Investment in Network Infrastructure

Some Thoughts on the Role of Financial Investors

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Motivation

- Some current issues:
  - Privatization (e.g., rail)
  - Private sell-off of networks (under “pressure”)
  - Public fear of underinvestment in network infrastructure

- Role of financial investors?

Focus on Two Issues

1. Are network infrastructure investments (sufficiently) attractive to FIs?
   - CoC, RoR regulation
   - “Regulatory risk”
   - Some misperceptions and fallacies

2. Are FIs attractive to the (public) users of networks?
   - Excessive leverage, short-terminism? (Experience?)
   - Implications?

Attractiveness of Network Infrastructure Investment?

- Features of CF stream
  - Shows up in low CoC (cf. below)
- Hard assets
  - Shows up in high leverage (cf. below)
- Regulation and “regulatory risk”
  - Should reduce rather than decrease CoC (cf. below)

Regulation and Risk-Sharing

- **True:** Different regulatory regimes impose different risk on operators. E.g.
  - High-powered regimes (price-caps)
  - vs. low-powered regimes (RoR)
- **But**: Beyond incentive aspects, “optimal risk sharing” (or “risk shielding”) should not be an objective

Risk and Return (CoC): Fallacy 1

- What risk (imposed by regulatory regime) shall affect CoC?
  - CAPM: Only systematic risk
  - E.g., difference between price-cap and profit-sharing regimes
  - But **not** the “risk of regulation” (= regulatory change)
- Caveat: Hold-up?
- Does this mean that “regulatory uncertainty” (or other idiosyncratic risk) does not matter?

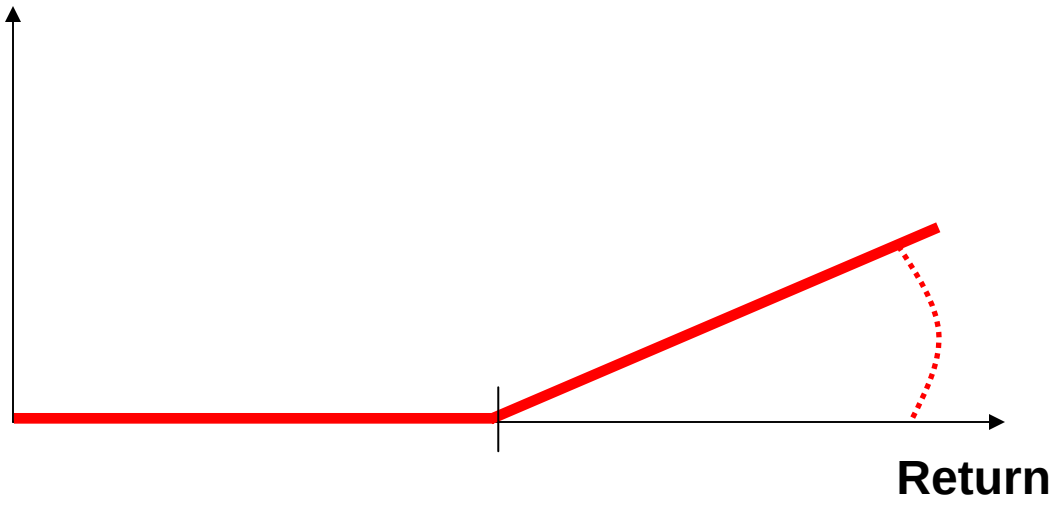
Risk and Return (CoC): Fallacy 2

- (Real-option) Opportunity costs of early investment
  - Affected by idiosyncratic uncertainty as well
  - Stimulate (early) investment? Then idiosyncratic risk matters for regulation (e.g., adjusted CoC ?)
- Summing up:
  - (Network) infrastructure investment should be highly attractive
  - Regulatory regime can affect CoC → CF-Beta approach?
  - "Regulatory risk" should not directly affect CoC, but all idiosyncratic risk matters for "timing" of investment

Financial Investors: The “Leverage Problem”

“Triple Leverage”

- At aquired assets
- At fund level
- At fund management (“GP”) contract



Why leverage?

- WACC approach
  - Ignore taxes: No benefits
  - Higher gearing may (but only may !) be beneficial under particular tax regimes
- FIs ?
  - Deal oriented (“Quicker to arrange”)
  - (Performance) contracts with LPs typically not adjusted for financial (instead of operating) risk
  - “Option-type performance pay”

Investment Distortions: Debt Overhang

- Consider a firm in the following situation:
  - Assets in place generate:
    - This year: €30m cash
    - Next year: €150m with probability ½ or €100m with probability ½
  - New investment opportunity:
    - Costs: €30m
    - Generates a sure payoff of €35m next year
- Riskfree rate is zero, assets have zero beta
- The firm has issued a zero-coupon bond with face value €135m, maturing next year

Investment Distortions: Debt Overhang

- Alternative 1: Pay dividend € 30m now, do not invest
  - Asset values next year: € 150m or € 100m
  - Shareholders realize: 30 + ½ (150 – 135) = € 37.5m
- Alternative 2: Forego dividend and invest
  - Asset values next year: € 185m or € 135m
  - Shareholders realize: ½ (185 – 135) = € 25m
- Owners‘ interest: No investment!

Excessive Risk Taking

- Suppose now: Choice between two projects – for simplicity zero investment costs:
  - Safe investment opportunity yields €20m next year
  - Risky project: Payoff of €30m and zero are equally likely
- Outstanding zero-coupon bond with face value €12m, maturing next year
- Zero beta, riskfree rate of zero

Excessive Risk Taking (cont.)

- Which project maximizes total firm value?

  NPV_S = €20m

  NPV_R = 0.5 x €30m + 0.5 x €0 = €15m

- Which project maximizes shareholder value?

  E_S = €20m - €12m = €8m

  E_R = 0.5 x (€30m - €12m) + 0.5 x €0 = €9m

- Shareholders prefer riskier, but low-NPV project!

Excessive Risk Taking (cont.)

- Generally: Insight that equity is a call option on the firm‘s assets.
  (Compounded by „triple leverage“)
- What could „more risk-taking“ mean for investment?
  → Underinvestment: Risk network failure?

Investment Distortions: Cont.

- So far focus on “stock”, but also “flow” aspect of debt: Interest payment
  - Negative effect on investment well documented
  - Explanation: Capital market imperfections
- Short-terminism? Depends
  - not only on maturity of debt
  - but also on time horizon of “performance contract”

Implications: FIs and Network Infrastructure

- Characteristics of many network infrastructures:
  - "Public good" aspects, uncaptured externalities
  - Consequences of underinvestment felt (only) in the long term (esp. no alternatives / switching as "early warning")
  - Natural monopolies? Not even contestable?
- Implications
  - Must ensure that "chosen" investor has no "built-in underinvestment and short-terminism" problem
  - Must ensure that "chosen" investor can not suffer from "cross-contagion" in its businesses

Are FIs “attractive”?

- Bringing in new and foreign (FI) investors has many positive sides:
  - Tapping into new experience
  - Competition
  - Regulatory capture / Lobbyism
- These are important. Maybe more important than the preceding “health warning” on FIs?

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