# NEW STANDARD OF FINANCIAL COMPETITIVENESS

## RESEARCH WORK

# Key words:

*Capital cost,*
*National Reference Rate,*
*Financial competitiveness,*
*Periodic Average National Reference Rate*

- ❑ **In the focus of this research is a new approach of financial competitiveness measurement.**

- ❑ **As a standard of this measurement, Periodic Average National Reference Rate (PANRR) is proposed.**

- ❑ **Authors conceive this standard as national replacement for international standards like EURIBOR or LIBOR.**

- For individual bank or other financial institution,
- NRR also represents the price at which it purchases the basic resource of its operations – capital cost.

- By this research authors determine average capital cost for national financial market.

- The whole procedure is carried out by case study of Croatia.

- The research includes all financial institutions licensed to operate in the Republic of Croatia.

- Data basis are taken from aggregated statistical reports that has been published monthly on the official Croatian National Bank website in the time horizon from 2009. to 2016. year.

# 1. INTRODUCTION

- **Capital cost** is the interest rate or rate of return at which capital is given for using at the capital market.

- **Interest** is a fee paid by the loan recipient to provider because equity is given in the present to be returned at some future time.

☐At the beginning it is necessary to define the methodology of calculating the National Reference Rate (NRR).

☐NRR is the basis for the calculation of Periodic Average National Reference Rate (PANRR).

☐This research aims to promote PANRR as a new financial competition standard at the banking market.

# 2. National Reference Rate

❑ **Until recently, in Croatia there was no reference interest rate which could be applied equally as well-known international reference rates EURIBOR and LIBOR.**

❑ **That's why Croatian Banking Association (CBA) has decided to define the reference rate of the average cost of financing Croatian banking sector – NRR**

☐ **Starting from year 2013. CBA has developed a transparent and simple methodology of NRR calculation for certain currencies using the only publicly published data of the Croatian National Bank (CNB).**

☐ **Based on the operations data of the banking sector CNB started to publish on their websites**

☐ **www.hnb.hr - link: "Indicators of credit institutions."**

☐ **NRR represents the average funding sources cost of Croatian banking sector with respect to certain past period, other sources and relevant currency.**

☐ **The kinds of sources are considered to be retail deposits, corporate deposits from non-financial sector and other sources of banks funds.**

☐ **NRR represent the average interest rate paid by the banking sector, in order to obtain the funds required for credit business.**

- For these purposes three types of NRR are defined as following:

- NRR for deposits of natural persons (calculated for the currencies HRK and EUR) - NRR1.

- NRR for deposits of natural persons and non-financial sector (calculated for currency HRK and EUR) - NRR2.

- NRR for all major sources of funds from all natural and legal persons, including those from the financial sector (calculated for the currency HRK, EUR, CHF and USD) - NRR3.

- Each of the above NRR is calculated for the period of 3 months, 6 months and 12 months and is marked with 3M, 6M and 12M.

- The abbreviation of each NRR contains a clear indications about funds comprised, an indication of the period for which it is calculated and specifies the currency.

- For example, quarterly NRR, formed on the basis of data on deposits of natural persons in HRK, will be marked as "3M NRR1 for HRK".

NRR for a specific currency, determined by the scope of the sources of funds and the period which may be 3, 6 or 12 months, is calculated as follows:

- The total interest cost of the banking sector is calculated, according to the particular currency and coverage of the fund sources that constitute the NRR, for the preliminary number of months corresponding to the length of the period.

- The average balance of the principal sources of funds in the previous period is estimated.

# 2. National Reference Rate as the instrument of Capital Cost measuring

☐ **Briefly speaking in the context of this paper Capital cost is the interest rate or rate of return at which capital is given for using at the financial market.**

☐ **NRRs which are already listed and defined in the previous chapter will be calculated for the period from 2009. to 2016. for the purposes of Capital cost measuring.**

- To calculate these NRR, data base on interest costs of the main sources of funds in the balance sheet of banks and savings banks licensed to operate in the Republic of Croatia and the state of these sources are needed.

- Required data are taken from the aggregated statistical reports monthly published by the CNB on its website.

- "EUR", "CHF" and "USD" include interest costs on the sources of funds in the currencies of the same name

# Table 1. The National Reference Rate of the banking sector financing average cost - 6 months from March 2009. to December 2016.

| Coverage | HRK | EUR | USD | CHF |
|---|---|---|---|---|
| Quarterly | 6M NRR3 | 6M NRR3 | 6M NRR3 | 6M NRR3 |
| 31.03.2009. | 3,40% | 3,55% | 3,22% | 3,11% |
| 30.06.2009. | 3,35% | 3,51% | 3,21% | 3,09% |
| 30.09.2009. | 3,33% | 3,41% | 3,12% | 3,15% |
| 31.12.2010. | 3,30% | 3,36% | 3,13% | 3,14% |
| 31.03.2010. | 3,25% | 3,33% | 3,10% | 2,95% |
| 30.06.2010. | 3,20% | 3,23% | 3,03% | 2,91% |
| 30.09.2010. | 3,16% | 3,20% | 3,02% | 2,99% |
| 31.12.2010. | 3,11% | 3,16% | 2,98% | 2,84% |
| 31.03.2011. | 3,08% | 3,21% | 2,74% | 2,70% |
| 30.06.2011. | 3,10% | 3,19% | 2,73% | 2,63% |
| 30.09.2011. | 3,05% | 3,15% | 2,69% | 2,51% |
| 31.12.2011. | 3,04% | 3,10% | 2,65% | 2,48% |
| 31.03.2012. | 2,96% | 3,02% | 2,64% | 2,43% |
| 30.06.2012. | 2,91% | 3,10% | 2,57% | 2,38% |
| 30.09.2012. | 2,86% | 3,09% | 2,41% | 2,13% |
| 31.12.2012. | 2,74% | 2,92% | 2,38% | 2,36% |

Source:Author's calculations

**Table 1.** The National Reference Rate of the banking sector financing average cost - 6 months from March 2009. to December 2016.

| | | | | |
|---|---|---|---|---|
| 31.03.2013. | 2,56% | 2,89% | 2,40% | 2,34% |
| 30.06.2013. | 2,29% | 2,86% | 1,99% | 2,28% |
| 30.09.2013. | 2,13% | 2,75% | 1,92% | 2,24% |
| 31.12.2013. | 2,03% | 2,65% | 1,87% | 2,25% |
| 31.03.2014. | 1,89% | 2,55% | 1,79% | 2,20% |
| 30.06.2014. | 1,76% | 2,49% | 1,71% | 2,11% |
| 30.09.2014. | 1,65% | 2,43% | 1,70% | 2,12% |
| 31.12.2014. | 1,59% | 2,34% | 1,67% | 2,11% |
| 31.03.2015. | 1,52% | 2,23% | 1,60% | 2,03% |
| 30.06.2015. | 1,42% | 2,12% | 1,48% | 1,87% |
| 30.09.2015. | 1,32% | 2,00% | 1,35% | 1,69% |
| 31.12.2015. | 1,31% | 1,89% | 1,28% | 1,79% |
| 31.03.2016. | 1,26% | 1,79% | 1,14% | 1,53% |
| 30.06.2016. | 1,14% | 1,66% | 1,00% | 0,62% |
| 30.09.2016. | 1,01% | 1,48% | 0,90% | 0,58% |
| 31.12.2016. | 0,89% | 1,36% | 0,82% | 0,51% |

Source:Author's calculations

☐ It may be noted that there is the downward trend of the NRR in the Croatian banking market for the whole researched period and it is expected to continue, due to favorable developments in the international markets.

☐ This is because the increase in the balance sheet of banks received deposits greater than the increase of loans that banks will provide for their customers.

- Due to the poor economic situation there are more and more loans that banks have to reserve.

- That leads to the fact that reservation costs increase as well as regulatory costs towards CNB.

- These costs are regularly compensated by reducing salaries, bonuses and various other savings, including the most significant decrease in interest on deposits.

*Figure 1. Trends of the National Reference Rates from 2009. to 2016.*
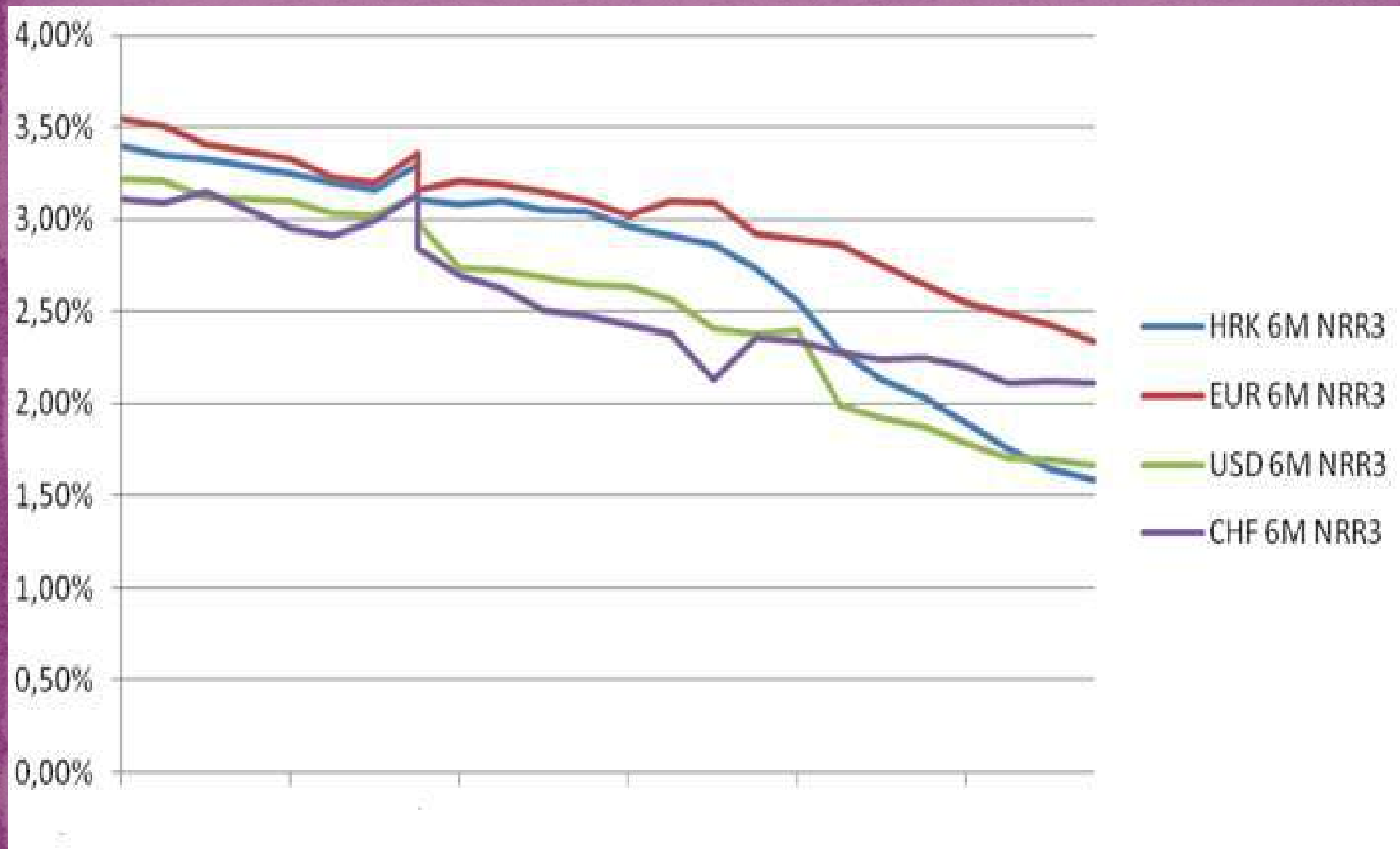
Source:Author's calculations

# 3. Periodic Average Reference Rate methodology

☐ This paper creates a model PANRR as a general standard for measuring the capital cost for all banks and other financial institutions at the territory of a country.

☐ Defining PANRR at the national level is necessary because each country has it's owns characteristics of capital markets and the banking system.

- **For example,**

- **Croatian filiala of the European banks give housing loans at the higher interest rates than the same filiala banks give in the country where is the headquarter of the same banks association.**

**Table 2:** The structure of sources of funds in liabilities by currency and average quarterly NRR3 from March 2009 to December 2016

| Coverage | Sources of funds in liabilities | | | | Average quarterly |
|---|---|---|---|---|---|
| Quarterly | HRK | EUR | USD | CHF | NRR3 |
| 31.03.2009. | 0,3575 | 0,5590 | 0,0350 | 0,0440 | 3,45% |
| 30.06.2009. | 0,3564 | 0,5600 | 0,0321 | 0,0460 | 3,40% |
| 30.09.2009. | 0,3351 | 0,5833 | 0,0296 | 0,0464 | 3,34% |
| 31.12.2009. | 0,3204 | 0,6030 | 0,0295 | 0,0420 | 3,31% |
| 31.03.2010. | 0,3118 | 0,6045 | 0,0330 | 0,0448 | 3,26% |
| 30.06.2010. | 0,3180 | 0,5889 | 0,0367 | 0,0530 | 3,19% |
| 30.09.2010. | 0,3148 | 0,5939 | 0,0355 | 0,0500 | 3,15% |
| 31.12.2010. | 0,3112 | 0,5943 | 0,0355 | 0,0530 | 3,10% |
| 31.03.2011. | 0,3126 | 0,5971 | 0,0346 | 0,0498 | 3,11% |
| 30.06.2011. | 0,3201 | 0,5792 | 0,0354 | 0,0591 | 3,09% |
| 30.09.2011. | 0,3206 | 0,5798 | 0,0364 | 0,0570 | 3,05% |
| 31.12.2011. | 0,3232 | 0,5673 | 0,0394 | 0,0623 | 3,00% |
| 31.03.2012. | 0,3200 | 0,5698 | 0,0384 | 0,0635 | 2,92% |
| 30.06.2012. | 0,3185 | 0,5691 | 0,0382 | 0,0653 | 2,94% |
| 30.09.2012. | 0,3228 | 0,5646 | 0,0400 | 0,0633 | 2,90% |
| 31.12.2012. | 0,3137 | 0,5736 | 0,0430 | 0,0625 | 2,78% |

**Source:Author's calculations**

**Table 2:** The structure of sources of funds in liabilities by currency and average quarterly NRR3 from March 2009 to December 2016

| | | | | | |
|---|---|---|---|---|---|
| 31.03.2013. | 0,3214 | 0,5693 | 0,0392 | 0,0620 | 2,71% |
| 30.06.2013. | 0,3137 | 0,5736 | 0,0391 | 0,0593 | 2,57% |
| 30.09.2013. | 0,3137 | 0,5736 | 0,0385 | 0,0613 | 2,46% |
| 31.12.2013. | 0,3137 | 0,5736 | 0,0357 | 0,0623 | 2,36% |
| 31.03.2014. | 0,3154 | 0,5697 | 0,0356 | 0,0442 | 2,21% |
| 30.06.2014. | 0,3154 | 0,5585 | 0,0353 | 0,0445 | 2,10% |
| 30.09.2014. | 0,3282 | 0,5574 | 0,0364 | 0,0408 | 2,04% |
| 31.12.2014. | 0,3285 | 0,5580 | 0,0371 | 0,0412 | 1,98% |
| 31.03.2015. | 0,3139 | 0,5443 | 0,0475 | 0,0306 | 1,83% |
| 30.06.2015. | 0,3211 | 0,5749 | 0,0467 | 0,0486 | 1,83% |
| 30.09.2015. | 0,3233 | 0,5887 | 0,0453 | 0,0343 | 1,72% |
| 31.12.2015. | 0,3298 | 0,6047 | 0,0492 | 0,0121 | 1,66% |
| 31.03.2016. | 0,3280 | 0,6036 | 0,0478 | 0,0111 | 1,57% |
| 30.06.2016. | 0,3395 | 0,5923 | 0,0483 | 0,0112 | 1,43% |
| 30.09.2016. | 0,3438 | 0,5890 | 0,0467 | 0,0115 | 1,27% |
| 31.12.2016. | 0,3535 | 0,5791 | 0,0482 | 0,0103 | 1,15% |

**Source: Author's calculations**

❑ **Favorable trends of interest at the European financial markets strongly influence the trends at the Croatian financial market and thus also affects the Croatian average quarterly NRR3.**

❑ **Figure 2. confirm this claim showing a continuous decline in the average quarterly NRR3.**

# Figure 3. Trends in the average quarterly NRS3 from March 2009. to December 2016.
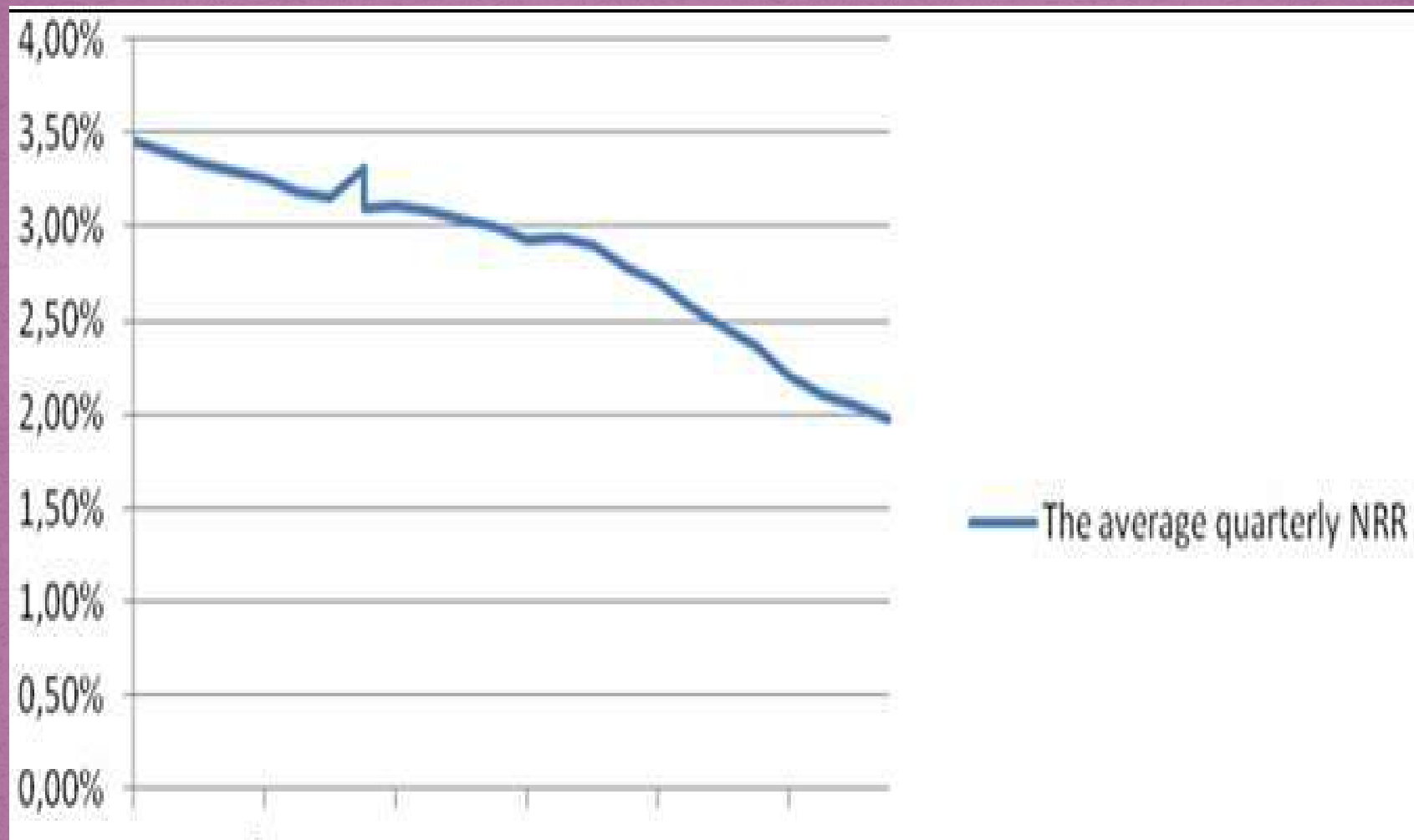


**Source:Author's calculations**

- At the next level of modelling PANRR as national standard it is necessary to estimate the unique annual NRR.

- For this task the simple geometric mean of average quarterly NRR3 can be used.

- Computing of the unique annual NRR using the geometric mean of the average quarterly NRR3 is shown below.

- Results cover the research period from 2009. to 2016.

$$\text{Average annual NRR}_{2009} = \sqrt[4]{0{,}0345 * 0{,}0340 * 0{,}0334 * 0{,}0331} = 3{,}37\%$$

$$\text{Average annual NRR}_{2010} = \sqrt[4]{0{,}0326 * 0{,}0319 * 0{,}0315 * 0{,}0310} = 3{,}17\%$$

$$\text{Average annual NRR}_{2011} = \sqrt[4]{0{,}0311 * 0{,}0309 * 0{,}0305 * 0{,}0300} = 3{,}06\%$$

$$\text{Average annual NRR}_{2012} = \sqrt[4]{0{,}0292 * 0{,}0294 * 0{,}0290 * 0{,}0278} = 2{,}88\%$$

$$\text{Average annual NRR}_{2013} = \sqrt[4]{0{,}0271 * 0{,}0257 * 0{,}0246 * 0{,}0236} = 2{,}52\%$$

$$\text{Average annual NRR}_{2014} = \sqrt[4]{0{,}0221 * 0{,}0210 * 0{,}0204 * 0{,}0198} = 2{,}08\%$$

$$\text{Average annual NRR3}_{2015} = \sqrt[4]{0{,}0183 * 0{,}0183 * 0{,}0172 * 0{,}0166} = 1{,}76\%$$

$$\text{Average annual NRR3}_{2016} = \sqrt[4]{0{,}0157 * 0{,}0143 * 0{,}0127 * 0{,}0115} = 1{,}35\%$$

**Figure 4. The movementt in the annual NRS3 from March 2009. to December 2016.**

Source:Author's calculations

❑ Due to the impact of the prevailing trends at the financial markets at home and abroad, as might be expected, in the reporting period annual NRR continuously has declining trend.

# 4.CONCLUSION REMARKS

☐ In the focus of this paper is a new approach of financial competitiveness measurement.

☐ It aims to promote PANRR as a new financial competition standard at the banking market, something like a national replacement for international standards EURIBOR or LIBOR.

☐ This paper creates a model PANRR as a general standard for measuring the capital cost for all banks and other financial institutions at the territory of a country.

- **Defining PANRR at the national level is necessary because each country has it's owns characteristics of capital markets and the banking system.**

- **Besides, the data dealing with the average capital cost for a fixed period and for the various currencies at the national capital market are much easier to get.**

- **The integral part of the paper is the case study of Croatia where the whole concrete modeling procedure for calculating average annual NRR is carried out over the time horizon from 2009. to 2016. year.**