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Do Financial Reforms Foster Competition in The Financial Industry and Reduce the Interest-Rate Spread? A Study of the Costa Rican Experience

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ABSTRACT

This article investigates if reforms of financial markets in Costa Rica have reduced the concentration of the financial industry and the interest-rate spread, two desirable outcomes of financial reforms. Our investigation shows that the concentration of the financial industry, measured by the Herfindhal-Hirschman index, fell notably after the conclusion of the reforms, suggesting an

increased competition among financial institutions. Our research, however, does not support the view that the fall in concentration led to a reduction in the interest-rate spread. We provide explanations for the results and suggest avenues for future research.

Keywords: Reform of financial markets, concentration of financial markets, interest-rate spread, economic policy, Costa Rica financial markets

INTRODUCTION

This study aims to scrutinize some of the possible consequences of the financial reforms in Costa Rica, i.e. the changes in the regulatory framework of the financial system of Costa Rica that took place after the mid-1980s. Paramount among those measures were the removal of non-market setting of loans and interest rates, the abolition of the monopoly of State-owned banks to issue checking and savings accounts, as well as the creation of a regulator with enhanced powers and its own board (Rivera & Rodríguez, 2008).

More specifically, we seek to analyze whether financial liberalization enhanced competition among Costa Rican financial institutions, and if this greater competition resulted in a reduced interest-rate spread in the Costa Rican economy during the period 1996-2017. We employ the terms "interest-rate margin" or "interest-rate spread" interchangeably to designate the difference between the rates charged on average by financial institutions for the loans that they provide to their customers and the average of the interest rates that they pay to the holders of deposits and savings.

The issue under discussion is of great importance for decision-makers and deserves scholarly attention. According to Faizan Iftikhar (2016) the conventional wisdom is that banks' interest margins have become important to examine, because they contain essential elements concerning the performance and efficiency of the banking system. González-Vega contends that the primary target of a financial reform must be a reduction in the cost of transactions for all participants in the formal financial-markets. This reduction could decrease the total cost of debt for the investors, and improve the net return for depositors, fostering simultaneously savings and investment (González-Vega, 1994). Empirical research does not necessarily give credence to the view that liberalization of financial markets, at least in Latin America, has been necessarily followed by a reduction in the interest-rate spreads. Brock & Rojas (2000) report that such spreads were higher in Latin American countries during the first half of the 1990s, than those prevailing in industrial countries. Barajas et al. (1999, cited by Faizan Iftikhar, 2016) found that interest-rate spreads in Colombia before liberalization did not differ from those corresponding to the post-liberalization period. These insights are the main motivation for the present article.

The contribution of this paper to the literature is multipronged. Firstly, it reports about the evolution of the concentration of the financial industry in Costa Rica, measured by the Herfindhal-Hirschman index (henceforth, HHI), an indicator that has a potential impact on the degree of competition of that industry. Moreover, our article tackles that question in the context of a wide time span, more than two decades. Secondly, our article presents two measures of the concentration in the financial industry. We measure it in terms of a limited definition of the financial industry, comprised solely of banks, and a larger definition of the financial industry that takes into consideration the growing presence of

other non-banking institutions in the financial landscape of Costa Rica, such as credit unions. Thirdly, we revisit the connection between the concentration in financial industry and the interest-rate spread in the economy. The topic has been examined before in the context of the individual banks and for shorter periods of time by Barquero & Segura (2011), Alfaro & Muñoz (2012), and Castro & Serrano (2013).

The remainder of the article goes as follows. The next section presents a review of the literature, and succinctly presents the evolution of the Costa Rican financial system, highlighting the main traits of the reforms. The third section discusses the methodology of the study, including the definition of variables as well as the sources of the data employed in the study. A fourth section presents the results of the study. The fifth section discusses the results of our investigation. A last section wraps up the article, offering conclusions and suggesting avenues for future research.

LITERATURE REVIEW

McKinnon (1973) and Shaw (1973) asserted that financial repression was a widespread trait of financial systems in developing countries. According to Goldstein (2001) the approach of these authors emphasizes the negative effects of governmental intervention on financial markets, such as low levels of financial intermediation, fragmented capital markets, capital flight, preferential treatment of well-connected groups, and large interest-rate margins. In Costa Rica, financial repression was facilitated by the Decree of Nationalization of the Commercial Banks, issued on June 19, 1948. Franklin (1998) reports that nationalization of the banks was one of the first measures undertaken by the junta that assumed power after the end of the civil war. The decree permitted, in the first place, the nationalization of three private-sector banks.

It also established that the newly nationalized banks, along with the Banco Nacional de Costa Rica, founded as a State-owned bank in 1914, were the only ones with the legal privilege of issuing checking accounts. A small bank, the Banco Lyon, was not nationalized, but it was not authorized to mobilize resources from the public (González-Vega, 1990; González-Vega & Mesalles, 1988).

González-Vega (1990) argues that the nationalization of banks attempted to sort out the dilemma between stability of the monetary system and sufficient risk-taking by banks, able to promote economic development.

The laudable intentions of the nationalization of commercial banks in Costa Rica, however, encountered great difficulties in being realized in practice (González-Vega & Mesalles, 1988). The emerging groups that pushed for the nationalization of the banks looked for economic opportunities of investment that the private banks would had avoided, given their risk. Over time, the Central Bank of Costa Rica set up quantitative controls in the loan portfolios of State-owned banks, the so-called "topes de cartera." The operation of these quantitative controls was complex. Every year, the Central Bank of Costa Rica designed a "programa de crédito" (credit plan) containing ceilings for activities that were deemed to be strategic by the monetary authorities of the country. In practice, these ceilings gradually became an entitlement, in the sense that commercial banks were obliged to lend at least the credit volume of the previous year for a specific activity, even if the economic prospects for the activity had changed. The result was a rigid allocation of credit, which tended to replicate itself every year and a low innovative capacity of State-owned commercial banks. The Central Bank had the legal ability to set the deposit and loan interest rates. There was, in fact, a different interest rate for each item in the credit programming, creating ample room for rent-seeking activities (González-Vega & Mesalles, 1988). The

commercial banks largely became institutions dominated by borrowers, who took advantage of implicit subsidies, to the detriment of deposit-holders. It has been estimated that in 1974 lenders of the agricultural sectors benefited from an implicit subsidy that was equivalent to a fifth of the valued added by the agricultural sector that year (González-Vega, 1990).

During the period 1948-1978, Costa Rica saw important economic growth, based on agricultural exports and industrialization supported by the substitution of imports. Nevertheless, at the end of the 1970s, Costa Rica entered a strong economic crisis, without precedent since the Great Depression in the 1930s. In July 1981, the country stopped servicing its external debt. The economic decline that ensued was massive. In just two years, the per capita gross domestic product and the private consumption per capita fell 10% and 20%, respectively. Inflation reached 100%, while a strong devaluation of the local currency, the Costa Rican colón, took place. The rate of open unemployment also doubled during 1982. To confront this economic decline, the authorities implemented stabilization policies, followed by structural adjustments, leading to a new model of development, based on the liberalization of international trade, the promotion of exports, as well as the reform of the financial sector and the State agencies (Sauma & Trejos, 1999).

We argue that there were two waves of reform of the financial sector. The first wave took place during the mid and late 1980s. Between 1984 and 1987, the Central Bank stopped setting ceilings on the loan portfolios of commercial banks. The private sector banks were authorized to have access to rediscount at the Central Bank in the case of foreign sources. They were also authorized to mobilize funds from donor agencies which were destined for the private sector, with the guarantee of the Central Bank. Regulation of financial players was strengthened as well, using funds from a

structural-adjustment loan provided by the World Bank (Lizano, 2004).

Reform of the financial sector in Costa Rica was greatly deepened in 1995 when a law abolished the exclusivity of State-owned commercial banks to issue checking accounts (García Soto, 2004; Goldstein, 2001; Cerdas, 2015). As pointed out above, the privilege granted to State-owned banks to be the sole entities able to issue checking accounts had a significant economic impact. By 1992 deposits on checking accounts absorbed 40.5% of liabilities connected with financial intermediation of the State-owned banks. Moreover, at the beginning of the 1990s these banks also had the exclusive right to issue savings accounts. The latter source of funds absorbed 15.7% of the liabilities of State-owned banks (Camacho & Mesalles, 1994).

In 1995 the Auditoría General de Entidades Financieras (AGEF) was transformed into the Superintendencia General de Entidades Financieras (SUGEF), as an independent body with its own board. SUGEF received the mandate to implement an ex ante prudential supervision, which replaced the ex post, repressive model, of supervision that prevailed until then (SUGEF, 2018). The end of the monopoly of State-owned commercial banks in issuing checking and savings accounts and the creation of SUGEF constitute what we call the second wave of financial reforms in Costa Rica. Given the depth of the two waves of reform, and the time elapsed since their implementation, we consider it worth inquiring into the capacity of those reforms to foster competition in the Costa Rican financial system. We also set out as an objective of the study to analyze if a more competitive environment in the financial industry has been able to reduce the interest-rate spread in Costa Rica.

The impact of the concentration in the Costa Rican financial industry, measured by the Herfindhal-Hirschman index (HHI), on the interest-rate margins of individual institutions in Costa Rica

has been previously explored by Alfaro & Muñoz (2012). Their study covers data from the years 1995 to 2010. The authors reported a positive and significant relationship between HHI and their measures of the margins of banks, supporting the view that a greater concentration of the financial industry leads to greater interest-rate margins. Barquero & Segura (2011), using monthly data of Costa Rican banks for the period 1994-2011 also concluded that HHI had a positive and significant relationship with the interest-rate margins. This is congruent with Demirgüç-Kunt, Laeven, & Levine (2004), who argue that the regulatory impediments to competition and monopolistic power create an environment in which a few powerful banks hamper competition with deleterious consequences for efficiency. In their view, high concentration is a useful sign of an uncompetitive and hence inefficient market. However, other researchers, such as Barajas (1999, cited by Faizan Iftikhar, 2016) report that liberalization of the financial sector does not seem able to lower the interest-rate spread. If the latter is the case, we reason that reduction in the concentration of the financial industry, resulting from liberalization, might not have any significant impact on the interest-rate spread.

We scrutinize the impact of HHI on the interest-rate margins exhibited by the Costa Rican financial system. We draw on previous literature to identify other variables that can play a role in the determination of interest-rate margins at an economy-wide level of aggregation. Demirgüç-Kunt et al. (2004) reason that countries with high inflation will have underdeveloped financial systems and banks. Their study found a positive and significant relationship between the interest rate margin and inflation, although they considered it to have been moderate in terms of its economic impact. Brock & Rojas (2000) included into their analysis the impact of the ratio of debt in arrears on the interest-rate margin.

They found empirical support for the view that this variable would increase the margin in just one country in their sample, out of six countries that they analyzed. We decided to analyze the impact of the ratio of debt in arrears to total assets, for two reasons. González-Vega & Mesalles (1988) documented an important degree of political interference in decision-making in State-owned commercial banks in Costa Rica. Given that this type of bank accounted for nearly 40% of the financial system in 2016 (data not shown for the sake of saving space), we wonder if their ratio of debt in arrears to assets could tilt upwards the margin of the interest rates for the whole financial system. Thus, for the sake of brevity, we attempt here to estimate a simple linear model. It can be stated algebraically as follows:

$$interest - rate\ margin_i = \beta_0 + \beta_1 HHI_i + \beta_2 Inf_i + \beta_3 Ratio\ DiA_i + \varepsilon_i \quad (1)$$

In this model, the dependant variable is the interest-rate margin, which denotes the difference between the average of the loan and deposit interest-rates in the economy; HHI denotes the value of the Herfindhal-Hirschman index, Inf_i represents the level of the inflation in year i; Ratio DiA represents the ratio of debt in arrears to total assets of the financial sector, and ε_i is a stochastic disturbance.

METHODOLOGY

All data reported in our study are annual and refer to the period from 1996 to 2017. The interest-rate margin was taken from the International Financial Statistics (IFS) database, put together by the International Monetary Fund (no date). It is the result of subtracting the deposit rate (line 60l) from the lending rate (line

60p). Inflation comes from the consumer price index reported by the IFS database (line 64). We follow McMillan & McMillan (2016) and Hirschman (1965) in computing HHI which is defined as indicated in equation 2:

$$\text{HHI} = \sum_i^N \frac{S_i^2}{N} \quad (2)$$

where N equals the number of financial institutions; S_i denotes the market share of each institution, measured in terms of the ratio of the accounting value of total assets of the financial institution i to the accounting value of total assets of the ensemble of institutions. We drew on the database of SUGEF (no date) to retrieve the data needed to calculate the HHI. We retrieved the accounting value of total assets for all financial institutions regulated by SUGEF, except for offices of exchange, which are also regulated by SUGEF. The latter were excluded because their income data revealed that they do not mobilize resources from the public. We also retrieved the accounting value of debt that has been in arrears for 90 days or more from the database of SUGEF and also report the ratio of that latter value to the accounting value of total assets of the financial sector as a whole.

RESULTS

Table 1 shows data from the variables selected for our study. It is worth underscoring the sharp reduction in the HHI. It went down, from 0.2344 in 1996 to 0.1072 in 2017, if we calculate it for the ensemble of the financial institutions. When a subsample comprising solely commercial banks is considered, our metric for concentration also shows a clear drop, from 0.3250 in 1996 to 0.1844 in 2017. HHI ranges from a value approaching to 0, as the

numbers of firms with small shares of the market becomes very large, to 1, when a market is dominated by a single firm. It is not possible to set theoretically any threshold serving as an indicator of when competition begins to be impaired. The Federal Trade Commission of the United States uses HHI, among other criteria, to assess if a proposed horizontal merger may adversely affect competition, as does its sister agency, the Department of Justice (Coate, Kleit, & Bustamente, 1995). According to the guidelines issued by the latter, a HHI between 0.15 and 0.25 is considered to be "moderately concentrated," while an industry exhibiting a HHI that exceeds 0.25 is regarded as "highly concentrated." Merger transactions that would increase the HHI in a highly concentrated market by 0.02 are presumed likely to enhance the market power of the resulting firm (Department of Justice, 2018). By these standards, the concentration of the Costa Rican financial industry looked in 1996 to be as "highly concentrated" if only banks were included in the calculation of HHI and "moderately concentrated" for a wider definition of the financial system. The values of HHI fell during the period under scrutiny, for most years. In 2017 the value of HHI calculated for commercial banks was 0.1844, falling under the category of "moderately concentrated." The metric exhibited a value of just 0.1072 in 2017, for the ensemble of actors in the financial system.

Visual inspection yields a less clear-cut picture of other variables incorporated in our analysis. The interest-rate spread that started at 8.98% in 1996 ended up at 8.58% in 2017, with multiple ups and downs during the period under scrutiny. Most of the time, inflation stayed above the two digits until 2009, and it shows a downturn afterwards. The ratio of the debt that has been in arrears for 90 days or more to total assets shows no discernible pattern, with multiple ups and downs along the period. It is possible to observe, nevertheless, that the ratios of bad debt were

higher during the period 1996-2000, when they reached on average 1.99% of total assets.

Table 1: Evolution of concentration of the financial industry, measured by the Herfindhal-Hirschman index, and other key indicators, 1996-2017

	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Lending rate	26.27	22.48	22.47	25.74	24.89	23.83	26.42	25.58	23.43	24.66	22.19	12.80	15.83	19.72	17.09	16.15	18.21	15.19	14.90	14.23	11.64	11.37
Deposit rate	17.29	13.03	12.76	14.31	13.38	11.77	11.46	10.41	9.51	10.14	9.77	6.35	4.15	6.96	5.32	4.01	4.74	3.88	3.32	2.37	1.21	2.79
Interest-rate spreads	8.98	9.45	9.72	11.43	11.51	12.06	14.96	15.17	13.91	14.52	12.42	6.45	11.68	12.76	11.77	12.14	13.47	11.31	11.58	11.86	10.43	8.58
HHI (all institutions)	0.2364	0.2011	0.1842	0.1836	0.1701	0.1510	0.1483	0.1382	0.1545	0.1532	0.1478	0.1316	0.1189	0.1167	0.1157	0.1108	0.1088	0.1161	0.1106	0.1047	0.1020	0.1072
No. of reported institutions	35	38	44	40	40	40	40	40	41	45	45	48	48	48	49	49	50	49	49	49	48	49
HHI (commercial banks only)	0.3250	0.2914	0.2808	0.2799	0.2540	0.2285	0.2261	0.2102	0.2333	0.2366	0.2325	0.2068	0.1828	0.1824	0.1862	0.1805	0.1786	0.1940	0.1851	0.1769	0.1725	0.1844
No. of reported institutions	11	11	12	12	12	12	12	12	12	12	12	13	13	13	14	14	14	14	14	15	15	15
Inflation rate	17.53	13.23	11.67	10.05	10.99	11.23	9.17	9.45	12.32	13.8	11.47	9.36	13.42	7.84	5.66	4.88	4.5	5.22	4.52	0.8	-0.02	1.63
Value of loans in arrears,[1] 90 days and more	30 266.7	25 840.0	37 991.8	26 886.8	43 739.9	36 365.1	56 746.2	37 196.6	51 783.4	50 356.1	62 873.1	73 966.5	129 334.7	181 502.3	170 968.3	191 768.5	211 584.1	238 400.1	247 875.3	298 152.4	312 806.5	446 702.3
Loans in arrears, percentage of total assets	2.69	1.95	2.17	1.35	1.79	1.30	1.67	0.91	0.97	0.75	0.76	0.73	1.03	1.31	1.18	1.20	1.15	1.13	1.03	1.11	1.06	1.39

1/Millions of current Costa Rican colones

We ran several ordinary-least-squares regressions to test the relationship between the dependent variable, i.e. the spread of interest rates, and our set of independent variables, namely the two versions of HHI (for the ensemble of actors in the financial market, and only for banks), the inflation rate and the ratio of debt that had been in arrears for 90 days or more or that is being collected in the judicial system. For simplicity, we call the latter "bad debt."

Table 2 presents the results of the different models that we estimated. It is important to highlight from models one and four in Table 2 that HHI, in the versions that we calculated, does not appear to have an impact on the value of the interest-rate spread, because the coefficients are not significant at any of the conventional thresholds of statistical confidence. Adding to the regression, the other independent variables (inflation rate and bad-debt ratio), does not yield better results: none of the coefficients are statistically significant, independently of the definition of HHI that we employ (see the results for models two and five).

Table 2. Estimation of coefficients, least-squares regressions, dependent variable: interest-rate spread

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
HHI (all institutions)	-10.918 -.833	-22.579 -.663	182.167* 1.9			
HHI (commercial banks only)				-9.986 -0.931	-17.5 -.751	214.114* 1.899
Inflation rate		.198 .993			.185 1.092	
Bad debt ratio		-.941 -.599			-.986 -.693	
Squared-HHI (all institutions)			607.706* -2.030			
Squared-HHI (commercial banks only)						470.341* -1.996

Note: ***, **, * indicate coefficients which are significant at the 99, 95 and 90 percent levels of significance, t-statistics appear beneath the coefficients. We do not report the values for the constants of the models.

The results just described allow us to safely conclude that there is absence of a linear relationship between the interest-rate margin and the HHI, in both of the two versions of the latter presented in this study. To test the possibility of a non-linear relationship between the interest-rate spread and HHI, we estimate the parameters of a model that includes as independent variables the value for each year of HHI and its square, as described in equation (3).

$$interest - rate\ margin_i = \beta_0 + \beta_1 HHI_i + \beta_2 HHI_i^2 + \varepsilon_i \quad (3)$$

Model three and six present the estimated values for equation 3, for HHI calculated for the ensemble of actors in the financial market and for banks only. Table 2 suggests that there is indeed a non-linear relationship between the two variables, independently of the definition that we employ to calculate HHI. The coefficients are statistically significant at the 90 percent level.

If the stochastic errors are on average zero, we calculate the values of the interest-rate spread for a number of values of HHI, using for that purpose the values of the estimated parameters presented in model three of Table 2. The results, not presented for the sake of saving space, suggest a concave relationship between HHI and the dependent variable, with an inflexion point that must be located between the values of 0.15 and 0.20 of HHI.

DISCUSSION

This article aimed to analyze the evolution of the concentration of the financial industry in Costa Rica resulting from the financial reforms, and its potential impact on the interest-rate margin.

Our results clearly show that the sweeping reforms of the financial sector brought about a clear reduction in the concentration of the financial industry from 1996 to 2017. We reported that the Herfindhal-Hirschman index (HHI), our indicator of concentration, fell sharply after 1996. The metric was 0.325 in 1996, if only banks were included in its calculation. It fell to 0.1844 in 2017. When all other players of the financial sector were included in the calculation of HHI, the reduction was even more drastic. HHI was 0.2364 in 1996 in this case, and it fell in 2017 to 0.1072. Measured by this standard, the financial reform of Costa Rica looks like a resounding success.

However, our regressions showed no significant linear connection between the HHI as independent variable and the

interest-rate margin. Inflation and bad debt, which presumably should have a positive relationship with the margin, failed to exhibit any linear relationship as well.

Our results give support the view that financial reforms in Latin America had failed to bring about changes in the interest-rate spread, a possibility suggested by Brock & Rojas (2000). Our research provides evidence that is also consistent with the fidings of Rivera & Rodríguez (2008), who argue that in spite of the reforms, foreign banks exhibited a limited presence in Costa Rica and other Central American countries, a factor that may cripple competition for clients among banks and other financial institutions. The authors also report that, while economic agents perceive that the financial systems of Central American countries facilitate investing abroad, companies still depend on local institutions to secure credit.

There also other aspects that may explain our results. One possibility is that HHI while reflecting concentration fails to describe the desire of actors in the financial sector to compete among themselves. The lack of a linear relationship between HHI and the interest-rate margin may also reflect the fact that, while the reforms levelled the playing field among actors in the financial system, they left untouched an important number of distortions that impair competition. A recent report suggests that the diverse players of the industry are confronted by numerous different rules (Academia de Centroamérica, 2018). For instance, the deposits of the public in the State-owned commercial banks can be guaranteed by the government, if it so decides. Deposit holders in private banks and credit unions cannot benefit from any governmental guarantee. Therefore, in order to cope with a higher risk, depositors should demand higher interest rates for their deposits, limiting the capacity of private banks and credit unions to reduce the interest rates that they charge for their loans. Also, private-

sector banks can issue checking accounts only if they devote 17 percent of the amount that they mobilize from the public to development banking projets or if they transfer the funds for that purpose to the State-owned banks, a regulation that obviously increases their costs of operation. State-owned corporations should open checking accounts only in State-owned banks. Those and other distortions created by an asymmetrical regulatory system are possibly constraining the ability of previous financial reforms to have an impact on the spread margins of the economy.

It is worth to mention that we found a statistically significant non-linear relationship between HHI and the interest-rate margin. Using the estimated parameters of the equation, we calculate values that seem to predict a concave relationship between HHI and the interest-rate margin. Explanations for that behaviour are not easy to find or to intuit. One possibility could be that smaller financial actors in a low-concentrated financial market tend to compete with each other on the basis of service or other non-pricing attributes, until the market is controlled by a few oligopolies, concentration becomes higher and competition on price is stronger, leading to a fall in the interest-rate spread. Previous literature suggests that actors in the financial industry experience economies of scale (Cole, 1974; Noulas, Ray & Miller, 1990), but it is not clear why economies of scale might only work to diminish the interest-rate spread after a level of concentration has been reached. This result is puzzling, and we do not have a ready-made explanation for it. We recognize that the explanation is incomplete at best, and that the topic clearly demands more reflection.

CONCLUDING REMARKS

Since the mid-1980s Costa Rica embarked on a deep reform of its financial markets. In a first step, the non-market setting of

interest-rates and governmental intervention in the allocation of credit were abolished. A stronger regulator of financial actors was set up in 1995, at the same time that the monopoly of State-owned commercial banks to issue checking accounts and savings accounts was abolished.

We must acknowledge that we have a limited number of observations. Our study could be replicated putting together data for several countries. In spite of the possible shortcomings of the article, it also provides support for the view that the reform of the financial markets of Costa Rica has not been able to reduce the interest-rate spread. Regulators could draw on this conclusion to envisage new policies that are able to attain a reduction of the spread, an outcome that could simultaneously increase savings and stimulate investment. There are other aspects of the evolution of the Costa Rican financial system that could have changed as a consequence of the reforms, which have not been included in our study. For instance, it has been argued that the stability and soundness of the financial system is critical for developing economies (Oyuntsatsral & Mukhzaya (2012). Future researchers could be interested in exploring that aspect of the evolution of the Costa Rican financial system after the implementation of the reforms.

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