

Analysis of Concentration, Dominance and Symmetry in Bank Deposits in Colombia (March 2017)

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Abstract: This study computes and analyzes some indicators of concentration, dominance and symmetry applied to the departmental distribution of deposits (in pesos) of banking establishments, broken down into 6 financial products: bank current account deposits, simple deposits, Term deposits, savings accounts, special savings accounts and real value savings certificates to March 2017. The results are contrasted with the information of December 2013, finding evidence of a process of greater concentration and geographical dominance of bank deposits, all variables except for real value saving certificates.

Key words: Financial system, concentration indexes, financial sector, dominance indexes, symmetry indexes

INTRODUCTION

The concentration in the financial system in Colombia has been explored in several studies (Gallego and Munoz, 2013; Mosquera and Gomez, 2013; Gallego and Echeverry, 2009; Morales, 2011) among others which address the relationship between concentration and financial stability. The effects on financial intermediation and prices, the fragility of the system, among others. However, one of the limitations of previous studies is the lack of elaboration of analyzes taking into account the geographic dimension (Gutierrez and Macias, 2014).

In view of the above this document aims to advance in the identification of signs of concentration and dominance in the Colombian territorial sphere. To do this, we calculate and analyze some concentration indicators applied to the departmental distribution of deposits (in pesos) of banking establishments, broken down into 6 financial products, at the court of March 31, 2017 (bank current account deposits, simple deposits, term certificates of deposit, savings deposits, special savings accounts and real value savings certificates).

MATERIALS AND METHODS

Based on the departmental information available at the Financial Superintendence of Colombia (FSC, 2017) with a cut-off date at March 31, 2017, concentration indicators were estimated using the Excel application

prepared by the economic studies group of the superintendency (Gutierrez, 2013) for the collection of banking establishments in pesos, broken down into 6 financial products: Bank current account deposits, simple deposits, term deposit certificates, savings deposits, special savings accounts, certificates of real value savings. Although, there is another product called investment securities in circulation, this was not considered, since it is only present in Bogota and Valle del Cauca.

RESULTS AND DISCUSSION

Deposits in bank current account: It was observed that for deposits in bank current account this type of product was present in the 32 departments of the country and in Bogota. Bogota was the leading entity with a concentration ratio of 49.53%. By including Antioquia, Valle del cauca and santander, the Concentration Ratio (CR4) was 69%. The departmental IHH for this type of product was 2,650 denoting a highly concentrated market. The number of equivalent companies which in this case were departments was 3.74 denoting that with 4 departments the same level would be reached in the IHH index (Table 1).

When analyzing the normalized entropy indicator, it is found that the probability that a user does not keep the deposit in the same department was 62.3%. The dominance index was 0.86, reflecting dispersion in the amounts of current bank deposits in the departments.

Table 1: Concentration indices by department for bank funding by type of product (March 2017)

Indices	PF1	PF2	PF3	PF4	PF5	PF6
Accumulated total equity (%)	100	100	100	100	100	100
Number of territorial entities Concentration ratio	33	30	33	33	32	27
1 territorial entity (CR1)	49.53	56.95	79.22	54.66	53.11	47.02
2 territorial entities (CR2) (%)	57.56	64.22	85.41	67.88	68.54	60.58
3 territorial entities (CR3) (%)	65.02	70.87	89.47	73.85	76.53	66.39
4 territorial entities (CR4) (%)	69.00	76.46	90.86	76.96	80.41	70.98
Hirschman-Herfindahl	2.642,92	3.428,76	6.338,63	3.238,46	3.169,12	2.530,19
Hirschman-Herfindahl standardized	0,241	0,320	0,622	0,303	0,295	0,224
Number of equivalent companies	3,784	2,917	1,578	3,088	3,155	3,952
Dominance index	0,8627	0,8954	0,9804	0,8544	0,7980	0,7692
Rosenbluth/Hall-Tideman	0,111	0,178	0,311	0,142	0,179	0,150
Entropy	2,179	1,791	1,025	1,911	1,810	2,038
Standard entropy	0,623	0,527	0,293	0,547	0,522	0,618
Kwoka dominance index	0,174	0,247	0,535	0,178	0,149	0,118
Threshold dominance index of Stenbacka (%)	38,06	34,05	18,81	35,93	37,09	39,87
Comprehensive industrial concentration index	0,532	0,606	0,804	0,594	0,597	0,531
Logarithms variance	132,418	445,830	486,205	148,767	356,278	193,823
Gini coefficient	0,727	0,812	0,902	0,787	0,825	0,819

Self made; PF1: current account deposits, PF2: simple deposits, PF3: term deposit certificates, PF4: savings deposits, PF5: special savings accounts, PF6: real value savings certificate

Table 2: Concentration indices by department for bank funding, by type of product (December 2013)

Indices	PF1	PF2	PF3	PF4	PF5	PF6
Accumulated total equity (%)	100	100	100	100	100	100
Number of territorial entities Concentration ratio	33	30	33	33	30	27
1 territorial entity (CR1) (%)	30	51	66	37	31	64
2 territorial entities (CR2) (%)	42	65	76	57	52	73
3 territorial entities (CR3) (%)	51	72	82	64	64	77
4 territorial entities (CR4) (%)	57	79	85	69	70	80
Hirschman-Herfindahl	1.253,01	2.968,72	4.469,22	1.903,40	1.655,82	4.219,26
Hirschman-Herfindahl standardized	0,098	0,273	0,430	0,165	0,137	0,400
Number of equivalent companies	7,981	3,368	2,238	5,254	6,039	2,370
Dominance index	0,5100	0,7965	0,9261	0,5711	0,4105	0,9336
Rosenbluth/Hall-Tideman	0,084	0,186	0,216	0,108	0,126	0,205
Entropy	2,668	1,837	1,495	2,330	2,294	1,578
Standard entropy	0,763	0,540	0,428	0,666	0,674	0,479
Kwoka dominance index	0,032	0,149	0,308	0,047	0,022	0,306
Threshold dominance index of stenbacka	0,464	0,377	0,290	0,450	0,475	0,300
Comprehensive industrial concentration index	0,368	0,576	0,688	0,468	0,438	0,666
Logarithms variance	113,086	481,079	424,266	118,152	379,058	193,823
Gini coefficient	0,638	0,821	0,860	0,720	0,736	0,819

PF1: current account deposits, PF2: simple deposits, PF3: term deposit certificates, PF4: savings deposits, PF5: special savings accounts, PF6: real value savings certificate

Also, the dominance index of Stenbacka and the index of dominance of Kwoka were analyzed. Both indexes showed a dominance risk. Finally, the Gini index (>72) and the variance of logarithms (>132) showed the disparities between the departments, although when comparing the values of this indicator with those obtained in the other 6 variables, it was the lower.

These results contrast with those found in December 2013 (Gutierrez and Macias, 2014) when the IHH showed a value of 1,253 denoting a moderate concentration structure and the concentration ratio was 30% for Bogota (Table 2).

Simple deposits: This product was available in 29 departments and Bogota. The departments that did not report this product were Guainia, Guaviare and Vaupes. The concentration ratio takes a value of 56.95% for Bogota to include Atlantico, Antioquia and Valle del

Cauca, the concentration ratio increased to 76.46%. The IHH has a value of 3,429 which implies a high concentration structure. In this case the equivalent number of departments was 3 (Table 1).

When analyzing the normalized entropy indicator, it is found that the probability that a user does not keep the deposit in the same department was 52.7% which when compared to 62.3% of the variable considered in the previous section, allowed to infer a greater concentration. On the other hand, the dominance index was close to 1 (0.89) which was a sign of possible dominance in this structure which is corroborated by a value of 0.606 of the comprehensive industrial concentration index and a threshold for the Stenbacka's dominance index of 34.05% was exceeded by the participation of the first department (56.95% for Bogota). Finally, the Gini index (>81) and the variance of logarithms (>445) showed the disparities between departments.

Certificates of deposit at term: This product was available in all 32 departments and in Bogota (Map 6). The concentration ratio was 79.22% for Bogota and in the Valle del Cauca, Antioquia and Santander the concentration ratio was 90.86%. The IHH presented a value of 6,339, denoting a structure of high concentration. This product was the second most concentrated according to the IHH, only surpassed by the "Investment Securities in Circulation". The number of departments equivalent was 1.57 (Table 1). When analyzing the normalized entropy indicator, it is found that the probability that a user does not keep the deposit in the same department was 29.3% when compared to 62.3% of deposits in current bank accounts or 52.7% of simple deposits, allowed to infer a higher concentration.

For its part, the dominance index was close to 1 (0.9804) only surpassed by the value of the indicator of the certificates of saving real value. The signal of possible dominance in this structure is corroborated with a value of 0.804 of the comprehensive industrial concentration index, a Kwoka dominance index of 0.53 and a threshold for the Stenbacka dominance index of 18.81% that was exceeded For the participation of the first department (79.22% for Bogota). Finally, the Gini index (>0.9) and the variance of logarithms (>486) showed the disparities between the departments.

Savings deposits: The product was available in all 32 departments and in Bogota. The ratio of concentration was 54.6% for Bogota to include Antioquia, Valle del Cauca and Santander the concentration ratio amounted to 76.96 points. The IHH showed a value of 3,238 denoting a high concentration structure which is corroborated by an equivalent number of departments of 3 and a comprehensive industrial concentration index of 0.59 (Table 1). The normalized entropy, dominance and Stenbacka indicators also showed a high level of dominance. This contrasts with the results found in December 2013 (Gutierrez and Macias, 2014) when the IHH showed a value of 1,903,40 denoting a moderate concentration structure and the concentration ratio was 37% for Bogota.

Special savings accounts: The product was available in all 31 departments and in Bogota. The concentration ratio was 53.11% for Bogota. Including Antioquia, Valle del Cauca and Atlantico, the concentration ratio was 80.41 points. The IHH showed a value of 3,169 denoting a high concentration structure which is corroborated by an equivalent number of departments of 3 and a comprehensive industrial concentration index of 0.59 (Table 1). The normalized entropy, dominance and

Stenbacka indicators also showed a high level of dominance. This contrasts with the results found in December 2013 (Gutierrez and Macias, 2014) when the HHI showed a value of 1,655.82 denoting a moderate concentration structure and the concentration ratio was 31% for Bogota.

Certificates of real value saving: This product was available in only 26 departments and in Bogota. The departments that did not report this product were Putumayo, Guaviare, Vichada, Amazonas, Guainia and Vaupes. For this variable, the concentration ratio for the first agent (Bogota) was 47.2%. Including Atlantico, Antioquia and Valle del Cauca, the concentration ratio was 70.98%. For this case, the IHH presented a value of 2530.19 which allowed to identify a highly concentrated structure. The high concentration is corroborated with an equivalent number of departments of 4 (Table 1). The normalized entropy indicator, it is found that the probability that a user does not keep the deposit in the same department was 61.98.

As for the dominance index, this was 0.7692 which is an indicator of a possible dominance in this structure. This was confirmed by the threshold for the Stenbacka dominance index which was 39.87%, surpassed by the participation of the first department (47.02% for Bogota). The Gini index (75.3) and the variance of Logarithms (158,106) reflect disparities between departments.

This was the only case of the variables analyzed in which there was an improvement compared to December 2013, since in this period the HHI presented a value of 4,219.26, the number of departments equivalent was 2.4, the indicator of Normalized entropy amounted to 47.9% and the dominance index was very high (0.9336).

CONCLUSION

The analysis presented attempted to identify some aspects related to the structure of the banking sector, considering in Colombia seven products available (bank current account deposits, simple deposits, CDTs, savings deposits, special savings accounts, real value savings certificates and Securities in circulation).

Focusing the analysis on bank deposits, it was found that all types of deposits had a highly concentrated structure. In all cases, the Gini index was >72% which shows the disparities in recruitment among local authorities. Likewise in all variables considered, evidence of dominance was found. These results contrast with those identified in December 2013 (Gutierrez and Macias, 2014) according to which current deposits had a deconcentrated structure; savings deposits and special

savings accounts had a moderately concentrated structure and in all other cases (simple deposits, term deposit certificates, real value savings certificates) the structure was highly concentrated in December 2013. In all The cases, the Gini index was >60% and showed signs of dominance.

This shows a process of greater concentration and geographical dominance of bank deposits between 2013 and 2017 in all variables except in the real value savings certificates.

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