

LEWIS MODEL, EDUCATION AND UNCERTAINTIES: THE CASE OF TURKEY FROM 1990 to 2014

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ABSTRACT

Lewis model is used to analyze economic transformation of countries and to investigate labours movement from traditional sectors to modern sectors. Mechanism of the model designed with no place to uncertainties in the economy and uncertainties in the economy is ignored. In the context of uncertainties, education can protect labours from uncertainties in the economy. In this study, Lewis model's compability to labour market in Turkey and the situation of labour force under uncertainty after the internal migration investigated at the time period between 1990 and 2014. The result of this investigation demonstrated that migrated labours opens to both calculable and incalculable uncertainties and economic structure of Turkey is not totally suitable to the Lewis model even though some aspects of the economy is compatible with the Lewis model.

Keywords: education, Lewis model, uncertainties

LEWIS MODEL, EĞİTİM VE BELİRSİZLİKLER: 1990'DAN 2014'E TÜRKİYE ÖRNEĞİ

ÖZET

Lewis model ülkelerin ekonomik dönüşümlerini analiz etmek ve geleneksel sektörlerden modern sektörlere işçi hareketlerini incelemek için kullanılmaktadır. Modelin mekanizması ekonomideki belirsizliklere yer vermeden dizayn edilmiş ve belirsizlikler göz ardı edilmiştir. Belirsizlik bağlamında, eğitim ekonomideki belirsizliklerden işçi gücünü koruyabilir. Bu çalışmada, 1990 ve 2014 yılları arasındaki zaman periyodunda, Lewis modelinin Türkiye'nin işgücü piyasasına uyumluluğu ve iç göçten sonra işgücünün durumu belirsizlik altında incelenmiştir. Araştırmanın bulguları göstermiştir ki, göç eden işgücü hesaplanabilir ve hesaplanamaz belirsizliklere karşı açık durumda ve her ne kadar ekonominin bazı yönleri uygunluk gösterse de, Türkiye'nin ekonomik yapısı tamamen Lewis modele uygun değildir.

Anahtar Kelimeler: Belirsizlik, Eğitim, Lewis Model

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INTRODUCTION

The Lewis model is an important economic modelling introduced by Sir Arthur Lewis to understand how economic development occurs. Dualistic structure of countries is the cornerstone of development and traditional sectors which include surplus labour inside can be source of cheap labour force for the capitalist sector. The implicit in Lewis model is that labours are transferred from traditional sector to work in modern sector and this movement benefits modern sector with low level of wages and increase in production, and traditional sector will be regardless to this situation due to the fact that traditional sector includes surplus of labour.

In addition, the mass literature about Lewis model or dual economic models generally focus on labours transfer and assumes there is no uncertainty in the economy. It is proposed in this paper that education is a helpful for labours and education can be a shield from both calculable and incalculable uncertainties in the economy. After the labours move from rural areas to urban areas, individuals may have not the chance to get high education.

In the first part, Lewis model was basically explained. Lewis claimed that economic structure of developing countries consists of two sectors contrasts to the Solow model. Lewis put capital accumulation at the centre of the model. Accumulated capital would be invested by capitalists and required labour power would be attracted from traditional sector characterized by surplus labour to modern sector. In the second section of this paper, uncertainties and evaluation of idea of calculable and incalculable uncertainties were introduced to understand the how uncertainties occur. In the third part, demographic transformation of Turkey is investigated and the situation of sectors and labours in these sectors were mainly concentrated to understand economic structure and change over time. In the fourth part, the relationship between uncertainty, education and labour force were focused on. The interactions between these factors and effect of them to each other is a significant issue to understand the role of education in labour market.

LEWIS MODEL AND DUAL ECONOMIC SECTORS

After the release of Arthur Lewis's seminal article of "Economic Development with Unlimited Supply of Labour" in 1954 brought a new perspective to the literature of economic development. Lewis assumed that countries have dualistic economic structure which are called as modern sector and traditional sector. The dualistic structure named differently in the context of dualistic economic development process of countries such as formal-informal sector, capitalist-non-capitalist sector. (these names come from the perspective of authors who investigate dualistic structure of economics. Look studies of Harris, Todaro, Fei, Ranis). Even though the assumption of two sector was named differently, all of them share the idea of that one of the sectors is labour intensive and the other one is capital-technology intensive.

Traditional sector has the characteristics of over-population which created surplus labour power and because of over-populated sector, marginal productivity of labour is nearly zero. The result of low marginal productivity of labour is clear that transfer of labour does not have any influence on output of traditional sector and traditional sector would not experience any decrease, at least any considerable decrease after the movement of labours.

The economies had dualistic structure would face internal migration because of the fact that relatively higher level of wages in modern sector would attract labour power from traditional sector. Nonetheless, it does not necessarily mean that the migration of labour power is determined by traditional sector, the decision belongs to modern sector conditions such as the level of capital accumulation and investment. Additionally, The economic growth was equalized by Lewis to the savings and profits as it was expressed in the `von Neuman model and Kaldor-Robinson Cambridge theory¹

The drawing labour would ceased up to the point when the marginal productivity of labour power in modern sector become at the same level with the wage. Thanks to the “unlimited supply of labour”, wages would stay at constant in modern sector.² These assumptions of Arthur Lewis is considered by another authors such as harris and todaro and fei and ranis to revision dual structure of economics. The engineer of development process in Lewis model is that entrepreneurs would reinvest the profits. More capital accumulation leads to more investment in the modern sector which would keep up growing up to point when surplus of labour power ceased to exist anymore.³ When the reinvestment is finished, entrepreneurs would try to find another ways to increase its profits and to keep wages at subsistence level. This situation can be achieved via two ways: promoting migration or transferring investments to other countries which have surplus labour.⁴ Capitalist goal is to find cheaper labour force. Therefore, lower wages at developing countries attracts more firms from developed countries to decline costs and rise profits.

Additionally, Harris and Todaro extended the views of Lewis and brought a new perspective to dual sector models. They pointed out that migration of labour from traditional sector to modern sector is not only motivated by higher wages, instead, finding a formal job in modern sector is another important motivation factor behind the migration of labour power. Form this context, it is implied that even though wages do not offer sufficient incentives, labour migration can continue to find a formal job in urban areas.⁵ Harris and todaro’s point is important indicator to understand the process of movement of labour due to the fact that movement keeps continue although development process of countries do not increase and wages does not higher than urban wages.⁶

Fei and ranis pointed out that productivity increase in agriculture has beneficial effect to modern sectors by that the surplus of agricultural sector would provide capital to the modern sector to invest more and more.⁷ However, some difficulties are confronted when the theory of Lewis model is tried to apply real life. Traditional sector is generally equalized with agriculture

¹ Ronald Findlay , “On W. Arthur Lewis' Contributions to Economics “, **The Scandinavian Journal of Economics**, Vol. 82, No. 1, 1980, p. 65

² Arthur Lewis, W. A. Economic development with unlimited supplies of labour, **Manchester School** 22, 1954, p. 3

³ Lewis, p.152

⁴ Lewis, p.22

⁵ Harris, John R. & Todaro, Michael P. (1970), "Migration, Unemployment and Development: A Two-Sector Analysis", **American Economic Review**, 60, p. 127

⁶ Todaro and Harris, p. 127

⁷ G. Ranis And J. C. Fei, "A Theory of Economic Development," **American Economic Review**, Sept. 1961, 51, p. 549

and urban sector with industries or manufacturing. On the contrary, it is not probable to associate with rural sector and informal to agriculture or industry with urban and formal sectors.⁸

Another problematic issue is that unskilled and uneducated labour power cannot be used in modern sector due to the fact that newly produced machines requires intensive usage of knowledge and special skills to be obtained. Nonetheless, it can be supply by schools and special training programs to adapt labours modern sector conditions.⁹Nonetheless, Lewis model associated with Karl Marx from the perspective of classes.

“Lewis postulates that the fundamental characteristic of certain less developed economies is the existence of disguised unemployment. Lewis’s analysis of the role of the unemployed in the determination of wages during economic development is strictly analogous to that of Marx.”¹⁰

CALCULABLE AND INCALCULABLE UNCERTAINTIES

Uncertainty means in general context as the vagueness of future events. Human beings are not able to estimate hundred percent of proximity of future events. The estimation of proximity of uncertainties can be made in two ways as the fact that the determination of relative probability of events by mathematical formulas which is labelled as calculable uncertainties or estimating volume of uncertainty with less mathematics. In other words, the risk is about probabilities in the future. Keynes pointed about these probabilities by that:

“Now our knowledge of propositions seems to be obtained in two ways: directly, as the result of contemplating the objects of acquaintance; and indirectly, by argument, through perceiving the probability-relation of the proposition, about which we seek knowledge, to other propositions.”¹¹ this kind of information is incalculable because it can be possible only to calculate probability when the knowledge about issues exists. However, it is not possible every time.

“There is no scientific basis on which to form any calculable probability whatever. We simply do not know.”¹²

Before the important contributions of Keynes, Frank Knight made a important distinction between uncertainties as measurable and unmeasurable risks which refers to calculable uncertainties and incalculable uncertainties which means ambiguity.

⁸ John Knight, "China, South Africa and the Lewis Model," **Economics Series Working Papers** WPS/2007-12, University of Oxford, Department of Economics, 2007, p.3

⁹Michael P. Todaro, Stephen C. Smith, **Economic Development**, 11th Edition the United States, Pearson, 2012, p. 134

¹⁰ Dale Jorgenson, Surplus agricultural labour and the development of a dual economy, **Oxford Economic Papers**, 1967, p. 289

¹¹ Keynes, J. (1921) `A Treatise on Probability` London: MACMILLAN and Co, p.12

¹² Keynes, J.M. (1937) “The General Theory of Employment” **The Quarterly Journal of Economics**, 51(2), p.214

Measurable risks correspond to "... all the alternative possibilities [states of nature] are known and the probability of occurrence of each can be accurately ascertained."¹³

On the other hand, uncertainties which are unmeasurable described by Knight is that:

"It will appear that a measurable uncertainty, or `risk` proper, as we shall use the term, is so far different from an unmeasurable one that it is not in effect an uncertainty at all. We shall accordingly restrict the term `uncertainty` to cases of the non-quantitative type."¹⁴

Another important contribution to illustrate the distinction between ambiguity and risk was made by Ellsberg with using word of `ambiguity`. Ellsberg described ambiguity by that:

"What is at issue might be called the ambiguity of this information, a quality depending on the amount, type, reliability and `unanimity` of information, and giving rise to one's degree of `confidence` in an estimate of relative likelihoods."¹⁵

From the context of Lewis model, uncertainties in the economy is ignored and mechanism of the model designed with no place to uncertainties in the economy. As it is well-known, uncertainties are significant factor both in economics and in labour market.

DEMOGRAPHIC TRANSFORMATION OF TURKEY, SECTORS AND EMPLOYMENT

Turkey as continued of Ottoman Empire experienced several migration shocks such as Crimea, Caucasus, and Balkans.¹⁶ After the First World War and establishment of Turkey, especially Muslims are moved from other parts of demolished Ottoman Empire to new established Turkey. These a kind of movement as it was emphasized by Arthur Lewis because these movements are not generally to find a job or to move directly to urban areas. From 1950's onwards, rural areas had less advantage to stay and urban areas had more advantage to stay in because of the fact that industrialisation process took place and urban areas became better places to find job after the more labour saving technologies are introduced into agriculture. Turkey's demography structurally changed over time and rural population decreased steadily over time and urban population simultaneously increased at the same rate with rural population decrease.

Additionally, population growth rate steadily decreased over time apart from 2009 and 2010 increase.¹⁷ The decrease in population growth has been accompanied with migration of labour from rural areas to urban areas. Nonetheless, the movement from rural sector to urban sector is not finished and keeps going. The transformation of these effect can be explained via various explanation. The most important one is as it was explained in this paper that disguised unemployment in rural areas pushes individuals to migrate urban areas, additionally, patronal family structure of Turkey forces family members to accompany and go to urban areas. Even though, the movement from rural areas to urban areas for finding a job is an important explanation of these transformation, it is not enough tool to explain whole situation. Another important reason of these movement is due to political problems of rural populated areas. The conflicts in east and

¹³ Frank Knight, F. (1921) `Risk, Uncertainty Profit` London: Houghton Mifflin, p. 198

¹⁴ Frank Knight, p. 19-20

¹⁵ Daniel Ellsberg. "Risk, Ambiguity, and the Savage Axioms", The Quarterly Journal of Economics, 75(4), 1961, p.657

¹⁶ Isa Blumi, Ottoman refugees, 1878-1939: migration in a post-imperial world Bloomsbury Academic, London, 2013, p. 55

¹⁷ World bank development indicators

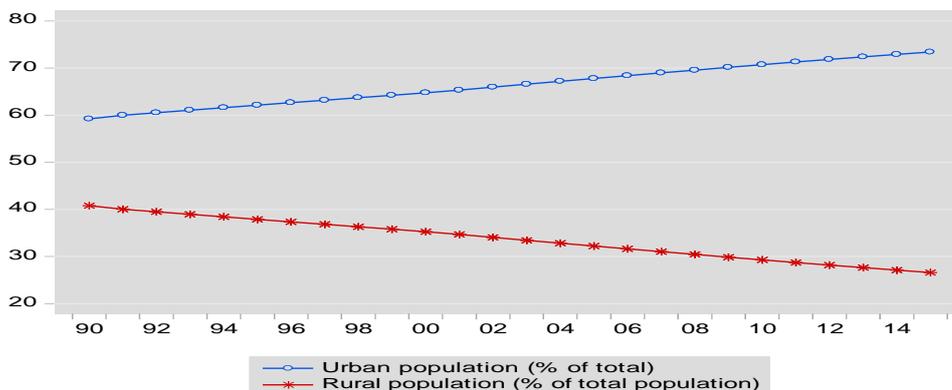
south east of turkey enforced peasants to abandon their places and immigrate to safer places which is seen as urban areas.

Political and economic problems enforced Kurds to migrate from rural areas to urban areas and southeast Anatolian project which was implemented in 1990s was not able to cease this movement of people in the eastern parts of Turkey.¹⁸

Moreover, insufficient educational process in rural areas makes people who want to get education to move urban areas. From the perspective of capitalist, it is not really matter why people migrate, the question is whether they are ready to supply its labour power at the wage rate which keeps capitalist profit as high as it was in the past. As it was pointed out by Lewis, capitalist will try to find new ways to keep taking advantage of surplus of labour power by two ways when surplus of labour in traditional sector does not exist anymore as that to move its facilities into more labour abundant countries or to encourage immigrant to the country.¹⁹ Nonetheless, urban areas were not able to create job for individual who are the part of movement from rural areas to urban areas.,

Urban population growth steadily increased over time and never decreased compare to previous years. These stable rise continued from 1990 onwards without any exception. The transformation of population seemingly not affected by the economic performance. The rise of urban population is not affected even from the economic crises in 2001, nor global crises in 2008, neither Syrian refugee crises in 2011. Regardless of economic or social shocks, the transformation of demographics of turkey took place over time. the urban population consisted of 59,976 percent of total population in 1990 and 64,223 in 2000 and 72,891 in 2014. Nearly 13 percent increase took place from 1990 to 2014 and expectation of this upward increase in urban population is positive because the data of previous years pushes us to make these prediction about the population of urban areas.

Table 1. : The Population of Urban and Rural Areas



¹⁸ Ahmet İçduygu, İbrahim Sirkeci ve İsmail Aydınğün, “Türkiye’de İçgöç ve İçgöçün İşçi Hareketlerine Etkisi”, Türkiye’de İçgöç, (İstanbul: Tarih Vakfı Yayımları, 1998), p. 222

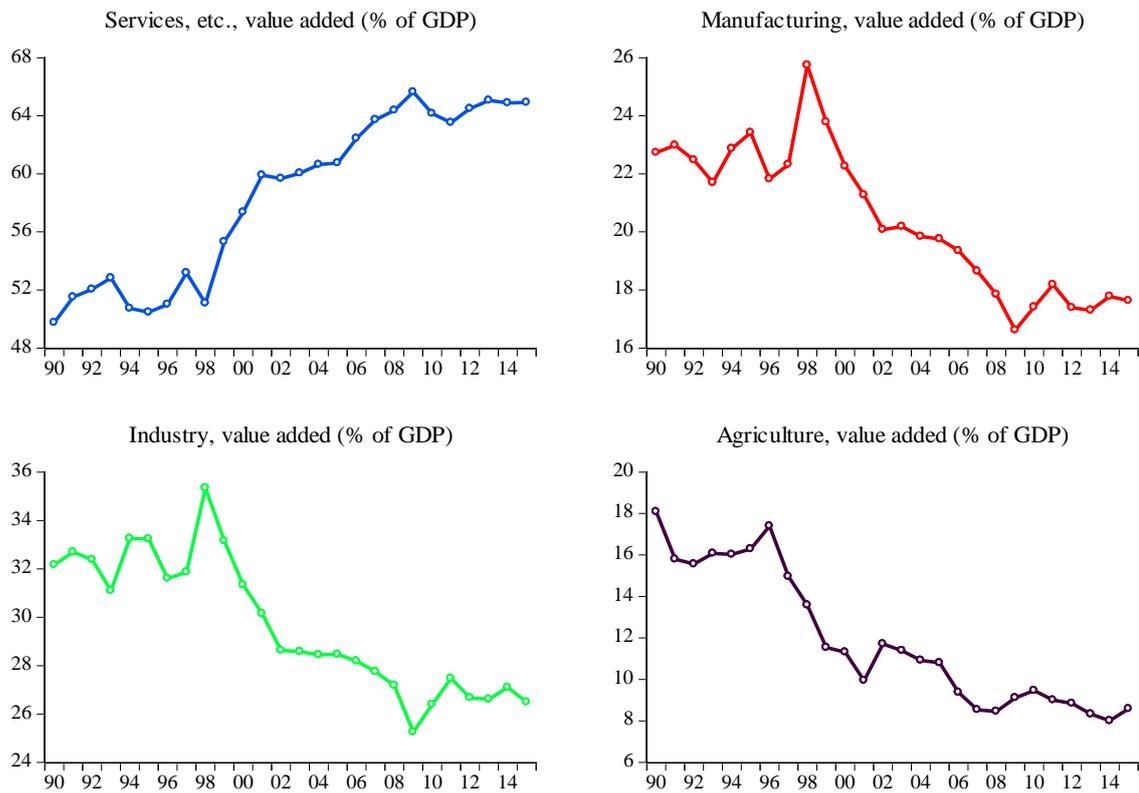
¹⁹ Lewis, p. 22

Source: World Development Indicators

On the contrary, the rural population steadily decreased over time without any exception. The rural population was 40,024 per cent of total population in 1990 and became 35,259 in 2000 and lastly 27,109 in 2014. The steadily decrease continued over time and the demographic structure of turkey considerably changed. Significantly high percentage of citizens of turkey had been living in rural areas as about 40 percent of total population, however, only nearly 27 percent of total population had stayed in rural areas in 2014.

Another important point is how sectors developed over time and in which way the economic structure of turkey evolved. As it is clear from the table 2 that the share of agriculture was and is the lowest one over time and dramatic decreases had been observed apart from the sharp increase from 1991 to 1996 and in 2002.²⁰ The share of agriculture was 18,0929 percent of total gross domestic product in 1990 and decrease up to 8,0094 percent in 2014. The share of agriculture in total GDP is really low and agricultural activities are not able to obtain an important position in the economy of turkey.

Table 2: The Transformation of Sectors from 1990 to 2014



Source: World Development Indicators

Another sector which is the lowest one after the agriculture sector is the manufacturing sector. Even though fluctuations occurred during the period of 1990-2014, the share of manufacturing decreased over time. The share of manufacturing shrank from 22, 73262 percent in 1990 to 17, 7788 percent in 2014. Additionally, it peaked 25, 74108 in 1998 and deeped 16,

²⁰ Other increases are ignorable and never passed more than 1 percent compare to previous year

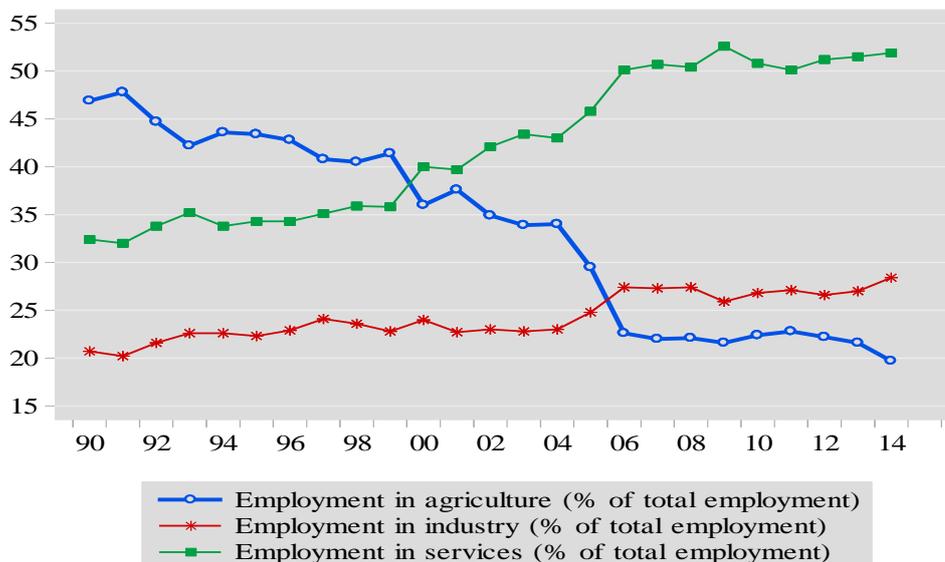
6162 in 2009. Even though manufacturing composed nearly 17 percent of total GDP, it is not able to get more share of labour over time. Moreover, industry is an important sector for the development process of countries and the share of industry is an important implication to predict how the economic structure of countries formed. The share of industry as percentage of total GDP was 32,1571 percent in 1990 and decreased up to 27,10044 in 2014. Furthermore, it peaked in 1998 as 35,34315 percent and deeped in 2009 as 25,25114. The share of industry is the second highest indicator amongst the other sectors.

Lastly, the only indicator increased over time is the services, etc. the share of services generates more than two of three of total GDP. It was only below the fifty percent in 1990 as 49,75 percent and after this year, it had never dropped the below the fifty percent. The share of services fluctuated from 1990 to 1998 and then, sharply increased over the period although some fluctuations were observed.

In 2014, it was about 65 percent and the contribution of services to gross domestic product is two and half times more than industry, three and half more than manufacturing, seven times more than agriculture.

As it is clear from the table 3 that services has the highest rate of share in GDP and the employment in services is the highest as well. Nonetheless, the employment in services started to exceed the employment in agriculture after 2000, then upward trend of employment in services continued.

Table 3: Employment and Sectors



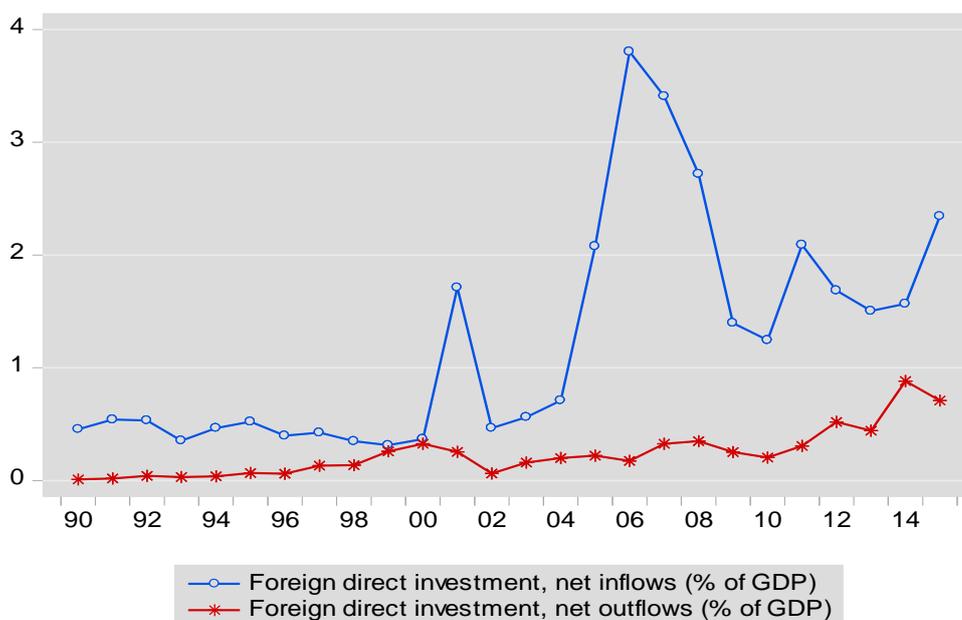
Source: World Development Indicators

The downwards trend in agriculture dramatically decreased over years. Nearly 47 percent of total labour were employed in agriculture in 1990 and 32,4 in services, 20,7 in industry. At the end of period, more than half of labour were employed in services in 2014 as 51,9 and agriculture only employed 19,7 and industry 28,4 employed.

Agriculture always employed more than its contribution to GDP and it was not the last one from the context of employment before 2005 although its contribution was the lowest one at that period. The total contribution of agriculture was 18 percent and the employment was about 47 percent in 1990 which have 3.5 times more and disguised unemployment can easily be observed to analyse from the perspective of Lewis.

In addition, another important implication of Lewis model is that capitalist will move its investments to other countries if the surplus of labour ceased. However, open economies and increased international relationships offered capitalists to move its investments easily into other countries. Foreign direct investment net inflows as percentage of GDP was below the 1 percent before 2005 apart from 2001 with 1,71. After 2005 onwards, the dramatic increase were observed up to 2007, then sharply dropped up to 1,2444 in 2010.

Table 4: Foreign Direct Investment



Source: World Development Indicators

Then, fluctuations accounted over the period of time, foreign direct investments net outflows never exceeded 1 percent of GDP and steadily increased. After 2012, the pace of increase rose up to nearly 0,90 percent in 2014.

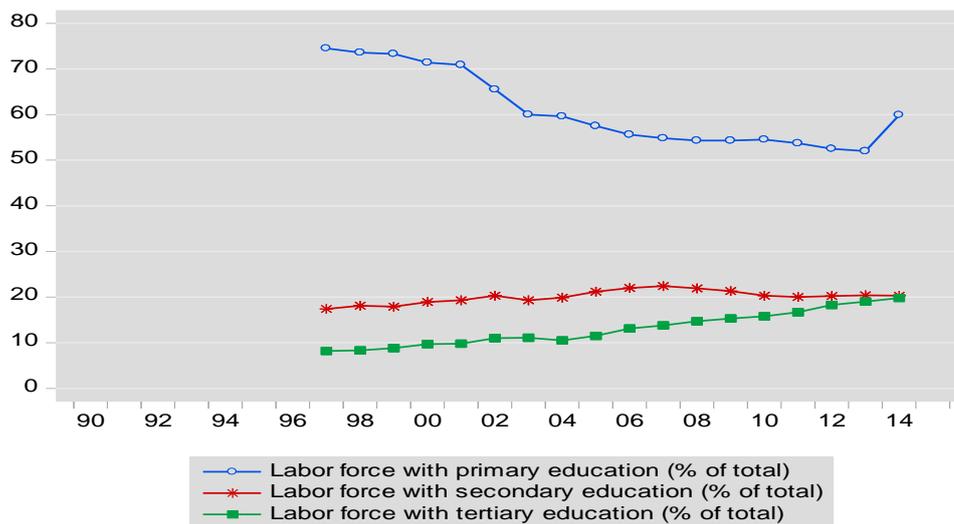
As it is clear, foreign direct investments inflows higher than outflows. As it was illustrated by Orhan Kandemir, European countries see turkey as a source of cheap labour power and to

move investments in Turkey or as more preferred way, encourage migration of labour from Turkey to Europe.²¹

UNCERTAINTY, EDUCATION AND LABOUR FORCE

As it is expected that labour transferred from rural areas are lack of education even though it is obligatory to attain primary and high schools for twelve years. Policy makers in turkey try to enhance the education level of citizens via schooling. The motivation of working in high positions in private sector and to work in public sector as well positioned places pushes individuals to obtain high education and enrol a university. It is not only motivation to individuals, it is a well motivation to parent for their children to obtain high education for their career, life standards in future, well-paid jobs and acquire high status in society.

Table 5: Labour Force and Education



Source: World Development Indicators

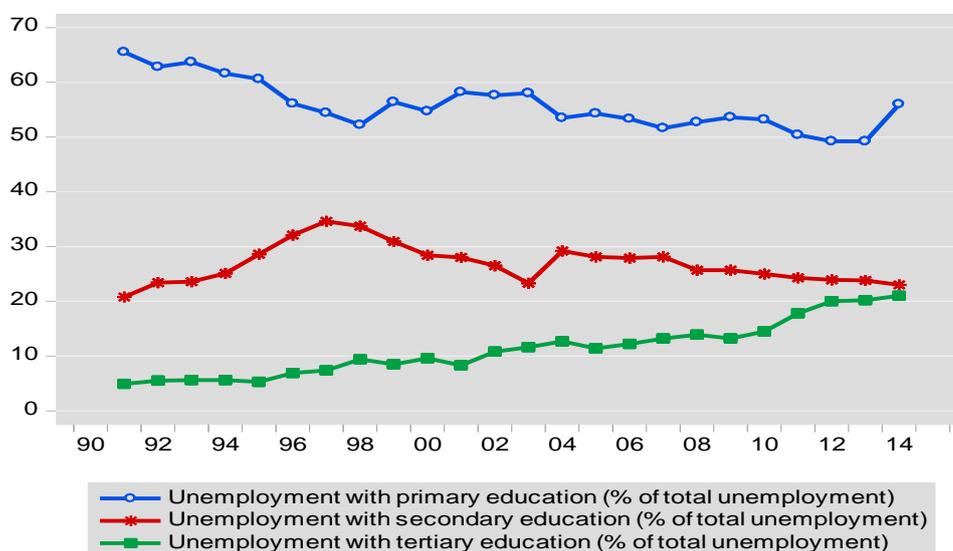
Due to lack of data, investigation of labour force with education level started from 1997, instead of 1990. Labour force with tertiary education increased over time and no considerable fluctuation observed. The share of tertiary educated labours in total labour power started as 8,2 in 1997 and upward trend reached 19,8 percent in 2014. Labour force with tertiary education and secondary education very closed each other in 2014. The secondary education level fluctuated around twenty percent during the period at the table and 17,4 percent in 1997 increased up to 20,3 in 2014. Lastly, the labour power with primary education has been the highest characteristics of labour power in the market and the deep year of percentage in 2013 is more than fifty percent. Market is still include primary educated labour power more than half of total labour force. It was

²¹ Orhan Kandemir, Lewis Modeli Ve Gelişmekte Olan Ülkeler: Türkiye İçin Bir Değerlendirme, *Akademik Bakış Dergisi*, 23, 2011, 17.

74,5 percent in 1997 and the fall of percentage between 1997 and 2001 accompanied with dramatic decrease from 2002 to 2004. The decrease continued, however, the pace of it decreased from 2004 to 2013. Interestingly, labour power with primary education increased after 2013. The reason for this situation is given by Ximena V. Del Carpio Mathis Wagner with relation to Syrian immigration shocks and transfer of labours from informal urban sector to formal urban sectors due to fact that Syrian refugees area overwhelmed informal sectors in urban areas.²²

To understand the situation of labour market in turkey, it is vital to look at labours unemployment level in accordance with years. Especially, crises and political uncertainties do influence labour power with primary education employment. It fluctuated over time and 65,5 in 1991 decreased during the period and dropped to 49,2 in 2012, then increased to 56 percent in 2014. The secondary educated labours' unemployment rate differentiated form years to years and fluctuated over the period of time. Nonetheless, the downward trend in unemployment rate of secondary educated labour power continued apart from the years from 1991 to 1997 and 2004.

Table 6: Unemployment and Education



Source: World Development Indicators

Moreover, unemployment with tertiary educated labours has upward trend and no considerable fluctuations are observed. Uncertainties, both calculable and incalculable, do not have influence on educated labour power and education can be shield to labours to have protection from uncertainties in the country. Only questionable problem is that tertiary educated labours become unrelated to uncertainties, however, the increaser is stable. The possible explanation for this situation can be given as that turkey is not able to increase its capacity and use its human resources sufficiently. The development process of turkey interrupted and well qualified workers are not demanded as it was supplied. The number of tertiary educated people increased and all of them are not able to find jobs in accordance with their qualification.

²²Ximena V. Del Carpio Mathis Wagner, The Impact of Syrian Refugees on the Turkish Labor Market, *Social Protection and Labor Global Practice Group*, 2015, p.28.

The findings show that the higher one's level of education, the better one's chances of getting a job and keeping the status of employed person in times of crisis on labour market.²³ (How does education affect labour market outcomes? Alina Mariuca Ionescu 1+ 1 Alexandru Ioan Cuza University of Iasi)

CONCLUSION

The Lewis model is an influential model in development economics. The application of this model has many important features to realise the Turkish labour market and its development from 1990 to 2014.

The population have significant implication for the Lewis model, but doubly the situation of turkey is suitable for the condition of Turkey. As it was assumed, labour should be withdrawal from traditional sector when surplus of labour required by modern sector. Nonetheless, the urban population growth and diminish in rural population never ceased. This situation can be interpreted via the explanation of Harris and Todaros's view of migration as that labours move to urban areas to obtain a formal job. Another issue is that the share of industry and manufacturing sector in GDP decreased from 1990 to 2014, however, the share of services amplified.

Lastly, the tertiary educated labour force is more durable to uncertainties in the economy than other groups in labour force. Education protects labours from unexpected shocks and crisis. Yet, the capacity of economy of Turkey is not able to absorb all of tertiary educated labour force and the increase in total tertiary educated labour force is accompanied with at the same rate increase in unemployment.

It can be asserted that education can be shield from uncertainties but education cannot guarantee the employment.

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