2014 IIOA Conference, Lisbon - Portugal (15-18th July 2014)
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Net Indirect Taxes and the Sectoral Structure of Economy

Abstract

Usually, the sectoral structure of economy is measured either a) as weights of the main branches in the total gross value added (wv_i) or b) as the respective weights in the gross domestic product (wg_i). The differences between vectors a) and b) infer from the distribution of the net indirect taxes rates ($rnit_i$), calculated as ratios of the sectoral net indirect taxes to the corresponding gross value added.

This issue has been explored using the Input-Output Tables of Romania for almost a quarter of a century, which offers a double advantage. On one hand, the exercise can be considered relevant because the series are annual and methodologically homogenized for the entire period (years 1989-2011) according to the last Eurostat classification. On the other hand, such an application is interesting because the data relate to a very dynamic structural process, as the one registered by the Romanian economy during transition from the centrally planned system to the functional market mechanisms. The primary information that resulted from the extended branch nomenclatures (from 90 to 105 positions in different years) has been aggregated into ten sectors.

The comparative analysis of the mentioned sectoral vectors involves five structural coefficients (SC) derived from the Euclidean 1-norm distance, Bhattacharyya coefficient, Hellinger distance, Cosine similarity coefficient, and the so-called Jaccard index.

Some computational problems of estimating — as autoregressive processes — the sectoral rates of the net indirect taxes are also examined.

Several concluding statements end the paper.

Keywords: sectoral structure, net indirect taxes, VAR

JEL Classification: C53, C67, H2

Content

Net Indirect Taxes and Sectoral Structure of Economy

I. Introduction

1. Usually, the sectoral structure of economy is characterized numerically by two vectors:
a) weights of the selected branches in the total gross value added (hereinafter noted as wv_i) or
b) the corresponding weights related, in this case, to the gross domestic product (wg_i).

The main differences between the mentioned vectors come from the sectoral distribution of the net indirect taxes. According to the national accounts definitions, the net indirect taxes cumulate the value-added tax and excises, the customs duties, the public budget subsidies on product (with negative sign), and other similar taxes.

We shall consider the algebraical I-O relationships involved in this matter (I, j = 1, 2,…,n sectors):

$$wv_i = GVA_i/GVA \quad (1)$$

GVA_i – gross value added in the sector i, current prices
GVA – total gross value added, current prices

$$GVA_i = Q_i - \Sigma Q_j * a_{ji} \text{ for i fixed} \quad (2)$$

Q_i - output in sector i, current prices
a_{ji} – technical coefficients, current prices

$$GVA = \Sigma GVA_i \quad (3)$$

$$wg_i = GDP_i/GDP \quad (4)$$

GDP_i – gross domestic product in the sector i, current prices
GDP – total gross domestic product, current prices

$$GDP_i = GVA_i + NIT_i = GVA_i (1 + rnit_i) \quad (5)$$

NIT_i – net indirect taxes in sector i, current prices
$rnit_i$ – rate of the net indirect taxes in sector i

$$GDP = \Sigma GDP_i \quad (6)$$

Normally, the rate of the net indirect taxes can be estimated not only sectorally ($rnit_i = NIT_i/GVA_i$) but also as an aggregate indicator (rnit = NIT/GVA).

2. This issue will be examined using, as a statistical application, the input-output tables of Romania for almost a quarter of a century (years 1989-2011), which offers a double advantage. On one hand, the series are methodologically homogenized for the entire period according to the last Eurostat classification (NCP, 2013; NIS, 2014). On the other, such an exercise is interesting because these series relate to a very dynamic structural process as that registered by the Romanian economy during the transition from the centrally planned system to the functional market mechanisms.

To notice that the primary data resulted from the extended branch nomenclatures (90-105 positions in different years); these data have been aggregated into ten economic areas (Dobrescu, 2013b). This collapsed structure shows the following (in brackets, the codes attached to the corresponding sectoral indicators):

- Agriculture, forestry, hunting, and fishing (1)
- Mining and quarrying (2)
- Production and distribution of electric and thermal power (3)
- Food, beverages, and tobacco (4)
- Textiles, leather, pulp and paper, and furniture (5)
- Machinery and equipment, transport means, and other metal products (6)
- Other manufacturing industries (7)
- Constructions (8)
- Transports, post, and telecommunications (9)
- Trade, business, and public service (10).

The appendix “Ap.1 Statistical series” details, for 1989-2011 years, the available information concerning the gross value added, the net indirect taxes, and the gross domestic product in both aggregate and sectoral determination; the sectoral weights wv_i and wg_i, and the rates $rnit_i$ are also determined.

3. Hereinafter, the paper is organized as follows.

Section II compares the structure of the Romanian economy based on GVA and GDP sectoral distributions. With this aim, five structural measures (SC) are involved. They are derived from the following: the Euclidean 1-norm distance, the Bhattacharyya coefficient, the Hellinger distance, the Cosine similarity coefficient, and the so-called Jaccard index. These have been accommodated in such a way that the corresponding structural coefficients to be bounded by 0 (for all the forms of incongruity) and 1 (when the compared structures are identical). Our analysis reveals the important shifts occurred during transition in the sectoral configuration of the Romanian economy.

Section III examines some computational problems of estimating the sectoral rates of the net indirect taxes as a univariate autoregressive process. The attention is focused on the VAR technique.

Several concluding statements close the paper.

II. Two sectoral structural vectors

1. Our search attempts to approximate statistically the degree in which the sectoral structures of the Romanian economy in GVA and GDP determinations are — or are not — consonant.

With this aim, five structural coefficients (SC) are estimated, according to formulas presented in Table 1 (in Dobrescu, 2011, pp.5-11, the necessary methodological considerations and documentary sources are presented in extenso). Normally, the symbols are adapted to our specific problem.

Table 1

Computational formulas for the structural coefficient (SC)

Structural coefficient	Symbol	Formula
Euclidean 1-norm	SCE	$SCE = 1 - \frac{\sum \lvert wg_i - wv_i \rvert}{2}$
Bhattacharyya	SCB	$SCB = \sum \sqrt{wg_i \, wv_i}$
Hellinger	SCH	$SCH = 1 - \frac{\sqrt{\sum (\sqrt{wg_i} - \sqrt{wv_i})^2}}{\sqrt{2}}$
Cosine	SCC	$SCC = \frac{\sum w_i W_i}{\sqrt{\sum wg_i^2} \sqrt{\sum wv_i^2}}$
Jaccard	SCJ	$SCJ = \frac{\sum wg_i \, wv_i}{\sum wg_i^2 + \sum wv_i^2 - \sum wg_i \, wv_i}$

2. All these formulas have been applied for the series wv_i and wg_i of the Romanian I-O tables (Table 2).

Table 2
Structural coefficients for the period 1989-2011

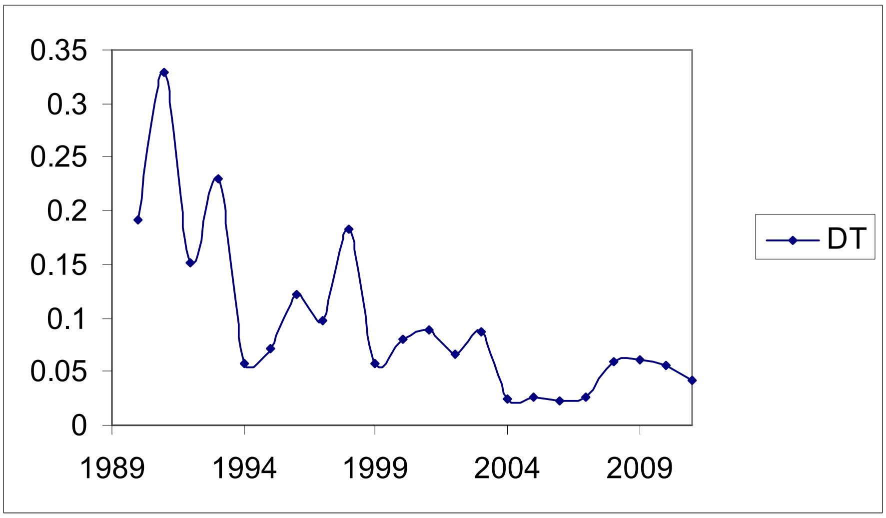
Years	SCE	SCB	SCH	SCC	SCJ
1989	0.949214	0.997163	0.946741	0.992245	0.983774
1990	0.921931	0.993448	0.919056	0.981642	0.960321
1991	0.964262	0.998631	0.963002	0.997638	0.994697
1992	0.967219	0.996621	0.941869	0.996778	0.993576
1993	0.95726	0.998578	0.962292	0.996364	0.991635
1994	0.957574	0.998817	0.965602	0.996555	0.992319
1995	0.959807	0.998666	0.963476	0.997492	0.994091
1996	0.956984	0.998387	0.959838	0.997064	0.99341
1997	0.947413	0.997974	0.954986	0.99643	0.991168
1998	0.936326	0.9972	0.947082	0.994588	0.985047
1999	0.932077	0.996636	0.942002	0.994635	0.984195
2000	0.94314	0.997623	0.951249	0.996045	0.988803
2001	0.945742	0.997847	0.953602	0.996298	0.989627
2002	0.958111	0.998544	0.961847	0.997371	0.992224
2003	0.9481	0.997554	0.950548	0.996245	0.989028
2004	0.948163	0.997719	0.952239	0.996244	0.989336
2005	0.947448	0.997576	0.95077	0.996068	0.988235
2006	0.949103	0.997609	0.951101	0.996156	0.988433
2007	0.952309	0.997835	0.953468	0.996756	0.990016
2008	0.952975	0.997934	0.954543	0.996967	0.990537
2009	0.955043	0.997706	0.952101	0.996825	0.990629
2010	0.956205	0.998016	0.955455	0.996774	0.990976
2011	0.951135	0.99774	0.952456	0.995936	0.988105

As expected, the sensitivity of these measures is not similar. For instance, the coefficient of variation (as a ratio of standard deviation to the sample mean) increases from 0.001093 for SCB and 0.003268 for SCC to 0.006922 for SCJ, reaching the highest levels in the case of SCH (0.010198) and SCE (0.010714). Despite these differences, all the measures indicate a noticeable dissimilarity between the examined two structural perspectives: gross value added and gross domestic product.

3. Obviously, such a discrepancy came from the modifications of the sectoral rates of the net indirect taxes ($rnit_i$). It must be mentioned that the intensity of these modifications was not uniform during the examined historical interval. It will be approximated by the annual changes coefficient (noted DT), computed as follows:

$$DT = [(1/n)*\Sigma(rnit_{it}-rnit_{i(t-1)})\hat{}2]\hat{}(1/2) \quad (7)$$

Graph DT

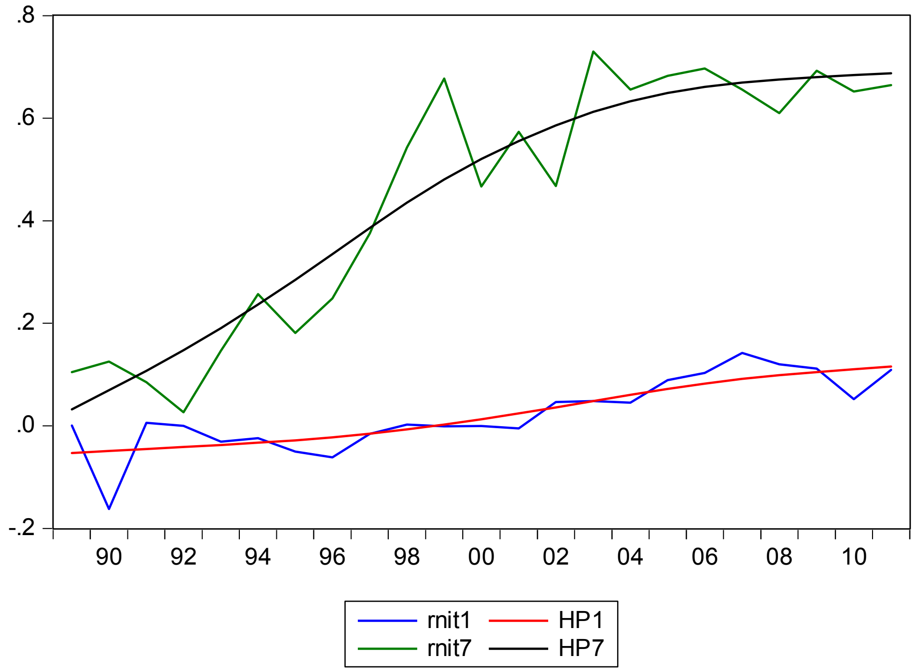


Generally, the first part of the interval is characterized by higher DT, which signifies more intensive changes in sectoral rates of the net indirect taxes. Such a temporal feature is understandable, taking into account that the initial phase of transition from the centrally planned to the market system inherently involves more extended institutional reforms, including the fiscality.

4. Despite the annual volatility registered by the sectoral NIT rates, several tendencies have been identified. To more clearly unfold them, the samples were filtered through Hodrick-Prescott procedure (HP symbol).

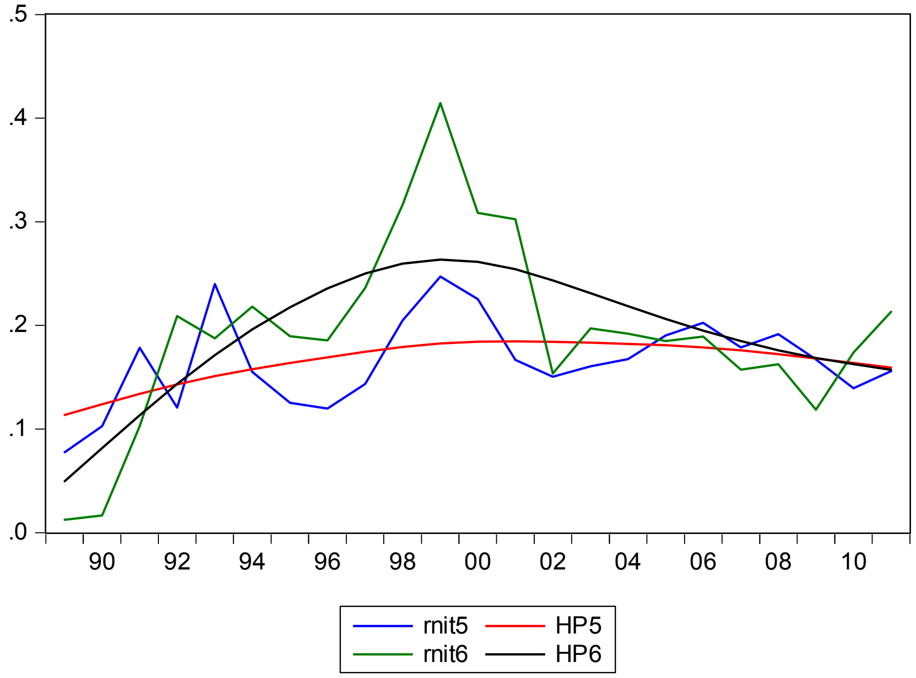
4.1. An increasing trend characterizes the agriculture, forestry, hunting and fishing (sector 1), and other manufacturing industries (sector 7).

Graph Asc



4.2. Relatively divergent evolutions appear in other fields. The Graph AscDes covers the cases of initial expansion followed by ulterior diminishing of the net indirect taxes rates.

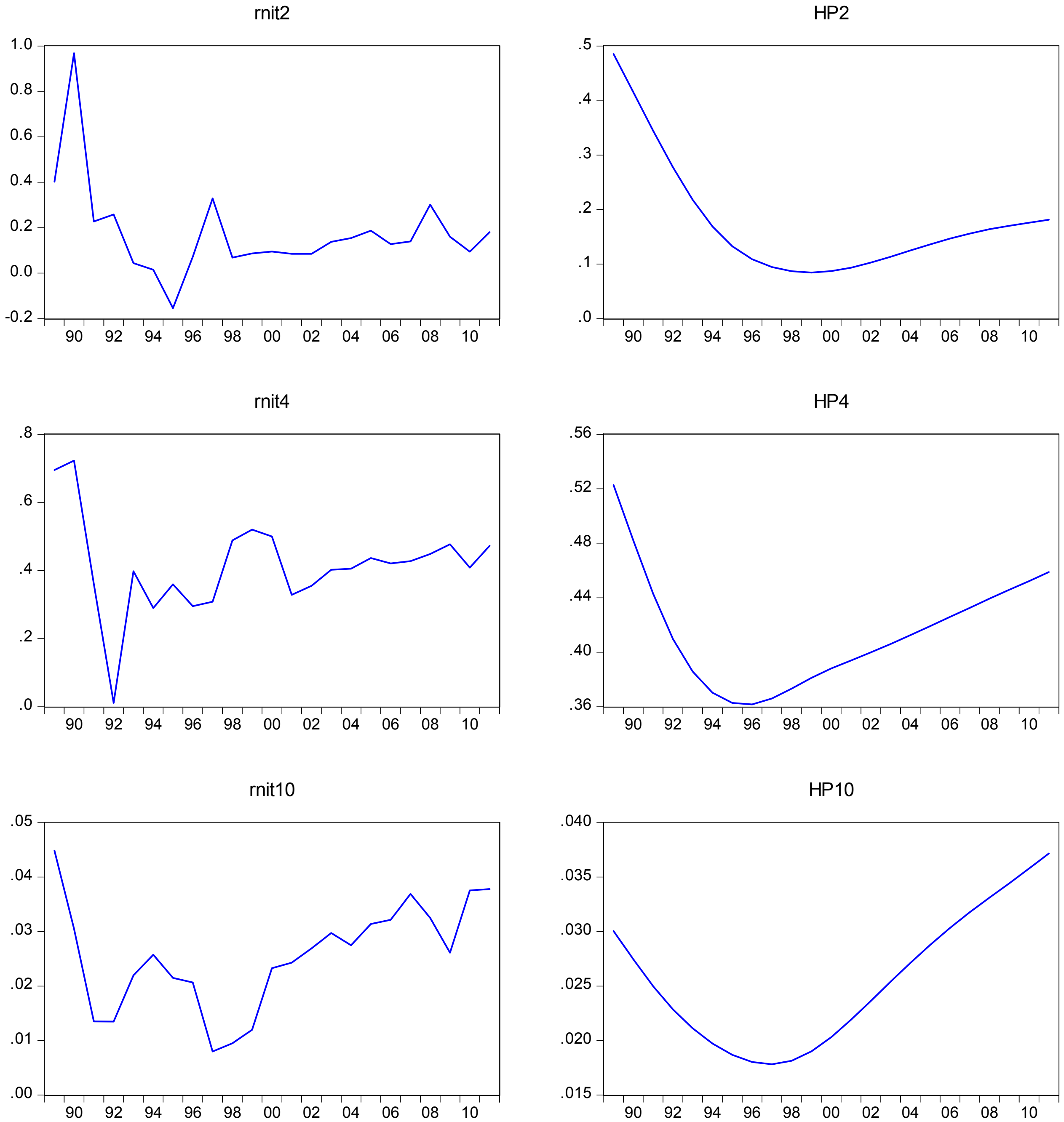
Graph AscDes



Such a pattern concerns the textiles, leather, pulp and paper, furniture (sector 5), machinery and equipment, transport means, and other metal products (sector 6).

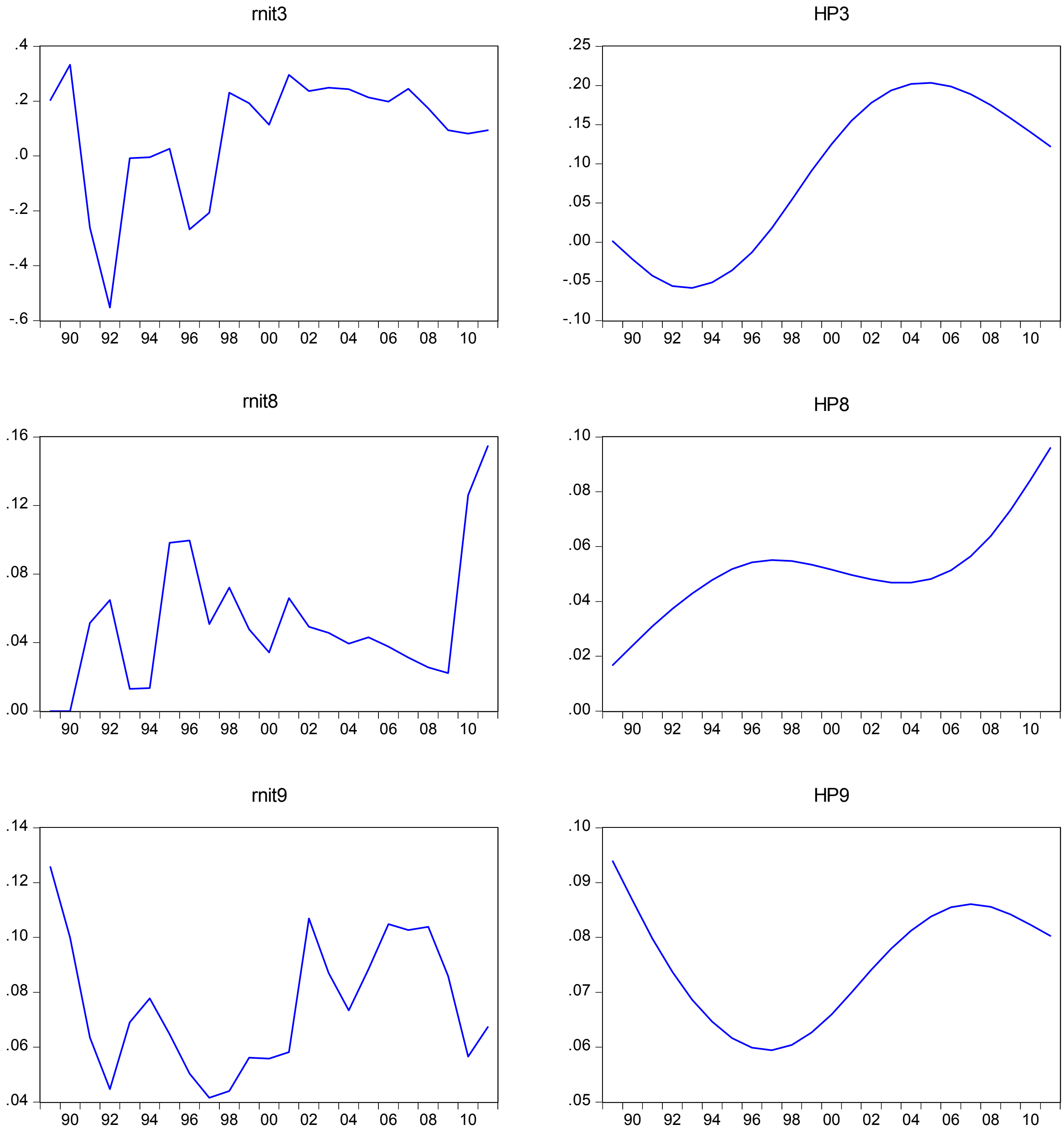
An inverse picture can be seen (Graph DesAsc), for instance, in mining and quarrying (sector 2); food, beverages, and tobacco (sector 4); and trade, business, and public service (sector 10).

Graph DesAsc



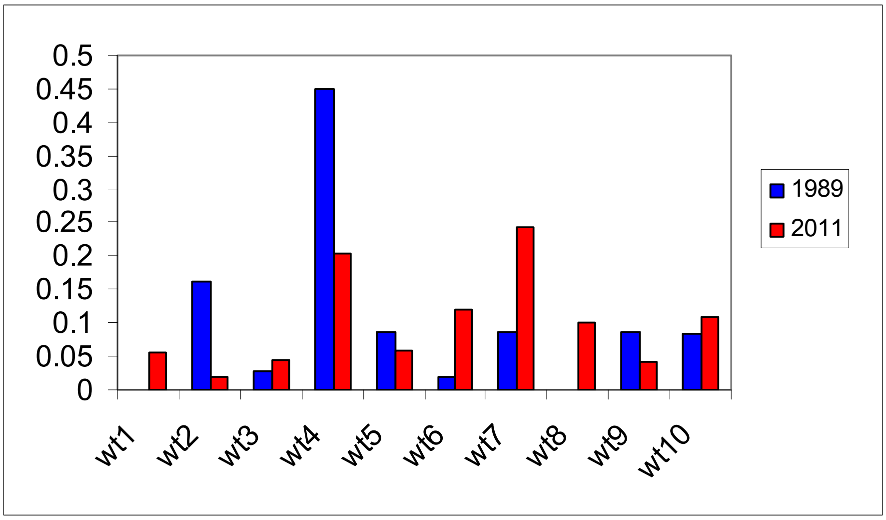
4.3. A quasi-cyclical dynamics characterizes the production and distribution of electric and thermal power (sector 3); construction (sector 8); and transports, post, and telecommunications (sector 9).

Graph Osc



4.4. As a consequence of these discrepancies, the sectoral structure of the net indirect taxes (wt_i) was significantly modified during the transition period (Graph WT).

Graph WT



Therefore, the relative contribution to the net indirect taxes of the Romanian economy has decreased in sectors 2, 4, and 9, this effect being compensated by its augmentation in sectors 1, 6, 7, and 8. The rest of economic activities (included in sectors 3, 5, and 10) registered small modifications.

III. The sectoral NIT rates as univariate AR processes

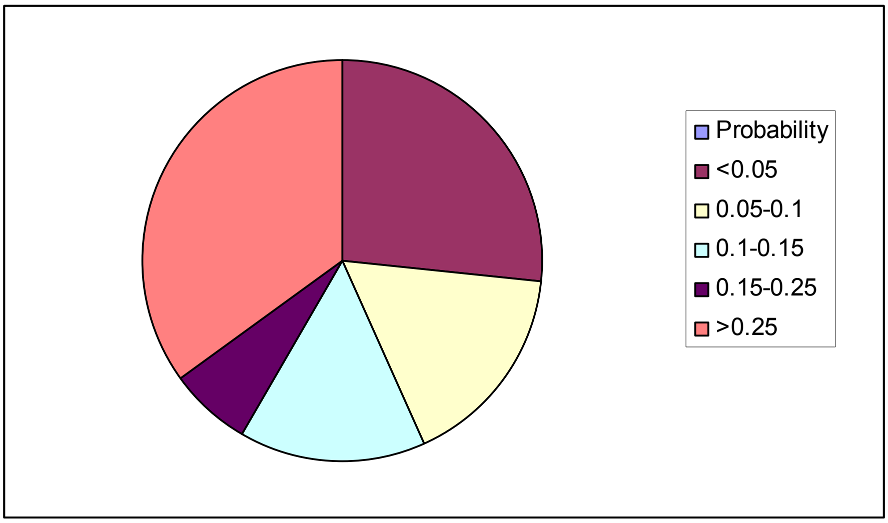
The econometric estimation of the sectoral NIT rates could be interesting for both analytical and forecasting purposes. From the existing techniques, we shall pay attention in the present paper only to the univariate autoregressive algorithm.

1. In the case of $rnit_i$ series, the stationarity problem has not proven to be simple.

1.1. Three most usual unit root tests were involved: Augmented Dickey-Fuller (ADF), Phillips-Perron (PP), and Elliott-Rothenberg-Stock (ERS) (appendix “Ap. 2 Unit Root Test”).

The first two have been computed in three exogenous variants: a) none, b) constant, and c) constant with linear trend, which means 60 statistics (10 statistical series, 2 tests, each of them in 3 exogenous variants). The probability to reject the null hypothesis (the series has a unit root) is distributed as in Graph URT.

Graph URT



Therefore, in more than half of the cases, the probability to reject the null hypothesis exceeds 10%.

The Elliott-Rothenberg-Stock (ERS) test has been calculated for two exogenous hypotheses: a) constant and b) constant with linear trend. The obtained results were also ambiguous.

1.2. Under such conditions, our computational strategy has been directed toward the stable VAR, which involves the roots of the resulted characteristic polynomial that lie inside the unit circle (for details, see Lutkepohl (2007); Canova (2007); Uctum (2007); SCCN (2011); Rossi (2013); and Baum (2013)). Such a solution can be considered relevant because "the same condition is necessary and sufficient for the stationarity of the stochastic process" (Nymoen (2013), p.41).

2. In VAR specification, the lag length is essential. Consequently, during the last decades, this issue was of high interest for quantitative analysis and forecasting research. An illustrative list of the so-called optimal lag length selection is shown as follows:

• the simple graphical representation in Franz (1942) and Kunst (2007);

• the autocorrelation (AC) and the partial autocorrelation (PACF) of the given series in Dettling (2012) and Schwert (2013);

• Breusch-Godfrey LM or a Box-Ljung *Q* tests for residual autocorrelation in Parker (2014);

• the mean squared error (MSE) and the final prediction error (FPE) in Hafer and Sheehan (1987), Lutkepohl (2007), and Gupta and Miller (2012); the F-test in Hafer and Sheehan (1987);

• the Akaike Information criterion (AIC) in Ozcicek and W. McMillin (1999); Dayton (2003); Canova (2007); Lutkepohl (2007); Gutierrez, et al. (2009); Gupta and Miller (2012); and Parker (2014);

• the Schwarz information criterion (SIC) in Hafer and Sheehan (1987); Ozcicek and W. McMillin (1999); Lutkepohl (2007); Canova (2007); Gutierrez, et al. (2009); Gupta and Miller (2012); and Parker (2014);

• the Hannan and Quinn criterion (HQC) in Lutkepohl (2007); Canova (2007); Gutierrez, et al. (2009); Tarek (2012); and Gupta and Miller (2012);

• the Phillips' posterior information criterion (PIC) in Phillips (1994) and Ozcicek and W.McMillin (1999).

Some derivations of these procedures or more or less different approaches appear as the hypothesis and diagnostic tests in Kunst (2007); the sequential modified likelihood ratio (LR) in Gupta and Miller (2012); the Keating's modification of the AIC and SIC (KAIC and KSIC, respectively) in Ozcicek and W. McMillin (1999); and the Geweke's and Meese's (1981) Bayesian estimation criterion (BEC) in Hafer and Sheehan (1987). Dobrescu (2013a) has used a composite structural inertiality index (SII) based on weighing aggregation of the AIC criterion, the length of postsample extrapolations until convergence, and the coefficient of variation computed for this interval. Comprehensive considerations concerning the lag order selection can be found also in Burnham and Anderson (2002 and 2004), Dayton (2003), and Claeskens and Hjort (2008).

3. Preponderantly, these techniques take into account the similarities and differences between the fitted and primary data. Such a perspective is undoubtedly essential when a multivariate VAR is used to evaluate the separate contributions of the involved causal factors to the global dynamics of explained variable. A good approximation of available statistical data, especially of those concerning the preforcasting interval, would be also a more reliable tool for the short and medium-run prognoses.

However, the long-run behavior of a VAR relationship can also be of interest not only from predictive reasons. In many cases, the statistical series could be "suspected" to contain some steady-state points or other time patterns. In such situations, the given VAR has to be submitted to a significant number of successive extrapolations to identify the possible stable dynamic features of the examined indicators.

This procedure has also been exercised on our example, for all the sectoral net indirect taxes rates ($rnit_i$) using nine lag lengths (from 2 to 10). The appendix "Ap. 3 VAR econometrics" synthetizes the obtained results concerning the estimators, and R-squared.

Its analysis and, first of all, the repeated consecutive computations based on VAR estimators reveal at least two important conclusions regarding the lag lengths.

3.1. As it was expected, some of these generate dynamically stable patterns, whereas others do not. In our application, we detected five types of long-run successive VAR extrapolations (symbol in brackets):

• oscillatory asymptotic trend (OAT),

• oscillatory explosive trend (OET),

• smooth asymptotic trend (SAT),

• smooth explosive trend (SET), and

• erratic evolution (ERR).

From this point of view, the sectoral picture looks as follows (Table 3).

Table 3
Dynamic patterns of the successive extrapolations depending on the adopted VAR length

Number of lags	2	3	4	5	6	7	8	9	10
rnit1	SAT	SAT	SAT	SAT	SET	OET	OAT	ERR	ERR
rnit2	SAT	OAT	OAT	OAT	OAT	OAT	OAT	OAT	OAT
rnit3	SAT	SAT	SAT	SAT	OAT	OAT	OAT	OAT	OAT
rnit4	OAT	OAT	SAT	SAT	OAT	OAT	OAT	OAT	ERR
rnit5	SAT	OAT	OAT	OAT	OAT	OAT	OAT	OAT	OAT
rnit6	SAT	OAT	SAT	OAT	OAT	OAT	OAT	OAT	OAT
rnit7	SAT	SAT	SAT	SAT	OAT	OAT	OAT	OAT	ERR
rnit8	OAT	OAT	OAT	OAT	OAT	OAT	OAT	ERR	ERR
rnit9	SAT	SAT	OAT	OAT	OAT	OAT	OAT	OAT	ERR
rnit10	SAT	SAT	SAT	SAT	OAT	OAT	OAT	ERR	ERR

Normally, the VAR estimations characterized by oscillatory explosive trend (OET), smooth explosive trend (SET), and erratic evolution (ERR) cannot generate stable patterns of the long-run consecutive extrapolations. Eleven cases (underlined) are in such a situation.

3.2. The rest of VAR relationships induce asymptotic (smooth or oscillatory) trends. Which one of them must be preferred? To answer this question, it would be useful to determine the stabilization interval of extrapolations, the number of successive VAR computations until the asymptotical property of series is reached. If $extr_t$ and $extr_{(t-1)}$ represent two such extrapolations, the mentioned condition may be formulated as a rate $|extr_t/extr_{(t-1)}-1|<\varepsilon$, ε being considered as an acceptable maximal deviation from the asymptotical trend.

Regarding ε, the following two thresholds (0.01 and 0.001) have been admitted as significant in our analysis. Consequently, the following stabilization intervals were determined:

• THR1 - the number of extrapolations, after which, the consecutive rates become smaller than 0.01, and

• THR2 - the number of extrapolations, after which, the consecutive rates become smaller than 0.001.

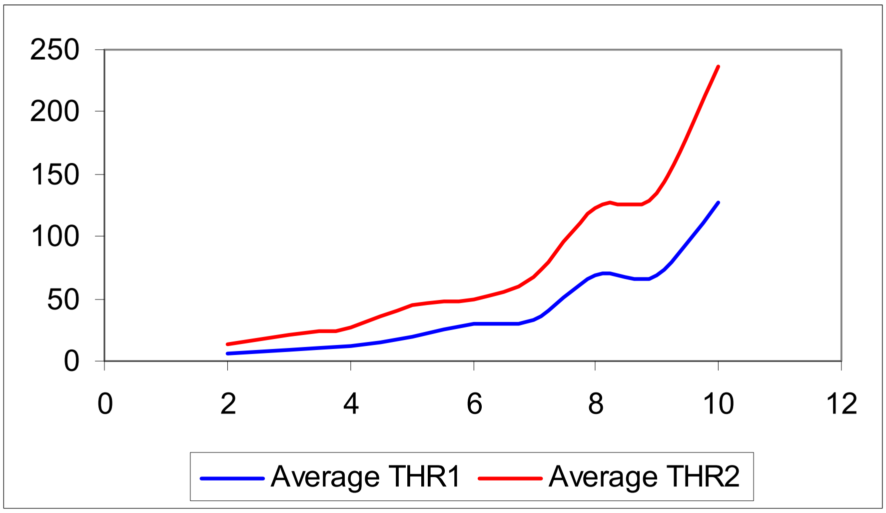
The sectoral distribution of these parameters is represented in Table 4, which obviously contains information for cases having asymptotical properties (79 series).

Table 4
VAR stabilization interval

VAR	Length	2	3	4	5	6	7	8	9	10
rnit1	THR1	8	17	20	43	***	***	170	***	***
	THR2	20	63	70	147	***	***	271	***	***
rnit2	THR1	4	7	8	27	25	16	15	19	71
	THR2	6	10	13	41	39	34	36	47	112
rnit3	THR1	6	6	11	12	28	55	23	25	31
	THR2	10	14	23	29	40	91	41	43	51
rnit4	THR1	5	8	4	4	14	9	11	37	***
	THR2	10	13	10	8	30	24	21	76	***
rnit5	THR1	3	6	23	37	43	33	19	22	27
	THR2	5	13	45	68	80	64	36	44	54
rnit6	THR1	2	7	8	17	22	24	92	81	381
	THR2	6	17	16	29	36	51	167	155	731
rnit7	THR1	3	2	7	3	8	11	14	19	***
	THR2	26	16	23	22	22	32	32	40	***
rnit8	THR1	21	27	26	40	98	53	68	***	***
	THR2	29	41	37	57	151	80	100	***	***
rnit9	THR1	5	6	7	5	16	80	221	276	***
	THR2	9	9	13	12	26	165	424	534	***
rnit10	THR1	8	8	3	7	12	21	50	***	***
	THR2	10	18	16	40	21	60	101	***	***

3.3. The data in Table 4 confirm the expected connection between the VAR stabilization interval and the chosen VAR length itself. To clearly reveal it, the Graph THR represents the THR1 and THR2 (as averages for each VAR length).

Graph THR



The dependence of THR on the VAR length is evident.

4. The methods mentioned under point 2 of this section seem unhelpful for the framework developed under point 3 regarding the choice of the VAR length.

4.1. Summarizing, such an operation is confronted with several problems.

4.1.1. Any econometric procedure aims to generate postsample estimations that reproduce as truthfully as possible the properties of the reference statistics (mean, volatility). It is evident that the shorter the VAR stabilization interval, the faster the extrapolations move away from the statistical characteristics of primary data. Therfore, the higher VAR length would be preferable because they induce a longer stabilization interval.

The maximal lag length can be derived from the degrees of freedom (df) specific to the given application, which strongly depends on the available sample dimension (n) and the number of estimators involved in regression. If the examined lag length is noted q, df is calculated simply as follows:

$$df = n-2*q-2 \quad (8)$$

Normally, the maximum of possibly usable VAR lags (noted q_{max}) must correspond to the minimum of degrees of freedom (df = 0), yielding the following:

$$n-2*q_{max}-2 = 0 \quad (9) \text{ and}$$

$$q_{max}=(n-2)/2 = n/2-1 \quad (10)$$

Because the VAR procedure operates only with integers, n will be decreased by 1 when it is odd.

4.1.2. On the other hand, with the extrapolating interval being relatively long, the VAR stability condition ceases to be of secondary importance as in the short- or medium-run applications It becomes essential, attesting that the successive extrapolations based on the resulting estimators are convergent—they tend to a given level (steady state), or they oscillate within decreasing (or fixed) boundaries.

Besides, as already mentioned, such a requirement also requires the role of the stationarity test.

4.2. As a result of observing both 4.1.1. and 4.1.2. points, we obtain what could be named the longest stable vector of autoregression (LSVAR). How to define it practically? The simplest way is to verify for stability condition the maximal VAR length. If this fails the test, the VAR length is step-by-step compressed until the results cover the mentioned restriction.

5. Coming back to our application, the sectoral statistical series of the net indirect tax rates ($rnit_i$) contain 23 observations. This means that in all cases, the maximal VAR length is 10. The appendix "Ap. 3 VAR econometrics" presents the estimated VARs of $rnit_i$ in all possible lag specifications (from 2 to 10). Table 5 reproduces the roots of the characteristic polynomials for the longest stable VAR identified in the analyzed series.

Table 5
Roots of characteristic polynomials (modulus) of the longest stable VARs in the $rnit_i$ series 1989-2011

Lag	rnit1	rnit2	rnit3	rnit4	Rnit5
(-1)	0.977252	0.935193	0.910685	0.940241	0.910554
(-2)	0.977252	0.935193	0.910685	0.940241	0.910554
(-3)	0.942163	0.933229	0.90162	0.911385	0.900065
(-4)	0.900482	0.933229	0.844824	0.869292	0.900065
(-5)	0.900482	0.864963	0.844824	0.869292	0.865939
(-6)	0.541512	0.864963	0.774207	0.861118	0.865939
(-7)	0.541512	0.800475	0.774207	0.861118	0.73446
(-8)	0.428933	0.800475	0.754083	0.853231	0.73446
(-9)		0.797131	0.754083	0.853231	0.731575
(-10)		0.797131	0.387002		0.731575
Lag	rnit6	rnit7	rnit8	rnit9	rnit10
(-1)	0.992517	0.900374	0.933637	0.991009	0.951262
(-2)	0.992517	0.900374	0.933637	0.991009	0.951262
(-3)	0.970274	0.887024	0.926583	0.84953	0.947732
(-4)	0.970274	0.847574	0.926583	0.848435	0.947732
(-5)	0.94686	0.847574	0.86309	0.848435	0.911864
(-6)	0.94686	0.785971	0.86309	0.843348	0.911864
(-7)	0.945567	0.605041	0.816006	0.843348	0.904161
(-8)	0.945567	0.605041	0.816006	0.769596	0.904161
(-9)	0.914232	0.38414		0.769596	
(-10)	0.914232				

Note: no root lies outside the unit circle; VAR satisfies the stability condition.

Therefore, LSVARs include the following:

- 10 lags in four series (rnit2, rnit3, rnit5, and rnit6),
- 9 lags in other three series (rnit4, rnit7, and rnit9), and
- 8 lags in the rest of three cases (rnit1, rnit8, and rnit10).

Normally, these results are corroborated with the data in Table 3 (to see the cells with highest number of lags before erratic evolutions).

6. The parameters of all computed LSVARs (constant and lag estimators) are synthetized in Table 6.

Table 6
VAR estimators for LSVARs

Constant and lag estimators	rnit1	rnit2	rnit3	rnit4	rnit5
c	0.013471	0.170334	0.096398	0.20311	0.330669
(-1)	0.532626	0.135147	0.334062	0.281894	0.536233
(-2)	0.435684	-0.1547	0.106355	-0.14719	-0.77999
(-3)	-0.41788	0.541103	0.067918	0.248268	0.097871
(-4)	0.517527	-0.21198	0.058012	-0.3668	-0.49716
(-5)	0.042292	-0.08745	-0.14001	0.246694	0.076921
(-6)	-0.16652	-0.17985	0.15539	0.045718	-0.1078
(-7)	-0.23783	-0.01893	-0.2343	0.055744	-0.1211
(-8)	-0.09177	-0.04879	0.071157	-0.12608	-0.01058
(-9)		-0.01031	-0.10708	0.328678	0.095292
(-10)		-0.23202	-0.0704		-0.14541
Constant and lag estimators	rnit6	rnit7	rnit8	rnit9	Rnit10
C	0.595599	0.658895	0.108653	0.07954	0.010791
(-1)	-0.22253	-0.29317	0.689524	0.554027	0.647532
(-2)	0.149745	0.206885	-1.07769	-0.35067	0.159752
(-3)	-0.28242	-0.2953	0.592245	0.409597	-0.11882
(-4)	-0.22835	-0.13773	-0.956	-0.08414	0.12397
(-5)	0.161875	0.401132	0.522418	-0.10798	-0.00492
(-6)	-0.31617	0.134139	-0.64766	0.131911	-0.04889
(-7)	-0.15992	-0.06076	0.163861	-0.40158	0.41142
(-8)	-0.04394	0.135079	-0.37121	0.004727	-0.55249
(-9)	-0.1602	-0.0571		-0.25299	
(-10)	-0.62135				

7. The residuals (symbol $RESrnit_i$) of the estimated LSVARs were submitted to the normality and autocorrelation tests. In all the cases, the lag length is long enough (8-10 terms) comparatively to the given statistical series, which obviously reduces the power of the tests. Nevertheless, they were considered useful, at least as auxiliary information.

7.1. The Jarque-Bera procedure has been performed as a normality test (Table 7).

Table 7
Jarque-Bera test for LSVARs' residuals

	RESrnit1	RESrnit2	RESrnit3	RESrnit4	RESrnit5
Skewness	0.1673	1.705819	-0.262339	1.31698	0.498615
Kurtosis	3.090865	5.993603	2.691461	5.02537	2.450946
Jarque-Bera	0.075133	11.15884	0.200678	6.43989	0.70196
Probability	0.96313	0.003775	0.904531	0.03996	0.703998
	RESrnit6	RESrnit7	RESrnit8	RESrnit9	RESrnit10
Skewness	-0.1845	0.166849	0.52213	1.21861	0.14709
Kurtosis	1.732361	1.842295	3.633237	4.55382	2.992022
Jarque-Bera	0.944165	0.846787	0.932167	4.87337	0.054128
Probability	0.623702	0.654821	0.627455	0.08745	0.973299

Therefore, the normality hypothesis cannot be accepted only in two cases: RESrnit2 and RESrnit4; for RESrnit9, this probability is also high. To be sure, these three series were checked using other normality tests, namely, sfrancia (Shapiro-Francia) and Shapiro-Wilk scores. These confirmed again the Jarque-Bera results.

Anyhow, it is a fact that for the great majority of LSVARs' series (seven from ten), the normality distribution of residuals cannot be rejected, which justifies their utilization.

7.2. Concerning the autocorrelation of LSVARs' residuals, the LM test has been applied (Table 8).

Table 8
LM Test for LSVARs' residual serial correlation

Lags	RESrnit1		RESrnit2		RESrnit3		RESrnit4		RESrnit5
	LM-Stat	Prob	LM-Stat	Prob	LM-Stat	Prob	LM-Stat	Prob	LM-Stat
1	0.09738	0.755	0.11115	0.7388	0.14279	0.7055	4.96154	0.0259	0.77014
2	0.00108	0.9737	0.53249	0.4656	0.11	0.7401	0.0489	0.825	0.15563
3	0.38665	0.5341	2.51846	0.1125	1.23835	0.2658	0.32952	0.5659	0.00174
4	1.44654	0.2291	0.00466	0.9456	0.03303	0.8558	1.08153	0.2984	0.3004
5	1.72479	0.1891	0.2597	0.6103	0.13783	0.7105	0.83583	0.3606	0.98422
6	0.50003	0.4795	0.96492	0.326	0.04441	0.8331	0.17592	0.6749	1.45182
7	0.03829	0.8449	0.97567	0.3233	0.03529	0.851	0.63693	0.4248	0.66552
8	1.60206	0.2056	0.01508	0.9023	0.02872	0.8654	1.12843	0.2881	0.62543
9			2.952	0.0858	0.02511	0.8741	1.16172	0.2811	2.02848
10			1.51983	0.2176	0.07313	0.7868			2.79634
Lags	RESrnit6		RESrnit7		RESrnit8		RESrnit9		RESrnit10
	LM-Stat	Prob	LM-Stat	Prob	LM-Stat	Prob	LM-Stat	Prob	LM-Stat
1	0.37538	0.5401	0.94403	0.3312	0.00178	0.9664	2.48685	0.1148	0.03502
2	1.0392	0.308	0.00175	0.9666	0.31933	0.572	2.70695	0.0999	0.06345
3	0.24081	0.6236	0.539	0.4628	0.39769	0.5283	4.52338	0.0334	1.50684
4	0.00816	0.928	0.02847	0.866	5.24053	0.0221	0.24571	0.6201	0.53516
5	0.06322	0.8015	3.96153	0.0466	0.01264	0.9105	3.76938	0.0522	4.18136
6	0.15857	0.6905	0.47153	0.4923	2.26869	0.132	0.02252	0.8807	0.55029
7	0.02004	0.8874	0.29164	0.5892	1.7779	0.1824	0.02796	0.8672	1.52E-05
8	0.0346	0.8524	0.02674	0.8701	2.75839	0.0967	1.75287	0.1855	2.25024
9	1.02372	0.3116	0.1653	0.6843			0.13989	0.7084	
10	0.36338	0.5466							

Generally, the serial autocorrelation of residuals does not seem to be a worrying problem in the case of LSVARs series. This corroborates Parker's (2014) remark: "adding lags…to the right-hand side of a distributed-lag regression usually lessens the degree of autocorrelation in the error term (p.54)." Our series really are long enough comparatively to the available sample.

8. We shall illustrate the acceptability of LSVARs' estimations from two final applicative criteria.

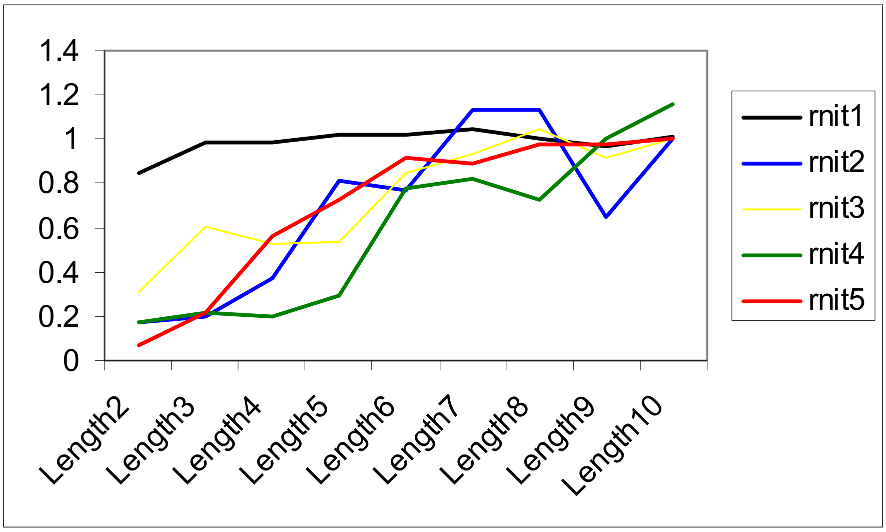
• The first concerns their ability to approximate adequately the statistical properties of the involved sample.

• The second refers to the pattern induced by the long-run successive extrapolations, in connection with the stability of the VAR condition.

8.1. Relating to the first, we shall focus on R-squared. As already outlined, in our application, longer possible VARs are preferred. Consequently, the adjusted R-squared seems to be irrelevant (see appendix "Ap. 3 VAR econometrics"). To easily interpret the data, R-squared of all VAR lengths (from 2 to 10) were scaled against the R-squared of LSVARs (=1).

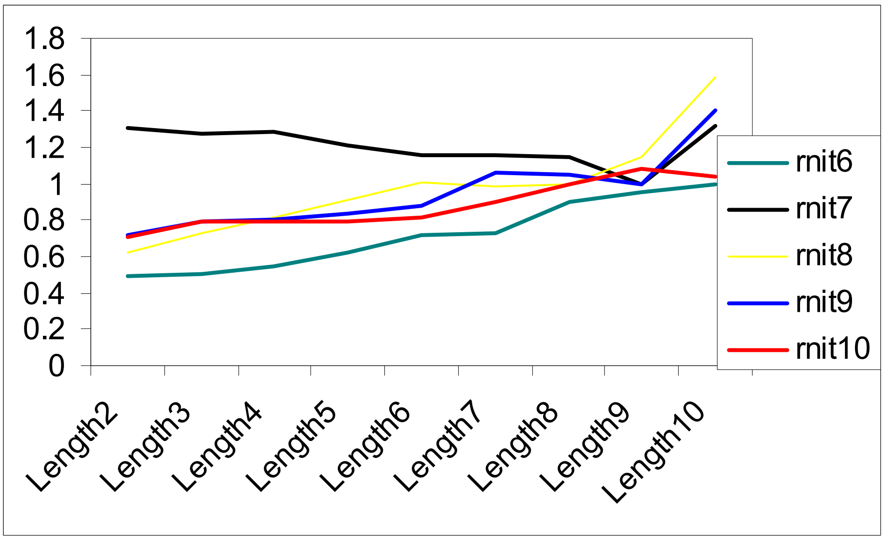
8.1.1. The Graph R2scA presents the coefficients of determination for sectors 1-5.

Graph R2scA



Therefore, there were registered R-squared higher than those of the LSVARs in only 8 cases.
8.1.2. We shall proceed similarly for the other five sectoral net indirect tax rates (rnit6-rnit10).

Graph R2scB

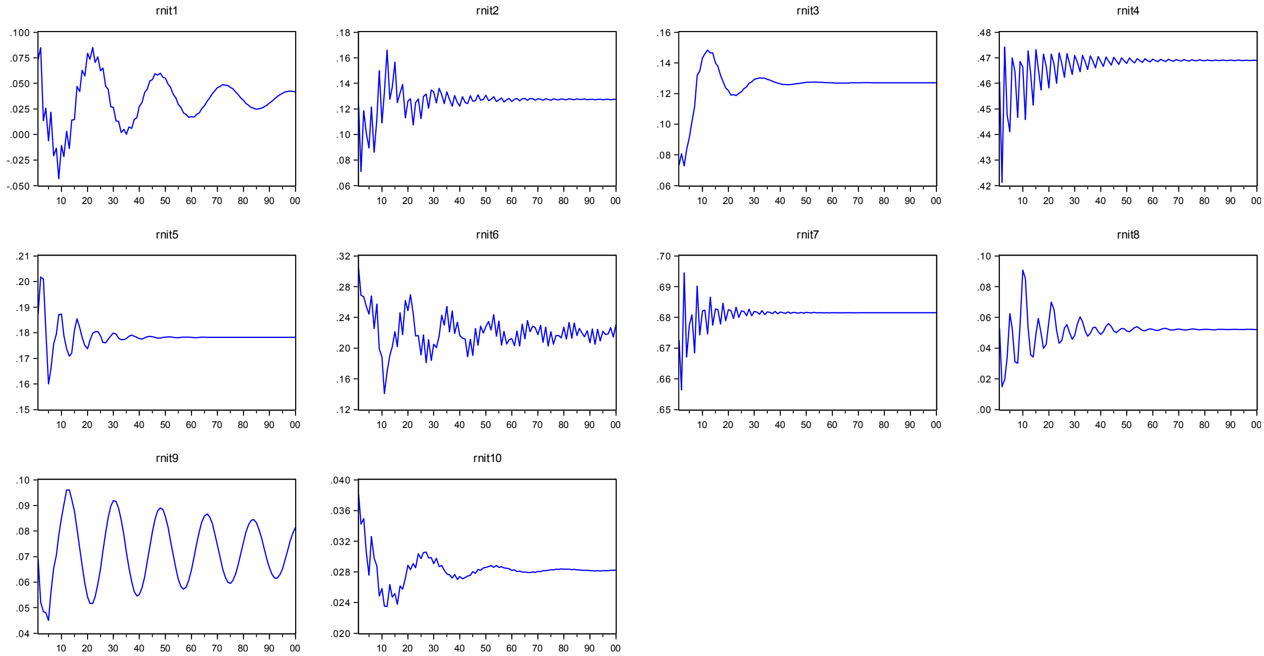


In the second group, the number of series with greater R-squared (than LSVARs) is larger, remaining around one third.

Synthetically, from a total of 90 estimations (ten series regressed for nine lag lengths), only approximately one quarter have R-squared higher than LSVARs. In our opinion, such a proportion indicates an acceptable degree of LSVARs to approximate the statistical properties of the involved sample.

8.2. The postsample simulations have been computed for different intervals. The following graphs retain dynamics that resulted from 100 successive extrapolations for all ten series $rnit_i$.

Graph TREND



The asymptotical property of all estimated LSVARs is also graphically illustrated.

IV. Final Remarks

1. The paper examined the sectoral structure of economy measured as weights of the main branches in the total gross value added and in the gross domestic product. As a numerical example, the input-output tables of the Romania (annual data for the period 1989-2011, aggregated into ten sectors) were used.

The comparative analysis involved five structural coefficients (SCs) derived from the Euclidean 1-norm distance, Bhattacharyya coefficient, Hellinger distance, Cosine similarity coefficient, and the so-called Jaccard index. All of them indicated some dissimilarities between the two mentioned structural perspectives, induced by the sectoral distribution of the net indirect taxes rates ($rnit_i$, computed as ratios of the sectoral net indirect taxes to the corresponding gross value added).

2. This distribution registered important shifts during the transition from centrally planned economy to market system, especially in the first part of the interval, when initial breaking institutional reforms were promoted. Despite the volatility registered by the sectoral $rnit_i$, several tendencies have been however identified. An increasing trend characterizes sectors 1 (agriculture, forestry, hunting, and fishing) and 7 (other manufacturing industries). In sectors 5 (textiles, leather, pulp and paper, and furniture) and 6 (machinery and equipment, transport means, and other metal products), the net indirect tax rates initially expanded, followed by a diminishing tendency. An inverse picture characterized sectors 2 (mining and quarrying), 4 (food, beverages, and tobacco), and 10 (trade, business, and public service). A quasi-cyclical pattern could be seen in the case of sectors 3 (production and distribution of electric and thermal power), 8 (constructions), and 9 (transports, post, and telecommunications).

3. The econometric estimation of the sectoral $rnit_i$ becomes necessary in any analysis or prognosis of the sectoral structure of economy. Obviously, such an objective could be reached through different ways. The present paper focused only on the univariate autoregressive algorithm; further studies will try other approaches.

For available series, the stationarity problem has not proved to be simple. Three from the most usual unit root tests were applied: Augmented Dickey-Fuller, Phillips-Perron, and Elliott-Rothenberg-Stock. However, the results were ambiguous. Consequently, the computational strategy has focused on the stable VAR, which shows that the roots of the resulted characteristic polynomial must lie inside the unit circle.

4. In choosing the VAR lag length, the paper has insisted on both targetable goals in such estimations.

• Undoubtedly, the coefficient of determination of regression cannot be ignored. A good approximation of available statistical data, especially of those that refer to the preforecasting interval, represents a reliable tool for the short- and medium-run prognoses.

• However, the long-run behavior of a VAR relationship can also be of interest not only because of predictive reasons. In many cases, the statistical series could be "suspected" to contain some steady-state points or other time patterns. In such situations, the given VAR has to be submitted to a significant number of successive extrapolations to identify the possible stable dynamic features of the examined indicators.

5. The paper introduces the so-named "the longest stable vector of autoregression (LSVAR)," based on two premises:

• It starts from the maximal VAR lag length (q_{max}), which corresponds to the minimum of the degrees of freedom specific to the respective application, dependent on its turn on the available sample dimension (n data). It is thus derived q_{max}=(n/2-1); because the VARs operate only with integers, n will be lessened by 1 when it is odd.

• On the other hand, the VAR stability condition is also essential. It attests that the successive extrapolations based on the resulting estimators are convergent, tending to a given level (steady state point) or to fixed or decreasing boundaries of oscillations.

The practical procedure begins by checking for stability condition of the maximal VAR length. If it fails such a test, the VAR length is step-by-step compressed until the mentioned restriction is observed. The examined paper statistical series ($rnit_i$) contain 23 observations, which means that in all cases, the maximal VAR length equals to 10 lags. Only in four cases, such a length corresponds also to the stability condition: rnit2, rnit3, rnit5, and rnit6. LSVARs include 9 lags in other three series (rnit4, rnit7, and rnit9) and 8 lags in the rest of the three cases (rnit1, rnit8, and rnit10).

6. The obtained LSVARs were analyzed, taking into account several econometric and applicative criteria.

The residuals of regression were submitted to the normality and autocorrelation tests. Obviously, their power is lessened by the circumstance that the lag length in all cases is sufficiently long (8-10 terms) comparatively with the statistical sample. Nevertheless, such an exercise has been considered useful at least as an auxiliary information. For the great majority of LSVARs' series (seven from ten), the normality distribution of residuals cannot be rejected, which justifies their utilization. The LM test also showed that the autocorrelation of residuals does not seem to be a disquieting problem in the case of these series.

The R-squared coefficient was also admitted as relevant. Synthetically, from a total of 90 estimations (ten series regressed for nine lag lengths), only approximately one quarter have R-squared higher than LSVARs. Such a proportion indicates, in our opinion, an acceptable degree of LSVARs to approximate the statistical properties of the involved sample.

The postsample simulations (computed for different intervals of successive extrapolations) confirmed the asymptotical properties of all LSVARs estimated in the present paper.

7. LSVAR steady-state level of $rnit_i$ (noted $srnit_i$) has been calculated as a mean of 100 estimations post-THR2, that is, after which, the relative change of two consecutive extrapolations became smaller than 0.001.

Table 9

Steady-state level of $rnit_i$ resulting from LSVAR

srnit1	srnit2	srnit3	srnit4	srnit5
0.034915	0.12743	0.127039	0.468994	0.17819
srnit6	srnit7	srnit8	srnit9	srnit10
0.218709	0.681511	0.052124	0.072495	0.028218

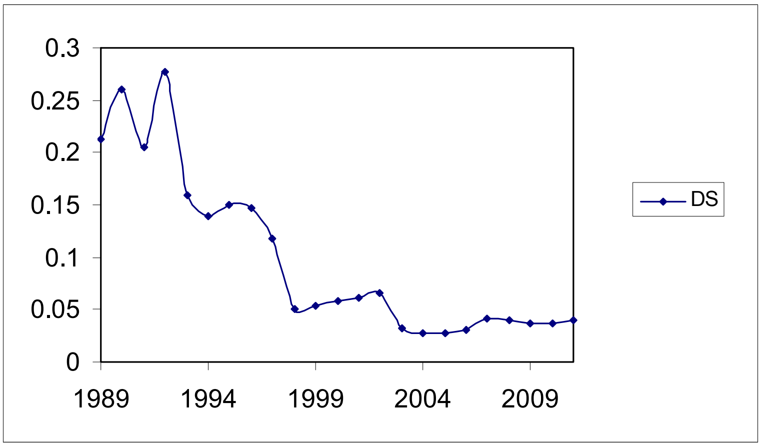
The net indirect tax rates, as steady-state levels, are positive in all the sectors.

It would be interesting to compare the actual evolution of $rnit_i$ with their steady-state levels. The DS will be used as a synthetic indicator with such a goal:

$$DS = (\Sigma wv_i*(rnit_i-srnit_i)^2)^0.5 \quad (11)$$

We remind that wv_i represents the sectoral weights of the gross value added. The Graph DS describes the trajectory of this indicator during the period 1989-2011.

Graph DS



Further research has to check if such a picture is confirmed by other econometric techniques than LSVAR.

Acknowledgments

The author thanks I. Ghizdeanu, V. Gaftea, and T. Bria for the valuable assistance in building the data base used in the present paper.

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Ap.1 Statistical series

Gross value added, current prices, mill. RON

Years	GVA	GVA1	GVA2	GVA3	GVA4	GVA5	GVA6	GVA7	GVA8	GVA9	GVA10
1989	73,27113	11,52185	3,15836	1,03532	5,09324	8,71491	12,47247	6,45126	4,38602	5,47410	14,96360
1990	80,80077	18,71219	2,77823	0,47578	6,05001	7,88667	11,71352	5,85987	4,60374	5,06082	17,65996
1991	211,33800	41,59350	6,67910	6,85863	13,52127	15,90910	20,10570	20,38660	9,60900	15,05776	61,61733
1992	619,62136	114,79281	19,74150	30,28290	39,99958	37,13601	47,14751	56,78699	29,00600	51,79790	192,93016
1993	1942,70710	420,58180	65,65600	78,64610	140,97560	111,10860	126,61440	155,13800	103,99980	204,08550	535,90130
1994	4794,53055	989,75140	164,04077	209,03204	368,05455	311,78249	356,41227	392,50183	325,13433	443,88840	1233,93248
1995	7209,30000	1381,80000	199,20000	259,80000	477,90000	402,20000	466,10000	496,90000	470,40000	480,50000	2574,50000
1996	10758,91000	1995,40000	268,54000	323,70000	808,00000	708,90000	703,40000	695,84000	693,00000	872,40000	3689,73000
1997	23691,23000	4462,26000	656,92000	862,00000	1918,08000	1397,20000	1365,37000	1431,89000	1377,00000	2028,05000	8192,46000
1998	33171,70000	5317,80000	713,60000	1142,10000	2479,10000	1747,60000	1867,20000	1838,40000	1883,40000	3244,70000	12937,80000
1999	49144,00000	7069,30000	1151,90000	1935,00000	3403,70000	2601,90000	2396,10000	2242,40000	2645,00000	5103,70000	20595,00000
2000	72736,40000	8773,40000	1684,30000	2393,70000	5186,30000	4188,80000	3627,30000	4026,60000	3892,50000	7598,70000	31364,80000
2001	106120,00000	15641,60000	2142,10000	2970,40000	8609,00000	6339,10000	5671,40000	5515,40000	6237,30000	11302,30000	41691,40000
2002	136922,30000	17289,30000	2733,20000	4937,50000	9893,80000	8536,00000	7573,00000	7422,00000	8648,80000	14479,40000	55409,30000
2003	175640,90000	22847,50000	2741,00000	5624,50000	12092,20000	10339,00000	9632,20000	8349,20000	11318,40000	19470,10000	73226,80000
2004	220931,30000	31055,00000	3271,20000	6294,30000	15169,00000	12828,30000	12745,40000	11319,00000	14649,00000	24827,00000	88773,10000
2005	255232,77000	24291,80000	3788,50000	6692,40000	17469,20000	13927,24000	16350,00000	13503,80000	18865,20000	29345,80000	110998,83000
2006	304269,80000	26861,90000	4744,60000	7395,10000	19916,00000	15592,30000	20882,00000	16026,00000	25547,80000	34803,30000	132500,80000
2007	368356,30000	23992,20000	5657,50000	8538,60000	23108,00000	18643,40000	26301,50000	18899,00000	37923,80000	43532,50000	161759,80000
2008	458534,50000	34125,40000	5174,40000	12074,70000	27404,00000	21959,30000	30757,40000	22535,90000	56130,60000	51485,40000	196887,40000
2009	450979,02785	32297,82313	5914,76822	15535,79150	26683,27349	20549,71670	34536,59389	19023,23358	52809,36833	53069,46121	190558,99780
2010	466397,00000	29874,20000	8672,00000	26722,90000	28937,60000	24056,00000	38252,10000	23007,30000	47762,30000	48300,90000	190811,70000
2011	487733,20000	36341,60000	7106,00000	32430,40000	30215,10000	26490,40000	39567,40000	25547,00000	44950,30000	43227,40000	201857,60000

Net indirect taxes, mill. RON

Years	NIT	NIT1	NIT2	NIT3	NIT4	NIT5	NIT6	NIT7	NIT8	NIT9	NIT10
1989	7,89450	0,00600	1,27220	0,21100	3,54120	0,67650	0,15370	0,67490	0,00000	0,68810	0,67090
1990	6,97240	-3,03870	2,69210	0,15850	4,37616	0,81002	0,19363	0,73559	0,00000	0,50580	0,53930
1991	13,77689	0,24880	1,52131	-1,79236	4,87621	2,84009	2,06295	1,73813	0,49418	0,95520	0,83237
1992	11,39751	-0,02725	5,09314	-16,72770	0,42987	4,47889	9,85358	1,51286	1,87940	2,31220	2,59250
1993	145,65040	-13,13446	2,90394	-0,61670	56,10342	26,66875	23,75621	22,75034	1,34520	14,10290	11,77080
1994	381,85515	-23,71600	2,38620	-0,86840	106,52230	48,33900	77,70283	100,84122	4,37330	34,51680	31,75790
1995	439,60000	-69,70000	-30,70000	6,90000	171,80000	50,40000	88,30000	90,00000	46,20000	31,10000	55,30000
1996	625,25000	-123,00000	19,45000	-86,80000	238,50000	84,90000	130,50000	172,70000	69,00000	43,90000	76,10000
1997	1838,60000	-70,20000	215,90000	-178,60000	591,70000	200,60000	322,40000	537,30000	69,90000	84,20000	65,40000
1998	3883,40000	11,70000	49,00000	263,00000	1212,10000	357,80000	591,00000	997,90000	135,70000	142,70000	122,50000
1999	6047,40000	-8,00000	99,60000	371,90000	1769,90000	642,60000	993,40000	1518,90000	126,30000	286,60000	246,20000
2000	8248,20000	-5,60000	160,00000	272,70000	2592,40000	944,50000	1118,80000	1878,90000	133,00000	424,10000	729,40000
2001	11825,80000	-78,50000	181,10000	879,10000	2831,50000	1055,70000	1714,30000	3162,30000	411,20000	657,80000	1011,30000
2002	15094,70000	802,10000	231,90000	1167,50000	3511,30000	1284,40000	1162,50000	3471,30000	425,30000	1548,80000	1489,60000
2003	21786,70000	1103,30000	378,60000	1401,40000	4866,40000	1657,90000	1897,80000	6094,80000	516,30000	1694,80000	2175,40000
2004	26436,70000	1405,00000	505,40000	1534,80000	6142,90000	2146,10000	2446,40000	7421,50000	576,10000	1821,00000	2437,50000
2005	33721,94000	2166,70000	709,50000	1429,90000	7631,00000	2649,50000	3022,30000	9220,10000	813,70000	2595,80000	3483,44000
2006	40380,80000	2771,10000	607,10000	1466,80000	8384,50000	3157,60000	3951,60000	11173,10000	961,70000	3649,00000	4258,30000
2007	47650,50000	3413,40000	789,80000	2092,50000	9873,30000	3331,70000	4134,20000	12393,20000	1184,60000	4472,70000	5965,10000
2008	56164,50000	4094,40000	1561,70000	2099,20000	12283,80000	4204,30000	4997,40000	13744,00000	1432,10000	5347,60000	6400,00000
2009	50160,31509	3612,10965	948,28115	1457,74086	12733,33573	3431,67850	4094,15081	13170,86567	1172,92811	4558,39250	4980,83211
2010	57296,30000	1563,10000	819,10000	2180,20000	11817,80000	3351,10000	6648,20000	14999,70000	6021,50000	2731,70000	7163,90000
2011	69615,00000	3971,90000	1279,70000	3052,60000	14287,40000	4129,00000	8429,90000	16977,20000	6949,50000	2910,10000	7627,70000

Gross domestic product, current prices, mill. RON

Years	GDP	GDP1	GDP2	GDP3	GDP4	GDP5	GDP6	GDP7	GDP8	GDP9	GDP10
1989	81,16563	11,52785	4,43056	1,24632	8,63444	9,39141	12,62617	7,12616	4,38602	6,16220	15,63450
1990	87,77317	15,67349	5,47033	0,63428	10,42617	8,69669	11,90715	6,59546	4,60374	5,56662	18,19926
1991	225,11489	41,84230	8,20041	5,06627	18,39748	18,74919	22,16865	22,12473	10,10318	16,01296	62,44970
1992	631,01887	114,76556	24,83464	13,55520	40,42946	41,61490	57,00109	58,29985	30,88540	54,11010	195,52266
1993	2088,35750	407,44734	68,55994	78,02940	197,07902	137,77735	150,37061	177,88834	105,34500	218,18840	547,67210
1994	5176,38570	966,03540	166,42697	208,16364	474,57685	360,12149	434,11510	493,34305	329,50763	478,40520	1265,69038
1995	7648,90000	1312,10000	168,50000	266,70000	649,70000	452,60000	554,40000	586,90000	516,60000	511,60000	2629,80000
1996	11384,16000	1872,40000	287,99000	236,90000	1046,50000	793,80000	833,90000	868,54000	762,00000	916,30000	3765,83000
1997	25529,83000	4392,06000	872,82000	683,40000	2509,78000	1597,80000	1687,77000	1969,19000	1446,90000	2112,25000	8257,86000
1998	37055,10000	5329,50000	762,60000	1405,10000	3691,20000	2105,40000	2458,20000	2836,30000	2019,10000	3387,40000	13060,30000
1999	55191,40000	7061,30000	1251,50000	2306,90000	5173,60000	3244,50000	3389,50000	3761,30000	2771,30000	5390,30000	20841,20000
2000	80984,60000	8767,80000	1844,30000	2666,40000	7778,70000	5133,30000	4746,10000	5905,50000	4025,50000	8022,80000	32094,20000
2001	117945,80000	15563,10000	2323,20000	3849,50000	11440,50000	7394,80000	7385,70000	8677,70000	6648,50000	11960,10000	42702,70000
2002	152017,00000	18091,40000	2965,10000	6105,00000	13405,10000	9820,40000	8735,50000	10893,30000	9074,10000	16028,20000	56898,90000
2003	197427,60000	23950,80000	3119,60000	7025,90000	16958,60000	11996,90000	11530,00000	14444,00000	11834,70000	21164,90000	75402,20000
2004	247368,00000	32460,00000	3776,60000	7829,10000	21311,90000	14974,40000	15191,80000	18740,50000	15225,10000	26648,00000	91210,60000
2005	288954,71000	26458,50000	4498,00000	8122,30000	25100,20000	16576,74000	19372,30000	22723,90000	19678,90000	31941,60000	114482,27000
2006	344650,60000	29633,00000	5351,70000	8861,90000	28300,50000	18749,90000	24833,60000	27199,10000	26509,50000	38452,30000	136759,10000
2007	416006,80000	27405,60000	6447,30000	10631,10000	32981,30000	21975,10000	30435,70000	31292,20000	39108,40000	48005,20000	167724,90000
2008	514699,00000	38219,80000	6736,10000	14173,90000	39687,80000	26163,60000	35754,80000	36279,90000	57562,70000	56833,00000	203287,40000
2009	501139,34294	35909,93278	6863,04937	16993,53236	39416,60922	23981,39520	38630,74470	32194,09925	53982,29644	57627,85371	195539,82991
2010	523693,30000	31437,30000	9491,10000	28903,10000	40755,40000	27407,10000	44900,30000	38007,00000	53783,80000	51032,60000	197975,60000
2011	557348,20000	40313,50000	8385,70000	35483,00000	44502,50000	30619,40000	47997,30000	42524,20000	51899,80000	46137,50000	209485,30000

Sectoral GVA weights

Years	wv1	wv2	wv3	wv4	wv5	wv6	wv7	wv8	wv9	wv10
1989	0,15725	0,04311	0,01413	0,06951	0,11894	0,17022	0,08805	0,05986	0,07471	0,20422
1990	0,23158	0,03438	0,00589	0,07488	0,09761	0,14497	0,07252	0,05698	0,06263	0,21856
1991	0,19681	0,03160	0,03245	0,06398	0,07528	0,09514	0,09646	0,04547	0,07125	0,29156
1992	0,18526	0,03186	0,04887	0,06455	0,05993	0,07609	0,09165	0,04681	0,08360	0,31137
1993	0,21649	0,03380	0,04048	0,07257	0,05719	0,06517	0,07986	0,05353	0,10505	0,27585
1994	0,20643	0,03421	0,04360	0,07677	0,06503	0,07434	0,08186	0,06781	0,09258	0,25736
1995	0,19167	0,02763	0,03604	0,06629	0,05579	0,06465	0,06892	0,06525	0,06665	0,35711
1996	0,18546	0,02496	0,03009	0,07510	0,06589	0,06538	0,06468	0,06441	0,08109	0,34295
1997	0,18835	0,02773	0,03638	0,08096	0,05898	0,05763	0,06044	0,05812	0,08560	0,34580
1998	0,16031	0,02151	0,03443	0,07474	0,05268	0,05629	0,05542	0,05678	0,09782	0,39003
1999	0,14385	0,02344	0,03937	0,06926	0,05294	0,04876	0,04563	0,05382	0,10385	0,41907
2000	0,12062	0,02316	0,03291	0,07130	0,05759	0,04987	0,05536	0,05352	0,10447	0,43121
2001	0,14740	0,02019	0,02799	0,08113	0,05974	0,05344	0,05197	0,05878	0,10650	0,39287
2002	0,12627	0,01996	0,03606	0,07226	0,06234	0,05531	0,05421	0,06317	0,10575	0,40468
2003	0,13008	0,01561	0,03202	0,06885	0,05886	0,05484	0,04754	0,06444	0,11085	0,41691
2004	0,14056	0,01481	0,02849	0,06866	0,05806	0,05769	0,05123	0,06631	0,11237	0,40181
2005	0,09518	0,01484	0,02622	0,06844	0,05457	0,06406	0,05291	0,07391	0,11498	0,43489
2006	0,08828	0,01559	0,02430	0,06546	0,05124	0,06863	0,05267	0,08396	0,11438	0,43547
2007	0,06513	0,01536	0,02318	0,06273	0,05061	0,07140	0,05131	0,10295	0,11818	0,43914
2008	0,07442	0,01128	0,02633	0,05976	0,04789	0,06708	0,04915	0,12241	0,11228	0,42938
2009	0,07162	0,01312	0,03445	0,05917	0,04557	0,07658	0,04218	0,11710	0,11768	0,42255
2010	0,06405	0,01859	0,05730	0,06204	0,05158	0,08202	0,04933	0,10241	0,10356	0,40912
2011	0,07451	0,01457	0,06649	0,06195	0,05431	0,08113	0,05238	0,09216	0,08863	0,41387

Sectoral GDP weights

Years	wg1	wg2	wg3	wg4	wg5	wg6	wg7	wg8	wg9	wg10
1989	0,14203	0,05459	0,01536	0,10638	0,11571	0,15556	0,08780	0,05404	0,07592	0,19262
1990	0,17857	0,06232	0,00723	0,11879	0,09908	0,13566	0,07514	0,05245	0,06342	0,20734
1991	0,18587	0,03643	0,02251	0,08172	0,08329	0,09848	0,09828	0,04488	0,07113	0,27741
1992	0,18187	0,03936	0,02148	0,06407	0,06595	0,09033	0,09239	0,04895	0,08575	0,30985
1993	0,19510	0,03283	0,03736	0,09437	0,06597	0,07200	0,08518	0,05044	0,10448	0,26225
1994	0,18662	0,03215	0,04021	0,09168	0,06957	0,08386	0,09531	0,06366	0,09242	0,24451
1995	0,17154	0,02203	0,03487	0,08494	0,05917	0,07248	0,07673	0,06754	0,06689	0,34381
1996	0,16447	0,02530	0,02081	0,09193	0,06973	0,07325	0,07629	0,06694	0,08049	0,33080
1997	0,17204	0,03419	0,02677	0,09831	0,06259	0,06611	0,07713	0,05667	0,08274	0,32346
1998	0,14383	0,02058	0,03792	0,09961	0,05682	0,06634	0,07654	0,05449	0,09142	0,35246
1999	0,12794	0,02268	0,04180	0,09374	0,05879	0,06141	0,06815	0,05021	0,09767	0,37762
2000	0,10827	0,02277	0,03292	0,09605	0,06339	0,05860	0,07292	0,04971	0,09907	0,39630
2001	0,13195	0,01970	0,03264	0,09700	0,06270	0,06262	0,07357	0,05637	0,10140	0,36205
2002	0,11901	0,01951	0,04016	0,08818	0,06460	0,05746	0,07166	0,05969	0,10544	0,37429
2003	0,12131	0,01580	0,03559	0,08590	0,06077	0,05840	0,07316	0,05994	0,10720	0,38192
2004	0,13122	0,01527	0,03165	0,08615	0,06053	0,06141	0,07576	0,06155	0,10773	0,36872
2005	0,09157	0,01557	0,02811	0,08687	0,05737	0,06704	0,07864	0,06810	0,11054	0,39619
2006	0,08598	0,01553	0,02571	0,08211	0,05440	0,07205	0,07892	0,07692	0,11157	0,39681
2007	0,06588	0,01550	0,02556	0,07928	0,05282	0,07316	0,07522	0,09401	0,11540	0,40318
2008	0,07426	0,01309	0,02754	0,07711	0,05083	0,06947	0,07049	0,11184	0,11042	0,39496
2009	0,07166	0,01369	0,03391	0,07865	0,04785	0,07709	0,06424	0,10772	0,11499	0,39019
2010	0,06003	0,01812	0,05519	0,07782	0,05233	0,08574	0,07257	0,10270	0,09745	0,37804
2011	0,07233	0,01505	0,06366	0,07985	0,05494	0,08612	0,07630	0,09312	0,08278	0,37586

Rates of the net indirect taxes

Years	rnit	rnit1	rnit2	rnit3	rnit4	rnit5	rnit6	rnit7	rnit8	rnit9	rnit10
1989	0,10774	0,00052	0,40280	0,20380	0,69527	0,07763	0,01232	0,10462	0,00000	0,12570	0,04484
1990	0,08629	-0,16239	0,96900	0,33314	0,72333	0,10271	0,01653	0,12553	0,00000	0,09994	0,03054
1991	0,06519	0,00598	0,22777	-0,26133	0,36063	0,17852	0,10261	0,08526	0,05143	0,06344	0,01351
1992	0,01839	-0,00024	0,25799	-0,55238	0,01075	0,12061	0,20899	0,02664	0,06479	0,04464	0,01344
1993	0,07497	-0,03123	0,04423	-0,00784	0,39797	0,24002	0,18763	0,14665	0,01293	0,06910	0,02196
1994	0,07964	-0,02396	0,01455	-0,00415	0,28942	0,15504	0,21801	0,25692	0,01345	0,07776	0,02574
1995	0,06098	-0,05044	-0,15412	0,02656	0,35949	0,12531	0,18944	0,18112	0,09821	0,06472	0,02148
1996	0,05811	-0,06164	0,07243	-0,26815	0,29517	0,11976	0,18553	0,24819	0,09957	0,05032	0,02062
1997	0,07761	-0,01573	0,32865	-0,20719	0,30849	0,14357	0,23613	0,37524	0,05076	0,04152	0,00798
1998	0,11707	0,00220	0,06867	0,23028	0,48893	0,20474	0,31652	0,54281	0,07205	0,04398	0,00947
1999	0,12305	-0,00113	0,08647	0,19220	0,51999	0,24697	0,41459	0,67735	0,04775	0,05616	0,01195
2000	0,11340	-0,00064	0,09499	0,11392	0,49986	0,22548	0,30844	0,46662	0,03417	0,05581	0,02326
2001	0,11144	-0,00502	0,08454	0,29595	0,32890	0,16654	0,30227	0,57336	0,06593	0,05820	0,02426
2002	0,11024	0,04639	0,08485	0,23646	0,35490	0,15047	0,15351	0,46770	0,04917	0,10697	0,02688
2003	0,12404	0,04829	0,13812	0,24916	0,40244	0,16035	0,19703	0,72999	0,04562	0,08705	0,02971
2004	0,11966	0,04524	0,15450	0,24384	0,40496	0,16729	0,19194	0,65567	0,03933	0,07335	0,02746
2005	0,13212	0,08919	0,18728	0,21366	0,43683	0,19024	0,18485	0,68278	0,04313	0,08846	0,03138
2006	0,13271	0,10316	0,12796	0,19835	0,42099	0,20251	0,18923	0,69719	0,03764	0,10485	0,03214
2007	0,12936	0,14227	0,13960	0,24506	0,42727	0,17871	0,15718	0,65576	0,03124	0,10274	0,03688
2008	0,12249	0,11998	0,30181	0,17385	0,44825	0,19146	0,16248	0,60987	0,02551	0,10387	0,03251
2009	0,11123	0,11184	0,16032	0,09383	0,47720	0,16699	0,11855	0,69236	0,02221	0,08589	0,02614
2010	0,12285	0,05232	0,09445	0,08159	0,40839	0,13930	0,17380	0,65195	0,12607	0,05656	0,03754
2011	0,14273	0,10929	0,18009	0,09413	0,47286	0,15587	0,21305	0,66455	0,15460	0,06732	0,03779

Ap. 2 Unit Root Test (the series has a unit root)

ADF - Augmented Dickey-Fuller test statistic

PP - Phillips-Perron test statistic

ERS - Elliott-Rothenberg-Stock DF-GLS test statistic

t-Statistic

		ADF			PP Adj.			ERS	
	Exogenous	None	Constant	Constant, linear trend	None	Constant	Constant, linear trend	Constant	Constant, linear trend
	rnit1	-1,66204	-1,83185	-5,22098	-1,66204	-1,58863	-5,22098	-1,89889	-4,97798
Test critical values:	1% level	-2,67429	-3,76960	-4,44074	-2,67429	-3,76960	-4,44074	-2,67429	-3,77000
	5% level	-1,95720	-3,00486	-3,63290	-1,95720	-3,00486	-3,63290	-1,95720	-3,19000
	10% level	-1,60818	-2,64224	-3,25467	-1,60818	-2,64224	-3,25467	-1,60818	-2,89000
	rnit2	-2,46913	-3,23901	-5,59303	-2,30914	-3,14220	-3,19515	-3,07974	-3,33786
Test critical values:	1% level	-2,67429	-3,76960	-4,46790	-2,67429	-3,76960	-4,44074	-2,67429	-3,77000
	5% level	-1,95720	-3,00486	-3,64496	-1,95720	-3,00486	-3,63290	-1,95720	-3,19000
	10% level	-1,60818	-2,64224	-3,26145	-1,60818	-2,64224	-3,25467	-1,60818	-2,89000
	rnit3	-2,58677	-2,70601	-3,19709	-2,58302	-2,65351	-3,05234	-2,71864	-3,18901
Test critical values:	1% level	-2,67429	-3,76960	-4,44074	-2,67429	-3,76960	-4,44074	-2,67429	-3,77000
	5% level	-1,95720	-3,00486	-3,63290	-1,95720	-3,00486	-3,63290	-1,95720	-3,19000
	10% level	-1,60818	-2,64224	-3,25467	-1,60818	-2,64224	-3,25467	-1,60818	-2,89000
	rnit4	-1,25339	-3,61037	-3,61612	-1,21663	-3,62479	-6,98133	-2,84696	-3,37877
Test critical values:	1% level	-2,67429	-3,76960	-4,44074	-2,67429	-3,76960	-4,44074	-2,67429	-3,77000
	5% level	-1,95720	-3,00486	-3,63290	-1,95720	-3,00486	-3,63290	-1,95720	-3,19000
	10% level	-1,60818	-2,64224	-3,25467	-1,60818	-2,64224	-3,25467	-1,60818	-2,89000
	rnit5	-0,03939	-1,24623	-3,24929	-0,36602	-3,64924	-3,42767	-0,48261	-3,15996
Test critical values:	1% level	-2,69977	-3,85739	-4,49831	-2,67429	-3,76960	-4,44074	-2,69977	-3,77000
	5% level	-1,96141	-3,04039	-3,65845	-1,95720	-3,00486	-3,63290	-1,96141	-3,19000
	10% level	-1,60661	-2,66055	-3,26897	-1,60818	-2,64224	-3,25467	-1,60661	-2,89000
	rnit6	-0,30055	-2,46482	-2,25954	-0,37171	-2,46729	-2,24791	-1,86591	-2,06745
Test critical values:	1% level	-2,67429	-3,76960	-4,44074	-2,67429	-3,76960	-4,44074	-2,67429	-3,77000
	5% level	-1,95720	-3,00486	-3,63290	-1,95720	-3,00486	-3,63290	-1,95720	-3,19000
	10% level	-1,60818	-2,64224	-3,25467	-1,60818	-2,64224	-3,25467	-1,60818	-2,89000
	rnit7	0,32984	-1,17941	-2,28705	0,32984	-1,34381	-2,22246	-1,04054	-2,47361
Test critical values:	1% level	-2,67429	-3,78803	-4,44074	-2,67429	-3,76960	-4,44074	-2,67429	-3,77000
	5% level	-1,95720	-3,01236	-3,63290	-1,95720	-3,00486	-3,63290	-1,95720	-3,19000
	10% level	-1,60818	-2,64612	-3,25467	-1,60818	-2,64224	-3,25467	-1,60818	-2,89000
	rnit8	-0,27804	-3,27239	-3,29260	0,07546	-1,58458	-2,00361	-3,35052	-2,38171
Test critical values:	1% level	-2,67429	-3,78803	-4,46790	-2,67429	-3,76960	-4,44074	-2,67974	-3,77000
	5% level	-1,95720	-3,01236	-3,64496	-1,95720	-3,00486	-3,63290	-1,95809	-3,19000
	10% level	-1,60818	-2,64612	-3,26145	-1,60818	-2,64224	-3,25467	-1,60783	-2,89000
	rnit9	-1,38365	-2,84609	-3,54223	-1,37974	-2,84609	-3,15646	-2,17887	-2,66422
Test critical values:	1% level	-2,67429	-3,76960	-4,46790	-2,67429	-3,76960	-4,44074	-2,67429	-3,77000
	5% level	-1,95720	-3,00486	-3,64496	-1,95720	-3,00486	-3,63290	-1,95720	-3,19000
	10% level	-1,60818	-2,64224	-3,26145	-1,60818	-2,64224	-3,25467	-1,60818	-2,89000
	rnit10	-0,95512	-2,34769	-3,96912	-0,95512	-2,50014	-3,91422	-1,82681	-3,00709
Test critical values:	1% level	-2,67429	-3,76960	-4,44074	-2,67429	-3,76960	-4,44074	-2,67429	-3,77000
	5% level	-1,95720	-3,00486	-3,63290	-1,95720	-3,00486	-3,63290	-1,95720	-3,19000
	10% level	-1,60818	-2,64224	-3,25467	-1,60818	-2,64224	-3,25467	-1,60818	-2,89000

Ap. 3 VAR econometrics

Lag length	2	3	4	5	6	7	8	9	10
Estimators									
rnit1									
c	0,01843	0,00990	0,01099	0,01694	0,02228	0,01276	0,01347	0,01849	-0,05512
rnit1(-1)	0,42941	0,73490	0,77141	0,75444	0,68032	0,66375	0,53263	0,49239	0,12863
rnit1(-2)	0,33383	0,06476	-0,02284	0,10319	0,17575	0,37714	0,43568	0,44701	1,56771
rnit1(-3)		0,13861	0,15194	-0,21299	-0,34841	-0,50274	-0,41788	-0,45984	-0,45323
rnit1(-4)			0,03965	0,09826	0,08374	0,60041	0,51753	0,48138	1,20493
rnit1(-5)				0,22230	0,23357	-0,29544	0,04229	0,08479	-0,60033
rnit1(-6)					0,21081	0,21221	-0,16652	-0,05342	-0,02808
rnit1(-7)						-0,29450	-0,23783	-0,38344	-1,84309
rnit1(-8)							-0,09177	-0,04673	0,46830
rnit1(-9)								0,05578	-0,59877
rnit1(-10)									-0,30914
R-squared	0,67221	0,78265	0,78061	0,80677	0,81116	0,82735	0,79339	0,76753	0,79933
rnit2									
c	0,09859	0,10317	0,14621	0,18757	0,21382	0,05122	0,05958	0,05895	0,17033
rnit2(-1)	0,13390	0,22533	0,20655	0,13286	0,08216	0,22885	0,12181	0,10079	0,06625
rnit2(-2)	0,04171	0,07332	-0,22680	-0,35621	-0,40011	-0,19809	-0,16766	-0,21210	-0,15470
rnit2(-3)		-0,11322	-0,04995	0,07853	0,06567	0,37489	0,30721	0,32122	0,54110
rnit2(-4)			-0,09933	-0,01535	-0,09528	-0,03239	0,04646	0,04673	-0,21198
rnit2(-5)				-0,26083	-0,24814	0,25603	0,20681	0,24230	-0,08745
rnit2(-6)					-0,04194	-0,07122	0,03669	0,03369	-0,17985
rnit2(-7)						0,18202	0,18191	0,22160	-0,01893
rnit2(-8)							-0,01711	-0,01400	-0,04879
rnit2(-9)								0,00433	-0,01031
rnit2(-10)									-0,23202
R-squared	0,09704	0,10869	0,20192	0,44570	0,42082	0,62206	0,62028	0,35382	0,54894
rnit3									
c	0,04282	0,03986	0,06495	0,05415	0,06252	0,04974	0,09187	0,14489	0,09640
rnit3(-1)	0,56455	0,77228	0,37457	0,43780	0,59238	0,40719	0,63899	0,22376	0,33406
rnit3(-2)	-0,24580	-0,43702	-0,03191	-0,05337	-0,14977	-0,00750	-0,38601	-0,18429	0,10636
rnit3(-3)		0,31904	0,12009	0,13290	0,24167	0,42370	0,61782	0,33025	0,06792
rnit3(-4)			0,16837	0,10164	-0,05654	0,03976	-0,40916	-0,03592	0,05801
rnit3(-5)				0,09072	0,32466	0,15914	0,21359	0,02007	-0,14001
rnit3(-6)					-0,39893	-0,26035	-0,19720	-0,05618	0,15539
rnit3(-7)						-0,26363	-0,09093	-0,18840	-0,23430
rnit3(-8)							-0,00475	0,02201	0,07116
rnit3(-9)								-0,13321	-0,10708
rnit3(-10)									-0,07040
R-squared	0,26468	0,51618	0,44472	0,45136	0,72024	0,79406	0,88980	0,78015	0,84794

rnit4									
c	0,41221	0,46851	0,24849	0,20057	0,34017	0,47548	0,49059	0,20311	0,88362
rnit4(-1)	0,22999	0,17270	0,16344	0,40739	0,62123	0,26890	0,22169	0,28189	-2,18187
rnit4(-2)	-0,28511	-0,19392	0,19512	0,16776	-0,28548	0,01035	0,00607	-0,14719	0,93230
rnit4(-3)		-0,17053	-0,00224	-0,09185	-0,14345	-0,41988	-0,38518	0,24827	-0,92505
rnit4(-4)			0,05652	0,01822	0,08727	0,03461	-0,05591	-0,36680	0,55736
rnit4(-5)				0,01538	0,15618	0,24016	0,25429	0,24669	-0,67627
rnit4(-6)					-0,24754	-0,18593	-0,13611	0,04572	0,41082
rnit4(-7)						-0,08339	-0,09434	0,05574	0,04781
rnit4(-8)							0,02378	-0,12608	0,20301
rnit4(-9)								0,32868	-0,15667
rnit4(-10)									0,79979
R-squared	0,14634	0,18496	0,16902	0,25127	0,65714	0,69505	0,61426	0,84684	0,98053

rnit5									
c	0,14634	0,16909	0,26215	0,09141	0,13986	0,16233	0,27540	0,34377	0,33067
rnit5(-1)	0,23839	0,23456	0,21308	0,60721	0,79504	0,69379	0,58627	0,41651	0,53623
rnit5(-2)	-0,08422	0,08817	-0,09353	-0,08544	-0,45566	-0,31315	-0,71990	-0,67360	-0,77999
rnit5(-3)		-0,31316	-0,43523	-0,33430	-0,16991	-0,29156	0,26234	0,02715	0,09787
rnit5(-4)			-0,19553	-0,05727	-0,09801	-0,10247	-0,61742	-0,50814	-0,49716
rnit5(-5)				0,34332	0,08495	0,08436	0,05229	-0,10997	0,07692
rnit5(-6)					0,05806	0,04198	0,02859	0,03868	-0,10780
rnit5(-7)						-0,02567	-0,08870	-0,10735	-0,12110
rnit5(-8)							-0,05016	-0,08026	-0,01058
rnit5(-9)								0,07579	0,09529
rnit5(-10)									-0,14541
R-squared	0,05830	0,19125	0,49571	0,64446	0,81617	0,79528	0,86810	0,87091	0,88917

rnit6									
c	0,09572	0,11056	0,07766	0,09246	0,10877	0,11537	0,20495	0,32585	0,59560
rnit6(-1)	0,68807	0,63802	0,72704	0,74850	0,83523	0,74296	0,65417	0,21906	-0,22253
rnit6(-2)	-0,12303	0,15726	0,17855	0,23313	0,28961	0,41494	0,17724	0,42224	0,14975
rnit6(-3)		-0,30910	-0,47836	-0,59697	-0,85876	-0,84326	-0,56658	-0,58002	-0,28242
rnit6(-4)			0,21324	0,04501	0,10161	-0,04994	0,14979	0,02702	-0,22835
rnit6(-5)				0,16238	0,53906	0,60164	0,05503	0,18063	0,16188
rnit6(-6)					-0,40164	-0,23991	-0,24408	-0,43256	-0,31617
rnit6(-7)						-0,15920	0,35077	0,26233	-0,15992
rnit6(-8)							-0,51594	-0,16346	-0,04394
rnit6(-9)								-0,42984	-0,16020
rnit6(-10)									-0,62135
R-squared	0,47015	0,47509	0,52318	0,58723	0,68424	0,69478	0,85829	0,90792	0,94943

rnit7									
c	0,08719	0,10897	0,16014	0,19289	0,17944	0,28458	0,47022	0,65890	1,12225
rnit7(-1)	0,57844	0,56115	0,45977	0,34967	0,37990	0,33414	-0,04448	-0,29317	-1,01829
rnit7(-2)	0,30366	0,31056	0,23624	0,25463	0,31649	0,24426	0,38272	0,20689	0,06898
rnit7(-3)		-0,02739	-0,19731	-0,18625	-0,25209	-0,41678	-0,41322	-0,29530	-0,09023
rnit7(-4)			0,28403	0,21868	0,28525	0,28072	-0,06976	-0,13773	-0,71574
rnit7(-5)				0,10416	0,24662	0,34924	0,50472	0,40113	0,41685
rnit7(-6)					-0,24063	-0,17341	-0,01720	0,13414	0,73457
rnit7(-7)						-0,04715	-0,16631	-0,06076	-0,23251
rnit7(-8)							0,13918	0,13508	0,19249
rnit7(-9)								-0,05710	0,54719
rnit7(-10)									-0,55429
R-squared	0,81224	0,79293	0,79663	0,74845	0,71923	0,72073	0,71284	0,62051	0,82019

rnit8									
c	0,05478	0,03993	0,05459	0,06791	0,09523	0,07981	0,10865	0,10732	0,10979
rnit8(-1)	0,54973	0,65694	0,72280	0,72718	0,64875	0,70912	0,68952	0,85233	0,92446
rnit8(-2)	-0,58742	-0,74232	-0,93363	-0,95768	-0,93785	-0,85732	-1,07769	-0,48086	-3,11617
rnit8(-3)		0,37390	0,52522	0,40686	0,56295	0,49753	0,59225	0,10569	0,34808
rnit8(-4)			-0,34372	-0,52497	-0,88236	-0,79277	-0,95600	-0,88332	-0,54269
rnit8(-5)				0,09323	0,23235	0,25307	0,52242	0,38057	1,60450
rnit8(-6)					-0,41199	-0,28829	-0,64766	-0,64331	-1,19598
rnit8(-7)						-0,02875	0,16386	0,08267	1,15284
rnit8(-8)							-0,37121	-0,55095	-0,78076
rnit8(-9)								0,17991	0,96156
rnit8(-10)									-0,93378
R-squared	0,33484	0,39246	0,43957	0,49224	0,54346	0,53433	0,54219	0,62429	0,86000

rnit9									
c	0,03817	0,02732	0,02546	0,02603	0,03338	0,05123	0,06376	0,07954	0,16000
rnit9(-1)	0,79658	0,87082	0,82437	0,87780	0,85896	0,74450	0,62348	0,55403	0,25096
rnit9(-2)	-0,32521	-0,43219	-0,43960	-0,44215	-0,39900	-0,31817	-0,27320	-0,35067	-0,28706
rnit9(-3)		0,18571	0,36128	0,36322	0,40435	0,38607	0,37718	0,40960	0,07092
rnit9(-4)			-0,08280	-0,16403	-0,29272	-0,14110	-0,09957	-0,08414	0,05329
rnit9(-5)				0,01161	0,17180	-0,13277	-0,09340	-0,10798	-0,11249
rnit9(-6)					-0,20407	0,20137	0,07739	0,13191	0,08324
rnit9(-7)						-0,45164	-0,27743	-0,40158	-0,29589
rnit9(-8)							-0,22043	0,00473	-0,45416
rnit9(-9)								-0,25299	0,26264
rnit9(-10)									-0,81087
R-squared	0,43345	0,47799	0,48860	0,50407	0,53013	0,64471	0,63923	0,60599	0,85078

rnit10									
c	0,00937	0,00614	0,00336	0,00265	0,00361	0,00365	0,01079	0,01689	-0,02629
rnit10(-1)	0,98503	0,91330	0,83311	0,81870	0,84523	0,76722	0,64753	0,46342	0,99474
rnit10(-2)	-0,35511	-0,19653	0,01017	0,06520	0,14029	0,29266	0,15975	-0,19296	1,01963
rnit10(-3)		0,07071	-0,19949	-0,17893	-0,33007	-0,30356	-0,11882	0,21439	-0,66778
rnit10(-4)			0,26659	0,15169	0,10556	-0,20615	0,12397	0,49841	-0,14020
rnit10(-5)				0,07970	0,33378	0,42250	-0,00492	-0,36435	0,19809
rnit10(-6)					-0,19205	0,14956	-0,04889	-0,44121	-0,43706
rnit10(-7)						-0,18648	0,41142	0,75811	1,04915
rnit10(-8)							-0,55249	-0,23181	-0,29921
rnit10(-9)								-0,28935	-0,50850
rnit10(-10)									1,07408
R-squared	0,57116	0,63655	0,64028	0,64223	0,66049	0,72136	0,80612	0,87087	0,83803