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THE BEHAVIOR OF THE BRAZILIAN FEDERAL DOMESTIC DEBT

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Resumo: Este artigo analisa a sustentabilidade da política fiscal do governo federal brasileiro examinando as respostas dos superávits fiscais do governo a alterações na razão dívida-PIB préviamente observada. A abordagem para acessar a sustentatbilidade, originalmente proposta por Bohn (1998), circunventa os problemas apresentados pelo teste tradicionais de sustentabilidade os quais baseiam-se nas propriedades estatísticas da dívida mobiliária, como testes de raíz unitária e de cointegração. Em particular, as regressões propostas não requerem pressupostos restritivos a respeito da taxa real de juros, da estrutura do endividamento governamental ou do comportamento dos agentes em relação ao risco. Utilizando dados anuais de 1966 a 2000, os resultados aqui apresentados indicam que os superávits fiscais não têm respondido de forma sistemática a variações da relação dívida-PIB previamente observada, indicando que a política fiscal do governo federal não pode ser considerada sustentável durante o período analisado. Além disso, o artigo mostra que a razão dívida-PIB não apresenta tendência de reversão à média, mesmo quando variações cíclicas no nível de renda e de gastos governamentais são levadas em consideração, o que também sugere um padrão não sustentável para a política fiscal brasileira.

Palavras-chave: Dívida mobiliária federal; consolidação fiscal; Brasil
Classificação JEL: H63

Abstract: This paper analyses the sustainability of the Brazilian federal fiscal policy by examining the responses of the government budget surplus to variations of the debt-GDP ratio. The approach to assess sustainability, originally proposed by Bohn (1998), circumvents the problems present in traditional sustainability tests based on statistical properties of the debt, such as unit roots and cointegration. In particular, the regressions proposed do not require restrictive assumptions about real interest rates, the structure of the government debt or the agents' behavior towards risk. Using annual data from 1966 to 2000, the results have indicated that the government surplus has not systematically responded to changes in the debt-income level previously observed, indicating that the fiscal policy cannot be considered sustainable during the period analyzed. Moreover, it is shown that the debt-GDP ratio does not exhibit a mean-reverting tendency even when one controls for cyclical variations in income and government expenditures, further indicating a non-sustainable path for the fiscal policy.

Keywords: Federal domestic debt; fiscal consolidation; Brazil
JEL Classification: H63

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1. INTRODUCTION

In the last few years, empirical work on the Brazilian federal domestic debt has focused on whether or not the government's behavior may be considered consistent with an intertemporal budget constraint, and therefore, sustainable in the long-run. A fiscal policy which implies an explosive debt/income ratio with the debt growing over time at a faster rate than the economy is obviously not sustainable. Hence, the emphasis of the empirical work has mostly been on assessing the statistical properties of the debt through either univariate analysis on the debt series (Hamilton and Flavin, 1986; Wilcox, 1989, Kremers, 1989; Uctum and Wickens, 1996) or the cointegration properties of government revenue and expenditure (Trehan and Walsh, 1988, 1991; Hakkio and Rush, 1991; Haug, 1991; Bohn, 1991; Tanner and Liu, 1994; Ahmed and Rogers, 1995).

Following the international literature, the econometric tests on the Brazilian case have yielded mixed results. Issler and Lima (1997) test the cointegration of expenditure and revenue and conclude that the Brazilian debt has been sustainable. Pastore (1995) considers the domestic debt sustainable, but not as a result of fiscal discipline. Instead, the author argues that intertemporal consistency is obtained through the usage of monetary expansions and seignorage collection. Tanner (1995) argues that sustainability is only attained because the Brazilian government has under-corrected indexation clauses on its debt, impinging real reductions in its debt value. Luporini (2000) tests the implications of the intertemporal budget constraint through the methodology developed by Kwiatkowski and others (1992) and finds that the debt has assumed an unsustainable path during the 1980s. Rocha (1995) also tests for sustainability.

Sustainability tests based on the statistical properties of the debt are not without critics, however. The debt series might present a high degree of persistence and take a long period to return to its mean-value, leading to a non-sustainable result. The comparison between fiscal surpluses and the stock of debt, both measured in present-value terms, depends crucially on the interest rate used in the discount factor. The discount factor itself depends, in turn, on the structure of the debt, particularly on the risks associated with each type of security. The analysis based on cointegration requires assumptions about the real interest rate and about the stochastic processes driving the deficit. A country may have a cointegrated revenue and expenditure and therefore a sustainable fiscal policy, but still have a debt/income ratio that is too high from the standpoint of debt management.

The purpose of this paper is to further investigate the sustainability of the Brazilian federal domestic debt by examining the responses of the government surplus to variations of the debt-income ratio. This approach, originally proposed by Bohn (1998), circumvents the problems present in tests based on the statistical properties of the debt, such as unit roots and cointegration. In particular, the regressions proposed do not require

restrictive assumptions about the real interest rates, the structure of the government debt or the agents' behavior towards risk.

The article is organized as follows. Section 2 discusses the role of the transversality condition for sustainability tests and why traditional tests fail to take into account uncertainty and agents behavior towards risk. Section 3 presents the new approach to sustainability proposed by Bohn (1998). The results of the applications of the new approach to the Brazilian data is presented in section 4. Section 5 concludes the article.

2. INTERTEMPORAL BALANCE AND TRANSVERSALITY CONDITIONS

The sustainability of government debts is usually defined in the literature as a fiscal policy whose temporal path is consistent with an intertemporal budget constraint. The government budget constraint in real terms is given by:

$$b_t - b_{t-1} = -s_t + rb_{t-1} \qquad (1)$$

where s is the non-interest surplus, b is the stock of government debt and r is the interest rate.

The intertemporal budget constraint is obtained by applying recursive forward substitution to (1):

$$B_t = B_{t+N} + \sum_{j=1}^{N} S_{t+j} \text{ , where } B_{t+N} \equiv \frac{1}{(1+r)^N} b_{t+N} \text{ and } S_{t+j} \equiv \frac{1}{(1+r)^j} s_{t+j} .$$

Taking expectations as of time t and applying the limit as N tends to infinite gives an expression to analyze what the creditors expect to happen to the government debt as time goes by:

$$B_t = \lim_{N\to\infty} E_t B_{t+N} + \sum_{j=1}^{N} E_t S_{t+j} \qquad (2)$$

The theory of government finance states that the budget will be intertemporally balanced when the government's debt is backed by expected primary surpluses of equal present-value and, in this sense, the government debt is sustainable. According to equation (2), this is the case when the transversality condition $\lim_{N\to\infty} E_t B_{t+N} = 0$ applies.

Traditionally, sustainability tests have been based on estimating a cointegrating relationship between revenues and expenditures or, equivalently, estimating the transversality condition. The use of the transversality condition to test for sustainability implies choosing the appropriate discount rate. Empirically, it is common practice to use

the real return on government bonds as the discount rate. According to Bohn (1995), this procedure is appropriate only under certainty conditions.

The reason is that in a stochastic environment, the intertemporal budget constraint becomes $B_t = \lim_{N\to\infty} E_t\left(u_{t,N}.B_{t+N}\right)+\sum_{j=1}^{N} E_t\left(u_{t,j}S_{t+j}\right)$ and the transversality condition now involves the term $u_{t,N}$ and $E(.)$, which denote respectively, the marginal rate of substitution between consumption in period t and $t+N$ and the expectation conditional on some state of nature [1].

In general, the rate of return on a financial asset in period $t+1$ when the state of nature s_{t+1} is realized, given the history of the economy up to time t, will satisfy the Euler equation:

$$E_t\left[u_{t+1}(1+R_{t+1})\right]=1$$

In a stochastic environment, however, the expression $u_{t,1}(1+R_{t+1})$ does not have to equal unity in every state of nature. As a result, the marginal rate of substitution between consumption in period t and $t+N$ may not be measured by the discount rate on government debt based on the observed real rate of interest as it is usually assumed by the applied literature on sustainability. Instead, the discount rate will depend on how the overall level of government debt is distributed across states of nature. As a result, the sustainability tests of the Brazilian debt currently present in the literature do not adequately deal with the implications of uncertainty and risk, and a new approach is needed.

3. A NEW APPROACH TO SUSTAINABILITY

The applied literature on sustainability is usually based on the direct estimation of the intertemporal budget constraint under certainty. There are some difficulties in deciding whether or not a policy has been sustainable based on these estimations in a stochastic environment.

To illustrate the problem, suppose two different policies. In the first one, the government sets its primary surpluses equal zero; in the second, the government runs budget surpluses when the debt-income ratio exceeds some exogenously given upper target, but does not make any interest payments if the debt-income ratio remains bellow the target. The policy that keeps the primary surplus equal to zero implies that the government is simply rolling over its debt forever as it does not run positive primary surpluses to face interest payments on its debt. The second policy implies an upper bound

[1] See Bohn (1995) for a thorough demonstration of this development.

on the debt-income ratio and the debt-income ratio will be a random-walk as long as it remains bellow the target (Bohn, 1994).

The first policy is clearly unsustainable because it represents a Ponzi scheme; the second policy might be sustainable under some states of nature.

In this example, accessing sustainability of the government debt becomes difficult because the behavior of the debt series under the two policies will be undistinguishable from an econometric point of view. That is, if there is a positive probability that the economy's growth rate might exceed the rate of return on the debt, the two policies are undistinguishable to an econometrician observing this economy, even though the second policy is sustainable while the first one is not.

The new approach proposed by Bohn (1998) represents a much more general test of sustainability because even if the government runs primary deficits on average and in most states of nature, persistent primary deficits will lead to excessive debt accumulation at least in some unfavorable states of nature, which will eventually require a corrective measure in terms of surplus. The approach looks at both the fiscal policy and the behavior of the debt-income ratio and does not depend on the behavior of the real interest rate, growth rates, debt management policies, uncertainty or degrees of risk aversion.

The approach to asses sustainability consists of searching for evidence of corrective actions by the government in response to changes in its debt by looking directly at the relationship between primary surpluses and the debt-income ratio. A positive response in terms of surplus indicates, for instance, that either expenditures are being reduced or revenues are being raised in order to counteract a previous increase in the debt-income ratio.

The author shows in the technical appendix to the article that when one writes the surplus-income ratio as a function of the debt-income ratio observed at the beginning of the period and other determinants, a strictly positive and at least linear response of the surplus to increases in the debt-income ratio will suffice to ensure compliance to an intertemporal budget constraint:

$$s_t = r\, b_t + m_t \qquad (3)$$

where m_t is bounded and represents other determinants of the surplus, namely temporary government spending and a business cycle indicator.

This condition, a positive coefficient on b_t, implies that any negative shock resulting in an increase of the debt-income ratio will eventually lead to an increase in the primary surplus as well, regardless of the nature of the shock..

4. EMPIRICAL RESULTS

In order to search for a systematic relationship between the primary surplus and the debt-income ratio, and assess sustainability, Bohn (1998) proposes estimating the following regressions:

$$\text{(A)} \qquad s_t = \alpha + \rho\, b_t + \beta_1 GVAR + \beta_2 YVAR + \varepsilon_t$$

and

$$\text{(B)} \qquad \Delta b_{t+1} = \alpha + \gamma\, b_t + \beta_1 GVAR + \beta_2 YVAR + \varepsilon_t$$

According to equation (3), the surplus-income ratio is a function of the beginning of the period debt-income ratio and other determinants of the surplus, namely the level of temporary government spending and a business cycle indicator, *GVAR* and *YVAR*, respectively. The background of this specification is the neoclassical theory of tax-smoothing (Barro, 1979) with further elaborations to allow for counter cyclical variations of the federal budget and temporary changes in government spending (Barro, 1986) .

A sustainable policy implies a strictly positive coefficient on the debt-income ratio in the first regression, as previously discussed. In the second regression, sustainability implies a negative coefficient on the lagged debt-income ratio because, in this case, there is evidence of mean-reversion in the debt series.

The possible counter cyclical effect of the budget surplus is captured by the business cycle variable *YVAR*. Following Barro (1986), *YVAR* is defined as $(1 - y/y^*)$, where y^* stands for trend output. As such, *YVAR* represents the output gap or a measure of unemployment. The coefficient on *YVAR* is expected to be negative, as an increase in the output gap is accompanied by an increase in the budget deficit (or a decrease in the surplus). For the same reason, the coefficient on temporary government spending *GVAR* is also expected to be negative. *GVAR* is defined as g^*/g, with g^* standing for the normal (or trend) amount of government expenditure.

In the second regression, sustainability implies a negative coefficient on the lagged debt-income ratio because, in this case, there is evidence of mean-reversion in the debt series. The coefficients on *YVAR* and *GVAR* are now expected to be positive since both a temporary increase in government spending and a counter cyclical motive for the deficit will imply an increase in the debt-income ratio.

The two regressions proposed can be estimated by Ordinary Least Squares (OLS) as long as the variables involved are stationary. *GVAR* and *YVAR* are stationary by construction. Augmented Dickey-Fuller (ADF) and the heteroskedastic-consistent Phillips-Perron unit root test were performed at the appropriate specification and the null-

hypothesis of a unit root was rejected at the 5 percent confidence interval (see *Table I*). The regressions are then estimated by *OLS.*

Table I : Unit Root Tests

Variable	ADF (lag 1)	PP (lag 3)	Statistic at 5% confidence interval	Specification
s	-2.77	-3.11	-1.95	no trend or intercept
b	-5.18	-14.80	-3.56	trend and intercept
gvar	-2.44	-2.54	-1.95	no trend or intercept
yvar	-2.72	-2.01	-1.95	no trend or intercept
intr	-5.03	-	-3.55	trend and intercept

* Null hypothesis of a unit root.

Estimates of regression (A) are reported in *Table II*. When the surplus-income ratio is regressed against the previous level of debt-income ratio, the coefficient is negative suggesting a non-sustainable fiscal policy, but it is not statistically significant. Ideally, one should look for responses of the *primary* budget surplus to variations in the previously observed debt-income ratio, not total surplus. Unfortunately, reliable data for interest payments on the debt is only available after 1986 and the negative coefficient might have resulted from movements in the real interest rate. Regression 2 controls for the real interest rate. As expected, the effect of the real interest rate on the surplus-income ratio is negative and highly significant, but not sufficient to revert the sign of the debt-income ratio coefficient. It remains negative and now becomes significant at 5%.

Bohn (1998) argues that a systematic government response to changes in the previous debt-income level might be obscured in a univariate analysis of the debt-income ratio by cyclical variations in output and temporary government spending. Regression 3 considers these effects. The results show that the coefficient on debt-income ratio remains negative and significant, although smaller in absolute value. As expected, temporary government spending has a negative impact on the surplus-income ratio. Cyclical variations in output are statistically significant, but do not have the expected negative sign. A possible non-linear effect of the debt-income ratio on the surplus is considered by adding a quadratic term to Regression 3. A positive coefficient on the quadratic term would suggest that the marginal response of the surplus ratio to changes in

the debt-income ratio previously observed increases in the debt-income level, with the government responding more to deficits when the debt is high. The results show that the quadratic term is statistically insignificant and so are higher order terms (not reported). Moreover, the inclusion of a quadratic term worsens the fit of the regression, decreasing the precision of the estimates.

Table II: Dependent variable: federal budget surplus as a ratio to GDP

	Const.	b_t	r_t	*GVAR*	*YVAR*	$(b_t - \overline{b})^2$	$\overline{R}^2$	*DW*
(1)	-.00252 (-0.63) [-0.95]	-.03243 (-1.66) [-1.47]					0.05	1.38
(2)	-.00012 (-0.03) [-0.05]	-.03853* (-2.43) [-2.42]	-.00029* (-4.20) [-2.33]				0.38	1.49
(3)	-.00258 (-1.00) [-1.33]	-.02287** (-1.82) [-1.52]	-.00025* (-4.63) [-3.29]	-.30439* (-4.86) [-3.05]	.03522** (1.71) [1.87]		0.63	1.18
(4)	-.00258 (-0.98) [-1.33]	-.02275 (-1.33) [-1.33]	-.00025* (-3.34) [-2.81]	-.30383* (-3.64) [-2.42]	.03518 (1.64) [1.70]	-.00095 (-0.01) [-0.01]	0.62	1.18

OLS estimations with annual data; ordinary *t*-statistic in parenthesis; Newey-West heteroskedastic and autocorrelation consistent *t*-statistic in brackets (lag window size 1). Annual observations, 1966-2000. (*) 5% confidence interval; (**) 10% confidence interval.

Estimates of regression (B) are reported in *Table III*. The coefficient on lagged debt-income level is positive and significant in all regressions, indicating absence of a mean-reverting process in the series and therefore a non-sustainable fiscal policy. The result is not altered when one controls for business cycles. In fact, both the temporary government spending and the output gap have positive signs as expected, but are not statistically significant.

Table III: Dependent variable: change in debt-GDP ratio (Δb_{t+1})

	Const.	b_t	*GVAR*	*YVAR*	$\overline{R}^2$	*DW*
(1)	-.05212**	.39156*			0.20	1.96
	(-1.85)	(3.07)				
	[-1.67]	[3.53]				
(2)	-.05179*	.38919**	.04078	.00748	0.15	1.96
	(-1.70)	(-2.73)	(0.05)	(0.03)		
	[-1.77]	[3.62]	[0.06]	[0.05]		

OLS estimations with annual data; ordinary *t*-statistic in parenthesis;
Newey-West heteroskedastic and autocorrelation consistent *t*-statistic in brackets (lag window size 1). Annual observations, 1966-2000.
(*) 5% confidence interval; (**) 10% confidence interval.

In order to understand the relationship between the results from *Tables II* and *III* , it is useful to assume that the government's debt for the period *t+1* is given by the debt minus the primary surplus in period *t*, both multiplied by the gross interest factor $(1+i_{t+1})$. That is, let's say the government's debt evolves according to the expression:

$$B_{t+1} = (B_t - S_t).(1+i_{t+1})$$

Calculated as a ratio to income, the expression above becomes

$$b_{t+1} = (b_t - s_t).q_{t+1} \qquad (4)$$

where $q_{t+1} \equiv (1+i_{t+1}).Y_t/Y_{t+1} \cong 1+r_{t+1}-g_{t+1}$ is the ratio of the gross return on government debt to the gross growth rate of income (Bohn, 1998, p. 951).

Combining equation (4) with the previously defined equation (3), and letting $\Delta b_{t+1} \equiv b_{t+1} - b_t$, one can establish a relationship between the response of the government surplus to changes in the previous debt-income level and the nature of the mean-reversion process required for sustainability:

$$\Delta b_{t+1} = -[1-q_{t+1}(1-r)]b_t - q_{t+1}m_t \qquad (5)$$

According to equation (5), provided that q and u are stationary processes, the debt-income ratio will be a stationary mean-reverting process if $\overline{q}(1-r)<1$. In this case,

the coefficient on b_t will be negative implying mean-reversion. Note that the crucial factor is the well known relationship between the real interest rate and the income growth rate, on one hand, and the response of the surplus to variations in the debt-income level, r, on the other. If the real interest rate is below the economy's growth rate, the debt-income ratio will decline even if the government produces a primary surplus of zero[2]. But if the real interest rate is above the economy's growth rate, then the government must run primary surpluses, on average, in order to keep the debt-income ratio from rising without bound. Moreover, the response of the budget surplus to variations in the debt-income ratio will have to be larger the greater is the difference between the real rate of interest and the economy's growth rate:

$$r > \left(1 - \frac{1}{\overline{q}}\right)$$

In the case of Brazil, the real interest rate has been, on average, above the economy's growth rate. For the period of time at hand, the real interest rate averaged *4.99%* while the growth rate averaged *4.83%* . These values make an average $\overline{q} = 1.0016$. Given this value of $\overline{q}$, the response of the government surplus to variations in the debt-income ratio would have to be greater than *2.0*, on average, if the mean-reversion condition is to be satisfied. The results from *Table II* show, however, that not only the coefficient on the debt-income ratio is much smaller than *2.0* in absolute value, but it also has the opposite sign. The results suggest, therefore, that although the federal government has been implementing a policy of keeping positive primary surpluses, because the real rate of interest on government securities has been substantially above the economy's growth rate, the fiscal effort has not yet proved itself sufficient for the compliance of the government's intertermporal budget constraint. A $r = 2.0$ indicates, for instance, that for each increment of the debt-income ratio, the surplus-income ratio should be incremented twice as much.

The stabilization of the debt-income ratio involves the rate of debt expansion, which depends crucially on the fiscal policy and on the real interest rate, and the rate of GDP growth. The real interest rate is regarded as an important instrument for price stability. The government has faced the trade off between achieving the agreed inflation targets through high real interest rates and allowing a fast growing debt-income ratio despite its fiscal efforts or controlling the ever-growing financial component of its debt. If one adds to the equation the impact of high real interest rates on the growth rate of the economy, the inconsistency of the government's macroeconomic policy becomes readily apparent and demands immediate adjustments.

[2] In fact, if the real interest rate is below the economy's growth rate with probability one, the economy will be operating in the dynamically inefficient region and the government intertemporal budget constraint is irrelevant.

5. FINAL REMARKS

This paper has analyzed the sustainability of the Brazilian federal fiscal policy by examining the responses of the government budget surplus to variations of the debt-GDP ratio and the mean-reverting process of debt-income level, using the approach proposed by Bohn (1998). Using annual data from 1966 to 2000, the results have indicated that the government surplus has not systematically responded to changes in the debt-income level previously observed, indicating that the fiscal policy can not be considered sustainable during the period analyzed. It is also shown that the debt-GDP ratio does not exhibit a mean-reverting tendency even when one corrects for cyclical variations in income and government expenditures, further indicating a non-sustainable path for the fiscal policy.

Moreover, given the historically levels of the real rate of interest and the economy's growth rate, the results indicate that for every increment of the debt-income ratio, the government's surplus should be incremented by at least twice as much for compliance of the government intertemporal budget constraint. The higher the difference between the real rate of interest and the growth rate, the greater has to be the government fiscal efforts. The government has opted for high real interest rates and has left the debt-income ratio to rise unprecedently. Besides the impact of high interest rate on the ever-growing financial component of the government's debt, the monetary policy has negatively affected income growth, making the control of the debt-income ratio even more difficult. Stabilization of the debt-income ratio calls for coordination between the fiscal and the monetary policy.

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APPENDIX

DATA SET

The data set consists of annual observations ranging from 1966 to 2000, the first year of federal securities issuing and the most recently available data on government expenditures and revenue.

s = government surplus/GDP as of time *t*
b = debt/GDP as of time *t-1*
gvar = temporary government spending defined as g^*/g , with g^* standing for the normal (or trend) amount of government expenditure
yvar = business cycle variable defined as $(1 - y/y^*)$, where y^* stands for trend output
intr = real rate of interest defined as $(1+r) = (1+i)/(1+\text{inf})$, where *i* stands for the nominal rate of interest and *inf* stands for the inflation rate.

Obs	s	b	gvar	yvar	intr
1.	-.009333	.	.0709576	.1461198	1.093111
2.	-.0147977	.0216761	.0456988	.1864365	5.837079
3.	-.0106537	.0292089	.0346326	.1771584	-3.221392
4.	-.0049934	.0293737	.0207606	.164854	1.588776
5.	-.003798	.0384613	.0181463	.1408072	2.410748
6.	-.0026055	.050871	.017548	.1043855	0.6104648
7.	-.001359	.0525792	.0181899	.0575558	0 .0478939
8.	.0005764	.0690921	.0110957	-.0133498	-12.22198
9.	.0052098	.0652868	.0032505	-.0372674	-10.1236
10.	.0000695	.0635763	-.0085251	-.0354615	-2.893593
11.	-.0008476	.0767667	.0038759	-.0864908	-8.038164
12.	.0004184	.0891666	-.0051991	-.0874682	-6.244028
13.	.0013469	.0816553	-.0099399	-.091183	-4.637871
14.	.0003851	.0867375	-.0206088	-.1157507	-9.403221
15.	.0001627	.0666367	-.006143	-.1693521	-23.81261
16.	.0001266	.0496426	-.0209575	-.0760537	-5.612338
17.	.0001356	.0903491	-.0262418	-.0443176	9.111305
18.	.0001307	.099956	-.0282226	.0229041	25.85709
19.	.0000615	.0870604	-.0346503	.0060501	13.50121
20.	.0101363	.1525819	-.0356878	-.0358471	6.961412
21.	-.0303035	.1976642	.017557	-.0771398	-32.33632
22.	-.0170882	.1025569	-.0012161	-.0799614	47.93744
23.	-.0617992	.2064645	.0597255	-.0462864	59.03354
24.	-.061178	.3902734	.0521773	-.0473014	78.52764
25.	.0040551	.6037517	-.0129678	.0271418	-55.82547
26.	.0041181	.0696566	-.0446488	.0446689	23.26587
27.	-.0022709	.0745317	-.0447303	.0757323	54.28957
28.	-.0225351	.2558261	-.0137328	.0559949	50.75286

29.	.0039262	.3538001	-.0167021	.0266041	-93.31664
30.	-.0061313	.176923	-.0098678	.0110934	-21.75675
31.	-.0117154	.1678845	-.0140144	.009745	5.557611
32.	-.0064841	.2262816	-.0105482	.0018988	31.2132
33.	-.0101199	.2934378	.0077679	.0231403	25.33393
34.	-.0051287	.37628	.0124484	.0379644	14.05025
35.	-.012142	.431803	.0762772	.0175499	7.020125