



NATIONAL SCIENTIFIC RESEARCH INSTITUTE FOR LABOUR
AND SOCIAL PROTECTION



The Short Term Anticipation of the Demand of the Romanian VET at NUTS 3 level

**CRISTINA LINCARU, GABRIELA PREDOȘANU, SPERANȚA PÎRCIOG,
VASILICA CIUCĂ**

Youth unemployment and joblessness:
causes, consequences, responses
ADAPT international conference series on
Productivity, Investment in Human Capital
and the Challenge of Youth Employment

Organized by
ADAPT & UNAM
on 29 and 30 August 2011
at the Instituto de Investigaciones Jurídicas de la UNAM
Circuito Maestro Mario de la Cueva s/n,
Ciudad Universitaria, CP. 04510, D.F., México

1. Goal of the paper / research question

- 1.1. General characteristics of the satisfied demand of the Romanian VET

2. Methodology and theoretical anchorage of the paper

- 2.1. Data, variables and model specifications
- 2.2. National regulation framework

3. Results

- 3.1. The development dimension
- 3.2. The growth dimension
 - a. The structure concordance
 - b. The “growth” potential as externalities of clusters/agglomeration spatial structures

4. Final remarks

1.1. General characteristics of the satisfied demand of the Romanian VET

“Vocational, complementary or apprenticeship educational level” at region NUTS 3 level is strongly connected with two dimensions:

the **development dimension** and
the **growth dimension**

*We intend to explore with **spatial analysis instruments** the connections/links between **demand** (as a measure of the productivity and the competitiveness at the NUTS 3 level) and **offer** (human capital – TVET graduates).*

The Short Term Anticipation of the Demand of the Romanian VET at NUTS 3 level

The number of employed people with VET level is almost **2 millions** in Quarter IV 2010 and represents almost **22%** from employed population

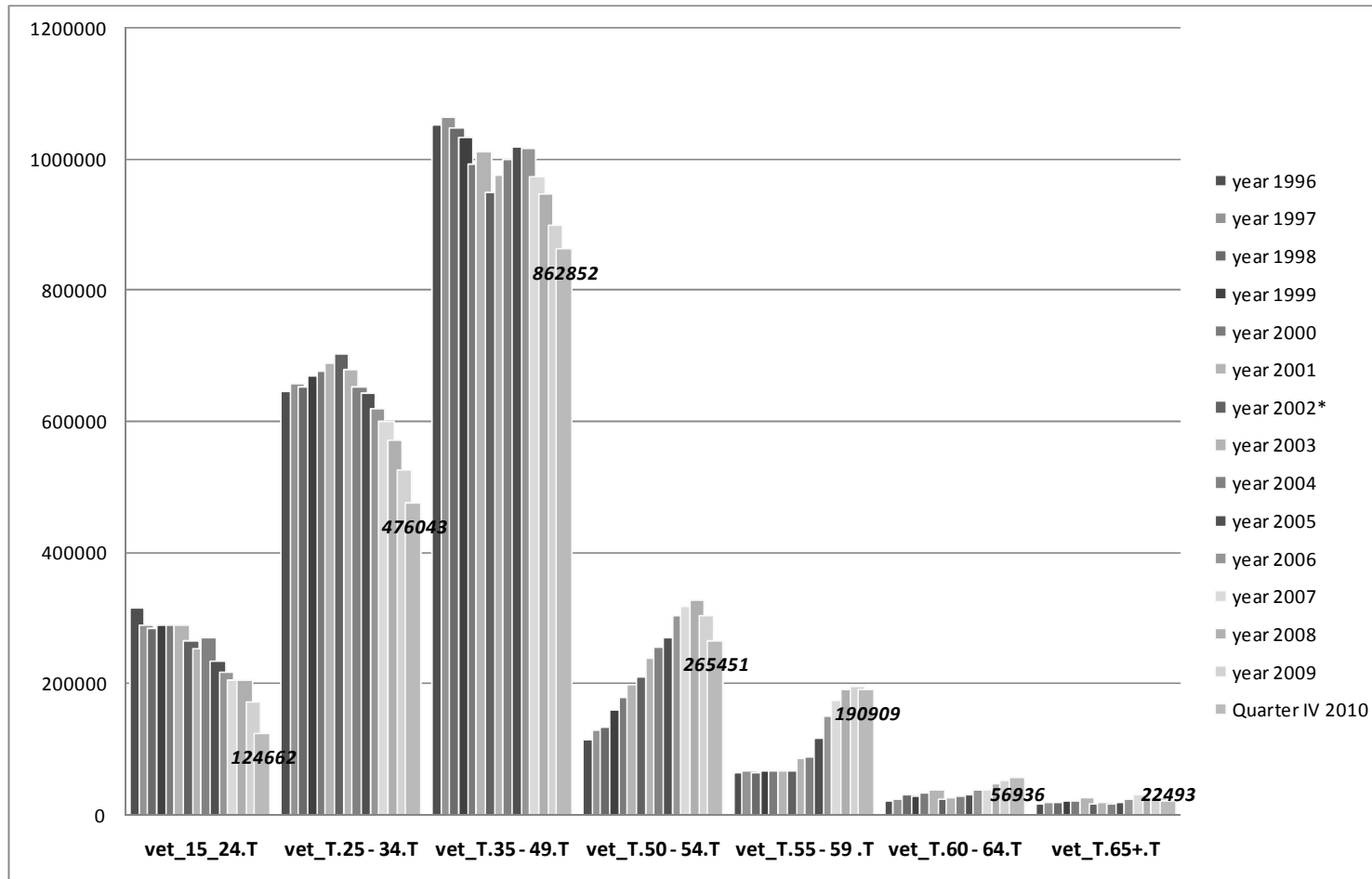


Fig.1. Number of employed people with "Vocational, complementary or apprenticeship Educational level" by age group, between 1996-2010

The Short Term Anticipation of the Demand of the Romanian VET at NUTS 3 level

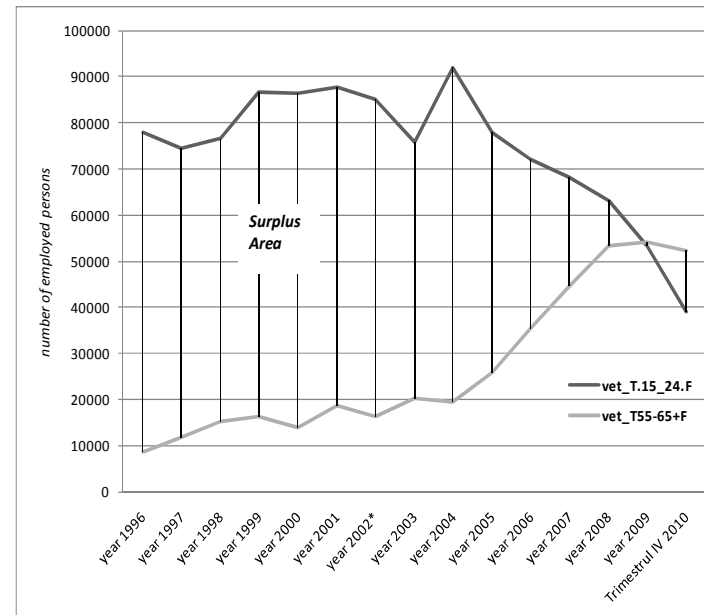
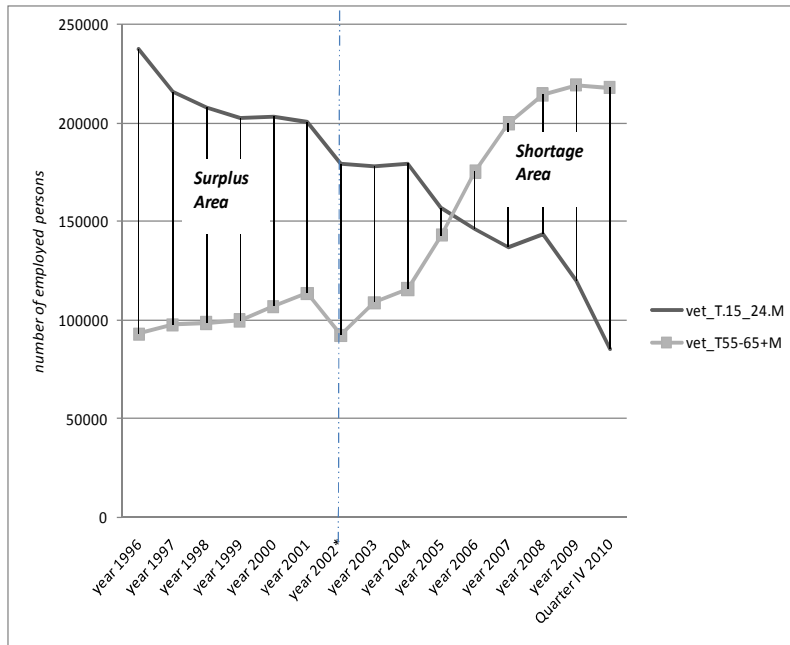


Fig.2. The difference between the number of new entrants and the exits in employment for the males and women with Vet level of education, between 1996-2010 for the group ages 15-24 years and 55-65 and more.
Source: **AMG110I** – AMIGO, Tempo Online, INS Romania

The Short Term Anticipation of the Demand of the Romanian VET at NUTS 3 level

$$\text{Vet_age_replacement_M} = \text{vet_T15_24_M} - \text{vet_55-65+M} \quad (1)$$

$$\text{Vet_age_replacement_F} = \text{vet_T15_24_F} - \text{vet_55-65+F} \quad (2)$$

$$\text{Vet_age_replacement_T} = \text{Vet_age_replacement_M} + \text{Vet_age_replacement_F} \quad (3)$$

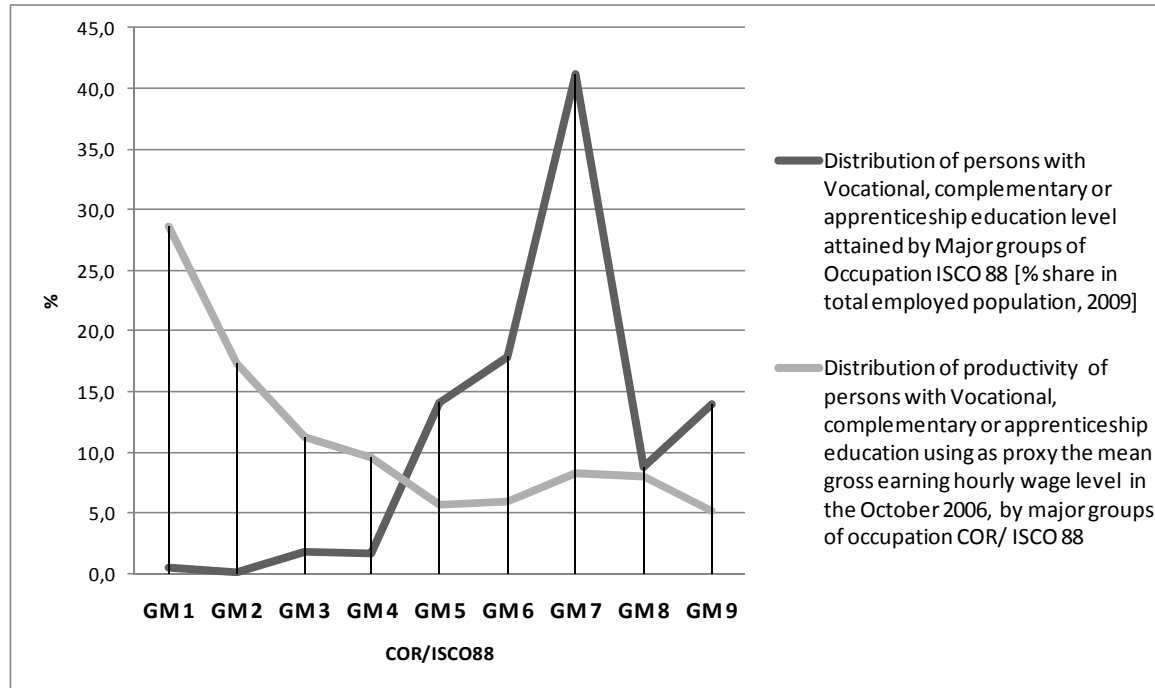
Table 1. The comparison of the estimated number of shortage deficit of intergenerational replacement with the total number of graduated of VET level attained at the end of school year 2008-2009

		Males estimated number of employed people with VET level of education shortage deficit of intergenerational replacement = vet_T15_24_M- vet_55-65+M	Females estimated number of employed people with VET level of education shortage deficit of intergenerational replacement = vet_T15_24_F- vet_55-65+F	Total estimated number of employed people with VET level of education shortage deficit of intergenerational replacement = (2)+(3)	The total number of graduated of Vocational, complementary or apprenticeship education level attained at the end of school year 2008-2009	(5)-(4) delta
	<i>(1)</i>	<i>(2)</i>	<i>(3)</i>	<i>(4)</i>	<i>(5)</i>	<i>(6)</i>
<i>(1)</i>	Year 2009	-99630	-822	-100452	100901	449
<i>(2)</i>	Quarter IV 2010	-132408	-13266	-145674		

Observation: For (2), (3) and (4) values calculated using the Indicators: AMG110I - AMIGO - Employment by educational level by age group and by sex, detail for "Vocational, complementary or apprenticeship educational level";

Colum (5) row (1) value is taken from "9m. NUMARUL ABSOLVENTILOR DIN INVATAMANTUL PROFESIONAL, PE REGIUNI, JUDETE, PE FORME DE PROFILURI, SPECIALIZARI SI SEXE, LA SFARSITUL ANULUI SCOLAR 2008 - 2009", 07/08/20, [The number of graduated of Vocational, complementary or apprenticeship education level attained at the end of school year 2008-2009 by profiles, specializations and sexes], INS, 2010 August

The Short Term Anticipation of the Demand of the Romanian VET at NUTS 3 level



	Distribution of persons with Vocational, complementary or apprenticeship education level attained by Major groups of Occupation ISCO 88 [% share in total active population, 2009] (*)	Distribution of persons with Vocational, complementary or apprenticeship education level attained by Major groups of Occupation ISCO 88 [% share in total employed population, 2009]	"proxy for productivity" lei/h	Distribution of productivity of persons with Vocational, complementary or apprenticeship education using as proxy the mean gross earning hourly wage level in the October 2006, by major groups of occupation COR/ ISCO 88 (**)
GM 1	0,4	0,6	19,1	28,6
GM 2	0,1	0,1	11,6	17,3
GM 3	1,3	1,8	7,57	11,3
GM 4	1,3	1,7	6,38	9,5
GM 5	10,6	14,1	3,82	5,7
GM 6	13,4	17,8	3,98	5,9
GM 7	30,9	41,1	5,57	8,3
GM 8	13,7	8,8	5,37	8,0
GM 9	10,6	14,0	3,51	5,2
No Empl	17,7	100,0		100,0
Total	100,0			

(*) , Ancheta complementară "Accesul tinerilor pe piața forței de muncă" s-a realizat în trimestrul II 2009, ca modul atașat cercetării statistice "Ancheta forței de muncă în gospodăria (AMIGO)" realizată în conformitate cu Regulamentul Comisiei Europene nr.207/2008 (OJ No L 62/4/6.3.2008) cu privire la modulul ad hoc "Intrarea tinerilor pe piața muncii". AMIGO Complementary Survey, second Quarter 2009 realised by INS Romania: "The young people access on the Labour Market" as a module of the statistical research "The Household Survey of the Labour Force – AMIGO".

(**), Ancheta Structurii câștigurilor salariale în anul 2006, Disparități salariale: factori de influență, /[2006 - The Salaries Structure Survey:influence factors] realizată în conformitate cu Regulamentul Consiliului și Parlamentului European nr.530/1999 privind statisticile structurii câștigului și costului forței de muncă și Regulamentul Comisiei Europene nr.1738/2005 de amendare a Regulamentului Comisiei Europene nr.1916/2000 cu privire la definițiile și formatul de transmitere a datelor referitoare la structura câștigurilor salariale. (CAEN, Rev1), corespunzătoare diviziunilor 01-93., INS Romania (National Institute of Statistics).

The Short Term Anticipation of the Demand of the Romanian VET at NUTS 3 level

Sexes, urban/rural and education level	Insertion rate on labour market		
	after 6 months from the education finalysing	after 1 months from the education finalysing	Δ
Urban_Superior level of education (University)	49	61,3	12,3
Feminin_Superior	48,7	61,1	12,4
Total_Superior	48,6	60,9	12,3
Masculin_Superior	48,6	60,7	12,1
Rural_Superior	44,9	56,6	11,7
Rural_Posthigh school specialization	44,3	52,7	8,4
Feminin_Posthigh school specialization	42,8	49,8	7
Total_Posthigh school specialization	40,6	49,7	9,1
Urban_Posthigh school specialization	39,8	49,1	9,3
Masculin_Postliceal de specialitate sau tehnic de maiştri	36,9	49,6	12,7
URBAN	29,5	39,6	10,1
Urban_Mean	25,7	36,3	10,6
MASCULIN	24,8	34,6	9,8
Masculin_Vocational, complementary or apprenticeship educational level	24,8	35,2	10,4
Masculin_Mean	24,7	36,4	11,7
TOTAL	24,4	33,6	9,2
Urban_High school inclusive first cycle	24,4	35,6	11,2
Total_Mean	24,3	35	10,7
FEMININ	24	32,6	8,6
Feminin_Mean	23,9	33,3	9,4
U_Vocational, complementary or apprenticeship educational level	23,8	33,7	9,9
Masculin_High school inclusive first cycle	23,3	36,3	13
Total_Vocational, complementary or apprenticeship educational level	23,2	33,3	10,1
Total_Liceal (inclusiv treapta I)	23	34,3	11,3
Rural_Vocational, complementary or apprenticeship educational level	22,8	32,9	10,1
Feminin_High school inclusive first cycle	22,7	32,5	9,8
Rural_Mean	22,3	33	10,7
Feminin_Vocational, complementary or apprenticeship educational level	20,6	30	9,4
Rural_High school inclusive first cycle	20,2	31,7	11,5
RURAL	18,2	26,3	8,1
Masculin_Low level of education (Gymnasium, Primary, no education)	11,8	16,2	4,4
Rural_Low level of education (Gymnasium, Primary, no education)	11,8	16,8	5
Total_Low level of education (Gymnasium, Primary, no education)	10,1	14,6	4,5
Feminin_Low level of education (Gymnasium, Primary, no education)	8,5	13,1	4,6
Urban_Low level of education (Gymnasium, Primary, no education)	5,2	8,3	3,1

Source: ***, Ancheta complementară “Accesul tinerilor pe piața forței de muncă” s-a realizat în trimestrul II 2009, ca modul atașat cercetării statistice “Ancheta forței de muncă în gospodării (AMIGO)” realizată în conformitate cu Regulamentul Comisiei Europene nr.207/2008 (OJ No L 62/4/6.3.2008) cu privire la modulul ad hoc “Intrarea tinerilor pe piața muncii”. AMIGO Complementary Survey, second Quarter 2009 realized by INS Romania: “The young people access on the Labour Market” as a module of the statistical research “The Household Survey of the Labour Force – AMIGO”

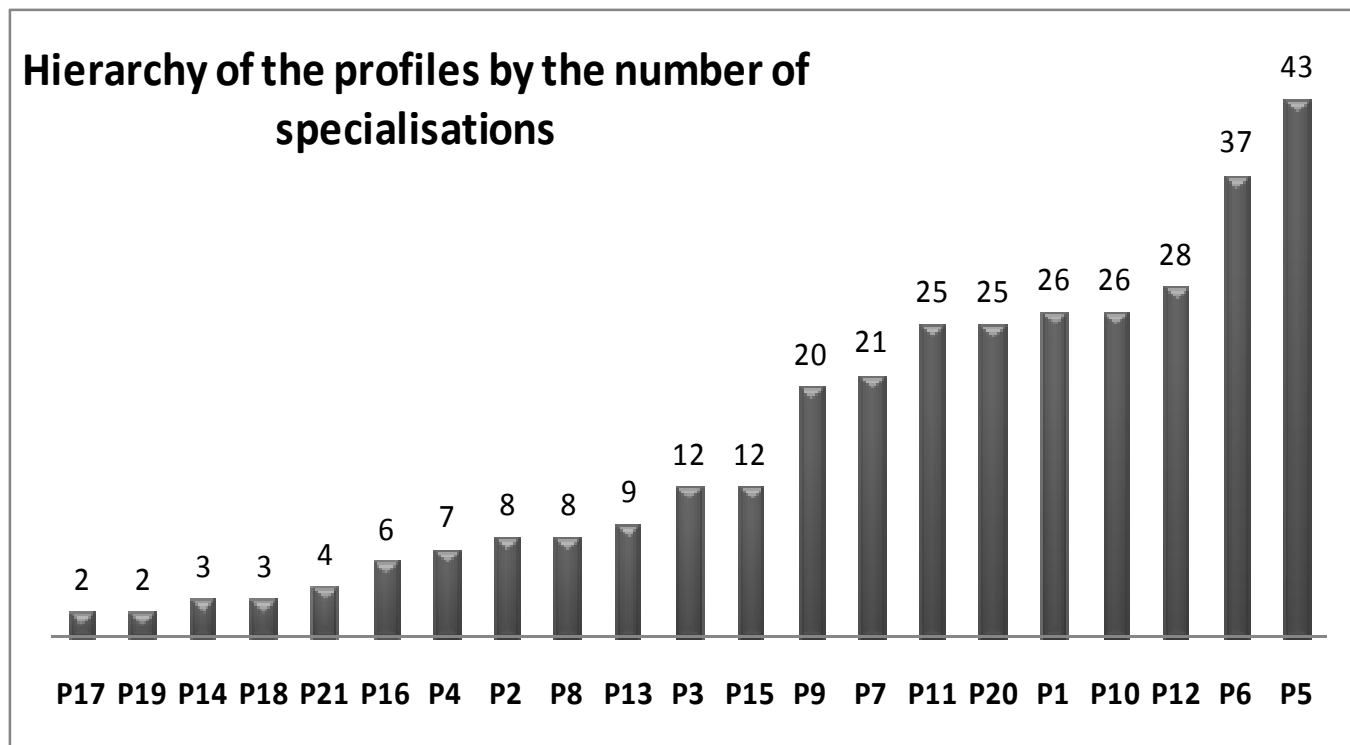
2. Methodology and theoretical anchorage of the paper

- **development dimension (Saviotti)** is represented by the “**quality**” aspect explained through variety/diversity of demand (enterprises diversity of economic activity at NUTS 3 level) and also of the offer (qualification under the domain of specialisation criteria).
- The **growth dimension** is represented by the **quantity** aspect of the “potential” demand shaped mainly by the region (NUTS 3 level) economic potential and strategic perspective. In this aspect there is considered also a strong path dependency because the region is characterised by a **specific spectrum of economic activities with a spatial degree of agglomeration/ concentration (Marshall, 1920) with important effect also on productivity and competitiveness (Jaffe 1993 , et al; Anselin 1997 et al).**

The Short Term Anticipation of the Demand of the Romanian VET at NUTS 3 level

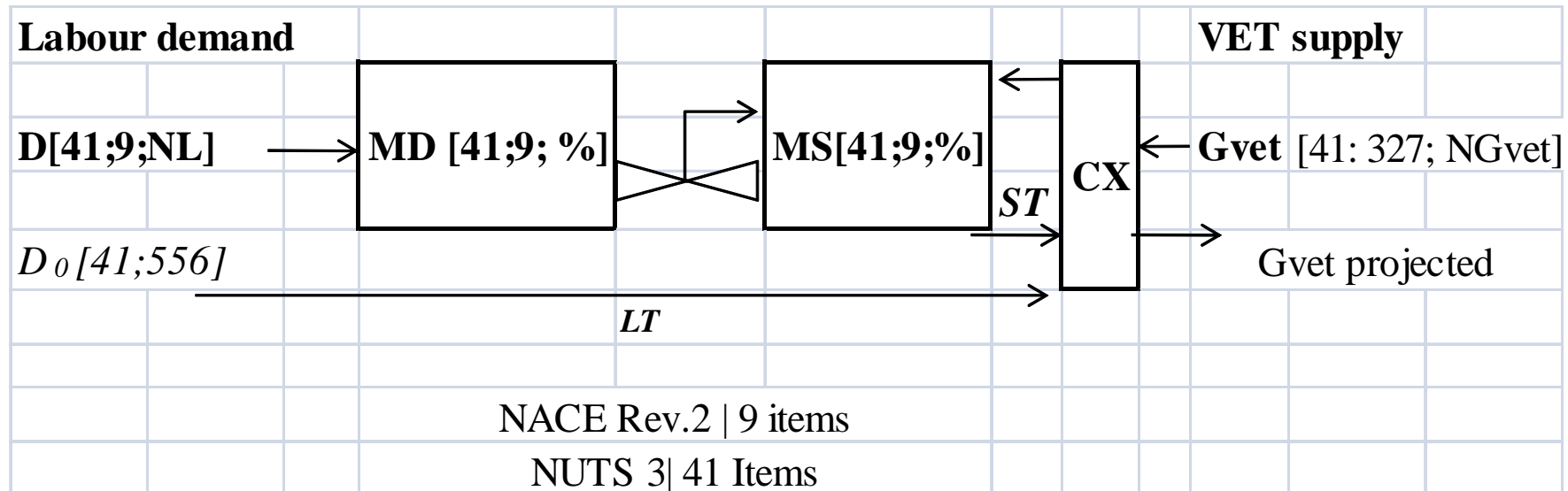
Table 2. Distribution of the specializations provided by the VET schools by CANE Rev.2 in 2009

NACE . R2	A	B	C	D	F	G	H	I	S	Total
Number of specialisations	29	12	193	8	37	7	27	12	2	327
%	8,9	3,7	59	2,4	11,3	2,1	8,3	3,7	0,6	100



The Short Term Anticipation of the Demand of the Romanian VET at NUTS 3 level

Model specifications



$GVET_t: VET(\text{space, quantity, quality, } t) =$

$= VET(\text{county, number, Profile/Specialisation, } t)$

$GVET_{t+1}: VET(\text{county, estimated demand VET, estimated Profile/Specialisation, } t+1)$

$$GVET_{t+1} = EV * MD / MS * CX \quad (4)$$

Gvet 2009 graduates with VET level of education

CX Conversion matrix: selection 9/20 section CAEN Rev 2

MS Supply structure matrix

D Satisfied demand matrix (employed persons by sections of NACE rev.2 and by counties/at NUTS 3 level)

MD Demand structure matrix

Fig.6. Model scheme for “The Short Term Anticipation of the Demand of the Romanian VET at NUTS 3 level”

Conversion matrix

CANE Rev.2 activities of the national economy				Type 1 of school		
	Section	Divison	Group	Code	Profile	
1	A	Agriculture, hunting and forestry	01	011, 012, 013, 014, 015, 016	P14	Agriculture
			02	021, 021, 022, 023, 024	P15	Forestry
3	B	Mining and quarrying	06	061, 062	P3	Petroleum
4	C	Manufacturing	24, 26, 27, 28	243, 265, 266, 267, 268, 271, 281, 282, 283, 284	P1	Machine manufacture / machine construction
			26, 27	261, 262, 263, 264, 271, 272	P2	Electrotechnics and electronics
			20	201	P5	Industrial chemistry
			23	231, 233, 235	P6	Materials for construction
			16	161, 162	P8	Wood procesing and exploitation
			10, 11	101, 102, 103, 104, 105, 106, 107	P10	Alimentar industry
			13, 14, 15	131, 132, 133, 139, 141, 142, 143, 151, 152	P11	Light industry
			18	181	P12	Poligraphy
		93, 96	930, 960	P19	Small industry and services	
5	D	Electricity, gas and water supply	35	351	P4	Energetic
7	F	Construction	41, 43	412, 432, 433, 439	P7	Construction-montage
			42, 49	421, 491, 492	P9	Transports
			43	433	P8	Wood procesing and exploitation
8	G	Wholesale and retail trade; repair of vehicles, motorcycles and personal and household goods	45, 46, 47	451, 452, 453, 454, 461, 462, 463, 464, 465, 466, 467, 469, 471, 472, 473, 474, 475, 476, 477, 478, 479,	P16	Commerce
9	H	Transport and storage	50	501, 502	P9	Transports
10	I	Hotels and restaurants	56	561, 562	P17	Public alimentation
			55	551, 552, 553, 559	P18	Tourism
20	S	Others activities of antional economy	94	9131, 9491	P13	Theological

The variance of number of VET graduates by profile and specialisation at NUTS 3 level, in
2009 –hierarchy by total variance

Profile	P1	P2	P3	P4	P5	P6	P7	P8	P9	P10	P11	P12	P13	P14	P15	P16	P17	P18	P19	P20	P21	Total
SV	20240	18491					444	2342	61	250	14921			1237			4287	800				7556
IS	9340	859		5			1122	1307	13101	1085	25961			13207		365	6466	1	1693			7289
PH	4798	6588	1				837	7688	7531	1194	7575			445		670	36121		1796			5914
B	8543	15250		37	648	108	339	597	10428	186	1733	207		72		848	13239		2145			5369
BT	25400	174					100	5081	1405	272	10501			2343		162	7745		246			4708
AG	5181	2985	25				729	856	20209	2	1924			591		32	2459		317			3286
SJ	11920	25					148	120			1390			52			516		18			3209
SM	3103	607				5	193	5802	20402	42	8947			1660		761	5248					3188
MM	2810	957					134	1820	8536	29	5054	13		17		200	15681		113			2964
BC	5719	152					1171	2309	925	121	2387			5373		1408	10082		10			2446
BV	1368	1661					42	429	38	357	119			1201		2245	12318	2	860			2209
VS	5521	78					1750	392	3042	1344	2899			3109		1102	3740		146			2209
DJ	2901	1288					76	57	2	109	10			1260		1682	2842		142			2020
VL	3943	1372					113	25	9408	174	1825			44		128	3968		1301			2014
CT	3797	1037		549			910	13	606	958	321		5	403		2450	6607		81			2007
CJ	3497	602					1305	173	7089	325	1198			82		61	5519		2232			2005
NT	1848	409				1	638	1207	7580	166	2876		1	237			7565	925	4			1971
BH	4169	1270					444	762	3601	279	731			468		648	7249	481	1744			1891
GL	2689	1311					1422	85	2823	797	664			563		6050	6796	98	177			1836
BZ	2963	2081				1	24	610	10584	239	444		39	127		2144	4471		0			1783
TR	1832	1386					1237		2813	313	351			4244		145	3145					1519
MS	4906	469	8			24	750	1591	1682	256	362			190		2813	3521		0			1512
GJ	3439	1155	145				1030	32	2813	492	37			13		72	192	648	33			1480
TM	2881	640	5	113			1010	368	3872	486	678			91		2048	3587		496			1473
HD	2557	1004		14			400	9	10225	365	888	8		38		5	1938					1434
SB	2684	740	258				2	543	265	2465	343	752		16		41	5369		346			1383
AR	1789	429					1291	409	4379		390			48		98	1893		377			1340
IL	2557	456					288		223	602	1101			3948		481	12		30			1334
OT	838	1245					539	40	1191	449	3688			139		421	709		166			1239
CL	487	882					111		3208		401		0	1995			2511		207			1113
DB	1095	3136	27				434	242	481	16	2451		5	1453		5	1557		61			1049
VN	2805	61					66	98	1310	161	387			104		338	1752					817
HR	291	25					268	1810	143	26	53			204		50	2923		98			789
TL	112	216					228	5	14	304	304			558			301		25			762
AB	736	428				14	374	175	427		137			78		4418	3430		61			752
CS	1251	527					964	1966	1861	0	12			276		32	756	181	5			715
MH	534	972					4	134		2	33			15		5	181					712
BR	468	145					185	64	1512	567	577			2611		2356	758		56			698
BN	1584	117					382	382		21	405			650		18	258	32				668
IF	365	108					25							39		91	2020					529
GR	192	489					90		481	12	34			44		145						465
CV	3872	225					19	658		18	234			133		1	117		169			431

Partial estimation of development concordance between Vet labour demand and supply at county/NUTS 3 level in Romania in 2009
Hierarchy by variance of demand/variance of offer -

CAENR2 at NUTS 3 level	Variance of offer (number of VET graduates by profile and specialisation in 2009 hierarchy by total variance)	Variance of demand (NACE Rev.2 classes level)	Variance of demand/variance of offer - hierarchy of the counties	
BT	4708	6330451	1344	<i>high probability of concordance between offer and demand</i>
AG	3286	6310308	1921	
BC	2446	6268586	2563	
BV	2209	6443888	2917	
CJ	2005	6234654	3109	
CT	2007	6490097	3234	
BH	1891	6184520	3271	
BZ	1783	6278954	3521	
TM	1473	6023534	4089	
AR	1340	6450371	4812	
CL	1113	6445762	5789	<i>low probability of concordance between offer and demand</i>
DB	1049	6327226	6031	
AB	752	6122720	8144	
CS	715	6278639	8777	
BR	698	6200557	8882	
BN	668	6141494	9194	
GR	465	6362450	13675	
CV	431	6159381	14304	

Calculated data by authors

The development dimension

Table 3. Partial estimation of development concordance between Vet labour demand and supply at county/NUTS 3 level in Romania in 2009
Hierarchy by variance of demand -

	CAENR2	Variance of offer (number of VET graduates by profile and specialisation in 2009 hierarchy by total variance)	Variance of demand (NACE Rev.2 classes level) - hierarchy	Variance of demand/variance of offer of the counties
<i>higer variety of demand</i>	CT	2007	6490097	3234
	AR	1340	6450371	4812
	CL	1113	6445762	5789
	BV	2209	6443888	2917
	GR	465	6362450	13675
	BT	4708	6330451	1344
	DB	1049	6327226	6031
	AG	3286	6310308	1921
	BZ	1783	6278954	3521
	CS	715	6278639	8777
<i>lower variety of demand</i>	BC	2446	6268586	2563
	CJ	2005	6234654	3109
	BR	698	6200557	8882
	BH	1891	6184520	3271
	CV	431	6159381	14304
	BN	668	6141494	9194
	AB	752	6122720	8144
	TM	1473	6023534	4089
	<i>mean</i>	<i>1613,4</i>	<i>6280755,1</i>	<i>5865,4</i>
	<i>maxim</i>	<i>4708</i>	<i>6490097</i>	<i>14304</i>
<i>minim</i>	<i>431</i>	<i>6023534</i>	<i>1344</i>	

Calculated data by authors

The development dimension

Demand structure matrix at NUTS2 level for economic activities at section level NACE Rev.2 (using the indicator FOMI03D TEMPO/INS, 2009) - variant 1											Demand structure matrix (MD2009)-supply structure matrix (MS2009)										probabilities		
NUTS2	Section NACE.R2											Section NACE.R2										Matching: MDMS	Substitution C with A
	NUTS3	A	B	C	D	F	G	H	I	S	Total	A	B	C	D	F	G	H	I	S			
N-E	BC	1,02	0,05	0,54	0,03	0,34	0,43	0,12	0,03	0,06	2,61	0,84	0,03	-1,00	0,03	-0,02	0,28	0,03	-0,24	0,06	0,01	-0,16	
	BT	1,14	0,00	0,30	0,01	0,07	0,22	0,07	0,02	0,03	1,85	0,70	0,00	-1,14	0,01	-0,03	0,12	-0,08	-0,39	0,03	-0,77	-0,44	
	IS	1,43	0,00	0,62	0,04	0,38	0,54	0,18	0,06	0,07	3,30	0,94	0,00	-1,94	0,01	-0,02	0,35	-0,18	-0,34	0,07	-1,10		
	NT	1,27	0,01	0,45	0,02	0,13	0,38	0,10	0,03	0,03	2,41	0,99	0,01	-1,02	0,02	-0,13	0,36	-0,16	-0,43	0,00	-0,37	-0,03	
	SV	1,64	0,02	0,47	0,02	0,15	0,42	0,15	0,06	0,07	3,00	1,22	0,02	-2,23	0,02	-0,06	0,34	0,10	-0,59	0,07	-1,09	-1,01	
	VS	0,87	0,04	0,44	0,04	0,20	0,33	0,10	0,04	0,03	2,09	0,47	0,02	-0,88	0,04	-0,02	0,22	-0,05	-0,26	0,03	-0,44	-0,41	
S-E	BR	0,59	0,01	0,39	0,02	0,18	0,25	0,08	0,03	0,03	1,56	0,47	-0,01	-0,40	0,02	0,09	0,04	-0,06	-0,18	0,03	0,01	0,07	
	BZ	1,11	0,02	0,47	0,02	0,12	0,32	0,10	0,02	0,04	2,23	0,96	0,02	-0,73	0,02	0,02	0,16	-0,17	-0,27	0,01	0,01	0,23	
	CT	0,97	0,03	0,62	0,07	0,52	0,68	0,41	0,12	0,12	3,54	0,73	0,03	-0,90	-0,02	0,28	0,37	0,14	-0,35	0,10	0,37	-0,17	
	GL	0,92	0,01	0,47	0,04	0,25	0,36	0,16	0,05	0,04	2,29	0,68	0,01	-0,91	0,02	-0,06	0,18	-0,17	-0,39	0,03	-0,60	-0,23	
	TL	0,48	0,01	0,22	0,01	0,07	0,11	0,06	0,02	0,03	1,00	0,16	0,01	-0,34	0,01	-0,07	0,07	0,01	-0,13	0,03	-0,25	-0,18	
	VN	0,96	0,00	0,35	0,01	0,11	0,23	0,09	0,01	0,03	1,79	0,86	0,00	-0,34	0,01	0,05	0,16	-0,08	-0,20	0,03	0,51	0,52	
S	AG	1,06	0,03	0,94	0,03	0,28	0,43	0,16	0,04	0,04	3,02	0,80	-0,01	-1,09	0,03	-0,01	0,25	-0,25	-0,16	0,04	-0,41	-0,29	
	CL	0,73	0,00	0,19	0,01	0,06	0,12	0,06	0,01	0,00	1,18	0,50	0,00	-0,36	-0,02	0,01	0,10	-0,23	-0,19	-0,01	-0,20	0,14	
	DB	1,07	0,05	0,62	0,02	0,10	0,39	0,17	0,02	0,02	2,47	0,78	-0,02	-0,56	0,02	-0,11	0,34	0,01	-0,16	-0,01	0,30	0,22	
	GR	0,70	0,02	0,09	0,01	0,10	0,10	0,06	0,01	0,00	1,08	0,64	0,00	-0,26	0,01	0,00	-0,08	0,00	0,01	0,00	0,32	0,38	
	IL	0,68	0,00	0,20	0,01	0,08	0,17	0,06	0,02	0,03	1,24	0,35	0,00	-0,55	0,01	0,02	0,09	-0,02	-0,06	0,03	-0,14	-0,20	
	PH	0,98	0,09	1,03	0,04	0,40	0,62	0,26	0,07	0,06	3,56	0,78	0,04	-1,29	0,01	-0,05	0,46	0,00	-0,81	0,06	-0,78	-0,51	
	TR	1,31	0,03	0,26	0,01	0,05	0,21	0,07	0,01	0,02	1,98	0,99	0,00	-0,48	0,01	-0,11	0,08	-0,04	-0,18	0,02	0,29	0,51	
	DJ	1,65	0,02	0,53	0,05	0,25	0,54	0,17	0,03	0,04	3,26	1,21	0,02	-1,26	0,05	0,10	0,26	0,12	-0,25	0,04	0,29	-0,05	
S-W	GI	0,59	0,23	0,23	0,06	0,21	0,20	0,08	0,03	0,02	1,66	0,55	0,19	-1,11	0,06	0,07	0,09	-0,12	-0,17	0,02	-0,42	-0,56	
	MH	0,75	0,01	0,19	0,04	0,12	0,15	0,07	0,01	0,01	1,35	0,63	0,01	-0,51	0,04	0,07	0,04	-0,09	-0,14	0,00	0,06	0,13	
	OT	1,17	0,02	0,41	0,01	0,12	0,20	0,08	0,02	0,02	2,06	0,98	0,02	-0,87	0,01	-0,14	-0,08	-0,07	-0,10	0,02	-0,23	0,11	
	VL	1,04	0,00	0,32	0,01	0,06	0,20	0,07	0,01	0,02	1,73	0,97	0,00	-0,86	0,01	-0,08	0,13	-0,20	-0,24	0,00	-0,26	0,11	
	AR	0,71	0,01	0,87	0,02	0,17	0,45	0,17	0,05	0,08	2,53	0,54	0,01	0,14	0,02	-0,08	0,22	-0,09	-0,20	0,08	0,63		
W	CS	0,63	0,01	0,36	0,02	0,11	0,18	0,09	0,03	0,02	1,44	0,42	0,01	-0,48	-0,03	-0,10	0,12	-0,02	-0,14	0,02	-0,19	-0,06	
	HD	0,64	0,17	0,55	0,05	0,18	0,44	0,13	0,04	0,03	2,24	0,40	0,17	-0,78	-0,01	-0,12	0,23	-0,05	-0,21	0,03	-0,34	-0,38	
	TM	1,10	0,02	1,12	0,04	0,31	0,70	0,25	0,08	0,11	3,72	0,96	-0,01	-0,46	0,02	-0,05	0,43	0,13	-0,19	0,11	0,92	0,50	
	BH	1,32	0,03	0,91	0,04	0,22	0,54	0,20	0,07	0,05	3,38	1,07	0,02	-0,25	0,04	-0,12	0,43	-0,07	-0,55	0,05	0,62	0,82	
N-W	BN	0,67	0,00	0,40	0,01	0,13	0,24	0,09	0,02	0,04	1,59	0,31	0,00	-0,69	-0,01	-0,05	0,10	-0,01	-0,12	0,04	-0,43	-0,38	
	CJ	1,10	0,02	0,90	0,04	0,42	0,78	0,27	0,07	0,11	3,73	1,01	0,02	-0,54	0,00	-0,01	0,63	-0,07	-0,42	0,11	0,74	0,47	
	MM	1,12	0,01	0,65	0,01	0,17	0,33	0,14	0,04	0,04	2,50	0,97	0,01	-0,97	-0,01	-0,03	0,22	-0,08	-0,54	0,04	-0,38	0,00	
	SM	0,85	0,00	0,49	0,01	0,14	0,24	0,09	0,02	0,03	1,87	0,60	0,00	-0,86	0,01	-0,02	0,16	-0,15	-0,30	0,03	-0,53	-0,26	
	SJ	0,54	0,00	0,32	0,01	0,06	0,19	0,08	0,01	0,02	1,23	0,49	0,00	-0,50	0,01	-0,02	0,19	-0,13	-0,12	0,02	-0,07	-0,01	
	AB	0,76	0,01	0,61	0,02	0,10	0,32	0,13	0,03	0,04	2,02	0,63	0,01	-0,46	0,02	-0,05	0,15	0,05	-0,23	0,04	0,17	0,17	
	BV	0,48	0,01	0,80	0,03	0,38	0,60	0,22	0,11	0,07	2,71	0,33	0,01	-0,79	0,03	0,30	0,45	0,16	-0,56	0,07	0,02	-0,45	
	CV	0,36	0,00	0,32	0,00	0,06	0,19	0,05	0,02	0,01	1,02	0,23	0,00	-0,23	0,00	-0,04	0,15	-0,02	-0,19	0,01	-0,08	0,00	
	HR	0,64	0,01	0,46	0,01	0,09	0,26	0,09	0,04	0,02	1,62	0,47	0,01	-0,40	0,01	0,01	0,13	0,01	-0,31	0,02	-0,06	0,07	
	MS	1,06	0,05	0,72	0,04	0,20	0,45	0,19	0,05	0,06	2,83	0,72	0,00	-0,57	0,04	-0,01	0,28	0,01	-0,25	0,06	0,27	0,15	
C	SB	0,42	0,03	0,71	0,02	0,18	0,37	0,16	0,06	0,06	2,02	0,31	-0,06	-0,59	0,02	-0,08	0,13	-0,04	-0,27	0,06	-0,52	-0,27	
	IF	0,52	0,00	0,50	0,01	0,12	0,50	0,18	0,04	0,02	1,90	0,36	0,00	0,22	0,01	0,10	0,46	0,16	-0,19	0,02	1,15		
B-IF	B	0,03	0,04	1,89	0,18	2,24	3,14	0,97	0,35	0,51	9,36	-0,03	0,04	-2,57	0,08	1,80	2,98	0,44	-0,28	0,49	2,95	-2,59	

a. The structure concordance

Total employment 2009 **6499700**

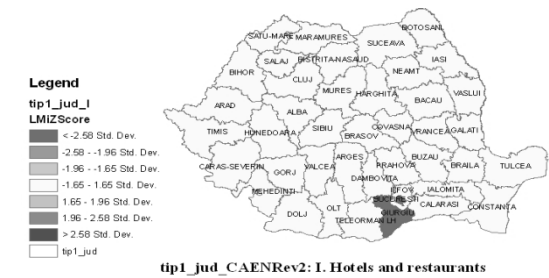
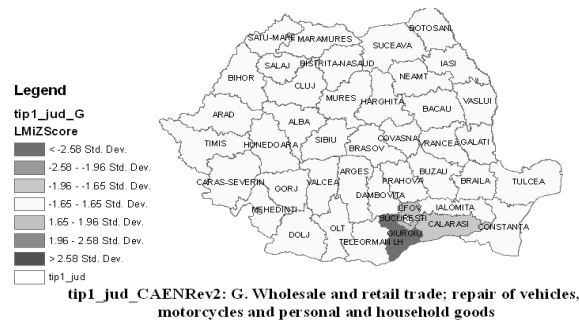
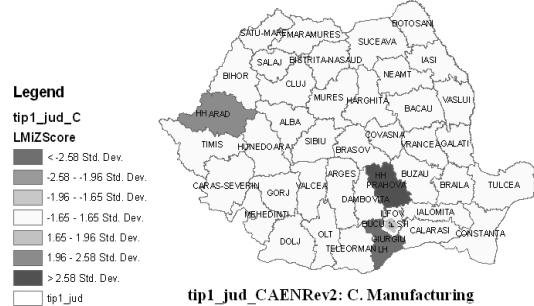
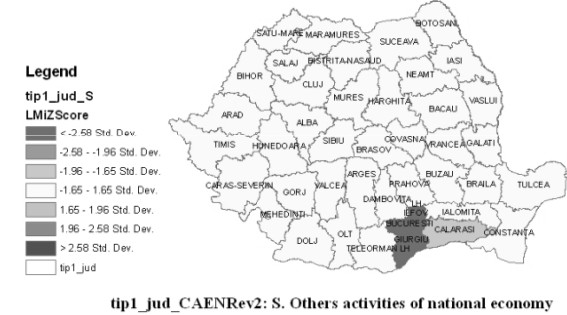
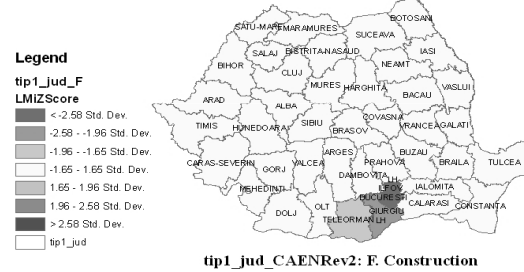
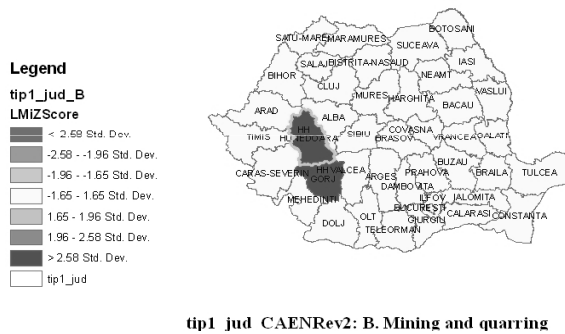
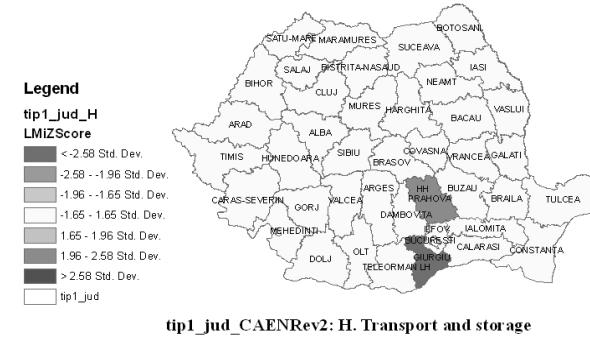
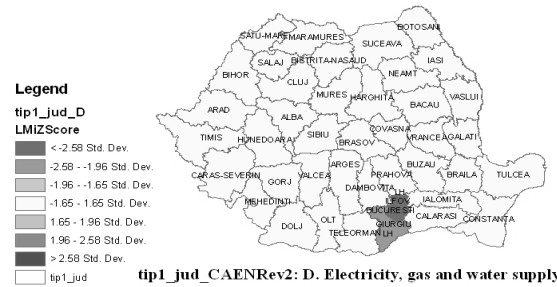
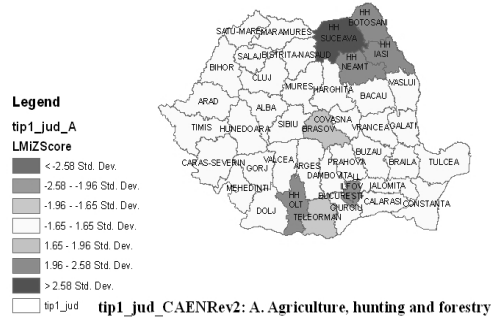
The growth dimension

												number of VET graduates										
NUTS2	Case 1: Projection for 2010 using the supply structure matrix (built with the school types and number of graduates in 2009)											Case 2: Projection for 2010 using the demand structure matrix at NUTS2 level for economic activities at section level NACE Rev.2 (using the indicator FOM103D TEMPO/INS, 2009)										
	NUTS3	Section NACE.R2									Total	Section NACE.R2										
		A	B	C	D	F	G	H	I	S		A	B	C	D	F	G	H	I	S	Total	
N-E	BC	256	29	2239	0	513	219	138	397	0	3790	1479	72	784	49	491	621	179	45	81	3801	
	BT	633	0	2095	0	142	136	225	594	0	3825	1654	2	439	13	103	318	105	27	38	2701	
	IS	707	0	3724	42	574	268	525	571	0	6410	2080	2	903	56	549	782	256	81	101	4810	
	NT	403	0	2147	0	367	32	387	680	33	4048	1849	11	654	22	184	560	150	47	38	3517	
	SV	603	0	3928	0	298	116	71	940	0	5957	2382	29	684	36	217	614	220	81	108	4370	
	VS	588	20	1921	0	319	164	229	446	0	3688	1269	52	637	61	287	486	152	65	40	3048	
S-E	BR	174	22	1145	0	122	298	201	298	0	2260	856	9	563	29	260	359	110	43	45	2273	
	BZ	227	0	1752	0	142	238	394	427	49	3230	1623	27	686	25	177	471	146	36	61	3250	
	CT	342	0	2226	135	345	446	406	687	36	4622	1410	45	908	99	751	991	603	173	177	5155	
	GL	343	0	2013	25	442	252	478	642	19	4214	1336	13	690	56	361	520	231	67	61	3335	
	TL	461	0	813	0	209	58	62	223	0	1826	695	11	318	11	101	164	81	29	49	1459	
	VN	143	0	1004	0	81	99	238	304	0	1869	1396	2	513	20	159	334	126	20	43	2613	
S	AG	393	57	2954	0	436	272	600	287	0	4999	1551	45	1367	43	415	630	233	58	61	4402	
	CL	332	0	809	38	74	28	425	291	23	2018	1062	2	278	9	90	177	83	16	7	1724	
	DB	430	96	1726	0	313	62	222	258	48	3154	1564	72	908	31	152	565	242	31	29	3595	
	GR	80	23	519	0	138	265	88	0	0	1113	1015	22	134	16	141	150	85	9	7	1580	
	IL	478	0	1087	0	90	117	122	112	0	2005	993	4	285	9	112	249	94	22	38	1806	
	PH	291	71	3383	35	651	232	380	1279	0	6322	1434	134	1504	52	585	903	381	105	83	5182	
TR	467	49	1066	0	239	193	161	277	0	2452	1903	45	374	18	78	307	103	16	36	2880		
S-W	DJ	636	0	2601	0	220	409	61	409	0	4335	2405	25	767	72	363	784	242	47	52	4756	
	GJ	57	59	1956	0	212	165	288	291	0	3028	863	338	338	90	307	294	119	45	25	2418	
	MH	177	0	1014	0	68	161	233	225	13	1891	1098	18	278	54	170	224	101	20	9	1972	
	OT	281	0	1866	0	377	413	217	171	0	3325	1710	22	598	18	177	291	121	22	34	2994	
VL	109	0	1714	0	204	90	398	361	19	2895	1522	0	462	16	90	285	105	18	22	2519		
W	AR	251	10	1066	0	369	330	385	359	0	2772	1035	18	1269	31	253	654	249	67	112	3689	
	CS	306	0	1217	62	300	78	164	245	0	2372	923	9	518	25	159	258	132	45	31	2100	
	HD	341	0	1937	85	448	317	265	364	0	3757	928	247	800	67	269	645	191	65	47	3259	
	TM	207	45	2298	30	525	400	177	396	0	4077	1605	27	1625	54	448	1024	361	114	159	5417	
N-W	BH	356	19	1695	0	488	159	390	908	0	4017	1921	47	1325	54	316	780	294	108	76	4920	
	BN	517	0	1590	30	258	194	146	203	0	2938	970	4	580	11	191	345	126	34	54	2315	
	CJ	141	0	2107	49	630	213	497	723	0	4360	1609	34	1318	54	616	1134	399	108	164	5435	
	MM	213	0	2366	26	284	148	312	849	0	4198	1625	9	953	16	242	475	199	63	63	3644	
	SM	358	0	1975	0	232	112	348	469	0	3493	1233	4	715	9	208	347	130	36	40	2723	
SJ	62	0	1201	0	123	0	314	194	0	1895	780	4	468	11	87	271	121	20	29	1793		
C	AB	194	0	1552	0	216	243	117	374	0	2697	1114	20	885	27	150	462	193	43	56	2949	
	BV	213	0	2317	0	116	210	94	974	0	3924	699	18	1172	47	556	870	325	155	105	3947	
	CV	197	0	800	0	138	48	107	313	0	1603	531	4	466	7	81	271	76	34	13	1484	
	HR	256	0	1253	0	126	185	126	501	0	2449	939	11	672	16	137	379	134	52	27	2367	
	MS	490	61	1892	0	312	251	271	443	0	3719	1542	67	1056	52	298	661	280	76	87	4119	
	SB	162	133	1888	0	385	355	301	475	0	3701	619	47	1035	29	269	542	238	87	81	2947	
IF	226	0	403	0	33	61	29	343	0	1095	758	4	728	9	175	735	264	65	36	2775		
B-I	B	90	0	6493	151	638	229	775	927	28	9330	49	61	2754	267	3257	4577	1410	515	742	13631	
Estimated projection		supply matrix									145674	demand matrix										145674

Case 1: Projection for 2010 using the supply structure matrix (built with the school types and number of graduates in 2009).

Case 2: Projection for 2010 using the demand structure matrix at NUTS2 level for economic activities at section level NACE Rev.2 (using the indicator FOM103D TEMPO/INS, 2009).

b. The “growth” potential as externalities of clusters/ agglomeration spatial structures



The development dimension

4. Final remarks

- Our Model for “The Short Term Anticipation of the Demand of the Romanian VET at NUTS 3 level” sustains and tries to proof that is impossible to project the VET offer without a spatial perspective both for demand and for supply.
- With this model we can estimate the location (still at NUTS 3level) and the quantity of VET for which is institutional capacity to provide and also for which is a prospect to be integrated on the labour market. The other two essential and very real dimensions “quality” and “time” should be considered in our future researches.

Acknowledgements

This paper represents some results obtained during the research component developed under the project **92-082 – The factors analysis and macroeconomic dynamics based on knowledge, using econometric and information techniques, Acronim: ECOMA**, Project PNCDI 2, Program 4; Project responsible for Partner 2 INCSMPS: PhD. Cristina Lincaru, Coordinator: Prof. Univ. PhD. Stelian Stancu, Bucharest Academy of Economic Studies,

The spatial statistic analysis is developed under the project: Nucleu project **PN 09-420103.01**: “Models and spatial econometric techniques for the regional labour markets analysis, centred to increase the interregional competition”.