NATIONAL BANK OF ROMANIA

The 13th Edition of the Seminar on Financial Stability Issues

Connecting financial inclusion and financial stability. Risks and benefits

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Agenda

1. **Financial inclusion from a financial stability perspective**
2. Evaluating the links between financial inclusion and financial stability
2.1. An EU case study
2.2. NBR’s macroprudential policy and implications for financial inclusion
3. Conclusions

1. Financial inclusion from a financial stability perspective

Mehrotra, A and Yetman, J. (2015): define financial inclusion as the "universal access" to a "wide range of financial services" at a "reasonable cost". However, access is only capturing one aspect of financial inclusion.

Sahay et al. (2015): define financial inclusion as the access to and use of formal financial services by households and firms; they investigate the implications of financial inclusion for economic growth, inequality and financial stability.

Cámara and Tuesta (2017): They propose a multidimensional index covering supply and demand indicators: "the degree of financial inclusion is determined by three dimensions: usage, barriers (i.e. quality) and access "

Hannig and Jansen (2010): synergies and trade-offs between the two concepts: financial inclusion and financial stability, perform a policy analysis of driving the "unbanked" population in the financial sector

Cihak et al. (2016) analyse the linkages between financial stability and financial inclusion, with a view to distinguish between different mechanisms by type of debtor (households and firms).

1. Financial inclusion from a financial stability perspective

An *inclusive* financial sector can:

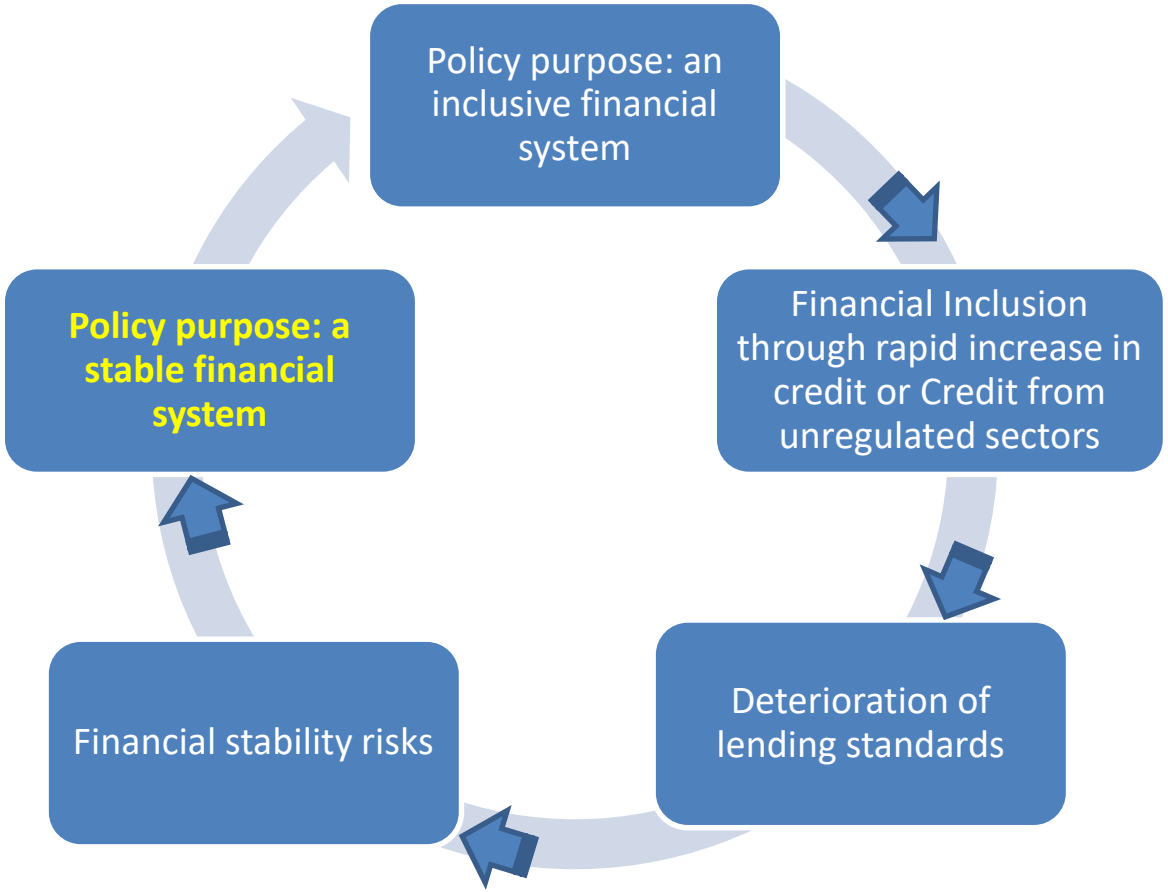
- contribute to economic growth (for eg. sustainable finance)
- reduce poverty, reduce inequality and advance economic development
- favor a diversification of loan portfolios by improving firms' access to credit

BUT how financial inclusion is achieved matters…

- Access to finance of the "poor" and a rapid credit growth can have negative consequences on financial stability
- The appearance of new financial actors (unregulated) and markets can create new risks and vulnerabilities

However, other factors matter also: the macroeconomic environment, the quality of supervisions, the governance.

1. Financial inclusion from a financial stability perspective



Both financial inclusion and financial stability are important policy objectives, which could either work in the same direction, leading to a sustainable development of the financial sector, or to a vicious cycle.

➔ *There is a need for a coordinated approach between them!*

2. Evaluating the links between financial inclusion and financial stability

- Has ensuring access to finance to households and SMEs the same implications for financial stability?
- How to evaluate synergies and trade-offs?
- What are the tools for financial stability policy makers?
- How are the tools of financial stability interacting with financial inclusion?

In order to answer to these questions I will investigate the sign and dimension of correlation coefficients between Financial Inclusion and Financial Stability variables, under different aggregations and considering some conditioning factors.

2.1. An EU case study

Methodology

Following Cihak et al. (2016) several steps are done:

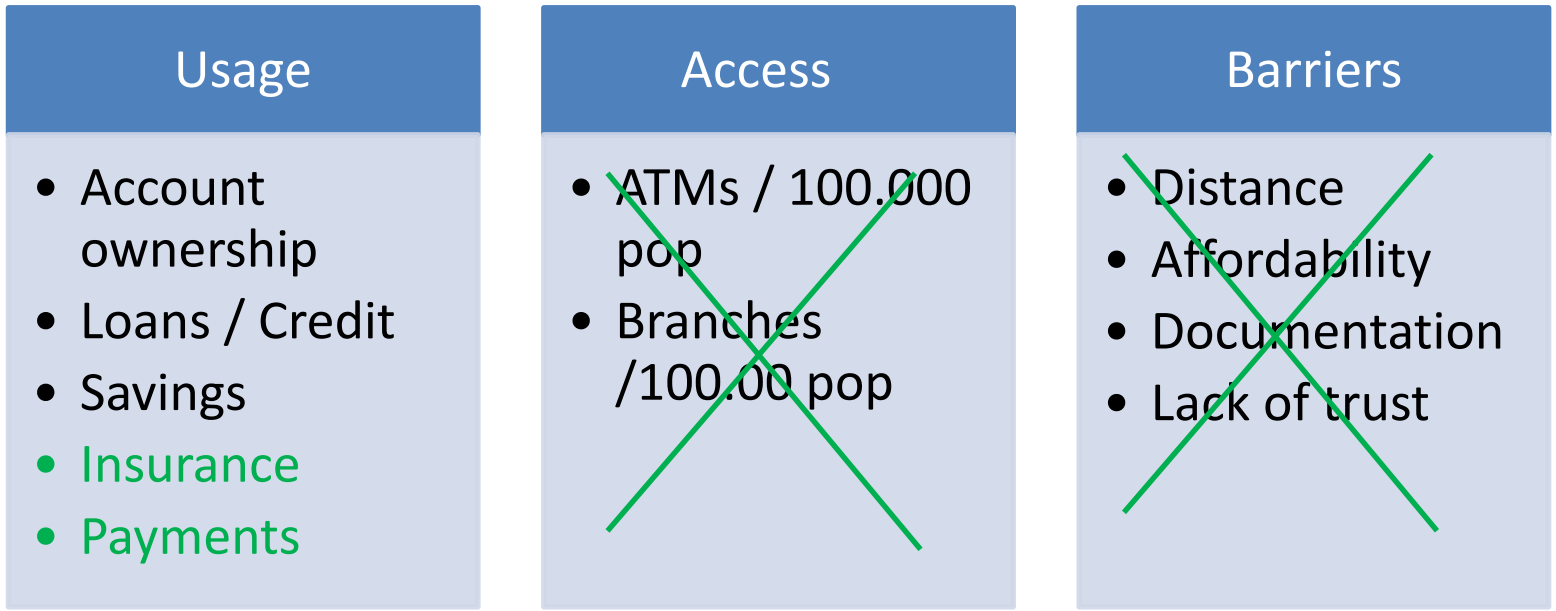
No relationship is implied between financial inclusion indicators and financial stability, but the covariance is assumed to be different from 0.

$$E[stable*inclusive] = E[stable] + E[inclusive] + Cov[inclusive, stable]$$

1. *Spearman correlation coefficients* are computed between individual indicators for both concepts (financial stability and inclusion). Variables are adjusted such that all have a positive contribution to financial stability and inclusion, respectively. A positive correlation coefficient reflects a potential synergy between inclusion and stability, while a negative correlation indicates the presence of a trade-off: the increase (decrease) in a variable measuring one concept is associated with a decrease (increase) in a variable measuring the other concept.
2. *Moving to aggregate measures*: Composite indicators for bank resilience and financial inclusion (aggregations of standardized variables). For robustness purposes a composite measure using PCA is also computed, but only for financial stability indicators due to data limitations.
3. *Conditioning factors*: dummy variables with the value of 1 when the data is above the average of the conditioning variable and 0 below. These dummies are calculated for each conditioning variable and they divide the dataset in 2 sub-samples: countries above and below average.

2.1. An EU case study
Data: measurement of financial inclusion

Figure 1. Indicators for financial inclusion



Source: Global Findex 2017, IMF FAS, WB Enterprise Survey

Some standard approaches in the literature were "the roots" of the analysis:

- Cámara and Tuesta (2017) propose a multidimensional index covering usage, access and barriers (**Figure 1**). In practice, data for barriers is very scarce.
- Cihak et. al (2016) disentangle financial inclusion indicators between households and firms and separate them in 5 categories: credit, savings, insurance, account ownership and payments, without considering the access indicators(Figure 1).

2.1. An EU case study

Data for EU 28 covering: 2011, 2014 and 2017

Financial inclusion		
Access	**Usage**	
Households and firms	**Households**	**Firms**
ATMs per 100,000 adults	Financial institution account	Saved to start, operate, or expand a farm or business (% age 15+)
Branches per 100,000 adults	Used the internet to pay bills in the past year	Borrowed to start, operate, or expand a farm or business (% age 15+)
	Saved at a financial institution	Percent of firms with a checking or savings account
	Debit and Credit card ownership	Percent of firms using banks to finance investments
	Borrowed from a financial institution	Percent of firms using banks to finance working capital

Financial Stability (Resilience indicators)		
Capital	**Liquidity**	**Credit risk**
Bank Z score	LTD	NPL ratio
Capital to total assets ratio	Liquid assets ratio	NPL provision coverage

Source: Global Findex 2017, IMF FAS, WB Enterprise Survey

2.1. An EU case study

Are there trade-offs or synergies between Financial Inclusion and Financial Stability (bank resilience)?

Financial inclusion		Financial stability (bank resilience)					
		Capital		Liquidity		Credit risk	
		Bank Z score	Capital Ratio	Loan to deposits	Liquid assets	NPL ratio	NPL provision coverage
Account ownership	HH: Financial institution account	**0.32***	**-0.50***	**-0.39***	**-0.33***	**0.70***	**-0.47***
	NFC: % of firms with a checking or savings account	-0.14	0.16	-0.31	**-0.43***	-0.17	**-0.48***
Payments	HH: Debit card ownership	**0.25***	**-0.36***	**-0.26***	**-0.29***	**0.71***	**-0.43***
	HH: Used the internet to pay bills in the past year		**-0.35***	**-0.37***	**-0.32***	**0.75***	**-0.61***
Savings	HH: Saved at a financial institution	**0.59***	**-0.54***	-0.29*	**-0.23***	**0.77***	**-0.41***
	NFC: Saved to start, operate, or expand a farm or business	**0.38***	0.13	0.08	-0.01	**0.31***	0.12
Credit	HH: Borrowed from a financial institution	0.17	**-0.27***	-0.15	-0.16	**0.50***	-0.12
	HH: Credit card ownership	**0.40***	**-0.52***	**-0.23***	**-0.23***	**0.57***	**-0.37***
	NFC: Borrowed to start, operate, or expand a farm or business	0.06	0.09	-0.03	-0.12	**0.37***	-0.09
	NFC: % of firms using banks to finance investments	-0.04	-0.25	-0.40*	-0.07	0.04	-0.22
	NFC: % of firms using banks to finance working capital	0.19	-0.29	0.39	0.26	-0.20	0.05
Access	No. of commercial bank branches/100,000 adults	0.16	**-0.50***	**-0.39***	**-0.33***	**0.70***	**-0.47***
	No. of ATMs / 100,000 adults	0.18	0.16	-0.31	**-0.43***	-0.17	**-0.48***

Source: Global Findex 2017, IMF FAS, WB Enterprise Survey

Note. The Spearman correlation coefficients were calculated for EU 28 and the * represents the significance at 10%.

2.1. An EU case study

Financial Stability (FS) index^	Financial inclusion (FI) index			
	FI Usage and access	FI Usage	FI Households^^	FI Firms ^^^
FS	-0.27*	-0.20*	-0.25*	-0.26*

- The composite measures for Financial Stability (FS) and Financial Inclusion (FI) are constructed as an average of the standardized variables.
- Aggregation at product and debtor level shows that different financial products have generate different dynamics in relation to banks' resilience.
- On average there seems to be no difference between increasing FI to households or firms.

Source: own calculations based on data from Global Findex 2017, IMF FAS, WB Enterprise Survey, WB Global Financial Development Database
Note: The Spearman correlations were calculated as averages of the correlation coefficients between the sub-categories of bank resilience and those of financial inclusion, presented previously.
^ The composite measures are calculated by aggregating the standardized variables.
^^The FI index for households does not include the usage of internet was exclude due to data limitations.
^^^The FI index for firms includes only the data on saving and borrowing from banks, from Findex.

2.1. An EU case study

A conditional correlation coefficient (ρ) between Financial Stability (FS) and Financial Inclusion (FI) indexes:

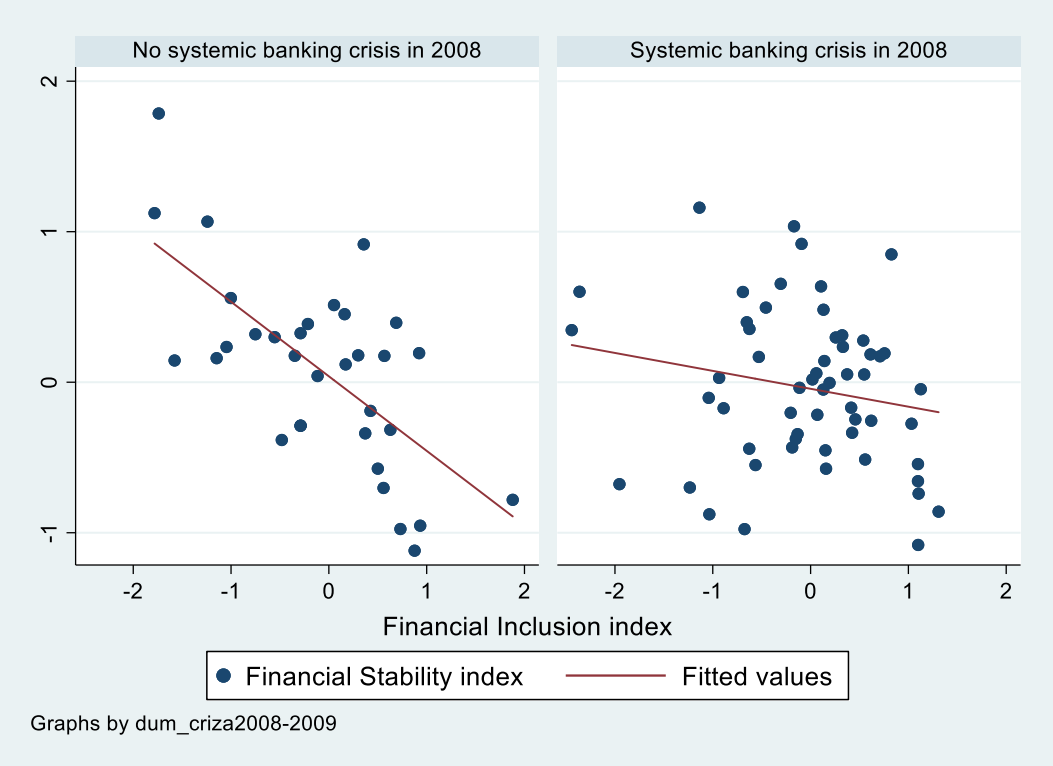
Spearman (FS, FI)	FI total			FI households			FI firms		
Conditioning variable	Countries below average	Countries above average	p-value	Countries below average	Countries above average	p-value	Countries below average	Countries above average	p-value
GDP per capita growth (annual %)	-0.09	**-0.37***	0.28	**-0.37***	-0.10	0.27	-0.03	**-0.64***	**0.01**
Population density	**-0.36***	0.36	**0.00**	**-0.36***	0.23	**0.01**	-0.23	-0.23	0.91
Domestic credit to private sector (% GDP)	-0.05	-0.27	0.41	-0.05	-0.22	0.52	**-0.36***	-0.31	0.91
Age dependency ratio	-0.13	-0.23	0.73	-0.13	**-0.26***	0.67	-0.30	-0.19	0.32
Mobile cellular subscriptions (per 100 people)	**-0.25***	-0.23	0.94	**-0.29***	-0.23	0.82	**-0.38***	-0.04	0.17
Chinn and Ito Financial Openness Index	0.39	**-0.40***	**0.00**	0.39	**-0.42***	**0.00**	0.03	**-0.35***	**0.08**
MPP index	-0.06	**-0.33***	**0.16**	-0.06	**-0.34***	**0.15**	-0.09	**-0.30***	0.47
Country experienced a systemic crisis in 2008	-0.49*	-0.04	0.08	-0.49*	-0.09	0.11	-0.11	-0.39*	0.42
Business freedom	-0.04	**-0.31***	0.31	-0.04	**-0.33***	0.27	-0.26	-0.24	0.84
Investment freedom	0.15	**-0.43***	**0.00**	0.15	**-0.46***	**0.00**	0.13	**-0.39***	**0.08**
Financial freedom	0.03	**-0.40***	**0.14**	0.03	**-0.43***	**0.11**	**0.07**	**-0.40***	**0.07**

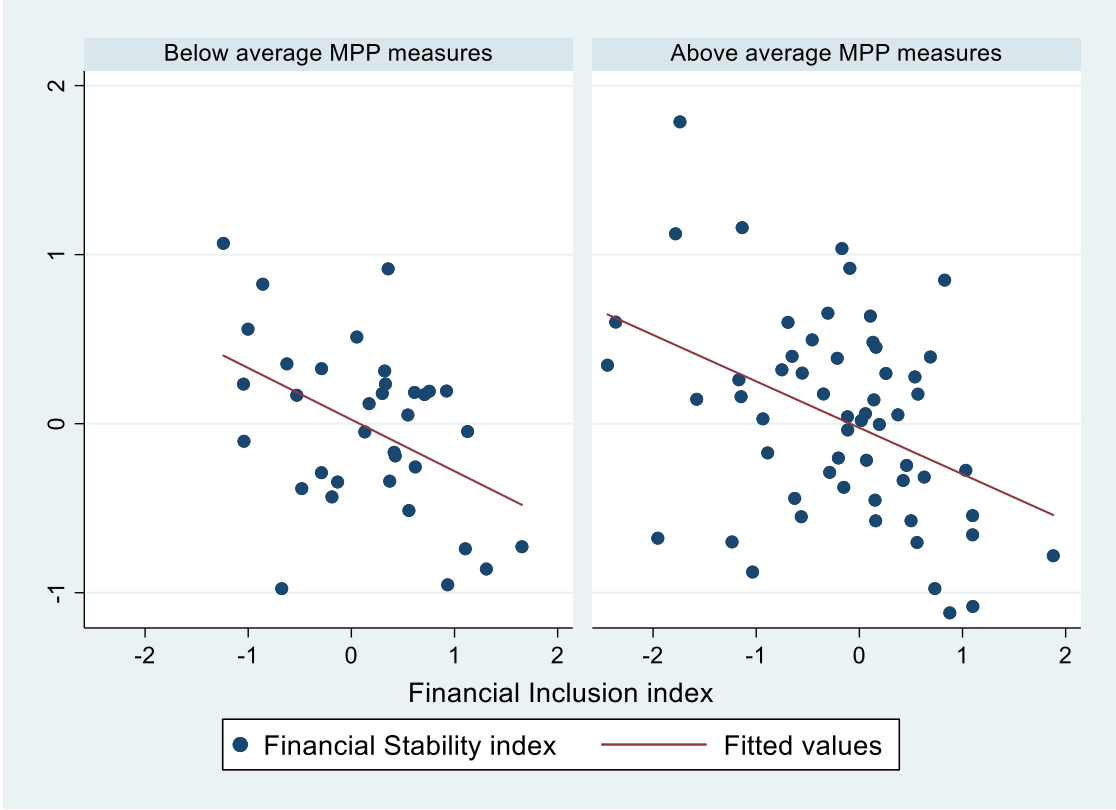
Source: own calculations based on data from World Development Indicators, http://web.pdx.edu/~ito/Chinn-Ito_website.htm Heritage Foundation, WB Doing Business Project, Enterprise Surveys, The Worldwide Governance Indicators, Eugenio Cerutti database on MPP measures, Systemic Banking Crises database (Luc and Valencia)

Note: The Spearman correlation is calculated between FS and the FI indexes for two-subsamples defined by the conditioning dummy variables: the sample of countries below average and those above average with respect to the conditioning variables. The p-value evaluates the statistical difference between the 2 coefficients calculated for each sub-sample.

2.1. An EU case study

Countries without a previous financial crisis deal with high trade-offs between the two objectives. Additionally, a larger then average number of MPP measures leads to trade-offs…





Source: own calculations

2.2. NBR's macroprudential policy and implications for financial inclusion

The 2011 LTV and 2019 DSTI measures:

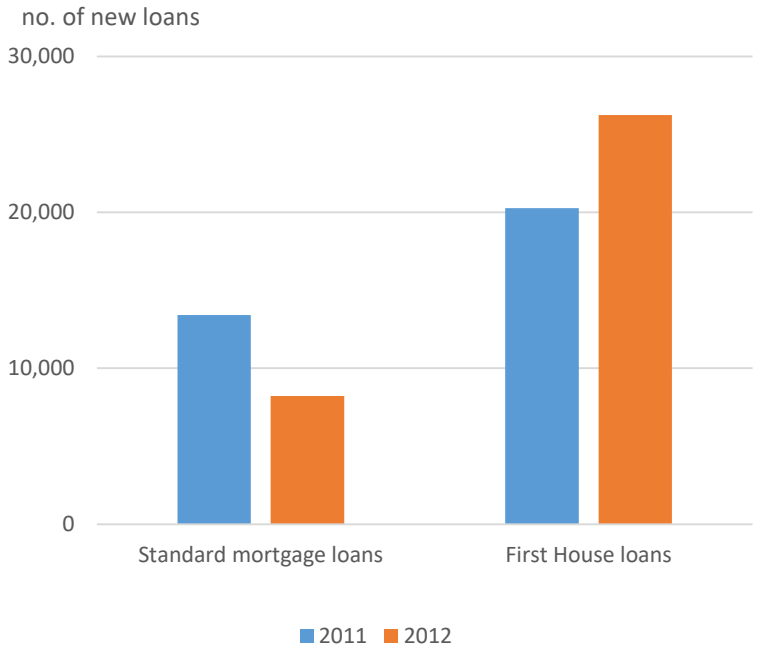
i. *The 2011 LTV measure* established limits for LTV for mortgage loans, differentiated by currency of the loan and of the income. First House loans were exempted.

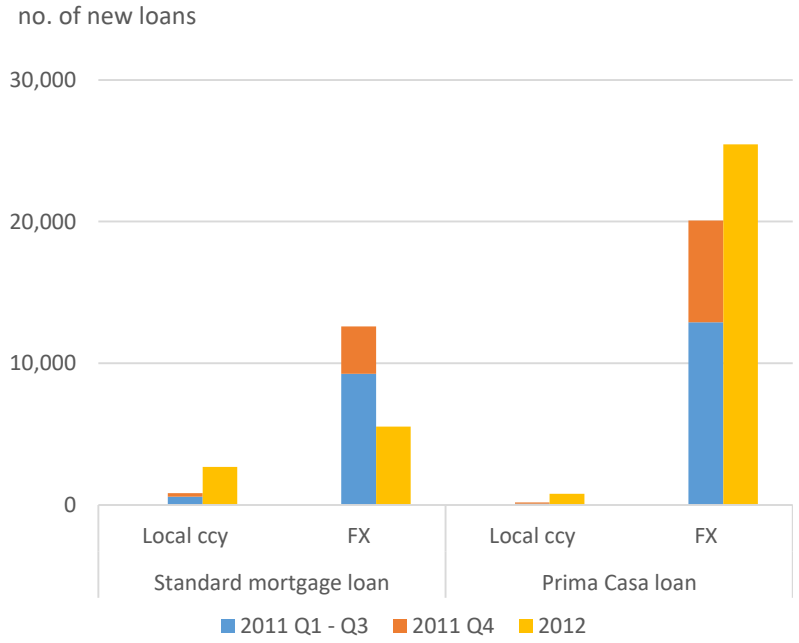
For mortgage loans, the LTV limits are: 85% for loans denominated in local currency, 80% for loans denominated in foreign currency to hedged borrowers, 75% for loans denominated in euro to unhedged borrowers and 60% for loans denominated in other foreign currencies than the euro granted to unhedged borrowers. LTV limits are not applied to the Prima Casă loans.

ii. *The 2018 DSTI measure* addressed the significant share of households with high debt service-to-income (DSTI) ratio setting a cap on the level of indebtedness for debtors (individuals), i.e. 40%, of which at most 20% for loans in foreign currency.

2.2. NBR's macroprudential policy and implications for financial inclusion

New lending after the 2011 LTV measure





Two changes in the structure of banks' portfolios:

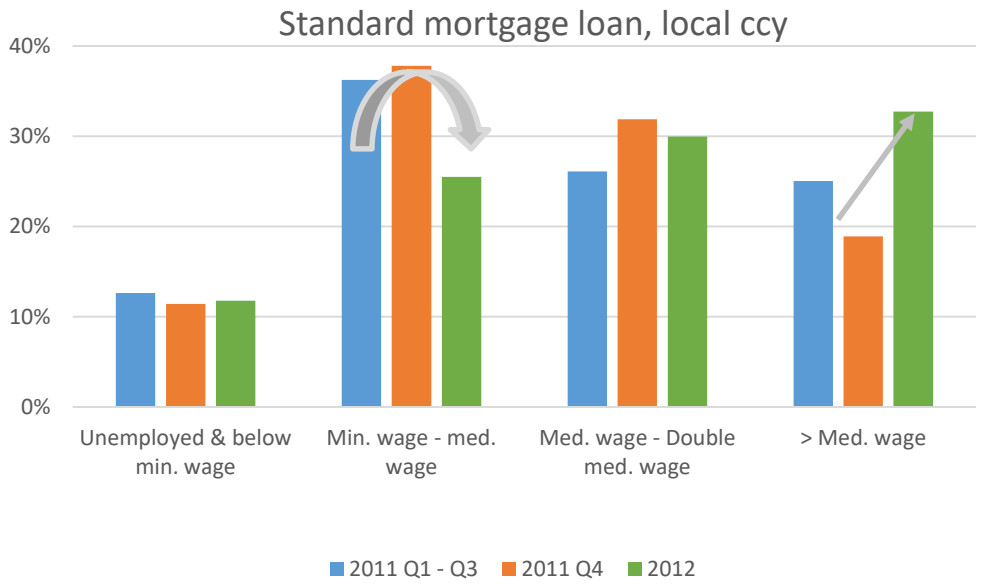
- Decrease of new standard mortgage loans and the shift from FX to local currency
- Increase of FX First Home loans

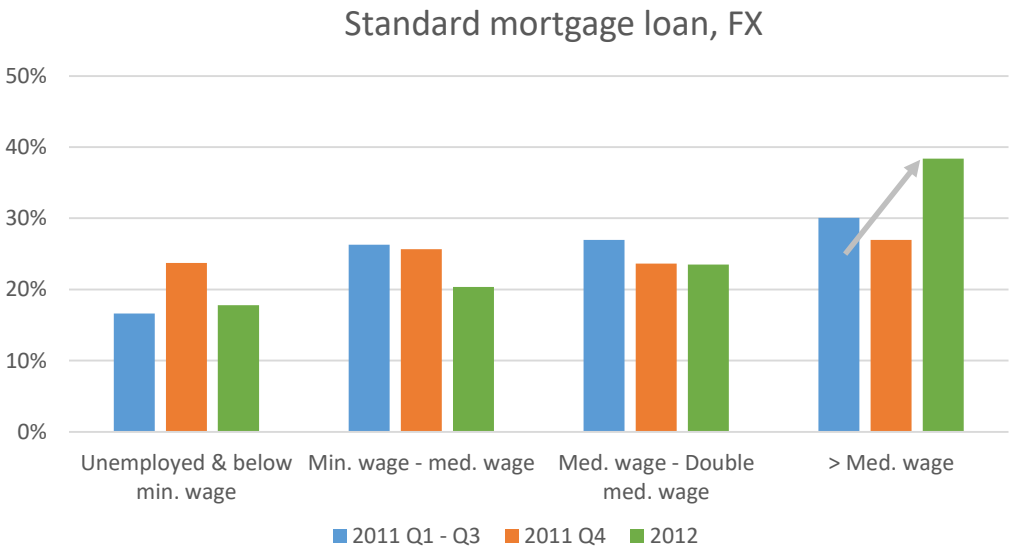
Source: Central Credit Register, Credit Bureau, own calculations.

Note: The data refers to the new loans granted prior the regulation (Q1- Q3 2011), during implementation (Q4 2011) and in the post regulation period (year 2012).

2.2. NBR's macroprudential policy and implications for financial inclusion

The 2011 LTV measure led to a deeper change in the structure of banks' portfolios, besides the decrease in the number of loans granted … a reorientation towards higher income borrowers



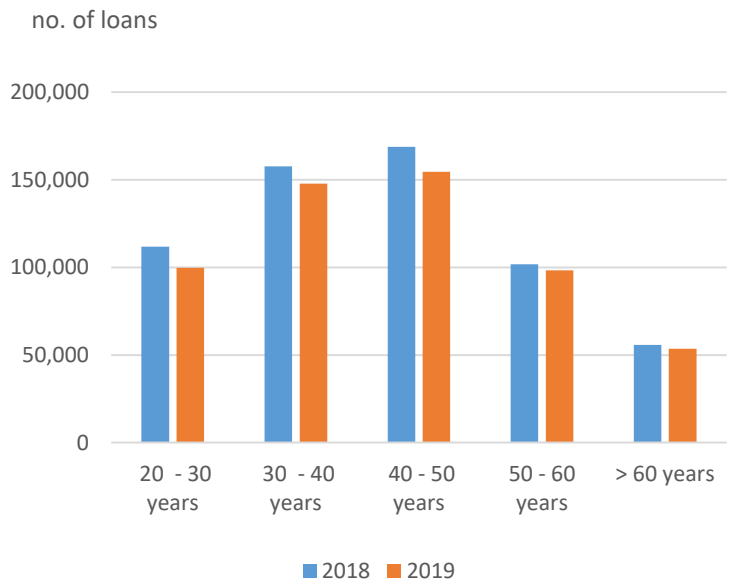


Source: *own calculations based on data from Central Credit Register, Credit Bureau*

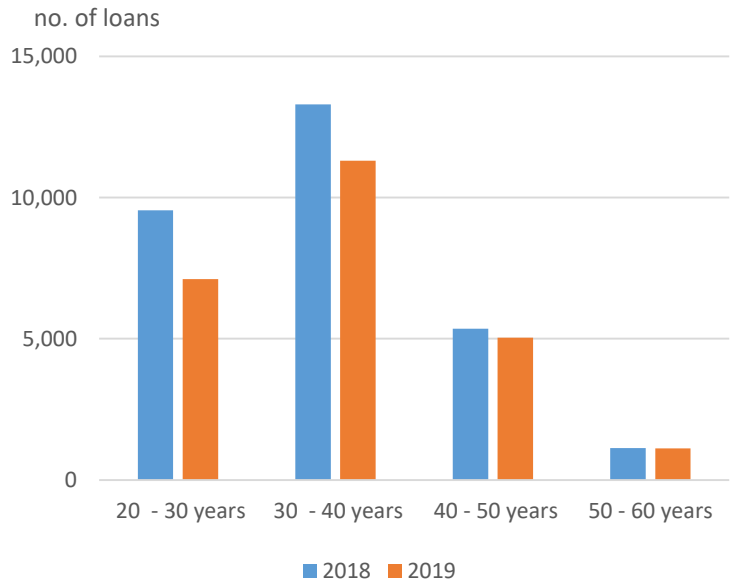
2.2. NBR's macroprudential policy and implications for financial inclusion

The 2019 DSTI measure led to a decrease of new loans granted to HHs up to 40 years for both consumer and mortgage loans …

New consumer loans



New mortgage loans



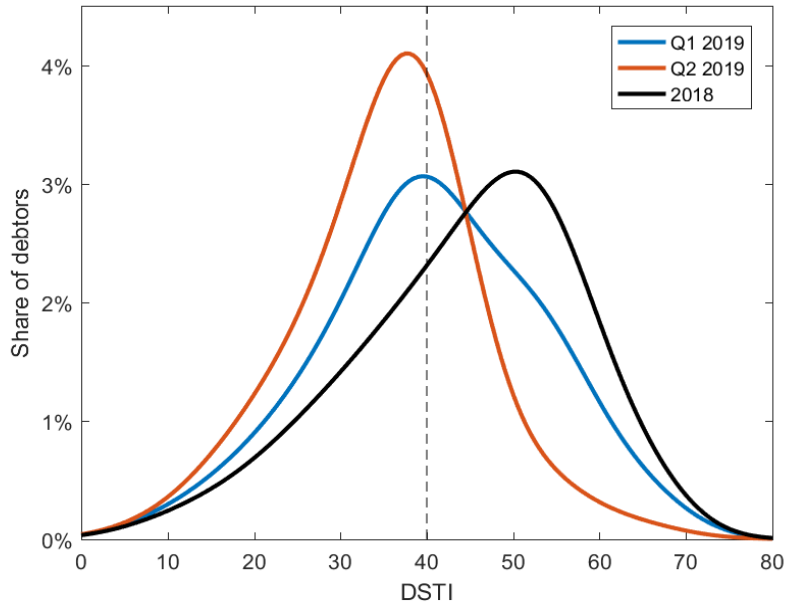
Source: own calculations based on data from Central Credit Register and Credit Bureau.

Note: The data refers to the new loans granted in the first 2 quarters of 2018 (prior the came into force of the regulation) and during the first 2 quarters o implementation (Q1-Q2/2019).

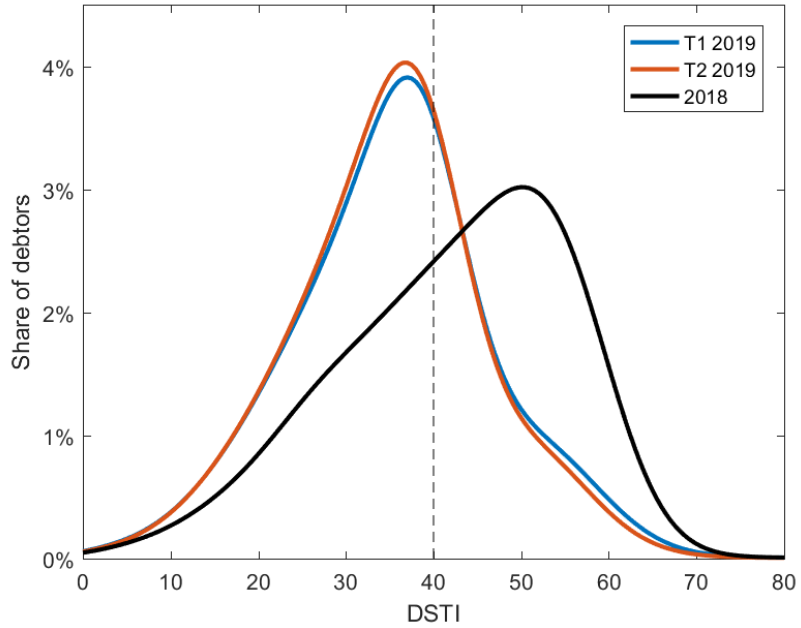
2.2. NBR's macroprudential policy and implications for financial inclusion

The impact of the 2019 DSTI limit was immediate for consumer loans due to the short analysis process, while for mortgage loans there was a 1 quarter lag due to the longer approval period

Distribution by DSTI of new debtors with mortgage loans



Distribution by DSTI of new debtors with consumer loans



Source: own calculations based on data from Central Credit Register and Credit Bureau.

Note: The data refers to the new loans granted in the first 2 quarters of 2018 (prior the came into force of the regulation) and during the first 2 quarters of implementation (Q1-Q2/2019).

3. Conclusions

- Both Financial Inclusion (FI) and Financial Stability (FS) are policy priorities. As such, an informed and coordinated approach between the two is mandatory.
- There are trade-offs and synergies between the two objectives: while higher FI generates synergies in terms of NPL ratios, it comes with a trade-off for banks' capital, liquidity and NPL provision coverage ratio.
- A more aggregate investigation, reveal similar trade-offs between FS and FI for households and firms.
- Some country characteristics condition the direction and strength of correlation between the two objectives: population density, financial openness, investment and financial freedom, GDP per capita growth rate, countries' experience with a systemic crisis in 2008. Countries without a previous financial crisis deal with high trade-offs between the two objectives. Additionally, a larger then average number of MPP measures leads to trade-offs.
- An ex-post assessment of NBR's macroprudential measures reveal that there is a trade-off between ensuring financial stability and households' access to credit.

Should this be a consideration for macroprudential authorities when setting the macroprudential measures?

Thank you!

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