



Expected Losses and Managerial Discretion as Drivers of Countercyclical Loan Loss Provisioning*

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* The views expressed in this presentation represent the authors' personal opinions and not necessarily those of the Deutsche Bundesbank, the European Central Bank, or any other institution.

- 1) Motivation
- 2) Empirical setting
- 3) Empirical analysis for the German Commercial Code (HGB)
- 4) Conclusions

Managerial behavior

Managers

- are appointed by owners to act in their interest,
- can (to some extent) act in their own interest due to information asymmetry,
- have objectives including, e.g., high income, job security, consumption on the job, high societal status,
- may achieve their objectives in various ways, e.g.,
 - through policies and decisions, for example concerning investments, affecting the real situation of the firm (non-financial and financial),
 - **making use of accounting choices** (our focus).

Objectives include, e.g.,

- presenting a „true and fair view“ of the firm,
- allowing comparisons over time and across firms,
- counteracting information asymmetry by
 - providing information useful for decision making *ex-ante*,
 - providing information useful for evaluating decisions and performance *ex-post*, which yields behavioral incentives during a cooperation (*interim*).

→ **Managerial discretion** in accounting is seen as **evil**.

Accounting and financial crises

Financial crisis 2007/2009:

- incurred losses in banks increased,
 - banks had to set aside more equity due to risk-based capital requirements,
 - lending to the real sector decreased, thereby amplifying the crisis.
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- **Strict accounting rules** seen as **evil**,
in particular loss recognition only for incurred, but not for expected losses.

Germany as testing ground

Particularly well-suited due to a unique combination of features:

- capital market less relevant as performance benchmark due to very few listed banks,
- performance-pay relatively unimportant in banks, in particular in cooperative banks and savings banks (which together by far dominate the banking sector by numbers), and therefore only weak profit motive for (their) managers' behavior,
- a culture of reporting, if possible, only small changes in reported annual profits,
- particular accounting rules (explained in detail below) which
 - allow managers to vary reserves without the owners' consent,
 - allow managers to do so without being observed by the public.

→ **General research question** (specific versions below):

Are managers of German banks using their discretion in accounting to counteract the procyclical effects of risk-based capital requirements?

Credit risk provisioning under German Commercial Code (HGB)

		Discretion	P&L impact	Tax deductibility	Reg. capital
Crossover compensation	340g	yes	yes	no	Tier I
	NSL	no	yes	yes	no
	340f	yes	yes	no	Tier II
	GLLP	yes	yes	(yes)	(yes)
	SLLP	some	yes	yes	(no)
	DWO	no	yes	yes	no

Research questions

1. *Do banks reporting under German HGB build specific loan loss provisions **countercyclically**? If yes, do they ...*
 - a. ... engage in earnings management?
 - b. ... explicitly consider the macroeconomic environment?
 - c. ... anticipate expected losses in the next 12 months at the closing date?

2. *How do banks reporting under German HGB use their **discretion** in the assessment of the reserve components for latent credit risk?*
 - a. For earnings management?
 - b. To complement high/low specific LLP?
 - c. To account for the macroeconomic environment?
 - d. To exploit tax rules?

3. *What drives the **total credit risk reserve** of banks under German HGB?*

Data and sample selection

- Source: Deutsche Bundesbank's prudential database BAKIS (jointly operated with the German Federal Financial Supervisory Authority (BaFin)).
- Database comprises all data that had to be filed with the regulatory authorities between 1994 and 2011.
- Coverage: roughly two full economic cycles.
- Loss of some observations due to conventional panel adjustments (first differencing, dropping of IFRS banks + subsidiaries, dropping of obviously incorrect database entries ...).
- Final panel consists of >40,000 observations for >5,000 banks (dominated by Coops and Savings banks, essentially individual accounts).
- For GLLP: further data management to account for tax rules
- GLLP subsample consists of >6,500 observations for >700 banks (2000-2008)

Variables and research hypotheses: Specific LLP

Hypothesis 1a: Banks use their discretion to use specific LLP as a tool for earnings management.

Hypothesis 1b: Banks might use their discretion to account for the economic cycle in the build-up of specific LLP.

$$\begin{aligned}
 SLLP_{i,t}^{OL} = & \beta_0 + \beta_1 \cdot SLLP_{i,t-1}^{OL} + \beta_2 \cdot GDPGR_{i,t} + \beta_3 \cdot NDI_{i,t}^{TA} \\
 & + \beta_4 \cdot CHNPL_{i,t+1}^{OL} + \beta_5 \cdot CHNPL_{i,t}^{OL} + \beta_6 \cdot NPL_{i,t-1}^{OL} \\
 & + \beta_7 \cdot CHOL_{i,t-1}^{TA} + \beta_8 \cdot TIER12_{i,t-1}^{RWA} + \beta_9 \cdot NSL_{i,t}^{TA} \\
 & + \beta_{10} \cdot CH340f_{i,t}^{OL} + \beta_{11} \cdot LNNTA_{i,t-1} + \mu_i + \epsilon_{i,t}
 \end{aligned}$$

Specific LLP: System GMM Results

Indep.	Exp.	Dep.: SLLP _{i,t}
SLLP _{i,t-1}	(+)	0.120***
GDPGR _t	(+)	0.002
NDI _{i,t}	(+)	0.469***
CHNPL _{i,t+1}	(+)	0.021***
CHNPL _{i,t}	(+)	0.069***
NPL _{i,t-1}	(+)	0.026***
CHOL _{i,t}	(+)	-0.005***
TIER12 _{i,t-1}	(+/-)	-0.014***
NSL _{i,t}	(-)	-0.652***
CH340f _{i,t}	(-)	-0.626***
LNTA _{i,t-1}	(+/-)	0.058***
Obs.		26,930
Test statistics ¹		VALID

Hypothesis 1a is supported

Banks use their discretion for earnings management.

No evidence for Hypothesis 1b

No significant macro effects (at least for GDPGR_t).

Observation

Specific LLP are built for concurrent and future NPL changes.

¹ Incl. AR (1)/AR (2) tests and Sargan-Hansen test. The number of instruments used is close to the number of clusters (here: 16).

Variables and research hypotheses: Changes in 340f reserves

Hypothesis 2: Changes in 340f reserves are mainly used for earnings management.

$$\begin{aligned}
 CH340f_{i,t}^{OL} = & \beta_0 + \beta_1 \cdot CH340f_{i,t-1}^{OL} + \beta_2 \cdot GDPGR_{i,t} + \beta_3 \cdot NDI_{i,t}^{TA} \\
 & + \beta_4 \cdot CHNPL_{i,t+1}^{OL} + \beta_5 \cdot CHNPL_{i,t}^{OL} + \beta_6 \cdot NPL_{i,t-1}^{OL} \\
 & + \beta_7 \cdot CHOL_{i,t-1}^{TA} + \beta_8 \cdot TIER12_{pre_{i,t-1}}^{RWA} + \beta_9 \cdot NSL_{i,t}^{TA} \\
 & + \beta_{10} \cdot SLLP_{i,t}^{OL} + \beta_{11} \cdot LNNTA_{i,t-1} + \beta_{12} \cdot CHOBS_{i,t}^{TA} + \mu_i + \epsilon_{i,t}
 \end{aligned}$$

Changes in 340f reserves : System GMM Results

Indep.	Exp.	Dep.: CH340f _{i,t}
CH340f _{i,t-1}	(+)	0.089
GDPGR _t	(+)	-0.006**
NDI _{i,t}	(+)	0.428***
CHNPL _{i,t+1}	(+/-)	-0.001
CHNPL _{i,t}	(+)	0.013**
NPL _{i,t-1}	(+)	0.006
CHOL _{i,t}	(+)	-0.004***
TIER12_pre _{i,t-1}	(+/-)	-0.003
NSL _{i,t}	(-)	-0.612***
SLLP _{i,t}	(-)	-0.483***
LNTA _{i,t-1}	(+/-)	-0.010
CHOBS _{i,t}	(+)	-0.003*
Obs.		26,814
Test statistics ¹		VALID

¹ Incl. AR (1)/AR (2) tests and Sargan-Hansen test. The number of instruments used is close to the number of clusters (here: 16).

Hypothesis 2 is supported

340f reserves are used to manage earnings.

Observation

They are in particular built when SLLP are low.

Variables and research hypotheses: General LLP

Hypothesis 3: Banks essentially follow local tax rules in the build-up of general LLP to reduce their tax burden.

$$\begin{aligned}
 GLLP_{i,t}^{OL} = & \beta_0 + \beta_1 \cdot GLLP_{i,t-1}^{OL} + \beta_2 \cdot GDPGR_{i,t} + \beta_3 \cdot NDI_{i,t}^{TA} \\
 & + \beta_4 \cdot CHNPL_{i,t+1}^{OL} + \beta_5 \cdot GLLPTD_{i,t}^{OL} + \beta_6 \cdot CHNPL_{i,t}^{OL} \\
 & + \beta_7 \cdot NPL_{i,t-1}^{OL} + \beta_8 \cdot IBL_{i,t-1}^{TA} + \beta_9 \cdot TIER12_{i,t-1}^{RWA} \\
 & + \beta_{10} \cdot NSL_{i,t}^{TA} + \beta_{11} \cdot SLLP_{i,t}^{OL} + \beta_{12} \cdot CH340f_{i,t}^{OL} \\
 & + \beta_{13} \cdot LNTA_{i,t-1} + \mu_i + \epsilon_{i,t}
 \end{aligned}$$

General LLP: System GMM Results

Indep.	Exp.	Dep.: GLLP _{i,t}
GLLP _{i,t-1}	(+)	0.113***
GDPGR _t	(+)	-0.001
NDI _{i,t}	(+)	0.009
CHNPL _{i,t+1}	(+/-)	-0.001***
GLLPTD_{i,t}	(+)	0.522***
CHNPL _{i,t}	(+)	-0.001
NPL _{i,t-1}	(+)	0.001***
CHIBL _{i,t}	(+)	-0.000
TIER12 _{i,t-1}	(+/-)	-0.000
NSL _{i,t}	(-)	-0.017***
SLLP _{i,t}	(-)	-0.009***
CH340f _{i,t}	(-)	-0.007
LNTA _{i,t-1}	(+/-)	-0.001***
Obs.		5,110
Test statistics ¹		VALID

¹ Incl. AR (1)/AR (2) tests and Sargan-Hansen test. The number of instruments used is close to the number of clusters (here: 16).

Hypothesis 3 is supported
 General LLP seem to primarily follow tax rules.

Variables and research hypotheses: Specific LLP + changes in 340f reserves

Hypothesis 4: *The total loan loss reserve is used to cover incurred losses, expected losses as well as to manage earnings.*

$$\begin{aligned}
 SLLPCH340f_{i,t}^{OL} = & \beta_0 + \beta_1 \cdot SLLPCH340f_{i,t-1}^{OL} + \beta_2 \cdot GDPGR_{i,t} + \beta_3 \cdot NDI_{i,t}^{TA} \\
 & + \beta_4 \cdot CHNPL_{i,t+1}^{OL} + \beta_5 \cdot CHNPL_{i,t}^{OL} + \beta_6 \cdot NPL_{i,t-1}^{OL} \\
 & + \beta_7 \cdot CHOL_{i,t-1}^{TA} + \beta_8 \cdot TIER12_{-pre_{i,t-1}}^{RWA} + \beta_9 \cdot NSL_{i,t}^{TA} \\
 & + \beta_{10} \cdot LNTA_{i,t-1} + \beta_{11} \cdot CHOBS_{i,t}^{TA} + \mu_i + \epsilon_{i,t}
 \end{aligned}$$

Total discretionary reserve : System GMM Results

Indep.	Exp.	Dep.: SLLPCH340f _{i,t}
SLLPCH340f _{i,t-1}	(+)	0.120***
GDPGR _t	(+)	-0.001
NDI _{i,t}	(+)	0.635***
CHNPL _{i,t+1}	(+/-)	-0.018***
CHNPL _{i,t}	(+)	-0.059***
NPL _{i,t-1}	(+)	0.024***
CHOL _{i,t}	(+)	-0.008***
TIER12_pre _{i,t-1}	(+/-)	-0.008***
NSL _{i,t}	(-)	-0.861***
LNTA _{i,t-1}	(+/-)	-0.059***
CHOBS _{i,t}	(-)	-0.002
Obs.		26,814
Test statistics ¹		VALID

Hypothesis 4 is supported
 Earnings management is strong for the full reserve.

¹ Incl. AR (1)/AR (2) tests and Sargan-Hansen test. The number of instruments used is close to the number of clusters (here: 16).

Robustness

- Alternative macro variables
 - Credit-to-GDP ratio
 - Credit-to-GDP gap

- Re-estimation for different subsectors
 - Cooperative banks
 - Savings banks
 - Commercial banks

- Specific LLP vs. DWO
 - DWO play minor role in Germany

- Clustering by county instead of state
 - Increases the number of clusters from 16 to more than 100

- Signaling
 - Time dummy (≤ 2007) and its interaction with NDI_{t+1}

- Total loan loss reserve (SLLP + GLLP + CH340f)
 - Sum of SLLP, GLLP and CH340f reserves

- Exclusion of anticipated CHNPL
 - Results are not driven by endogeneity

- More conservative outlier treatment

Conclusions and potential lessons learned

- **Specific LLP** are *to some extent* used in a forward-looking way
 - predominant motive: earnings management
 - additionally built in times of high (non-discretionary) earnings, even in the presence of other reserve components
 - Evidence for the coverage of expected losses as well

- **Reserve for latent risks** (§ 340f HGB, a highly discretionary instrument):
 - increased in times of high earnings and low specific LLP
 - used for earnings management and to complement specific LLP

- **General LLP:**
 - not explicitly used to cover latent risks in the loan portfolio
 - predominant motive: tax management

- **Acknowledgement:** Results need not hold in other countries due to special setting.

Managerial discretion reconsidered

How is managerial discretion used?

- Tax advantages via **general loan loss provisions** are reappt whenever possible.
- **Specific loan loss provisions** are used for earnings management, if possible.
- Invisible **reserves for latent risks** (§ 340f HGB) are used for earnings management and to complement specific LLP, in particular when the latter are low (and earnings are high).

Altogether, managerial discretion in this setting results in countercyclical (and therefore stabilizing) loss recognition and reserve building by managers.

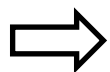
Thank you for your attention!

Backup

Rationale and literature on credit risk and the economic cycle

- *In expansionary periods:*
 - More liberal credit policy/lower borrowing standards
 - Short-term concerns (Rajan, 1994)
 - Institutional memory hypothesis (Berger/Udell, 2004)
 - Screening profitability (Ruckes, 2004) and bank rivalry (Ogura, 2006)
 - Consequently, the aggregate credit risk in the banking sector rises

- *In recessionary periods:*
 - Borrowers systematically default, especially if they are hit by a common adverse shock
 - Loans need to be written off
 - Capital crunch (Peek/Rosengren, 1995) is likely if loan loss allowance is insufficient



Impact of different loan loss accounting models!?

Loan loss accounting models

- *Incurred loss model (IAS 39):*
 - Objective impairment evidence is necessary („trigger events“)
 - Little managerial discretion, reduction of income smoothing (Gebhardt/Novotny-Farkas, 2011)

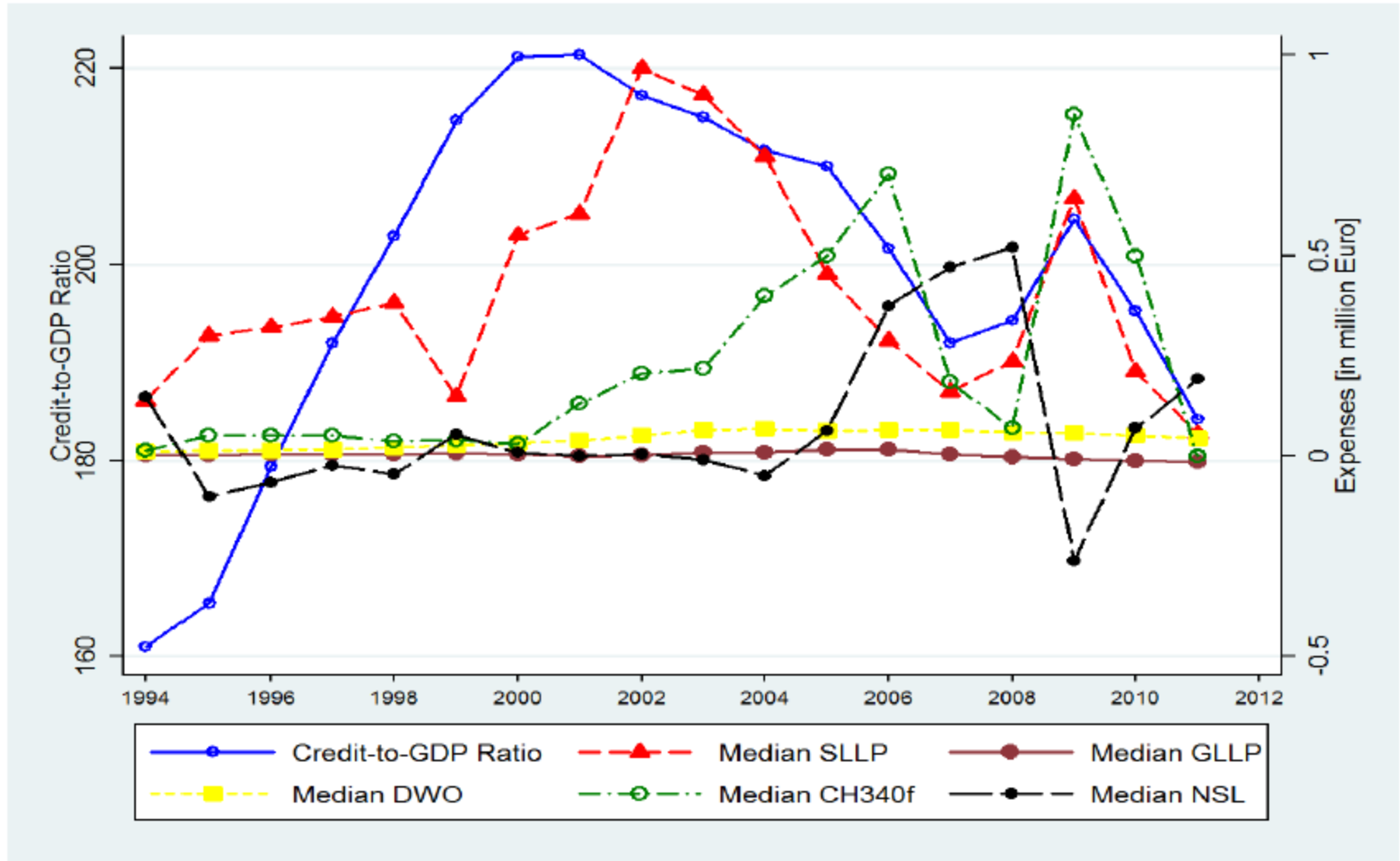
- *Expected loss model (IFRS 9):*
 - Loan loss allowance is based on both incurred and **expected credit losses**
 - Intended to provide more useful information on an entity's expected credit losses
 - Empirical evidence on earnings management and countercyclical effects is missing
 - Timeliness of expected credit losses?

- *“More than an expected loss model“ (German Commercial Code – HGB)*
 - Specific loan loss provisions for incurred and **expected credit losses**
 - A considerable degree of **discretion** in the accumulation of (hidden) reserves for **latent risks**
 - Earnings management partially and implicitly accepted
 - Countercyclical effects via earnings management? Provisioning for expected losses?

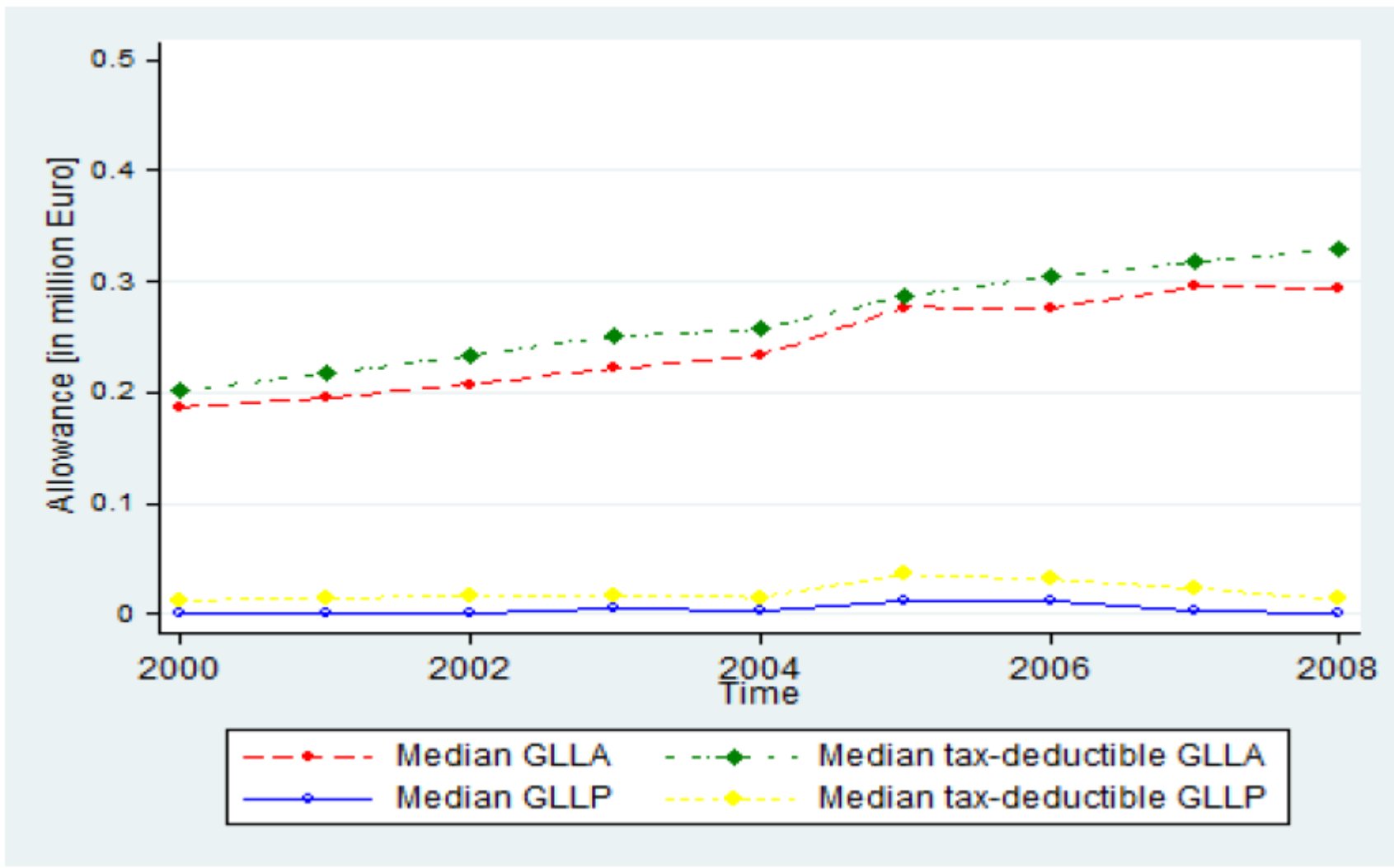
Tax-deductible general LLP – BMF (1994) formula

$$\begin{aligned}
 GLLA_{i,t}^{taxded} = & \frac{\frac{1}{5} \left(\sum_{k=t-4}^{k=t} LD_{i,k} \right) - \min \left\{ SLLA_{i,t}; 0.4 \cdot \frac{1}{5} \left(\sum_{k=t-4}^{k=t} LD_{i,k} \right) \right\}}{\frac{1}{5} \sum_{k=t-5}^{k=t-1} CL_{i,k}^{risk}} \\
 & \cdot (CL_{i,t}^{risk} - CL_{i,t}^{SLLP})
 \end{aligned}$$

Graphical evidence – Credit risk reserve vs. Credit-to-GDP ratio



Graphical evidence – Actual vs. tax-deductible general LLP



Descriptive statistics

Variable	n	Mean	Std. dev.	p1	p50	p99
1994-2011 — Full Sample						
Total assets (in billion Euro)	43,565	1.37	18.30	0.01	0.24	11.8
$SLLP_{i,t}^{OL}$ (in %)	38,069	0.44	0.78	-0.51	0.30	2.85
a) Specific LLP (in % of OL)	38,069	0.39	0.73	-0.56	0.26	2.65
b) Direct write-offs (in % of OL)	38,069	0.05	0.17	0.00	0.02	0.57
$CH340f_{i,t}^{OL}$ (in %)	38,069	0.17	0.47	-1.40	0.12	1.30
$GLLP_{i,t}^{OL}$ (in %)	38,069	0.01	0.09	-0.20	0.00	0.24
$SLLA_{i,t}^{OL}$ (in %)	43,434	2.43	2.54	0.00	1.96	10.12
$340f_{i,t}^{OL}$ (in %)	43,434	1.86	1.66	0.00	1.39	6.97
$GLLA_{i,t}^{OL}$ (in %)	38,069	0.19	0.18	0.00	0.14	0.80
$NDI_{i,t}^{TA}$ (in %)	38,175	1.11	1.48	-0.16	1.05	3.24
$CHNPL_{i,t}^{OL}$ (in %)	36,328	0.18	3.05	-5.92	0.01	7.18
$NPL_{i,t}^{OL}$ (in %)	41,907	6.17	82.57	0.12	3.88	21.79
$CL_{i,t}^{TA}$ (in %)	43,485	57.64	14.66	10.45	59.96	89.43
$IBL_{i,t}^{TA}$ (in %)	43,513	13.60	11.36	0.53	10.96	58.21
$OL_{i,t}^{TA}$ (in %)	43,434	71.27	11.94	38.09	72.36	96.64
$TIER12_{i,t}^{RWA}$ (in %)	43,126	14.10	6.69	8.80	12.26	40.60
$NSL_{i,t}^{TA}$ (in %)	38,175	0.00	0.23	-0.60	0.00	0.75