Economic Capital Management as Business as Usual

Major Challenges for Japanese banks

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Agenda

1. Concept of Economic Capital Management and its Implications for Japanese Banks
2. Identification of Major Risks
3. Setting of Risk Appetite and Risk Quantification
4. Risk Aggregation
5. Definition of Capital to be Compared with Risk
6. Use of Outcome

1. Concept of Economic Capital Management and its Implication for Japanese Banks (1)

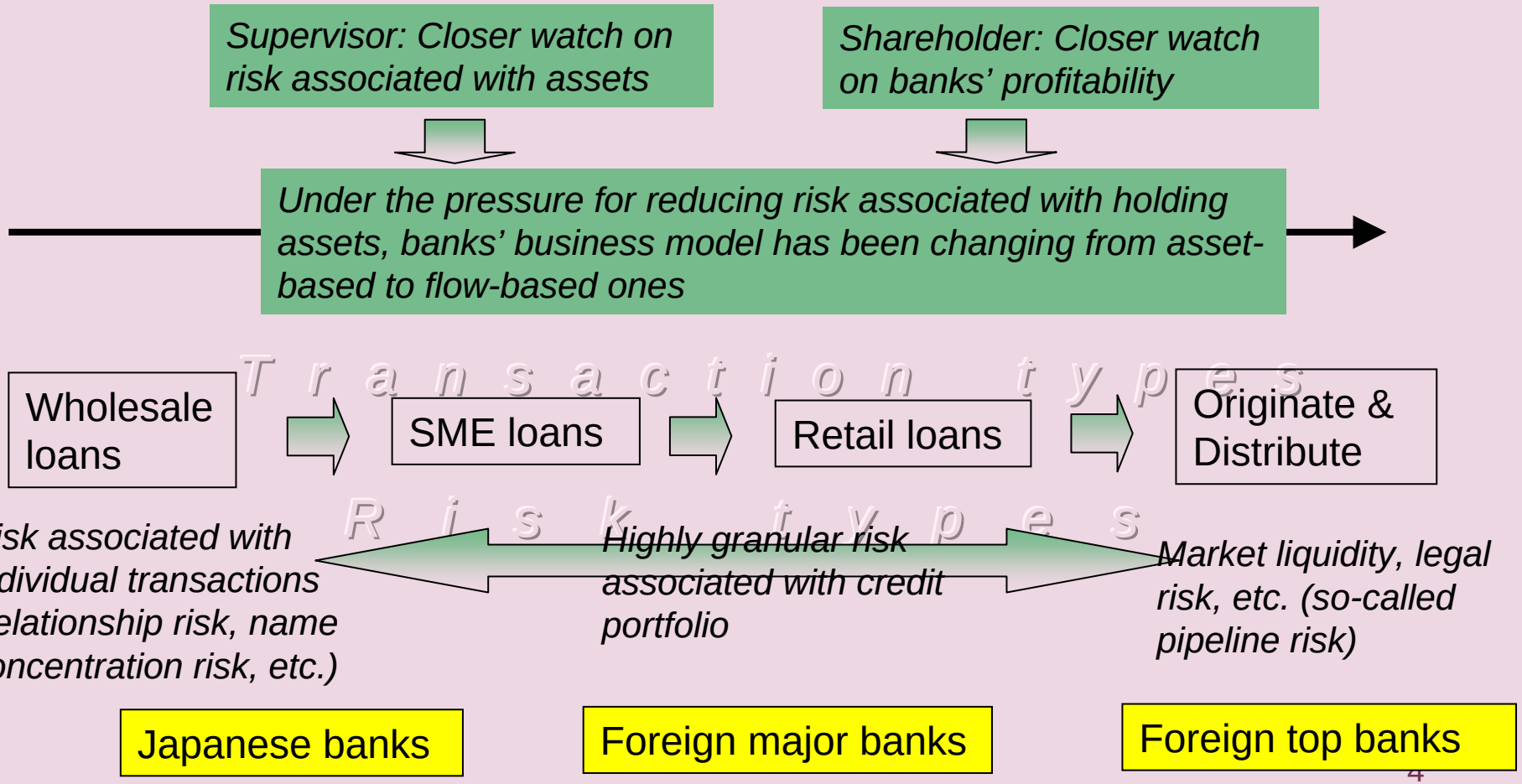
- Basic Concept
  - Capture the possible economic loss, and use this assessment outcome for ensuring capital adequacy and assessing risk adjusted profitability of LOBs
  - Principal target is to establish smooth communication with major stakeholders (especially, shareholders and supervisors) and to help making B strategy
    - ✓ Shareholders focus on capital efficiency and supervisors focus on capital adequacy
    - ✓ Banks' deposits are guaranteed by deposit insurance while their taking risks tend to be more and more complex → Need for high accountability
    - ✓ Smooth communication, however, cannot always lead to accurate risk assessment
  - Typical process of economic capital management
    - ✓ Identify all major risks faced by the concerned bank
    - ✓ Set its risk appetite and then quantify the identified risks
    - ✓ Aggregate all the quantified risks
    - ✓ Define the capital to be compared with the aggregated risk amount
    - ✓ Use the outcome of comparison for various business purposes

1. Concept of Economic Capital Management and its Implication for Japanese Banks (2)

- Economic capital management—why so important now?
  - Increasing complexity of banks' risk profile → Possible widening gap between economic and regulatory concept of risk
  - Globalization of banking activities → Need for the common language to talk about various risks in various contexts
  - Language-driven risk commoditization creates new businesses for banks
- Economic capital management—its Implication for Japanese banks
  - An important lesson we learned from our banking crisis during 1990s
    - ✓ Lack of common language to speak of risks led to no effective challenges made by major stakeholders
  - Uniqueness of Japanese banks' businesses
    - ✓ Strong relationship with obligors
    - ✓ Closed market in the age of globalization
  - Preemptive action against another stress and adaptation to the globalization → Need for the further enhancement of economic capital management

1. Concept of Economic Capital Management and its Implication for Japanese Banks (3)

- Uniqueness of Japanese banks' business model and risk mgt (1)
  - Business model transition of major foreign banks (Illustration)



1. Concept of Economic Capital Management and its Implication for Japanese Banks (4)

- Uniqueness of Japanese banks' business model and risk mgt (2)
  - Background of uniqueness
    - ✓ Strongly established domestic business channels --> high franchise value partly owing to an expectation of increase in deposit margin, exclusive possession of obligor information
    - ✓ Significant sunk cost --> Costs paid for establishing the relationship with obligors and employees, which might be lost due to the change in B model
    - ✓ Insufficient assessment/consideration of risk associated with "relationship"

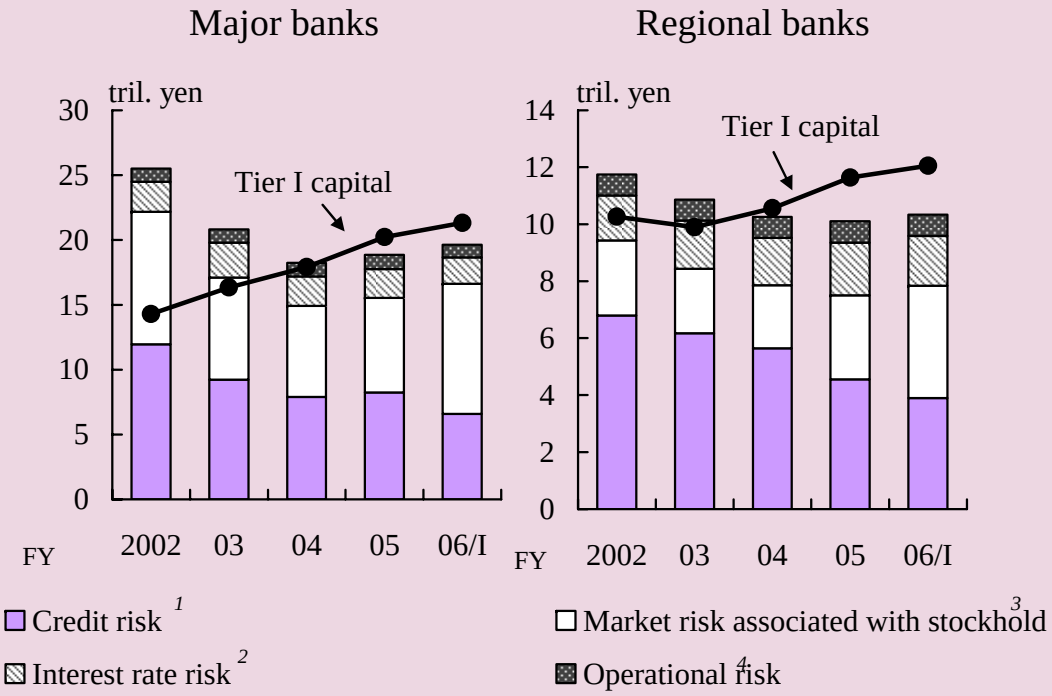
But…...

  - Is this uniqueness sustainable?
    - ✓ Shrinking relative size of domestic market in the global economy
    - ✓ More M&A by foreign investors/banks
    - ✓ Materialization of risk associated with relationship with obligors

  - Need for enhancing the global-market-oriented B strategy through ECM

2. Identification of Major Risks (1)

- Major risks faced by Japanese banks (1)
  - Image of risk amounts held by Japanese banks (Bank of Japan, “Financial Stability Report” March, 2007)



Notes: *1.* Credit risk is calculated by subtracting expected loss (EL) from the maximum loss (EL + UL) based on the Basel II risk weight formulas with a confidence interval of 99 percent. In the estimation, borrowers classified as requiring "special attention" or below (in terms of credit quality) are considered

2. Interest rate risk is limited to yen-denominated bond portfolios and calculated by the same method as in Chart 1.

3. Market risk associated with stockholdings is calculated by the same method as in Chart 15.

4. Operational risk is defined to be 15 percent of gross profits based on the Basel II basic indicator approach.

2. Identification of Major Risks (2)

- Major risks faced by Japanese banks (2)
  - Some characteristics of Japanese banks vis-à-vis foreign banks
    - ✓ Larger wholesale and smaller retail credit risk
    - ✓ Larger name concentration risk
    - ✓ Significant risk of equity held for relationship purpose
    - ✓ Smaller trading risk
    - ✓ Smaller op risk
  - Does the conventional measure of risk (e.g. the graphs in the previous page) correctly capture the risk profile of Japanese banks?
    - ✓ Identification of risk factors and setting of granularity --- appropriate?
    - ✓ All major risk are covered?
    - ✓ Risk measurement methods --- appropriate and consistent between different risks?
    - ✓ Assumptions of risk measurement methods --- appropriate and consistent between different risks?

2. Identification of Major Risks (3)

- Major risks faced by Japanese banks (3)
  - In the first place……what kind of risks do banks ever try to capture?
    - ✓ (Venturous/naïve) forward-looking number versus. (moderate/too easy) backward-looking number
    - ✓ The risk events that could happen once in every 100 (or 1000) years in the specific external environments versus the risk events that could happen once in every 100 (or 1000) years after considering possible changes in external environments

2. Identification of Major Risks (4)

- Major risks faced by Japanese banks (4)
  - The worst loss cases experienced by major Japanese banking groups after the burst of bubble
    - ✓ Credit risk loss: The worst credit cost ratio is 4.7% (FY1998) → 55.6% of the current Tier1 capital based on the current loan outstanding
    - ✓ Equity risk loss: The worst loss ratio is 61.4% (FY1991) → 70.8% of the current Tier1 capital based on the current equity outstanding
    - ✓ Market risk loss: The worst loss ratio is 1.3% (FY2005) → 4.3% of the current Tier1 capital based on the current securities outstanding
    - ✓ Op risk loss: Daiwa Bank NY Branch (around 100 billion yen, or 30% of its gross profit), Mizuho Security (around 40 billion yen, or 2% of its gross profit) → 0.7--9.6% of the current Tier1 capital based on the current level of gross profit
    - ✓ Aggregation: 131.4%--140.3% of the current Tier1 capital
  - Do the currently measured risks reflect the above events?
  - What types of the stress is supposed to be managed by the current risk management system? → Could we have avoided the bubble if we had introduced the current system 20 years ago?

2. Identification of Major Risks (5)

- Major risks identified by Japanese banks
  - Risks which are usually quantified
    - ✓ Credit risk (incl. wholesale and retail)
    - ✓ Name/industry concentration risk
    - ✓ Risk of Equity held for relationship purpose
    - ✓ Market risk
    - ✓ Op risk
  - Other risks which are often dealt with by stress testing or qualitative measures
    - ✓ Liquidity risk
    - ✓ Business risk
    - ✓ Reputational risk ……

2. Identification of Major Risks (6)

- The risks that are not well-recognized by Japanese banks
  - Insufficient risk identification and granularity setting?
  - The risks that are not highlighted in the US/Europe, and the risks that are not yet materialized in Japan tend to be dismissed
  - (Credit risk)
    - ✓ Risk associated with strong relationship between banks and some obligors → this risk is not necessarily distinguished from ordinary credit risk
    - ✓ Op risk aspects of credit risk (e.g. credit losses due to a lack of due diligence)
  - (Risk of equity held for relationship purpose)
    - ✓ Risk associated with strong relationship between banks and some obligors → this risk is not necessarily distinguished from the risk of equity held for trading purpose
  - (Op risk?)
    - ✓ Op risk related to possible misconduct of senior management
    - ✓ Op risk events which were not brought to the court and thus not materialized

3. Setting of Risk Appetite and Risk Quantification (1)

- Setting of risk appetite
  - 99% versus 99.9% versus 99.97% versus ……
  - How to set the level of risk appetite
    - ✓ Targeted external rating? → Is the policy of external rating agency consistent with the idea of economic capital management?
    - ✓ Expectation of supervisors → Basel II surely assumes the specific confidence level but ……
    - ✓ Market expectation → Do shareholders and institutional investors understand and accredit the idea of economic capital management?
    - ✓ The type of capital to be compared might be considered (P.21)
    - ✓ World trend
- Risk quantification (1) – Scope of quantification
  - To be quantified or not to be……
    - ✓ Identification of risk factors
    - ✓ Number of sample data of risk factor developments, observation period
    - ✓ Stability and skewness of the distribution followed by risk factors

3. Setting of Risk Appetite and Risk Quantification (2)

- Risk quantification (2) – Various ways of quantification
  - Various ways of incorporating risks into the ECM framework corresponding to their quantifiable natures
    - ✓ Risk that can easily be quantified (market risk, some credit risks)
    - ✓ Risk that can be quantified (some credit risks, risk of equity held for relationship purpose)
    - ✓ Risk that is hard to be quantified (op risk, business risk, liquidity risk)
  - More difficult to quantify → More risk of measurement errors → Need for some supplement measures
    - ✓ Stress testing
    - ✓ Conservative margin
    - ✓ Qualitative risk control measures
    - ✓ Provision of risk buffer for potential unrecognized risks

3. Setting of Risk Appetite and Risk Quantification (3)

- Risk quantification (3) – Quantification methods and confidence level
  - Risk quantification methods
    - ✓ Stress testing versus VaR versus CVaR versus ……
    - ✓ How much information is available on the tail part of distribution?
  - Relation between stress testing and VaR
    - ✓ Need to clarify the specific aspects of VaR, which are supplemented by stress testing → help identify the areas where both should have the same assumptions to keep their comparability
    - ✓ e.g. lack of sample data to be supplemented → Degree of stress and confidence level should be consistent
  - Implication of confidence level
    - ✓ e.g. implication of 99% confidence level in the real world context
      - The worst event that occurred (could occur) over the last (coming) 100 years
      - The worst event that occurred (could occur) over the last (coming) 10 years across 10 similar banks
      - The worst even that occurred (could occur) over the coming 100 years assuming the current external environment

3. Setting of Risk Appetite and Risk Quantification (4)

- Risk quantification (4) – External environment factor
  - How to consider external environment factor
    - ✓ Definition of “changes” in external environment
      - The difference between ordinary and extraordinary?
      - Structural breakdown by statistical sense?
      - Intuitive recognition (e.g. EE should be stable over ten years)
  - Should we explicitly consider the changes in EE? If yes, how?
    - ✓ Consider the changes in EE in the context of VaR or in the different framework (e.g. stress testing)
  - Degree of accuracy and comprehensiveness?
    - ✓ Issues of comprehensiveness and objectivity → same with the issues of op risk scenario analysis
    - ✓ This issue can be reduced to the top management judgment of the risk to be managed → Whether the bank withstands another possible bubbles in the future or just some cyclical impacts under the current benign conditions
    - ✓ More concretely, whether or not consider our crisis experiences, huge earthquake projections, correction mechanism of the current benign global economies, etc.

3. Setting of Risk Appetite and Risk Quantification (5)

- Risk quantification (5) – Internal control factor
  - How to consider internal control factor
    - ✓ The risk to be compared to capital should be the inherent risk minus internal control factor
    - ✓ Internal control factor impacts significantly over op risk amounts → Op risk measurement usually considers internal control factor explicitly
    - ✓ Risk factors beyond internal control tend to dominate credit/market risk amounts but qualitative aspects of risk management (e.g. the process of effective challenge against the assessment outcome) is still important → Internal control factor is often considered in setting the conservative margin of estimated risk parameters
  - How to keep consistency in assumptions between different risks?
    - ✓ VaR → Aggregation of risks “in a strict sense” is difficult
    - ✓ Besides, use of different assumptions among different risks could further complicate risk aggregation
      - e.g. how to keep consistency in some assumptions such as confidence level, holding period and stability of external environments (see next page)

4. Risk Aggregation (1)

- Consistency in assumptions among risks (1)
  - Implications of holding period and its consistency among risks
    - ✓ How to set holding period
      - Various ideas of holding period and their lengths: the period to liquidate positions **<** the interval of reviewing risk taking policy **<** the interval of reviewing economic capital allocation **<** the period to raise additional capital **<** the period to liquidate relationship transactions with obligors
    - ✓ How to compare the risks with different holding periods
    - ✓ An idea might be to set the common time horizon, which correspondents to the period to raise additional capital (capital horizon)
      - How to assume variable risk taking behaviors during the capital horizon (normally, one year) → An idea is to assume the constant level of risk during this period
      - How to assess the risks, of which holding period could be longer than 1 year (e.g. credit and equity risks <in particular, the risk associated with relationship with obligors>, business risk) → An idea is to measure the risks with longer-than-one-year horizon and then compare them with capital level considering its variability during this period (e.g. stress testing, scenario analysis)

4. Risk Aggregation (2)

- Consistency in assumptions among risks (2)
  - Consistency in confidence level among risks
    - ✓ Top managers decide the confidence level corresponding to their risk appetite → There should be no difference in confidence level among risks
      - The above idea, however, does not necessarily force banks use the risk quantification method focusing only on the specific point of confidence level → Paucity of samples over the tail part might justify the estimation of risk corresponding to lower confidence level than the common level and subsequent scaling up to the level using some indicators
    - ✓ How to set the frequency of stress scenarios
      - 99.9% confidence level → Should scenarios consider the events that could happen once every 1000 years?
      - How to consider the change in external environments
  - Consistency in consideration of the change in external environments
    - ✓ Generally speaking, no consideration of the change in EE for market/credit risks
    - ✓ Basel II requires op risk to consider BEICF for risk quantification
    - ✓ An idea: to consider the change in EE over 20 years (99.9% confidence level → the worst loss event that could happen once every 20 years “across 50 banks”)

4. Risk Aggregation (3)

- Challenges for each risk category to be consistent in assumptions with others
  - Credit risk, risk of equity held for relationship purpose
    - ✓ How to deal with the risk, of which holding period is longer than one year, and the risk associated with strong relationship with obligors
    - ✓ How to consider the change in external environments
  - Market risk
    - ✓ How to assume risk taking behaviors during the capital horizon (i.e. one year)
  - Op risk
    - ✓ How to keep consistency in consideration of the change in external environments and confidence level with other risks
  - Business risk
    - ✓ How to deal with the risk, of which holding period is longer than one year

4. Risk Aggregation (4)

- Assumption of correlation between risks
  - Various correlations
    - ✓ Inter-risk correlation
    - ✓ Intra-risk correlation
    - ✓ Risk correlation between entities
  - How to measure correlations
    - ✓ Paucity of sample (in particular, during the stress period)
    - ✓ Complexity of dependence structure
    - ✓ Meanwhile, we need sufficiently granular risk numbers to be used for day-to-day risk management → Simple aggregation of these numbers without considering correlation, however, could significantly overestimate risk amounts
    - ✓ Excessively conservative assumptions of correlation might lead to more volatile market behavior
  - Status quo
    - ✓ Japanese banks: In addition to intra-risk correlations, some banks have started to consider inter-risk correlations
    - ✓ Foreign banks: Many banks have already considered inter-risk correlations but the supervisors tend to recognize them in a conservative way

5. Definition of Capital to be Compared with Risk (1)

- Definition of capital
  - Definition of capital could vary depending on “capital-ness” in terms of its nature as risk buffer
  - Different capital definition might be used for different risks to be compared
    - ✓ Core capital → Tier 1 capital
    - ✓ How to deal with latent profits and expected profits
    - ✓ How to deal with Tier 2 capital
    - ✓ How to deal with hybrid capital

5. Definition of Capital to be Compared with Risk (2)

- Comparison with risk
  - The risks to be compared with capital is the inherent risk minus internal control factor
    - ✓ Need for clarifying the way to consider internal control factor, if any (P.16)
    - ✓ How to consider the qualitative assessment of risk, which is hard to be quantified, or the outcome of stress testing for assessing capital adequacy
  - Accounting issues
    - ✓ Consistency between the loss evaluation method, on which risk quantification is based and the accounting method to evaluate capital
      - e.g. How should we define the capital to be compared with the risk of equity that has latent profits, or the op risk about damages to fixed assets which was already fully depreciated ?
    - ✓ How to deal with fair value option in the future

6. Use of Outcome (1)

- To ensure capital adequacy
  - How to consider the relationship between regulatory and economic capital
    - ✓ Regulatory capital emphasizes the importance of sharing the common language between banks and supervisors, tends to be characterized by highest common factor among different banks' practices and conservatism
    - ✓ Meanwhile, even Pillar I is designed to reflect certain divergence in banks' practices
  - How to increase the accountability of process of deciding the risk appetite
  - How to communicate with other stakeholders than supervisors about capital adequacy
    - ✓ Pillar III is designed to bring in market discipline into the process of ensuring capital adequacy
    - ✓ How to communicate effectively with other stakeholders such as rating agencies and institutional investors is future tremendous challenges

6. Use of Outcome (2)

- To use for performance evaluation and business strategy
  - Backward-looking assessment (in favor of communication with supervisors) versus forward-looking assessment (in favor of practical use for senior mangers' decision making)
  - Forward-looking assessment based on objective assessment (e.g. use of business risk estimates, scenario analysis) versus forward-looking assessment mainly based on senior managers' "animal spirits"
  - How to consider the assets/liability, which does not appear in the B/S
    - ✓ For example, how to evaluate the value of firm-specific skills such as strong relationship with obligors, which was formed at the expense of costs but is valued only in the specific firm
    - ✓ Risk/return analysis based on the relatively short horizon and subsequent business reactions could not be matched with the employment practice of Japanese firms, which is based on relatively long horizon → how to converge the two different time horizons → First of all, who decides the time horizon of banks?
  - Use of outcome for business judgments and verification of capital adequacy
    - ✓ Use test perspective
    - ✓ Not used outcome for B-judgments can be used for ensuring capital adequacy?