Banking Integration in Europe

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1.1 Why Banking Integration Matters

- Economic integration in Europe is supposed to provide some benefits.
- Expected gains in growth from increased competition and efficiency on financial markets.
- As the financial system is more bank-oriented than market-oriented in the European Union, the focus is on the gains of banking integration.

Why Banking Integration Matters

- **Two channels for the gains of banking integration**

- **First channel : gains in competition**
- gains from increased competition => reduction of monopoly rents => reduction of banking prices

- **Second channel : gains in efficiency**
- gains in cost efficiency => reduction of banking costs => reduction of banking prices

Why Banking Integration Matters

- Both channels are observed for all industries (reduction of prices => welfare gains), but specific role for banks in the financing of the economy :

- Reduction of prices in banking (loan rates) => increase of investment => gains in growth.

  => utmost interest for banking integration in the EU

1.2 Banking Integration : Legal changes

- **Legal progress made towards a single banking market in the EU**
- **Treaty of Rome in 1957** : principles for a single banking market by asserting the will to achieve a single common market for goods and services resorting to two instruments : the recognition of the right of establishment and the coordination of legislation if that proved to be necessary.
- **Single European Act in 1986**, stating the completion of the single market through the free circulation of people, goods and services, and capital in 1992.
- **Directive on Liberalization on Capital Flows in 1988.**

Banking Integration : Legal changes

- **Second Banking Directive in 1989** : single banking license: any bank authorized to provide banking services in a EU state was from then on allowed to provide banking services in another EU state
- => directive expected to favor **the cross-border expansion of banking services** through either the creation of branches or the supply of cross-border financial services.
- **Creation of the single currency in 1999** : cancellation of the exchange risk for banks.
- **Some legal obstacles remain** (consumer protection rules, tax rules).

2. The evolution of bank competition

- How to measure bank competition
- The evolution of bank competition
- The additional effects of bank competition

2.1 How to measure bank competition ?

- Two types of measures

- **1. The structural measures of competition**
  - Herfindahl index.
  - Concentration ratios.

- **2. The non-structural measures of competition**
  - Lerner index
  - H-Statistic

The Herfindahl index

- The Herfindahl-Hirschman index (HHI) is the sum of the squares of market shares for all firms in the industry.

- Let's consider a market with five banks with the market share as follows: bank 1 (30%), bank 2 (25%), bank 3 (20%), bank 4 (16%), bank 5 (9%).
- The HHI is equal to : $0{,}30^2+0{,}25^2+0{,}2^2+0{,}16^2+0{,}09^2=0{,}2262$

- The HHI varies between a lower limit of 0 and 1 (monopoly).
- The closer it is to 1, the more concentrated the industry.

The concentration ratios

- The n-bank concentration ratio (CRn) is the percentage of the market controlled by the top n banks in the market.
- Popular measures of competition in banking are CR3 and CR5.
- Limitation of CRn in comparison with HHI: it does not adjust for variation in firm size:
  - CR3 for an industry with 4 banks of equal size is 75%.
  - A banking market with 8 banks with the top bank for 65% and the 7 other banks with a market share of 5%: both have the same CR3.
  - However the HHI is 0.25 in the first market and 0.44 in the second one.

The structural measures of competition

- Advantages:
  - Easy to understand.
  - Easy to implement.
  - Low data requirements (size of all banks on the market).

The structural measures of competition

- Limitations:
  - Very dependent of the definition of the market: which banks are relevant to take into account for the market shares?

    National, regional or local level?
  - Concentration is generally associated with lower competition but it is not a theorem (e.g. Airbus vs. Boeing, Carrefour vs. Tesco…).
  - They do not consider the effective behavior of banks which is dependent of : (1) the threat of potential entrants, (2) the possible substitutes... and not only of the structure of the market.

The non-structural measures of competition

- **The Lerner index**

- **The H-Statistic** (proposed by Rosse and Panzar)

- Created to solve the limitations of the structural measures of competition:
- **They consider the effective behavior of banks.**
- They take into account **the role of barriers to entry and thus of potential competitors.**
- For instance, even if a market with one firm can show highly competitive behavior.

The Lerner index

- The Lerner index is an individual measure of market power, defined as follows:
- Lerner index = (price – marginal cost) / price
- Reminder: marginal cost is the additional cost that arises when the quantity increases by one unit.
- Market power can be defined as the ability to profitably raise price above marginal cost.
- => Lerner index is a perfect measure of market power.

The Lerner index

- In case of perfect competition:
  - Price = Marginal Cost
  - Lerner index = 0
  - No market power: banks are price-takers.
- In case of imperfect competition:
  - Price > Marginal Cost
  - Lerner index > 0
  - Market power: banks are price-makers.

The Lerner index

- Advantages:
  - Takes into account the effective behavior of banks (e.g. threat of potential entrants).
  - Provides an individual measure of competition (better for bank-level comparisons)

- Limitations:
  - Less intuitive than structural measures of competition.
  - Data requirements: information on prices, on costs.

2.2 The evolution of banking competition

- How has banking competition evolved in the recent years in the EU ?
- Structural measures from the ECB.
- Lerner indices from : Laurent Weill, « Bank Competition in the EU: How Has It Evolved? », Journal of International Financial Markets, Money and Institutions, 2013.

Structural measures: 1997-2014

	HHI			CR5		
	1997	2014	Δ	1997	2014	Δ
France	0.045	0.058	+0.013	0.40	0.48	+0.08
Germany	0.011	0.030	+0.019	0.17	0.32	+0.15
Italy	0.031	0.042	+0.011	0.31	0.41	+0.10
Spain	0.050	0.084	+0.034	0.45	0.58	+0.13
UK	0.021	0.046	+0.025	0.28	0.39	+0.11
Source: ECB.						

European banking : the Lerner index 1/2

	2002	2008	Evolution
Austria	0.1066	0.0462	-0.0605
Belgium	0.1091	0.0890	-0.0201
France	0.1382	0.1337	-0.0045
Germany	0.0627	0.0528	-0.0099
Italy	0.1427	0.1378	-0.0049
Portugal	0.2003	0.0777	-0.1225
Spain	0.1305	0.1285	-0.0020
UK	0.1369	0.1141	-0.0228
EU27	0.1386	0.1220	-0.0166
Source : Laurent Weill, « Bank Competition in the EU: How Has It Evolved? », 2013.			

European banking : the Lerner index 2/2

	2002	2008	Evolution
Bulgaria	0.1347	0.2185	0.0839
Czech Republic	0.1541	0.2418	0.0878
Hungary	0.1405	0.1429	0.0024
Latvia	0.2020	0.1670	-0.0350
Poland	0.1594	0.1514	-0.0080
Romania	0.1464	0.1333	-0.0132
Slovakia	0.0620	0.1730	0.1110
EU27	0.1386	0.1220	-0.0166
Source : Laurent Weill, « Bank Competition in the EU: How Has It Evolved? », 2013.			

Conclusion on banking competition

- **Slight increased competition in the EU as a whole, but no general trend of increased competition in the EU banking sectors.**
- Test of convergence in bank competition:
  - β-convergence : we measure the link between the growth rate of a variable and the initial level of the variable: if the link is significantly negative, there is β-convergence.
  - **empirical evidence about β-convergence in Lerner indices** : Lerner indices have converged between 2002 and 2008 (stronger reduction in countries with the higher initial levels).

Conclusion on banking competition

- **Why not a stronger increase of banking competition?**
- Some barriers still prevent the implementation of the Single Banking Market.
- These obstacles notably include :
  - political barriers to entry : e.g. the will of some national authorities to prevent the takeover of large national banks by foreign interests.
  - sunk costs making ex nihilo creation of a network of branches hard.
  - switching costs resulting in barriers to entry for new competitors.

2.3 Additional effects of bank competition

- Our results : limited evidence on banking integration for competition.
- => limited benefits of banking integration through lower banking prices (favoring investment and growth)
- But competition could also have other effects on the economy…notably on financial stability and on monetary policy transmission.

2.3.1 The impact of bank competition on failures

- Key dimension of banking: financial stability.
- Does greater bank competition enhance bank risk and then the risk of failure?

- Important issue for the normative implications of bank competition: should bank competition be promoted?

- Illustration to explain all the arguments.

The impact of bank competition on failures

- **“How Market Power Influences Bank Failures: Evidence from Russia”**
- **From Zuzana Fungacova and Laurent Weill, Economics of Transition (2013).**

- Aim of the paper : to investigate the impact of bank competition on the presence of bank failures.

- Many studies on the impact of bank competition on risk-taking, but no former research on the influence on bank failures.
- Unique opportunity for this investigation with the Russian banking industry for the period 2001-2007 (300 banks failed during that period).

The Russian banking industry

- Russia is a very interesting emerging market that experienced an impressive economic and banking sector growth.

- **The Russian banking industry in a nutshell** (figures 2003)**:**
  - Share of banking assets for state-owned banks : 68%
  - Share of banking assets for foreign banks : 7%
  - Number of banks : 1329

- => **very unusual transition country** : the banking industry is almost fully-owned by foreign investors (and therefore in private hands) in most CEE countries (e.g. the Czech Republic with 97% of banking assets owned by foreign investors).

Competition and failures: arguments

- Two opposing views concerning the impact of bank competition on financial stability.

- **1. "Competition-fragility" view :**
- Competition contributes to higher risk of bank failure.
  - Competition reduces bank profits and therefore diminishes the "buffer" against adverse shocks.
  - Competition reduces future expected bank profits and then reduces the opportunity cost of going bankrupt, which enhances the incentive to take risk (moral hazard).

Competition and failures: arguments

- **2. "Competition-stability" view :**
- Competition contributes to financial stability
- Key argument: the former view neglects the impact of bank competition on borrower's behavior.
- ↑ bank competition

  => ↓ loan rates

  => ↓ incentives for borrowers to undertake moral hazard behavior by shifting into riskier projects

  => ↓ bank losses on loans

  => ↑ financial stability

Competition and failures: empirical studies

- Studies at the bank level on the impact of bank competition on risk-taking measures (e.g. non-performing loans ratio)

=> they tend to show that more competition is associated with more risk-taking (support for the competition-fragility view).

- But no direct evidence of an impact of bank competition on bank failures.

Competition and failures: results

- **We investigate the impact of bank competition on the presence of bank failures (2001-2007).**

- Data : quarterly data on all banks for the period 2001-2007. More than 20 000 observations. State-owned banks excluded from the investigation (no risk of failure).

- Regressions of the occurrence of bank failures on bank competition measured by the Lerner index.

Competition and failures: results

- We observe a **negative impact of the Lerner index on the occurrence of bank failures.**

- => bank competition favors failures

- We also test with concentration indices (Herfindahl indices, C3): we find again that bank concentration exerts a negative impact on the occurrence of bank failures.

So competition and financial stability…?

- This study shows that greater market power reduces the occurrence of bank failures.
- => support for the “competition-fragility” view, i.e. greater bank competition is detrimental for financial stability.

- Normative implications :
  - taking measures that increase bank competition may weaken financial stability
  - trade-off between benefits of competition through lower banking prices and losses resulting from higher financial instability.

2.3.2 The impact of competition on monetary policy

- **Bank competition can influence the transmission of monetary policy** and then the effectiveness of monetary policy by favoring or hampering the transmission of monetary policy decisions.

- Issue of particular interest in the Eurozone as the degree of bank competition can vary across countries, while a single monetary policy is implemented.

- Evidence above on different levels of bank competition.
- EU Commission provides information on the interest rates charged on loans up to 1 million euros for all EU countries: the average loan rates in 2010 in Eurozone countries ranged from 2.36% in Austria to 6.16% in Cyprus.

The impact of competition on monetary policy

- **Two main channels for monetary policy:**

- **1. The interest rate channel**

- Impact of monetary policy through **the loan rates.**
- Intuitive idea: contractionary monetary policy increases loan rates which reduce credit demand.

The impact of competition on monetary policy

- **Two main channels for monetary policy:**

- **2. The bank lending channel**

- Impact of monetary policy through **the supply of bank loans.**
- Idea: when banks face a funding shock through a monetary policy tightening, the shock will be transmitted to their supply of loans if they cannot substitute liabilities with other external sources of funding like money market funds.
- Both channels contribute to the effectiveness of monetary policy, but some evidence suggests that the bank lending channel could play a stronger role.

The impact of competition on monetary policy

- **“Does Bank Competition Influence the Lending Channel in the Eurozone”**
- **From Zuzana Fungacova, Laura Solanko and Laurent Weill (Journal of Banking and Finance, 2014)**

- Aim of the paper: to analyze how bank competition affects the bank lending channel in Eurozone countries.

The impact of competition on monetary policy

- Why can bank competition affect the bank lending channel in Eurozone countries?

- Hypothesis: bank competition can contribute to foster the bank lending channel by reducing the access to alternative sources of funding and thereby makes banks more responsive to monetary policy.

- Banks with a greater market power have higher profitability and lower probability of failure.
- Thus, they can more easily obtain alternative sources of funding like certificates of deposit or interbank loans.

The impact of competition on monetary policy

- Dataset of 3000 banks from 12 “old” member countries of Eurozone covering the period from 2002 to 2010.
- We analyze the reaction of loan supply to monetary policy actions: we check if banks differing in market power (measured by Lerner index) react differently to shifts in monetary policy.
- ECB monetary policy is proxied by the ECB refinancing rate.

The impact of competition on monetary policy

- Results: **we find that greater bank competition strengthens the transmission of monetary policy through the bank lending channel.**

- Two major implications:
- 1. The level of bank competition matters for monetary policy transmission.
- Additional benefit of bank competition: it increases the effectiveness of monetary policy.
- 2. As long as substantial cross-country differences in bank competition persist, the single monetary policy will have asymmetric effects.

Conclusion on bank competition

- The evolution of bank competition shows banking integration on this dimension.
  - Convergence in bank competition.
  - Slight improvement of bank competition.

- It means expected benefits through lower banking prices and better effectiveness of monetary policy…
- …but it is not good in all aspects since bank competition hampers financial stability.

- In other words, banking integration may have a cost if it favors bank competition…

3. The evolution of bank efficiency

- How to measure bank efficiency
- The results
- The additional effects of bank efficiency

3.1 How to measure efficiency

- **What is efficiency ?**

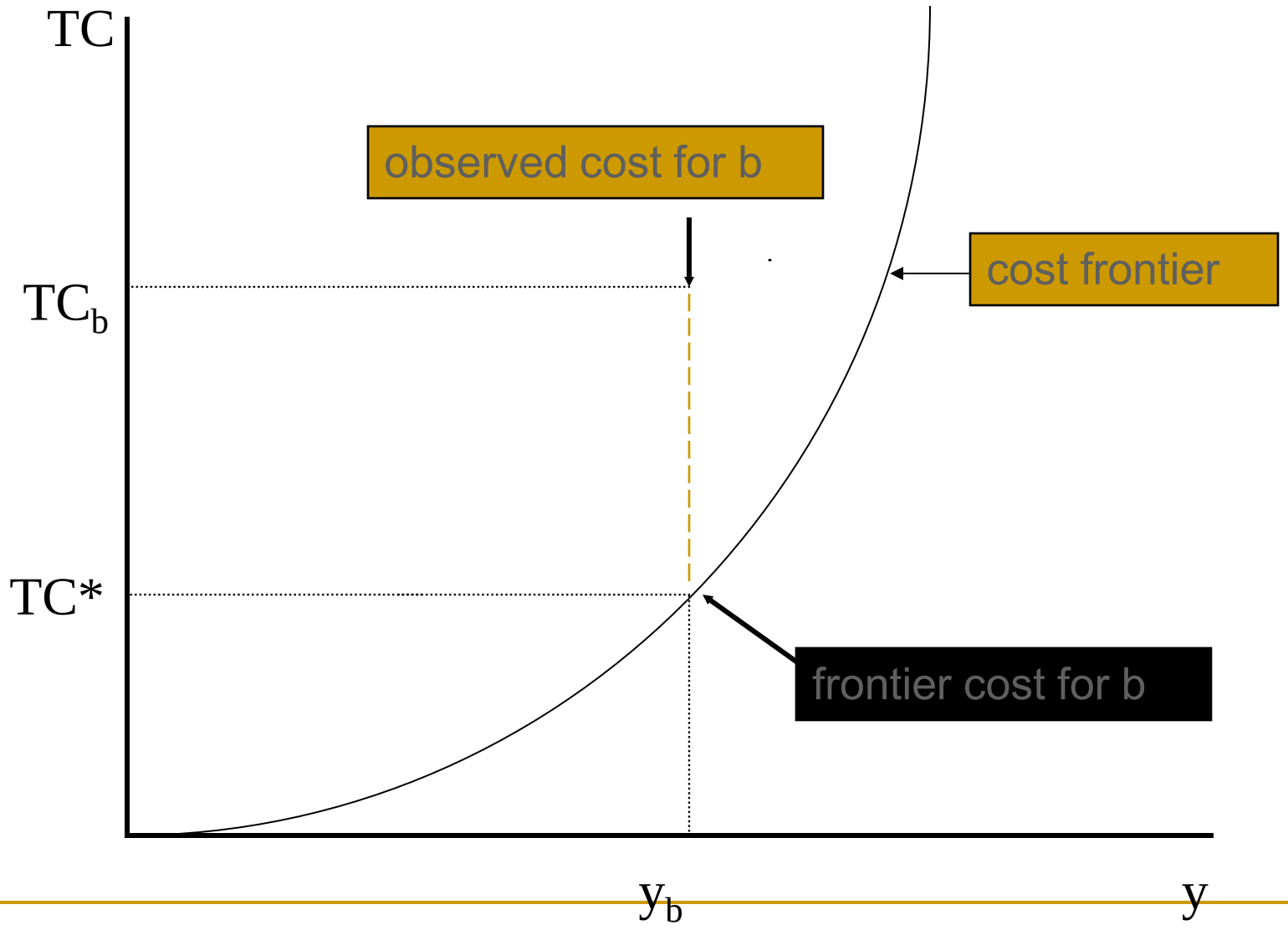
- **Cost efficiency** measures how close a bank's cost is to what a best-practice bank's cost would be for producing the same bundle of outputs.

- Measured with frontier efficiency techniques.

How to measure efficiency

- **Frontier efficiency techniques** : the most commonly used techniques to estimate measures of performance in the banking industry in the academic papers.

- Basic concepts :
  - The best performance is unknown.
  - Instead, each bank is compared with the best-practice banks.
  - The efficiency score measures the distance from the efficiency frontier.


TC
observed cost for b
cost frontier
TC_b
TC*
frontier cost for b
y_b
y

How to measure efficiency

- Why measuring performance with frontier efficiency techniques?
- **1. Synthetic indicators**
- Several inputs and outputs in banking production.
- Each cost ratio is either only compared to one input in quantity terms, or needs to sum in monetary terms all the input quantities.
- Frontier efficiency techniques do not.
- **2. Relative measures**
- Each bank is compared with the best-practice banks.
- A 50% cost efficiency score means that you could produce twice as much output with the same level of costs.

How to measure efficiency

- Why measuring performance with frontier efficiency techniques?
- **3. Scale economies are considered**
- Let’s consider 2 banks;
- Bank 1 : 1 employee = > 1000 euros of loans
- Bank 2 : 2 employee = > 3000 euros of loans
- Which bank is the most efficient?
- With the ratio loans / employees, bank 2 is the best.
- Not necessarily with frontier efficiency techniques, as they consider scale economies.

How to measure efficiency

- Several frontier efficiency techniques to estimate cost efficiency.
- Some based on econometric techniques: e.g. stochastic frontier approach.
- Some based on linear programming tools: e.g. DEA.

- Some papers from the Czech National Bank use these techniques to estimate cost efficiency of Czech banks.

3.2 The evolution of efficiency

- **Results from "Convergence in Banking Efficiency across European Countries"** (Laurent Weill, Journal of International Financial Markets, Money and Institutions, 2009).

- **Dataset** : from the international database "Bankscope" of BVD-IBCA.
- Accounting data for a sample of banks from 10 EU member countries (Austria, Belgium, Denmark, France, Germany, Italy, Luxembourg, Portugal, Spain, the United Kingdom).
- Commercial, cooperative and savings banks, from 1994 to 2005.

Results

- We measure cost efficiency by estimating a cost frontier according to which each bank uses 3 inputs (labor, physical capital, borrowed funds) to produce 2 outputs (loans, investment assets).

- We use the **stochastic frontier approach** :
  - Technique based on econometric tools.
  - The distance from the frontier is divided into two terms : the inefficiency and a random disturbance reflecting bad or good luck.
  - Assumptions on the distributions of the inefficiency term and the random disturbance.

Q1 : How efficient are EU banks ?

	Mean 1994-2005
Austria	78.29% (7)
Belgium	83.05% (1)
Denmark	81.44% (5)
France	82.91% (2)
Germany	77.27% (8)
Italy	80.90% (6)
Luxembourg	81.88% (3)
Portugal	74.31% (9)
Spain	74.25% (10)
UK	81.63% (4)
Total	78.94%

Q1 : How efficient are EU banks ?

1. Average cost efficiency in the EU : 78.94% for the period.

2. Large discrepancies in banking efficiency between EU countries : from Spain (74.25%) to Belgium (83.05%)

Q2 : Has cost efficiency of EU banks improved?

	1994	2005	Evolution
Austria	74.28	82.13	+7.85***
Belgium	77.87	87.64	+9.77***
Denmark	71.70	86.26	+14.57***
France	78.90	85.48	+6.58***
Germany	73.71	81.84	+8.13***
Italy	70.93	85.82	+14.89***
Luxembourg	72.33	90.88	+18.54***
Portugal	61.03	88.34	+27.31***
Spain	62.87	80.32	+17.45***
UK	74.37	86.29	+11.92

Q2 : Has cost efficiency of EU banks improved?

1. Increase in banking efficiency for all EU countries :

Variations ranging from +6.58 points in France up to +27.31 points in Portugal.

Efficiency scores significantly greater in 2005 than in 1994 in all countries, with the exception of the UK.

=> ground for optimism : it tends to support the view that European integration had a positive impact on cost efficiency of banks in the recent years.

Q2 : Has cost efficiency of EU banks improved?

2. Catching-up process in banking efficiency between countries :

The two countries with the least efficient banking sectors in 1994 (in ascending order Portugal, and Spain) are among the three countries with the highest improvement in banking efficiency between 1994 and 2005.

Q3 : Has convergence in cost efficiency happened?

- Tests of convergence for the full sample of countries between 1994 and 2005.
- Evidence about β-convergence : the most efficient banking sectors in 1994 have known a lower improvement of efficiency than the least efficient banking sectors in 1994.

=> **convergence in bank efficiency across EU countries.**

Conclusion

- **Two major findings :**
  - The improvement in efficiency in all EU banking sectors.
  - The convergence in efficiency across EU countries.

3.3 Additional effects of bank efficiency

- Conclusion : increased bank efficiency for banks in EU countries, convergence in bank efficiency.
- => support for banking integration which should favor some economic gains (greater cost efficiency allows a reduction in banking prices).

- But is cost efficiency of banks good for other economic dimensions ? And notably for financial stability ?

- We have evidence on Czech banks on the relationship between bank efficiency and financial stability.

Efficiency and financial stability

- **Study from Jiri Podpiera and Laurent Weill : "Bad Luck or Bad Management : Emerging Banking Market Experience" (Journal of Financial Stability, 2008; and Working Paper of the Czech National Bank, 2010)**

- Motivation of the paper
- A large number of bank failures occurred in transition countries during the 1990s and the early 2000s.
- In the Czech banking sector : out of the 48 banks operating in 1994 and another l6 licensed later on, 21 banks had failed by 2003.
- Key question: which factors predict bank failures?

Efficiency and financial stability

- From the empirical literature, two main factors predict bank failures:

- **The volume of non-performing loans**: a large share of non-performing loans observed in the loan portfolio of failing banks.

- **Cost efficiency of banks:** several studies have shown that deteriorated cost efficiency increases the likelihood of bank failures.

Efficiency and financial stability

=> Important issue :

- Is one of both factors the deep determinant of bank failures?
  - Non-performing loans => cost efficiency => bank failures
  - Cost efficiency=> non-performing loans => bank failures.
- Aim of the paper : to investigate the sign and causality between non-performing loans and cost efficiency in the Czech Republic.
- Then we can have evidence on the beneficial / detrimental effects of cost efficiency on financial stability.

Efficiency and financial stability

- The relationship between cost efficiency of banks and non-performing loans is not clear…
- Three opposite assumptions for the sign and direction of causality:

- **The bad luck hypothesis** : ↑ bad loans => ↓cost efficiency
  External events such as economic slowdown affect bad loans, resulting in extra costs for banks to deal with these loans.
- **The bad management hypothesis** : ↓cost efficiency => ↑ bad loans
  Bad managers do not efficiently monitor loan portfolio management
- **The skimping hypothesis** : ↑ cost efficiency => ↑ bad loans
  This relationship is the consequence of the reduction of resources allocated to loan monitoring.

- Everything is possible for the sign and the causality between efficiency and bad loans.

The evolution of the Czech banking industry

- The first years: dismantlement of the monobank, strong increase of the number of banks from 1989 to 1993, change in 1993 with new banking licenses harder to obtain.
- Two main trends during the 1994-2005 period:
  - **Failure of many banks**: 21 bank failures between 1994 and 2003, with two subperiods: a troubled subperiod (1994-2000) and a quiet subperiod (2001-2005, with only 2 bank failures).
  - **Strong increase of the share of foreign-owned banks**: privatization of the largest banks between 1999 and 2002 => 96% of assets in the banking sector owned by foreign investors at the end of 2005.
- Both these trends are general characteristics of the banking sector transformation in transition countries.

The analysis

- Data for all Czech banks from 1994 to 2005 from the Czech National Bank.
- We perform causality tests (Granger-causality) to analyze the effect of cost efficiency on non-performing loans and the effect of non-performing loans on cost efficiency.
- We estimate cost efficiency for each bank with an econometric technique (distribution-free approach).
- Non-performing loan ratio is defined as non-performing loans to total loans.

The results

- Mean efficiency score of Czech banks : 60%.

- No effect of nonperforming loans on cost efficiency => no support for the bad luck hypothesis.
- Negative and significant effect of cost efficiency on nonperforming loans
- => support for the bad management hypothesis
- => no support for the skimping hypothesis

- Main finding : **the "bad management" hypothesis** is observed for Czech banks : **greater cost efficiency reduces bad loans.**

Implications for bank efficiency

- Main conclusion: **greater cost efficiency reduces bad loans.**

- Good news :
  - Greater cost efficiency means gains through lower banking prices but also through better financial stability (no trade-off for cost efficiency: all measures favoring cost efficiency should be promoted.
  - We have observed greater cost efficiency in the EU in the recent years : it should have contributed to financial stability (at least for normal times).

Conclusion on bank efficiency

- The evolution of bank efficiency shows evidence of banking integration.
- Improved bank efficiency in the EU.
- It is an evolution beneficial in all aspects, as it provides expected benefits through lower banking prices, but also favors financial stability.

Conclusion on banking integration

- The analysis shows some evidence in favor of banking integration in the EU.
- It takes place through:
  - the evolution of bank competition (slight improvement, convergence).
  - the evolution of bank efficiency (improvement, convergence).
- Overall this conclusion is economically beneficial.

Thanks for your attention.