



Granular data for the central Bank needs : Case of Bank Al-Maghrib

CHADIB MOHAMED AMINE

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I Granular data : interest for the central banks

- Central Banks needs data to fulfill their main missions :
 - **Monetary policy** : money supply, Channels of Transmission of Monetary Policy, banks' loan portfolio and the rating associated to it to evaluate the impact of measures on firms' access to finance,...
 - **Financial stability** : Subsector indebtedness, contagion risks, impacts of new phenomena (climate changes), credit concentration, banking system portfolio quality, shadow banking
 - **Financial inclusion** : Access to financing for individuals and SMEs, use of financial services,
- To achieve their missions, CB have always used aggregates as statistical tool. However, the 2008 financial crisis has highlighted the need for more granular, timelier and efficient reporting.
- “...Looking at the details beyond the aggregates enriches our understanding of economic phenomena and at the same time increases our flexibility to respond to unexpected policy needs, contributing to even better statistics.” [Mario Draghi, former ECB President in the 8th ECB Statistics Conference, 2016.](#)

Bank Al-Maghrib has a Wide set of granular data

DATA SOURCES

Loans by loans
(credit register)

CBSO (CIFEN)

Banking accounts
register

Payments incidents
register

Monetary and
exchange operations

Security-by-security

Real estate register



INTEGRATION AND
TRANSFORMATIONS

STATISTICS AND INDICATORS

Credit concentration

Interest rates

Bank account ownership

Access to financing

Securities issuances

Loans distribution

NFCs indebtedness and solvency

Trade credit

Cheque payment incidents

NFCs payments delay

Real estate price development

MISSIONS SERVED



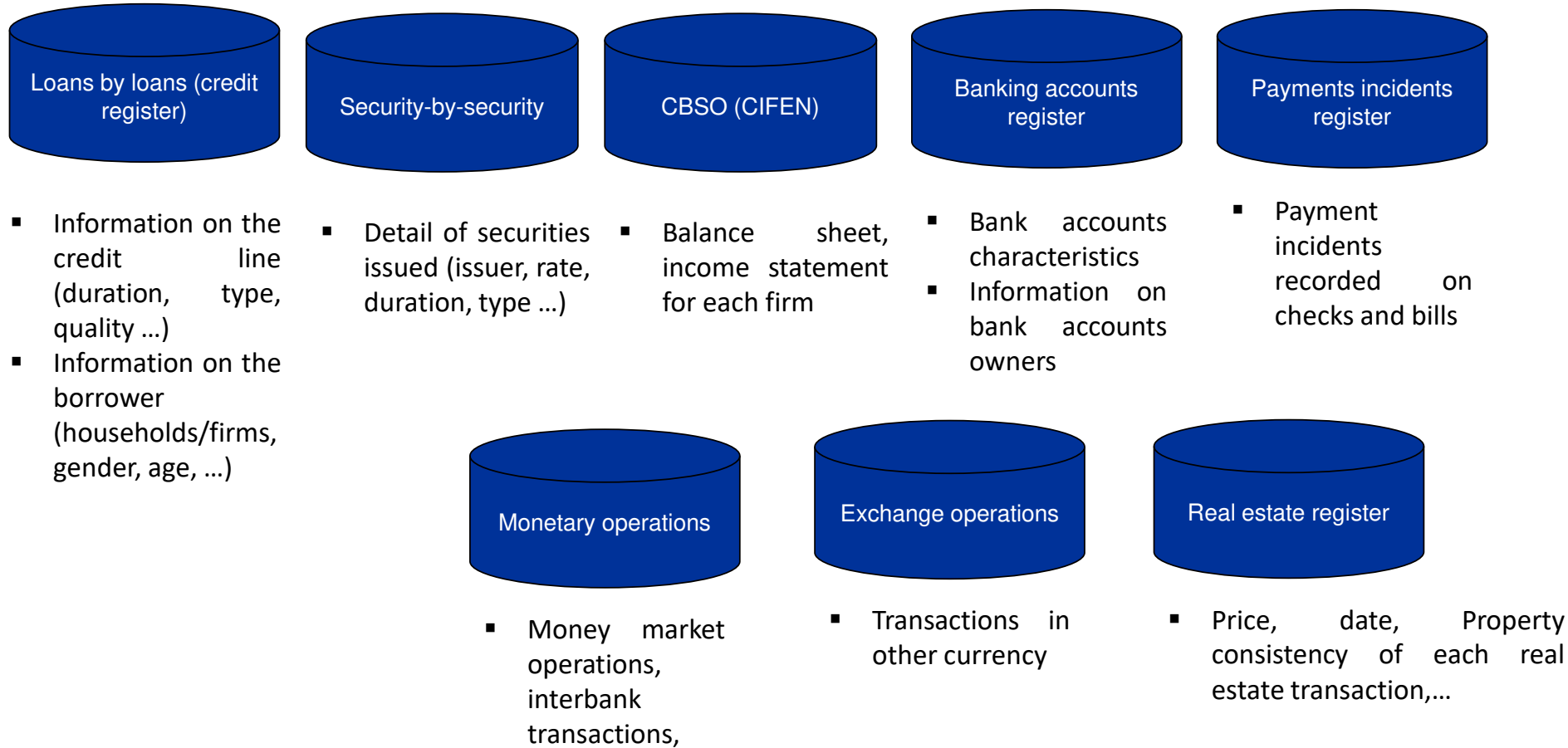
Monetary Policy
transmission

Financial stability

Financial inclusion

Granular data at Bank Al-Maghrib: Wide set of data is collected and processed

- The experience of bank Al-Maghrib started in the 2000s with the creation of the central balance sheet office and the credit register





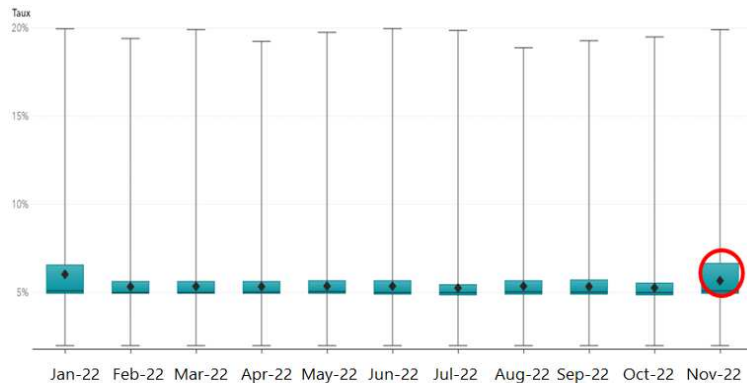
Granular data at Bank Al-Maghrib: Monetary policy assessment

■ Monetary policy transmission

- Granular data is used to monitor the impact of monetary policy decisions, notably on lending to the non-financial sector
- The loan-by-loan data is used to compute monthly flow of credit and interest rates applied :

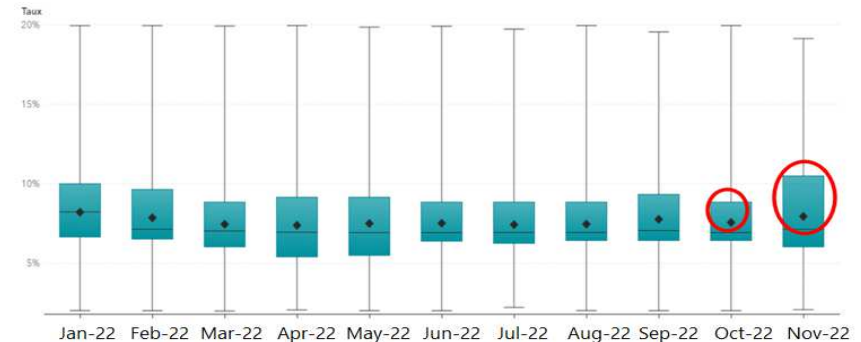
To examine the impact of monetary policy tightening in September 2022, estimations carried out, prior to the availability of data based on aggregate reporting showed that there were an increasing number of new loans with rates higher than the levels recorded prior to monetary tightening.

Housing loans interest rates distribution



For housing loans, the maximum rate for three quarters of loans granted by banks stood at 6.7% in November 2022, compared with 5.6% in October and 5.7% in September.

Consumer loans interest rates distribution



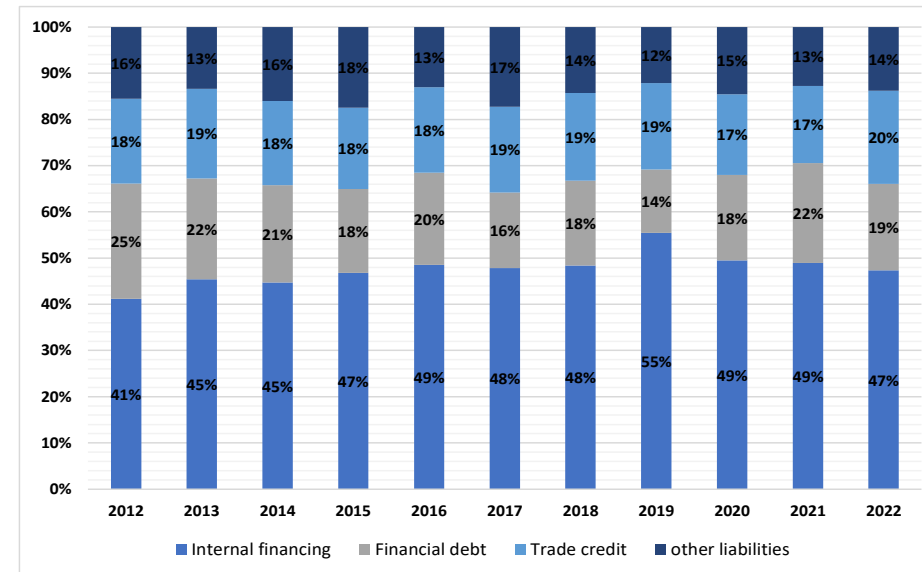
For consumer loans, the range of variation in interest rates widened relatively in November, with a 3.4% spread between the median rate and the maximum rate, compared with spreads of 1.9% in October and 2.3% in September.



▪ Monetary policy effectiveness : Testing the Balance sheet channel effectiveness

- Using CBSO, data shows the internal financing is the main source of financing (47%) followed by trade credit (20%) and by financial debt (19%).
- The degree of response to monetary policy decisions depend on the weight of financial debt of NFCs.
- The figure shows that in 2021, financial debt experienced a slight increase explained by several financing programs launched by government in response to COVID crise.
- In the opposite, during the monetary policy tightening, NFCs reduces their financial debt.

NFCs liabilities structure in %

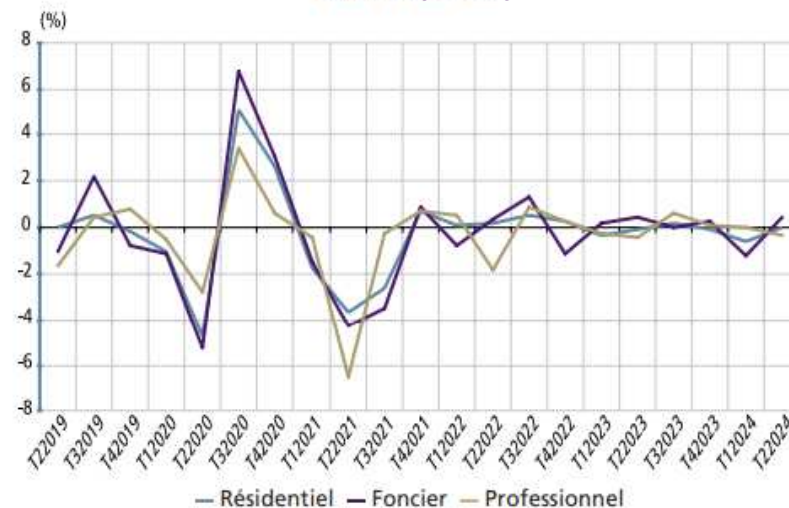




▪ Mesuring the implications of fluctuating property prices for monetary policy and financial stability

- Granular Data help to establish a system for monitoring real estate asset prices.
- Following a partnership between the National Agency for Land Conservation and Bank Al-Maghrib (BAM) in 2009, a real estate price index was established
- The index is calculated using the **repeat-sales method** for several reasons : information available does not allow using the hedonic method due to the unavailability of the main characteristics of real estate properties (number of rooms, age of the property, etc.);

Year-on-year change in the real estate price index (ln.%)

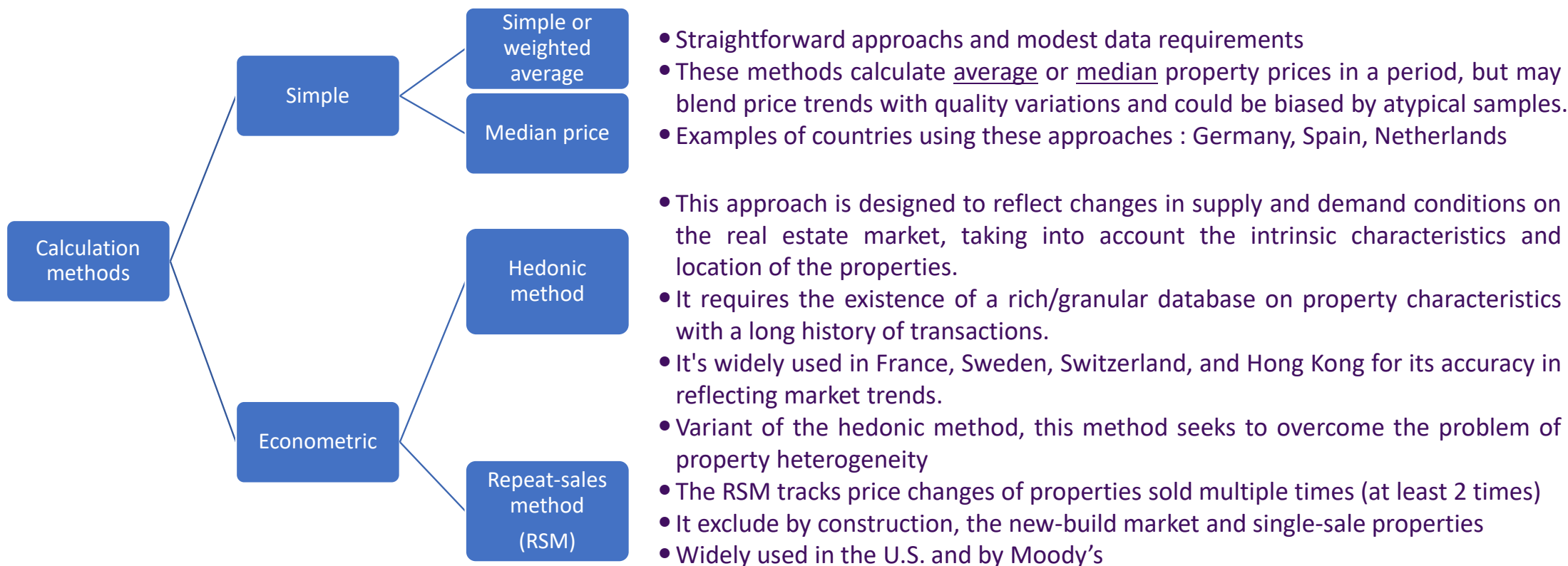


Efforts are being made to upgrade the information system to collect essential data for:

- Establishing a price index to cover new housing sector.
- Elaborating the real estate price index through the hedonic pricing approach.

▪ **Mesuring the implications of fluctuating property prices for monetary policy and financial stability**

For the development of real estate price index, various approaches are adopted internationally, which can be categorized into two main groups:



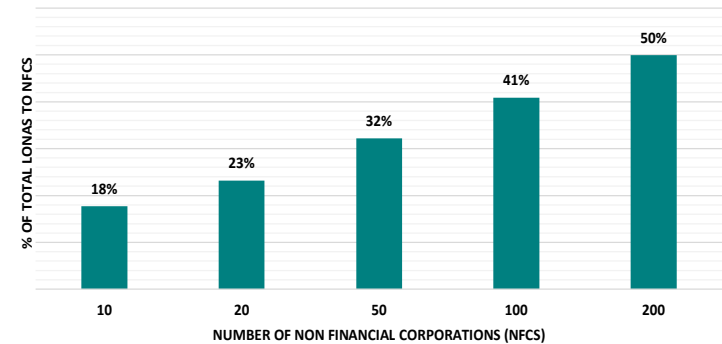


Granular data at Bank Al-Maghrib: Financial stability monitoring

■ Banking system individual exposures

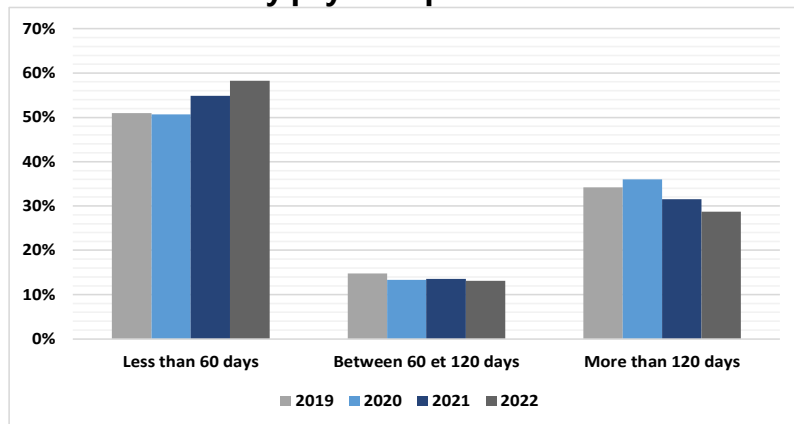
- Using granular data as complement of aggregated reporting to supervise the counterpart risk is more relevant (aggregated reporting is not exhaustive)
- 10 companies account for 18% of total outstanding corporate loans, rising to 23% for the top 20 companies.
- More breakdowns can be provided by using granular data (private NFC, state owned NFC, credit distribution, geographic distribution, gender, ...).

Credit to non financial corporations concentration



■ Payments delays and its implications for financial stability

Average Customer Payment Period In % of companies by payment period



- Knowing that payments delay can lead to business failure which represent a risk for financial stability, the issue of trade credit is crucial for CB.
- CBSO granular data is used to analyze this phenomenon:
 - Payments delays exceeded 150 days during the 2010s. However, the trend has been improved during last years.
 - The proportion of companies paid within the statutory timeframe have increased reaching 58% in 2022 after 51% in 2020.
 - Companies that are significantly late in paying their bills and exceed regulatory deadlines has fallen to 20% in 2022 after 26% in 2020.



Granular data at Bank Al-Maghrib: Financial stability monitoring

■ NFCs vulnerability analysis

- Businesses vulnerability is a special and important topic for central banks regarding its impacts on the whole economy including financial system
- A study has been carried out using CBSO data in 2021 to examine the NFCs vulnerability using for axes : Solvency, liquidity, profitability and debt service capacity.

Conclusions

- ✓ At least 5 firms among 10 are vulnerable using one axe
- ✓ Corporate vulnerability index (CVI) remained relatively stable (2006-2019)
- ✓ a slight increase from 2014 linked to the sluggish economic growth
- ✓ by source of vulnerability, NFCs are mainly exposed to liquidity risks and relatively limited capacity to cover their interest charges, followed by solvency and profitability risks.

Share of vulnerable businesses



Corporate Vulnerability Index : CVI »



III Granular data at Bank Al-Maghrib: Financial inclusion

Financial inclusion

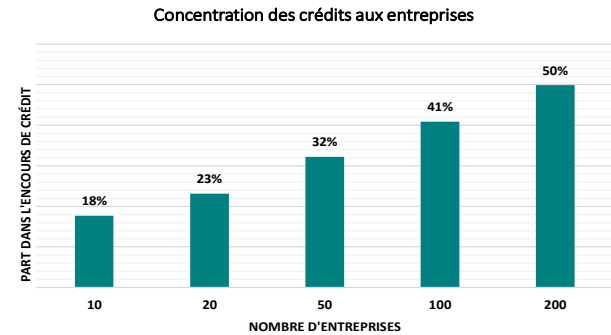
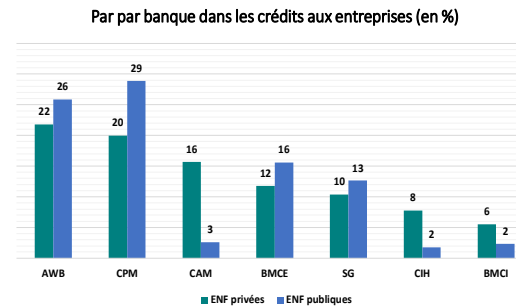
- Regarding the financial services digitalisation, financial inclusion of individuals and businesses especially SMEs has become crucial for central banks
- The availability of granular data on loans and banking accounts allow to monitor financial inclusion and to target population with no access or no use of financial services

Credit register

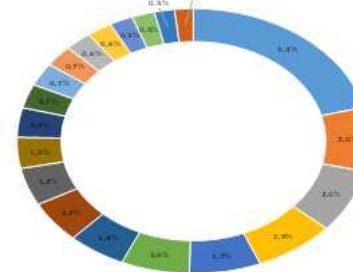
Mesure the level of Access to financing : half of firms have access to financing and about 10% of adult population

with Geographical, sectoral, gender and occupation breakdown.

→ Put in place specific strategies to encourage firms to reach finance in order to develop their activity or swap their difficulties



Concentration de la production de crédit entre janvier 2022 et juin 2023



Répartition des entreprises par tranche de montant de crédit

Tranches du montant	Nombre d'entreprises	% // entreprises ayant un crédit	fréquence cumulée	Encours MMDH	% // l'encours
[0,1[	96 706	86,8565	86,8565	10,11	2,083
[1,15[	11 376	10,2174	97,0738	45,61	9,397
[15,40[	1 641	1,4739	98,5477	39,79	8,200
[40,50[	267	0,2398	98,7875	11,94	2,461
[50,1Md[	1 294	1,1622	99,9497	212,66	43,819
[1Md,5Md[49	0,0440	99,9937	89,44	18,430
[5Md,10Md[5	0,0045	99,9982	35,84	7,385
[10Md et +]	2	0,0018	100,0000	39,92	8,225

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Financial inclusion

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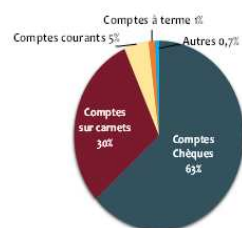
Bank Account register

Banks account ownership is up to 53% at the end of 2023)

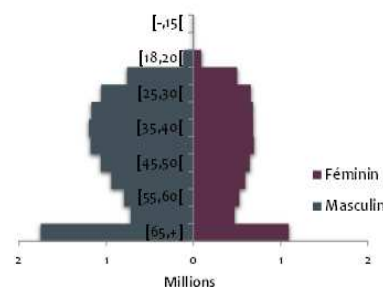
- with Geographical, sectoral, gender and occupation breakdown.

-> Put in place policies to promote the use of banking account (electronic payment,...) rather than cash

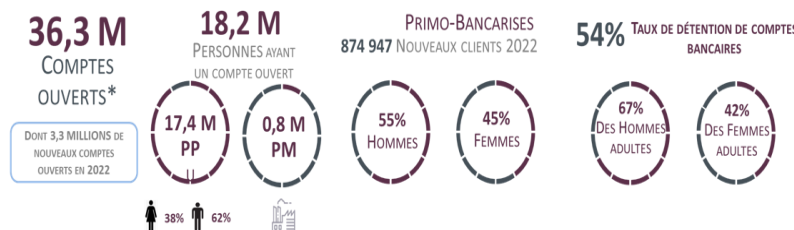
Répartition des comptes bancaires ouverts par type



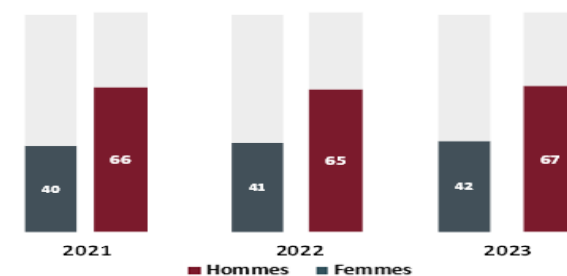
Pyramide des âges des PP titulaires de comptes



Indicateurs clés



Taux de détention de compte bancaire par genre (en %)



III Granular data at Bank Al-Maghrib: Other uses

- Other uses

Real estate development and risks

Loan to value ratio (LTV) which compare the amount of money being borrowed to the market price of the asset being purchased

Clustering

Classification of populations according to their credit reimbursement behavior to know good clients and bad ones (reason why they don't respect their commitment and to supervise their evolution)

Statistical purpose

Refinement of macro aggregates and deepening the understanding of reporting to give explanation and responses to a lot of question raised by the Board in preparation to the monetary policy decision

Cross control : Mapping aggregates and micro data for quality purposes

CONCLUSION

THANK YOU FOR
YOUR ATTENTION