Risk Management in High-tech Industry—Is it Possible & How to Take Advantage of the Crisis

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I. Required Steps in Risk Management
Required Steps in Risk Management

1. Determine an Objective Function, and Set Limits.
3. Find Relevant Instruments for Risk Management.
5. Implement Strategy/Tactics.
6. Check Performance (against Objective Function).
1. Determine an Objective Function

The objective function must

- Be feasible
- Define “Risk Appetite”
- Be consistent with overall strategic plan of the firm
- Take risk-return trade-offs into account
- Be reevaluated after a certain period or with changing conditions.
1. Determine an Objective Function

Some difficult issues:

- How to determine the Risk-Return trade-offs
- How to set risk limits
- What is the relevant time horizon
  - Accounting vs economic profits
- What risks should be taken into consideration
- Top-down approach
1. Determine an Objective Function

Type I vs. Type II errors:
Type I- Accept what should be rejected
Type II- Reject what should be accepted

Example: Elron and Cisco
1. Determine an Objective Function

Special issue for start-up companies:
  Diversification vs. Focus
(The problem of Idiosyncretic Risk)
Examples: Oridion
  Nexsense
The Economists’s Accepted Objective Function*:

Maximize market value of the firm/bank

Accept projects with ANPV≥0

How to adjust for risks?
How to account for dependencies?
Implementation problems

All economic models are based on a Perfect Capital Markets (PCM) assumptions.
2. Map Risks

- Technological Risk vs. commercial Risk
- Business risk vs. financial risk
- Financial risks:
  - Market Risk
  - Credit Risk
- Non-financial risks:
  - Operational Risk
  - Business Risk
  - Reputation Risk
- Systematic vs. nonsystematic (idiosyncratic) risk.
- Insurable risk vs. hedgeable risk vs. non-insurable and non-hedgeable risk.
Map Risks

- Size of investment
- Time Horizon
- Regulatory environment
  e.g. Cleantech, Chemistry, Pharma.
  Medical devices vs. Internet
Schematic presentation, by categories, of the risk exposures.

(need to made comprehensively disclosed Risks in Pillar 3)

One can “slice and dice” these multiple dimensions of risk

- **Market Risk**
  - Equity Risk
  - Interest Rate Risk
  - Currency Risk
  - Commodity Risk
  - Trading Risk
  - Gap Risk
- **Credit Risk**
- **Operational Risk**
- **Business Risk**
- **Reputation & Strategic risks**
- **Portfolio Concentration Risk**
- **Transaction Risk**
- **Counterparty Risk**
- **Issuer Risk**
- **Issue Risk**

“Specific Risk”

**General Market Risk**

• For more details, see “Essentials of Risk Management”
• by Crouhy, Galai and Mark (McGraw Hill)
Firm-wide Approach to Risk Management

Assets   Liabilities + Equity

Risky Assets   Debt

Riskless Assets   Equity

Total Assets   Total Liabilities + Equity

Business Risk
- demand/supply
- competition
- efficiency of factors of production

Market Risk
- stocks
- bonds
- FX
- commodities

Credit Risk
- loans
- counter party
- guarantees

Operational Risk
- human
- technology
- model

Liquidity Risk
- efficiency of markets

Market Risk
- interest rate
- FX
- Inflation
- Stock Market
3. Instruments for Risk Management

Internal instruments

External instruments: market traded vs. OTC

Accounting and tax treatment

Time horizon
3. Instruments for Risk Management

- What about buying a put option on the company’s shares? – Cephalon’s example

- Budget vs. Actual expenses

- Timetable & Milestones
4. Construct a Strategy

Determine risks to mitigate

Determine time horizon for hedging

Budget risk management

What is the Business Model
5. Implement Strategy


Timetable: Actual vs. Planned

Costs/Benefits Considerations.

Synchronization of Various Systems in the Firm
6. Check Performance

Continuous Process.

Always, check against Objectives.

Importance of changing directions if circumstances change
What firms should do?

- Define a clear strategy now, facing the new business environment and the enhanced risks.
- Define your “Risk Appetite”
- Stress test the business and locate the major exposures that can affect the business in the next year, and over longer horizons.
- Find out whether you can raise money and at what cost?
- Define whether you currently want to preserve the existing business, or do you want to down-size it, or whether you want to look for business opportunities.
What firms should do?

- Define simple exposure limits - it is effective.
- “Hit Parade” of major risks.
- Try to analyze the risk exposures of your suppliers and competitors.
- Check in-house incentives to key people to see that they are aligned with the firm’s objectives and do not encourage risk taking behavior.
Investment opportunities

- Recession is the only time a company can take real measures to become more effective - do it!
- Crisis creates excellent investment opportunities. Prices are affordable. Locate, identify and analyze business opportunities.
- Don’t save on due diligence - it is even more important during tough times.
Incentives and Risk Management

- Spread bonuses over a long enough period.
- Adjust bonuses for risks associated with the activities.
- Should you use options plans (ESOPs)?