PORT REFORM TOOLKIT

WORLD BANK

FINANCIAL MODEL MANUAL

Concession Project in the port sector

1/ PRELIMINARY ADVICE

- **Required Software** : Excel 2000 for PC

- **Data & parameters of modelling** : It appears in blue colour and exclusively in the "hypothesis" sheet of the model. It can be directly modified in the cell. All other cells are parameterised on these initial values and should not be modified.

- **Macro of calculation** : It was elaborated so as to determine the amount of debt (Project Finance) that "Arranging Banks" should bring to serve, besides the investments, the interests and commissions during the period of construction (Intercalar Interests). The modification of these parameters requires to restart the calculation ("CALCULATE" button).

2/ DEFINITION OF THE PROJECT

- **Object** : Concession Project in China of a new Container Terminal (New Terminal or NT) leaned to an existing one (Existing Terminal or ET).

- **Typology of the Public Partner** : Port Authority

- **Typology of the Sponsors of the *Special Purpose Company (SPC)*** : European Joint-venture formed by a Contractor and a Port Operator.

- **Perimeter of the Project falling to the responsibility of the Port Authority** : Financing and construction of maritime infrastructures (breakwater, dredging, beaconing…) & ground accesses.

- **Perimeter of the Project falling to the responsibility of the *SPC*** : Financing and construction of infrastructures, buildings, superstructures & surfacing of the NT; Financing and installation of port equipments (gantry cranes) in the NT; Financing and rehabilitation of the ET (civil engineering and port facilities); Operating of the two terminals.

- **"Public/Private" Contractual Scheme** : "Vertical" Partnership based on a BOT Contract (*Build Operate Transfer*).

- **"Private" Contractual Scheme (*Sponsors*/Contractor/Supplier/Operator)** : EPC Contract (Engineering/Procurement/Construction) signed between the SPC and the Contractor (also shareholder of the SPC) and a contract between the SPC and an American industrial group for the acquisition of the Port Equipments. The SPC is the operator of the two Terminals.

- **Financial Engineering Assumptions** : Debt financing under *Project Finance* basis.

3/ DATA & PARAMETERS OF THE MODEL

3.1 – GENERAL ASSUMPTIONS

- **Start of Construction Period NT**: 06/30/2001
- **Construction Period NT** : 2 years
- **Operating Period NT** : 20 years from the end of the Construction Period.
- **Start of Construction Period ET**: 06/30/2001
- **Start of Operating Period ET**: 06/30/2001
- **Operating Period ET** : 2 + 20 years

3.2 - MACRO-ECONOMIC ASSUMPTIONS

- **Revision Indexes** : General Inflation, Construction & Salaries Indexes.
- **Local currency** : China Yuan Renmimbi (CNY)
- **Foreign currencies** : Euro (EUR) & US Dollar (USD)
- **Interest & Exchange rates** : We suppose that the financing is granted by the banking syndicate in Euros at a fixed rate (during the construction and operating periods), which means that Swaps of rate and exchange were granted to the SPC.

3.3 – CAPITAL EXPENDITURES ASSUMPTIONS

- **Construction & Port Equipment Costs** : They are registered in their currency of contractual payment for the SPC and according to their value in 2001. Consequently, the contracts for construction are registered in MCNY and the supply of port equipments in MUSD.
- **Development Costs** : They are constituted by expenses required for the development of the project and financed by the Sponsors prior to the signature of the Concession Contract. They include technical, financial and legal studies. They should be considered as “intangible” assets.

3.4 – OPERATING ASSUMPTIONS

- **Traffic Forecasts** : For each terminals, traffic forecasts are split as follows : transhipment *versus* domestic traffic; full *versus* empty containers. We suppose all the traffic growths are linear; except for the transhipment traffic of NT. In that case, where a logarithmic function has been implemented and parameterised to represent the transhipment traffic NT growth.

- **Tariff Policy** : The handling and storage tariffs are given in their value 2001 (full containers & empty containers). We supposed that the tariffs are simply indexed on the General Inflation Index. Besides, this Model allows to take into account a discount fee for the transhipment traffics (ET & NT).

- **Operating Costs** : They are a function of the use rate of the terminals foreseen at the end of the concession (2023) and the maintenance ratios generally allocated to these categories of assets (given in the UNCTAD report)

- **Labour Costs** : The fixed labour costs include all the wages of the SPC employees : local labour (paid in CNY) and expatriates (paid in EUR). The variable labour costs comprise the expenses of the "temporary staff" which indexed to the traffic growth.

- **Other Fixed Expenses** : They include Technical Assistance missions (paid in MEUR) and administration costs (paid in MCNY).

- **Lease Payment** : They both include a fixed & variable part which is indexed to the traffic growth.

3.5 – FINANCIAL ENGINEERING ASSUMPTIONS

- **Equity** : The total amount of Equity is given by the ratio E/(E+D) accepted by the banking syndicate. This ratio is generally a function of the risk of the project and analysed according to the point of view of the lenders.

- **Financial Debt under *Project Finance* basis** : All the characteristics of the financial Debt (according to Project Finance basis) are considered as parameters. The macro of calculation has been computed to determine the exact amount of debt to be invested in order to serve the various intercalary interests (interests on Debt, Arranging & commitment Commissions) during the drawing period on the credit (construction period).

- **Export Credit Option (for the purchase of the port equipments)** : The "repatriate part" of the Export Credit has been parameterised.

- **Trustee Account Option (for the Debt service)** : This option allows the SPC to block on a Trustee Account the amount required to serve to the lenders, at each period, the debt service for the next 6 months. The initial financing of this Trustee Account is integrated into the calculation of the financing need.

- **Option for a Dynamic Management of the Cash Flow Account** : This option allows to calculate the remuneration (respectively the interest charges) of the Cash-Flow Account.

- **Revolving Credit Option** : In case of negative cash flow at the end of one period, this option allows the model to calculate the exact amount of financing that should be injected as well as its schedule of repayments.

- **Cash-in / Cash-out (Contractor)** : The Model takes into account the Contractor gross margin (which has been parameterised) earns on the EPC Contract in order to calculate the final return of the project for the Contractor (who is also a shareholder of the SPC).

3.6 - FISCAL & ACCOUNTING ASSUMPTIONS

- **Fiscal Assumptions** : We suppose that the local legislation authorizes losses to be carried forward and the tax deduction of allowances for renewal.

- **Accounting Assumptions** : We suppose that the depreciation mode of all assets is straight-line.

- **Depreciation of Operating ET Assets** : We suppose that the ET assets were completely depreciated at the beginning of the concession and that the capital expenditures (civil engineering & rehabilitation of the port equipments) invested in the project will be depreciated at the end of the concession.

- **Depreciation of "Intangible" Assets** : We suppose that they will be depreciated on a 5-year basis.

4/ ECONOMIC MODEL

4.1 – CAPITAL EXPENDITUES STATEMENT (CAPEX)

- **Capital Expenditures** : They are calculated so as to obtain their current value for the considered period. Consequently, the initial Capital Expenditures are indexed to the various revision indexes : construction contracts to the Construction Index and the port equipment purchases to the General Inflation Index.

- **Average Duration of NT Assets Depreciation** : It represents the average weight of Duration of the various NT Assets.

- **Assets Depreciation Statement** : We suppose that the intercalar interest are included in the assets gross value and will be also taken into account in the depreciation.

4.2 – OPERATING EXPENDITURES & REVENUES (OPEX)

- **Gross Operating Surplus (GOS)** : GOS calculation should identify clearly the Fixed from the Variable Expenses in order to assess, at each period, the level of the break-even point.

- **Working Capital Need** : Its calculation is based on Receivable & Payable time assumptions.

- **Operating Cash Surplus (OCS)** : OCS calculation is obtained by subtracting Working Capital Need to GOS.

- **Average values** : Their calculation allow to "stall better" the initial values of data & parameters of the Model (such as General Inflation Index, growth rate of the traffics…), in particular when the growth rates are important.

5/ FINANCIAL MODEL

5.1 – PROFIT & LOSS STATEMENT

- **P&L Statement** : The intercalar interests (construction period) having been integrated into the CAPEX, it is normal that they are not taken into account in the P&L Statement.

- **Corporation Tax** : The corporation tax is calculated at the end of year N and paid in year N + 1 (end of the first half-year).

5.3 – CASH CLOW STATEMENT

- **Dividends Distribution Policy** : Dividends of year N are paid to the shareholders at the end of year N.

- **Cash Flow Account** : A "test" function has been incorporated into the Model in order to verify if the cash flow account was always positive.

- **Sources & Uses Statement** : A "test" function has been incorporated into the Model in order to verify if the Sources & Uses were well balanced at the end of each period.

5.4 – BALANCE SHEET

- **Assets/Liabilities :** A "test" function has been incorporated into the Model in order to verify if the Assets & Liabilities were well balanced at the end of each period.

6.1 – ANALYSIS OF THE REQUIREMENT FOR FINANCIAL BALANCE

- **Annual Debt Service Cover Ratio** : DSCR is a ratio calculated at each period. The maximal financial risk for the SPC occurs when this ratio is minimal. A "test" function has been incorporated into the Model in order to indicate if, at one period, its value is lower than 1.

- **Debt Cost** : They can be calculated either on the loan life (Loan Life Cover Ratio or LLCR), or on the duration of the whole concession contract (Project Life Cover Ratio or PLCR).

6.2 – ANALYSIS OF THE REQUIREMENT FOR FINANCIAL RETURN

- **Pay-back** : This first ratio is calculated on the basis of an "average value" of the Operating Cash Flows.

- **Internal Rate of Return (IRR)** : This ratio is calculated (before and after corporation tax) on the basis of the Operating Cash Flows given in their current value.

- **Return on Equity *versus* Shareholders Return** : The main difference between these two rates come from the various currencies taking into account in the return calculation : MCNY for the Return on Equity *versus* MEUR for the Shareholders Return.

6.3 – PROJECT SYNTHESIS SHEET

- **Initial Assumptions** : All the initial assumptions are recapitulated in their "average" value.

- **Global Financing Plan** : It is interesting to set-up a global financing plan of the project, kind of Global Sources & Uses Statement.

- **Graphs** : 3 main graphs required for a financial analysis of the project are proposed : Cash Flow Statement allocation ; Annual Debt Service Cover Ratios; "Endogenous" Financial Risk Analysis (Net Operating Cash Flow *versus* Debt Service).