

THE STRUCTURE OF UNEMPLOYMENT

IN ROMANIA

(1989-2000)

By

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The Structure of Unemployment in Romania (1989 – 2000)

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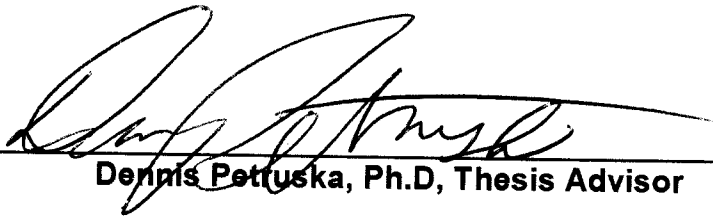


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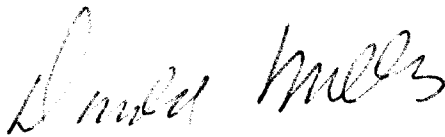
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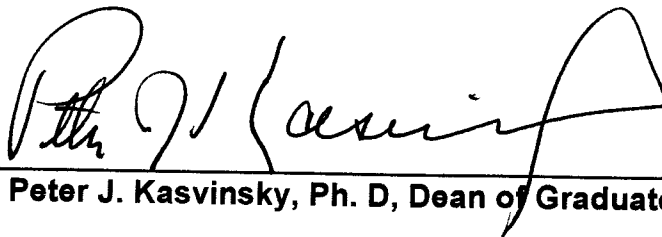
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Abstract

“ROMANIA – The Structure of Unemployment in Romania (1989-2000)” is a comprehensive study that focuses mainly on how structural unemployment can be expressed through unemployment rates by both level of education and industrial structure.

The thesis is divided into three parts. Part 1 focuses on the history of Romania and the general economical situation. Part 2 deals with the analysis of structural unemployment by examining technological changes, industrial composition, occupational composition, and education. Part 3 is presenting solutions that researchers have given over the years or solutions that the Romanian government has implemented or is planning to implement in the next few years, followed by the author’s suggested solutions to the structural unemployment problem.

The thesis intends to provide a realistic insight and comprehensive understanding into the acute structural unemployment in Romania that prolongs the transition period.

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1. Introduction

After the revolution in December 1989, Romania switched from a communist country to a democratic country overnight. This change brought about numerous radical changes to the country, including the entire economic system, politics, and the culture of freedom. The hardest and most significant step for Romania is the transition from a centralized planned economy to a capitalist economy. Romania had been communist for 45 years, meaning that even today, most of the current labor force had lived in a centralized planned economy for their entire lives. This economy featured full employment and full governmental control of the economy. After the revolution, the entire communist doctrine disappeared, and suddenly everyone wanted a free market economy (where people can own a part of a business or have their own business). Unfortunately, this concept was difficult for most people to understand. How can a population who had been told what to do all their lives change their way of thinking overnight and become an owner of a business? These concepts were new to Romanians.

It is very important to keep in mind throughout this study that the economical transition of Romania is not solely upon the structural changes of the economy, but upon the population's way of thinking and their inherent rigidity thereby preventing them from comprehending the new concept of "freedom".

The transition from the central planned economy to a free market economy is a 20th century phenomenon and its success is very important to the global economy. The analysis of the structure of the unemployment is selected in this study as a tool to demonstrate why Romania is having a difficult time going through transition because the structural of the unemployment shows a strong relationship between the migration of the population out of the country, people's skills in relation to job market demand, and to gross domestic product (GDP). It also explains the production and annual total output within the economy causing an increase of the percentage of people currently living in poverty. The major premise of this study is to prove through an analysis of the unemployment rate by educational levels that Romania is going through structural unemployment. In addition, the reason Romania has such a hard time getting out of the transition is the acute structural unemployment.

Section 2 presents a literature review of relevant research. Many economists have written research papers dealing with the structure of the unemployment throughout the world. This section outlines what researchers have found about the structure of the unemployment and how it ties in with Romania's situation.

Section 3 presents the problems inherent in the Romanian economy and the specific problems that this work addresses. Unemployment is just a part of the problem that Romania economy currently faces. Section 3 describes the present economic situation that the country is experiencing.

Section 4 provides an overview of the Romanian economy during Communism. This provides a historical description of the Romanian economy under the socialist regime and outlines the degree of government control over the unemployment rate.

Section 5 provides a view of the Romanian economy after the Revolution when the country switched to a free market economy. It shows how the economy has been changing after the revolution.

Section 6 provides an analysis of the structure of the unemployment that has caused stagnation in the Romania economy. In this section the statistical analysis of unemployment rates by education level and industry is also presented. The major factor that poses a more direct threat to Romania's economy is labor mismatch. Mismatch refers to a persistent imbalance between supply and demand for labor across skill groups and industries. In other words, while there are currently significant job vacancies, the unemployed are unable to fill them because they don't meet the skill requirements of the new jobs. The danger of labor mismatch has increased due to the fast pace of technological changes, and the increased need for higher skills and educational qualifications to perform the newly created jobs. While the thesis will concentrate on the analysis of the structure of the unemployment caused by technological changes, level of education and by industry, the main focus will be on analyzing structural unemployment by labor's level of education.

Section 7 proposes solutions to Romania's economic woes. Many Romanian economists and policy makers have proposed solutions to the severe

high unemployment in Romania. Some of these solutions have been implemented as governmental policies. Some additional solutions that have been proposed are presented in this study.

Section 8 concludes this research; it includes the findings that resulted from the analysis performed.

Section 9 lists references.

When Romania shifted towards a free market economy, the country faced extraordinary economic problems. The largest of these was being hit with an increasing unemployment rate. Unemployment officially became legal in February 1991 when the official unemployment rates were released.

1.1. Definitions of unemployment

According to the definition specified by the International Labor Office (I.L.O.), the unemployed are defined as persons aged 15 years and over and/or meeting the following conditions during the reference period (Anuarul (annual) statistic, 1999):

- He/she has no job and are not engaged in any activity in order to earn an income
- He/she is looking for a job, undertaking certain actions during the past four weeks (were registered with the labor and unemployment offices or private placement agencies, attempted to start an activity on their own account, published advertisements, or solicited a job among friends, relatives, colleagues, trade unions)

- He/she is available to start work within the next 15 days, if they immediately find a job. (Filip Mihai Alexandrescu)

The Romanian legislation has its own definition of unemployment. This definition states that registered unemployed must fit the following qualifications:

- age 18 years old and over,
- able to work,
- cannot be employed because of a lack of available jobs corresponding to their qualifications, and
- are registered with labor and unemployment offices (Anuarul (annual) statistic, 1999).

The Romanian unemployment rate expresses the ratio between the number of unemployed (defined by ILO or registered with the unemployment offices) and the state civil active population (employed + unemployed).

2. Literature review

Many economists are interested in the Eastern European transition from centrally planned economies to free markets economies. After 1989 many Eastern European countries have started to gain their economic freedom as a result of their own revolutions. Countries going through such a transition are the former Czechoslovakia, the former Yugoslavia, and the former USSR, followed by the former Eastern Germany. Each of these countries are currently undergoing economic transitions similar to those in Romania. Some economists are analyzing the phenomena and proposing solutions that provide help to these countries in order to make the transition as smooth as possible. In the next section some of the work that scientists have proposed will be presented.

2.1. In the article "The Labor Market in Romania", Gheorghe Oprescu analyzes the Romanian labor market from the viewpoint of employment and unemployment by gender and education over the last ten years. The number of unemployed women was higher than unemployed men for most of the sampled period. However, the relative number of unemployed women has decreased significantly in 1997 and 1998, falling below 50 percent of the total unemployed. Oprescu observed a high unemployment rate among low-skilled laborers with a lower rate of unemployment among high-skilled laborers. Low-skilled laborers made up by far the highest percentage of the unemployed. In 1998, 74.7 percent of the total unemployed were low-skilled workers while high school graduates and university graduates counted for only 25.3 percent. Oprescu's analysis on

the duration of unemployment shows a decline in unemployment duration in 1998. As a result, long-term unemployment is much less prevalent as in previous years. By the end of 1998, 42 percent of the unemployed had been out of work more than 12 months, a decline of almost 50 percent one year earlier. Similar to the work that will be presented here, Oprescu proposes solutions to the unemployment problem. His solutions take the form of governmental unemployment policies, such as those the Romanian government has implemented to diminish the labor supply. The policy targets the elderly, who tend to make a substantial contribution to the unemployment rate in transition countries. For example, Romania has passed early retirement laws to reduce the unemployment rates during their transition period. Another policy that the Romanian government implemented creates services for the unemployed. There are currently only between one and two labor office employees to every 10,000 Romanians, which present a major problem to Romania, a country faced with mass layoffs caused by industrial restructuring. The third policy concerns training and retaining of laborers. This is the most significant policy and is one of the solutions proposed in this thesis. Restructuring causes people whose skills are no longer in demand to lose their jobs. This policy is the most important, especially when the number of unemployed is equal to the number of vacancies, but the unemployed lack the right skills to apply for available jobs (see Table 1).

Table 1: Training and Retaining

	Number of participants					Out of which: those who found a job				
	1993	1994	1995	1996	1997	1993	1994	1995	1996	1997
TOTAL, out of which:	65458	45858	45298	49074	61479					
- Unemployed	49470	25478	22794	20409	23575					
Completed the training organized:	49082	31330	32403	34515	40391	8070	6453	6030	6975	5357
- At the request of the firms	1982	7170	8074	10099	11323					
- On the basis of studies and programs regarding the labor market	45436	7044	5214	5263	7372					
- At the request of the participants	1664	17116	19115	19153	21696					
On going	11019	11648	10512	14441	21046					

Source: National Commission for Statistics

According to table 1, in 1997, less than 7 percent of the unemployed participated in training and retaining. During 1992-1996, about 1 percent of the total unemployed participated in this program and 9-15 percent of those involved in such courses succeeded in finding a job. The low figure and its remarkable stability generate doubts about the efficiency of the way in which the money for social protection is spent. One possible explanation is that only about 20 percent of the participants have been in courses organized at the request of the firms (which may be considered as being the “real” demand) (page 31). This program has succeeded in reducing the duration of unemployment.

2.2. “Unemployment in Romania During Transition”, Filip Mihai Alexandrescu presents a picture of unemployment under the socialist regime and explains the dynamics of unemployment during the period 1991-1998. Alexandrescu takes a different position on unemployment than Oprescu by utilizing the level of education of the employed as a tool for analysis. By measuring unemployment rates by level of education, Alexandrescu shows that possessing a higher education (university or college), reduces the chance of an individual being unemployed. Unemployment rates broken down by level of education show that a higher education (university or college) leads to a higher employment level (Table 2). Even vocational education was shown to reduce an individual’s chance of being unemployed. Alexandrescu showed that there was a strong correlation between education level and risk of unemployment in the Romanian population. One explanation of his findings is that about 74 percent of the active population with a primary education are age 55 and over. As a result, 26 percent of the population with higher education is among the age group 55 or less and youths. Additionally, around 95 percent of these elderly people live in rural areas and probably engaged in agricultural activities. (Usually the elderly move in rural areas because the cost of living in cities is high and the pensions received are very little. This is the reason why many of them will engage in agricultural activities in order to survive and make some extra earning).

Alexandrescu concentrated his work on youth unemployment by education because he was concerned with the future of the Romanian economy. In his findings, the most widespread rate of unemployment is among youth high school,

secondary school graduates, and the graduates of vocational schools as shown in Table 2.

Table 2: Total Unemployment Rates by Level of Education (%)

Level of education	1996	1997	1998	1999
Total unemployment rates by level of education (%)	6.7	6.0	6.3	6.8
Higher education (University or college)	2.4	2.6	2.6	3.1
Specialty post-high school or technical foremen education	2.9	3.2	3.7	4.2
High school	8.7	8.0	8.9	9.4
Vocational, complementary or apprenticeship	8.0	7.4	8.0	9.2
Secondary school and the first high school degree	7.7	6.5	6.4	6.4
Primary or without graduated school	3.4	2.4	2.2	2.5

Source: Ancheta asupra fortei de munca¹

High school graduates are the most affected by unemployment. Those with higher education are also exposed to a high risk of becoming unemployed, although the more highly educated part of the population has the lowest unemployment rates. An explanation of this situation might be the lack of experience among the young people. The most successful young people entering the job market are post-high school graduates, technical foreman, and secondary school graduates.

¹ Ancheta asupra fortei de munca is an independent research done on unemployment. The unemployment rates presented in the table are calculated by taking into count the black market existent in Romania

2.3. "Duration and Risk of Unemployment in Argentina", Sebastian Galiani and Hugo A. Hopenhayn (2000). This paper deals with the social consequences of increased employment volatility and the incidence of unemployment. A standard method to evaluate unemployment risk is to consider the incidence of unemployment and its duration. This paper shows that a correct amount of unemployment risk must be taken into consideration when the typical unemployment spell is short-lived. Argentina has gone through episodes of high unemployment during the 90s. The lack of a well-developed social security system may be the reason that most unemployment episodes are of a short-run nature. In countries with a high turnover (where the average duration of unemployment is low) a good indicator of long-term unemployment is the proportion of time an individual has been unemployed over a certain period of time. The authors modeled the unemployment risk, where at any point in time a worker could be in any of two states: Employed (E) and Unemployed (U), using the Markov process. The Markov process allows for the duration dependence, i.e., the probability of transition from one state to the other varies with the time spent in the previous state. The specific parameters of the process also depend on a series of covariates that capture individual characteristics. The paper shows the importance of considering unemployment re-incidence in the analysis of unemployment risk. Although the duration of a typical unemployment spell in Argentina was very short in the study time frame, the average individual that entered unemployment in 1998 had a probability greater than 50 percent of experiencing a total of 4 or more unemployment spells over two years. The

number of incidences and cumulative unemployment is 50 percent larger for the high-risk group comprising young workers with low schooling. The fraction of long-term unemployment is similar to the high numbers encountered in European economies.

The authors were trying to model the unemployment risk in Argentina using the Markov process. The article shows a different method of modeling unemployment in a country that is going through economic transition with high unemployment rates. These high unemployment rates can be seen in Romania's case.

2.4. In "Measuring Unemployment and Structural Unemployment", W Craig Riddell (1999) asks an important question about the many "gray areas" that are involved in separating the non-employed into two groups: the unemployed and out-of-the-labor force, or participants and non-participants. The principal criterion used in the separation of the two groups is availability and searching for work. What does being available and searching for work mean? Riddell mentioned that these difficulties are illustrated by the fact that different countries have developed different ways of operationalizing broad concepts such as "availability for work" and "job search". The classic definition of structural unemployment involves situations in which there are unemployed workers in one region, occupation, or skill category and unfilled vacancies in different regions, occupations, or skill categories. Such unemployment may result in a job search, but if the workers are well informed about the situation they face, the situation is also likely to

indicate the desire to work but not the actual searching for work. Another way in which structural unemployment is measured is less familiar because there is no reliable data about job vacancies throughout industries. As a result many economists turn to other indicators to distinguish structural unemployment from other types of unemployment. Such an indicator is the duration of unemployment, with longer-term joblessness being viewed to be structural in nature. Even using duration of unemployment can be quite sensitive with respect to how each country distinguishes between unemployment and out-of-labor force. “The reason is that many spells of job search end in labour force withdrawal – as conventionally measured – rather than employment” (page 4). Riddell then looks at other aspects of unemployment, such as the duration of unemployment with longer-term joblessness being viewed as more likely to be structural in nature. However, even with this type of measurement one cannot have a true measurement because it is still difficult to distinguish between unemployment and out-of-the-labor force.

The reason of the introduction of this paper is related with the modeling of structural unemployment. Craig Riddell is modeling structural unemployment with the help of the spells of job search. It shows a different approach on how Riddell is defining structural unemployment and how is modeled.

2.5. “Incidence and Duration of Unemployment in Romania”, John S Earle and Catalin Pauna (1996). This paper analyzes the main characteristics of the registered unemployed in Romania using a large sample from the population

(11,504 individual observations). The authors reach a conclusion at the beginning of the article that the economic changes occurring in the East has caused unemployment to exhibit a strong structural, rather than cyclical pattern. Following this conclusion, the authors try to fill in a gap and supply new evidence on the incidence, the duration, and especially the origins of unemployment in Romania.

The authors' findings on a sample of unemployed in Romania were very similar to the population analysis. The incidence of unemployment is greater among women, youths, and individuals with minimum education. There are nearly twice as many unemployed women than men. Youths account for a large proportion of unemployed, and the unemployment for teenagers is astonishingly high. The mean duration of spells does not vary by gender, but there is some variation among age groups (the longest being found in the early twenties and late fifties). The highest unemployment rate and longest mean duration is found among secondary school graduates. Both unskilled and low-skilled workers and university graduates are much better off than the secondary school graduates. One explanation to this phenomenon might be the high degree of specific training of medium skilled workers, slowing their ability to adjust to changing labor market conditions. As a result, people with secondary school and vocational education stay longer in the unemployment pool. This suggests that they should become the primary target for policy-makers, as their capacity for re-employment is reduced by their narrow specific skills.

2.6. "Structural Unemployment and Technological Change in Canada, 1990-1999", Timothy C. Sargent(2001-03). The paper examines the impact of technological change on employment and unemployment in Canada. The author focuses in particular on the argument that an increase in the rate of technology has been responsible for Canada's poor employment in 1990's. Sargent followed two models. One approach was dynamic/matching approach and the second was the static supply and demand framework. One way Sargent modeled the search/matching model was through the Beveridge curve that shows a relation between vacancy rates and unemployment rates. He found that Canada has no longer a direct measure of vacancies. He used an indirect measure that can be constructed using the Help Wanted Index.

Sergeant's paper also includes an analysis of the structure of the unemployment from data on educational composition. In his findings the author reached the conclusion that the highest rise in unemployment was among those with lower education. But the less educated had a "higher unemployment rate at the start of the recession, and in proportionate terms the rise was very similar for all education groups." On the other hand analyzing the evidence from data on employment rates is much different than the ones found analyzing the unemployment rates. The employment rates for those with high school education or better stayed at a constant rate over the period analyzed. However the employment rates for those who had not completed high school or had no post-secondary education fell continuously, showing no sign of recovery.

Sargent reached the conclusion that technological changes cannot be held responsible for the poor overall performance of the Canadian labor in the 1990's.

2.7. "Demographic Transition and Economic Transition. Interlinking and parallelism. The Case of Romania", Valentina Vasile, Ph.D. (2002). The paper deals with the restructuring process of the Romanian economy and the important reforms that the country underwent for the past 12 years that lead to increased poverty. In the last 12 years, Romania had more costs and losses than gains – no Gross Domestic Product (GDP) recovery, a downward trend in employment, an aggravating demographic and economic dependence ratio, severe social problems, etc. Vasile concludes that after 10 years of transition, Romania's GDP is still falling. The result is a worsening of the standard of living to include having an average life expectancy at birth reaching a current maximum level of 69.82 years which is lower than that achieved during the communist period. Worsening the standard of living also increased the infant mortality rate over four times higher than European Union (EU) indicator, and experienced a demographic dependence rate (the number of young (0-14 years) and old (60 and over) people to 100 working age (15-59 years) people) slightly higher than the world average. From the economic and social viewpoint, Romania ranges among Europe's less developed countries. The GDP per capita expressed in USD at the purchasing power parity accounts for one-quarter in the EU countries (in 1999, 6,014 PPP as against around 23,500 USD PPP).

After 1990, the demographic age composition of the population has undergone under major changes. The number of deaths per 1000 inhabitants has increased; as a result, the age pyramid has been changing by narrowing the base and the top. The main reason for this change is the poor standard of living. In 2000 the purchasing power of the average wage was about one-half that of 1990.

Since the revolution, Romania has witnessed the following two types of transition:

- a demographic one, that had started several decades ago, and
- an economic and social one, that is, from a centralized planned economy to an economic and social system based on competition.

The demographic transition before 1990 followed a slow trend. After 1990, the dynamics of the demographic phenomena has intensified and the transition became non-typical with low birth rates and high mortality rates.

According to Vasile the economic transition has generally followed the idea of “learning by doing”. Sometimes economic and social reforms have gone wrong, even regressed. This has occurred because of the government reform stages² and its components are not correlated³.

Also Vasile has presented a very interesting explanation to the high rate of unemployment. First she says that the restructuring and privatization of the

² A reform stage is a part of the economic transition and usually is not expressed as a time period but around the introduction of a new government policy that regards the transition.

³ The economic state of Romania during the transition period did not live up to the reform stages introduced by the government.

economy “have caused a major quantitative and qualitative shift in the population number and structure from the territorial view point⁴”, to follow later in the paper by saying that while Romania has had structural changes they are outdated especially in the sector allocation of the employed population. The employment structure is inconsistent with the European economy because of the major shifts among the sectors.

One of the most important points that Vasile has analyzed is the migration rate over a period of 10 years between 1990-2001. Since the beginning of her analysis she agrees that migration was a permanent factor of adjustment of the total population size. As a result migration had a significant impact on the economic transition of Romania.

Vasile also analyzed the employment and unemployment situation in Romania. The employment model of the communist regime was that after graduating high school, the young had their job secured (in socialism, only several handicapped people did not work or people living in hardly accessible – mountainous - area where no co-operative farms could be set up). “Traditionally” both parents had a job, even in rural areas. After the revolution the employment rate of young people had diminished for the following reasons:

- They chose to carry on their education. This resulted from financial support from parents, expansion of private higher educational system, and extension of paid education to the state universities.

⁴ The restructuring and privatization of the economy caused mass layoffs in urban areas, which caused a shift of the population into rural areas.

- The opportunity to find jobs soon after graduation is low. In Romania only the gifted young people can find jobs during the higher education period or soon after graduation; most of them leave the country.
- The absence of firm long-term orientation concerning the national economy's development makes some young people try to improve their training level to find a stable well paying job by attending more than one college of a different or complementary profile. (Page 21).

In her unemployment model Vasile is talking about the transition from the public sector to the private sector. The drastic decrease in the employees' number and share in the employed population stands out as an abnormal, asymmetric processes that caused our moving away from the structures of the developed countries, from the European standards (page 25). The proportion of long-term unemployment (over 12 months) exceeds the proportion of employment less than six months and further increasing (registered unemployed, receiving cash unemployment assistance). The higher share of unemployed seeking a job for several months has caused the structural shifting. In 1998 the unemployment for 12-18 months accounted for over two-thirds of the unemployment for over 12 months, and in 1999 only half of them were in the same situation, and the balance was included in the group of the long unemployed.

With respect to the employed population structure per training levels, Vasile cited two aspects: a) the younger people who attended school before 1990 have a high education level owing to the gradual increase in the number of

schooling years; b) the people who graduated after 1990 may be divided into young people who entered the labor market after secondary school and completed their education through a different complementary form⁵ and those young people, who for financial reasons, entered the labor market to provide for themselves during the completion/continuation of their education.

Vasile concluded that the employment condition and the corresponding evolution in the last 12 years reflect the dysfunction of the economic and social environment caused by reform/restructuring, by the errors in the promoted policies, and by privatization.

Vasile's findings are the basis for my second hypothesis used as part of the model presented later in this thesis.

2.8. "Education and the Distribution of Unemployment", C.J. McKenna(1996). This paper presents a two-sector model of job matching. The jobs matched are distinguished by their accessibility to uneducated workers and by their productivity. Empirical studies have indicated a two-way relationship between unemployment and education. The education investment decision is determined in part by unemployment, since spells of unemployment affect the relative rate of return. In McKenna's model, education expands employment opportunities since educated workers are productive in all jobs whereas the uneducated are productive only on certain jobs. As found, not all jobs are equally attractive to educated workers though the wage structure is such that less attractive jobs may

⁵ A different complementary form of school can be considered vocational, complementary or apprenticeship school.

be taken temporarily until a more attractive job is found. As a result there is always a temporary mismatch of an educated worker with a low output job and this is referred to “trading-down” or “over education”. The main components of the model are the education investment opportunities, workers and firms, the matching process, and the wage-determination rule. Education is highly stylized in the model. It is available to all at a cost and results in a greater accessibility to jobs and higher earnings. Also, it is an “all-or-nothing” investment (because the model looks at the stationary phases only) and is acquired entirely at the beginning of a worker’s life. The workers differ in their cost of acquiring education but otherwise they are identical. Also, in order to make the model more feasible, the author divided the firms into two generic types (h and l). Uneducated workers are unproductive in h-jobs and educated workers are just as productive as uneducated workers in l-jobs. Each firm represents one job at which at any point in time is either filled by a qualified worker or vacant. The most important process within the model is the matching process. The author restricted the search process for the unemployed in such way that in each period if an educated workers searches in the market for h-jobs and does not find any in the first attempt, then he/she switches to search for one in the market for l-jobs at no additional cost. If both searches are unsuccessful, the search begins again in the following period starting with the h-sector. The model is analyzed under the labor market returns, labor market flows, wages, firm entry in the market, and under the decentralized equilibrium. It is concluded that the model emphasizes the incidence of unemployment among educated and uneducated workers.

Educated workers may choose to work in jobs requiring less skill and thus they experience lower unemployment rates and have shorter unemployment durations. Productivity also changes the educational decision because the average unemployment rates depend on the overall unemployment rates and the amount of human capital investment. The overall effect of the productivity changes needs to take into account the education decision. Also, high productivity among the high-output sector has a positive spillover in the low-output sector resulting in a decreasing overall unemployment rate.

McKenna's findings are the basis for my first hypothesis used as part of the model presented later in this thesis.

3. The Struggling Romanian Economy

The objective of this study is to perform an analysis on unemployment and poverty in Romania over a period of the last 10 years or more. Unemployment is a useful metric in analyzing the growth of an economy and may be used to forecast the trend in the labor force. The initial phases of the transition created numerous economic and cultural dilemmas such as the failure of the market to adapt to the structural and macroeconomic changes experienced since the revolution. Romania's adaptation to the free market system is being accomplished slowly, inefficiently, and with many difficulties and problems. In such a process of radical economic transformation, the rise in unemployment is an unavoidable phenomenon. This drastic rise in the unemployment rate is the

result from both the exposure to pre-existing hidden unemployment and the lack of symmetry between job destruction due to structural adjustment and job creation in new business initiatives (Zecchini, 1997).

4. Romania under Communism (1945-1989)

A brief overview of the economic situation in Romania before December 1989 will clarify the transformation problems that the country is currently struggling with today. These transformation problems have resulted from a strong economic recession in the first five years where the GDP had fallen drastically. The number of unemployed during those years was very high, which relates to the direction of the transformation of the labor markets.

The socialist regime left Romania with an economy that was underdeveloped, inefficient, and irrational. It suffered from important structural distortions to include the following:

- an orientation towards self-sufficiency
- an absolute monopoly over the internal market
- rigid and technologically backward large enterprises
- economic sectors totally dependent on massive subsidies

4.1. Unemployment during Communism

The notion of unemployment during the Socialist Regime differs from the traditional concept of unemployment. In a welfare state, the state admits the existence of this social problem and uses various methods to support the

unemployed. However, unemployment was not officially recognized by states under a socialist regime. In socialist Romania, the state had the task of insuring a job for everyone who was able to work. The government manipulated the economic activities of the society in order to utilize the entire available labor force. Work was viewed as both a right and as a duty, and employment was taken for granted by the people. The government forced people to work by enforcing laws against parasitism (the jobless being imprisoned or forced to work under difficult conditions). The idea was that everyone had to contribute through his/her work to the collective well being. In return for work, many of the social benefits such as social insurance, pension plans, healthcare, housing, and children's allowance were awarded at no cost/charge to those employed in the state's socialist economic system. The government did not officially recognize unemployment and the unemployed did not receive any cash unemployment assistance. As a result, many jobs were created in all industries and in the construction of the country's infrastructure (roads, canals, housing, etc.). Due to the seasonal or temporary nature of many of these jobs, the variable demand would result in people without a job. The strategy that the socialist government adopted in order to cope with the excess of labor was to maintain an artificially high employment rate. This led to over employment, which adversely affected economic efficiency. In 1989, the real unemployment rate in Romania was estimated at about 4-5 percent (Zamfir, 1999).

5. Romania under the Free Market System (1989-2000)

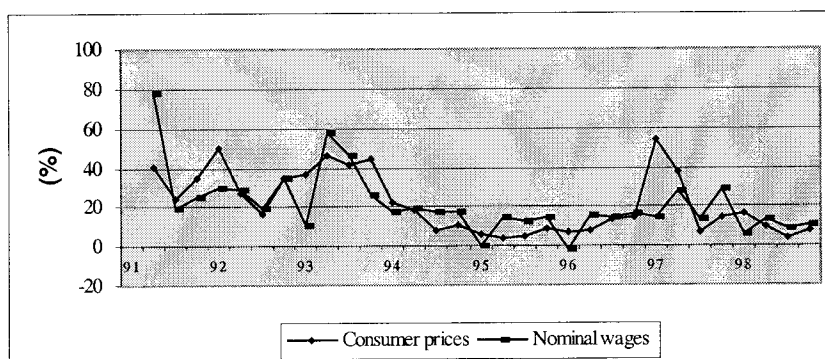
In December 1989, a revolution occurred which brought Romania's economy to a free market system. The massive restructuring that occurred as a result of the transition proved to be extremely difficult. The free movement of goods, people, and information produced an almost overnight re-orientation of consumer preferences to imports better suited to their tastes (before 1990 the products found within the economy were mostly domestic).

5.1. Causes and Effects of Unemployment

The increase in the unemployment rate was partially caused by the rise in the inflation rate. This is especially true in 1993 when inflation increased by 256 percent causing a decline in earned income, which in turn caused the unemployment rate to increase. As a result of this inflation, the demand for goods also decreased considerably. The rise of the unemployment rate caused the standard of living to fall as well. Wages are the principal source of income for the majority of the population and the average real wage fell by nearly 40 percent between 1989 and 1993. Between 1994-1996 a slight rise in income gave people a reason to believe in an economic recovery but shortly after that, in 1996, a sharp downturn in wages brought in the year 2000 the lowest level wages since 1989. This fall in wages forced formally employed people to experience unemployment for the first time (during the communist era the government kept the economy at full employment rate) and also made them face

the risk of becoming permanently dependent on social benefits. Some who had left waged work attempted to start their own proprietorship. A few of them had an opportunity to reach some success but not many experienced long-lived businesses (the majority struggling to break even). In 1998, approximately 48 percent of registered entrepreneurs were classified as poor with 54 percent of households reporting as headed by a registered entrepreneur (Tesliuc, Pop, Tesliuc, 2001).

Figure1: Quarterly Changes in Consumer Prices and Nominal Wages



Source: National Commission and Statistics

Privatization of existing businesses also proved to be very ineffective. The newly established privatization also had a wide variety of problems and obstacles. Many of the newly privatized companies experienced major financial problems. Often these newly privatized companies barely provided their employees with an adequate income and very rarely did any produce profit in order to induce expansion. The development of the private sector did not significantly improve the standard of living of those employed therein.

5.2. Economic State of Romania During the Transition Period

As seen in the Table 3, after eleven years of transition, the GDP still remained at about 77 percent of its 1989 level. It has become increasingly evident that the dramatic increase in unemployment and poverty can only be partially understood as an unavoidable cost of transition. Its main cause lies in the defective strategies applied to the implemented economic reform. As an example, the transition from public to private sector in 1991 caused the GDP to fall by 12.9 percent. The decrease in GDP, coupled with the very high increase in inflation rate of 170.2 percent annually caused a decrease of 18.3 percent in the annual net real average earning thereby causing an increase in the poverty rate. In 1993, the GDP increased by 1.5 percent while the annual rate of inflation reached the highest in the history of Romania by reaching 256.1 percent from 1992. This caused the annual net real average earning to decline by 16.7 percent.

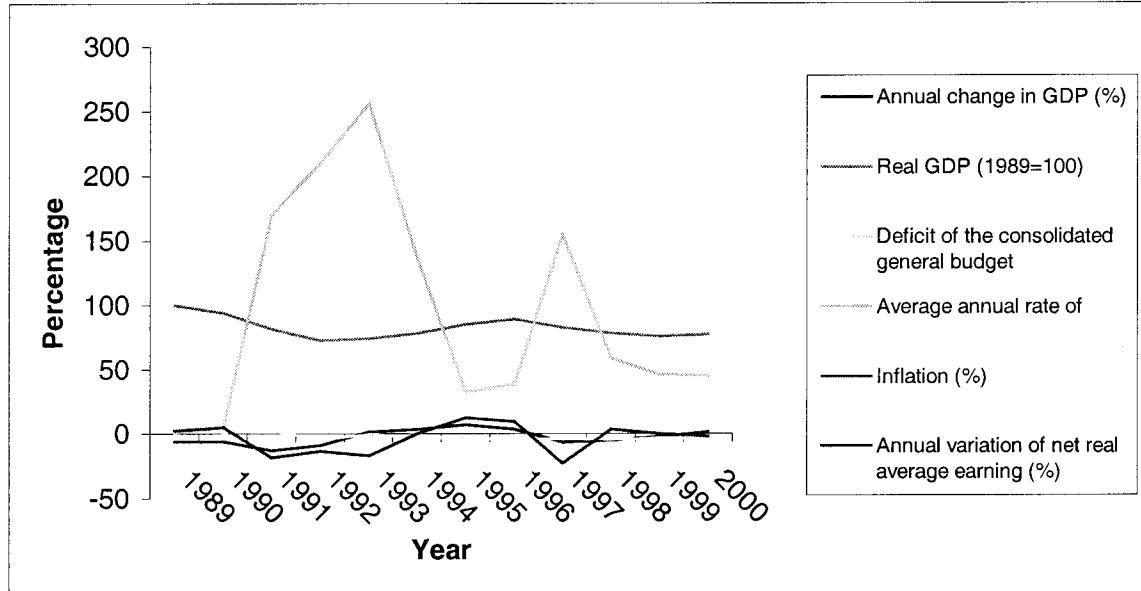
1995 was a very good year for Romania and many people thought that the country was on its way out of transition. With the highest increase in annual GDP reaching 7.1 percent and with an inflation rate falling to 32.8 percent (the lowest after many years of high inflation rate), the annual variation of net real average earning increased by an astonishing 12.6 percent. During the subsequent years, the Romanian GDP started to decline once again and in 1997 it reached the highest fall in an annual variation rate of net real average earning by 22.8 percent.

Table 3: Socio-economic indicators 1989-2000

	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
Annual change in GDP (%)	-5.8	-5.6	-12.9	-8.8	1.5	3.9	7.1	3.9	-6.1	-4.8	-2.3	1.6
Real GDP (1989=100)	100	94.4	81.5	72.7	74.2	78.1	85.2	89.1	82.9	78.1	75.8	77.4
Deficit of the consolidated general budget	8.4	1.0	2.6	-4.1	-0.4	-2.4	-2.9	-4.1	-3.9	-4.5	-3.4	-3.8
Average annual rate of Inflation (%)	1.1	5.1	170.2	210.4	256.1	136.7	32.3	38.8	154.8	59.1	45.8	45.7
Annual variation of net real average earning (%)	2.8	5.0	-18.3	-13.0	-16.7	0.4	12.6	9.5	-22.8	3.6	0.2	-2.0

Source: RIQL Database

Figure 2: Socio-economic indicators 1989-2000



Source: RIQL Database

By the year 2000, after 10 years of transition, Romania is still struggling to improve its economy. The annual change in GDP increased by 1.6 percent and the annual rate of inflation increased by 45.7 percent causing the net real average earning to fall by 2.0 percent.

As can be seen, the implementation of economic reform has failed miserably. The rate of inflation increased by so much (reaching 256.1 percent in 1993) that the purchasing power parity of currency has declined by approximately the same amount. This decline left a significant mark in the unemployment and poverty rates in the next two years. Unemployment reached 12.29 percent in 1994, and 11.71 percent in 1995.

Table 4 indicates the state of the transition from state owned and operated industries to privately owned industries. After 1989, employment decreased substantially in both the state and industry sectors while employment simultaneously increased in trade and services. The most drastic decline (75 percent) was registered in the state industries. The number of employed in 1997 was 3 million lower than 1989 showing an on-going process of restructuring in the state industries. Also, an increasing number of firms entered the trade industry, reaching 716 private firms in 1997.

Table 4: Employment by ownership and main sectors

Year	Total	Industry	Construction	Agriculture	Trade
1989-Total	10946	4169	767	3056	649
State	8059	3973	710	525	643
Private	616	40	16	464	2
1990-Total	10839	4015	653	3097	678
State	7938	3847	604	568	636
Private	960	52	23	735	38
1991-Total	10786	3817	463	3095	872
State	7111	3586	438	507	519
Private	3621	226	23	2583	351
1992-Total	10458	3301	579	3448	929
State	6174	3037	405	511	400
Private	4284	264	174	2937	529
1993-Total	10062	3030	574	3641	716
State	5195	2551	304	472	273
Private	4402	283	234	3139	367
1994-Total	10011	2882	563	3647	772
State	4688	2256	260	308	213
Private	4923	444	280	3260	497
1995-Total	9493	2714	479	3265	988
State	4194	1937	180	249	207
Private	4815	555	281	2934	695
1996-Total	9379	2741	475	3320	888
State	3829	1718	158	222	152
Private	4828	604	282	3009	645
1997-Total	9023	2450	439	3348	932
State	2633	974	78	85	75
Private	5186	727	293	3156	716

Source: National Commission for Statistics

The following three figures are a graphical representation of the data in the above table. These figures show the divergence in employment numbers between the state and private economic sectors from 1989 to 1997.

Figure 3: Total Employment by Main Sectors

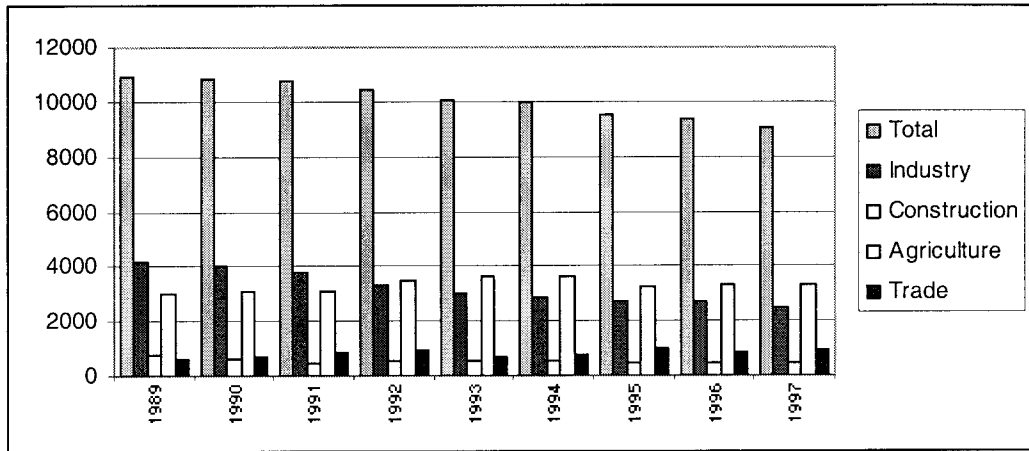


Figure 4: State Employment by Main Sectors

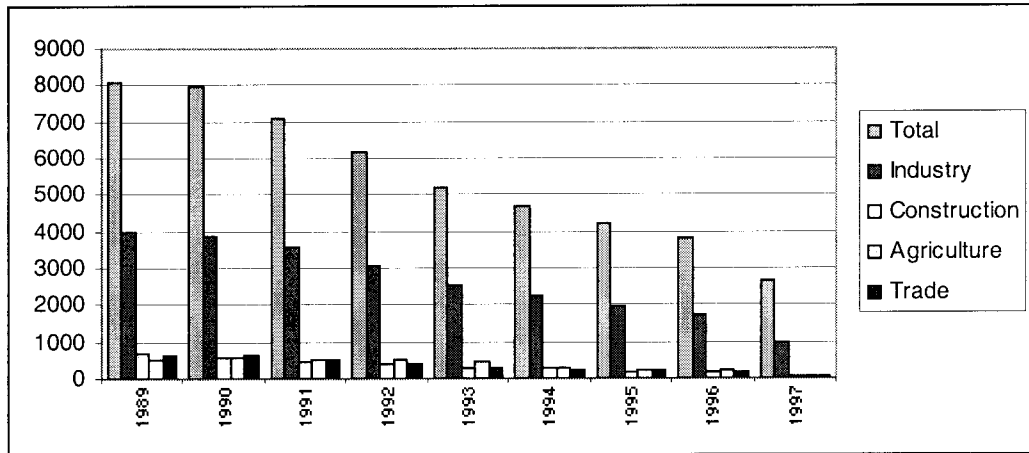
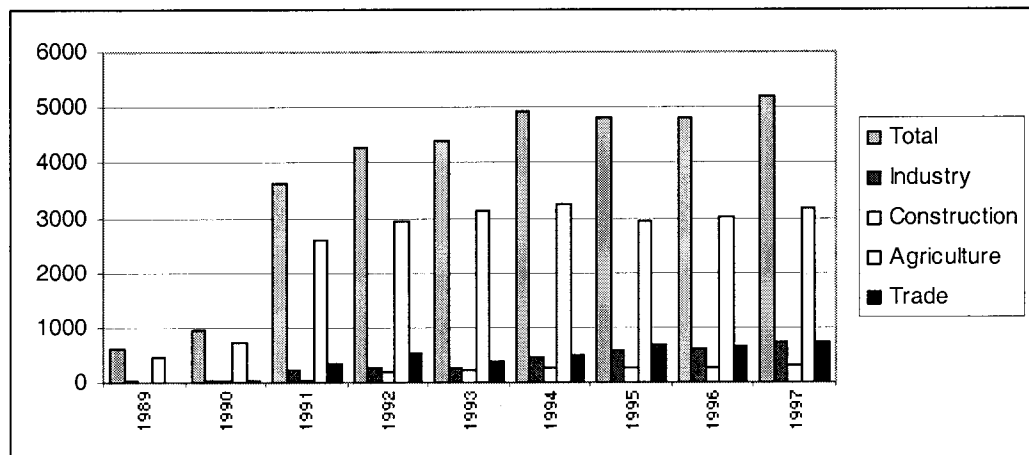


Figure 5: Private Employment by Main Sectors



In 1993, the wedge between changes in the consumption and production prices disappeared, confronting the managers for the first time with the usual market economy trade-off among wages, profits, and employment. As a result, when confronted with a demand shock, the companies diminished the rate of new hires while the decrease in employment was mainly due to retirement. At the same time, the number of hours worked diminished substantially. The decrease in employment through layoffs became significant only later (Oprescu, p.18). Most of the retirees moved into the country and started their own agricultural businesses. This explains the high increase in the agriculture industry, reaching 60.9 percent of all private firms in the industry in 1997. The transition from state to private was the most successful in the construction industry where in 1989, only 2.1 percent of the firms were private but this transition reached 66.7 percent in 1997.

It was questionable if labor had the capability to adapt to the enormous structural and macro economical changes. There are, however, important differences with regard to the evolution of employment across the various industries despite the fact that the decline in output is quite homogeneous. This suggests that the increase in unemployment does not depend on the decrease in output. The next table shows the migration of workers from one industry to another over a period of 20 years, 10 years during the central planned economy and 10 years during the following transition. Not only that there is a high change between the two economies, but there is also a major change in the last 10 years of transition. Between 1980 and 1985 the changes in the labor force among

industries were very minor, somewhere between 1-2 percent. The highest increase was in the total industry, increasing by 2 percent. Even the total labor force stayed constant, experiencing a dramatic fall only in 1999 when it fell to 8,420,000 employees. Also shown in Table 4, many people whom their lost jobs in industry turned to agriculture. This explains the increase of 11.8 percent in 1999 after a constant average rate of labor of around 28.8 percent in 1980, 1985, and 1990.

Table 5: Employment by industry

In thousands	1980	%	1985	%	1990	%	1999	%
Total Labor Force	10,350	100	10,586	100	10,840	100	8,420	100
Sylviculture	99	1.0	89	0.8	89	0.8	47	0.6
Agriculture	3,049	29.5	3,023	28.6	3,055	28.2	3,419	40.6
Total Industry	3,642	35.2	3,938	37.2	4,005	36.9	2,054	24.4
1. Mineral	213	5.8	256	6.5	259	6.5	146	7.1
2. Industry	3,344	91.8	3,580	90.9	3,613	90.2	1,734	84.4
3. Utilities	85	2.3	102	2.6	133	3.3	174	8.5
Construction	862	8.3	797	7.5	706	6.5	338	4.0
Commerce	508	4.9	493	4.7	538	5.0	756	9.0
Tourism	156	1.5	167	1.6	186	1.7	100	1.2
Public Transportation	646	6.2	655	6.2	667	6.2	310	3.7
Postal	80	0.8	82	0.8	97	0.9	95	1.1
Financial	28	0.3	27	0.3	39	0.4	69	0.8
Other services and real estate	293	2.8	328	3.1	388	3.6	238	2.8
Public Administration	78	0.8	71	0.7	88	0.8	141	1.7
Education	389	3.8	376	3.6	411	3.8	429	5.1
Health	290	2.8	298	2.8	320	3.0	277	3.3
Other	230	2.2	242	2.3	251	2.3	147	1.7

Source: Annual National Statistics

Figure 6: Employment by Industry

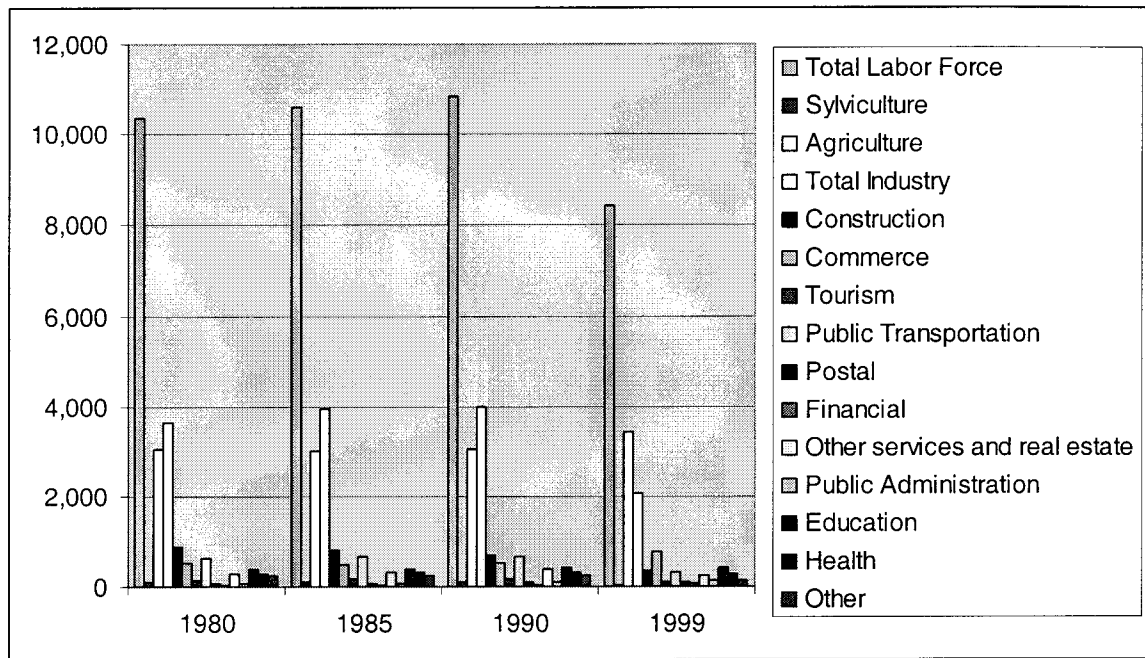


Table 5 shows the change in the labor force over a block period of five years. As can be seen, the change in employment over the period from 1980-1990 exhibits a small deviation. One reason for this is during this period, Romania was under a central planned economy with full employment (although it must be noted that the communist government, which was historically prone to exaggeration of statistical data, provided this data). Also, it can be seen that there was a decrease of employment in industry and a high increase of employment in agriculture from 28.2 percent to 40.6 percent increase. This shows that over the period from 1990-1999; the decrease in output has caused the high unemployment existent in industry. Also, the table shows that during this period, the economy shifted from one based on heavy industry to one based on an agricultural industry. Changes in the structure of employment are

significant; the decline in industry employment was substantially lower than the fall in industrial output, especially in the first years of transition. In 1997, the total number of employees decreased by 500,000 due to a mass layoffs determined by the restructuring of the “regimes autonomies” and the closures of commercial companies. This difference, as opposed to previous years, was the adjustments in the labor force generated by measures taken by the government at the macro level. Some attempts were made in order to minimize the consequences of these measures through severance pays, early retirements and facilities for the initiation of private activities. Also, it can be seen that the numbers for the totally unemployed have decreased over the years. This is due to the migration of people outside the country itself. Additionally, after one considers the total hours worked weekly, a different picture comes to light. During the socialist regime, Saturday was a working day. People worked 8-10 hours a day Monday through Saturday with no overtime pay. After the revolution, the workweek was changed to 8 hours a day, Monday through Friday, with overtime pay, which in turn has radically changed income from wages.

Besides the economic and social transition from a centrally planned economy to an economic and social system based on competition, another type of demographic transition has also been developing. The demographic transition before 1990 had a very slow trend, without any major changes in the general demographical pattern. After 1990, the dynamics of the demographic phenomena has been significantly intensified by low birth rates, high mortality rates, and high migration rates toward other developed countries. The main

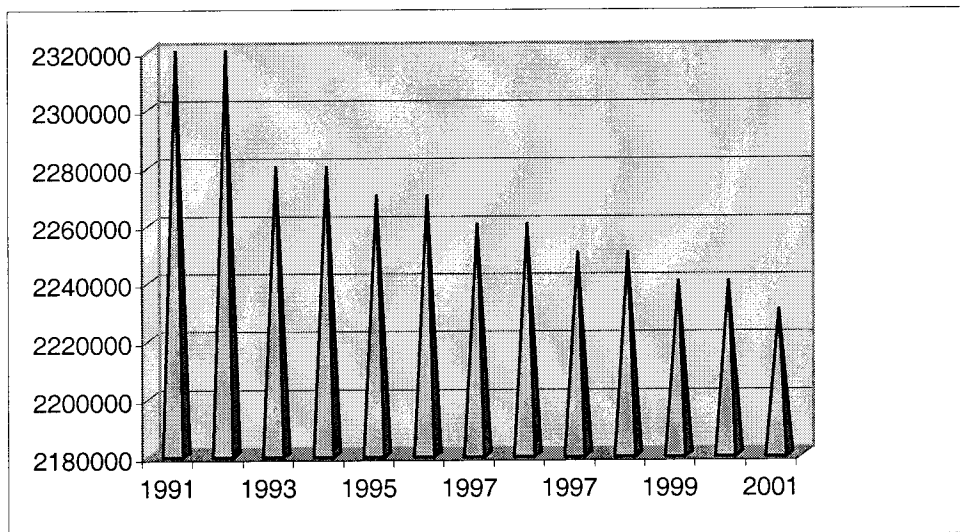
reasons for such drastic demographic changes are the economic transition and its associated outcomes, which can be identified by the following factors:

- Dramatic diminution in the living standard
 - In 2000, the purchasing power of the average wage was about one-half that of it in 1990.
 - With respect to household money expenditures, the share of the amount of expenditure for food (over one-third in the year 2000) has constantly increased while the expenditure on health costs has diminished. The expenditure on medicine and health care have accounted for only 2.5 percent of total consumption expenditure made by the average household.
 - Increasing poverty, both as incidence and extent. While at the beginning of the period at issue, the number of the poor in Romania was estimated to be less than 900,000 people; in 1998 over 7.5 million people (33.8 percent of the whole population) lived in poverty, over 2.6 million lived in extreme poverty.
- Higher instability of jobs and, consequently of incomes, and no prospects of jobs (along with the phenomena associated with youth migration)
- The functional inability of the new government structures to promote effective social security and assistance services (low budget for social insurance, for the unemployment fund, poor management of health insurance, etc.)

- Inconsistency of economic and social policy, which affects demographic dependent groups like children and pensioners. (Valentina Vasile, Ph.D., February 2002)

5.3. Unemployment Trends Caused by the Evolution of Romania's Population, 1991-2001

Figure 7: Population in Romania, 1991-2001



Source: NSI Data

Romania's population continuously diminished during the period of 1990-2001 from 32.2 million in 1990 to 22.4 million in 2001. The main reasons for the population diminution in number were migratory balance and natural growth. Migration was a permanent factor of adjustment on the size of the total population, higher in 1990 and 1991 and lower over the next period. It is important to note that population migration was concentrated on youth migration. After the revolution, Romanian borders were open for traveling and the

developed countries welcomed Romanians into their countries by opening their borders. As a result, a huge influx of Romanian teenagers, looking for better opportunities, has invaded the developed countries all over the world. When the borders opened in 1990, 96,900 people emigrated from Romania. Over the years this trend started to decrease reaching 12,600 people in 1999 as shown in Table 6.

Table 6: Number of Emigrants (1990-1999)

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
Number of emigrants (Thousands persons)	96.9	44.2	31.2	18.4	17.1	25.7	21.5	19.9	17.5	12.6

Source: based on NIS data

As can be seen from Table 6, many people left the country at the beginning of 1990s. Soon after this, many developed countries began to impose restrictions on Romanians immigration. Because of this, the numbers have decreased, but still reached 277,000 people, totaling 30.32 percent of the decrease in the total population over ten years. This type of migration has posed many questions and triggered a bigger problem that was not foreseen, i.e., that a small percentage of these teenagers came back into the workforce in Romania. Economists forecasted that Romania would have a big gap between successive generations. The youth generation is missing, giving a grim forecast on the

productivity of the country in the next 10-20 years when the next generation is to take over the economy.

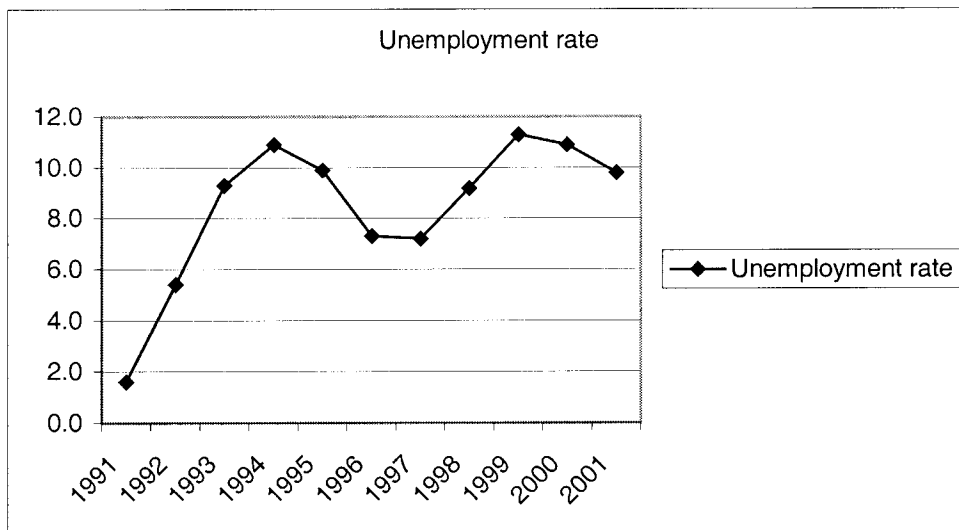
The primary reason for the unemployment increase was Romania's economic transition. It follows that the restructuring process must continue even if it leads to higher unemployment in the short term. A number of specific features of the Romanian situation are identified with the help of data from household surveys (the labor force survey and the integrated household survey). Employment and household income data show that many links exist between the large sector of farming and an urban economy in great need of restructuring. As a result of major industrial lay offs farm employment has risen since it provides seasonal occupation for youths and the source of a secondary income for many workers and pensioners.

Also, the transition from a public to private economy created job losses in large firms and job creation in private firms that are mostly small and medium sized. As the result of this, the net employment impact of restructuring appears likely to be negative in the short-term future. The reason is that loss-making large enterprises still account for a much greater share of total employment than does the emerging growth sector, which primarily consists of small private firms in retail trade and consumer-oriented manufacturing. It is noticeable that one apparent consequence of insufficient job creation in the emerging sectors is that labor mobility is relatively low. Geographic mobility is very low. When workers leave jobs in industry they typically take up other urban jobs or engage in small-scale farming. The majority of job-leavers who do not find new jobs are more

likely to leave that labor market and engage in black market commerce than to become unemployed.

The period considered in this analysis is marked by a sizable increase in unemployment rates, from 0 percent in January 1990 to a peak of 12.2 percent in February 2000. Although the recovery in the demand for labor through 1996-1998 induced a partial reversion of the upward shift, the unemployment figures at the end of the period still remained high (see Figure 2).

Figure 8: Registered unemployment rates



Source: NSI Data

Romania includes both “passive” and “active” searchers among the unemployed. Figure 2 represents all the registered unemployed but understates true unemployment. Many people that are legally unemployed are not registered because most of them work on the black market and are afraid of exposure from registering at the unemployment office. Working on the black market provides

many people more money than unemployment insurance would provide. Therefore, Figure 2 does not accurately capture the true value of the unemployment rate. Figure 2 represents an approximate measure of unemployment that is useful for pure research.

6. Analysis of the Romanian Economy through the Unemployment Metric

For this thesis, three structural unemployment models proven popular in the literature will be employed. The unemployment rates in Romania are to be examined from different angles starting at the level of technology, the level of education, and by industry structure in order to show that high structural unemployment exists in Romania. The main focus for analyzing structural unemployment will be on the level of education.

6.1. Structural Unemployment Caused by the Technological Changes.

This model is a search/matching model in which unemployment arises through the mismatch between the need for market participants and the time to make an acceptable match.

The search/matching approach can be used to model technical changes. When Romania changed its economical structure from central planned economy to a free market economy, the major change was the introduction of new technology. This will be assumed to be the primary reason for structural unemployment in Romania.

6.1. a. Model of unemployment due to skill neutral technical changes.

According to the micro-economical tools, neutral technological changes leave the marginal rate of technical substitution between labor and capital unchanged. In macro-economical terms, it can be said that if the rate of technical change starts to grow more quickly in some industries, one would expect that labor would be reallocated from the slower to the faster growing industries. According to the theory, in a simple static demand and supply framework with homogeneous workers, one will not find any change in the unemployment rate because this reallocation would take place instantly with no period of growing unemployment. But in Romania it is found that labor reallocation takes time. Pissarides (1990) build such a model where an increase in relative productivity is modeled as a relative price shock that leads to job creation in some sectors, but an increase in job destruction in other sectors. As a result, in Romania unemployment rose and caused increased layoffs in the contracting sectors.

6.1. b. Model of unemployment due to skill biased technical changes.

Since the Romanian economy and its inherent institutions are similar to the rest of Europe and as such, it is probably safe to apply results from other European countries to Romania.

A simple way of motivating unemployment in a model is to assume that institutions or social norms exist such as unions, a legal minimum wage, and downward nominal wage rigidity that prevent wages from adjusting to clear the

market. In this context, a shift in the demand away from low skilled workers will tend to increase the unemployment rate of these workers and lower the unemployment rate of more skilled workers. Because the institutions mentioned above have more impact on the wage rates of low-skilled workers, it is reasonable to suppose that in general the overall unemployment rate will rise.

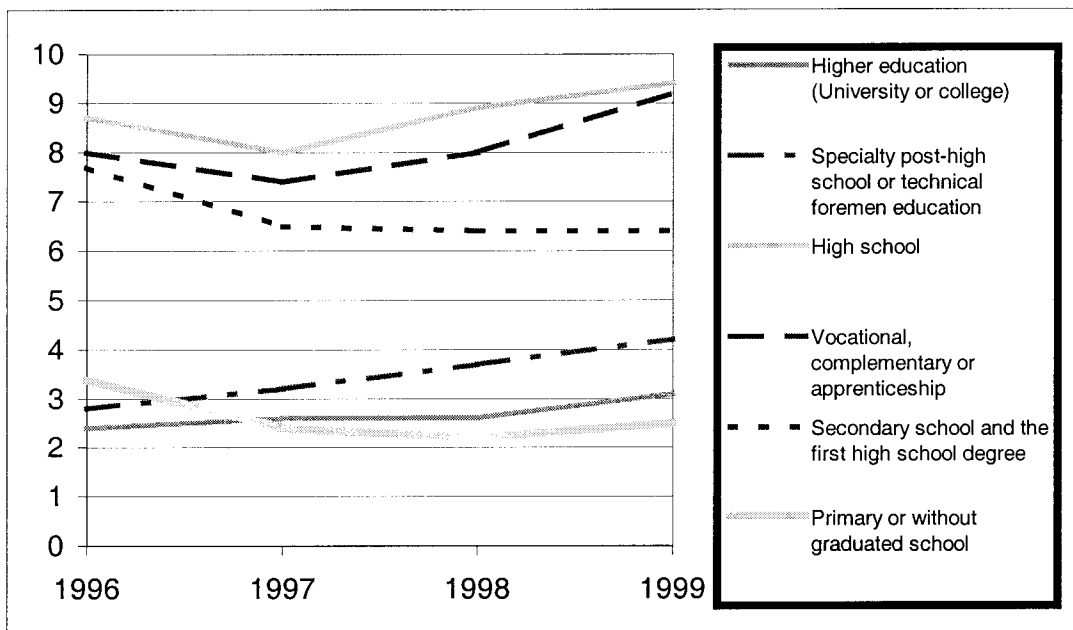
In Romania these institutions or social norms do exist. Starting with restructuration of the economy, unions started to form in order to help people go through the process. Also the minimum wage concept was introduced in order to help the workers, but in 2000 the minimum wage (per person) was equal to 50 percent of the Subsistence Level and 30 percent of the Minimum Decent Living Standard, as calculated by the Research Institute for the Quality of Life.

6.2. Model of the Structure of Unemployment by Education

Like many other countries in transition, the percentage of unemployed who are unskilled labor workers in Romania was higher than the percentage of unemployed who are skilled workers for most of the transitional period. Analyzing unemployment by level of education is then a good way to model the structure of the unemployment in Romania. As can be seen in Figure 7, the group with the lowest unemployment rate between 1996 and 1999 was the more highly educated group. The highest unemployment rate can be seen in high school and vocational, complementary, or apprenticeship graduates reaching a high of 9.4 percent in 1999. Also, 1999 was the year with the highest unemployment rate among all educational groups. It is interesting to see that the

“primary” or “without graduating school” group has a very low unemployment rate that is explained by the increased number of people that migrated to the country and started an agricultural business. The specialty post high school or technical foremen education has relatively low unemployment rates. These rates can be explained by the involvement of businesses in the training of their employees and also by the government providing the necessary classes to keep up with the job requirements of the market arena.

Figure 9: Unemployment Rate by Education 1996-1999



Source: Annual Statistic Labor Force

Many economists have researched the causes of the structure of unemployment in each type of economy from underdeveloped economies to developed economies including transient economies. As a result, this study will try to

identify which type of the structure of unemployment research paper best fits the Romanian case.

Hypothesis 1: C. J. McKenna – A Model of the Structure of Unemployment in Developed Market Economies

McKenna's model found that education reduces the incidence and possibility of the duration of unemployment for an individual. The basis of the model is educated workers that are productive in all jobs compared with the uneducated workers that are productive only in some jobs. Also, not all jobs are equally attractive to educated workers and as a result, less attractive jobs might be taken temporarily until a more attractive alternative is found. Here are some of the assumptions that McKenna made in order to explain the model:

- Education is available to all at a cost and confers two types of benefits: greater accessibility to jobs and higher earnings over ones lifetime.
- Uneducated workers may qualify for only one type of job while educated workers qualify for all jobs.

Hypothesis 2: Valentina Vasile, Ph.D. builds a model using the Romanian data.

Vasile builds an employment model on the Romanian economy, i.e., a transitional economy. In the model, the imbalance and inefficiency throughout the economy changed the employment structure. According to Vasile, the employment and unemployment structure was caused by the changes in the activity sectors. The Romanian employment structure is inconsistent with the European economy. The major shifts occurred in the distribution per sectors and branches of the employees. Vasile's model focuses on the movement of the employed and

unemployed from one sector to another, mass layoffs, and immigration. The reasoning behind the model is that unemployment rates by education are increasing or decreasing at the same rate. Contrary to McKenna's model, Vasile's model concentrates on restructuring reform, especially mass layoffs that caused the high structural unemployment found in Romania. As a result of mass layoffs, the reasoning behind the model is that employment and unemployment increase by the same percentage across sectors and by education.

6.3. The Structure of Unemployment Model:

6.3.a. A model that is analyzing the movement between the sectors and education

Building the model:

Economic model

$$\text{Dif (NSL)} = \beta_0 + \beta_1 \text{ Dif (UG)} + \mu$$

$$\text{Dif (NSL)} = \alpha_0 + \alpha_1 \text{ Dif (HS)} + v \text{ and}$$

$$\text{Dif(UG)} + \text{Dif(HS)} + \text{Dif(NSL)} = \text{Dif(U)}$$

Where, NSL = percentage of people unemployed who have completed less than 12 years of school

HS = percentage of unemployed who are high school and post high school graduates

UG = percentage of unemployed who are university graduates

U = unemployment rate

$$\text{Dif (UG)} = \text{UG} - \text{UG} (-1)$$

$$\text{Dif (HS)} = \text{HS} - \text{HS} (-1)$$

$$\text{Dif (NSL)} = \text{NSL} - \text{NSL} (-1)$$

$$\text{Dif (U)} = \text{U} - \text{U} (-1)$$

β_0 is expected to be negative and to have a meaning. It means that with no increase in unemployment rate of university graduates, some decrease in unemployment rate among less than 12 years of school group is expected.

β_1 is expected to be positive, meaning that an increase in the change in the university graduates is correlated with a positive change in less than 12 years of school group.

α_0 is expected to be negative also and to have a meaning. It means that with no increase in unemployment of high school graduates, some decrease in unemployment among less than 12 years of school group is expected.

α_1 is expected to be positive, meaning that an increase in the change in the high school graduates is correlated with a positive change in less than 12 years of school group.

Hypothesis 1: Under McKenna's hypothesis $\text{dif (UG)} < \text{dif (HS)} < \text{dif (NSL)}$.

As a result, α_1 is expected to be less than 1 and β_1 to be less than 1 and less than α_1 .

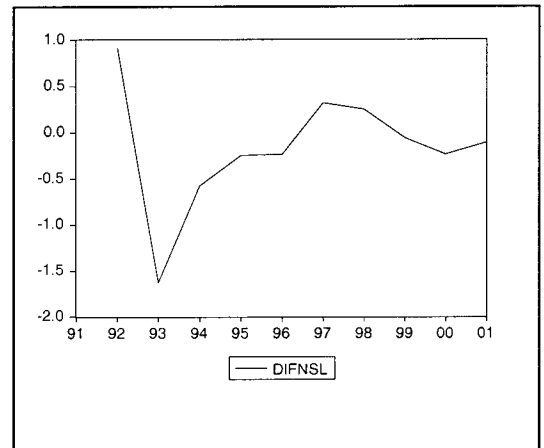
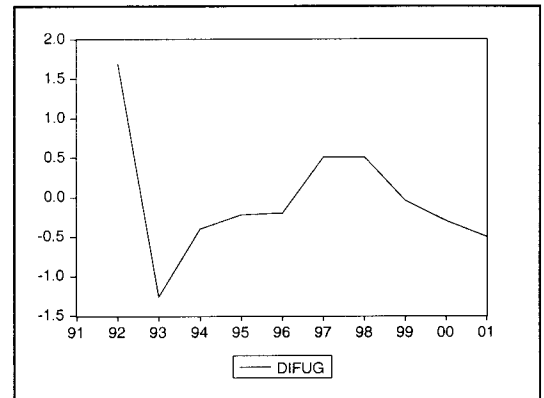
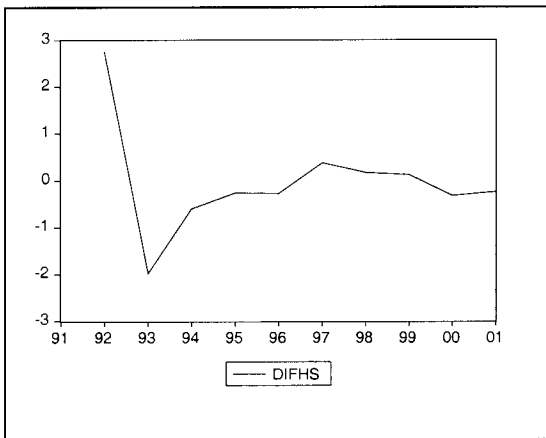
Hypothesis 2: Under Vasile's hypothesis $\text{dif (UG)} = \text{dif (HS)} = \text{dif (NSL)}$.

As a result, α_0 is expected to be equal to β_0 and equal or close to 0 and β_1 is expected to equal to α_1 and equal or close to 1.

Running the Statistical Model:

- The data used in analyzing this model is yearly data.

TSP (Trend) of the Variables



OLS Estimation Results

Least Squares Analysis: DIFNSL DIFUG	
R-squared	0.856
Adjusted R-squared	0.838
Durbin- Watson stat	0.6111
F-statistic	47.65
Prob (F-statistic)	0.000124

$$\begin{array}{l} \text{Dif(NSL)} = -0.1467 + 0.7771 * \text{Dif(UG)} \\ t \quad \quad (-1.7483) \quad (6.9029) \\ \text{Prob.} \quad (0.1185) \quad (0.0001) \end{array}$$

Testing for serial correlation:

$$H_0: \rho \leq 0$$

$$H_A: \rho > 0$$

Decision Rule:

Reject H_0 if DW statistic $< d_L$

Don't reject H_0 if DW statistic $> d_U$

Inconclusive if $d_L \leq \text{DW statistic} \leq d_U$

Because the observed DW statistic of 0.6111 is lower than d_L of 0.81 and lower than d_U of 1.07, as a result reject H_0 , meaning that there is a strong correlation between the unemployment rate of university graduates and the unemployment rate of less than 12 years of school group.

Least Squares Analysis: DIFNSL DIFHS	
R-squared	0.856
Adjusted R-squared	0.837
Durbin- Watson stat	0.5933
F-statistic	47.25
Prob (F-statistic)	0.000128

$\text{Dif(NSL)} = -0.1484 + 0.5211 \cdot \text{Dif(HS)}$
 t (-1.7627) (6.8740)
 Prob. (0.1160) (0.0001)

Testing for serial correlation:

$H_0: \rho \leq 0$

$H_A: \rho > 0$

Decision Rule:

Reject H_0 if DW statistic $< d_L$

Don't reject H_0 if DW statistic $> d_U$

Inconclusive if $d_L \leq \text{DW statistic} \leq d_U$

Because the observed DW statistic of 0.6111 is lower than d_L of 0.81 and lower than d_U of 1.07, as a result reject H_0 , meaning that there is a strong correlation between the unemployment rate of high school graduates and the unemployment rate of less than 12 years of school group.

After the regression was run, it can be seen that β_1 is less than 1, being 0.7771 and it can also be seen that α_1 is 0.5211, less than 1 and also lower than β_1 . The results does not support McKenna's hypothesis or Vasile's hypothesis for modeling the structure of unemployment by education, because, $\alpha_1 < \beta_1$.

If the yearly difference in UG increases by 1, then the yearly difference in NSL is increasing by .7771 percent. According to McKenna, unemployed university graduates are taking lower skilled jobs till they find a more suitable job for their education but as found in this model the hypothesis does not hold.

If the monthly difference in HS increases by 1 percent then the monthly difference in NSL is increasing by 0.5211 percentages; According to McKenna's model it means that if more unprofessional jobs are available, then more educated people are taking less preferable jobs, as a result the low percentage of university graduates unemployed. The same as above McKenna's hypothesis does not hold in this case either.

6.3.b. A model that is trying to analyze the relationship in the structure of the Romanian economy to a change in employment by education.

One solution to the high correlation coefficients (proved in the previous regression model), is to run the regression showing the relationship between the GDP and UG, HS, and NSL taken individually.

Where, UG = yearly unemployment rate of university graduates

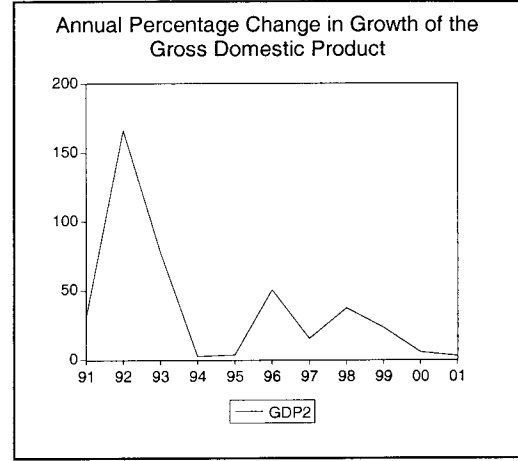
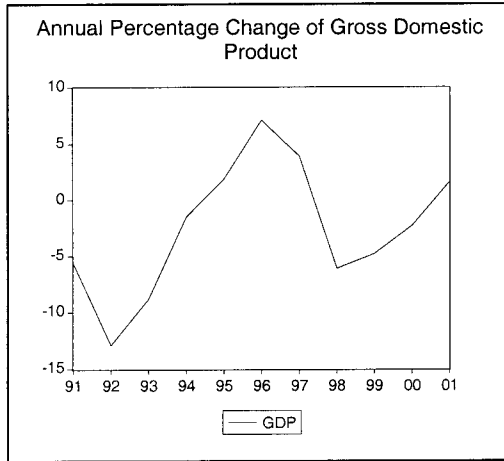
HS = yearly unemployment rate of high school graduates

NSL = yearly unemployment rate of less than 12 years of school group

GDP = yearly Gross Domestic Product

GDP² = yearly squared growth in Gross Domestic Product

TSP (Trend) of the Variables



- The data used to build the statistical model is yearly data.

Building the model

Economic model and Statistical Model

a. $UG = \beta_0 + \beta_1 GDP + \beta_2 GDP^2$

$$UG = -0.01145 - 0.0556 * GDP + 0.0049 * GDP^2$$

t	(-0.1039)	(-2.7548)	(2.0037)
Prob.	(0.9197)	(0.0249)	(0.0801)

Least Squares Analysis: UG GDP GDP^2	
R-squared	0.8069
Adjusted R-squared	0.7586
Durbin- Watson stat	1.9943
F-statistic	16.7136
Prob (F-statistic)	0.0014

$$b. HS = \beta_0 + \beta_1 GDP + \beta_2 GDP^2$$

$$HS = -0.1388 - 0.0467 * GDP + 0.0124 * GDP^2$$

t	(-1.1039)	(-1.9794)	(4.3623)
Prob.	(0.3120)	(0.0831)	(0.0024)

Least Squares Analysis: HS GDP GDP^2	
R-squared	0.8069
Adjusted R-squared	0.7586
Durbin- Watson stat	1.9943
F-statistic	16.7136
Prob (F-statistic)	0.0014

$$c. NSL = \beta_0 + \beta_1 GDP + \beta_2 GDP^2$$

$$NSL = -0.1007 - 0.0692 * GDP + 0.0081 * GDP^2$$

t	(-0.6211)	(-2.3266)	(2.2607)
Prob.	(0.5518)	(0.0484)	(0.0537)

Least Squares Analysis: NSL GDP GDP^2	
R-squared	0.8069
Adjusted R-squared	0.7586
Durbin- Watson stat	1.9943
F-statistic	16.7136
Prob (F-statistic)	0.0014

The estimates are statistically significant even at 1 percent and the estimators are BLUE and the reported t, F, and LM statistics are valid.

In order to analyze completely the models presented above it is necessary to use the average growth in GDP over 11 years used in the model of -2.5%. Using the average growth in GDP would help analyze the model including GDP and GDP².

$$\text{a. } dUG/dGDP = d\beta_0/dGDP + d\beta_1GDP/dGDP + d\beta_2GDP^2/dGDP = \beta_1 + 2*\beta_2GDP = (-0.0556)+2*(0.0049)(-2.5) = \mathbf{-0.0801}$$

$$\text{b. } dHS/dGDP = d\beta_0/dGDP + d\beta_1GDP/dGDP + d\beta_2GDP^2/dGDP = \beta_1 + 2*\beta_2GDP = (-0.0467)+2*(0.0124)(-2.5) = \mathbf{-0.0712}$$

$$\text{c. } dNSL/dGDP = d\beta_0/dGDP + d\beta_1GDP/dGDP + d\beta_2GDP^2/dGDP = \beta_1 + 2*\beta_2GDP = (-0.0692)+2*(0.0081)(-2.5) = \mathbf{-0.1097}$$

After running the regressions the findings show that both hypothesis are rejected, McKenna's ($|UG/GDP| < |HS/GDP| < |NSL/GDP|$) and Vasile's ($|UG/GDP| = |HS/GDP| = |NSL/GDP|$) because $|HS/GDP| < |UG/GDP| < |NSL/GDP|$

In conclusion, the first model presented above does not follow any hypothesis presented, McKenna's or Vasile's. Also, the second regression presented above does not follow any hypothesis, McKenna's or Vasile's. As mentioned at the beginning of this study, the reason for this discrepancy is that the transition the county is currently experiencing does not depend solely on the structural changes within the economy, but depends also on the people's way of thinking and how quick new ideas are embraced by the Romanian people.

6.4. Structural Unemployment by Industry

In the twelve years of transition, the employment structures underwent major changes. Some of these were justified by the economic reform that included the transition of industries ownership from the government to private. The economic reform has resulted in the passage of a wide variety of legislative actions that have affected virtually every industrial sector causing a diminution in the employment in industry and an increase in the employment in both the services and agriculture sectors. Therefore in late 2000, the employment reached 41.4 percent in agriculture, 27.3 percent in industry, and 31.3 percent in services. In agriculture, the employment growth was mostly comprised of third age people⁶, of which many were women and people of about 50 years and over who were laid off from industry and had no opportunity for re-employment and returned to rural area as an alternative to poverty (the cost of living in rural areas is lower and the household farm production satisfies many of their needs). Another category that moved towards rural areas were the young commuters that once they were laid off and could not find a job in the areas or towns that they used to work.

It is very important to mention the hidden unemployment in the agriculture sector. Because of the mass layoffs and the low possibility of finding a new job people have moved from the urban area to a rural area and started a small agriculture business used primarily to support their families and not for profit. As a result of that the government does not have an accurate number of people unemployed or employed. Also it is important to mention the black market

⁶ Third age people meaning elderly people (50 years and over)

existent in Romania. Many of the unemployed are taking the advantage of the government for not being aggressive regarding the black market formed for the past 10 years in Romania. Most of them have social assistance given by the government but also they work on the black market, a market that is increasing every day. As a result the government cannot keep track of which of the unemployed are actually hired on the black market.

The Romanian economy cannot be analyzed fully as long as the real data is not available, and the data used in analyzing the structure of unemployment by industry is biased.

7. Proposed Solutions to Structural Unemployment

Since 1990, there has been a sharp increase in unemployment, combined with the abrupt decrease in real income. Since this time, Romania had adopted a series of programs designed to assist the unemployed and other disadvantaged persons. These programs combine social insurance and means-tested income support with active policies aimed at increasing labor demand for youths, improving matching by providing retaining for many categories of unemployed individuals, and stimulating job creation through credits to businesses (Earle, Pauna, 1998). The following are some of these programs:

1. The most important unemployment policy adopted by the Romanian government is the Unemployment Benefit (UB) Program, founded by Law No. 1 in 1991 "Concerning the Social Protection of the Unemployed

and their Professional Re-Integration”. It was amended twice (Law No.72 in December 1991 and Law No.86 in July 1992). The maximum duration for benefit receipt was initially 6 months but prolonged to 9 months in December 1991. After 9 months on the UB, the unemployed could apply for a Support Allowance benefit, a means-tested program. The maximum duration for SA is 18 months.

2.

Table 7: Social Benefits as percent of the minimum wage

	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
Average pension (state social insurance)	71.0	75.6	73.3	95.0	118.9	122.0	129.6	127.8	139.2	122.5	133.0	121.7
Unemployment benefit	--	--	69.8	64.4	73.7	103	95.8	97.9	135.8	106.4	138.9	111.2
Unemployment allowance	--	--	--	43.5	42.5	41.1	59	52.1	53.2	48.3	62.2	45.9
Social Aid	--	--	--	--	--	--	60	46.4	39.3	41.1	38.6	27.2

Source: RIQL Database

As shown in the Table 8, Unemployment Allowance was provided to the unemployed in 1992. When Unemployment Allowance was introduced, 43.5 percent of the people that finished their unemployment benefit were taking advantage of the program. In 1995, the Romanian government introduced the Social Aid as a new means-tested social assistance program targeting low-income families and individuals. The law regulating the program, “The Social Assistance Law” No. 67/1995, supplemented by a 1996 government decision, stipulates that families with a net monthly income below a certain threshold (a function of the

number of persons in the respective family) are entitled to some additional income, namely the difference between the threshold and the actual per family net income. (Earle, Pauna, 1998).

3. For the educated people, the Romanian government a different type of unemployment aid or other types of programs. The programs were introduced to help skilled people. First, in 1992 the government introduced the wage subsidy program for new graduates, called the Wage Subsidy Program for New Graduates. In the first year of the introduction of the program in 1992, 15,895 newly graduates had been hired by July 1, 1993, less than 10 percent of all 1992 graduates. Out of 15,895 of those hired, 97.7 percent were secondary school graduates and only 2.3 percent were university graduates. It was an important aid for the youths. For nine months, companies receive the same amount in subsidy as the unemployed graduate would have received in unemployment benefits: 60 and 70 percent of the minimum wage for secondary school and university graduates, respectively. The number of graduates hired through the wage subsidy program has almost double. It still represents only 15-20 percent of total school graduates. Also, the share of university graduates is lower than at the beginning of 1990s, while the share of vocational graduates increased sharply after 1994. Overall, both in terms of the number of successful matches and in terms of expenditure, the effect of wage subsidy program for graduates is relatively minor.

Table 8: Number of new hires under the wage subsidy program for recent graduates

Level of education		1993	1994	1995
University				
	State	7006	3806	4558
Technical	Private	1255	585	617
	State	1311	804	1041
Economics	Private	195	71	121
	State	1897	1813	470
Medicine	Private	26	5	58
	State	258	218	1359
Education	Private	89	69	85
	State	7226	12238	8418
Secondary School	Private	838	1075	630
	State	1364	14995	10482
Vocational Schools	Private	93	930	2517
	State	19062	33875	26328
Total Hires	Private	2496	2735	4028
TOTAL		21558	26610	30356

Source: Ministry of Labor and Social Protection

Table 9 presents the outcomes for new hires under the wage subsidy program. Annual figures are provided until 1995. An overwhelming majority of the matches occur in the state sector (state sector is still a primary employer) although the private sector recruits more and more through the program but it is still minor (private sector is composed of small family owned businesses).

4. A related wage-subsidy type-of-measurement involving the payment of wages out of the Unemployment Fund was the so-called "technical unemployment" and it was introduced when some enterprises were forced to close due to a lack of energy supply. The unemployed wages were paid out of the Unemployment Fund.

5. One social program that deals with the retired people is the social insurance pensions. This is important due to the drastic increase in the number of pensioners. The pension program in Romania is run entirely by the state since private funds are practically non-existent for this case. The system is regulated by the “law concerning the state social insurance pensions and social assistance” adopted during communism and supplemented by a series of new laws introduced after the fall of communism. The law stipulates that persons with a total length of service at least of 30 years for men and 25 years for women are entitled to pension benefits with a minimum retirement age of 62 years old for men and 57 year for women. However, if requested some people may retire at 60 for men and 55 for women. Also, because of the restructuring process, the Romanian government proposed many laws for early retirement. It was implemented through different calculations of length of service according to the occupation of the individual. Occupations are grouped into three categories under the Romanian work code and they are correlated with the difficulty degree of performing the job. With the number of pensioners increasing and the number of contributors decreasing, it is not surprising to see a continuous deterioration of the social insurance budget.
6. Vocational training is another solution to structural unemployment. It consists of training and re-training courses that were introduced in Romania in the early 1980s. This type of assistance gives the

opportunity for the unemployed to improve their work skills. The professions, in which the unemployed are to be trained, are established according to documentation or specialized studies on the demand for labor or the request of the unemployed/other interest persons (Stroie, 1999: 435).

According to Law 228 (April 1991), all registered unemployed, including recipients and non-recipients, are eligible for up to two retraining courses. Each course can last up to six months. If the recipients completed contracts with the labor offices, they have to repay the cost of training if they refuse two job offers. The participation rate for these programs is very small probably because the labor offices offer training that corresponds poorly with the structure of the labor demand. It has been proposed that unemployed and firms should participate and submit proposals for new training courses.

8. Future Plans for Romania that are Designed to Help Decrease Unemployment

In terms of future development, the Romanian Government has issued a medium-term development plan of the Romanian economy. Several scenarios have been considered – including the use of the econometric models – that differ in terms of the depth and duration of the structural changes in the transition as well as in terms of the applicable macroeconomic policies.

- There are some key assumptions associated with the restructuring scenario. The key presented by the government on December 19th, 2001 is the completion and consolidation of the institutional framework of a market economy by means of a long-lasting clarification of ownership rights and continuing privatization; ensuring the functional consistency and stability of the legal framework; completion of banking sector reform; clear-cut regulation of the natural monopoly regime and the effective fight against economic monopolies; the significant improvement of the business environment.
- A certain growth of the employment rate was taken into account. The assumption of early retirement was excluded.
- The orientation of trade policy towards export promotion is outlined by the systematically higher growth rate of exports compared to the growth rate of GDP.

The restructuring scenario in terms of unemployment also predicts a reversal of the current trend starting 2001. Further economic growth after 2004 will make this indicator come closer to the normal level in a functioning market economy, for that the country has to alleviate the emigration pressures.

Table 9: Unemployment and real wage

	2000	2001	2002	2003	2004
Unemployment rate (end year, %)	13.3	11.7	10.5	10.2	9.1
Unemployed (thou persons)	1290	1124	995	943	822
Net real wage (%)	2.9	4.9	5	4.9	5.2

Source: Romanian Chamber of Commerce

The increase in labor productivity – as a result of an improved business environment, and better firm management – is associated with a relative increase in the real wage. The numbers provided by the government do not seem unreachable with an unemployment rate of 9.1 percent in 2004 and net real wage growth of 5.2 percent. These numbers are realistic as long as inflation is kept under control, but unfortunately the government did not include any type of analysis on the inflation analysis forecast.

9. Conclusion

This thesis proposed to explain the influence of structural unemployment on the economy. The best way to show this is through an analysis of the unemployment by education. Romania's structural unemployment does follow the economic developed countries model. Because people are not as receptive to the new economy changes and the influx of information Romania follows a different structural unemployment trend from the ones mentioned by McKenna or Vasile.

It is important to realize that Romania has high structural unemployment that can be devastating for the future of the country. It is crucial for the Romanian government to start finding and implementing solutions to the problems caused by its transition or the country will never complete its economic development. This may have caused many young and educated people to leave the country looking for new opportunities. This would only serve to further hinder Romania's transition and development. It was decided to concentrate on the

unemployment by level of education because education is currently one of Romania's strongest assets and this may be the best resource Romania has to develop its economy. It is also evident through this research that Romania does not know how to take advantage of the skills of its working force. Many of the highly skilled people find themselves out of a job with the introduction of new technology because of the different requirements of the job market. Another major inhibitor to Romania's growth is that the labor force is composed of people working most of their lives under central planned economy. This leaves these workers caught in the middle of a dynamic environment with obsolete skills.

It is clear that the first step in easing the transition is for Romanians to understand the difference between the communist era and the new democratic era. Continuous learning and training is the only solution to keep up with the labor requirements on the market.

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NOTE:

The data researched about Romanian economy was gathered from different articles from the Romanian Annual Statistic data released each year by the Romanian government, articles written by different economists, and articles released by the World Trade Organization, WoPEc Journal, Business Central Europe Journal, World Bank Offices, Romania, and Romanian news on line: <http://stiri.ROL.ro>. It is believed that the data provided above and collected from all the institutions mentioned it is not the real data. The declining real incomes over the years have forced people to search for alternative to gain income. More than 25 percent of the retired persons have another income in addition to their pensions, although only 5 percent of them registered employed. (M. Stanculescu 2001). Also the Public Opinion Pool (CURS, 1999) has found an underground (informal) economy, called the "black market", which tripled in size compared to the official economy. Informal economic activities most of the times provide higher incomes than working in the official economy. The government does not have accurate numbers regarding how many people work on this market. In their research papers John S Earle and Catalin Pauna mentioned many times how difficult it was to get any type of data or information from the Ministry of Labor.