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Testing for the Sustainability of the Current Account Deficit in Four Industrial Countries: A Revisitation

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Abstract

In this article we re-examine the mean-reverting property of the current account for the US, the UK, Canada and France. This is important because a current account that is not a stationary process implies that the external debts are unsustainable. The empirical results show that the current account-GDP ratios for the four countries are non-stationary processes based on the traditional unit root test. Bierens' non-linear unit root test results show that these current account-GDP ratios could exhibit mean stationarity, trend stationarity and non-linear trend stationarity once we account for a more general specification of the non-linear deterministic components based on a Chebishev polynomials approximation. One should, therefore, be cautious when concluding that the current account is sustainable or unsustainable based upon the traditional unit root test since it overlooks the non-linear property intrinsic in the data.

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1 Introduction

The concept of current account sustainability has long been the focus of research and policy debate in economics. The mean reversion property of the current account has two important implications for international macroeconomics. First, a stationary current account is consistent with the sustainability of the external debt. In this case, there is no incentive for the government to make drastic policy changes and default on its international debts in the near future. Second, the stationarity of the current account validates the modern intertemporal model (Wu, 2000). Theoretically, the model combines the assumptions of perfect capital mobility and consumption-smoothing behavior to postulate that the current account acts as a buffer to smooth consumption in the event of shocks.

Testing the sustainability of the current account in an economy is important, and many investigators have examined this issue in the extant literature. Some researchers utilize single-equation unit root tests and/or cointegration tests to investigate the mean-reverting behavior of the current account (Husted, 1992; Ghosh, 1995; Wu et al., 1996; Fountas and Wu, 1999; Bergin and Sheffrin, 2000; Liu and Tanner, 2001; Arize, 2002; Baharumshah et al., 2003). The traditional approach provides mixed results in favor of the sustainability. For example, Wu et al. (1996) and Fountas and Wu (1999) found that the US current account deficits are not sustainable based on the conventional cointegration test. Dulger and Ozdemir (2005) found that the current accounts of France and Canada are mean-reverting, but the current accounts of the US and UK are not mean-reverting and are unsustainable.

Motivated by the development in the panel unit root and panel cointegration tests (Levin and Lin, 1993; Maddala and Wu, 1999; Breitung, 2000), an increasing number of authors have applied these new tools to test whether or not the current account is sustainable in the long run, for example, Wu (2000), Wu et al. (2001), Lau and Baharumshah (2005), Lau et al. (2006), Kalyoncu (2006) and Chu et al. (2007). For instance, Wu (2000) and Wu et al. (2001) support the stationarity of current accounts for the G-7 by using the panel unit-root test and panel cointegration test, respectively. For information, we summarize selective contributions to the current account sustainability in Table 1.

Distinct results from previous studies are in part due to differences in methodology, approach and sample. This means that there is no corroborative conclusion on the stationarity property of the current account. One possible reason for the non-stationarity in the current account could be the presence of structural breaks in the series. Perron (1989, 1990) and Perron and Vogelsang

(1992) have shown that when a time series has structural breaks in the mean or trend, the unit root hypothesis is often accepted before structural breaks are taken into account, while it is rejected after structural breaks are considered. One way to take these changes into account, suggested by Bierens (1997) among others, is to approximate the broken time trends with non-linear trends.

The purpose of this paper is to re-examine the mean-reverting property of the current account for the US, the UK, Canada and France. Chortareas and Kapetanios (2004) point out that there are at least three channels that make the current account become a non-linear process. The first source of non-linearity is the twin-deficit channel. The second channel that leads to non-linearity is the level of a country's indebtedness, which reflects the willingness of foreign lenders to hold domestic assets. The third channel comes from the transaction cost. Christopoulos and León-Ledesma (2010) also claim that changes in the current account affect agents' perceptions concerning risk, portfolio allocation decisions, and future policy changes; all these can also trigger adjustment dynamics that are not linear. We take this possibility into account in this empirical study. In order to achieve this, we use the Bierens (1997) non-linear augmented Dickey-Fuller (NLADF) test here since it allows the trend to be an almost arbitrary deterministic function of time. These tests differ from others in that they use Chebishev time polynomials rather than regular time polynomials, a parametric specification of the dynamics rather than using a Newey-West type long-run variance estimator, and the null hypothesis is a unit root with a constant drift hypothesis rather than a unit root with a non-linear trend drift hypothesis.

The remainder of this paper is organized as follows. Section 2 briefly discusses the theoretical model of the current account. Section 3 introduces the econometric methodology that we employ, and Section 4 describes the data and the empirical test results. Section 5 presents the conclusions that we draw from this research.

2 Theoretical Background

Following Ghosh (1995), Wu (2000) and Lau et al. (2006), this paper considers a simple variant of the intertemporal optimization model in which the world interest rate is fixed at r with a quadratic utility function. In such a model, the optimal current account can be represented as

$$CA_t = -\sum_{k=0}^{\infty} \frac{1}{(1+r)^k} E_t \Delta Q_{t+k}, \tag{1}$$

where the term E_t denotes the mathematical conditional expectation operator for information available at time t; $Q_t = Y_t - I_t - G_t$ is the net output or national cash flow; Y_t denotes the country's GDP; I_t is the level of investment; G_t is the level of government expenditure; and CA_t is the current account balance. Two implications emerge from equation (1). First, it indicates that the current account acts as a buffer through which private agents smooth consumption over time in response to shocks, that is, changes in output, investment, and government expenditure. Second, equation (1) states that the current account (CA_t) is determined by future expectations with regard to changes in net output. If Q_t is I(1), the first difference ΔQ_t is stationary, which means that CA_t on the left-hand side of Eq. (1) is stationary. Based on these assumptions, current accounts follow a mean-reverting process. Using these results, Wu (2000), Lau and Baharumshah (2005) and Lau et al. (2006) have demonstrated that the stationarity of the current account is important for any empirical investigation of the relationship.

3 Bierens' Non-linear Unit Root Test

Bierens (1997) proposed the non-linear Dickey-Fuller test by replacing the ordinary time polynomials with orthogonal Chebishev time polynomials. The advantage of using the Chebishev polynomials is that they allow one to distinguish between stationarity around a linear trend and stationarity around a non-linear deterministic trend under the alternative hypothesis.

Denote the orthogonal, detrended Chebishev polynomial as $P^*_{0,t}$ through $P^*_{m,t}$, where $P^*_{0,t}$ equals 1, $P^*_{1,t}$ is equivalent to a linear trend, and $P^*_{2,t}$ through $P^*_{m,t}$ are cosine functions. With these polynomials, the augmented Dickey-Fuller regression becomes:

$$\Delta z_t = \alpha z_{t-1} + \sum_{j=1}^{p} \phi_j \Delta z_{t-j} + \sum_{j=0}^{m} \theta_j P^*_{j,t} + \varepsilon_t. \qquad (2)$$

Bierens (1997) considered the null of the unit root with drift against three alternative hypotheses: stationarity around a level, stationarity around a linear trend or stationarity around a non-linear trend. Bierens proposed several test statistics for equation (2): $\hat{t}$ which is the t-statistic for the estimated coefficient $\hat{\alpha}$, $\hat{A} = \frac{n\hat{\alpha}}{|1-\sum_{i=1}^{p}\hat{\phi}_i|}$, and $\hat{F}$ which is the F test for the joint hypothesis that $\hat{\alpha}$ and the last m components of the parameter θ_j in model (2) are zero under the null. When H_0 is rejected, the proper alternative hypothesis will depend on the test statistic and on whether there is left-side or right-side rejection (see Table 2). Since this test does not follow a standard F distribution, Bierens (1997) provided the distribution fractiles based on a Monte Carlo simulation.

In addition, the author developed a model-free unit root test $\tilde{T}$, given that for the F test it is necessary to choose the lag length p in the auxiliary regression and the results may be sensitive to this choice. The model-free unit root test is based on the following regression:

$$\Delta z_t = -\rho z_{t-1} + \lambda_0 + \rho\lambda_1 t + f(t) + \epsilon_t, \tag{3}$$

where ρ lies in the interval $[0, 1]$, $f(t)$ is a non-constant deterministic function of time such that $\lim_{n\to\infty}(1/n)\sum_{t=1}^{n} f(t) = 0$, $\lim_{n\to\infty}(1/n)\sum_{t=1}^{n} tf(t) = 0$, and ϵ_t is a zero-mean process that follows the functional central limit theorem. The null hypothesis of a unit root is formulated as:

$$H_0 : \rho = 0, f(t) \equiv 0, \tag{4}$$

There are two alternative hypotheses. The first one is linear trend stationarity

$$H_A^L : \rho = 1, f(t) \equiv 0, \tag{5}$$

whereas the second alternative is non-linear trend stationarity

$$H_A^{NL} : \rho = 1. \tag{6}$$

In the case of the rejection of the null, in order to distinguish between stationarity around a linear or around a non-linear trend, Bierens (1997) designed the $\tilde{T}$ test. As this test does not have a standard limiting distribution, Bierens (1997) provided the most important fractiles of the distribution for $m = 3, ..., 20$. Left-side rejection would imply linear trend stationarity whereas right-side rejection implies non-linear trend stationarity.

Thus, the main advantage of $\tilde{T}$ over $\hat{F}$ is that the former permits the distinction between stationarity around a linear and a non-linear trend. However, in $\tilde{T}$ we assume that the lag length of the auxiliary regression is zero. That is, the ADF-type regression becomes a DF-type regression.

4 Data and Results

We focus on four of the G-7 industrial countries, i.e., the US, the UK, Canada and France, in our empirical study. The data include quarterly observations of the current account and gross domestic product. The sample periods are different across countries depending upon the availability of data. The sample period is 1960:1-2008:1 for the US and the UK; 1961:1–2008:1 for Canada; and 1978:1–2008:1 for France. All data are obtained from the OECD Main Economic Indicators at `http://stats.oecd.org/mei/`. The current account per output or the current account-GDP ratio (CAGDP) is calculated as follows: the current account is divided by gross domestic product.

First, we apply the Augmented Dickey-Fuller (ADF) unit root test to determine the order of integration of CAGDP for the four countries. The key here is to account for serial correlation; we set $k = 20$, which is the lagged difference, and use the AIC to select the optimal lag length. The results are not reported here due to space constraints, but they are available from the author upon request. We find strong evidence in favor of the unit root hypothesis based on the ADF test using their respective level data. When we apply the ADF test to the first difference of these series, again, we are able to reject the null hypothesis of a unit root at the 5% level or better.

In order to validate the non-linear unit root tests used in this paper, we conduct several non-linear tests for the current account-GDP ratio. The nonlinearity tests that we consider include the RESET-type tests, the Keenan test, the Tsay test, the McLeod-Li test, the BDS test, the White dynamic information matrix test, and the neural network test. Readers are referred to Psaradakis and Spagnolo (2002) for detailed descriptions of these tests. We adopt these statistics to examine whether any nonlinearity exists in the current account-GDP ratio. The results are reported in Table 3. Table 3 shows that, except for the UK, some of the p-values of these non-linear tests are smaller than those at the 10% significance level, indicating that the current account-GDP ratios of these countries could be better characterized by the non-linear model.

As discussed before, we have performed Bierens' (1997) non-linear unit root tests. In implementing the tests, the first question that arises is what time orders we should use. Ideally, one would use the time order that best approximated the non-linear trend under the alternative hypothesis, but this is unknown. If too low an order is specified, the tests may lack power due to specification error, and if too high, the tests may lack power from estimating superfluous parameters. Unfortunately, there is no good rule to determine an ideal time order. Thus, we have run the tests for time orders from 2 through 20. The higher orders allow for a possibly complex path, but even a path that looks simple to the eye could need a high time order to approximate it. The second question that arises concerns lag choice. We choose the number that minimizes the Akaike Information Criterion (AIC) for the null model. For the purpose of robustness, we also choose the number of lags using the formula suggested by Bierens as follows: $p = [cn^r]$, where $c = 5$ and $r = 0.25$ and n is the sample size. We find that the general conclusions are unchanged compared to the AIC criterion.

An issue for the tests concerns determining their statistical significance. Although large-sample critical values are available (Bierens, 1997), all the tests are subject to possible size distortions (usually in the direction of over-rejection) with typical sample sizes. Therefore, we follow Bierens'

(1997) approach of simulating the p-values for all tests. We conduct the Bierens' NLADF test by using the EASYREG software and summarize the final results in Table 4 while including the test results in Tables A1–A4. The graphs for the current account-GDP ratio and non-linear time trend are included in Figures 1 to 4 for the US, the UK, Canada and France, respectively.

In the case of the US, we obtain right-side rejection (p-value > 0.9) of the $\hat{t}$ statistics when m is equal to 11 and 12, indicating that the null hypothesis of a unit root with drift is rejected in favor of the non-linear trend stationarity. The results from the $\tilde{T}$ statistics when $m = 18$, 19 and 20 also signify that the current account is non-linear trend stationary because the p-value is greater than 0.9. However, it is not possible for us to distinguish between mean stationarity, linear trend stationarity or stationarity around a non-linear trend based on the $\hat{A}$ and $\hat{F}$ statistics since we obtain left-side rejection (p-value < 0.10) for the $\hat{A}$ statistics when m is equal to 14 and 19, and right-side rejection for the $\hat{F}$ statistics when m is equal 18, 19 and 20.

In the case of the UK, we cannot distinguish between mean stationarity, linear trend stationarity or stationarity around a non-linear trend based on Bierens' NLADF test because we obtain left-side (right-side) rejection of the $\hat{t}$ and $\hat{A}$ ($\hat{F}$) statistics. Therefore, the evidence that favors the non-linear trend stationarity of the current account of the UK is not clear. However, it is indicative of the mean or linear stationarity of the current account based on the left-side rejection of the $\tilde{T}$ statistics.

In the case of Canada, we find that the current account is the mean or linear trend stationary process because we obtain left-side rejection of the $\hat{t}$, $\hat{A}$ and $\tilde{T}$ statistics for a number of values of m. Finally, in the case of France, we obtain both left-side and right-side rejection of the $\hat{A}$ statistics, and right-side rejection of the $\tilde{T}$ statistics when $m = 6$. Therefore, the null hypothesis of a unit root with drift is rejected but we cannot distinguish between mean stationarity, linear trend stationarity and stationarity around a non-linear trend based on these tests.

Overall, it is difficult for us to draw a concrete conclusion regarding the mean-reverting property of the current account for the US, the UK, Canada and France since the tests are in part inconclusive to distinguish between mean stationarity, linear trend stationarity, and stationarity around a non-linear trend. What we learn in this exercise is that we should exercise caution in concluding that the current account is sustainable or unsustainable based only on the traditional unit root test since it overlooks the non-linear property inherent in the data.

5 Concluding Remarks

This paper investigates the sustainability of current accounts for the US, the UK, Canada and France. The empirical evidence suggests that the traditional unit root cannot be rejected at the 5% level, indicating that the current account-GDP ratios for these countries are not stationary processes and are thus unsustainable. However, previous studies have pointed out that we cannot exclude the possibility that the current account could be a non-linear process. Ignoring this feature will lead to bias in that we will accept the null hypothesis of a unit root by using the traditional unit root test. We take this possibility into account by employing Bierens' non-linear unit root tests. The merit of Bierens' approach is that it allows the trend to be an almost arbitrary deterministic function of time.

The application of Bierens' tests to the current account-GDP ratio indicate that the null hypothesis of a unit root is rejected once we account for a more general specification of the non-linear deterministic components based on a Chebishev polynomials approximation. Unfortunately, the tests are in part inconclusive because it is difficult for us to distinguish between mean stationarity, linear trend stationarity, and stationarity around a non-linear trend. Hence, we are unable to draw a concrete conclusion on the mean-reverting property and hence the sustainability of the current account for the US, the UK, Canada and France. This is because, as pointed out by an anonymous referee, making such a strong claim for the US for example would require a better model specification showing the links between the current account deficits and the domestic finances of the United States. One possible solution for this problem is that we should employ a specific non-linear model, for example the threshold model or a Markov switching model, to characterize the data. We plan to undertake this study in the near future. In addition, will we find similar results for other interesting countries such as Australia or emerging countries? We leave this as an open question for interested readers.

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Table 1: Summary of recent contributions on current account sustainability

Studies	Countries and Samples covered	Methodology	Sustainability
Apergis et al. (2000)	Greece, 1969–1994	Gregory-Hansen cointegration test with regime shift	Held
Arize (2002)	50 countries, 1973–1998	Johansen's cointegration test	31 out of 50 countries held
Baharumshah et al. (2003)	Indonesia, Malaysia, the Philippines, and Thailand, 1961–1999	Unit root test, Gregory-Hansen cointegration test with regime shift	Violated
Chortareas et al. (2004)	Argentina, Bolivia, Brazil, Chile, Colombia, El Salvador, Guatemala, Mexico, Nicaragua, Panama, Peru, and Venezuela, 1970–2000	Kapetanios and Shin (2002) Threshold unit root test	Held
Christopoulos and León-Ledesma (2010)	US, 1960–2008	Kapetanios et al. (2003) STAR unit root test	Held
Chu et al. (2007)	48 African Countries	Breuer et al. (2002) SURADF panel unit root test	37 out of 48 held
Dulger and Ozdemir (2005)	G-7 countries, 1974–2001	Fractional unit root test	France, Italy, Canada hold Germany, UK, US, Japan violated
Herzer and Nowak-Lehmann (2006)	Chile, 1975–2004	Unit root test, Gregory-Hansen cointegration test with regime shift	Held
Holmes (2006)	11 OECD countries, 1980–2002	Panel cointegration	Australia, Belgium, Canada, Japan, UK, US Held France, Germany, Italy, Norway, Spain violated
Ismail and Baharumshah (2008)	Malaysia, 1960–2004	Unit root test Cointegration test	Held
Kalyoncu (2006)	22 OECD countries, 1960–2002	Panel unit root test	Held
Kim et al. (2009)	Indonesia, Korea, Malaysia, The Philippines, Thailand, 1981–2003	Park and Shintani (2005) non-linear unit root test	Held
Lau and Baharumshah (2005)	Asian-12: Bangladesh, India, Indonesia, Japan, Korea, Malaysia, Nepal, Pakistan, The Philippines, Singapore, Sri Lanka and Thailand, 1970–2002	Breuer et al. (2002) SURADF panel unit root test	Violated except Bangladesh, Korea and Singapore
Lau et al. (2006)	Asian-5: Indonesia, Korea, Malaysia,	Panel unit root test	Held
Wu (2000)	10 OECD countries	Panel unit root test	Held
Wu et al. (2001)	G-7, 1973–1998	Panel cointegration test	Held

Table 2: Alternative hypothesis

Test	Left-side rejection	Right-side rejection
$\hat{t}$	M, L, or NL	NL
$\hat{A}$	M, L, or NL	NL
$\hat{F}$		M, L, or NL
$\tilde{T}$	M or L	NL

M, mean stationarity.
L, linear trend stationarity.
NL, non-linear trend stationarity.

Table 3: p-values for a battery of non-linear tests

	US	UK	Canada	France
RESET1	0.018	0.262	0.153	0.367
RESET2	0.018	0.136	0.153	0.574
KEENAN	0.758	0.152	0.774	0.280
TSAY	0.757	0.359	0.773	0.082
MCLEOD	0.970	0.226	0.440	0.000
BDS	0.344	0.603	0.804	0.557
WHITE1	0.624	0.305	0.092	0.662
WHITE2	0.033	0.106	0.083	0.032
NEURAL1	0.011	0.591	0.078	0.174
NEURAL2	0.014	0.289	0.166	0.896

RESET1: Ramsey and Schmidt (1976).
RESET 2: Thursby and Schmidt (1977).
KEENAN: Keenan (1985).
TSAY: Tsay (1986).
MCLEOD: McLeod and Li (1983).
BDS: Brock et al. (1996).
WHITE1 and WHITE2 are White's (1987) information matrix tests.
NEURAL1 and NEURAL2 are the neural network tests proposed by White (1989a,b).

Table 4: Summary of test results

Tests	US	UK	Canada	France
Left-side rejection of $\hat{t}$	yes	yes	yes	
Right-side rejection of $\hat{t}$	yes			
Left-side rejection of $\hat{A}$	yes	yes	yes	yes
Right-side rejection of $\hat{A}$				yes
Right-side rejection of $\hat{F}$	yes	yes		
Left-side rejection of $\tilde{T}$		yes	yes	
Right-side rejection of $\tilde{T}$	yes			yes

'Yes' denotes the condition is satisfied.
M, mean stationarity.
L, linear trend stationarity.
NL, non-linear trend stationarity.
Left-side rejection of $\hat{t}$: the series could be M, L, or NL.
Right-side rejection of $\hat{t}$: the series is NL.
Left-side rejection of $\hat{A}$: the series could be M, L, or NL.
Right-side rejection of $\hat{A}$: the series is NL.
Right-side rejection of $\hat{F}$: the series could be M, L, or NL.
Left-side rejection of $\tilde{T}$: the series could be M or L.
Right-side rejection of $\tilde{T}$: the series is NL.

Table A1: Simulated percentiles for Bierens' NLADF tests (US)

m	$\hat{t}$	$\hat{A}$	$\hat{F}$	$\tilde{T}$
2	0.463	0.480	0.358	–
3	0.669	0.713	0.092	0.464
4	0.787	0.815	0.092	0.375
5	0.868	0.844	0.048	0.279
6	0.849	0.736	0.044	0.330
7	0.706	0.676	0.361	0.550
8	0.801	0.717	0.240	0.445
9	0.894	0.828	0.142	0.381
10	0.707	0.591	0.282	0.366
11	<u>0.963</u>	0.887	0.181	0.383
12	0.637	0.454	0.483	0.496
13	<u>0.903</u>	0.718	0.323	0.674
14	0.305	<u>0.073</u>	0.809	0.844
15	0.644	0.179	0.693	0.829
16	0.754	0.274	0.591	0.806
17	0.873	0.372	0.479	0.703
18	0.495	0.287	<u>0.914</u>	<u>0.903</u>
19	0.122	<u>0.026</u>	<u>0.977</u>	<u>0.965</u>
20	<u>0.074</u>	0.168	<u>0.954</u>	<u>0.947</u>

Table A2: Simulated percentiles for Bierens' NLADF tests (UK)

m	$\hat{t}$	$\hat{A}$	$\hat{F}$	$\tilde{T}$
2	0.003	0.002	0.995	–
3	0.193	0.213	0.640	0.076
4	0.250	0.262	0.498	0.028
5	0.445	0.498	0.201	0.025
6	0.372	0.512	0.324	0.105
7	0.548	0.541	0.170	0.146
8	0.223	0.307	0.503	0.171
9	0.333	0.344	0.334	0.246
10	0.321	0.421	0.351	0.230
11	0.452	0.544	0.213	0.133
12	0.179	0.428	0.528	0.191
13	0.458	0.587	0.338	0.246
14	0.693	0.708	0.212	0.187
15	0.412	0.506	0.381	0.212
16	0.430	0.498	0.328	0.219
17	0.546	0.602	0.238	0.165
18	0.720	0.673	0.151	0.213
19	0.057	0.210	0.817	0.397
20	0.135	0.339	0.866	0.594

Table A3: Simulated percentiles for Bierens' NLADF (Canada)

m	$\hat{t}$	$\hat{A}$	$\hat{F}$	$\tilde{T}$
2	0.201	0.123	0.737	–
3	0.052	0.030	0.880	0.576
4	0.094	0.058	0.812	0.230
5	0.204	0.121	0.542	0.119
6	0.347	0.233	0.397	0.254
7	0.035	0.009	0.841	0.287
8	0.047	0.020	0.854	0.279
9	0.069	0.008	0.729	0.178
10	0.038	0.007	0.819	0.135
11	0.097	0.030	0.629	0.105
12	0.158	0.041	0.516	0.062
13	0.259	0.068	0.307	0.037
14	0.386	0.116	0.212	0.015
15	0.544	0.161	0.105	0.013
16	0.363	0.076	0.209	0.009
17	0.524	0.077	0.134	0.022
18	0.685	0.174	0.091	0.046
19	0.552	0.118	0.169	0.036
20	0.617	0.131	0.139	0.021

Table A4: Simulated percentiles for Bierens' NLADF tests (France)

m	$\hat{t}$	$\hat{A}$	$\hat{F}$	$\tilde{T}$
2	0.822	0.760	0.132	–
3	0.871	0.924	0.115	0.506
4	0.311	0.671	0.671	0.745
5	0.801	0.811	0.421	0.856
6	0.886	0.796	0.263	0.901
7	0.357	0.295	0.789	0.887
8	0.370	0.427	0.740	0.852
9	0.557	0.608	0.572	0.783
10	0.521	0.120	0.566	0.750
11	0.447	0.047	0.579	0.779
12	0.596	0.037	0.389	0.686
13	0.389	0.332	0.469	0.585
14	0.838	0.167	0.293	0.595
15	0.143	0.914	0.823	0.660
16	0.105	0.826	0.896	0.680
17	0.166	0.666	0.779	0.549
18	0.259	0.461	0.663	0.467
19	0.399	0.488	0.489	0.399
20	0.506	0.491	0.329	0.438

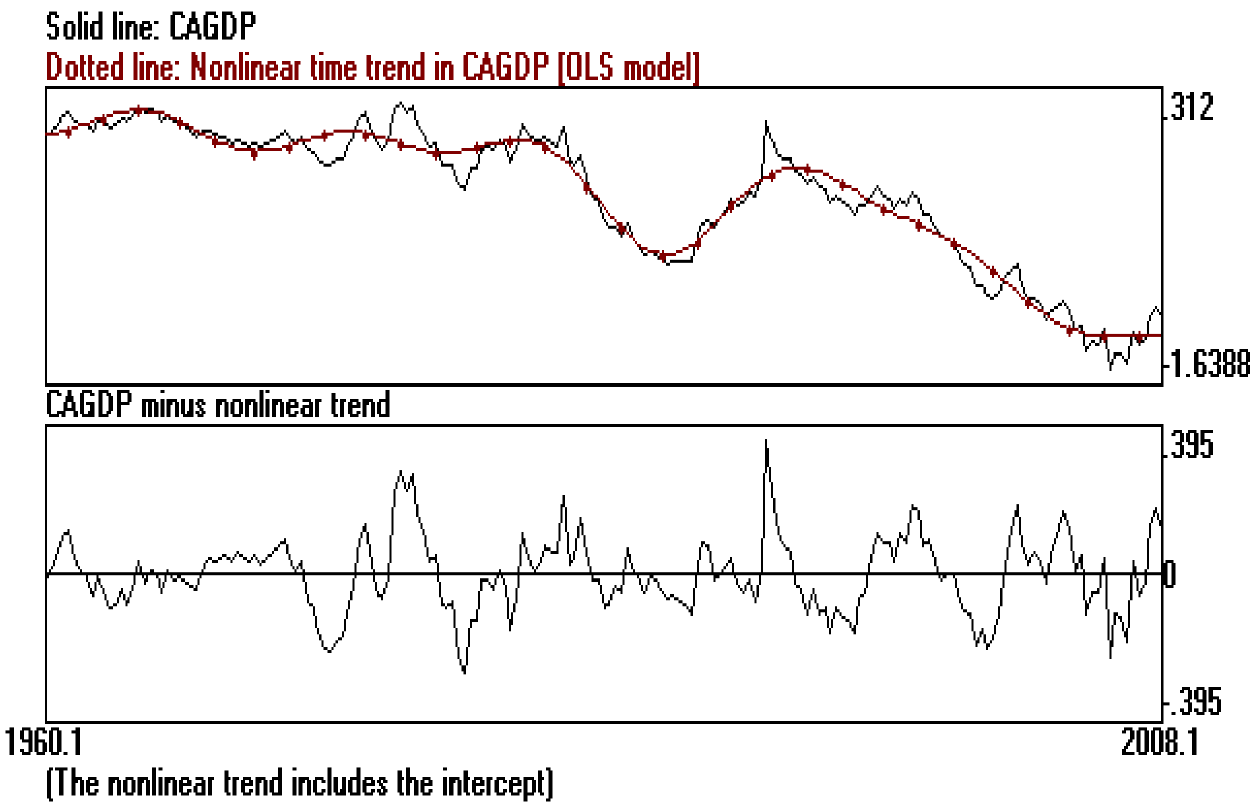

Figure 1: Current account-GDP ratio and the non-linear time trend for the US.

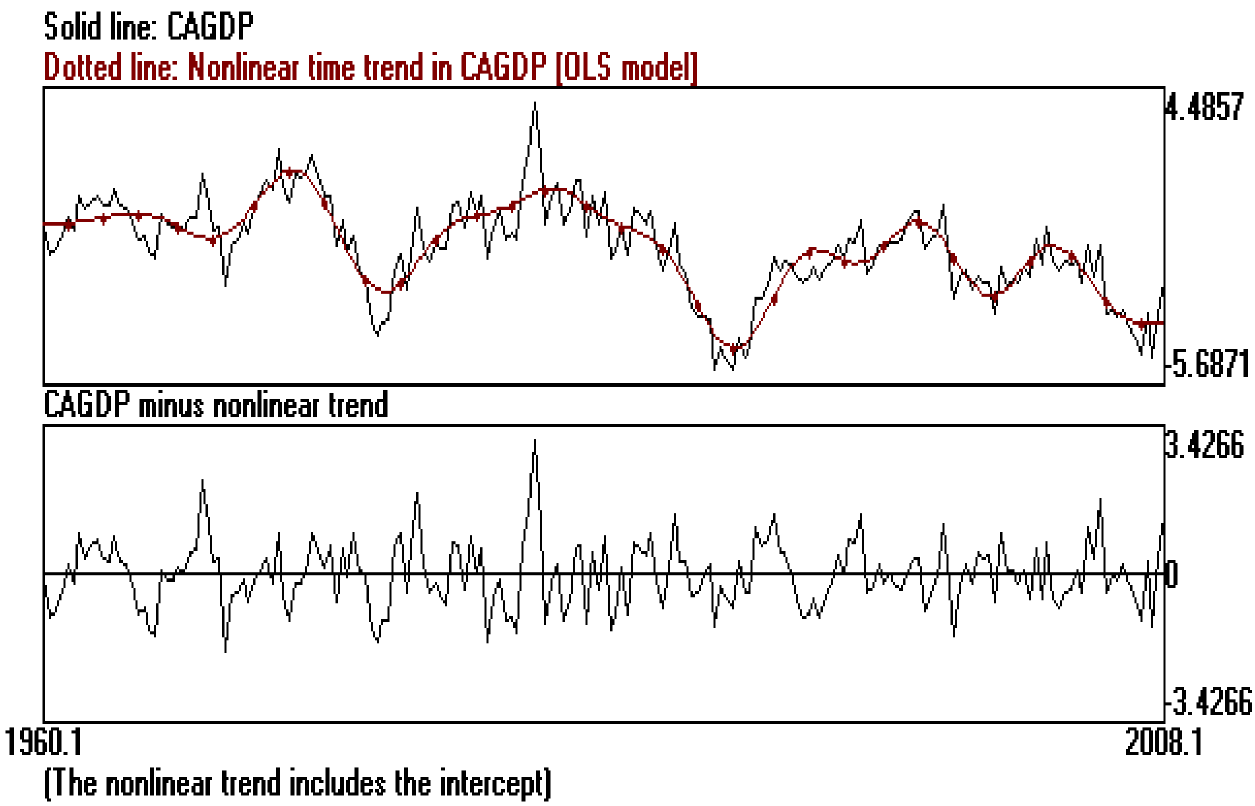

Figure 2: Current account-GDP ratio and the non-linear time trend for the UK.

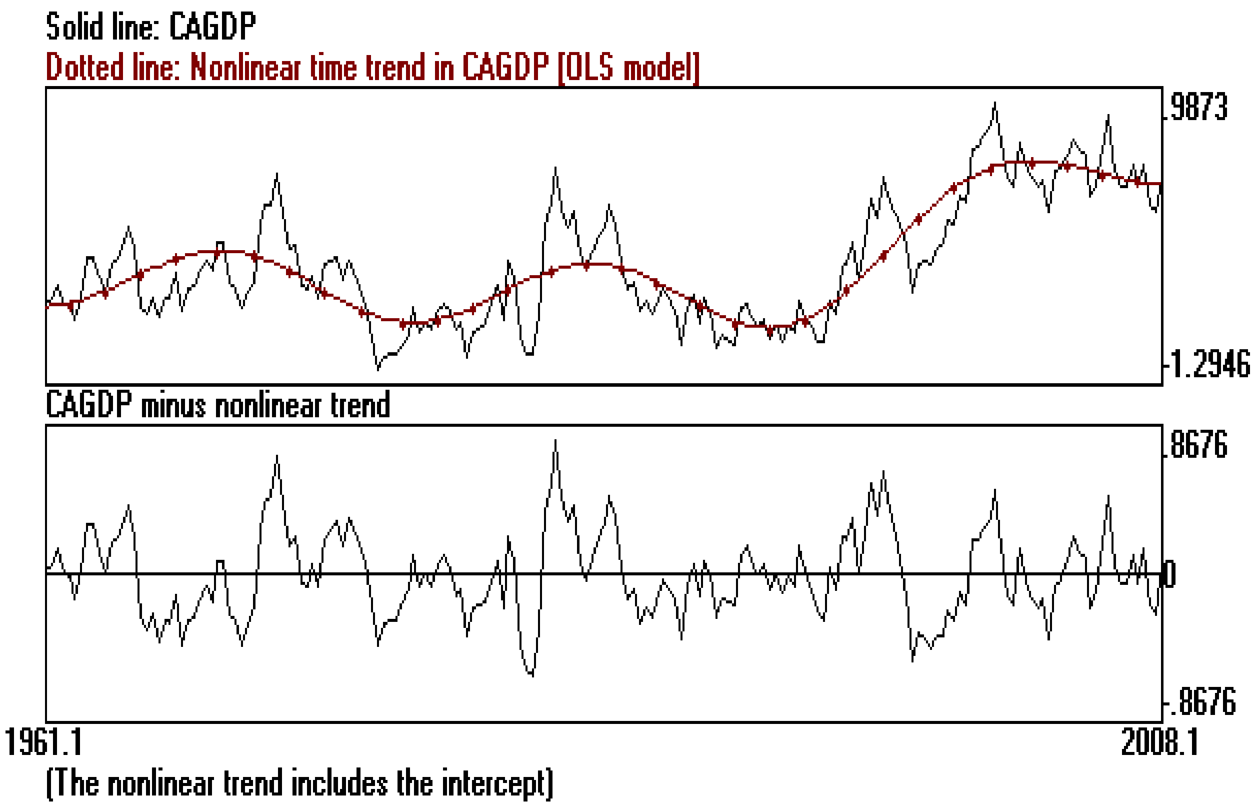

Figure 3: Current account-GDP ratio and the non-linear time trend for Canada.

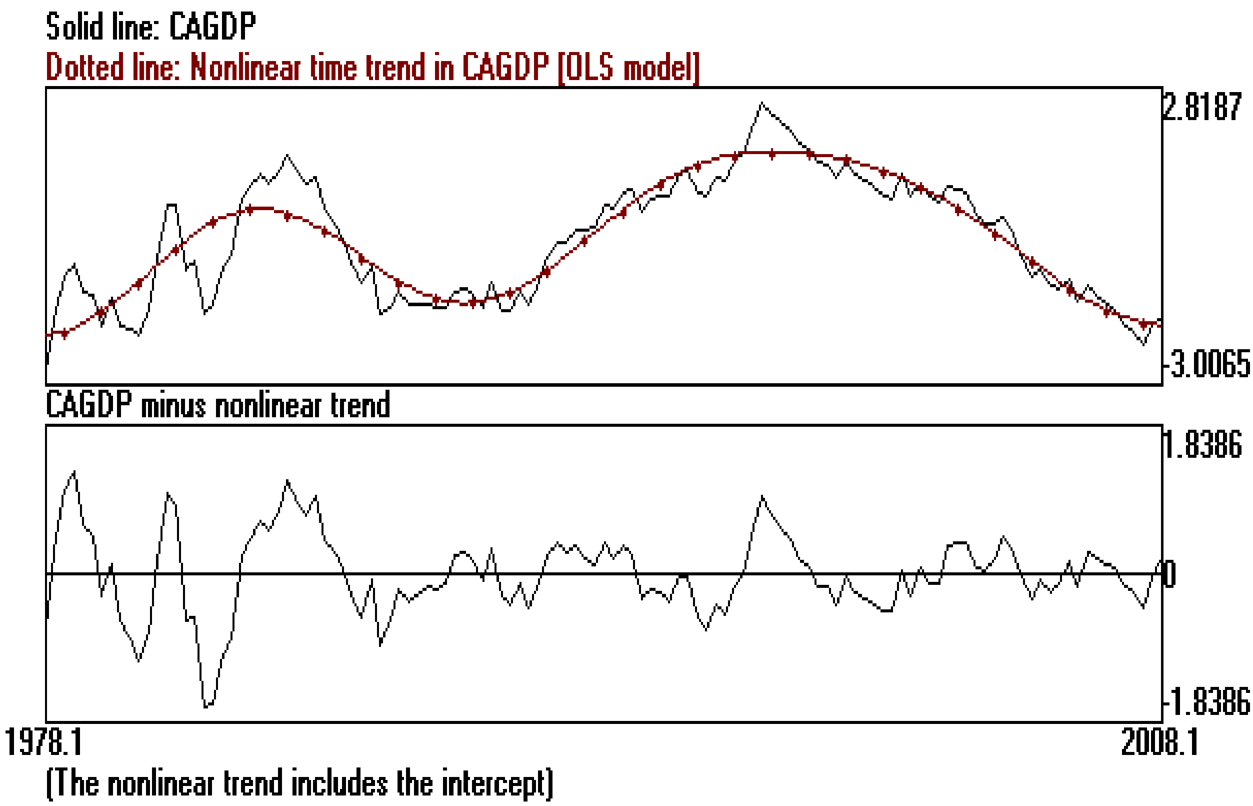

Figure 4: Current account-GDP ratio and the non-linear time trend for France.