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NON-FINANCIAL RISK ANALYSIS & MACROECONOMIC FACTORS

CCP CHAPTER 10B PART 2

📌 Why is Research on NFR & Macroeconomy Difficult?

- **Not all NFR events have clear macroeconomic linkages** – Some occur **randomly** 📉.
- **Time-lag issue** – Economic downturns today may cause **frauds to surface years later**.
- **Banks focus on evidence-based NFR events**, ignoring those without clear macroeconomic proof 🧐.

📌 🔍 Key Theories on NFR & Macroeconomics

1.Boom Economies Encourage fraudulent lending 🚀 → **Fraud Risk Increases**

📌 **What happens?**

- During economic upswings, banks approve **high-risk loans** with **minimal scrutiny**.
- **Fraudulent loans** get approved **alongside legitimate ones** 🏦.

- Compliance teams become **overly optimistic**, reducing suspicion.

📌 **Impact?**

🔴 **When economy crashes, fraudulent loans default**, causing massive financial losses.

2 Intense Market Competition Lowers Risk Standards

📌 **What happens?**

- **Banks compete aggressively** for lending business 🏦.
- Stringent loan checks **are bypassed** to gain market share.
- **Collateral fraud** becomes rampant as due diligence declines.

📌 **Impact?**

🔴 **Fraudulent lending increases**, leading to **higher NPA (Non-Performing Assets) post-crisis** 📉.

3 Fraud Goes Undetected Until Economy Crashes

📌 **What happens?**

- Fraud remains **hidden** as long as **obligations are met**.
- During an **economic downturn**, fraudsters **fail to repay loans**.
- **Uncovered frauds** create **huge financial damage** 💰.

4 Unemployment & Financial Desperation Lead to More Fraud

📌 **What happens?**

- During **recessions**, unemployment **rises sharply** 📉.
- People commit fraud **to sustain their lifestyle** or **out of desperation**.
- The belief that **"I won't get caught"** becomes stronger.

📌 **Impact?**

🔴 **Rise in banking frauds, cyber crimes, and financial misconduct**.

5 Heavy Workloads in Booming Economies Cause More Errors

📌 **What happens?**

- High **credit demand** = **Overburdened** banking staff 🏦.
- Mistakes increase **due to fatigue & pressure**.
- Errors of omission (missing due diligence) lead to **financial risks later**.

📌 **Impact?**

🔴 Operational risks rise **as mistakes accumulate over time**.

📌 🔍 Summary Table: How Macroeconomic Conditions Affect NFR?

Macroeconomic Factor 📊	Primary NFR Risk ⚠️	Effect 🔲
Economic Boom 🚀	Rogue Lending & Fraud 📈	Banks approve **risky loans**, increasing **fraud risk**.
Intense Market Competition 🏆	Collateral Fraud & Loan Default	Loan **scrutiny weakens**, leading to **higher NPA**.
Economic Downturn 📉	Fraud Detection Surge 🚨	Hidden frauds **surface**, causing **huge financial losses**.
High Unemployment	Employee Fraud	Financial desperation

📊	🏦	**drives people to commit fraud**.
Heavy Workload 🏗️	Operational Errors 🔴	Increased pressure causes **more process failures**.

📌 Common NFR-Loss-Estimation Approaches

Most banks estimate **NFR losses** during their **annual budgeting and forecasting processes** 📊. This is typically done by:

✓ Using **historical loss data** 📜.

✓ Incorporating **management inputs** at a business-line level 🏦.

✓ Employing **different models** for specific event types (e.g., fraud, litigation).

- **Advanced banks** combine historical data and forward-looking analysis, to **improve stress-testing accuracy**.
- Some banks rely solely on **historical averages**, but this is a **backward-looking approach** ❌ that does not account for future risks.

📌🔍 NFR-Loss-Estimation Models

🔄 Comparison of NFR Loss Estimation Approaches

Approach 🏛️	Methodology 📊	Advantages ☑️	Challenges ❌
Regression Models 📉	Statistical models predicting NFR frequency & severity **based on macroeconomic trends.**	📊 Identifies correlations between economic conditions & NFR losses.	❌ Not all NFR losses correlate with macroeconomic conditions.
Loss-Distribution Approach (LDA) 📊	Uses historical loss data & Monte Carlo simulations to estimate NFR loss distribution.	🔄 Incorporates both **frequency & severity** of losses.	❌ Requires extensive **historical loss data**.
Scenario Analysis 🔍	Experts assess **plausible severe NFR events** & their impact.	🎯 Helps capture **unknown risks & data gaps**.	❌ **Subjective** – depends on expert judgment.
Historical Averages	Uses past loss data to predict future	🏛️ Simple & easy to apply.	❌ Does not account for

📜	losses.		**future risks or evolving threats**.
Legal Exposures ⚖️	Separates **legal losses** (lawsuits, settlements) from operational losses.	⚠ Provides **detailed legal risk insights**.	❌ Highly **unpredictable** due to evolving regulations.

📉 Regression Models

📌 What is it?

Regression models estimate **two key variables**:

1 **Loss Frequency** – How often NFR losses occur.

2 **Loss Severity** – The financial impact of these losses.

📌 How does it work?

✓ Banks use regression models to **identify correlations** between **macroeconomic factors** (e.g., GDP growth, interest rates) and NFR loss frequency.

✓ Time-lag assumptions are applied to **adjust for delayed impacts**.

✓ If no correlation is found, **alternative models** are used.

📌 Challenges:

❌ Most banks struggle to correlate **macroeconomic conditions with NFR loss severity**.

❌ They often **use static assumptions** (e.g., 4-quarter moving average) to estimate **operational losses**.

📊 Modified Loss-Distribution Approach (LDA)

📌 **What is it?**

✓ A statistical method used in the **Advanced Measurement Approach (AMA)** to estimate **Value-at-Risk (VaR)** for NFR losses.

✓ Uses **historical loss data** & **probability distributions** for risk estimation.

📌 **How does it work?**

🔹 **Two key distributions are estimated**:

✓ **Loss Frequency Distribution** – How often NFR events occur.

✓ **Loss Severity Distribution** – How costly each event is.

🔹 These distributions are **combined using Monte Carlo simulations** 🎲 to estimate the **annual NFR loss probability**.

📌 **Key Benefits**:

✅ Helps banks **quantify** potential **loss exposure**.

✅ Useful for regulatory capital calculation 🏦.

📌 **Challenges**:

❌ Requires **extensive historical data** 📜.

❌ Results can be **highly sensitive** to model assumptions.

🔍 Scenario Analysis

📌 **What is it?**

✓ A structured process where **risk-management experts** assess the **likelihood & impact** of severe NFR events.

📌 **How does it work?**

✓ Banks **simulate hypothetical scenarios** (e.g., cyberattack, major fraud event) & estimate potential losses.

✓ Used as a **management overlay** to **complement data-driven models**.

📌 **Key Benefits**:

✅ Helps **identify unknown risks** where historical data is lacking.

✅ Captures **idiosyncratic risks** (specific to a bank or event type).

📌 **Challenges**:

❌ **Subjective** – depends on expert opinions.

❌ Requires **transparent, well-supported methodology** for credibility.

📜 Historical Averages

📌 **What is it?**

✓ Banks use **past loss data** to estimate future NFR losses.

📌 **How does it work?**

✓ Historical averages are applied where **no macroeconomic correlation exists**.

✓ Can be used **alone or in combination** with other models.

📌 **Key Benefits**:

✅ Simple & easy to implement 🏦.

✅ Useful when data is **limited**.

📌 **Challenges**:

❌ **Backward-looking approach** – ignores emerging risks.

❌ Requires careful **adjustment for outliers & anomalies**.

Legal Exposures

📌 **What is it?**

Banks **separate legal losses** (lawsuits, settlements) from other NFR losses.

📌 **How does it work?**

✓ Legal reserves, historical loss data, and **regression models** help predict **future litigation losses**.

✓ Some banks use **hazard-rate models** 📊 to estimate **default & repurchase claim rates**.

📌 **Key Benefits**:

✅ Provides a **clearer picture** of legal risk exposure.

✅ Helps banks **allocate reserves** for future legal liabilities.

📌 **Challenges**:

❌ Legal risks are **highly unpredictable**.

❌ Regulatory changes can **invalidate historical loss patterns**.

📌 Dealing with Recoveries

📌 What are Recoveries?

✓ **Recoveries** refer to **funds recovered after NFR losses**, beyond **insurance claims**.

✓ The net financial damage after deducting recoveries is the **final NFR loss**.

📌 Key Considerations for Banks:

✓ Estimate the **probability & timing** of recoveries under **adverse economic conditions** 📉.

✓ Ensure **capital reserves are adequate** to cover expected losses.

📌 Best Practices for Banks:

- Maintain **accurate recovery records**.
- Align **recovery projections with macroeconomic trends**.

- Consider **delays in settlement processes** when forecasting losses.

📌 🔍 Final Summary Table: NFR Loss Estimation & Recoveries

Aspect 🏦	Key Details 📌
Common NFR Loss Estimation Methods	Regression Models, LDA, Scenario Analysis, Historical Averages, Legal Exposure Models.
Most Advanced Approach	**Loss-Distribution Approach (LDA)** using Monte Carlo Simulations 🎲.
Easiest to Implement	**Historical Averages** 📜.
Best for Unknown Risks	**Scenario Analysis** 🔍.
Legal Risk Consideration	Separate models for **litigation & regulatory losses** ⚖️.
Handling Recoveries	Estimate **realistic recovery timelines & net losses**.