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Regulatory solutions for bank loans pro-cyclicality
Is the cure worse than the illness?

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* This presentation reflects the views of the authors and not necessarily those of the BIS or of central banks participating in the meeting.

Regulatory Solutions to Bank Loans Pro-Cyclicality
Is the cure worse than the illness?

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The views are sole responsibility of the authors

Plan

- Motivation / background
- Alternative tools
- Model
- Conclusions

Motivation

- We adopt the view that counter-cyclical mechanisms are desirable

"To have a banking system that acts as shock absorber rather than shock amplifier"

- Reinforcing link between the business cycle and credit
- Very topical in the wake of the international financial crisis
- Less-developed countries: instability is cause and consequence of lack of development.
- Debate focused traditionally on the links between monetary policy, credit and the real economy, has lately shifted towards prudential regulation.
- Insufficient consideration has been paid to the interplay between accountancy rules, prudential regulation and finance

Alternatives

- Traditionally capital pointed out as the main restriction on loan granting

- Solution? To lessen the impact on income statements
- Other proposals:
  - asset valuation methodologies
  - compensation schemes (bonuses)
  - quality of capital
  - TTC risk measures, max leverage, impact of the cycle on financial reports and other regulatory changes
- We pick the proposals of the 4th group and analyze them **dynamically**
  - **Special focus on counter-cyclical provisions**

Issues

1. Conflict between accounting and prudential views + *financial and incentive perspectives*
2. There are *signaling problems*
3. *Internally generated cash flows are an important driver* in pro-cyclical dynamics
4. Biases in credit prices and amounts may drive financial business *out of regulated institutions*.

Loan Loss Provisions as a value adjustment and as a prudential tool

1. Provisioning brings a loan's accounting value closer to its fair value. → economic concept
2. Loan Loss Provisions (LLP) should cover expected losses → statistical concept

- 2 objectives, 2 points of view, for an instrument that follows...

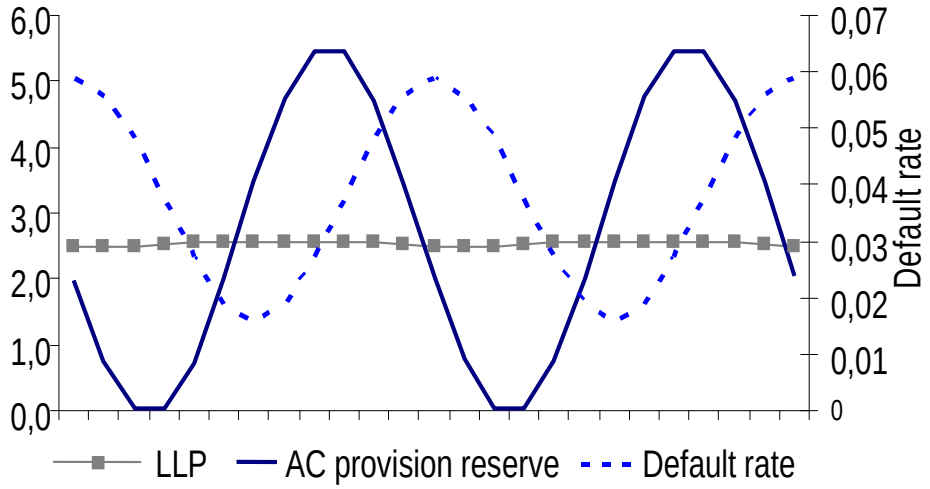
Accounting rules!

- objective evidence → financial records
- verifiable information → a loan quality
- Provisions are backward-looking and pro-cyclical

- Industry point of view? "banks consider expected losses as a cost of doing business and set product margins to both compensate for them and earn a return on capital". Yet, margins are ignored in regulation.

Counter-cyclical provisioning

- Idea: stable LLP at the long-term expected loss level
- Smooth out the impact on the bank's results by temporal distribution of LLP's booking
- When booked provisions > incurred losses ⇨ accounting reserve ⇧
- When booked provisions < incurred losses ⇨ accounting reserve ⇩
- Spain (1999)



Regulatory solutions to pro-cyclicality

- Usually mentioned challenges:
  - Differentiation between macro conditions and idiosyncratic drivers of default
  - Articulation with other standards
- 3 potential problems associated with pro-cyclicality:
  1. Signaling problems:
     - asymmetrical information and agency problems
     - Required rate of return is affected by released information. Two-fold challenge: *(I)* understand the break down between observed and regulatory losses; *(II)* asses if the bank is hiding, deferring or advancing portfolio risk booking.
     - Precedent: voluntary smoothing of earnings.
  2. Liquidity dynamics and management.
  3. Pricing problems.

Exercise

- Simulation exercise - *representative bank*
  - Band's behavior throughout a business cycle under different regulation schemes
  - Calibration: (as a reference) Argentine banking system
  - perfect foresight
- The bank holds 3 asset classes: (identical) loans, fixed assets and risk-free liquid assets. Its funding comes from deposits and capital.
- Loans are bullet with yearly payment of interest, fixed interest rate and 2-year maturity.
- The bank faces a credit demand curve.

$$ln(L_t)-ln(L_{t-1})= w\ [ln(1+r^{l}_{t})- ln(1+r^{l}_{t-1})]$$

  - r^{l}_{t} is the lending rate
  - L_t stock of loans
  - r^b is a benchmark rate
  - w is a very crucial elasticity, we carried out an econometric estimation using 2SLS.

Exercise

- The bank faces a supply of deposits which is a function of the risk assessment made by depositors

$$r_t^d = 0.005 + r^b + \Sigma_i \varepsilon^i ind_t^i + \eta \Delta D_t * cycle$$

  - ε^i represent sensibilities applied on *ind* indicators, corresponding to capitalization, liquidity, ROE, phase of the cycle and if the bank has had to raise capital at the previous year end.
  - the rate increase required to raise one additional peso worth of deposits in the economic expansion is lower than the same increase in the economic contraction (last term).
- The benchmark rate fluctuates around 5%, with the cycle

Exercise

- identity of the balance sheet:

$$(L_t - AP_{t-1}) + F + B_t = K_{t-1} + D_t$$

  - *F* represents Fixed Assets (constant).
  - B_t stands for risk-free liquid assets, (remunerated at a constant rate).
  - AP_{t-1} is the stock of provisions at the end of the previous period and
  - *K* is the Net Worth value (Tier 1 capital).

- Liquidity and solvency requirements:
  - Target capital ratio constant at 9.0%.
  - Tier 1 capital = Net Worth.
  - Tier 2 capital: where (partial) capitalization of anti-cyclical provisioning is admitted.

$$\theta\,[(L_t - PA_{t-1}) + F] <= K_{t-1} + PAC_{t-1}$$

  - 15% liquidity ratio requirement as a percentage of deposits, must be met with liquid assets:

$$\lambda\, D_t <= B_t$$

Cash-Flow

$$NL^{(t+1)} = MNI_t + L^{(t-1)}(1-d_{t-1})(1-d_t) + (B_t - B_{t+1}) + (D_{t+1} - D_t) - Y_t$$

where

$$MNI_t = L^{(t)}(1-d_t)\, r^l_t + L^{(t-1)}(1-d_{t-1})(1-d_t)\; r^l_{t-1} - r^d_t\, D_t + r^b\, B_t$$

- MNI Net Interest Margin
- d_t default rate of the period
- Y_t dividend payments

- Dividends are paid in cash at the end of each period so as to comply with capital requirements for the next period. In some periods the institution may need to raise capital.
- Total Result of the period = NIM + LLP
- Pricing: The lending rate must cover expected funding rates, loan losses and ROE. Lending rates are fixed on 2-year loans. When LLP result from an anti-cyclical regulation, this reported level is factored into the pricing formula.

- Initial composition of the balance sheet and interest rates:

Balance Sheet						Interest Rates		
B	Liquid assets	13.7	***D***	Deposits	91.1	***rl***	Lending	13.5%
L	Loans	67.6	***K***	Net worth	7.6	***rd***	Deposit	4.5%
F	Fixed assets	17.5				***rf***	Benchmark	5.0%
	Total	98.8		Total	98.8			

- With this structure the bank strictly complies with the regulatory ratios and gets the desired level of ROE (15%); balance sheet and interest rates are stable.
- Resolution: The bank decides simultaneously, at the end of each period, the variables under its control: new loans, liabilities, capital and holding of liquid assets and the corresponding interest rates, st the mentioned restrictions.
- The bank always gets the funds required though sometimes at a higher cost, It always gets the desired ROE as a long-run average.

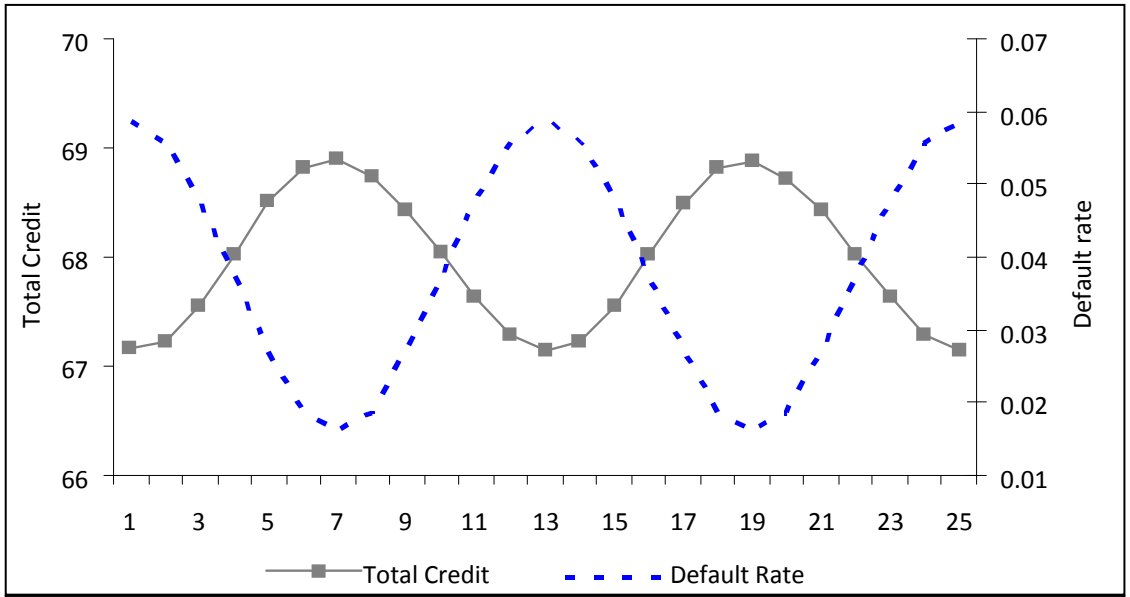
Schemes

- **"Base"** scenario : Current regulation
- Counter-cyclical regulation schemes
  - **Anti-cyclical provisions**:
    1. **"AP"** – if there is a balance, it is not allowed for regulatory capital
    2. **"AP capitalization"** - anti-cyclical provisions partially allowed as capital (Tier 2 capital up to 50% of Tier 1 capital)

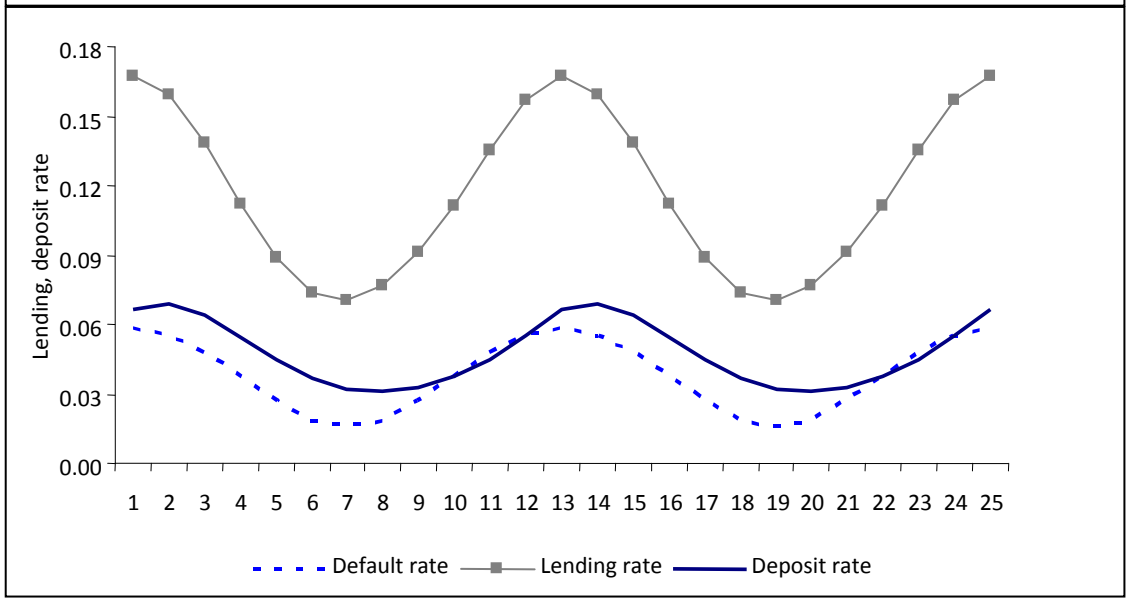
  - **"Capital"**- time-varying capital ratio: it increases in economic expansions and decreases in economic contractions. The amounts by which the capital increases or decreases are similar to the changes in the anti-cyclical reserve balance under the AP scheme.
  - **"Liquidity"** - time-varying liquidity requirements: In the expansion, the bank must accumulate liquid assets above the λ ratio (by an amount similar to the anti-cyclical reserve balance under the AP scheme) and the opposite occurs during the contraction.

Base Scenario

Credit and cycle

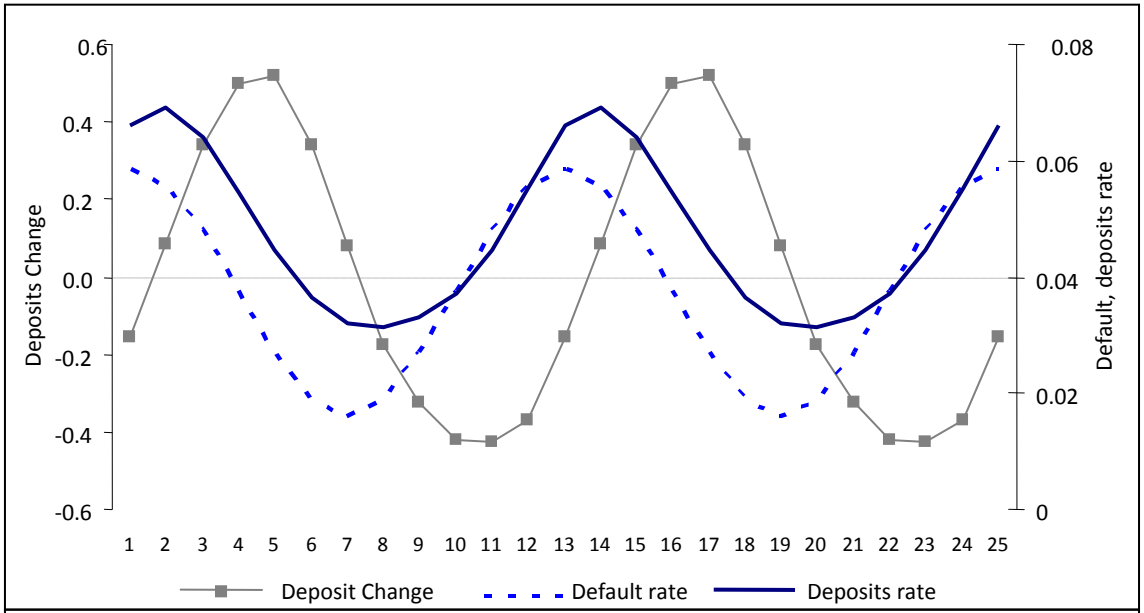


Interest Rates

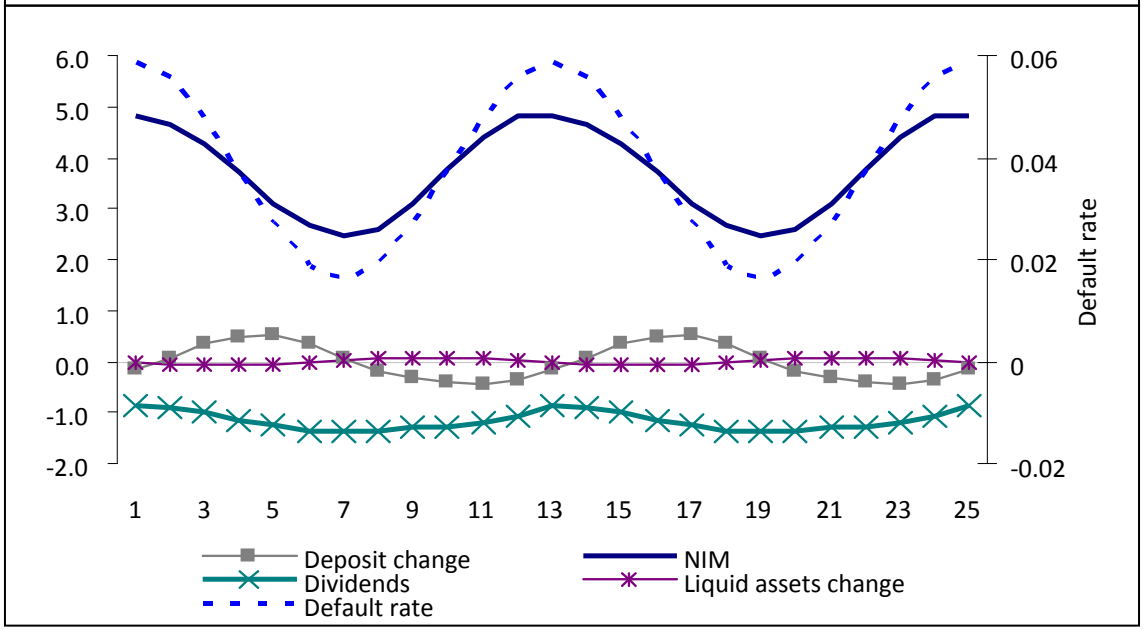


Base Scenario

Funding with Deposits

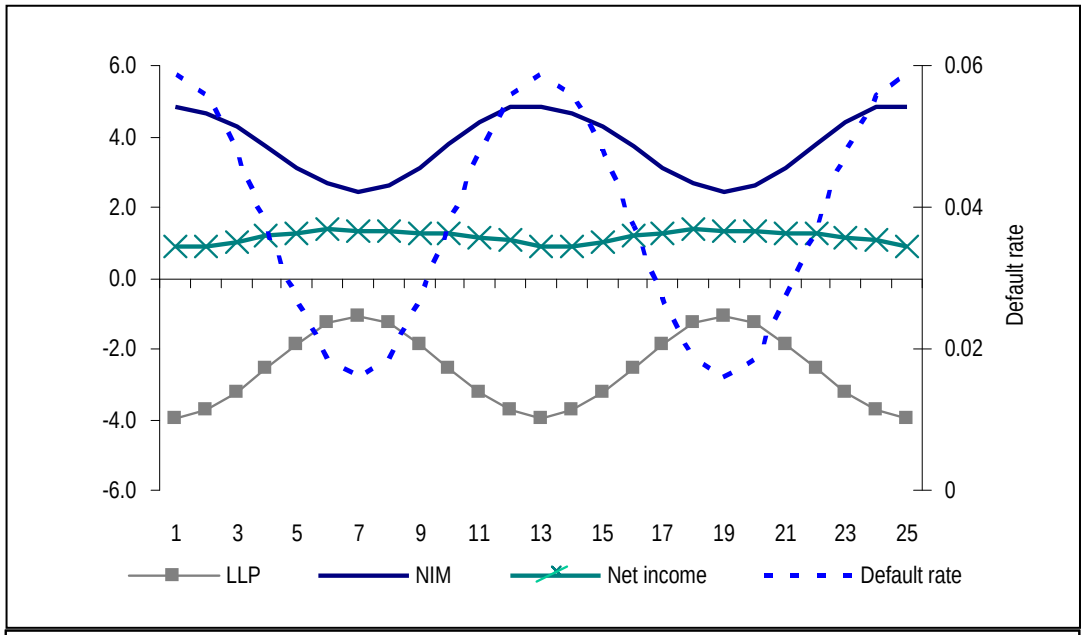


Cash Flow

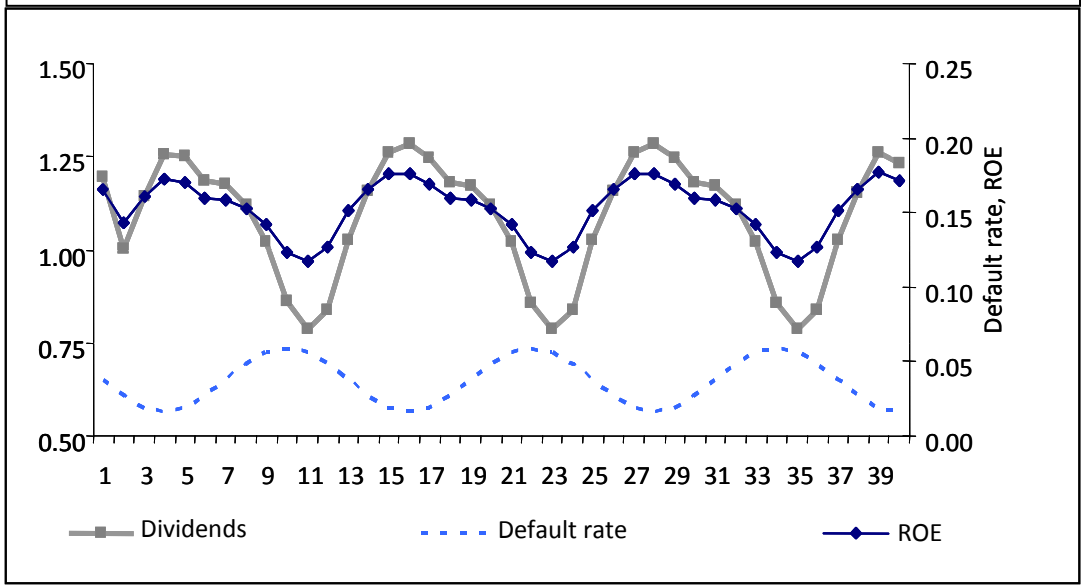


Base Scenario

LLP, NIM and Net Income

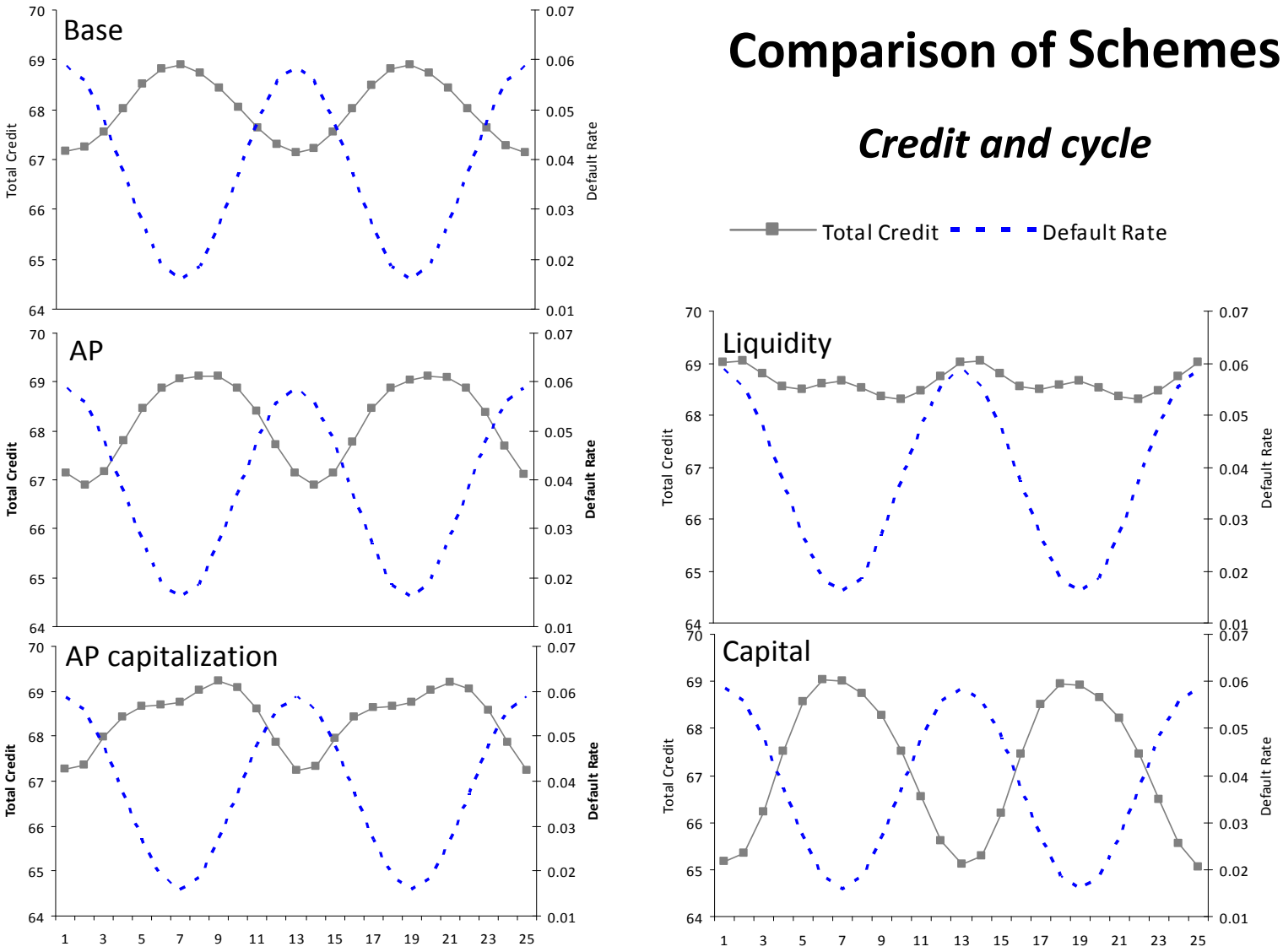


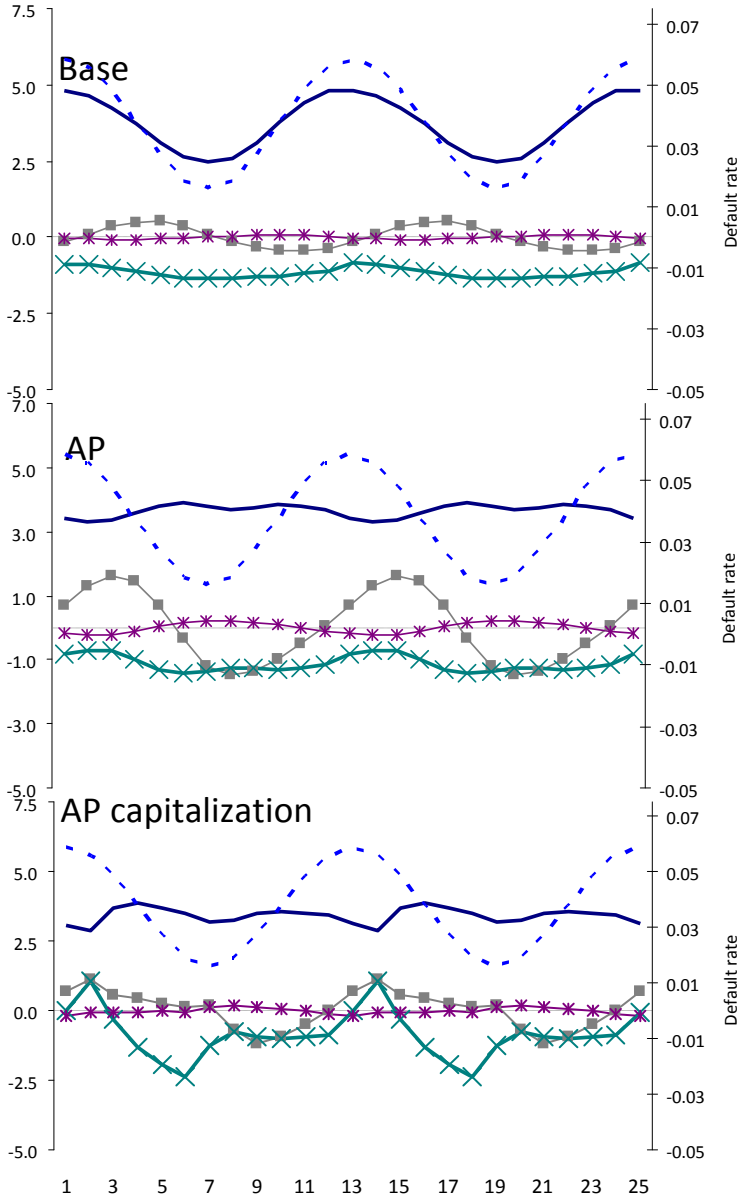
ROE and dividends



Comparison of Schemes

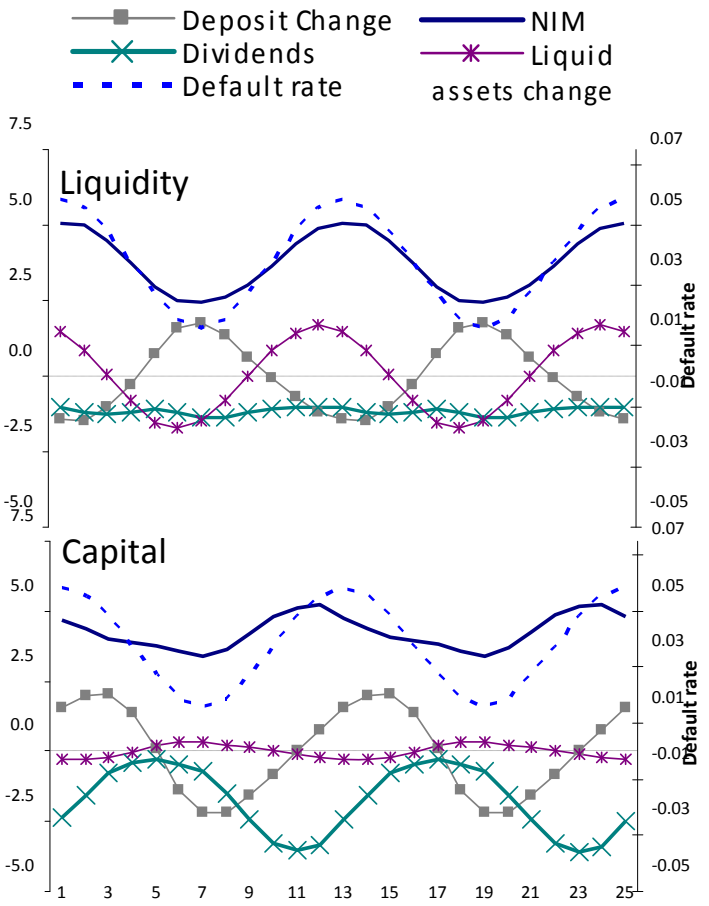
Credit and cycle





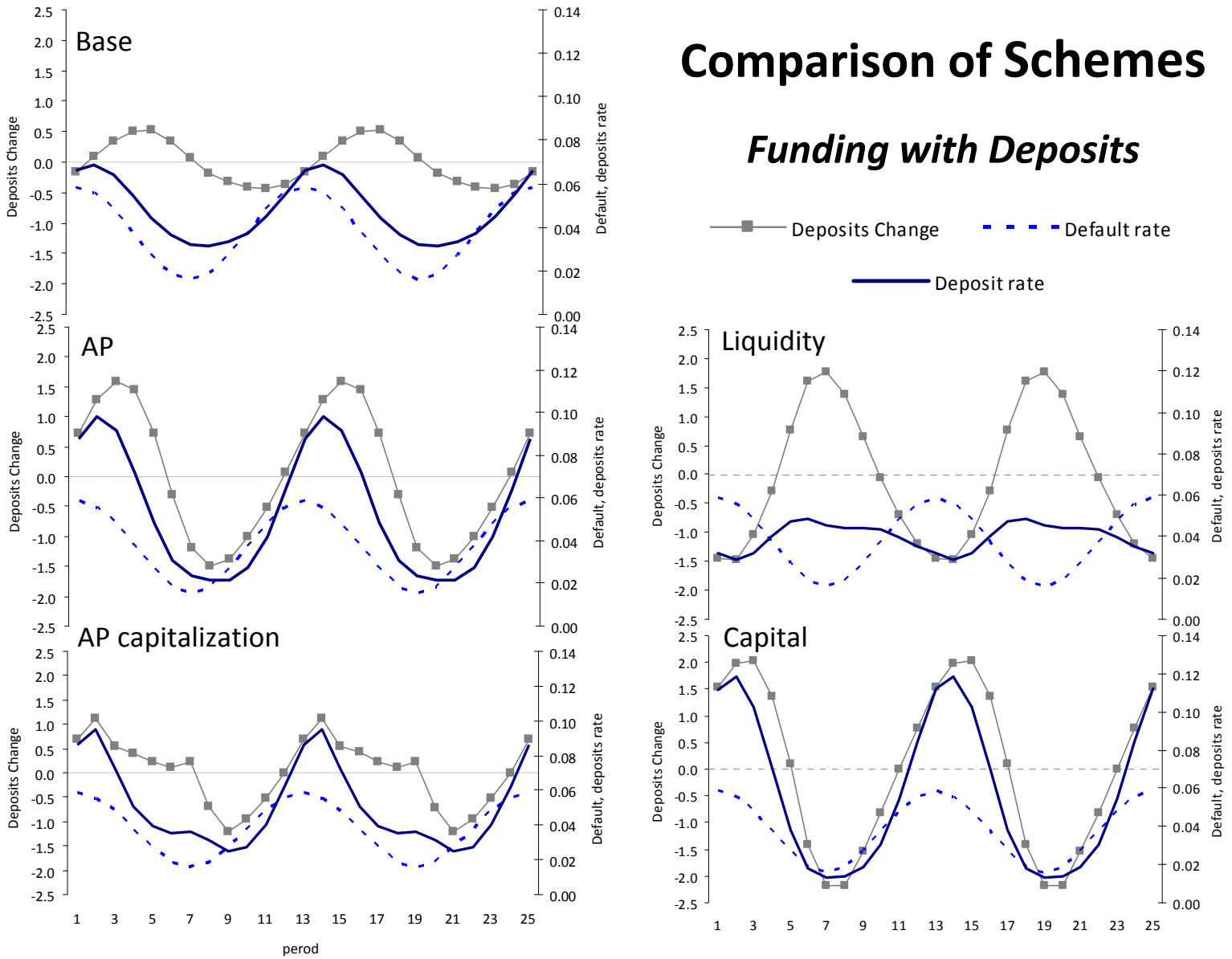
Comparison of Schemes

Cash flow



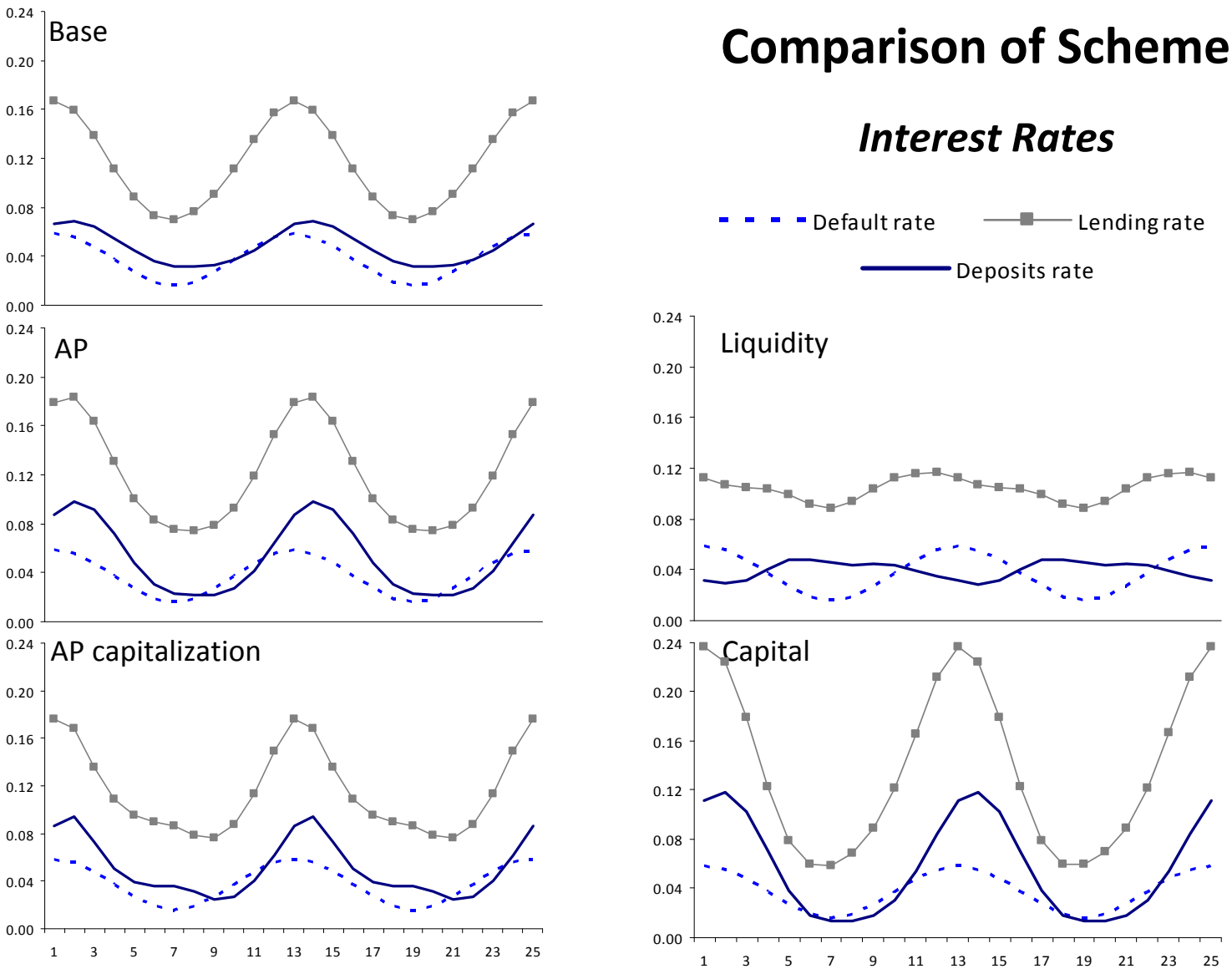
Comparison of Schemes

Funding with Deposits



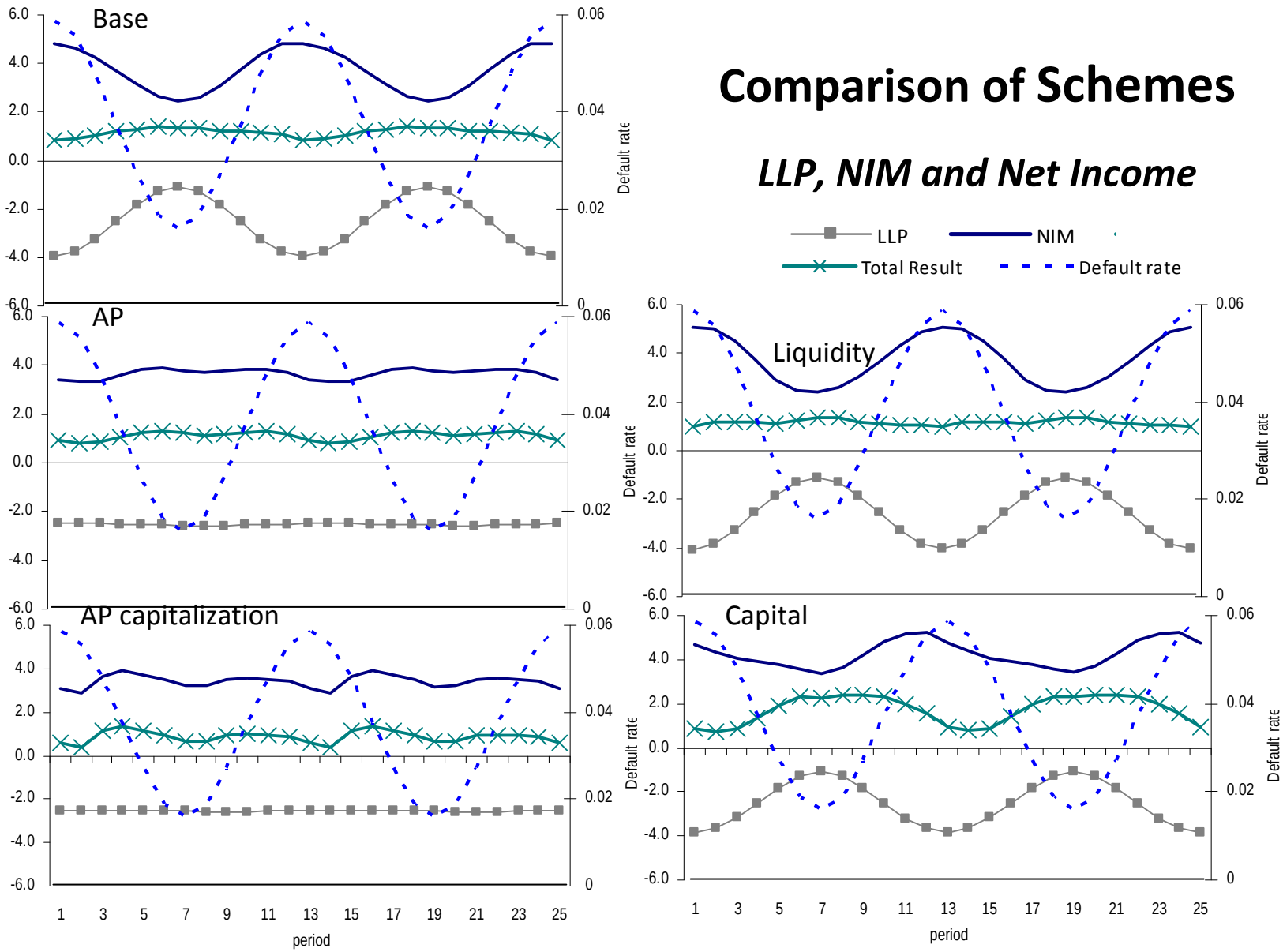
Comparison of Schemes

Interest Rates



Comparison of Schemes

LLP, NIM and Net Income



Pricing distortions

- If the regulation introduces a wedge between future incurred losses and future booked losses, which is the relevant expected default loss for pricing?

  - losses reported in the books ⟶ a wedge between bank loan rates and financial market rates.

    ↓

    Regulatory arbitrage problems

    ↓

    incentives to "manage the books"

- Cost of borrowing from bank vs cost of borrowing from "capital markets"

  regulated — unregulated

Price distortions and incentives to "manage the books"

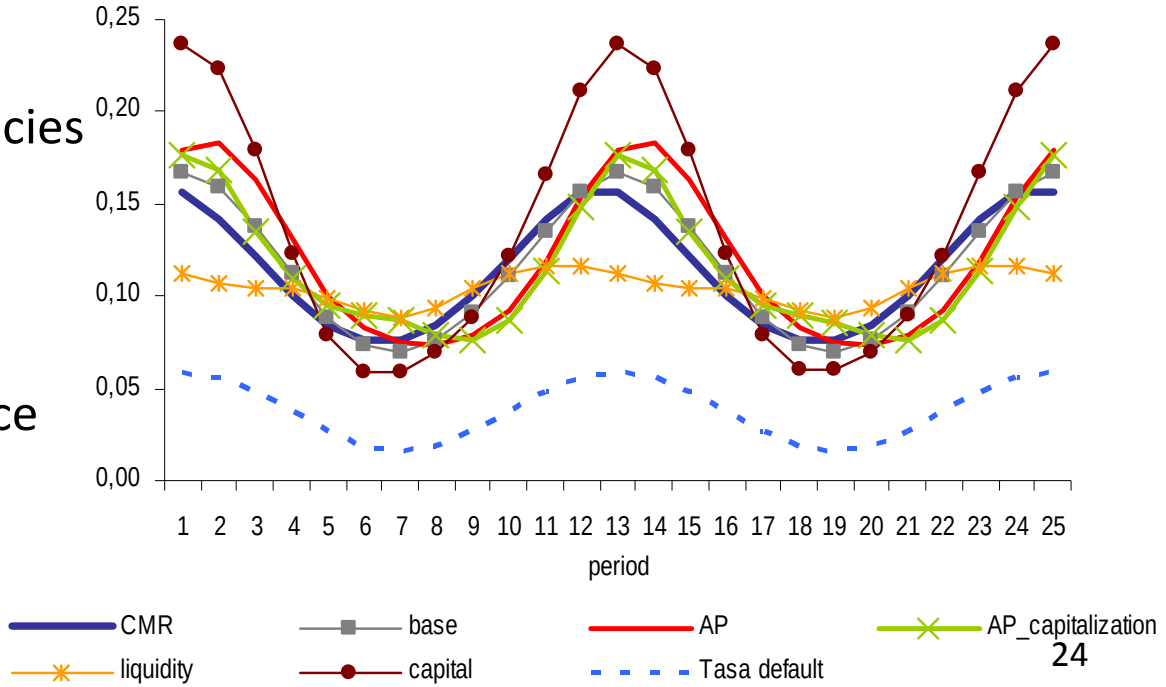
- Risk Neutral pricing
- risk = cap. req.

} the capital market interest rate shows slight difference with the rate of the base scheme

- The other schemes show higher values for bank loans rate during contractions and lower values during expansions

- With time-varying liquidity the discrepancies take the opposite sign and are sizable.

- Incentive for the bank to "manage" its balance sheet.



Concluding Remarks

- Double-edged swords may be introduced, we should be cautious about:
  - Liquidity related aspects
  - accounting changes that do not alter cash flows
  - encouraging financial statements manipulation.
  - There is a risk of complacency

Thank You!