

# At your service !

## Monetary policy and risk management in 19th century France

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# Motivation

- Monetary policy trade-off during the financial crises:
  - Income shocks better stabilized by wide access to discount window Bignon & Jobst 2017
  - at the risk of triggering moral hazard Freixas *et al*, 2004
    - ⇒ Explains well pre-2007 consensus Goodhart 2018
- During the GFC and the Covid crisis, the Fed designed new facilities to refinance non-banks, e.g. money market fund, and the Eurosystem extended its collateral framework to avoid liquidity constraints.
- Fintech companies are now important actors of the international payment system (google pay, apple pay...)

## Can Central Banks easily widen discount window? At what price?

- Discount window varies substantially in time & space
  - Wider in 19<sup>th</sup> century France
  - We focus on the Bank of France, late 19th century to show how it tamed moral hazard

# What do we do? What do we find?

- Collect data on risk management supervision of counterparties
  - A cross-section of 1,676 counterparties in 1898 (7% of total discount)
  - document 20 negative income shocks at branch-level in 1898 (bank runs, industrial and agricultural shocks: Spanish–American War, cattle disease)
  - A time serie on a district hit by productivity shock (1890-1905)
- Describe and assess the toolbox used then by Bank of France
  - 1) Screening by acquisition of proprietary information
    - Capital and wealth, business, risk-taking behaviors, business partners, local business activity
    - Collateral and guarantees provided
  - 2) For what purpose? **For monitoring credit risk**
    - counterparty discrimination depending on risk appetite, types of guarantees provided, relationship lending
  - 3) To what end? **To implement efficient crisis management policy**
    - Wide and diverse set of counterparties
    - In crisis time, CB plays on the extensive margin (increase in # of counterparties) and rewards prudent behaviors

# Source

- We use the archives of the yearly inspections of BoF branches.

*Courtois & C<sup>ie</sup> Banque,  
à Toulouse.*

*4. Paris et succ<sup>ls</sup>: 421 mfs.*

*(dont 22 mfs à 2 signatures) 4. Place 324 "*

*Valeurs en garantie d'escompte: 295.300 fcs.*

*Compte c<sup>de</sup> Banque: Prêt ouvert: 634 mfs. Prélève: 169 mfs.*

*Raison sociale - maison menée par F. Courtois,  
Cousin du précédent; plus de 4 millions de fortune -  
1<sup>re</sup> Banque de la place, opérant avec correction et  
loyauté, et presque exclusivement avec ses seuls  
Capitaux: une recherche trop ardue des affaires  
a gâté quelque peu la chose de sa clientèle -  
Courtois & C<sup>ie</sup> recule sur à la Banque de France  
une partie des effets de la Banque Populaire,  
(cud: 25 mfs) et de la Banque toulousaine (p. 24)  
(cud: 28 " ). Ses autres clients sont:*

<i>Clastre</i>	<i>P<sup>de</sup> 25 mfs</i>	<i>(v. 31)</i>
<i>Cramou</i>	<i>" 20 "</i>	<i>( " 20 )</i>

Name

Profession

City

Discounted on Paris & branches: 421 mfs

(with 22mfs 2 signatures bills) discounted in the city: 324 mfs.

value of pledged securities: 295.300 fcs.

Current account: Loan granted: 634mfs. withdrawn: 169mfs.

Description of the company and its capital

Description of the character of Courtois

Description of the clients of Courtois

Information reported included :

- Guarantees: Collateral, Capital
- Risk Appetite

# The Bank of France and the banking system

## 19th century France:

- Harsh creditor law: failed debtors can expect few debt discharges
- Central bank: Profit-maximizing w/ monopoly on banknotes  
Discount open to any solvent and reputable trader
  - Including shadow banks, non banks
- Heterogeneous banking system, not regulated, no deposit insurance,  
4 nation wide deposit banks and 2,000 banks operating 2400 branches
- Bills of exchange: dominant form of credit and payment instrument  
(3 month maturity)
  - Few maturity transformation in the banking system
  - Roll-over risk
- Potential run on bills, in case of concerns on the quality of the guarantees (Gorton & Metrick 2011)
- May lead to severe contraction of the money stock (*Friedman & Schwarz 1963*).

means of payment	Stock (bn)
Gold & silver coins	3.5 (11% GDP)
Banknotes	3 (9.4% GDP)
Bills of exchanges	6 (19% GDP)

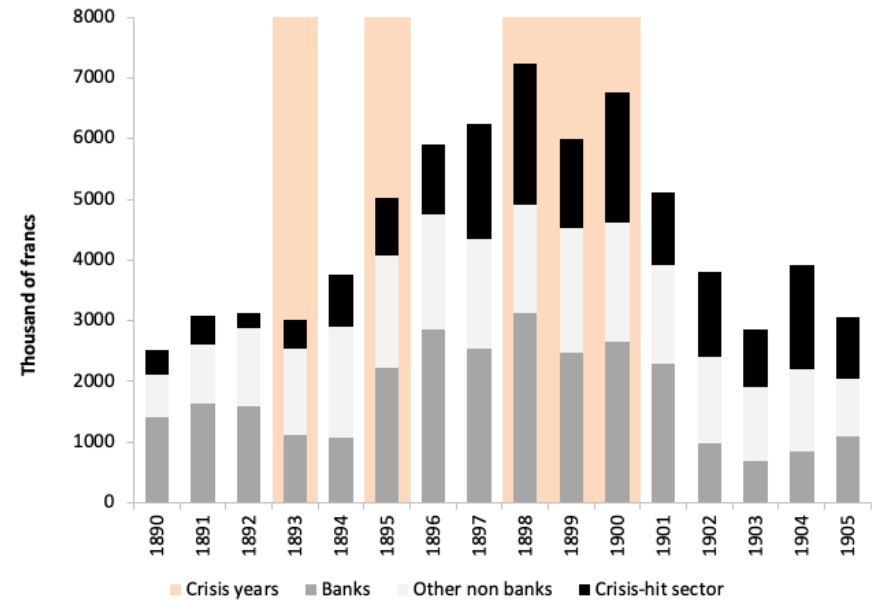
# The economic benefit of a broad discount window

- The Bank of France extended its discount operations to smooth negative economic shocks at the branch level.
- Branches in economies hit by a shock accepted a **greater number of counterparties** at their discount window.

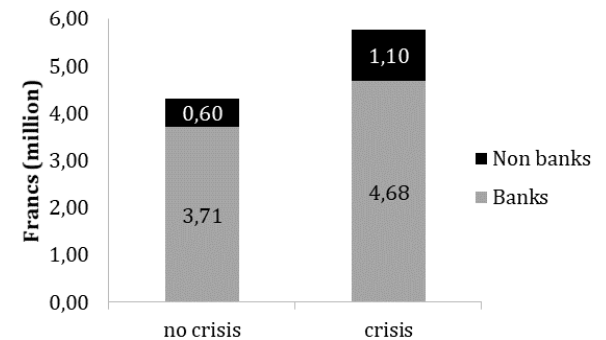
Average number of counterparty per branch

	No crisis	crisis
# Non banks	6	15
# Banks	9	12

- The Bank of France increased the liquidity provided to banks and accepted to rediscount significantly more non banks.



Total discount in a district hit by a shock



Average liquidity provided per branch<sup>94</sup>  
branches, 1676 counterparties

# Empirical strategy

- A wide access to the discount window may trigger moral hazard behavior and weaken market discipline

Theory suggests 3 mechanisms to mitigate agency issues:

- ✓ the pledging of collateral,
- ✓ the screening and monitoring of the risk appetite of the counterparties,
- ✓ the building of a reputation by the borrower *vis à vis* its lenders

To understand how the BoF managed the risks associated with the wideness of its discount window, we run:

- Cross-sectional regressions, 94 branches for 1898, 1676 individuals

$$\text{Liquidity}_i = \beta_1 \text{risk appetite}_i + \text{Guarantees}_i * \alpha + \beta_2 D\text{crisis}_i + \beta_3 (\text{risk appetite}_i * \text{crisis}_i) + (\text{Guarantees}_i * D\text{crisis}_i)\theta + \delta \text{controls}_i + \varepsilon_i$$

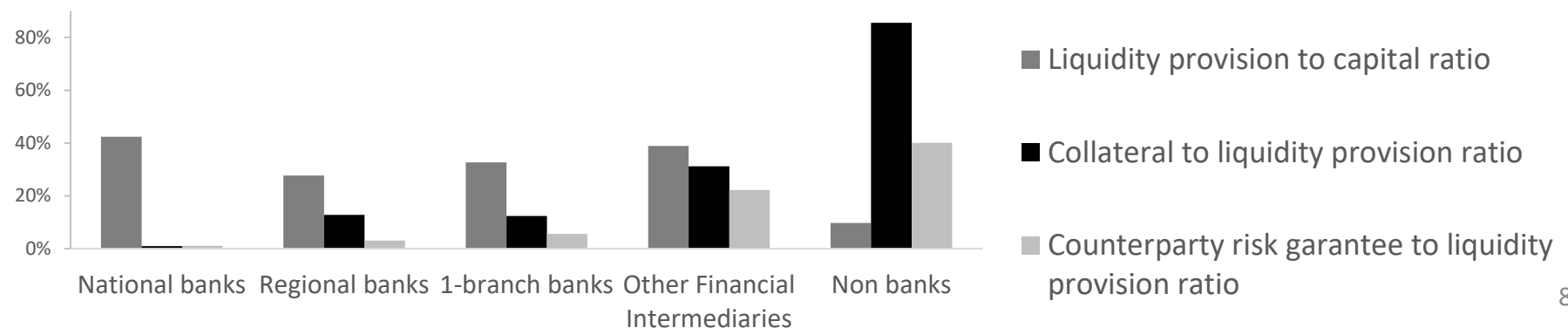
- Panel regressions on Moulins district: 883 observations or 136 individuals (max 79/year), 5 years of crises,

$$\text{Liquidity}_{i,y} = \beta_1 \text{risk appetite}_{i,y} + \text{Guarantees}_{i,y} * \alpha + \beta_2 D\text{crisis}_y + \beta_3 (\text{risk appetite}_{i,y} * \text{crisis}_y) + (\text{Guarantees}_{i,y} * D\text{crisis}_y)\theta + \delta \text{controls}_{i,y} + FE + \varepsilon_i$$

# Collateralizing operations at the discount window

- Pledging guarantees and seizable collateral was required to access the BoF liquidity.
- The BoF screened the guarantees & closely managed exposure and credit risk.
- The guarantees were seizable after a failure procedure but for collateral.
- Liquidity risk can be taken by the BoF because of the monopoly on banknotes

Type of guarantees	Description	Sum stat - (1676 ind.)
<b>Liquid collateral</b>	Pledged securities	51%
<b>Other guarantees</b>	- Credit risk guarantors (CDS)	- 40%
	- Counterparty risk guarantee	- 22%
	- Capital	- 94%





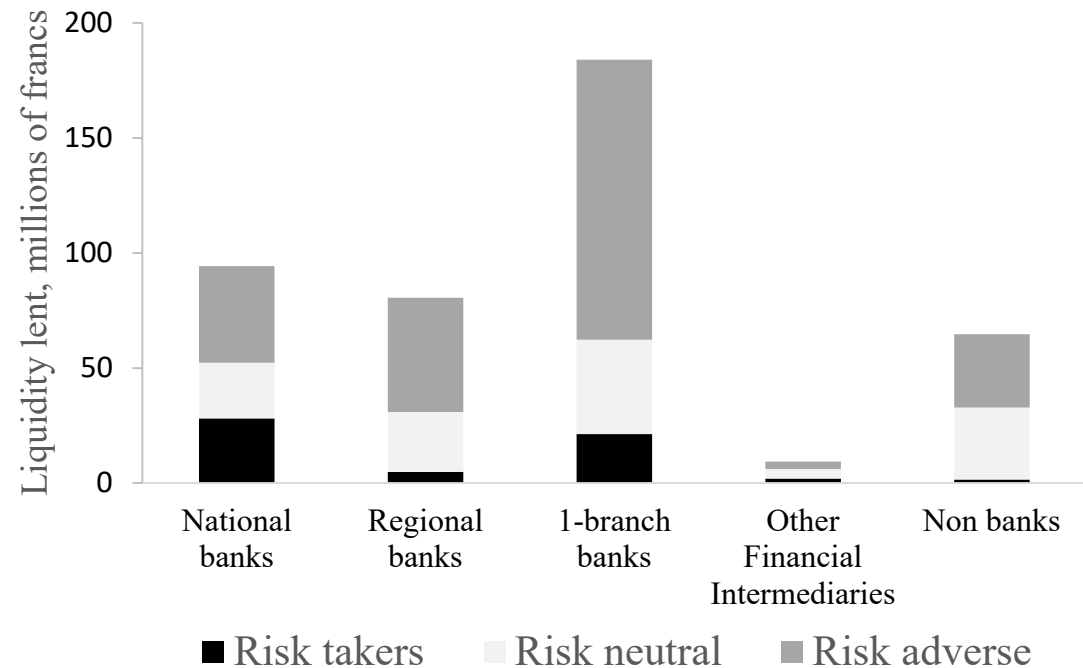
# Screening the risk appetite

- The Bank of France screened the risk appetite of its counterparties.
- Proprietary soft information were produced on managers and businessmen, including business model attitude, personality, personal history.

E.g. « they manage quite well the house but are arduous. They discount with 2 signatures –including to youngs – The bills that they presented therefore need to be selected »  
Salzedá bank in Bayonne.

« Just arrived, smart, active, related to the best families of Lorient. Keep a close eye on his clients, quite numerous »  
About the manager of Société générale branch in Lorient.

## We encoded risk appetite using those judgments

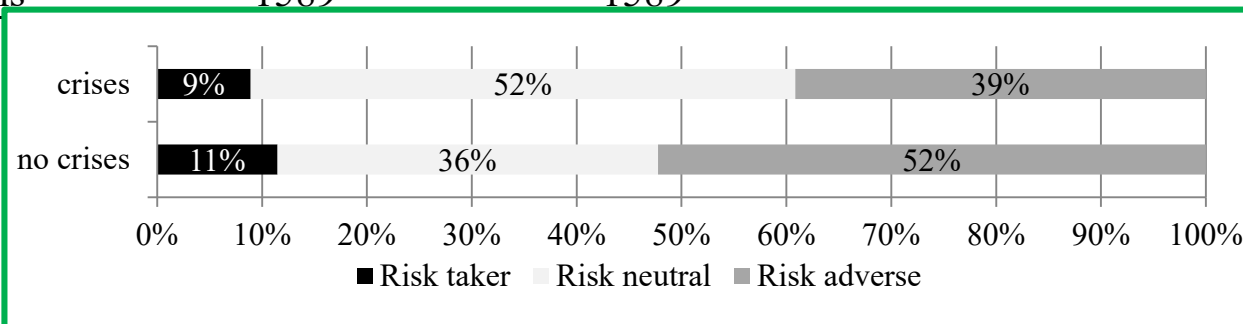


# Risk management of a wide discount window

	(1) Discount	(2) w/ Crises x rating
Collateral	0.28***	0.29***
# of credit risk guarantors	62.10***	64.54***
counterparty risk guarantee	0.46***	0.37*
Capital	0.06***	0.06***
Assessment of risk appetite	18.62**	36.37***
Crises	0.04	40.28***
risk appetite*crises		-65.74***
Controls	Yes	Yes
Adjusted $R^2$	0.670	0.670
Observations	1589	1589

The BoF rewards risk adverse attitude

The presence of local shock determined an increase of discount volume at the branch level



# Risk management in Moulines

	(1) Discount	(2) w/ Crisis	(3) Crises x rating
Collateral	0.21** (0.03)	0.21** (0.03)	0.26* (0.05)
# Credit risk guarantors	28.20*** (0.00)	28.47*** (0.00)	27.21*** (0.00)
Counterparty risk guarantee	76.97*** (0.00)	77.86*** (0.00)	78.54*** (0.00)
Capital	0.14*** (0.00)	0.14*** (0.00)	0.13*** (0.00)
Assessment of risk appetite	28.32** (0.03)	30.08** (0.02)	13.85 (0.34)
Crisis		20.19* (0.07)	3.96 (0.76)
D.crisis X Risk appetite			56.84** (0.05)
Controls	<i>Yes</i>	<i>Yes</i>	<i>Yes</i>
FE	<i>Yes</i>	<i>Yes</i>	<i>Yes</i>
Adjusted $R^2$	0.456	0.458	0.463
Observations	671	671	671

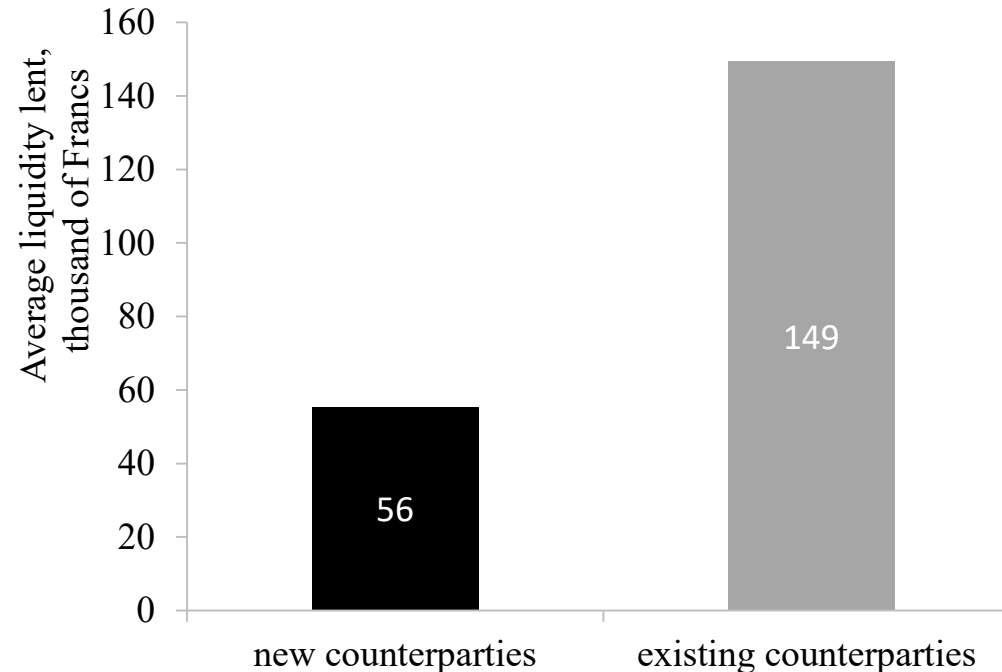
In time of crises, the Bank payed special attention to the risk appetite and conditioned its lending of last resort to agents who proved to be risk adverse.

# Rewarding relationship lending

## Did the Bank value prior relation?

$Liquidity_i$

$$= Guarantees_i * \alpha + \beta_1 Existing_i + \beta_2 Non\ bank_i + \beta_3 (Existing_i * Non\ banks_i) + \beta_4 controls_i + \varepsilon_i$$



Note: 415 individuals, of which 91 were new borrowers, living in the 14 regions hit by a new crisis.

# Rewarding relationship lending

	(1) Discount
Collateral	0.19
	0.11
# of credit risk guarantors	39.11***
	0.00
Counterparty risk guarantor	0.58***
	0.00
Capital	0.06**
	0.01
Assessment of risk appetite	-25.41
	0.11
Existing   banks	53.87***
	0.00
Non-bank	5.09
	0.63
Non-bank * Existing	-37.80*
	0.08
Constant	
Controls	Yes
Adjusted $R^2$	0.576
Observations	396

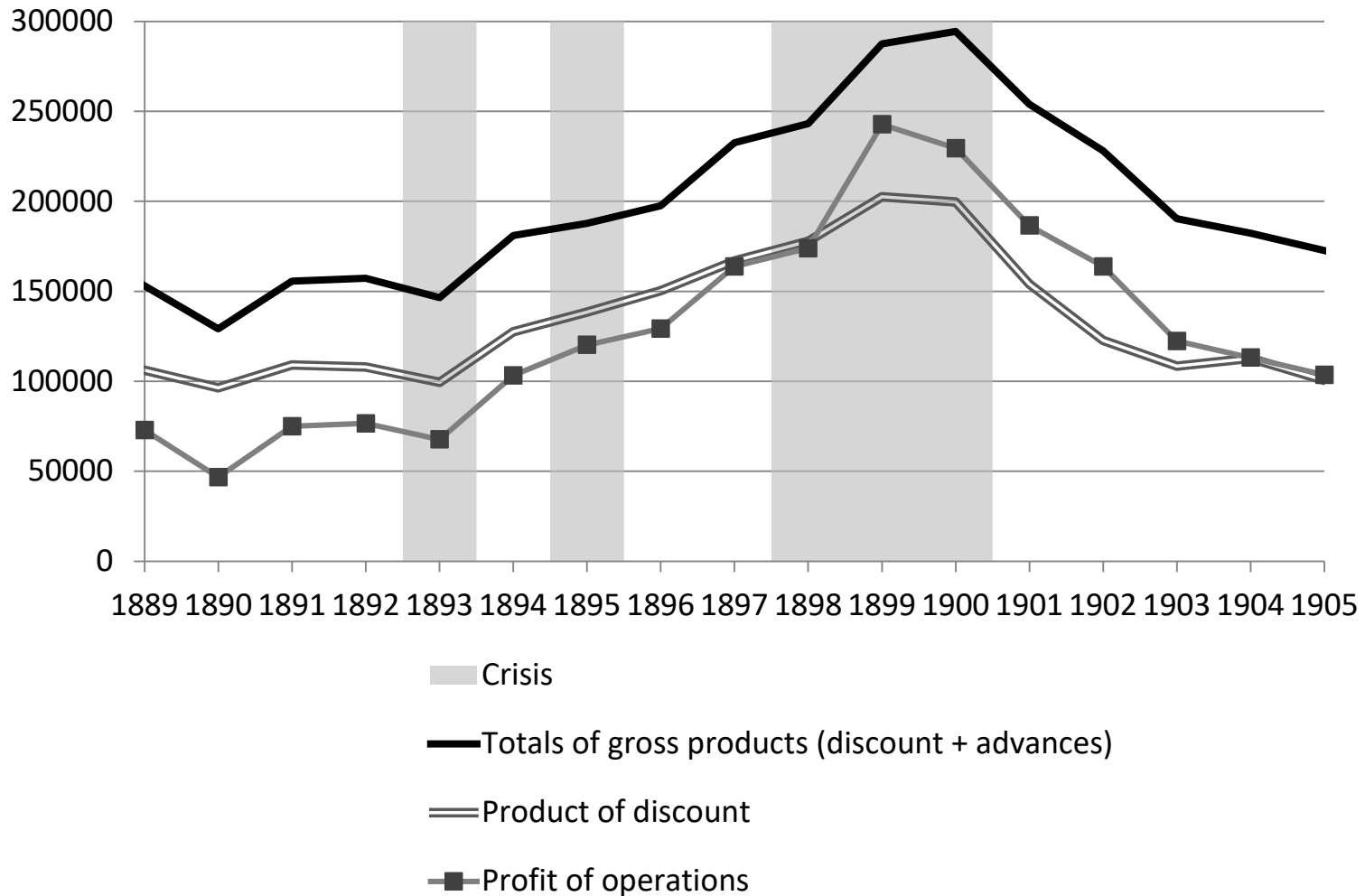
The BoF lends more generously to financial institutions than non-financial agents, especially if they are long-term customers.

# Conclusion

- With GFC and the covid crisis, greater focus on monetary policy implementation
  - Trigger increase in research on how central banks policies can smooth crises
- Trade-off between benefit of broad discount window but at risk of moral hazard
- Our study: A case of broad access but with moral hazard checked
- How: tight risk management framework
  - Involved lot of information gathering by the central bank to choose to which individual risk it is exposed, including discriminating for risk appetite: data as collateral
- Important with discussions on the discussion of reduction of liquidity risk triggers by shadow banks/ new payment operators

# Annexes

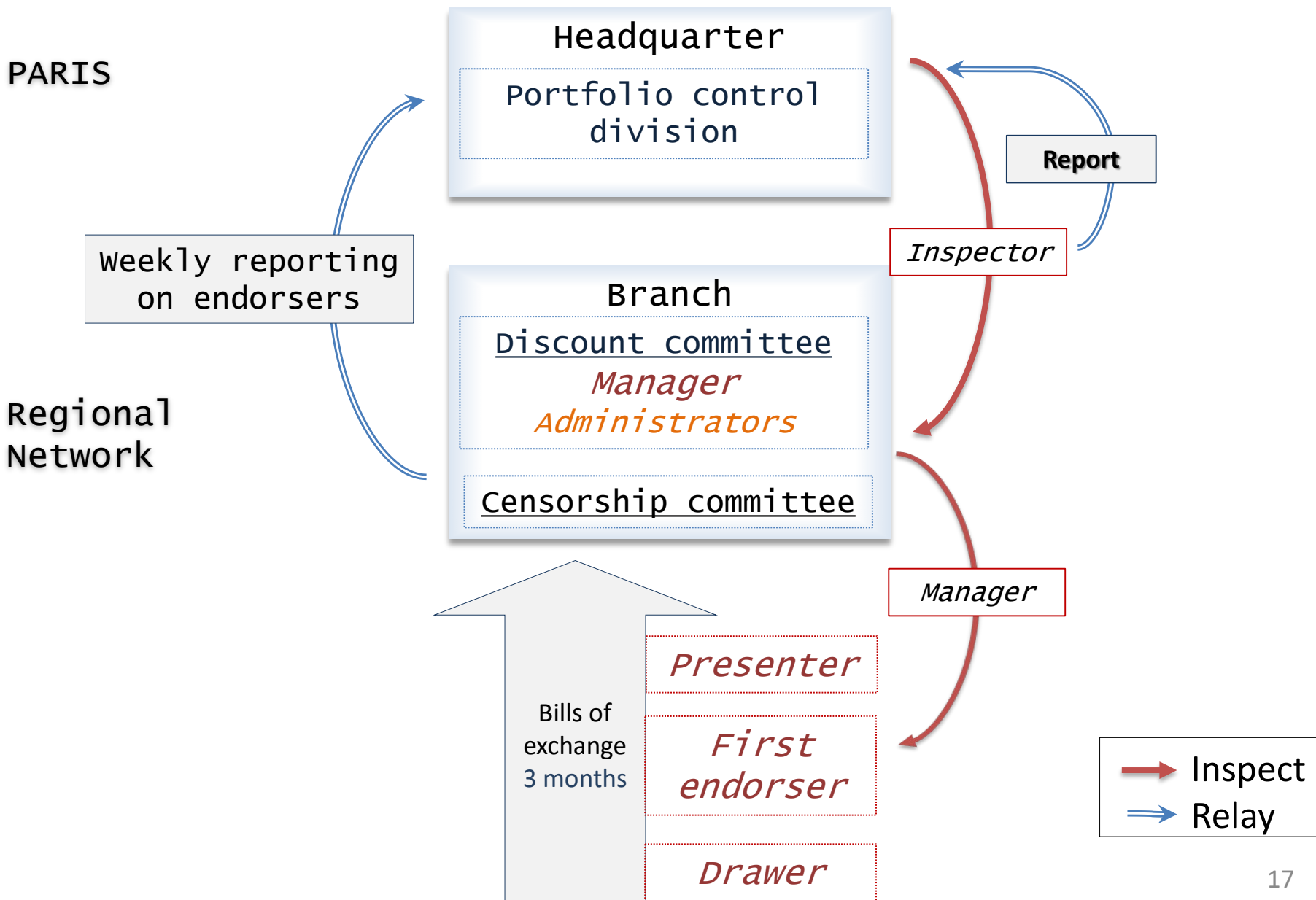
# Conclusion (2): A profitable activity



Product and profits of BoF operations at  
the branch of Moulins, 1890-1905



# Internal governance of discount decisions



# Managing the extensive margin

Logit regression on the probability of being a new counterparty at the discount window

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	Entry
Collateral	-0.00 0.35
# of credit risk guarantors	-0.24*** 0.01
D.counterparty risk guarantor	-0.80*** 0.00
Assessment of risk appetite	0.45** 0.03
Capital	0.00 0.96
D.crisis	0.70*** 0.00
D.non bank	1.11** 0.02
Constant	-1.97*** 0.00
Controls	Yes
Pseudo $R^2$	0.056
Observations	883

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A counterparty is more likely to be a new counterparty using the liquidity provision of the BoF if:

- He has good guarantees
- He is risk adverse
- There is a crisis
- He is not a bank

# Managing risks in case of banking stress

- Trigger of entry into “resolution”:
  - 1) Increase of exposure towards distressed banks (but credit limit)
  - 2) provide emergency loans guaranteed by real estate.
  - 3) organizes a lifeboat rescue w/ funding from other local banks.
- Three cases of bank resolution in 1898

Bank in Bordeaux	Bank of Burgundy --Dijon	Bank Camuzet in Reims
Mismanagt but bk loses funding Failure of ‘big’ client => run BoF supervisor organizes emergency loan by other banks Continued mismgt => liquidation	Embezzlement by CEO No risk of bankrun Failure procedure + liquidation	(uncorrelated) failure of 2 clients, that cost 2/5 of bank capital Bankrun starts Real estate of the bank >> losses => Emergency loan

– Less than 1% of losses on the emergency lending operations

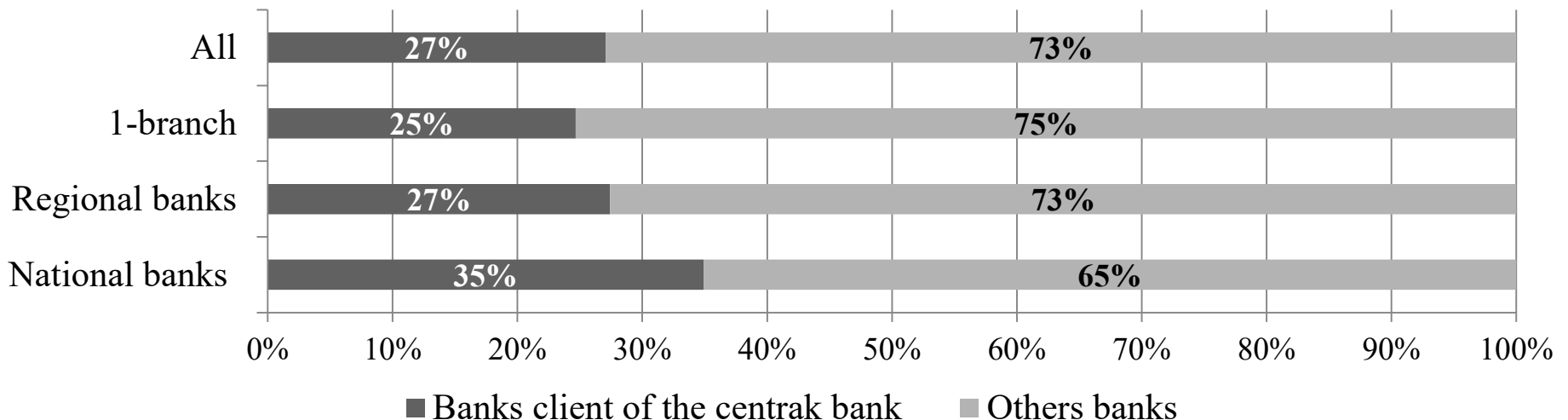
“The Bank of France board... always had as principle... to provide its most effective support rather than to rebuilt ruins...But to be helpful, the Bank needs to meet characters, intelligences who start by helping themselves, thus deserving the support...”.

# The context

- Late 19<sup>th</sup> century France
- Better access to central bank lending provided by local branch offices of the Bank of France significantly lowered defaults. *Bignon & Jobst 2017*
- Eligibility at the BoF: Every person enjoying its civil rights, a worthiness and a recognized solvency
- Heterogeneous banking system, not regulated, no deposit insurance but highly capitalized banks
- Harsh creditor law
- Main mean of payments: bills of exchange, instrument for short-term credit.

# Accessing the discount window

- Eligibility at the BoF: Every person enjoying its civil rights, a worthiness and a recognized solvency (1897) is allowed to open an account provided:
    - ID, profession/nature of business
    - Certificate of worthiness signed by 3 persons
    - **Notarial deed of the society**
- ⇒ Assessment of wealth and reputation at the branch level (by the manager)
- ⇒ Bank of France knew a lot on its clients



# Thank you !

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## DP13556 At Your Service! Liquidity Provision and Risk Management in 19th Century France

Author(s):	<a href="#">Maylis Avaro, Vincent Bignon</a>
Publication Date:	February 2019
Keyword(s):	<a href="#">central bank, discount window, lender of last resort, Retail and shadow banks</a>
JEL(s):	E51, G23, N13
Programme Areas:	<a href="#">Economic History</a>
Link to this Page:	<a href="https://cepr.org/active/publications/discussion_papers/dp.php?dpno=13556">cepr.org/active/publications/discussion_papers/dp.php?dpno=13556</a>