APPLYING THE KUZNETS CURVE IN CASE OF ROMANIA

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Abstract: *The Romanian economy experienced a contrasting trend in recent years. Some of its features are similar to those of other Central and Eastern European Countries, that have joined the European Union in May 2004 and 2007, but some of them are very specific. Indicators of convergence and catching-up seem to show a GAP between Romania and other European countries, and even other CEEC. Indicators of convergence and catch-up are usually used to analyse the effectiveness of EU policies applied in all European countries. Apparent Romanian lag may be the result of too important weight of the rural sector in the economy. This sector is characterised, for example, by too many farms and very small agricultural holdings that induces a certain loss in productivity, also by low income and poverty. This result is consequence of both the story and original policy choices. This paper consists of two parts. In the first one, we detail the specificities of new member states and particularly Romanian. The second part allows analysing the link between the agricultural sector and development. Notably, the Kuznets curve can be used as a tool in order to better understand the mechanism of this link. The Kuznets hypothesis is applied to the case of Romania and allows us to draw some conclusions about the recent developments.*

Introduction:

This paper investigates the empirical relationship between agricultural sector structure and development. The agricultural sector has a significant weight in the Romanian economy, particularly in terms of employment. This fact clearly distinguishes Romania other countries of the European Union. However, this sector is undergoing significant changes in the current period. These changes originate for example in the post-Communist policy of land restitution, economic development related to the integration of Romania into the European Union, the liberalization of markets... Our analysis focuses on the relationship between agriculture and the rest of the economy. We will use the inverted-U shape curve that summarizes the analysis proposed by Kuznets. This article is shared into two parts:

1 - Convergence and the weight of agricultural sector in Romania
2 - Analyse of Kuznets curve in Romania

1) Convergence and the weight of agricultural sector in Romania

Several central, eastern and south-eastern European countries have joined the EU in May 2004 and 2007 (Estonia, Latvia, Lithuania, Poland, Czech Republic, Slovakia, Hungary, Slovenia, Malta, Cyprus, Romania, Bulgaria). Catching-up is the distance to be travelled in order to reach the economic level of the other countries of the European, while convergence expresses the measure of progress. According to the analysis of literature, there is three types of convergence of the three specific application areas: 1) *real convergence* according to the evolution of economy indicators such GDP or per capita income; 2) *nominal convergence* in the monetary and financial stability and in rates of inflation, budget deficit, public loan rate, trend of the exchange rate; 3) *administrative and institutional convergence* to unify the structure of administrative institutions and to ensure efficiency and good communication between countries.

There is evidence of convergence in the transition countries of central, eastern and south-eastern Europe. GDP growth during 2001-2007 has increased almost 6% annually, contributing the great socio-economic transformations. The growth in the new Member States with lower income was faster than in the old Member States. The catch-up process accelerated after the accession. However, the countries with the lowest GDP per capita in the EU are Bulgaria (lower than the EU average by 56 %, Romania (by 54 %), Latvia (by 48 %) and Lithuania (by 45 %). The catch-up rate is calculated by means of the historical actual growth rate. From the year of accession to 2008 and on average for the EU-10 – except for Hungary and Malta – all the countries experienced significant growth in the catch-up rate, with the average rate nearly doubled compared to the previous five years. Total factor productivity growth has been the main driver of convergence, followed by capital deepening, whereas labour has contributed only marginally to economic growth. The transition also involves improving the quality of institutions, the expansion of market reforms and macroeconomic policies.

Labour productivity has improved in most countries, while employment and participation rates have been falling. Structural changes have resulted in, at least temporarily, increasing labour market mismatches. Thus, in order to sustain the positive developments observed in the past, further improvements are needed in terms of labor productivity and utilisation, as well as in terms of physical and human capital accumulation. Total factor productivity (TFP) growth has been the main driver of convergence in the candidate and potential candidate countries, followed by capital deepening, whereas labour has contributed only marginally to economic growth. In the EU10, by contrast, although TFP has been the main driver of growth, its contribution has declined notably over the last decade. This is in line with expectations that after the elimination of inefficiencies linked to a former central planning regime, sustained TFP growth may be more difficult to achieve. Thus further improvements in capital accumulation and capital efficiency are needed in the candidate and potential candidate countries to help sustain convergence in the future. So, unemployment rates are much higher on average than in the EU10 and the euro area countries.

In the new Member States (NMS), the absolute income inequalities decreased, too. The faster growth in the NMSs after EU-accession was based mainly on faster domestic demand growth. In four countries (Poland, Lithuania, Romania, Slovakia)

the contribution of the domestic demand growth reached the indicated share after the accession.

Table 1: GDP growth and its main demand factors

Annual average change as percentage (fixed prices)	New Member States		Old Member States	
	1999-2003	2004-2008	1999-2003	2004-2008
GDP	3,4	5,6	2,2	2,2
private consumption	4,0	5,5	2,5	1,7
public consumption	3,1	2,3	2,2	1,8
gross fixed capital formation	2,0	10,2	2,3	3,4
export	8,7	11,8	4,8	5,7
import	7,9	12,4	5,0	5,6
Contribution to the GDP growth				
domestic demand	3,4	6,4	2,2	2,1
net export	0,0	-0,8	0,0	0,1

Source: HALMAI P., VÁSÁRY V. (2009).

The success of the integration process of the new EU Member States is reflected by their nominal and real convergence performance. But, the financial and economic crisis of 2008 has resulted, however, in a fundamentally new situation. Financial crisis has hit particularly fast-growing eastern European Member States. There are risks related to convergence. The growth dynamism in the NMSs was generally accompanied by rapid financial deepening and credit expansion. The catch-up process was partly based on exuberant demand. The process was financed through cheap credit. Countries accumulating huge internal and external deficit are very vulnerable under the conditions of the present crisis. Moreover, the catching up process requires globalization and financial integration this implies high sensitivity of the NMSs against shock impacts. There has been a deep recession in the NMSs mostly as a consequence of the crisis.

In Romania, there is a considerable gap from the old EU members regarding the development of the real economy (GDP per capita and other indicators of level). Structural analysis of indicators corresponding to the Lisbon strategy, but this shows that Romania occupies the last place among the EU 27. We can also note the existence of weak performance in terms of economic efficiency, productivity, level of competitiveness, due to structure of employment and low-usage of human capital. Currently the Romanian economy is among the less competitive countries of Eastern and Central Economies. Another problem is the movement of Romanian citizens in the Schengen area since 2002: over 1.5 million people have emigrated in search of work places. This phenomenon has generated shortages in certain segments of the internal market of labor, especially in industries such as construction or textiles and confection. Romania still in the phase of the economy based on the accumulation of factors, with high share of population employed in agriculture.

**Table 2 : Employed persons aged 15 years and older :
composition by economic activity (main job), 2011**

	Agriculture	Industry	Market Services	Non-market services
UE27	**5,0**	**25,2**	**39,4**	**30,4**
ZE17*	**3,5**	**25,1**	**40,2**	**31,2**
Germany	1,6	28,3	39,8	30,3
France	2,9	22,2	38,3	36,6
Hungary	4,8	30,7	37,7	26,7
Poland	12,7	30,6	33,9	22,8
Romania	28,6	28,8	26,3	16,3

Source: Eurostat(2012), " European union labour force – Annual results 2011)", statistic in focus, N° 40.

If the weight of the Romanian agriculture is clearly the highest among the European Union countries, the service sector is the largest in terms of employees, like in the others EU countries but on a lower level. According to a Eurostat survey on labor force (2012), nearly 70% of people employed in the EU27 worked in the service sector in 2011 a percentage ranging from 43% in Romania to 85% in Luxembourg. According to Eurostat (2012):

"Almost 70 % of employed persons in the EU in 2011 worked in services. 39.4 % produced market oriented services such as trade, transportation, accommodation and food services, information and financial activities and real estate. 30.4 % were employed in public administration, education, human health, arts, entertainment and recreation and other services. A further 25.2 % of employed persons worked in industry and construction, while 5.0 % worked in agriculture…

…Agriculture continues to be a very significant source of employment in Romania (28.6 % of the working population in 2011), whereas it accounts for only a very small share (below 2 %) in Germany …"

Romanian agricultural sector is heavily dependent upon subsidies from European Union. Productivity is poor: current earnings per hectare are the weakest in Eastern Europe. This is due to a bad surface distribution: most farmers have only small surfaces. Over half of the useful agricultural surface is operated by families for their own maintenance, by hand, horse and obsolete machines. A family enterprise occupies around 1.8 ha. Large enterprises are located mainly in the south and have an average surface of 270 ha each. The fragmented structure of the agricultural surface is a drawback in drawing new investments. Land restitution of properties confiscated during the Communist regime is not over until today. The land reforms may bring economic change in the society through redistribution of land.

The transition to a market economy has affected the land tenure systems of Central and Eastern Europe by reversion to private ownership, mass privatisation and restitution, including farm lands. Among the family and individuals units, many are tiny subsistence farms, implying a serious fragmentation of farmland (As we can see in Table 3). The very low income situation on the Romanian and Albanian collective farms was in contrast with the relatively better situation of workers on state farms in their own countries. In consequence, Romania has chosen a similar land reform as

Albania for its collective farmland, by distributing an important share of its collective farmland to poor collective farm workers. Romania is the only Central and Eastern European Countries which has partially "overruled" the demand for land restitution from individuals who still formally owned the land. By imposing a 10 hectare maximum for restitution, and distributing the remaining share of its collective farmland to poor collective farm workers. Compensation of farm workers has typically taken the form of a combination of nonland assets and restrictions on the transfer of property rights to former owners. Farm workers ("labour contributions") received 60% of non-land asset shares in Romania.

When the restitution of land was discussed, the choice of the reference date had important distributional implications. In Romania, Hungary and former Czechoslovakia, land restitution was not based on the 1945 ownership situation, but on the ownership situation which was strongly influenced by post-World War II land reforms, implemented by a government dominated by the Communist Party. Despite the fact that the political basis on which these land reforms were decided and implemented was undemocratic, these countries have chosen not to use the 1945 land ownership distribution, but rather a later date as the basis for restitution. In Hungary 1948 and in Romania 1947 was taken as the reference date.

Table 3: Average Area per holding, 2010 (1)
(hectares)

Average UAA/holding (ha)		Average UAA/holiding (ha)	
Czech Republic	152.4	Latvia	21.5
United Kingdom	78.6	Austria	19.5
Denmark	64.6	European Union 27	14,1
Luxembourg	59.3	Lithuania	13.7
Germany	55.8	Portugal	12.0
France	52.6	Bulgaria	9.8
Estonia	47.7	Poland	9.6
Sweden	43.5	Italy	7.9
Ireland	32.3	Hungary	8.0
Finland	35.9	Slovenia	6.4
Belgium	31.7	Greece	5.8
Slovakia	28.1	Romania	3.4
Netherlands	26.0	Cyprus	3.1
Spain	24.0	Malta	0.9
Norway	21.6		

Source: Eurostat (2011)

However, in recent years the number of farms decreases significantly because of high age of famers, migration to the cities or abroad and recent drought.

In the period 1980 - 2000 the drought event occurrence increased with more than half. In the year 2000, almost the entire country was affected by a prolonged drought event with high intensity as a result of a very hot and dry summer. The most drought affected areas were located in the western, south-western and central part of the country. In terms of intensity, surface extension and duration, the drought which occurred in 2000 was the strongest one in the last century, at least the most severe after 1946. Drought related periods (regarding intensity, duration and spatial extension) became more frequent and severe in the last decade having a very

negative effect upon crop yields. Some of the drought years may be considered as catastrophic concerning the impacts upon the mean yield of winter wheat and maize crops - the most important crops in Romania. The decline in crop yields reached about 40-60%, especially in the areas without irrigation systems.

According to Martins C. and Spendlingwimmer F. (2009), in 2007, 19% the sole holders were women, 71% were aged 55 or more and 2.9% were younger than 35 years. 29% of the sole holders had another gainful activity in 2007. 64% of the agricultural area was farmed by its owners. Romanian agricultural production is characterized by a predominant share of self-consumption: in 2007, 64% of Romanian farms produced mainly for own consumption.

In most countries there has been a noticeable shift of employment from agriculture and industry to the services sector, a trend which has been much more pronounced in the NMS.

The transition to democracy and an market economy directly affect the land tenure systems of Central and Eastern Europe by reversion to private ownership, mass privatization and restitution, including farm lands. Among the family and individuals units, many are tiny subsistence farms. Serious fragmentation of farmland exists throughout the region.

A number of the new EU members from Central and Eastern Europe had restrictions on the ownership of agricultural land by foreigners. Among the countries joining the EU in 2004 and 2007 that had restrictions on foreign ownership of land were Estonia, Hungary, Lithuania and Romania. The lifting of restrictions on foreign companies acquiring agricultural land also implies that any barriers to domestic companies purchasing land must also end.

The eventual granting of rights to foreign companies to acquire agricultural land implies that any remaining obstacles to domestic companies purchasing agricultural land must also be lifted. The phenomenon by which larger farming businesses are obliged to rent land on a short-term basis because they cannot legally own it will disappear. There could be profound changes in land ownership and land tenure as the transition periods come to an end. The use of devices such as options to purchase at a future date and the registering of purchases in the names of nominees may mean that these changes will be anticipated towards the end of the transition periods, even though the interests acquired may not be officially registered or appear in official statistics. There is some limited evidence of such practices already occurring. For example, from Hungary there are reports of land acquisitions by foreigners using methods of dubious legality and estate agents' reports from Romania talk of demand for land coming from foreign investors.

Romania has the largest useful agricultural surface in Europe. The country has 14.7 million hectares of land for agriculture. Romania, Europe is third biggest agricultural country after France and Germany. Romania ranks 11th in the world among farmers and 6th among agricultural exporters. Around 30% of employees work in agriculture - in Western countries the average is 3-5%.

The link between agriculture and economic development can be analyzed via the Kuznets curve. With this curve, changes in income inequality seem to reflect the different phases of developments.

1) Analyse of Kuznets curve in Romania

Kuznets curve assumes that as a country develops, there is a natural cycle of income inequality. At first, industrialization causes a significant rural-urban income inequality gap and consequently rural migration to cities and migration from agriculture to industry. Moreover, when the agricultural productivity increases the incomes of farmers, this leads to expand the demand for manufactured goods. This is the contribution of agricultural sector to the other sectors of the economy. Income inequality is expected to decrease when a certain level of average income is reached. Migration and mechanization in agriculture sector causes income inequality decrease when 50% of the workforce switches over to the higher paying sector. According to Kuznets' belief; income inequality would follow an inverted-U shape as it rises and then falls again with the increase of income per capita.

The Kuznets curve is based on the assumption of a monotonic increase in GDP per capita (or per capita income) and inverted-U shape depending on GDP evolution.

Kuznets curve
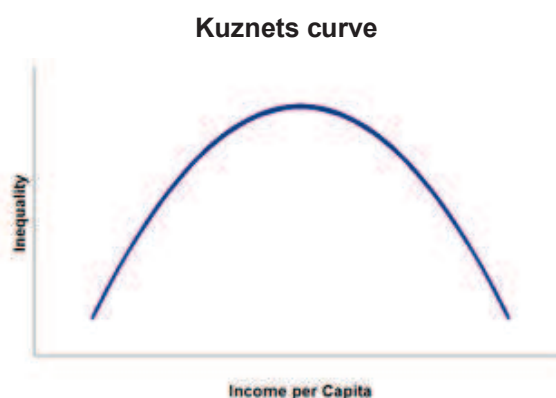
In fact, Simon Kuznetz (1955) has divided the economy into two sectors: industrial and urban sector to an agricultural and rural sector, and so has built a dual economy. He stressed that the average per capita income of the rural population is generally lower than that of the urban population on the one hand and that unequal distribution is more pronounced in urban areas than in rural areas on the other hand. Development is defined as the passage of a growing fraction of the population from rural to urban areas. More developed a country is, the greater the social pressure for greater equality also seems to increase. From purely empirical observations, Kuznets built a hypothesis on the evolution of income inequality during economic development.

It is useful, however, to update the explanation for the relationship between income inequality and level of development. According to Berry (2013), the major determinants of income inequality are the distribution of factors of production: the distribution of land, physical capital and human capital. In market economies, the differences in income across people can be thought of as the result of a set of market imperfections that leave their incomes either higher or lower than their contributions to production. Technology choice, essential to growth, may be also an important structural contributor to the level and trend of income inequality, since it can play a

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powerful role in determining both the capital share as well as the distribution of capital and labour incomes. But the magnitude of its impact is hard to measure precisely. Furthermore, economic policies or social policies are not taken into consideration in this traditional shape of the curve.

In the initial design of the Kuznets curve, per capita income has a quasi-unique value related to a given level of income inequality. According to Barthélemy (1995), this approach implies knowing ex ante the level of income distribution if level of development is given. It assumes a deterministic process of development. Internal politics and environment appear to play no role.

Critics of the Kuznets Curve theory argue that its inverted-U shape comes not from progression in the development of individual countries, but rather from historical differences between countries. Barthéllemy (1995) finds that the hypothesis Kuznetz is based on a purely mechanical view.

However, many economic and econometric analyzes has showed heterogeneous trajectories and the sensitivity of inverted-U shape (more or less flat or pronounced) related to socio-cultural or socio-political factors or regional specificities. Today the long and deep economic crisis leads us to examine recent changes in income distribution.

Some authors extend the Kuznets curve in the link between income inequality and market liberalization. Furthermore, since 1991, Environmental Kuznets Curves (EKC) have become standard features in the literature, though their application here is strongly contested. It is a hypothesized relationship between environmental quality and economic development: various indicators of environmental degradation tend to get worse as modern economic growth occurs until average income reaches a certain point over the course of development.

We can now study the shape of the Kuznets curve for Romania and France from 2000 to 2011. The impact of German reunification prevents us from achieving the same type of graph for this period.
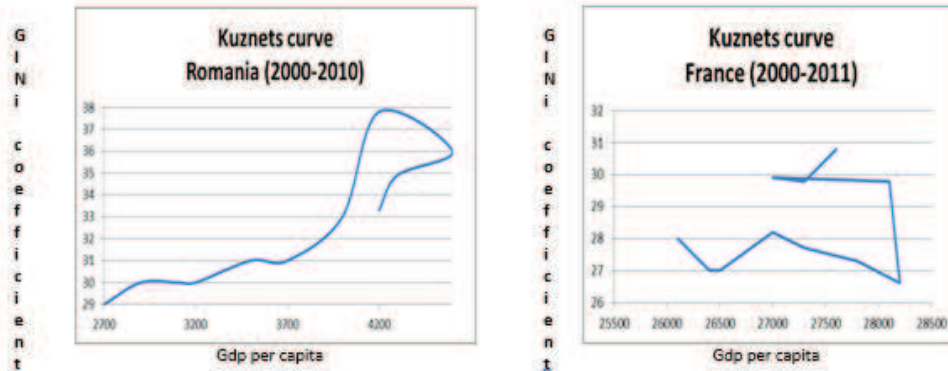
Table 4: GDP per capita and Gin coefficient

		2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Romania	Gdp/inhabitant (€)	2700	2900	3100	3200	3500	3700	4000	4200	4600	4300	4200	--
	Gini coefficient *of equivalised disposable income*	29	30	30	30	31	31	33	37,8	36	34,9	33,3	--
France	Gdp/inhabitant (€)	26100	26400	26500	26500	27000	27300	27800	28200	28100	27000	27300	27600
	Gini coefficient	28	27	27	27	28,2	27,7	27,3	26,6	29,8	29,9	29,8	30,8

(1)Source Eurostat:
http://epp.eurostat.ec.europa.eu/tgm/table.do?tab=table&init=1&plugin=0&language=en&pcode=tessi190
(2) Source:Eurostat:
http://epp.eurostat.ec.europa.eu/tgm/table.do?tab=table&init=1&plugin=1&language=en&pcode=tsdec100

In Romania, income inequality peaked in 2007 with a GDP per capita equal to €
4,200. The increase in income inequality is almost exponential until 2007. Beyond
2007, in accordance with Kutznets's hypothesis, income inequality seems to
decrease. Thus, in 2008 the GDP of € 4,600 level is associated with a Gini coefficient
equal to 36 against 37.8 in 2007. After 2008, the GDP decreases as a result of the
economic crisis. The decline in the Gini coefficient can be explained by the economic
and social counter-cyclical policies.

Regarding France, the Gini coefficient is almost stable until 2009. Indeed, the Gini
coefficient remains in the 27-28 margin in this sub-period. However, the crisis has
an opposite effect on the evolution of income inequality: in France, they have
significantly increased due to the crisis parallel to a decrease in GDP per capita.

Conclusion

In Romania, the agricultural sector with 30% of the workforce is still a significant
source of employment. But this weight seems to decrease, sign of a change in future
years. The agricultural revolution is not yet completed in Romania. There is concern
in the near future a very significant reduction of the agricultural population, an
increase in farm size and an increase of productivity in the agricultural sector. In the
context of appropriate policies, a virtuous circle may appear: agricultural
transformation may have an impact on all other sectors of the economy in terms of
productivity and the evolution of institutions. One may utilise Kuznets' intuition on
link between migration from rural areas to urban ones, i.e. from agriculture to other
sectors, and economic development. According to Kuznets, changes in income
inequalities reflect this evolution, through inverted_U curve. It should nevertheless
update the Kuznets' explanations for more recent analyses. For Romania, the
hypothesis of the existence of a Kuznets curve is not invalidated. One observes a
augmentation income inequalities until 2007, in a period of economic progress and
market liberalization. Then, one can note a reduction of these income inequalities,
implying that economic development has is a relatively mature. However, it is
premature to assert it because we do not have enough perspective and because of
the current economic crisis that disrupts behavior.

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