Medical Net Discount Rates: Updated and Re-examined

by

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December 12, 2014

For presentation at a National Association of Forensic Economics session at the Allied Social Science Association meetings, Boston, January 2015

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ABTRACT

Schap, Guest and Kraynak, "Total Offset and Medical Net Discount Rates: 1981-2012," *Journal of Forensic Economics* fall 2013, examines time series properties of medical net discount rates based on three different, short-term Treasury securities. The article finds attributes of stationarity in each of the various series examined and notes greater support for total offset of interest rates and medical cost growth rates than does previously published research.

The present study makes four adjustments to Schap, Guest and Kraynak (2013). First, the data set is updated by two years and four months. Second, the t-test applied in the original study and also used in earlier studies of total offset fails to account for autocorrelated error terms, so a substitute test is applied to both the original data set and the newly extended data set, with results reported. Third, Phillips-Perron testing is conducted in addition to Augmented Dickey-Fuller and Kwiatkowski-Phillips-Schmidt-Shin testing of stationarity of the various series analyzed, with results reported for both the original and newly extended data series. Finally, the present study proposes to use Zivot-Andrews testing diagnostically, to identify stationary sub-series of medical net discount rates, similar to an approach used successfully to identify stationary sub-series of *wage* net discount rates (Schap, Baumann and Guest, "Wage Net Discount Rates: 1981-2012," *Journal of Forensic Economics*, forthcoming). Results of the alternate approach have yet to be developed at this stage of the research project.

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I. Introduction

A medical net discount rate (MNDR) may be formulated on the basis of an interest rate r, used to adjust future values to present value equivalents, and a growth factor g, used to account for medical care price increases over time. The most accurate formulation of a MNDR is: MNDR = (r-g)/(1+g). In forensic economics, MNDRs are often applied in the context of determining the present day cost of a life care plan in the case of catastrophic impairment that may stretch years or even decades into the future. For those forensic economists who choose to make use of MNDRs (not all do), r is typically selected based on current yields on investment securities or the average yield on some bundle of securities over a specified historical period, whereas g is typically the growth rate in the overall medical care consumer price index (MCPI) or a component part thereof in detailed applications. It is possible to construct a great many different MNDRs by changing the source of either r or g.[1]

Schap, Guest and Kraynak (2013), henceforth SGK, examine MNDRs based exclusively on short-term Treasury securities (3-month, 6-month and 1-year instruments), invoking a legal rationale for the limited range of discount rates based on two prominent U.S. Supreme Court cases. Coupling monthly data on the three alternate discount rates for the period 1981:01 to 2012:06 with percent monthly changes in the MCPI (or its commodities and services component parts), SGK presents several MNDR series and explores their time-series properties with specific reference to the total offset method, which posits that future medical care cost increases will just

[1] As well as in forensic economic practice, a variety of MNDR formulations have appeared in the literature. See for example Bowles and Lewis (2000), Ewing, Payne and Piette (2001), Ewing, Piette and Payne (2003 and 2004), and Sen and Gelles (2006).

offset the interest rate factor used in discounting to present value (thus a zero net discount rate). Principal among the findings in SGK is that the empirical basis for strong condemnation of the total offset method found previously in the literature (Ewing, Payne and Piette, 2001) appears to no longer hold when the various data series are extended to 2012:06.

The present study makes three adjustments to the empirical analysis in SGK, the last two of which have been previously applied to various *wage* net discount rate series by Schap, Baumann and Guest (forthcoming). First, the SGK data set is updated by over two years, to 2014:10, the most recent data available at time of data analysis in the present study. Second, the t-test applied in SGK and used in earlier studies of total offset fails to account for autocorrelated error terms, so a substitute test is applied to both the SGK data set and the newly extended data set, with results reported. Third, in addition to the tests of stationarity reported in SGK (namely ADF, KPSS and Zivot-Andrews testing, all described in Appendix A), Phillips-Perron testing (described in Appendix A and termed PP testing) is also conducted to further assess stationarity. Test results are reported for the SGK data series and the newly extended data series. Looking beyond the present study, an alternate approach to the lag selection criterion applied in both SGK and here has proven useful in finding stationary sub-series of *wage* net discount rate series (Schap, Baumann and Guest, forthcoming). Once developed, the results of the alternate approach will be reported for both the SGK data series and the newly extended data series in a revised version of this paper.

In what follows, we borrow heavily from SGK and Schap, Baumann and Guest (forthcoming) in descriptions of the data sets and tests applied. Test results presented herein were derived using Stata as the statistical software package. Appendix A, adapted from Schap, Baumann and Guest (forthcoming), describes the content of each test executed. Appendix B presents separate results on MNDR series based on the commodities and services components of the MCPI. The figure and tables referenced herein appear after Appendices A and B and References.

II. Data Construction, Test Protocols and Initial Results.

Following SGK, we focus on the period since 1980, cognizant of a regime change in the Federal Reserve's monetary policy that structurally shifted post-1980 interest rates, making interest rates prior to 1980 essentially non-comparable to those occurring thereafter. SGK presented certain results concerning a simple MNDR, derived using the form r-g, for comparison to previously published research using that particular form, but more generally relied on the complex formulation of the MNDR presented in the introductory section of this study. We eschew the less accurate simple form in favor of the complex formulation of the MNDR for all calculations.

MNDRs initially were constructed using the percent change in the MCPI and the rate of return on the 1-Year Treasury Security. The data were compiled on a monthly basis from 1980:01 to 2014:10. Data for the percent change in the MCPI were calculated based on the percent change of one month from the same month in the previous year. Data for rates of the constant maturity 1-Year Treasury Securities were obtained from the St. Louis Federal Reserve's FRED series (Federal Reserve Economic Data series) and converted to annualized percentage yields.[2] MNDRs were also constructed using the percentage change in the MCPI series and

[2] The Treasury Department reports that "CMT yields are read directly from the Treasury's daily yield curve and represent 'bond equivalent yields' for securities that pay semiannual interest, which are expressed on a simple annualized basis" (U.S. Treasury Resource Center Interest Rates FAQ webpage 2011). These interest rates were then converted to effective (compound annualized) yields using the formula available at the Treasury Resource

effective yields based on the 3-Month and (alternatively) 6-Month Treasury Bills: Secondary Market Rate,[3] also resulting in constructed MNDRs from 1981:01 to 2014:10 per our previous description. The three MNDR series track one another closely. Figure 1 presents a graph of the 6-month Treasury based series.

Figure 1 here.

A test of the total offset hypothesis requires two aspects: first, a test of zero mean in the three MNDR series; and second, a test of stationarity of the series. Total offset is empirically validated only if a series both (1) has a zero mean (or, less stringently, a mean not statistically different from zero) and (2) is stationary. See SGK for a full discussion.

An ordinary t-test of zero mean is executed in Ewing, Payne and Piette (2001) while SGK equivalently regresses a constant term for each of the three MNDR series (based on 1-year, 6-month and 3-month Treasury Securities) and tests for zero mean based on the Student's t-distribution. There is a problem with such testing, however, in that it fails to take account of possible autocorrelation of error terms (as described in more detail in Appendix A). Schap, Baumann and Guest (forthcoming) remedy the problem when examining *wage* net discount rates by applying instead a test developed by Prais and Winsten (described in Appendix A and termed PW testing). Table 1 reports the results of PW testing on the SGK MNDR series beginning

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Center Interest Rates FAQ webpage. Fjeldsted (2000) explains that for computing net discount rates, effective yields are the appropriate base measure.

[3] The 3-Month and 6-Month Constant Maturity Treasury Securities are available only back to 1982:01 in the St. Louis Federal Reserve's FRED series mentioned previously. The 3-Month and 6-Month Secondary Market Treasury Securities are presented on a bank discount rate basis. To convert to effective yields we applied equation 4 of Fjeldsted (2000, p.77) to the discount rate data. The 1-Year Treasury Bill: Secondary Market Rate data set has missing values from 2001:09 to 2008:05 and is thus unsuitable for analyzing the entire period 1981:01 – 2012:06.

1981:01 and either ending 2000:05 (the Replication period, replicating the time frame used in Ewing, Payne and Piette 2001) or ending 2012:06 (the Extended period in SGK); Table 1 also presents results for the MNDR series carried to 2014:10 (referred to herein as the Newly Extended period).

Table 1 here.

The results in Table 1 are remarkable with regard to the first aspect of a test for total offset, namely a constant term that is not statistically different from zero, which is indicated in all of the results. The strongest support for total offset occurs in the Newly Extended 6-month Treasury based series, with a constant term of 0.0012 and an associated P-Value of 0.999. In the Replication period, total offset cannot be rejected, although the evidence is not as compelling, with P-Values of approximately 0.2 for each of the three series. The results for the Replication period reverse the strong rejection of total offset issued in Ewing, Payne and Piette (2001) based on the inappropriate simple t-test of a mean for the same period (a test essentially mimicked in SGK for the Extended period, but with results more favorable to total offset). In summary, the simple t-test (or its least squares equivalent of regression of a constant) is not appropriate when autocorrelation of error terms is present; applying appropriate PW testing results in evidence consistent with the zero mean aspect of total offset for all three series across all three time spans examined.

As in SGK, an ADF test was conducted on each MNDR series to examine whether each series is stationary. The test was separately conducted on each of the three MNDR series (based on 1-year, 6-month and 3-month Treasury Securities) in the Replication and Extended periods, as in SGK, and in the Newly Extended period. The null hypothesis of the ADF test is that the series in question has a unit root, which produces a nonstationary series. Rejection of the null hypothesis suggests a stationary process and that the historical series of MNDRs may be relevant for future MNDR estimations or forecasts. The ADF test produces a τ-statistic (tau-statistic) that has a different distribution than an ordinary t-statistic, and the one-sided P-values for the ADF statistic are derived from a Dickey-Fuller distribution provided by MacKinnon (1996). Table 2 reports the τ-statistic and the P-value for the ADF test for each period and MNDR series.

Table 2 here.

The unit root null hypothesis is rejected at least marginally (ten percent level) for all three MNDR series in all three periods. The strongest indications of stationarity are for the 3-month and 6-month Treasury based series in the Newly Extended period (with P-Values of 0.0227 and 0.0281, respectively).

Table 3 presents the results of PP testing, which has the same null and alternative hypothesis tests as ADF tests. The results show strong indication of stationarity only for the 3-month Treasury based series in the Newly Extended period (P-Value of 0.0260), with marginal (ten percent level) indications of stationarity for the 3-month Treasury based series over the Replication and Extended periods and the 6-month Treasury based series over the Newly Extended period.

Table 3 here.

Reporting test results for KPSS testing (Table 4) and Zivot-Andrews testing (Table 5) is more streamlined than the results presented for other tests. SGK already contains the results for the KPSS and Zivot-Andrews tests for each of the three series (1-year, 6-month and 3-month Treasury based) for the Extended period, so these results are merely reprinted here for comparison purposes alongside the results for the Newly Extended period. The tests are not applied in the Replication period in SGK, in part because there was nothing to replicate: the precursor study (Ewing, Payne and Piette 2001) applied neither the KPSS test nor the Zivot-Andrews test.

Table 4 here.

Table 5 possibly here (or as indicated below).

In the KPSS tests, the null and alternative hypotheses are reversed relative to either ADF or PP testing, so rejection of the null is tantamount to rejecting stationarity. In SGK, the KPSS results indicated rejection of stationarity at the five percent level, but not at the one percent level, for the Extended period for all three series. Testing for the Newly Extended period finds rejection of stationarity at the one percent level for all three series.

Table 5 possibly here (or as indicated above).

Zivot-Andrews testing in the Newly Extended period is used to determine if the null hypothesis of unit root might be rejected in favor of an alternative hypothesis that allows for an endogenously determined series break. If so, then the post-break series might be as (or more) useful as a basis for forecasting than the entire thirty-three year, ten month Newly Extended series.[4] We apply the specific type of Zivot-Andrews test in each instance that explores for an intercept only break, given simultaneous adherence to a total offset hypothesis (which precludes search for stationarity about a trend line). The Zivot-Andrews type tests are executed for each of the three MNDR series in the Newly Extended period, with results reported in Table 5. Like the

[4] Zivot-Andrews type testing is more typically called for when ADF testing fails to reject unit root, which may be a false indication of a nonstationary series. In none of the three series examined for the Newly Extended period did ADF testing fail to reject the null hypothesis of unit root (five percent level in all cases). We focus only on the Newly Extended period in Zivot-Andrews testing because even if one were to identify an endogenous break in the Extended period, the latter portion of an outdated series like any of those in the Extended period would be irrelevant for current forecasting purposes.

results in SGK for the Extended period, in no instance was the unit root (nonstationary) null hypothesis rejected (five percent level) for any series in the Newly Extended period. Consequently, there is no need to conduct tests again regarding total offset on any late portion sub-series of the thirty-three year, ten month Newly Extended series.

Based on the straightforward application of the Zivot-Andrews tests, there would appear to be no recent portion of the Newly Extended period better suited for constant-level forecasting purposes than is the entire Newly Extended period, no matter which particular series is called upon.[5] In fact, however, Schap, Baumann and Guest (forthcoming) presents a way to use Zivot-Andrews testing diagnostically, to identify potential breakpoints that define late-portion sub-series of promise that may have their stationarity properties explored by not only ADF testing (the underlying instrument applied methodically and relentlessly when Zivot-Andrews testing is conducted[6]), but by PP and KPSS testing as well. If such extensive testing identifies late-portion subseries with desirable stationarity properties, then PW testing for the zero-mean aspect of total offset can subsequently be applied to the appropriate sub-series identified. The approach is applied in the next section, which begins with a summary of our findings to this point.

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[5] Had a finding of trend-break stationary occurred, further testing along the lines of Lee and Strazicich (2003), as described in Glynn, Perera and Verma (2007, pp. 65 and 70-71), would typically be warranted. Such was not the case here. Moreover, such testing would be atypically inappropriate in the given context since the test referenced permits a break under the null hypothesis (in addition to under the alternative hypothesis), but the maintained hypothesis of total offset precludes the introduction of a possible structural break under the null.

[6] The Zivot-Andrews test essentially applies ADF testing to every possible relevant sub-series within a data series to identify breakpoints endogenously. See Appendix A for additional detail.

III. Summary Initial Findings and Further Search for Stationary Series

To this juncture, we have looked at the two empirical aspects relevant to total offset. First, we found strong indication that the MNDR is not statistically different from zero. Second, we found mixed evidence concerning stationarity (not unlike that reported in SGK), with strong indications of stationarity based on ADF testing, less so based on PP testing, and not at all based on KPSS testing.

The mixed results cause us (following the approach in Schap, Baumann and Guest forthcoming) to apply the Zivot-Andrews test diagnostically in hopes of identifying sub-series ending at 2014:10 of shorter duration than the full Newly Extended series that exhibit strong indication of stationarity across the full battery of stationarity tests, namely ADF, PP and KPSS. To assist in finding such promising sub-series, we relax the deterministic method previously applied to lag selection (namely the Modified Aikaike's Information Criterion) to permit a search over a greater range of lag structures. For each sub-series "passing" any two of the three stationarity tests (ADF, PP and KPSS), we subject the sub-series to PW testing to see if any such stationary series has a mean not statistically different from zero. The revised test protocol thus identifies whether there is support, limited support or little support for the total offset hypothesis of a zero MNDR.

Once completed, the results of the test protocol described in this section will be reported in a revised version of this paper bearing the same name, but a new date.

Appendix A: Test Descriptions (adapted from Schap, Baumann and Guest, forthcoming)

In order to test total offset, a null hypothesis of total offset is used against a two-sided alternative. SGK uses the sample mean of the net discount rate as the test statistic and uses a least squares approach where $y_t = \mu + \varepsilon_t$ where y_t is a MNDR and ε_t is a white noise residual. In SGK, a statistical significance test on the constant term μ serves as a total offset test with the same null and alternative hypotheses above. The method is equivalent to a standard population mean test (an ordinary t-test) as the least squares estimator for the constant is the sample mean in the absence of independent variables.

In order to account for the impact of autocorrelation on the standard errors in our total offset test, we depart from SGK and use a Prais and Winsten (1954; henceforth PW) approach. PW models the error term as autoregressive of order one. After the coefficient on the lagged error term, ρ, is estimated, the data are transformed with

$$y_t^* = \begin{cases} \sqrt{1-\hat{\rho}^2}\, y_t; t = 1 \\ y_t - \hat{\rho} y_{t-1}; t \geq 2 \end{cases}$$

Finally, the model with the transformed data is estimated with least squares.

The Dickey and Fuller (1979, 1981) method is a common test for a unit root. The test statistic derives from a first-difference transformation of an autoregressive process. This procedure produces the first difference of the time series as the dependent variable. The lagged time series variable is always an independent variable, and its coefficient serves as the test statistic. Because of the first-difference transformation, the null hypothesis is a unit root.

Constants and time trends may also be included as regressors if the researcher wants to test stationarity after accounting for these controls. Finally, using deeper lags of the independent variable can be used to mitigate higher order autocorrelation. Such an addition produces an Augmented Dickey Fuller test (ADF).

Phillips and Perron (1988) (PP) testing is largely similar. It has the same dependent variable, test statistic, hypothesis test, and ability to include constants and time trends as Dickey-Fuller. However, PP uses a Newey-West style adjustment to the standard errors rather than modeling autocorrelation using lagged dependent variables as in ADF. Because the Newey-West estimators improve with sample size, it is believed that PP testing is not appropriate for small sample sizes.

A third alternative in unit root testing is the Kwiatkowski, Phillips, Schmidt, and Shin (1992) approach (KPSS). Their hypothesis test is unique for two reasons. First, the statistic is the variance of the population mean over time. If this variance is zero, then the population mean is constant which implies a stationary series around a constant mean. A Lagrange Multiplier approach is used to evaluate the test. Second, the null and alternative hypotheses change positions. Specifically, the null hypothesis is that the time series is stationary in KPSS, rather than the time series has a unit root in ADF and PP.

Given the time frame of our sample size, it is possible that break points are producing misleading unit root tests. For example, a break point could be the result of one of the numerous changes in the macro-economy during the course of our sample frame. If this is true, unit root tests may misidentify a unit root for a series that is stationary after including the break.

Rather than testing specific time periods for a break point, we use the protocol outlined by Zivot and Andrews (1992) to endogenously determine a break point. The so-called Zivot-Andrews approach estimates several ADF tests, each changing the time period for the dummy variable that accounts for the break. Zivot-Andrews tests typically report only the break point location that is most likely to produce a stationary series, i.e. the estimation that minimizes the test statistic. The logic is that a break point at that time period produces the most stationary series. Finally, Zivot-Andrews testing avoids testing for breaks near the beginning or the end of the sample frame, as the standard errors for breaks at these extreme values are comparatively large. We follow the convention and do not test for breaks in the first or last 15 percent of the sample.

Appendix B: Results on Commodities MNDRs and Services MNDRs

All results based on 1-Year Treasury Security in the Newly Extended period.

Test Results for Total Offset

MNDR Sub-Series	Constant	t-Statistic	P-Value
Commodities	0.492757	4.528001	<0.001
Services	-0.429947	-3.523534	<0.001

Unit Root Tests (Augmented Dickey-Fuller Test, No Trend)

Results Concerning Unit Root Using the Augmented Dickey-Fuller* Test

MNDR Sub-Series	τ-Statistic	P-Value
Commodities	-2.891	0.0464
Services	-3.052	0.0303

* A time trend was not included because of the a priori hypothesis of total offset. The number of lagged differences included in the ADF test was determined by the Modified Aikaike's Information Criterion with a maximum number of lags set at three. The actual number of lags chosen was three in each instance.

Zivot-Andrews Stationarity Tests

Lags included = 3 in both cases.

Tests for Stationarity: Minimum t-Statistics Reported (5% critical values in parentheses).

	Intercept (-4.80)	Trend (-4.42)	Intercept-Trend (-5.08)
Commodities MNDR	-4.392 at 1993:11	-3.433 at 1997:07	-4.306 at 1993:11
Services MNDR	-4.083 at 1993:11	-3.334 at 1998:01	-4.054 at 1993:10

Kwiatkowski-Phillips-Schmidt-Shin Test

Critical Values

Asymptotic critical values*:	1% level	0.739
	5% level	0.463
	10% level	0.347

*Kwiatkowski-Phillips-Schmidt-Shin (1992, Table 1)

Null Hypothesis: COMPLEX_MNDR is stationary
Exogenous: Constant
Bandwidth: 15 (Newey-West using Bartlett kernel)

Series	KPSS Test Statistic
Commodities	0.663
Services	0.980

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Figure 1: Medical Net Discount Rates Plot

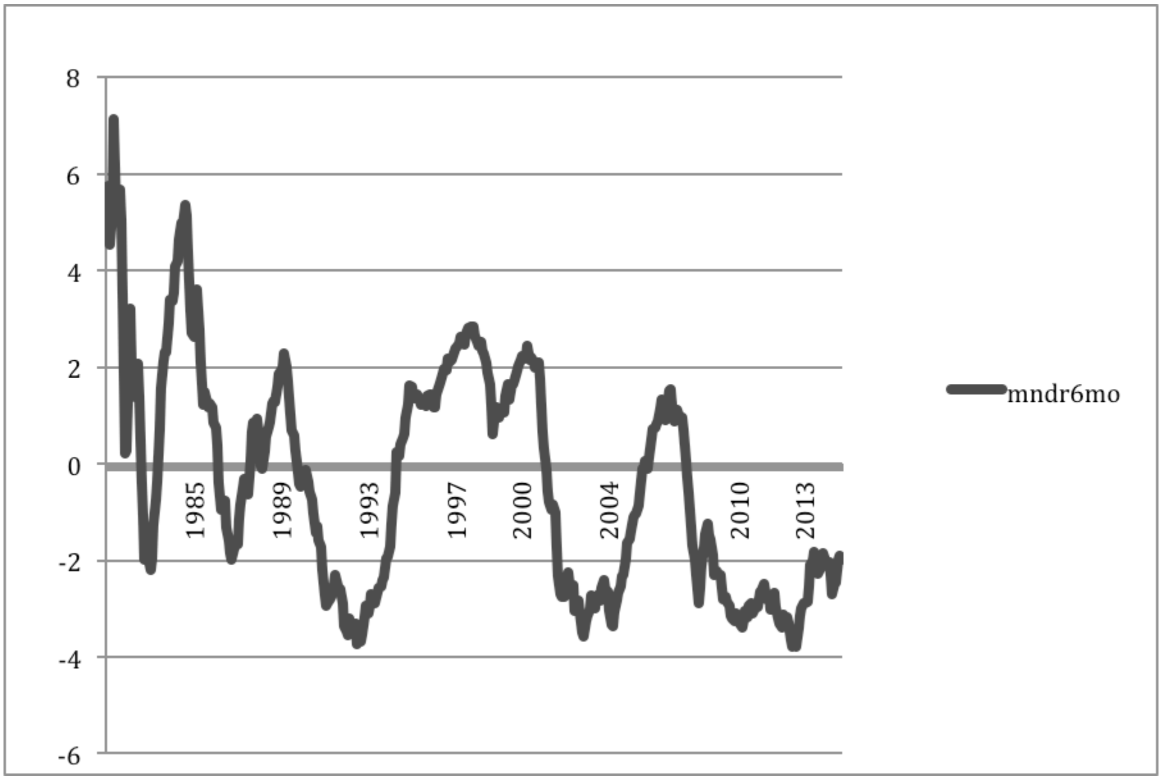

Table 1

Test Results for Total Offset: Prais-Winsten

MNDR Series	Period	Constant	t-Statistic	P-Value
1-Year	Replication (1981:01 – 2000:05)	1.4779	1.1381	0.195
1-Year	Extended (1981:01 – 2012:06)	0.0051	1.1119	0.996
1-Year	Newly Extended (1981:01 – 2014:10)	0.0481	1.0138	0.962
6-Month	Replication (1981:01 – 2000:05)	1.4235	1.0588	0.180
6-Month	Extended (1981:01 – 2012:06)	-0.0117	0.9747	0.990
6-Month	Newly Extended (1981:01 – 2014:10)	0.0012	0.8998	0.999
3-Month	Replication (1981:01 – 2000:05)	1.1814	0.9325	0.206
3-Month	Extended (1981:01 – 2012:06)	-0.1216	0.8545	0.887
3-Month	Newly Extended (1981:01 – 2014:10)	-0.1303	0.7951	0.870

Table 2

Results Concerning Unit Root Using the Augmented Dickey-Fuller* Test

MNDR Series	Period	τ -Statistic	P-Value
1-Year	Replication (1981:01 – 2000:05)	-2.5806	0.0972
1-Year	Extended (1981:01 – 2012:06)	-2.7252	0.0698
1-Year	Newly Extended (1981:01 – 2014:10)	-2.9712	0.0377
6-Month	Replication (1981:01 – 2000:05)	-2.6353	0.0859
6-Month	Extended (1981:01 – 2012:06)	-2.8316	0.0540
6-Month	Newly Extended (1981:01 – 2014:10)	-3.0802	0.0281
3-Month	Replication (1981:01 – 2000:05)	-2.7208	0.0707
3-Month	Extended (1981:01 – 2012:06)	-2.9082	0.0444
3-Month	Newly Extended (1981:01 – 2014:10)	-3.1561	0.0227

* A time trend was not included because of the a priori hypothesis of total offset. The number of lagged differences included in the ADF test was determined by the Modified Aikaike's Information Criterion with a maximum number of lags set at three. The actual number of lags chosen was three in each instance.

Table 3

Results Concerning Unit Root Using the Phillips-Perron* Test

MNDR Series	Period	τ -Statistic	P-Value
1-Year	Replication (1981:01 – 2000:05)	-2.1525	0.2241
1-Year	Extended (1981:01 – 2012:06)	-2.2012	0.2060
1-Year	Newly Extended (1981:01 – 2014:10)	-2.4554	0.1267
6-Month	Replication (1981:01 – 2000:05)	-2.4149	0.1378
6-Month	Extended (1981:01 – 2012:06)	-2.5253	0.1095
6-Month	Newly Extended (1981:01 – 2014:10)	-2.7818	0.0610
3-Month	Replication (1981:01 – 2000:05)	-2.7271	0.0695
3-Month	Extended (1981:01 – 2012:06)	-2.8523	0.0513
3-Month	Newly Extended (1981:01 – 2014:10)	-3.1077	0.0260

* A time trend was not included because of the a priori hypothesis of total offset. The number of lagged differences included in the PP test was determined by the Modified Aikaike's Information Criterion with a maximum number of lags set at three. The actual number of lags chosen was three in each instance.

Table 4

Results Concerning Stationarity Using the Kwiatkowski-Phillips-Schmidt-Shin Test

Asymptotic critical values*:	1% level	0.739
	5% level	0.463
	10% level	0.347

*Kwiatkowski-Phillips-Schmidt-Shin (1992, Table 1)

Null Hypothesis: COMPLEX_MNDR is stationary
Exogenous: Constant
Bandwidth: 15 (Newey-West using Bartlett kernel)

Extended Period (1981:01-2012:06)

Series	KPSS Test Statistic
1-Year MNDR	0.732729
6-Month MNDR	0.671810
3-Month MNDR	0.633873

Newly Extended Period (1981:01-2014:10)

Series	KPSS Test Statistic
1-Year MNDR	0.924
6-Month MNDR	0.851
3-Month MNDR	0.805

Table 5

Results Concerning Zivot-Andrews Unit Root Tests Test

Lag included = 3 in all cases.

Tests for Stationarity: Minimum t-Statistics Reported (5% critical values in parentheses)

Extended Period (1981:01-2012:06)

Series	Intercept (-4.80)	Trend (-4.42)	Intercept-Trend (-5.08)
1-Year MNDR (complex)	-4.177 at 1992:11	-3.187 at 2005:10	-4.034 at 1992:11
6-Month MNDR	-4.121 at 1993:01	-3.219 at 2005:08	-3.927 at 1992:11
3-Month MNDR	-4.132 at 1993:01	-3.292 at 1997:12	-3.923 at 1993:01

Newly Extended Period (1981:01-2014:10)

Series	Intercept (-4.80)	Trend (-4.42)	Intercept-Trend (-5.08)
1-Year MNDR (complex)	-4.149 at 1993:11	-3.286 at 1997:12	-4.100 at 1993:11
6-Month MNDR	-4.106 at 1993:11	-3.317 at 1998:02	-3.996 at 1993:11
3-Month MNDR	-4.117 at 1994:01	-3.387 at 1997:12	-3.985 at 1993:11