



Wavelet Analysis of Deposit returns. Conventional and Islamic Contingency: The Malaysian Saga

By
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Abstract

A unique feature of Islamic banking, in theory, is its profit-and-loss sharing (PLS) paradigm. In practice, however, we find that Islamic banking is not very different from conventional banking. Our study on Malaysia shows that Islamic deposits returns are not interest-free, but are closely pegged to conventional deposits which also proves that only a negligible portion of Islamic bank financing is strictly PLS based. In this study, a new approach is proposed based on wavelets analysis for the first time to investigating such relationships between the conventional deposit returns and their influence on the Islamic versions. The proposed procedure is acted on a sample composed of 64 monthly observations spread over 2005- April 2011. It has proved that the contingency between the returns of deposits and their betas are more robust at short scales and higher frequencies. The study has also tried to go more deeper and attempted to observe even a homogeneous comparison between Islamic saving and Investment deposit returns and hence the influence of the former on the later, and it was found that there is a constant casual relation and this mutual inclusiveness was much more evident in longer scales or lower frequency instances. Some interesting explanations and new dimensional conclusions were drawn from these findings even from the investor's view point.

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1 Introduction:

Over the past four decades, Islamic banking has emerged as one of the fastest growing industry, at an estimated growth rate of over 20 percent per annum. Hasan, (2010). It has spread to all corners of globe and received wide acceptance by both Muslims and non-Muslims. Aziz Z.A, (2006). Great emphasis is given by the Malaysian government to develop a well functioning and efficient Islamic banking system. It is not a coincidence that Islamic banking is making its progress in Malaysia but it is the Malaysian government's vision to develop a progressive and robust Islamic banking industry, rooted in the Islamic core values and principles that best serve the needs of the nation's economy. It is the aspiration of the Malaysian government to have a strong Islamic banking industry capturing 20 percent of the market share of financing and deposits in the Malaysian financial industry by 2010-11. Aziz Z.A, (2007).

The Islamic banking system in Malaysia has evolved as a competitive component of the overall financial system, complementing the conventional financial system as a driver of economic growth and development. Today, Malaysia has succeeded in implementing a dual banking system and has emerged as the first nation to have a full-fledged Islamic banking system, operating in parallel, with the conventional banking system. The Malaysian Islamic banking system today, comprises of eleven (11) local Islamic banks and six (6) foreign Islamic banks. BNM, (2010). Like conventional banks, Islamic banks also depend on depositors' money as a major source of funds. Bank Islam Malaysia Berhad (one of the Islamic banks in Malaysia) for example, had total deposits amounting to 83% of total liabilities and shareholders' equity as at the end of December 1998.

Since depositors' money is a major source of funds, it is important for the management of Islamic banks to know the factors that influence customers' decision making in depositing their money with Islamic banks. Since depositors are motivated by returns, it is also important for the management to understand the extent that rates of return on deposits influence their customers' decision to deposit. The purpose of this study is to highlight the strength of the relationship between the deposits of Islamic banks, and its 'rate of profit' of particularly investment deposit facilities. This study will also measure whether the rates of interest

available at conventional banks have a direct influence on the level of deposits of Islamic banks.

Conventional bankers have learned that deposit pricing can be used to shape the kind of customer base each bank can best serve. Changing deposit prices affect not only spread between bank loan rates and deposit interest rates but also customer balances and deposit mix decisions, which in turn, influence both bank growth and profit margins. Edmister, (1982). As Rose (1991) points out, deposit pricing is best used to protect and increase bank profitability, rather than to simply add more customers and to take market share away from competitors. Indeed, when new deposit plans are introduced, its biggest appeal and greatest chance for success lies with those customers who already hold deposits with the bank. And even those customers the bank already has will not automatically pay higher prices for deposit services. They will pay no more for a deposit than the sum total of its benefits to them and will go elsewhere when the value of those benefits falls below the deposit's price or if a competitor offers a significantly better package of services.

In summary, two important elements emerge from this overview. First, the acknowledgement by conventional banks that those who are willing to part with their monies must be rewarded. Second the recognition that different types of deposits carry different amount of returns or rewards. Therefore, if the management of Islamic banks believe that the attitude of depositors of Islamic banks are indifferent to those of conventional banks, the same rates of return will be rewarded with rates of conventional banks. There are several serious repercussions if the management of Islamic banks believe that depositors at Islamic banks possess similar attitudes to those at the conventional banks. Dar, H.A., Presley, J.R., (2000). The interest rate will continue to have an influence on the operations of Islamic banks as long as this thought remains in the mind of their management.

2 Objective:

Unlike conventional bank customers who have the privilege to know the exact amount of returns that they will receive from their deposits, no Islamic bank customers will have this information. Therefore, while it is likely that conventional bank customers make decisions based on existing information, the decision to deposit made by Islamic bank customers is based on historical facts and assumption of the future. If the assumption that Islamic bank

customers are rational in their decision making process and governed by the utility maximization theory, there is a great possibility that the amount of deposits at Islamic banks is influenced heavily by the rate of returns declared by them and also the existing rates of deposits of conventional banks. Haron and Shanmugam (1995) in their work, try to link the rates of profit to Islamic bank's deposits. Using the Pearson Correlation and First Order Autoregressive model, they find a strong negative relationship between the two variables.

Similarly, their finding indicates that there is a positive linear longterm relationship between deposits of conventional and Islamic banks. However this needs further rigorous and indepth investigation, that is there really any positive longterm relation and if so then for how long and at what scale of time. Perhaps any such relationship between these breeds of deposits would yeild much meaningful results if measured with the minicus of multi time scale variations and then conclud by answering *The Finance Question: Are the Relationships between Islamic deposit return and conventional deposit returns Chiefly at High Frequencies i.e. lower time scales or other wise?* The methodology used to answer this question should be as rigorous as the Quest itself. What data and what methodology would be applied, will be further unfolded in the section of data and methodology but before going into those depths of despair, let us first peep in what has or has not already been achieved in answering the above query by exploring the past literature.

3 Literature Review:

As the Islamic financial industry is an infant, so are the empirical studies on it; and even more so when it has something to do with return on deposits and any contingency of these returns with their peers; despite an extensive literature which are limited only to study the savings behaviour of customers in Islamic banks. Nevrttheless, still quite a few empirical studies have attempted to see the customers' selection determinants for using the services of Islamic bank.

These studies mainly focus on therelationship between Islamic banks deposit, rate of return of Islamic banks andinterest rate of conventional banks. For example, Metwally, M.M. (1997), perhaps comes close- tough not ideally to our objective.It examines the relationship between rate of return offered by Bank Islam MalaysiaBerhad and the level of deposit in the bank over the period 1983-1993.

The result shows an inverse relationship between the variables, implying that Islamic bank customers did not consider returns from the deposit as an incentive to maintain funds with the banks. More recent study by Haron and Ahmad (2000) further provide support to the conclusion that Islamic bank customers are guided more by the profit motive. By expanding the previous study to include all funds deposited in the Islamic banks in Malaysia, the result of the study indicates that the rates of profit have a strong positive relationship with Islamic banks' deposits, while the interest rates have a strong negative relationship with it. The result of this study is confirmed by Sukmana and Yusof (2005) who performed the same study for all Islamic banks in Malaysia from January 1994 to October 2004.

In addition to these empirical studies, several studies have been conducted to investigate the factors that determine the behavior of Islamic banks' depositors by using qualitative methods and surveys. In contrary to the general findings of the empirical studies, most of the studies found that profit motive did not appear to be a major driver of the behavior of Islamic banking customer. Instead, religion is suggested as the main reason for choosing Islamic bank, together with Islamic banks specific factor such as cost and benefit of products/services offered (products prices and rate of return of the investment), service quality (fast/efficient service and friendliness of the bank's staff), size and reputation of the bank, and convenience (location and ample parking space). Erol, C., and El-Bdour, R. (1989). Keeping all the above into consideration, this empirical study can be safely assumed as the first attempt to dig this deep into such a notion, by exploring the above spectrums and that too with the application of the state of the art wavelet technique to cover all the bases with rigorous findings. The next section on Data and methodology will unfold the mechanics used in coming up with the results.

4 Data and Methodology: The Wavelet Approach.

Our data on the monthly series of Islamic investment deposit rates and conventional deposit rates were collected from the Monthly Statistical Bulletin, which is published by the Bank Negara Malaysia. The sampling period was from January 2005 to April 2011. For robustness, we examined the rates provided by two types of financial institutions banks and finance companies. For each type of institution, we compared Islamic investment rates and conventional deposit rates on investment and savings deposits as well as with Islamic saving

deposit returns of various maturities, ranging from one month to 12 months. As mentioned before, we are not only looking at any expected contingencies but looking at this for the first time in the spectrum of different time scales and this is where our application of wavelet analysis originates itself.

Many economic and financial time series are non-stationary and, moreover, exhibits changing frequencies over time. Much of the usefulness of wavelet analysis has to do with its flexibility in handling a variety of nonstationary signals. Indeed, as wavelets are constructed over finite intervals of time and are not necessarily homogeneous over time, they are localized in both time and scale. Thus, two interesting features of wavelet time scale decomposition for economic variables will be that, Percival, D., & Walden, A. (2000).

- since the base scale includes any nonstationary components, the data need not be detrended or differenced, and
- the nonparametric nature of wavelets takes care of potential nonlinear relationships without losing detail. Schleicher, (2002).

In this section we present very briefly the basic concepts of wavelet analysis. Wavelets are mathematical tools that are widely applied for analysing time series. The starting point in such an analysis is based on decomposing a time series on scale-by-scale basis in order to control the series structure at different time horizons. Percival, D., & Walden, A. (2000). Wavelets basis are obtained from some source functions (ϕ , Ψ) called (father, mother) wavelet by dilations and translations (Gencay *et al.* (2002). Usually the wavelet basis elements are defined by;

$$\phi_{j,k}(t) = 2^{-j/2} \phi\left(\frac{t - 2^j k}{2^j}\right) \text{ and } \psi_{j,k}(t) = 2^{-j/2} \psi\left(\frac{t - 2^j k}{2^j}\right) \quad (1)$$

One usually associates some coefficients

$$S_{j,k} \approx \int \phi_{j,k}(t) f(t) dt \text{ and } d_{j,k} \approx \int \psi_{j,k}(t) f(t) dt \quad (2)$$

The $S_{j,k}$ are known as the smoothness coefficients or approximation coefficients and the $d_{j,k}$ the detail coefficients or wavelet ones. Ramsey J.B., (2002). The wavelet series of f at the level J is:

$$f_j(t) = \sum_k S_{j,k} \phi_{j,k}(t) + \sum_k d_{j,k} \psi_{j,k}(t) + \dots + \sum_k d_{1,k} \psi_{1,k}(t) \quad (3)$$

This series represents the decomposition of the signal into orthogonal signal components at different scales. More specifically, the detail coefficients $d_{j,k}, \dots, d_{1,k}$ capture the higher frequency oscillations and so they represent fine scale deviations of the trend. The $S_{j,k}$'s represent the smooth coefficients that capture the trend. So that, the wavelets series approximation of the original signal f is composed of a superposition of smooth part signal and detail signal parts as follows:

$$f(t) = S_j + D_j + D_{j-1} + \dots + D_1 \quad (4)$$

Where:

$$S_j(t) = \sum_k s_{j,k} \phi_{j,k}(t)$$

$$D_j(t) = \sum_k d_{j,k} \psi_{j,k}(t)$$

will be much interested to see the effects of the mother wavelet and this would give us the required multi-time scale information.

The Models used in our study would be:

$$r_i = \alpha + \beta r_{ci} + e_i \quad (5)$$

$$r_i = \alpha + \beta r_{cs} + e_i \quad (6)$$

$$r_i = \alpha + \beta r_{is} + e_i \quad (7)$$

Where r_i is the dependent variable i.e. the return on Islamic investment deposits. r_{ci} , r_{cs} and r_{is} are the independent variables i.e. return on conventional investment deposits, return on conventional saving deposits and return on Islamic saving deposits respectively.

5 Empirical Findings:

Table 1 shows the results of estimating equation 5, 6 and 7 for the years concerned. The mean, variance, skew and kurtosis are shown for the total of 64 values and the β 's coefficients, which measure the effect of frequency j movements in the Islamic deposit return in relation to the return for other deposits. We estimated the β coefficients for six different frequencies – two, four, eight, 16, 32, and 64 months. These coefficients may be thought of as frequency-specific β s for each observation. To highlight again, our objective for an initial foray into wavelet analysis is to parse the r_i to r_{ci} , r_{cs} and r_{is} relationship into relationships at different frequencies, and to observe whether there are different quantitative links at different frequencies. Another way to state the issue is: does β change for different frequencies?

Table 1 demonstrates the relationship that was revealing: on average, across 64 observations, the betas decline as the frequency declines. This evidence supports the proposition that the major part of the other conventional forms of deposit influence on Islamic investment deposits return is at higher frequencies. However the situation is complete opposite in case of equation 7 and the influence of Islamic savings deposit returns is more evident at lower frequencies and higher time scales. Once again, there is a clear tendency for the explanatory power to decline as the frequency declines by the adjusted R^2 coefficient averages and other distribution statistics for returns. However a constant increase in R^2 coefficient supports the findings in relation to Islamic savings deposits return. In a nut shell the above results yield that any contingencies between the Islamic investment deposit returns and its peer deposits returns will be captured primarily in higher frequency (lower scale) movements and in case of a homogeneous comparison with the Islamic saving deposits return the case is opposite where lower frequencies (higher scale) capture the effect.

The above results put forward some interesting conclusions and hence explanations. In theory, Islamic investment deposits like mudarabah are structured based on a “profit-sharing” basis, in practice, however, we found that these deposits are not “interest-free,” and their investment rates are closely linked to conventional deposit rates. Our finding though agree in some measure with the finding of Haron and Shanmugam (1995) because it does suggest a causal relation between the conventional deposit returns and the Islamic but this relation fades away in long term and most of the effect is in a short-run unlike the results put forward by Haron and Shanmugam (1995) where they provided a positive linear long term relationship.

An interesting question that arises, therefore, is why are the Islamic deposits not interest-free in practice? One explanation is that the actual implementation of the PLS paradigm is constrained by competition from conventional banking practices. Religion notwithstanding, individuals can choose to bank with an Islamic bank and/or a conventional bank. Thus, in terms of best practices, Islamic banking practices often cannot deviate substantially from those of conventional banking because of competition. Obaidullah (2005), for example, commented that:

“Islamic financial institutions face a kind of “withdrawal risk” that mainly results from the competitive pressures an Islamic financial institution faces from existing Islamic or conventional counterparts. An Islamic bank could be exposed to the risk of withdrawals by its depositors as a result of the lower rate of return they would receive compared to what its competitors pay. Faced with this scenario Islamic financial institutions, operating in mixed systems, may pay their investment account holders a competitive “market” return regardless of their actual performance and profitability. Failure to do this might result in a volume of withdrawals of funds by investors large enough to jeopardize the bank’s solvency.”

The Governor of the Central Bank of Malaysia, Dr. Zeti Akhtar Aziz, in fact acknowledged in her keynote address on February 15, 2006 at the 2nd International Conference on Islamic Banking, Kuala Lumpur that:

“(profit-and-loss sharing) places a higher degree of fiduciary risk on the Islamic financial institutions in ensuring that the investment deposits funds are managed in the most effective and efficient manner. This is further compounded by competition in managing the liquidity in the system. The profit share distributed needs to be competitive relative to that earned and paid by the conventional banks. This is important to avoid a shift of deposits and to retain the funds in the system. Given the dual banking environment, as the one in Malaysia, the ability to maximize risk-adjusted returns on investment and sustain stable and competitive returns is an important element in ensuring the competitiveness of the Islamic banking system.”

Consistent with the above competition explanation, our study shows that, because of competition from conventional banking, the returns on the Islamic deposit accounts are effectively pegged to the returns on conventional banking deposits. Our results, for example, show that changes in the conventional deposit rates cause Islamic investment rates to change,

by double in higher frequencies (lower time scales). Another possible explanation on why the Islamic deposits are not interest-free particularly in higher frequencies is that, contrary to Islamic banking PLS theory, the depositors' funds are mostly invested in non-PLS financing in practice. Under the asset-liability matching explanation, the risk and return characteristics of Islamic deposits should be similar to that of the Islamic bank's financing (investment) portfolio. We are unable to study this relation directly because the return data on Islamic bank's financing as far as we know is not available to the public.

However, anecdotal evidence shows that, contrary to the asset-liability matching explanation, the Islamic bank depositors in practice do not fully share in the financing losses incurred by Islamic banks. The Bank Islam Malaysia Berhad's depositors, for example, continued to receive "market" investment rate of returns despite the bank's reported loss of RM480 million (US\$127 million) as at June 30, 2006 due to non-performing loans. The only explanation that why in lower frequencies (higher scales) this dependence fades away could only be vindicated by religious zealotry cause though the increase in riskiness may sway away depositors but the contrary outcome must have religious groundings which echoes with the findings of Yusoff & Wilson, (2005), S. Harun & N.W. Azmi, (2005) and Cyril Eze et.al, (2011).

The opposite outcome in the impact of Islamic Saving deposits on the return of investment ones though is tricky to explain as it shows less influence at higher frequencies (shorter scales,) but as we go more deep into the scales this relation is substantiated more and more at lower frequencies. One possible explanation could be the customer retention strategy of Islamic banks in long term-and hence a direct impact on the profitability of the bank, as more customers or retention of them means more funds, Mughees, (2010), because remember Islamic banks product returns particularly in Malaysia are at least 90% driven from sale based products like *murabaha* and its variants and they are not required to share any profits what so ever however they can give away returns in form of *hibah* (gift) to the Saving deposit holders and because there are not much equity based financing available particularly in long term, they are bound to increase the returns for the Investment deposit holders to not only retain them but also attract other depositors and to compensate for their higher risk, however religion has been found dictating the behavior of the deposit holders but that can be too romantic a survival to sustain for good or for long.

Table 2 displays another dimension of the same issue. Here we recomposed the data. The recomposed residue is the difference between the raw signal and the accumulated wavelet components that represent the signal at each scale. M.Masih et al (2010). This table shows the explanatory power of the residues of various frequencies, also shown to decline as the frequency declines. This is as we would expect: here we expect to see the explanatory power of the residuals decline as the frequency decreases, and that is what we observed in the previous results also. The average R^2 declines monotonically with frequency, and nearly the explanatory power of particularly lower frequencies is quite low. This pattern in the explanatory power of the residues (statistically, the residuals) once again reinforces the finding that the higher frequencies are the primary link between the deposit returns. The recomposed tale for the relation between saving and investment Islamic deposits remains also the same as before. (Table 1 on Decomposed crystals and Table 2 on the recomposed version of it can be referred below).

TABLE 1: Beta and R2 computed from Decomposed crystals of Islamic Investment Deposit return and the other Returns

	Total		Beta		R-Square									
	Beta	R-Square	D1	D2	D3	D4	D5	D1	D2	D3	D4	D5		
	Islamic Return Investment Deposit model compared to Conv_Inv_Dep Market (using OLS)													
Mean	0.493532365	0.69720541	2.526563397	1.992570314	0.276492658	0.256674185	-1.11892023	0.6448736	0.6220223	-0.11964367	0.551850896	0.611141743		
SD	0.559108741	0.359435849	0.172032136	0.057159117	0.030458542	0.054026129	0.227935028	NaN	0.4482734	1.016580283	0.334712474	0.30423938		
Skew.	2.261128398	-0.87739768	-0.52178792	3.340421208	-1.94956204	1.91804078	-0.49794360	-5.29553658	-2.681905079	-2.97718304	-0.119115962	-0.72053434		
Kurtosis	6.126565767	2.62332632	10.49381591	15.10018332	8.239372633	6.168863209	3.772164323	29.37256552	11.8765836	10.85447299	1.95334589	2.308900499		
	Islamic Return Investment Deposit model compared to Conv_Sav_Dep Market (using OLS)													
Mean	0.200764976	0.656886032	1.894416818	2.059319866	-0.6526175	0.653599667	-0.53768448	0.203109222	0.151267903	0.125506784	0.095815887	0.045034447		
SD	0.357876181	0.3819098	0.576846541	0.44799748	0.063793283	0.108656056	0.479408258	0.168082054	0.247589144	0.267411118	0.34753954	0.489346687		
Skew.	-2.244201157	-0.63472262	2.602201943	0.925782196	1.246593027	1.04334474	-1.30238175	4.594922594	2.741917909	1.971731088	0.121646567	0.504081708		
Kurtosis	6.086566562	1.918361222	12.59358419	5.476447998	5.887825586	3.760035141	4.397037817	24.7443771	9.09841752	5.635095158	1.965461553	1.271537085		
	Islamic Return Investment Deposit model compared to Is_Ret_Sav_Dep Market (using OLS)													
Mean	0.093304209	0.628909583	-0.19653504	-0.15181405	0.129497626	0.331272297	0.683141941	0.10235885	0.294843481	0.282145958	0.266991256	0.455114001		
SD	0.280820485	0.401701795	0.056189643	0.109452127	0.083957869	0.195448116	0.329797261	0.255687924	0.33577501	0.394389877	0.34463463	0.424554337		
Skew.	-1.896552638	-0.63881987	-4.91175976	-1.28138069	-0.43465059	0.791166539	-0.33150448	2.656074601	0.692648532	0.985689886	1.156113379	0.411296898		
	5.422222251	1.847711162	27.84821156	7.508626019	3.105660312	3.909135389	3.585275749	8.53781395	2.107616634	2.234185185	3.046811769	1.330990673		

TABLE 2

Beta and R2 computed from recomposed crystals of Islamic Investment Deposit return and the other Returns

	Total		Beta					R_Square				
	Beta	R_Square	D1	D2	D3	D4	D5	D1	D2	D3	D4	D5
Islamic Return Investment Deposit model compared to Conv_Inv_Dep Market (using OLS)												
Mean	0,273175825	0,194507309	2,509306218	1,85036294	0,247558332	0,284953681	-0,88302708	0,196998883	0,185675588	0,162609933	0,056251351	0,054399054
SD	0,017125816	0,2245069	0,115334884	0,012597018	0,006556419	0,004629456	0,00503281	0,185244157	0,216298508	0,302518969	0,295788826	0,284421433
Skew.	0,909833598	1,905823823	0,91539812	4,649671445	-1,40645021	1,618733734	0,945569685	3,303407338	3,040448694	1,82970551	-0,03292720	-0,44910284
Kurtosis	22,34980673	6,302721718	16,38759098	29,41131242	12,61488932	6,561974003	3,571068063	15,73234963	11,38791622	4,607858769	2,026173581	2,304168377
Islamic Return Investment Deposit model compared to Int_sav_Dep Market (using OLS)												
Mean	-0,00533001	0,130290625	1,60850205	1,722006862	0,580839849	0,277846158	-0,33065326	0,274858291	0,367663251	0,191532594	0,147028632	0,012285365
SD	0,035847069	0,225564263	0,355360535	0,107760565	0,016418364	0,012559409	0,016683257	0,143555999	0,144591927	0,210512524	0,233013358	0,396552915
Skew.	-4,36011929	2,600362566	0,765431312	0,967723957	-1,40768848	0,068401623	0,0965558893	4,644032354	3,431530203	1,597924119	1,645513078	0,178244129
Kurtosis	27,59317347	8,600900994	15,3802395	10,58722208	6,624812668	2,933791723	2,668862095	26,88645422	19,03169893	5,358159908	5,387331853	1,163295054
Islamic Return Investment Deposit model compared to Ia_Ret_sav_Dep Market (using OLS)												
Mean	-0,35561909	0,236089342	-0,13944454	0,055612133	0,160586635	0,576055706	0,64215636	0,09178713	0,325745752	0,432753225	0,567233079	0,631145349
SD	0,017236634	0,21041129	0,007775766	0,024332387	0,016402168	0,022587367	0,015446217	0,243788531	0,314825519	0,37298747	0,226207517	0,359171641
Skew.	-0,92516192	1,704730977	0,846550269	1,027625996	-0,71339579	-1,29209471	-0,01949551	2,802658818	0,328593635	0,278262361	-0,06355436	0,590232275
Kurtosis	8,707607115	6,748063024	9,45098234	6,790473679	6,137391448	5,226497668	2,692144533	9,422745134	1,697174246	1,405670391	2,786169591	1,700149462

6 Conclusion:

Wavelet analysis demonstrates rather strong evidence that the conventional deposit returns both investment and saving influence on Islamic investment return is principally in the high frequency movements but other way round in case of the homogeneous comparison. In this paper, we attempted to establish whether Islamic banking returns are really contingent on the conventional returns. In theory, a unique feature that differentiates Islamic banking from conventional banking is the PLS paradigm. In practice, however, we found that Islamic banking is not very different from conventional banking, infact its returns are deriven and influenced by the interest based conventional return and this has found to be more the case in higher frequencies or shorter time scales.

The ever excessive competetion with their peers pariticularly in a dual banking system as in Malaysia has been found to be among the chief reason alongside the improper impementation of the PLS paradigm whichis considered foundational to Islamic norms of finance. This could also further explains that why the return on saving deposits is impacting the return on investment deposits specifically with the decrease in frequency or increase in time scales. However religious zealousness was susepted to be driving the long term behavior of depositors specifically in relation to conventional scenarios.

The recompsed results further strenghten our findings by echoing with our findings according to our expectations. The results also could yeild some very useful information for depositors conventional or Islamic as it can conclude for them that when there will be a short term increase in conventional returns, it will double the return on the Islamic deposits and for lower time scaled deposits investors would be better off in Islamic version particularly in good times as they may yield increased returns. The situation is completely opposite as the influence of Islamic saving deposit returns are captured more in lower frequencies. So investors should rest assure that if there is an increase in the savings return there gain is bound to be augmented.

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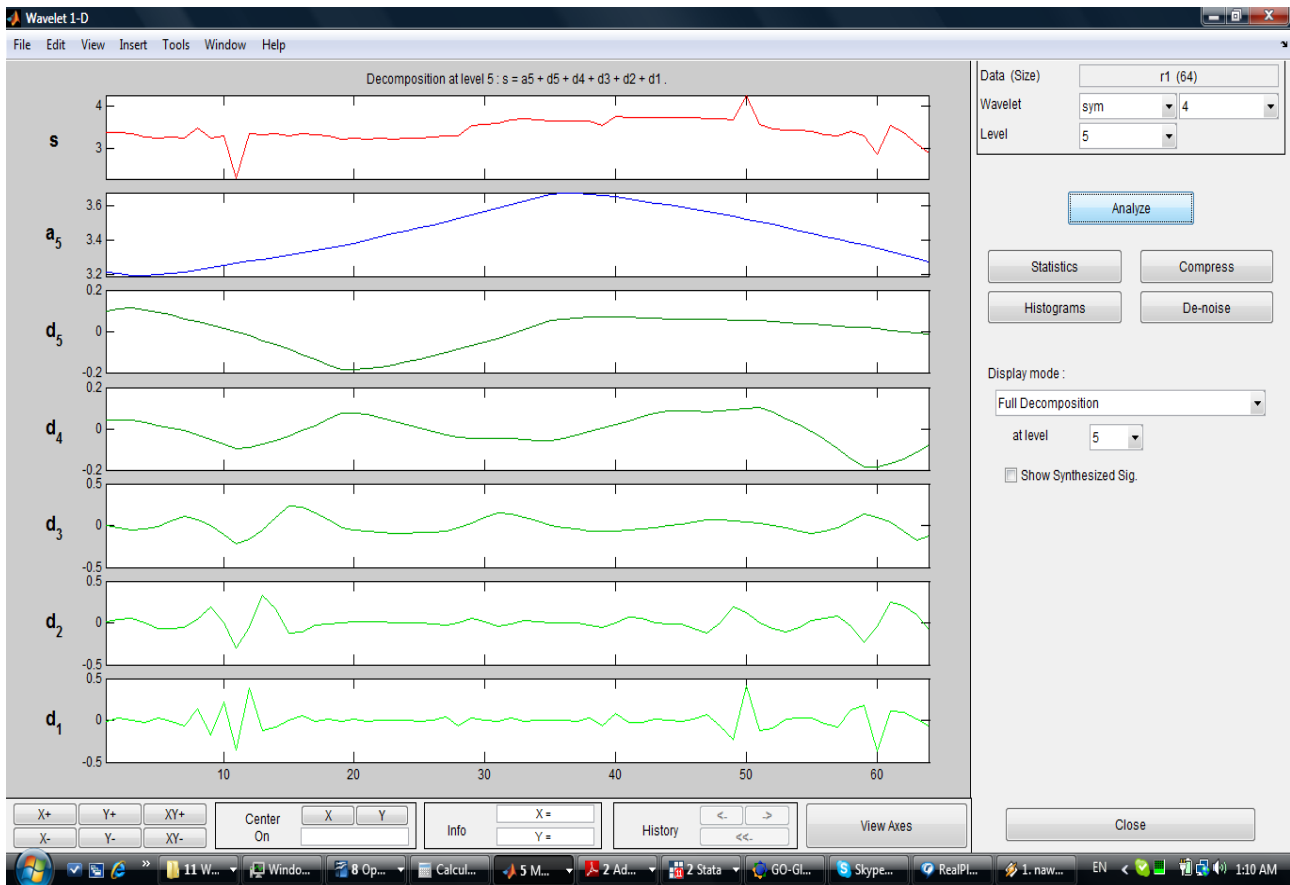
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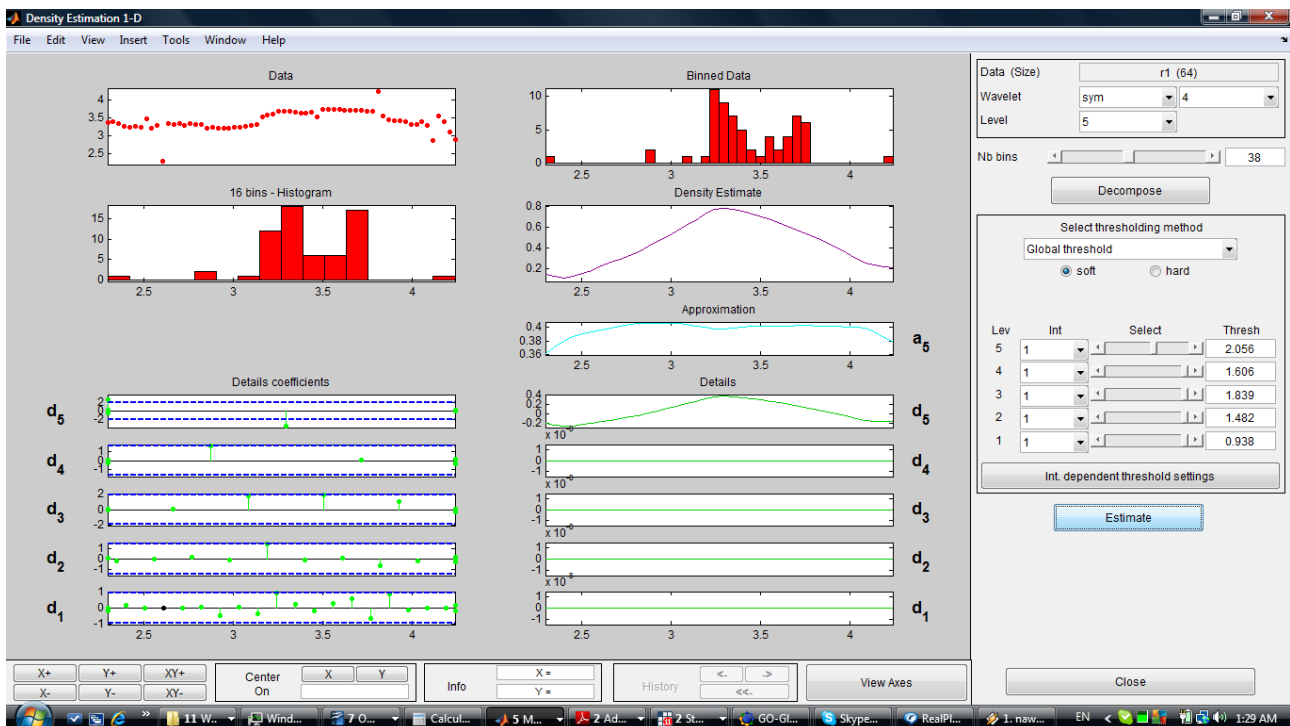
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Appendix

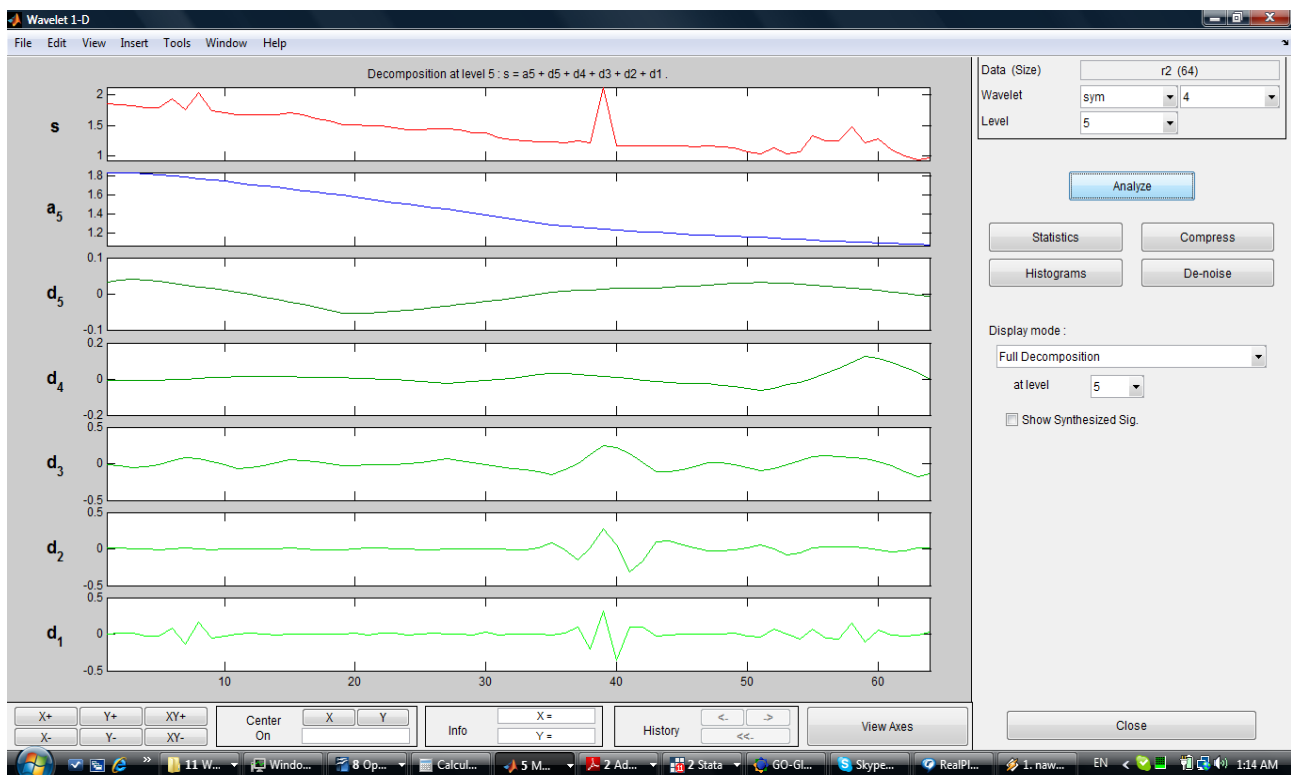
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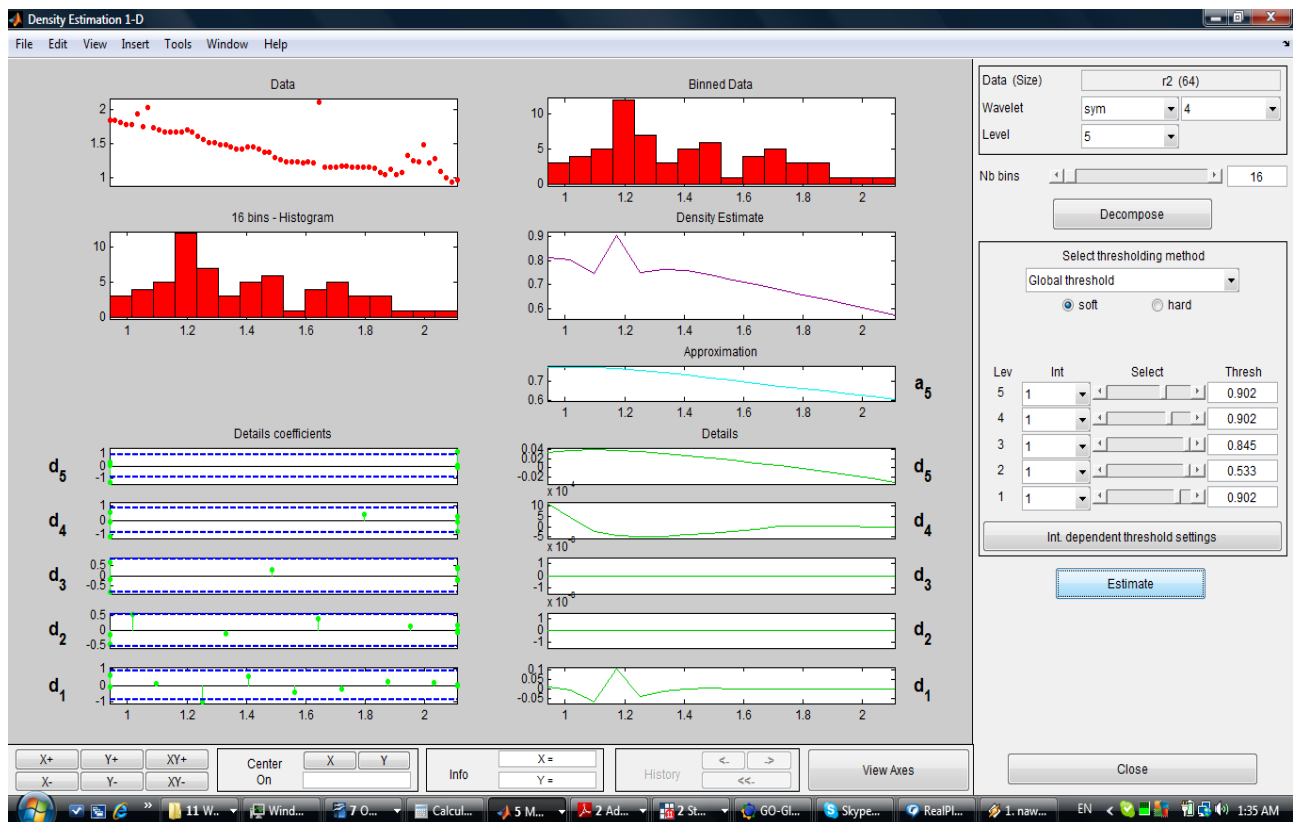
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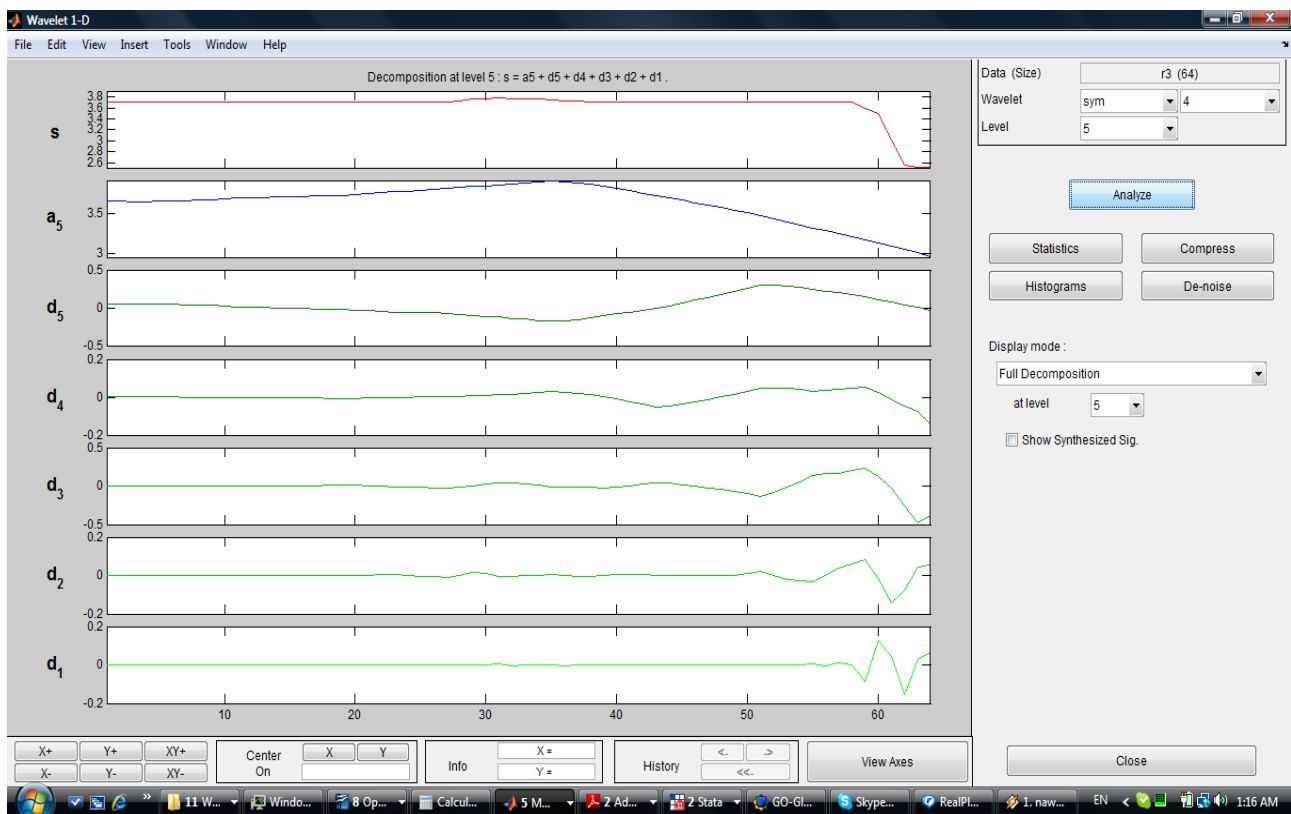
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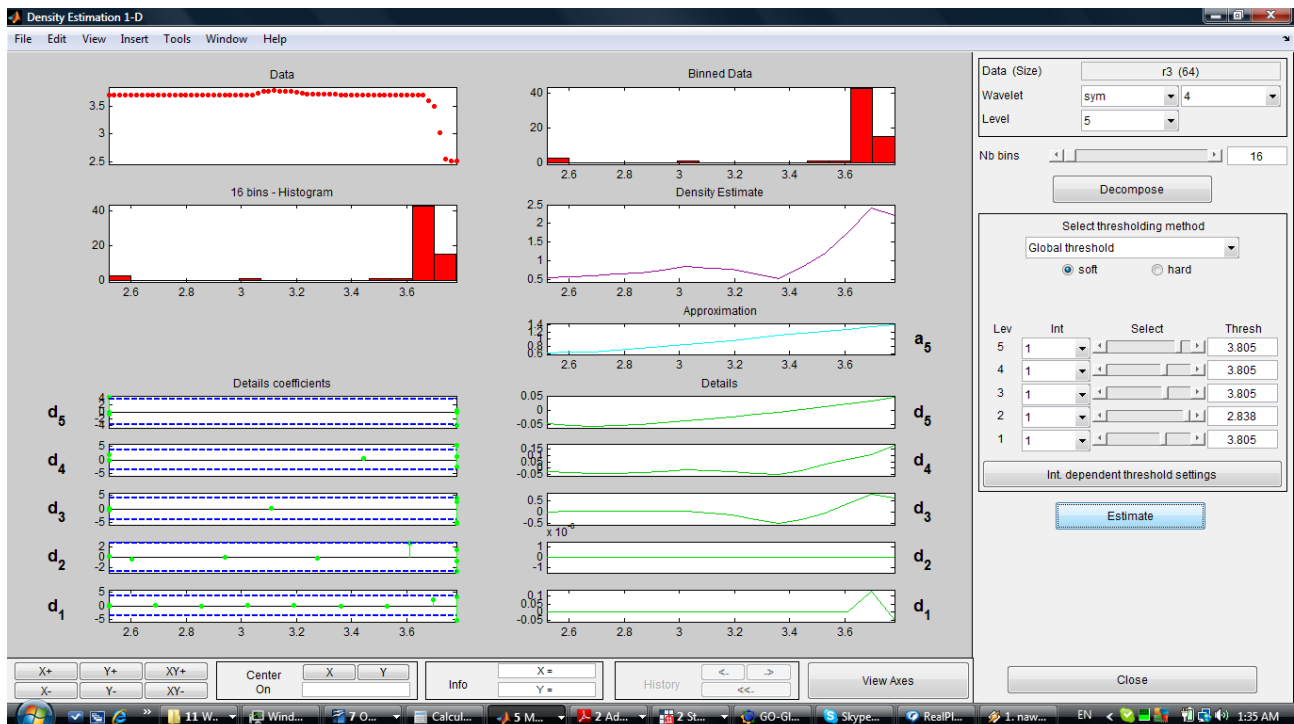
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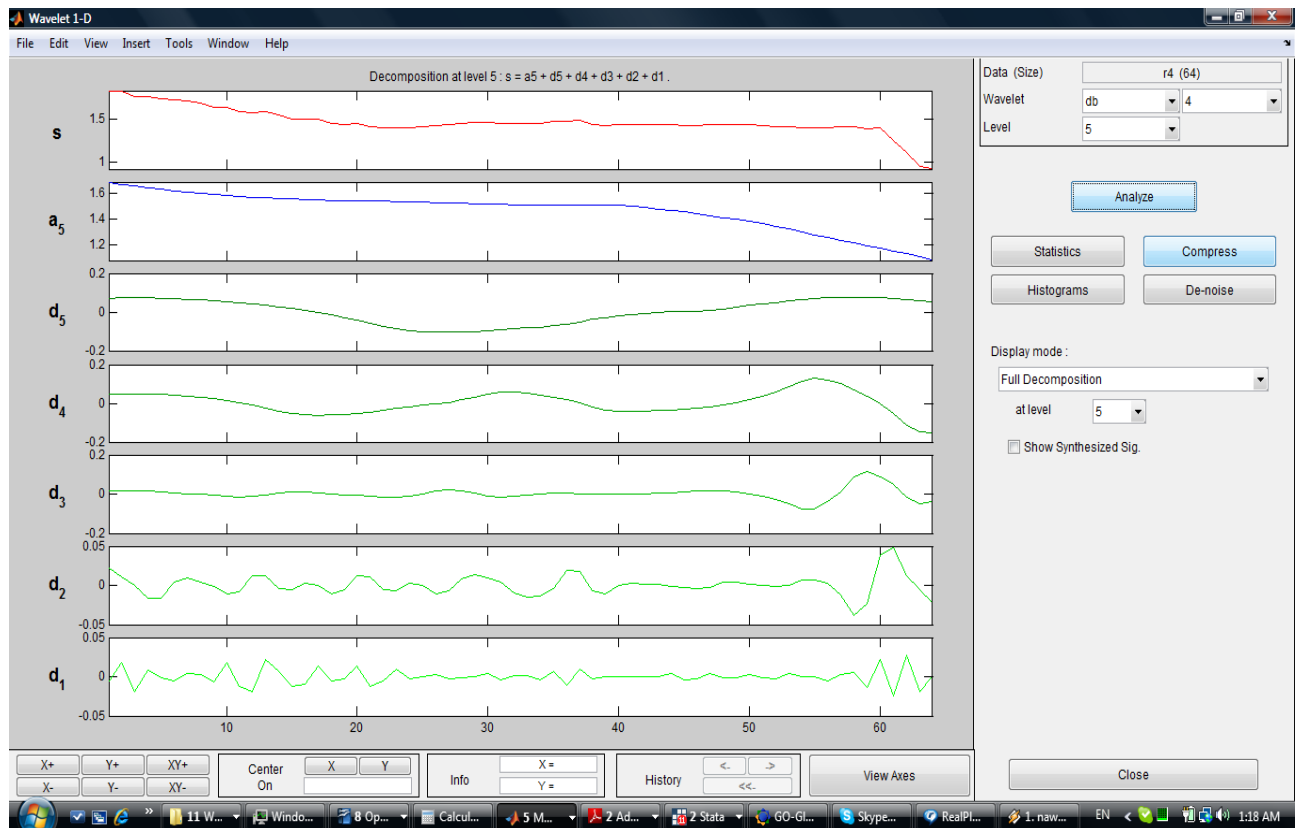
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DECOMPOSED SIGNAL: Conv_Ret_Sav_Dep



DENSITY ESTIMATION: Conv_Ret_Sav_Dep

