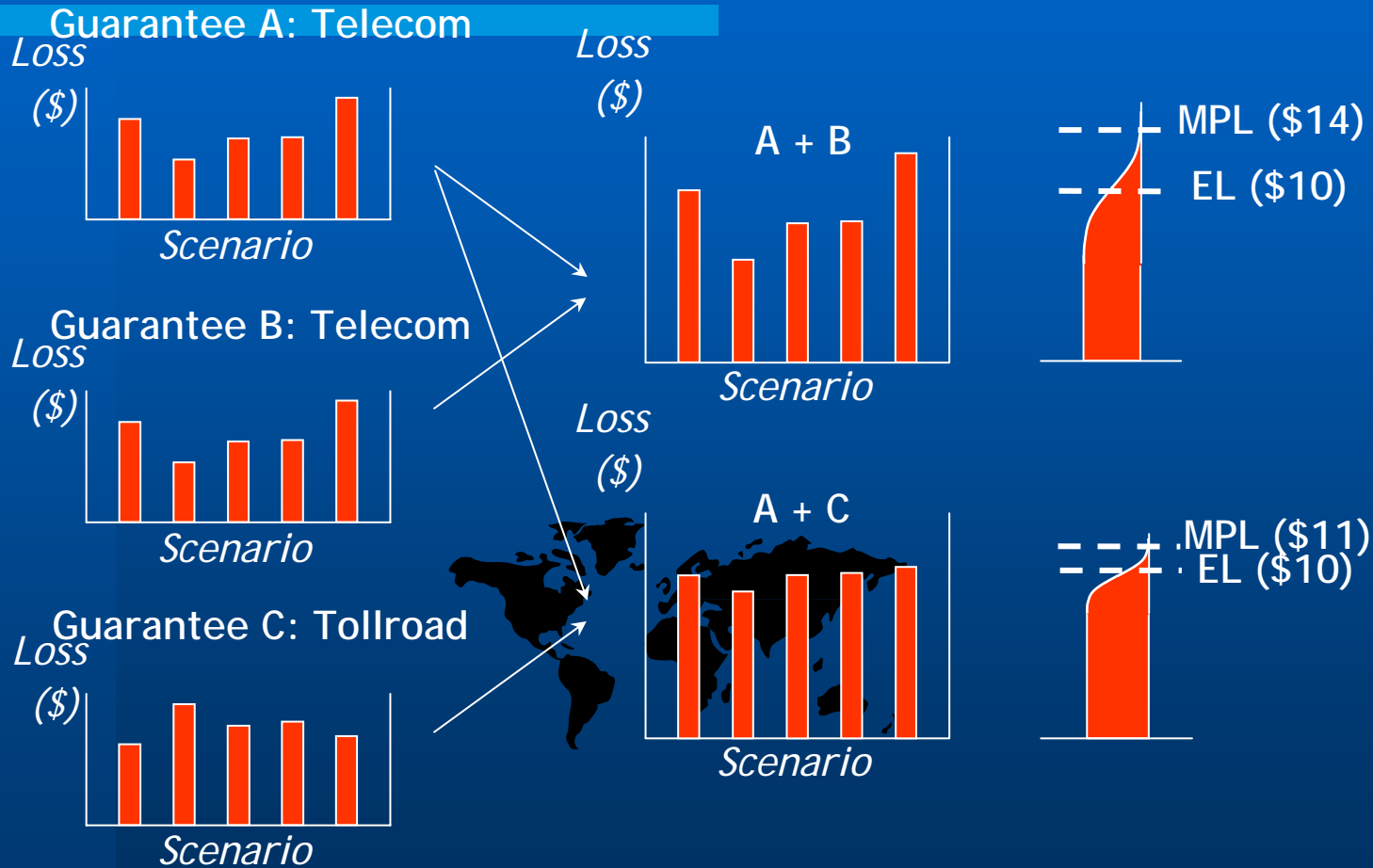
- EL: Expected (Average) Loss
- MPL: Maximum Probable Loss
- APL: Additional Probable Loss = $MPL - EL$
- ML: Maximum Loss



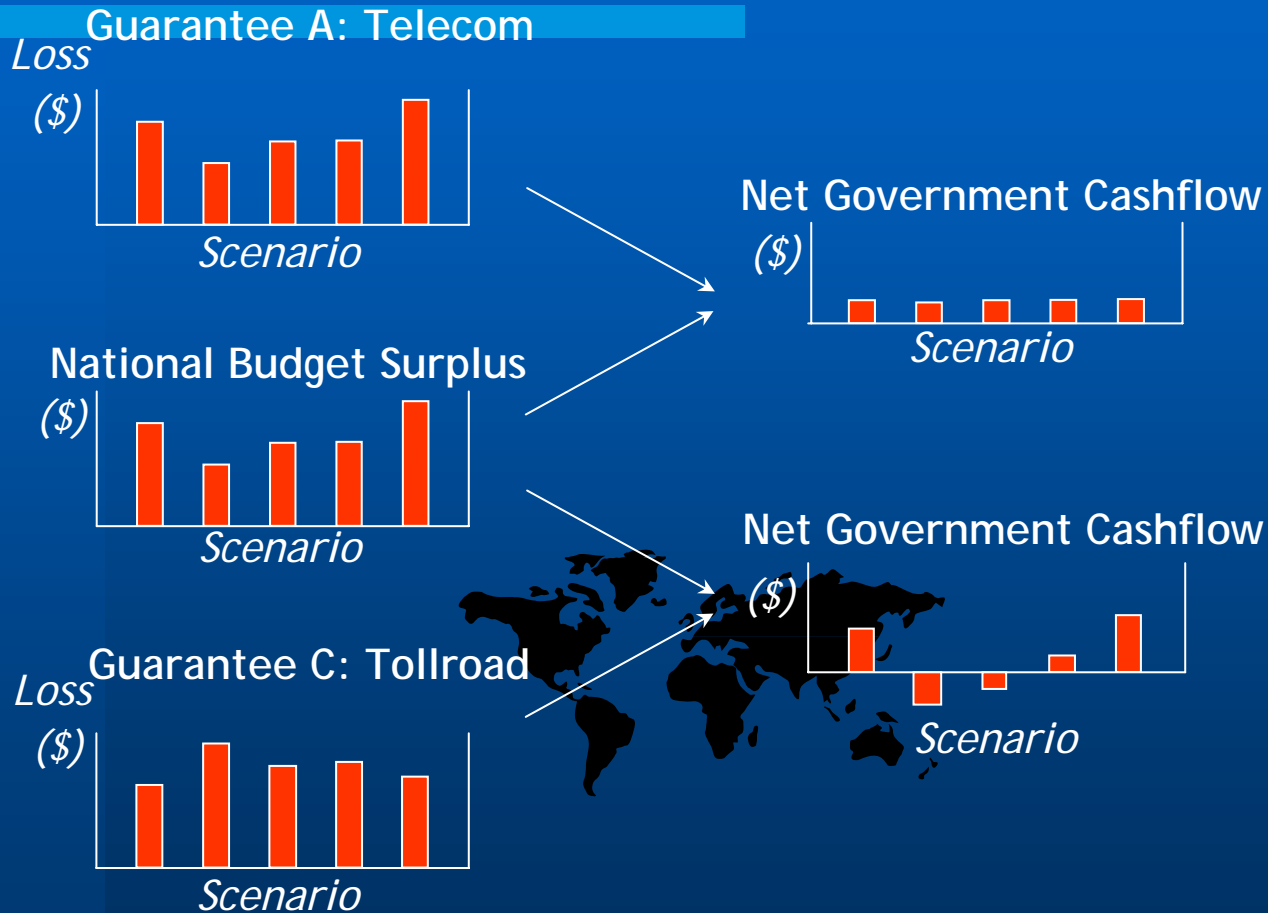
Loss distribution suggests desirable level of a reserve fund



Risks can be mitigated by their correlation in a portfolio, but...

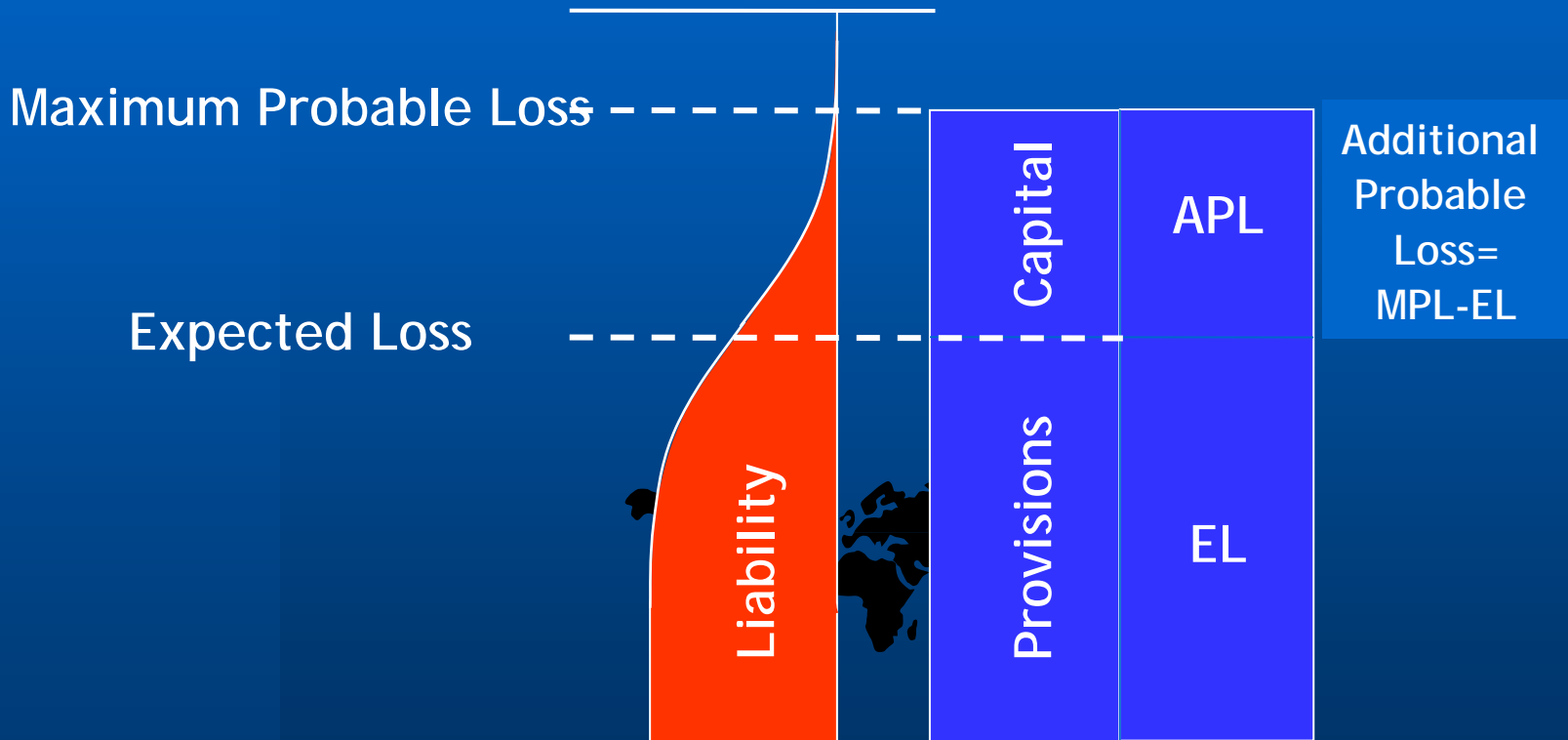


...risk will magnify if capital outflows correlate with macro-stress



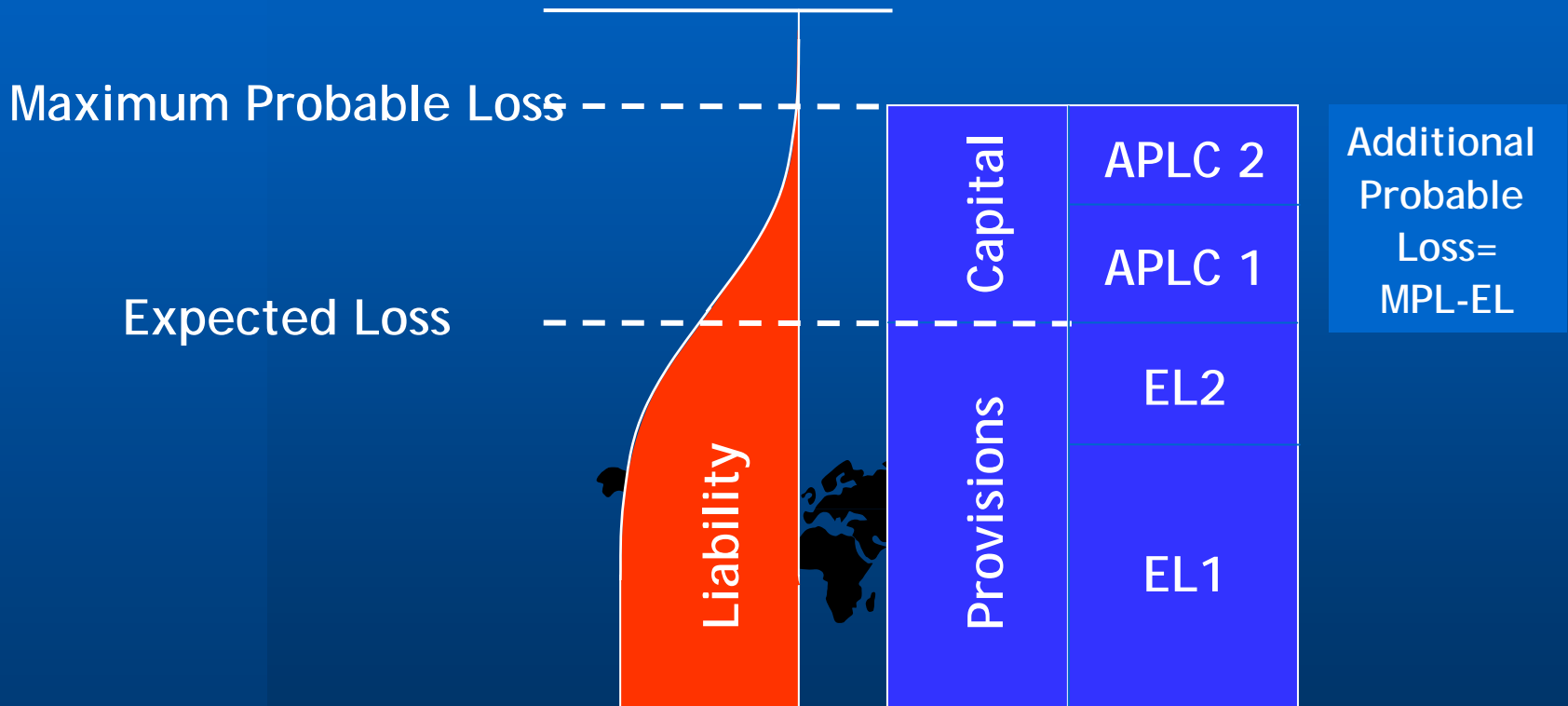
Banks price risks according to the portfolio's MPL

Comparison of Risk and Reserves



Portfolio risk and the contribution of risk from an individual project

Example of a Portfolio of Two Guarantees



The cost of the reserve is charged to the customers who create the risk

- Banks charge for 100% of the Expected Loss...
- ...and for part of the Maximum Probable Loss:
 - Shareholders leave capital with the bank. They hope to get this money back, but there is a risk that they will not
 - To compensate for the risk, shareholders require an expected return on their capital of $H\%$
- Commercial Price = $EL + APL \times H$
- Government subsidy is the difference between the commercial price and the government's charge



Good practice: fully price guarantees, be clear about the level of subsidy

- The guarantee beneficiary should be required to pay for its full cost
- If the guaranteed project produces merit goods and/or will not be completed without a subsidy, an explicit subsidy should be granted
- The Cost/Benefit Ratio of the project should be compared with other possible projects:

$$\text{Project A C/B Ratio} = \frac{\text{Subsidy}}{\text{Benefit}}$$

$$\text{Project B C/B Ratio} = \frac{\text{Subsidy}}{\text{Benefit}}$$



Applicability of valuation methods

| GUARANTEES | | VALUATION METHOD/ PERSPECTIVE | |
|---------------------------|--|---|--|
| <i>Type</i> | <i>Examples</i> | <i>Long-term / guarantor perspective</i> | <i>Short-term / beneficiary perspective</i> |
| Loan and other guarantees | loan payment guarantees, mortgage guarantees, student loan guarantees, deposit insurance schemes | Actuarial Balance (less applicable) | Market (widely used) Option Pricing (widely used) |
| Social Security | Health insurance, pension fund | Actuarial Balance (well established) | Actuarial Fairness (most applicable) Option Pricing (less applicable) Market valuation (less applicable) |
| Implicit | Support to the public enterprises and banks "too big to fail" | Actuarial Balance (not tested) | Actuarial Fairness (not tested) |
| Discount Rates | (may differ due to tax distortions, risk and externalities) | real after tax interest rate on government securities | opportunity cost of funds for private sector |



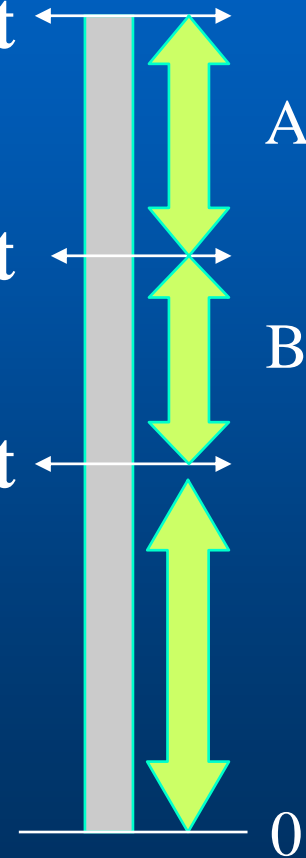
Mark-to-market valuation

Market price of:

Default-free asset

Guaranteed risky asset

Non-guaranteed risky asset



Mark-to-market Version A

- Difference between the default-free price and market price of a guaranteed asset
- Default-free price = PV (debt) discounted by the rate on Treasury securities of the same duration
- Advantages: minimal information needed
- Limitations:
 - Approximate
 - Cannot be used in the presence of call provisions;
 - Cannot be used to value a partial guarantee
 - Errors from subjective judgement if asset is not traded



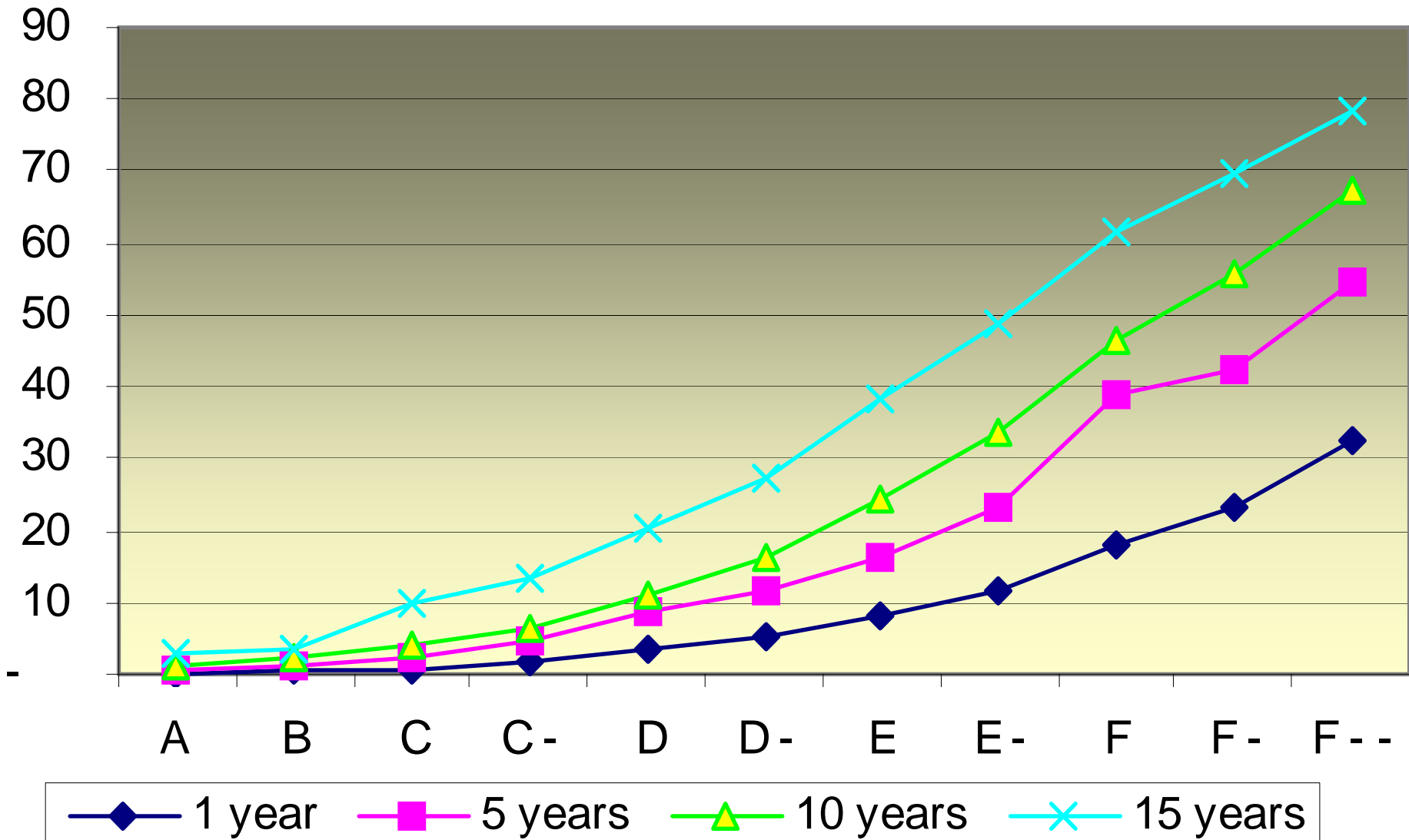
Example: U.S. Uniform Sovereign Risk Assessment

- Endorsed by GAO for all U.S. Government agencies that issue guarantees
- Rating referenced with S&P and Moody's
- Risk premia are calculated as historical average of premia of commercial bonds with same ratings over investment grade bonds
- Subsidy cost = difference between the PV (debt) discounted by the rate on the Treasuries and by the risk premium rate



USA: subsidy cost rates for beneficiaries of guarantees

percent



Mark-to-market Version B

- Price differential between premiums on similar instruments with and without guarantee (if traded)
- Advantage: transparent method
- Limitations:
 - No two instruments are alike
 - Market may fail to price the risk adequately (e.g. may discriminate against worse risks, or be too optimistic)
 - Possible only if liquid markets exist for standardized instruments
- Further enhancement: rewards from the upside to be shared by the guarantee issuer



Option pricing

- Allows to value a specific project guarantee
- Value of a guarantee derived from the payout structure implied by the guarantee:
guarantee = put option on the debtor's assets or cash flows
- Inputs
 - Market value of the guarantee beneficiary's assets
 - Book value of its debt
 - Volatility of underlying assets or liabilities
 - Time horizon
- Assumptions
 - Price of the underlying asset follows the stochastic pattern
 - Risk-free interest rate and asset price volatility are constant



Option pricing

- Advantage: correctly values the subsidy cost
- Limitations:
 - assumption-sensitive: specific model must be developed for each guarantee;
 - discount rate difficult to determine;
 - non-diversifiable risk difficult to measure;
 - data-intensive > subject to greater computation errors



Integrated portfolio approach

- Standardize risk management rules to the extent possible across the liability portfolio
- Disaggregate/diversify risk design the guarantee
- Charge the beneficiary for the guarantee
- Share the guarantee risk with the private sector
- Value the liability portfolio continuously →
- **TARGET NET WORTH**



IV. Managing contingent risks

Policy

- Consider full performance beyond the budget and debt
- Identify, classify, and analyze all risks in a single portfolio
- Determine the government's optimal risk exposure and reserve policy according to its risk preference and risk management capacity

Public Institutions

- Internalize and disclose the full portfolio of public liabilities
- Monitor, regulate, and disclose the risks in the public and private sectors



Steps to control risks

| <i>Measures</i> | <i>Policy</i> | <i>Public Institutions</i> |
|---|---|---|
| Before government admits an obligation (program, commitment, promise of support) | <ul style="list-style-type: none"> • Assess how the obligation fits the strategic priorities • Consider the choices of policies and forms of support • Limit government involvement to minimize moral hazard | <ul style="list-style-type: none"> • Evaluate program risks individually and in a single portfolio • Design the program to protect the government against risks |
| When the obligation is held | <ul style="list-style-type: none"> • Stick to the pre-set limits of government responsibility | <ul style="list-style-type: none"> • Budget, account, and disclose the obligation • Monitor risk factors and reserve-fund adequacy |
| After the obligation falls due | <ul style="list-style-type: none"> • Execute the obligation within pre-set limits • If implicit, assess whether meeting the obligation fits the state's announced role and promotes healthy market behavior | <ul style="list-style-type: none"> • Compare and report the actual costs versus the estimates, evaluate performance, and impose sanctions for failures |



Rules for risk-taking

- Formulate risk-averse strategy
- Conduct pre-commitment analysis
- Share risk with private investors
- Set fees for guarantees
- Provision for the guarantees when issued
- Approve by one decision maker
- Report to the Parliament

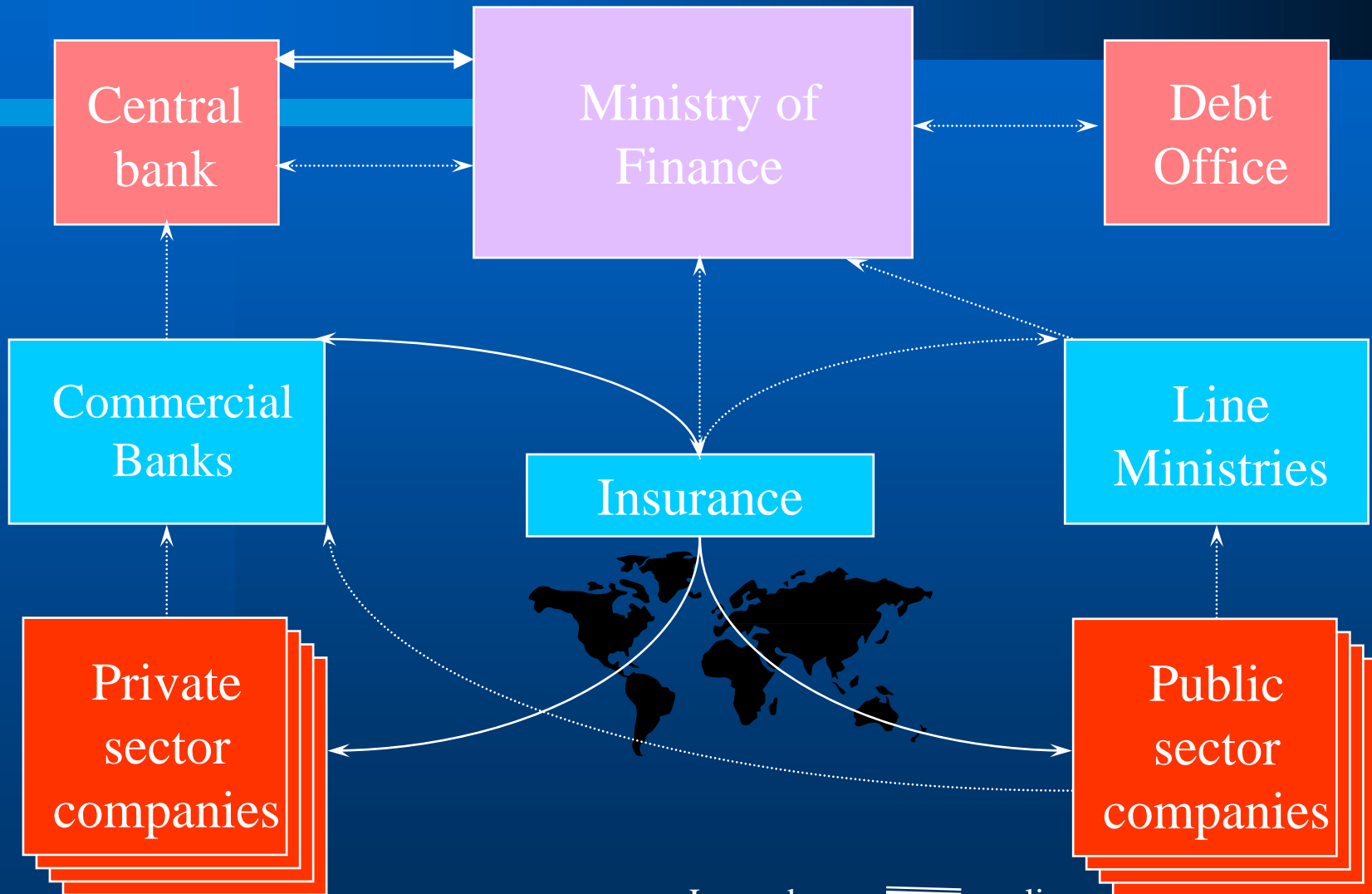


Sharing risks with the market

- WHY:
 - Return part of the risk to the market
 - Simplify risk-sharing: risk based premiums; re-insurance of govt. risk
- PROS:
 - reduce political opportunism
 - diversify risk
 - Reduce government costs and losses
- KEY LESSON: Sharing risk with the market is a long-term goal



Coordination in public liability management



Legend:



In closing...

- In practice, the public already knows what the big contingent liabilities in a country may be, although its extent may be unknown
- Focus on a few CLs first when setting up the capacity to monitor and manage the risks associated with CLs.
- Institutional set-up: Risk analyses and monitoring unit should be separate from guarantee issuing unit within the Govt.
- Even if one monitored CLs and everything was done right, they are still exposed to “shocks” in a dynamic and growing economy. This highlights the need to do **scenario analyses** and **stress tests**



Thank You

