

**Dissertation Proposal**

**Growth, employment and labor productivity:**  
**A long run analysis for the case of Argentina**

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## **I. General Problem and background in the field**

Over the past centuries, economists have attempted to understand the major sources of long run economic growth and their studies have been focus not only on unveiling its main determinants, but also on the way in which growth affects and transforms the production process and the economy. Within this second group of studies, and especially since the economic stagnation of the 1970s, one of the topics that has attracted more attention in the literature is the analysis of how economic growth impacts on employment and which are the determinants of this relationship.

The aim of this dissertation is to analyze the long run relationship between economic growth and employment for the case of Argentina. In order to do that, I will study not only the historical relation and evolution of these variables throughout the period 1956-2006, but also, by building long run econometric models and through forecasting analysis, I will investigate the future evolution of the relationship between variables under different scenarios.

Thus, the dissertation will be structured in two consecutive steps. In the first one, I will develop an Autoregressive Distributed Lag (ADL) model on labor productivity in order to unveil the hidden determinants of the relationship between growth and employment for the case of Argentina. Labor productivity is the natural link between growth and employment and it basically shows how the demand of labor reacts to economic growth. Once the demand side has been obtained, the second step of the dissertation will be devoted to evaluate how the relationship between growth and employment would evolve under different growth scenarios. In order to do that I will study the long run evolution and determinants of labor supply by building an ADL model, and then we will combine the demand and supply sides through forecasting analysis to evaluate how growth and employment would relate to each other in future scenarios.

In this context, the guiding questions at the center of the dissertation are: What is the relationship between growth and employment? How it has evolved in the last fifty years for the case of Argentina? Which are the determinants of the

relation between these variables? How economic growth impacts on employment? What is the role of labor supply in this problem? Is it true that economic growth always has a positive impact on employment?

In what follows, I will briefly present the topics discussed in the three chapters of this dissertation.

### **I.I. Growth and employment: An analysis through labor productivity**

Labor productivity is one of the main concerns of economists and politicians and the amount of research on the topic has grown exponentially in the last forty years, especially in studies related to the economic growth literature. In economic terms, labor productivity is a single measure productivity which relates output to labor. At the aggregate level, labor productivity shows the amount of goods and services that a country can obtain given a certain quantity of labor and its analysis can be realized by either a microeconomic or a macroeconomic perspective. The microeconomic approach is centered on the way in which a firm (or group of them), classified according to certain parameters (such as size, market share, sales share or nationality), contributes to economic growth and employment in a specific sector of the economy. This approach has the advantage of being able to present detailed explanations of the characteristics of the firms and sectors. However, its ability to explain the overall functioning of the economy and the whole process of accumulation is limited to the specific sector under analysis.

On the other hand, it is possible to study the problem from a macroeconomic perspective. In this case, the purpose is to examine the evolution of the variables under analysis for the whole economy in order to identify the general path of the economy. This approach is interested in looking at economy-wide phenomena; and as a consequence, the results give the opportunity to identify general relations and problems. Therefore, since our goal is to analyze the relationship between growth and employment at an aggregate level, we will base our study on the macroeconomic perspective.

But before entering into more detail of this approach, it is important to make some clarifications regarding the concept of labor productivity. If we study it as the ratio of outputs to the inputs of labor, there are basically three extended ways of measuring. The first two ways are the most extended ones and basically differ in the way in which labor is measured. They are:

$$(1) \text{ Labor productivity} = \text{Output} / \text{Employed Population}$$

or

$$(2) \text{ Labor productivity} = \text{Output} / \text{Hours worked}$$

As we can see, in (1) labor is measured by the sum of workers of the economy, while in (2) the amount of goods and services produced are measured by the sum of hours worked by the employed population. Due to the lack of information in Argentina regarding the quantity of hours worked, in the current dissertation I will use definition (1). Besides these two methods, the third way of measuring labor productivity is by an aggregation method for inputs and outputs using index numbers, and the more commonly used are the Divisa, Tornqvist and Diewert indexes.

Labor productivity has been widely analyzed for the case of Argentina and since our goal is to perform long run analysis of the variables, two elements appear to be needed. On the one hand, it is important to review the elements that empirically have been used (not only in the Argentine literature) to explain changes in the level of productivity and its growth path. The task is not an easy one; basically, because everything that could potentially affect labor market conditions or production, could affect labor productivity. However, from the review of the literature, we can group labor productivity determinants in three main groups. The first one takes into account labor market variables, which basically include human capital, education, flexibility of labor, wages, capital to labor ratio, measurements of knowledge, population growth and management skills and quality. The second groups of studies believed that the main determinants of labor productivity can be explained by market variables. The list of those determinants are the evolution of the terms of trade, exchange rate, resource allocation, economies of scale, intensity of resource use, competitive

pressures, R&D expenditures, regional factors and externalities. Finally, there is a vast group of authors that believe that the key issues to explain labor productivity's evolution is provided by institutions variables, such as government institutions, transaction cost with the government, corruption, and legal and human environment.

The second element relevant in order to perform long run analysis of labor productivity is to examine the Argentine specific literature on the topic. Regarding it, the vast majority of the studies on productivity are related to the analysis of total factor productivity which is a multifactor productivity measure that relates a measure of output to a bundle of inputs (Meloni (1999), Maia and Nicholson (2001), Coremberg (2004a), and Coremberg (2005b) among others). However, in spite that the group of studies that deal with labor productivity is relatively small, its literature can be classified in three main categories: labor productivity analysis; long run analysis and labor productivity determinants.

Most of the Argentine literature on labor productivity corresponds to the group of studies that include labor productivity in its analysis as an important category that has to be taken into account when analyzing labor market and macroeconomic issues. Including in this category we can point out the studies performed by Tokman (1986), Frenkel y Gonzalez Rosada (1998, 1999), Altimir and Beccaria (1999), Katz (2000), Katz and Stumpo (2001), ECLAC (2005) and Ministerio de Trabajo (2005). According to this literature, the evolution of labor productivity was due to labor rationing in the 80s, and to the increase in production, decrease in employment, evolution of productive sectors, the access to foreign capital goods, concentration of the markets, evolution of relative prices, the effect of the policies applied, the adoption and use of new technologies and monetary policies during the 90s.

The second category in which we can classify the Argentine literature is the group of studies that analyzes labor productivity in the long run. In this respect we can only cite the studies from Weller (1998) and Féliz and Perez (2004). Both studies had different scopes and unit of analysis (Weller studied Latin America and the Caribbean for the period 1950-1990, while Féliz and Perez

analyzed the conflict between workers and capitalists for the period 1930-2001 in Argentina), and the incorporation of labor productivity in the long run analysis, is mainly descriptive and use the long run perspective to situate their findings in a specific historical context.

Finally, the third category of studies on labor productivity in Argentina is the ones that explicitly try to unveil and explain labor productivity determinants. It is composed by the studies of Diamand (1973), Gelbard (1990), Stallings and Peres (2000) and Coremberg (2005a). With important differences among them, these authors conclude that labor productivity has the following determinants: the availability of natural resources; the evolution of capital stock; the age, health and education of the labor force; technological change; public sector activities; the industrial and social organization; the macroeconomic policies, stability and power of the institutions; size and composition of the market and firms; countries efficiency regarding the use of resources; management skills and the import coefficient.

From this brief review of the Argentine literature on labor productivity we can derive the following conclusions. First, the analysis of labor productivity is usually performed within the scope of labor market analysis in which its role is as equal as important as many other variables. Second, the period under analysis of most studies is usually the short or medium run (less than 15 years with only two exceptions). Third, the studies that analyze labor productivity in the long run usually analyze Argentina as a member of a vast group of countries (Weller (1998)), and when they focus on Argentina (such as Féliz and Perez (2004)), they don't investigate the determinants of labor productivity. Finally, regarding the studies that inquiry on labor productivity determinants, they relate (in different degrees) the evolution of labor productivity with market conditions, the availability of resources, labor force characteristics (skills, age, education, etc.) and macroeconomic and public policies.

As we can see from this review, there is a lack of studies that combine long run analysis with the study of the determinants of labor productivity for the case of Argentina with the aim of measuring the impacts that economic growth has on

employment. Moreover, there are no studies of labor productivity using Autoregressive Distributed Lag models.

## **I.II. Labor Supply**

Once that the historical evolution of the relationship between growth and employment has been clarified, the second goal of the dissertation is to predict how the relationship between these variables would evolve in the future under different growth scenarios. In order to do that, we need to estimate the long run evolution of labor supply which will allow us to complete our view of the labor market.

Labor supply has been a central issue in the last decades of economic research, since it is now clear that our understanding of its dynamics provides crucial information to face and predict employment problems. In Argentina, labor force is defined as the population above 14 years old that is actively employed or looking for a job. Thus, it is the sum of the employed and unemployed population which together with the participation rate (the ratio between the labor force and the overall size of their cohort -national population of the same age range-) constitutes the main indicators of labor supply.

The economic literature on the determinants of labor supply is an old one, and during the past thirty years its worldwide literature has multiplied many times over as labor supply has become the most active area of all labor economics (Pencavel, 1986, p. 3). However, most of its literature is rooted into the neoclassical framework which assumes that individuals optimize its decisions by dividing its time between working hours and leisure time. According to this theory, labor market functions exactly as any other market, and the forces of supply and demand jointly determine price (in this case wage) and quantity (the number of employed population).

The Argentine literature on labor supply has been growing in the last thirty years and it is structured around four main topics. The first one corresponds to the analysis of female labor supply. This group of studies, such as García de Fanelli

(1989 and 1991), Wainerman (1979), Montuschi (1996), Cerrutti (2000) and Rincón de Muñoz (2007) started at mid seventies with the growing of the service sector in the economy and the rise in female participation on the labor market. The goal of these studies has been to understand how certain characteristics of female labor force influence its insertion in the labor market; and it has been centered in the determinants of female labor supply, the impact that changes in economic structures have on female participation on the labor market and the distribution of the female labor force in the economy.

The second group of studies that deal with labor supply in Argentina corresponds to studies that focus on specific characteristics of the labor force and study its evolution and composition in a certain period of time. Most of these studies, such as Beccaria et. al. (1994), Consejo Empresario Argentino (1997) and Mondino et. al. (1998), analyze labor supply focusing on personal characteristics (as age, marital status, sex, level of education, poverty, access to social benefits, and family structure) or specific geographical regions (CEA, 1997 and Mondino et. al., 1998), being the Great Buenos Aires the one more commonly studied. Due to the approximation, the conclusions of these studies are only valid to specific segments of the labor supply.

The third group of studies of the Argentine labor force relates its evolution and composition to the one followed by many Latin American countries. The goal is to compare and identify regional patterns of labor supply that could provide some inputs on how to approximate specific problems that the region is facing. These studies, usually performed by researchers from international organizations (Jatoba, 1988; Duryea et. al., 1998; and Weller, 1998), study labor supply as part of a more comprehensive study on the evolution of Latin American labor markets; and due to the lack of comparable data, the analysis is focus on trends descriptions in which specific years are selected as representative of the general evolution.

Finally, there are two studies which specifically focus on establishing the main determinants of labor force and they build models to explain its behavior. The first one was conducted by Pessino (1997) which using data from Household

Surveys estimated the labor force for Great Buenos Aires for the period 1974 to 1995 and found that its evolution depends on the level of income and the evolution of wages. The second study was made by Perez et. al. (2001), which using panel data for Great Buenos Aires for the period 1989 to 2000 found that labor force depends on the level of unemployment, education, age, sex and family configuration.

From the review of the Argentine literature on labor force we can derive the following conclusions. First, there is an important lack of studies seeking to unveil the determinants of labor supply. Second, the period under analysis of most studies is usually the short or medium run (less than 15 years with only two exceptions). Third, the studies that tries to estimate and model labor supply determinants focus on Great Buenos Aires as the main area under analysis. Fourth, there are no studies on labor supply that use Autoregressive Distributed Lag models. Finally, long run analysis of labor supply for the case of Argentina is only undertaken as part of a vast group of countries and as part of a more general labor market analysis and the long run evolution is depicted selecting specific years as benchmark.

As we can see from this brief review of the literature, there is a lack of studies that combine long run analysis, with the analysis of the determinants of labor supply, which uses Autoregressive Distributed Lag models.

### **I.III. Forecasting**

Economic forecasting could be defined as the process of making predictions about the economy in the future. In spite that the activity is as old as organized economic activity, modern forecasting got its impetus around the 1930s with the Great Depression in an effort to understand the economic determinants of the dynamics of the capitalist system. From these years to present, many forecasting techniques have been developed.

In the first two chapters of this dissertation we have developed two ADL models that together explain the long run behaviour of labor productivity and labor

supply in Argentina for the period 1956-2006. Thus, the aim of this last chapter is to put together these two ADL models in order to forecast how labor productivity and labor supply would evolve in the next years in Argentina with the aim of predicting how the relationship between growth and employment would evolve according to three different growth scenarios of GDP. The first one will be called *the optimistic scenario* that expects to keep having annual GDP growth rates of 8% equal to the ones that the country had for the 2003-2006 period. The second is the *moderate scenario* that expects the production of goods and services to grow at annual rates of 4%; while the *pessimistic scenario* assumes that the country's GDP growth will substantially reduce its path during the next six years, it will present annual GDP growth rates of 1%. The forecasted period will be of six years in every case (2007-2012).

The forecasting analysis would provide crucial information about the relationship between growth and employment and would be of great importance not only for the government and official authorities to define their public policies, but also to the working class, since it could provide information that can help to modify and probably rectify their positions and demands.

#### **I.IV. The case of Argentina**

Argentina is a perfect case to analyze the association between economic growth and employment, since the country presents the particularities and general evolution of most developing countries, and more specifically the ones from Latin America. From the 1930s until the mid 1970s, the economic strategy for development followed by the country was based on industrialization by import substitution and society had a strong and well organized working class. However, in 1976 a military coup seized power and installed a deindustrialization process that dramatically transformed the economy and the living conditions of the working class. In order to achieve this, a vast set of economic policies were implemented which consolidated a new structure of economic power which massively started to redirect their investments to financial markets and speculative investments.

During the end of the eighties and beginning of the nineties, the deindustrialization process was consolidated and even deepened by the democratic governments that follow from mid 1980s. The different administrations, following the recommendations of the Washington Consensus, World Bank and IMF, prompted deregulation, openness and liberalization of all markets. As a consequence of these transformations, the country that was considered at the beginning of the 1990s, as a main example of how a developing country must undertake a successful economic transformation; faced in 2001, its worst economic and social crisis. The economy was in complete chaos, the country had five presidents in eleven days, and the level of poverty and the unemployment rate reached more than 52% and 22% respectively.

However, at the end of 2002 and after the abandon of the fix exchange rate that ruled the economy for almost a decade, Argentina's economy gradually began to recover triggered by the massive devaluation that modified relative prices and reduced salaried costs (around 40%). Moreover, under Kirchner administration (2003-2006) the country undertook a substantial debt restructuring, increased its expenditure on social welfare, provided credit for businesses, raise the level of real wages of the retired population and public workers and cancelled the privatization of the main postal office (Correos Argentinos), the major railway lines (San Martín) and the main Argentinean Water and Supply Company (Aguas y Saneamientos Argentinos).

## **II. Specific topic or problem to be addressed**

This dissertation explores, for the case of Argentina, the relationship between economic growth and employment by:

- Adopting a long term view, which will give us the opportunity to provide some historical perspective on the variables under analysis
- Studying the main determinants of the relationship between growth and employment through the analysis of labor productivity;
- Analyzing the historical evolution and changes suffered by the labor supply by identifying its long run determinants;

- Integrating the demand (labor productivity) and supply (labor force supply) sides and predict, by forecasting analysis, the way in which employment, labor force and labor productivity will evolve under different growth scenarios

### **III. Methods of analysis**

#### **III.I Theoretical framework**

The present dissertation will be rooted on the Marxian theoretical framework, which means that this theory will provide particular explanations and insights regarding the way in which we will approximate the topics under analysis. The use of this approach will lead the focus of our attention to specific causalities and variables that we will use in setting up our ADL models on labor productivity and labor supply. In what follows, I will present the main elements of the Marxian theory regarding the driving forces behind growth and the way in which accumulation impacts on the labor market, labor productivity and labor force determinants.

According to this school of thought, capitalism is driven by the aim of increasing profitability and labor is the ultimate source of value. In search of this incessant goal, capitalist will pursue different strategies tending to raise surplus value. They have mainly four different ways to achieve this goal: by augmenting the length of the working day, by increasing the intensity of the job, by reducing the level of wages, and by introducing technical change. But the length of the working day, the intensity of job, and the level of wages have a natural boundary, which is 24 hours, the maximum intensity and the subsistence level of wages respectively; while technological change has not boundary at all. Therefore, Marx states that in the long run technical change will be the most used mechanism to increase surplus. As a consequence of this, Marx develops his theory of technical change which explains how capital tends to replace labor when accumulation is taking place; and he stated that the impact of accumulation on the working class and on profits was dominated by its presumed labor-saving form.

This analysis has many economic implications but for the purpose of this dissertation we can point out two important elements. First, the increase in technological change will increase the Reserve Army of Labor (RAL), which, for this theory, is an inherent feature of capitalist society. Second, this process of accumulation will be accompanied by two main changes in the scale of individual capital. The first process is called concentration and reflects that every successful capital becomes larger through time. The second effect is called centralization of capital, and is the process in which larger capital absorbs smaller capital.

Therefore, when analyzing the effects of accumulation on the demand of labor, Marx was not as optimistic as Ricardo regarding its effects on labor demand. According to Marx, the impact of accumulation on employment not only could be negative but also it will push the level of wages towards its physiological minimum. In this respect, Marx believed that accumulation proceeds in a way in which the system always assures itself an excess of labor.

According to this framework, labor productivity will rise with accumulation, since mechanization not only helps to increase production but also reduces the demand of labor; and its general outcome will be closely linked to the evolution registered by the level of wages and profits. An increase of the level of wages higher than the increase in labor productivity will result in a reduction on profits, and also in a decrease of the capitalist's incentive to invest and expand. As a result, the growth rate will fall, as well as the demand of labor and a group of workers will become unemployed. If this type of solution is not enough to restore the previous level of profit, the capitalist will try to mechanize and to modify the relation between workers and machinery. Therefore, the mechanization rate depends on wages and on the level of tightness of the labor market. As we can see, the Marxian theory states that the evolution of labor productivity is linked with technological change, the accumulation path and the evolution of the labor market.

The second element that we need to explain in order to be able to perform some future estimation on the relationship between growth and employment is

the analysis of labor force. Regarding it, the classical analysis supported the idea that labor supply grows or shrinks in response to the demand of labor at an exogenously given real wage (Foley, 1999, 71). Ricardo, following Malthus, argued that the population and hence the supply of labor would rise if the real wage rose above a subsistence level; and that the population would fall if the real wage fell below this level. In the long run this theory implies that the supply curve is horizontal at the subsistence wage.

The hypothesis of subsistence wage rests on Malthus model of demographic transition. According to this author, a pioneer in enunciate a scientific model of demography, the relation between real wages and the demand of labor can be states as follows: a rise in the level of wages above a subsistence level will lower mortality rates and therefore will provoke a rise in population and labor supply. This new situation will eventually push down real wages which will also lead to a later decrease in the population level (and labor supply) due to a rise in the mortality rate closing the circle. Thus, Malthus believed that labor supply would be closely related to the evolution of population, and in the long run, the real wage will be close to the subsistence level.

Marx criticized these arguments on two grounds (Foley and Michl, 1999, p. 72). First, he stated that mortality and birth rates were product of specific social relations; which implied that Malthus theory applied only to the early nineteenth century. Second, Marx did not believe that labor supply was proportional to population. He stated that capitalist production is always able to coexist with non-capitalist production (such as subsistence agriculture and domestic labor); and therefore, the system draws part of its labor supply from these non-capitalists sectors through migration and/or the incorporation to the labor market of female and child labor. If this is the case, labor supply might not vary proportional with population, because the changes will be offset in these labor reserves, which in his view were essentially reserve armies of labor.

Marx agreed with Malthus that the supply of labor was horizontal at a given real wage because the movement of labor from the reserve armies would increase the labor supply if the real wage rose. However, in Marx's analysis, this was not

a subsistence real wage in the sense of a biological minimum, but reflected social and historical factors affecting the cost of reproducing labor-power in different economies. Thus, according to Marx, labor population and labor supply would be essentially determined by the accumulation process in its particular historical context; which implies that population growth would be an endogenous response to the accumulation of capital (Foley and Michl, 2003, p. 1).

### **III.II Econometric models**

Typically, in the past when an analyst selected an econometric model to estimate some relationship, inferences were limited to short-run effects and the interpretation was static in temporal terms. This resulted in a situation in which temporal dynamics were excluded from the analysis and the predictions were valid only in the short run. In order to address this issue, in the last years, a set of econometric tools have been developed to make long run analysis possible.

Associated with the existence of a long run relationship between two or more variables is the concept of cointegration, which states that even if a series may deviate in the short run, there is a tendency that will move the variables together in the long run. Thus, variables that cointegrate assume that not only a path or tendency for the variable exists in the long run, but also has a short run path that oscillates the long run tendency.

There are multiply ways of studying long run relationships and among them we can distinguish two methods widely used: the Error Correction Model (ECM) and the Autoregressive Distributed Lag Model (ADL). Both methods will be used in the present dissertation and in what follows we briefly present them. On the one hand, the ECM is a dynamic model that captures short-run adjustment to changes, in particular, adjustments to past disequilibria and changes in the explanatory variables; and is transparent in displaying the cointegrating relationship among variables. In its simplest form incorporates two elements: adjustment to contemporaneous changes in the variables that determine

equilibrium; and adjustment to lagged disequilibrium, so that given no other change, equilibrium is gradually achieved.

On the other hand, the Autoregressive Distributed Lag Model (ADL) popularized by Pesaran and Pesaran (1997), Pesaran and Smith (1995) and Pesaran et. al (2001), is one of the more commonly used methods to test the long run relationships. This model, also known as the bound test, is a dynamic model in the level of the variables and their lags and its forces implies that the dependent variable will return to its equilibrium value following a change in the explanatory variables. The long run or equilibrium solution of this model is given when either the dependent and explanatory variables have no incentive to change.

### **III.III Hypothesis**

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The main hypotheses of the dissertation are:

- 1- The relationship between growth and employment has dramatically changed with the military dictatorship that seized power in 1976, and the new relationship established between these variables was deepened throughout the period under analysis.
- 2- At the aggregate level, labor productivity exhibits a pro-cyclical behavior for all the period under analysis. However, its trend shows two different periods. The first one registered for the period 1956-1976, has a rising labor productivity in line with the industrialization by import substitution period; while the second one, that last until the beginning of the XXI century, shows that the variable has stagnated around its 1976 level.
- 3- Labor productivity and real wages shows two patterns. The first one until 1976 in which labor productivity grows roughly in line with real wages; while from that year real wages stagnate and labor productivity presents a positive tendency (especially since the 1990s). As a result of this

performance, the country has consolidated a regressive income distribution in the last thirty years.

- 4- In spite that labor force shows a positive trend trough the whole period under analysis, the growth rate of this variable has doubled in the last twenty years. Thus, since the growth rate of population has been roughly constant through the whole period, the rise in labor force was mainly due to the rise in labor force participation.
- 5- Labor force participation rates in Argentina rose particularly since mid seventies almost entirely accounted for by the increase in female labor force participation
- 6- The forecasting analysis of different growth scenarios show that the relationship between growth and employment does not change substantially in the coming years despite the level of GDP growth

#### **IV. Resources required**

The lack of resources is a main problem of most developing countries, and Argentina is not an exception. However, the information that we are going to use at the aggregate level is available for all the variables that we will use.

In order to perform our analysis of the relationship between growth and employment we will basically need data on production, labor market and capital stock. Regarding the data on Gross Domestic Product (GDP), the series is produced by the National Institute of Statistics and Census (INDEC) and the period that we can cover is from 1900 to 2006. The information for the employed population, unemployed population, real wages, and most labor indicators is produced by the Ministry of Labor and Social Securities (MTySS), which has data available for the total country for the period 1946-2006. The data of the MTySS is constructed using a mix of sources such as the Ministry of Economics, the National Institute of Statistics and Census (INDEC), and Permanent Household Surveys (EPH). Finally, the capital stock and the gross

fixed capital formation series was provided by a study made by Maia and Nicholson (2001), technical experts who made estimation as part of a work made by the Direction of Macroeconomic Policy, a major dependence of the Ministry of Economics. The information for the construction of all the variables basically came from the Central Bank, CEPAL, and other dependencies of the Ministry of Economics.

Regarding the building of the long run labor force supply model we basically need data on the labor force supply, population, migration and real wages. The labor supply is the economically active population (EAP) which gives us the evolution of the people who is working or searching for a job (employed plus unemployed). For the case of Argentina, the information used in this dissertation was produced by the Ministry of Labor and Social Securities (MTySS) and complemented with data from the Economic Commission for Latin America and the Caribbean (ECLAC) and the National Migration Department (NMD). Regarding the data on real wages, as in the case of labor productivity it was provided by the National Institute of Statistics and Census (INDEC), the Ministry of Labor and Social Securities (MTySS) and a Permanent Household Surveys (EPH) for the period 1960 to 2006. Moreover, when studying the impacts of growth on the economy, and particularly on employment, we will complement the information with the Input-Output Matrix, National Accounts of the Ministry of Economics, and the Economic Commission for Latin America and the Caribbean (ECLAC).

## **V. Prospective conclusions**

The preliminary conclusions of the dissertation are:

- 1- The relationship between growth and employment in Argentina shows a structural break in 1976.
- 2- There is a long run pro-cyclical relationship between growth and employment for the import substitution industrialization period (1956-1976) and for the post-convertibility period (2002-2006). However, the

economic and social transformations that Argentina experienced from 1976 to 2001, modified this relationship, and the level of employment was becoming increasingly less related to the evolution of economic growth.

- 3- The stagnation that labor productivity exhibits at the aggregate level from 1976 until the beginning of the XXI century shows that the country did not substantially improve its capacity to produce goods and services given a certain amount of work.
- 4- At the aggregate level, the evolution of the capital to labor ratio shows that the replacement of materialized labor by living labor with the mechanization of production has been negative in the last thirty years.
- 5- Since from mid seventies the surplus product of the country has been almost constant due to the stagnation of labor productivity, the gains of the profit share were based on the appropriation of the existent surplus product rather than on the improvements on the techniques of production.
- 6- Labor force participation rate rose significantly from the beginning of the 1980s explained fundamentally by the deterioration of the labor market and the fall in real wages.
- 7- Regarding the relationship between growth and employment, forecasting analysis shows that the growth rates assumed under the moderate and optimistic scenarios (4% and 8% respectively) have substantial impacts on the level of employment. On the other hand, under the pessimistic scenario, the annual growth rate of 1% is not able to absorb the new labor force.
- 8- During the forecasted period, the labor productivity to real wages ratio shows an almost constant tendency (slightly downward) for the three

scenarios studied, implying that the distribution of income between classes will not be substantially modified.

## **VI. Chapter Outline**

The dissertation will be organized in three main chapters. After a brief introduction of the work, ambitions, motivations and structure of the dissertation, **Chapter I** will be devoted to the estimation of the determinants of labor productivity for the case of Argentina. In order to do that, the chapter will review not only the literature on the more common techniques and variables used to measure and explain changes in labor productivity; but also it will summarize the specific Argentinean labor productivity literature. Once this is done, I will estimate the long run growth path of labor productivity for the period 1960-2006 by building the Autoregressive Distributed Lag Model (ADL) and the Error Correction Model (ECM). The chapter will allow me to study the relationship between growth and employment from 1960-2006. **Chapter II** will be devoted to the development of a long run labor force model that will give us an explanation of the main determinants affecting labor supply. In order to do this, after briefly presenting a short description of labor supply in Argentina for the period under analysis and a review of the labor supply literature, we will build an ADL and ECM labor supply models for the period 1960-2006. **Chapter III** using the models developed in chapters I and II that corresponds to the demand and supply of labor respectively, I will perform some forecasting with the aim of predicting how the relationship between growth and employment would evolve in the next years in Argentina. The forecast period would be from 2007 to 2012 and I will assume three possible growth scenarios: optimistic, moderate and pessimistic which corresponds to annual GDP growth rates of 8%, 4% and 1% respectively. The dissertation will end with the development of the main conclusions.