

Identifying Higher-Education Level Skill Needs in Labor Markets: The Main Tools Usable for Turkey^{*}

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Abstract

There are natural mismatches in the labor market between the demand for higher-educated laborers and the supply of graduates provided by the higher education system in terms of quantity and qualifications. While there are open positions, some graduates still cannot find work. There are various findings indicating that the mismatch between qualification and skill is significantly high in Turkey. The fundamental political tools for reducing such mismatches include identifying the capacities of higher education programs based on skill needs, corporate structures ensuring the participation of relevant parties in the educational process, matching and consultancy services for jobseekers, and continuing education for the unemployed. Implementation of such policies depends on identifying in higher education which higher education-level skills are needed currently and for the future. The objective of this study is to identify the principal studies required to reveal the need for amount and qualifications of workers with higher education in Turkey. For this purpose, the subject is handled with theoretical foundations; field research data is evaluated and possible sets of studies and activities complying with the economic and social structure of Turkey are suggested by discussing alternative approaches and tools developed for the solution of the issue. A set of studies has been suggested under three categories (a) manpower forecasts, (b) skills needs researches generating micro data to enrich these forecasts, and (c) the information that comes from the participation and contributions of social parties in the educational process.

Keywords: Higher education and labor market • Skill mismatches • Skill need forecasting • Manpower planning • Social demand

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The skills expected from employees change dynamically with technological and economic developments such as industrial shifts from industry to services after moving to a post-industrial society, the emergence of new industries, and change-of-work processes (Kurtulmuş, 1997, p. 99). These developments require a review of higher education programs at regular intervals and a harmonization of the skills that graduates must have to meet the expectations of the business world (Hernández-March, Martín del Peso, & Leguey, 2009, pp. 1-2). Mismatches arise in the supply and demand of skill in labor markets since people in the education system and working life cannot respond to these changes at the same pace.

Society and the economy pay a price when cannot ensure harmony between the labor market and the education system. The dynamo of economic and social development is the pool of graduates from higher education in modern societies. It takes significant individual and societal investments (human capital investments) for a person to complete their higher education and gain competence in a field. For this reason, it is highly important to make investments in the fields that will bring a maximum contribution to both the person and the economy. Therefore, it is inevitable to harmonize the structure, functions, and products of higher education with the economic and societal needs. There is also an increasing demand to design both education and research functions of higher education in a manner to support local and regional development (Chatterton & Goddard, 2000, p. 475).

Harmonizing the number and qualifications of laborers that are demanded in a particular field of the labor markets with the number of students graduating from higher education programs is a critical issue in Turkey. Apparent mismatches have been observed recently in this respect in Turkey; while staff cannot be found in various fields for employment, many graduate students are encountered in other fields. Employers

often complain about the qualifications of graduates. One of the most important criteria in evaluations related to the quality of higher education institutions is the employability of its graduates. Higher education institutions are expected to improve the quality of education, to make sure the education programs offered include the fields which will be required by the labor market in the future, and to provide content in their programs for the skills deemed valuable in the labor market, as well as provide recruitment studies in order to ensure the employability of their graduates (Yükseköğretim Kurumu [YÖK], 2005, 2007).

Developed countries identify deficits in manpower by way of projections on the supply and demand of manpower; they create their education plans accordingly and offer matching and consultancy services (Biçerli, 2007, p. 501), as well as second-career programs for the purpose of eliminating quantitative mismatches, which can be defined as a mismatch between the number of graduates in various fields and the requirements of the economy. The main tools for this include research for identifying skills required by the business world, creating mechanisms for engaging the business world and other social parties in the process of preparing the content of education programs, and closing the skills gap by way of lifelong trainings in order to eliminate the qualitative mismatches which could be defined as a mismatch between the actual skills of graduates and the skills expected from the graduates in a given field. Identifying the need for workers with higher education at the national, local and sectoral levels plays a key role in decreasing the mismatches of qualification and skill in labor markets and effectively employing a labor force with higher education.

The objective of this study is to identify the principal studies that will be required to reveal the needed number and qualifications of workers with higher education in Turkey. For this purpose, the reasons for structural mismatches between supply and demand will be initially reviewed in order to reveal

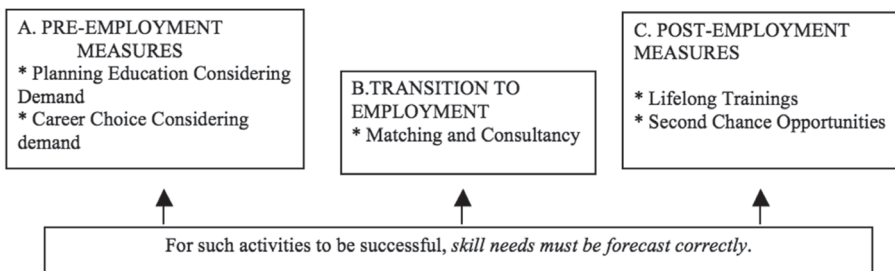


Figure 1: Effective employment of labor force with higher education and predictions for skill needs in reducing mismatches.

the problem in detail then the nature and outcomes of such mismatches in the labor force with higher education will be introduced. In the second stage, the problem will be concretized by describing the overall view of the mismatch between qualification and skill in the labor force with higher education in Turkey based on field researches related to the subject. In the latter stage, up-to-date approaches and tools will be identified with respect to the predictions of needed skills, which play a key role in solving the issue put forth in the previous chapters. Finally, the nature of the issue and skill-need system required in Turkey will be generally described considering the economic, social, and corporate dynamics unique to Turkey.

Mismatches in Labor Supply and Demand in Labor Markets

A mismatch occurs in the labor market when the structure of labor supply is different from the structure of labor demand. The mainstream approaches in economy mostly deal with the point at which the general level of employment, costs, and supply and demand will reach a balance, but they do not include enough detailed analysis with respect to matching supply and demand in terms of structure.

According to the classical approach, there is a direct connection between the population and the cost of labor. The level of cost also determines the magnitude of population. The population will increase as costs rise. The point where labor supply and labor demand overlap determines both the cost and the employment level of the economy. Labor demand is mostly a negative function of real cost. Labor demand decreases as real costs rise. Labor demand and labor costs are also limited to the amount of funds allocated by companies. The cost of labor is set according to the amount of funds since the amount of funds is fixed. The unit cost of labor decreases in the case where labor supply broadens. The cost of labor rises when labor supply is scarce. The classical views on supply and demand for labor, cost, and employment were developed on a market assumption which involves perfect competition. The most criticized aspect of classical employment theory is the compulsory relation that is created with labor supply and demand to employment. This is because it has been observed that workers do not quit their job when real incomes decrease as a result of inflation (Kazgan, 1980, pp. 81-85)

The emphasis on the regulatory role of costs becomes apparent in the neo-classical approach in addition to, yet different from, the classical

approach. The reasons for not reaching a balance in commodity and labor markets are the impairments in the cost mechanism. Unemployment emerges when wages, which are the cost of labor, are higher than interest, which is the cost of capital. Excess supply is absorbed when labor costs decrease (Hopkins, 2002, pp. 31). According to neo-classics, labor supply is determined by the marginal trouble of working and the marginal benefit of the income obtained as a result of working. The marginal trouble of working, which means the trouble caused by each hour of working, increases in parallel with the time spent working. Labor demand is related to the marginal productivity of labor. Companies will employ staff until the point at which marginal productivity is zero (Kazgan, 1980, p. 165). Recently, the neo-classical approach has explained the presence of unemployment while there are open positions in labor markets as the fact that the compliance mechanism takes a certain amount of time. Such mismatches are constant elements of competitive markets. Balance is reached as long as there is no external intervention on market mechanics. Reaching a balance takes a certain time depending on the pace of the processes that propagate information related to change in the market and, accordingly, the pace of individuals obtaining new skills (Shah & Burke, 2003, p. 68).

The Keynesian approach emphasizes the aspects of demand in economy for eliminating unemployment and the insufficiencies of total demand as a result of the 1928 Great Depression. Labor demand depends on consumption trends and investment expenditures. Labor demand is considered to depend on investments since consumption trends are relatively stable. The economy does not always reach full employment as claimed by the classical view. A balance of excess employment, underemployment, and full employment applies to an economy. Keynes does not accept Say's Law which claims each supply creates its own demand. He prefers not to reach a balance of employment with wage and cost flexibility for its various drawbacks (Fisunoğlu & Köksel Tan, 2009, pp. 32-41). The Keynesian approach finds "state intervention" useful in improving demand for the purpose of preventing a recession of demand, thus eliminating unemployment (Arın, 1988, p. 32). As a result, the Keynesian approach suggests that supply and demand in labor will not reach a balance by itself. Therefore, intervention on market mechanisms is required. However, this approach does not include analysis related to the structure of supply and demand.

The fact that unemployment, an indicator of the mismatch between supply and demand in labor supply, is too high in less developed countries has urged researchers to study why cost does not serve to decrease unemployment. In particular, development economists have conducted studies on the reasons for unemployment, low labor productivity, and cost with prevention of the same in less-developed countries (Lewis, 1954; Rosenweig, 1988). Schultz's human capital theory which claims that cost differences among people depend on differences in people's human capital has been a significant analysis tool in ensuring development and employment in less developed countries. The import substitution development model has been suggested for less developed countries since low productivity and labor supply exceeding labor demand is attributed to their limited savings and investments. However, organizations such as the ILO (International Labor Organization), World Bank, and UNICEF have offered support by emphasizing that fundamental requirements such as education, health, accommodation, and so forth, must be eliminated to develop employment in such countries. In addition to the import substitution economic model, economists from the ILO and World Bank have put forth policy suggestions representing two different ends on how much a state should intervene in the economy for developing employment. ILO economists claim that regulated labor markets adapt more easily and the triple solidarity structure of the worker-employer-state as well as collective bargaining are the most appropriate methods for full employment, while the World Bank economists suggest that public contributions to social funds, occupational safety, and collective bargaining are practices that deteriorate labor markets and distance markets from the ideal situation (Hopkins, 2002, pp. 37-42)

Pigou, a classical economist attempting to explain the reasons for mismatches between labor supply and demand in the labor markets claimed that labor markets were segmented in the 1940's. According to him, labor markets are segmented due to limited labor mobility inside and among industries as well as the fact that labor force is heterogeneous due to the various properties of skills and education (Leontaridi, 1998, p. 67). From empirical studies initiated on labor markets, dynamics unique to labor markets emerged beyond the areas of interest of economic theory. Doeringer and Piore (1971, pp. 64-65), economists studying segmentation in labor markets in the 1970's, claimed that variations of cost among people with the same human capital in labor markets is related to the

industry in which they are employed. According to this theory, from a primary segment requiring initiative to be taken in labor markets, and a secondary segment requiring less on-the-job training and limited skills, an implementing order can emerge (Dickens & Lang, 1985). Such segmentations in labor markets can lead to mismatches between the skills of employees and the actual skills needed. In addition, while it is not possible to find a labor force that meets the requirements of some industries, a labor force exceeding the needed skills might emerge in other industries.

Some researches conducted in labor economics indicate that the market mechanism, instead of ensuring balance, is a source of imbalance. The adverse selection (Montgomery, 1999; Weiss, 1991), shirking (Shapiro & Stiglitz, 1984), labor turnover (Salop, 1979) and justice (Akerlof, 1984) models developed in the scope of efficiency wage theories explain the reasons for segmentation in labor markets, wage differences between industries, and why wage levels tend to be higher than the competitive balance wage. According to efficient wage theories, wages have another role besides the effect of regulating market. There is an asymmetrical information ownership between employers and employees. Employers can not be sure if employees are doing their job properly. For this reason, they use wage as a tool to motivate employees and increase their productivity. Companies waive low wage costs and low productivity in favor of hardworking employees despite high wages. Therefore, companies tend to pay wages to their employees slightly higher than the average wage level in the market. In this case, wages increase and unemployment may occur. Recruiting employees who will work for a lesser wage is in the favor of companies. As a result, the balancing function of wage is blocked.

There are some theories other than efficiency wage which explain how wages do not serve to balance labor supply and demand. One such theory is on implicit labor contracts. As they are known, companies do not recruit employees during each period. Certain periods are set aside for recruitment, and interviews are conducted during these periods. Then, contracts are signed with the employees. Wages do not serve to balance supply and demand since companies are inflexible in terms of wage as long as contracts are in effect. In parallel, there is a loyalty relationship between companies and workers. Terminating employment is a risk to both the company and the employee. Research indicates that employees are more likely to avoid the risks of quitting. Employees may accept a wage less than their productivity in return for a regular income and employment.

More radical theoretical and conceptual tools have been generated to analyze the labor markets as such studies increase. According to one of the significant studies in this field, it is incorrect to examine the labor markets using balanced economy models. There is no evidence indicating that the forces which are effective in the labor market work effectively and consistently to bring a balance to employment or relevant conditions. Labor markets varied significantly to include sections which can be differentiated from each other empirically (segmented labor markets theory claims such sections apply to all labor markets) (Azariadis, 1975; Baily, 1974; Gordon, 1974).

The market mechanism claimed to have a regulatory function for ensuring labor supply and demand in classical theory can work with the problems in developed countries. Many researches were conducted to understand how the economies of less developed countries would develop after World War II. These researches indicate that the market mechanism involves various obstacles that prevent reaching maximum social welfare conditions in less developed countries. One of these is a departure from the situation of theoretically perfect competition. This might be greater in less developed countries compared to developed countries. Secondly, the impacts of economic policies and changes on the market are more significant in countries which are not well industrialized. The third obstacle is that perfect competition might serve to make income distribution more unbalanced around the economic borders and geographic regions in less developed countries (Chenery, 1959, pp. 89-71 as cited in Hesapçıoğlu, 2001).

Labor market institutions might constitute an obstacle in addition to the obstacles stemming from the functioning of labor markets. The collective bargaining system is one of the institutions used in many industrialized countries for various self-benefits. Since collective bargaining is made once a year or once every two years, it may prevent the regulatory functioning of wages in case of any imbalance between supply and demand of labor force. The workers are so strong in some private labor markets that workers might set the wages. Minimum wage regulations also prevent the regulatory functioning of wages with practices for setting wage nationally (Neugart & Schömann, 2002, p. 5).

Labor market institutions and regulations such as minimum wage, collective bargaining, intensity of syndication, unemployment compensation, active and passive labor force policies, and so forth, have significant impacts on labor supply and demand. In

one research examining the impacts of unemployment compensation, a labor market institution found that an increase in such payments had very limited impact on extending the length of unemployment. On the other hand, these payments influence participation in the labor force over the long term and decrease early retirement (Lalive & Zweimüller, 2004).

Various regulations are put into effect for regulating labor markets in the world as well as Turkey due to the structure of labor markets which differentiates from other markets as well as the failures of market mechanisms. Although deregulations have increased since the 1980's as a requirement of flexibility, it is observed that regulations maintain their presence to a great extent. The impact of regulations on labor supply and demand is one of the most often discussed subjects. A study which estimated the impacts of regulations for maintaining employment on labor force supply and demand between 1998 and 2008 in 18 European countries and Turkey, a member of the OECD, indicated that labor-force demand decreased and labor-force supply increased when employment maintenance regulations became stricter. On the other hand, deregulations were found to have adverse impacts (Aykaç, 2010, pp. 299-308; Belot & van Ours, 2004; Mourre, 2006; Nickell, Nunziata, & Ochel, 2005). The study suggests precautions such as decreasing non-wage labor-force costs for the purpose of increasing labor-force demand as well as precautions to facilitate access of employers to a more effective labor force.

One of the main institutions regulating labor markets is the support for education. Considering the relation of educational support with labor markets and wages, the dominant approach is to support the primary and secondary education of the public since their outcomes are higher and higher education should be left to the market. Other studies on this issue found that many employees with a low level of qualification arise in the labor market in the case of supporting primary and secondary education, which made wages low. On the other hand, the entry of highly-qualified employees to the labor market increased the wage level. Therefore, it is recommended that educational support be more widespread (Dur & Teulings, 2004).

Qualification and Skill Mismatches in Labor Force with Higher Education

Today, different concepts are used as a unit of analysis in labor market analyses. The oldest concept is labor, which has the more abstract

meaning of a production factor, and emphasizes similarities instead of personal differences. The concepts of labor force and manpower were used in the period when production was mostly based on muscle strength. Manpower initially meant labor based on muscle strength, and its meaning changed when “Manpower Planning” started to be used in economic planning literature. It is now used with the meaning of a qualified labor force for achieving the objectives of an economic plan. This concept was also preferred in the developmental plans of Turkey. The concepts that were used started to change when the production structure changed. At the business level first especially, the concepts of personnel then human resources were used. Human resource underlines the proportion of a company’s facilities in production of commodities and service. What differentiates human resource from labor force and labor is that human resource emphasizes quality less (Geylan, 2007, p. 3).

While expressing the quality of a person’s labor, education, diploma, and conventional professional title, the skills that can be used in the business world have become the indicator of an employee’s qualifications. When job advertisements in newspapers are reviewed, one can see that certain skills (sometimes only skills) are required along with education and diplomas for the jobs posted. The concepts of labor and labor force are still used in macro and theoretical explanations. However, these concepts have lost their ability to be explained in the analysis performed on labor markets. As a result, skill supply, instead of labor supply, and skill demand, instead of labor supply, are used intensely. Qualification, which is often used with the concept of skill, mostly means the sum of skills and level of qualification of education. Therefore, qualitative mismatches in supply and demand in labor markets are named as qualification and skill mismatches in this study.

An expansion started in the higher education system worldwide beginning in the 1960’s. Thus, the rate of higher education graduates increased among employees. Today, the schooling rate for higher education exceeds 60% in some countries. Other changes are experienced in the dynamics of labor markets with a rise of employee education levels. Researches indicate that the geographical mobility of people with a bachelor degree in business market is higher compared to people with a lower degree of education. While 45% of people with bachelor degrees settle in a city other than their birth city in their 30’s, this rate is 27% for high school graduates (Wozniak, 2010, p. 944). Since the total education investments of higher education graduates is clearly higher than lower education levels, graduates may act more flexibly with respect to changing places for the purpose of utilizing this investment (Budria & Moro-Egido, 2007). On the other hand, the increase of higher education graduates in the total labor force has a reducing effect with respect to the mobility of labor force in terms of qualifications and skills. That means graduates are willing to work in fields where they can use the competences they have developed after many years.

The labor markets involving higher education graduates may often contain qualitative and quantitative mismatches. While labor supply is below the demand in a local or sectoral labor market, there might be more employees than demand in another sector. Mismatches may sometimes be in the form of a labor-force supply which is not appropriate for the job in terms of occupation or qualification. The situation where companies cannot find people with the required qualifications for the number of open positions announced is called skills shortage. Companies may often employ people who have different qualifications than the ones required by the job,

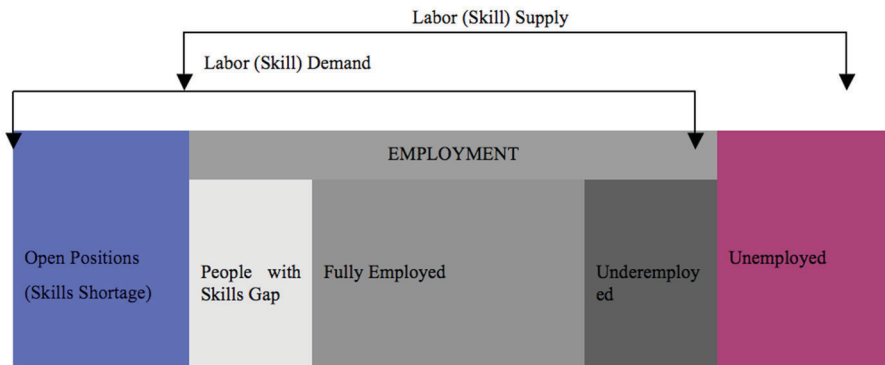


Figure 2: Qualification and skill mismatches in labor force.

or people who are below the required qualification level. Sometimes, the qualifications required by a job may become more complicated or change with time, and the skills of people already employed in a position may not suffice to perform that job productively. Such situations are called skills gap (Shah & Burke, 2003, p. 49; Tessaring, 1998, pp. 278-279). On the contrary, being employed in a job which is below one's qualification level is called underemployment. This situation is called qualification and skill mismatches in labor market and can be drawn as follows:

Different types of skill mismatches are observed on the graph. As can be seen from the graph, labor supply consists of the employed and unemployed. However, while part of the employed are employed in accordance with their qualifications (full employment), part of them are employed above their qualification level (skills gap) and part of them are employed below their qualification level (underemployment). Labor demand consists of the open positions posted as well as the employed. The graph also shows that there might be unemployed people while there are open positions on one side (skills shortage). Failure to match the unemployed with open positions might have various reasons such as work conditions, insufficient wages, market discrimination, geographical mismatches, and so on. The most well known reason is the fact that the qualifications of the unemployed do not match the qualifications required for open positions.

The qualifications and skills of higher education graduates should not be expected to match the skills required in labor markets themselves. This is because individuals make their higher education choices not only according to employability but also according to many social, cultural, and psychological variables. The study conducted by Çelik and Üzmez (2014), which examined the researches performed on the career choices of students in education fields and individuals working in various industries revealed that professional choices are made depending on factors such as interest in job, having professional knowledge and skills, the possibility of finding a job, job security, wage, career facilities, holiday facilities, social respectability, ease, family, and environment. That is to say the natural situation has mismatches. In cases where unemployment increases, it can be accepted that regarding their career choices people will consider the future employability of the higher education program they apply for. In the presence of healthy data concerning the future

situation of higher education programs in terms of employability, it can be said that qualification and skill mismatches will be reduced by considering such information in their career choices.

The demand for higher education has also increased in this period, also called the information society. Information society is not only about increased participation in higher education and information-intensive manufacturing industries, but also the structural shaping of work organizations according to information (Teichler, 1999). An increase in information and the importance of higher education as well as a variety of education programs makes it more important to transfer the skills obtained during the education process to working life.

Many studies have been conducted with respect to the results of the different types of qualification and skill mismatches summarized above. The results of unemployment are clear. However, mismatches do not always result in unemployment; graduates are employed somehow. Education-to-job mismatches occur in the case of employment. Open unemployment occurs when there is an excess of graduates from education programs within a very specific field of education and the application of higher education. However, this condition does not create absolute unemployment for graduates from other programs. One research performed in this respect indicates that three types of problems emerge when the number of graduates from an education program exceeds the demand: a) graduates may accept jobs below their education level, b) part-time employment increases, or c) they may earn less compared to those in the same profession (Wieling & Borghans, 2001).

Skill gaps are analyzed using the concept of under-education when examined in terms of the education levels of employees, and underemployment is analyzed using the concept of over-education. Studies using such concepts define the under-education or over-education of an already employed person compared to the requirements of a job as education-job mismatch. In other studies, qualification is defined according to the education received. In some of these studies, employees were asked to indicate if their qualification is under or over the requirements of their job in order to test if the employees have such qualifications. A lack or surplus of skill is identified according to the person's statement (Allen & van der Velden, 2001; Di Pietro & Urwin, 2006).

Mismatches between education and work have led to major problems in the labor markets. There are empirical studies indicating that over-education has

impacts on labor turnover, choice of profession, and job satisfaction. The main focus of the researches studying education-job mismatches is to examine the impacts of such mismatches on earnings. Empirical studies are carried out to understand how earning will be shaped in the case of any mismatch with the education level of an employee to the education and qualification level required by the job. Such studies indicate that people who are overeducated for their job have income losses. The incomes of undereducated people for the requirements of their jobs are higher when compared to other people (Sicherman, 1991). However, over-education has a higher impact on income. There are different approaches for interpreting this condition. Assignment theory claims there must be a correct match between an employee and their job so that this person's capital can lead to an increase in income. When a person works in a position under their education level, their productivity decreases and thus income loss occurs since they cannot reflect their skills on the job and the job confines them. On the contrary, one's income increases when a person employed in a position above their education level can use their skills optimally, leading to an increase in productivity. Human capital theory claims that people employed at positions under or over their education levels are actually recruited at such positions due to the other human capitals they have or don't have. This capital is work experience. Over-education is mostly seen in people who have just entered into the business market. Starting work at a position under one's level with a decline in productivity is a result of lack of experience (Allen & van der Velden, 2001).

Another research concerning the impact of skill mismatches on income indicate that the education level and qualification level required for a job become determinant when the education and qualification level of a person is different from the education and qualification level required by the position they are recruited for. According to a research performed on the education and income of employees in Italy, it was observed that a person working in a position where they could use their skills had a higher income compared to another person with the same education and qualification level. Similarly, a person working in a position beyond their education and qualification level had a higher income compared to another person with the same education and qualification level (Di Pietro & Urwin, 2006).

One of the factors that leads skill mismatches to be more prevalent is the title and content of education programs. Another field research showed that income loss caused by education and job mismatch

is higher (32%) in cases where higher education programs have more specific titles and contents (such as Sweden). However, income differences decrease as the experience of employees increases according to the research. On the other hand, people employed in a field other than their field of education attend more courses. No finding was found in the research which indicates that people who started to work in a field other than the field they graduated from moved to their original field with time (Nordin, Persson, & Rooth, 2008, p. 10).

Skill shortages and gaps may have severe adverse effects on employees, companies, and the economy. Being employed at a position under one's qualification level leads to significant income losses. On the other hand, it can be said that skill shortages and gaps constitute an obstacle for fulfilling quality standards and developing new business practices, products and services, as well as the growth of a company in general. Economically, it has negative impacts in terms of developing the production and technology of a country, increasing added value of production, and increasing national income as a result. Another study conducted in this respect indicated that skill shortages decreased productivity by 0.4% in England between 1983 and 1989 (Haskel & Martin, 1996).

Overview of Skill Mismatch in Higher Educated Workers in Turkey

There has been no research covering higher education programs at a national level or different levels with respect to matching the numbers and qualifications of graduates from higher education programs in Turkey to the requirements in the labor market. On the other hand, there have been field researches concerning the skills expected from graduates of higher education from employers at different levels. Various field researches have been prepared by employer organizations and international organizations in this respect.

As the employment-creating capacity of an economy and low education level of the labor force were emphasized with regards to reasons for unemployment before the year 2000, qualification and skill mismatches were considered to be an important reason for unemployment after those years and active labor force programs were underlined in order to eliminate such mismatches. While qualification and skill mismatches were not mentioned in the unemployment report issued by TÜSIAD in 2002, the subject was covered significantly in the 2004 report. The variance of relative unemployment rates

was used in the report to identify the aspects of occupational, industrial, and regional mismatches. Relative unemployment rates were calculated by dividing the calculated unemployment rate for each group of occupation by the average unemployment rate for all occupations. Variance in growth among relative unemployment rates is considered to be an indicator of supply and demand not developing in the same direction as when grouped by occupation (TÜSİAD, 2004, p. 179).

The report published with respect to the current situation from the Turkish Higher Education by YÖK (Council of Higher Education) mentions the mismatches between higher education programs and labor markets. Especially, Vocational High School (VHS) issues were mentioned in the report since a direct economy is set up in line with the intermediate manpower needs. The report mentions that the issues related to the employment of VHS graduates in their own fields continue and only 50% of graduates from the current 490 VHS create sufficient employment facilities in the labor market. It was stated that there are significant differences between the competences offered by VHS and the expectations of business life. Moreover, some education programs directed at narrowing fields creates an obstacle for graduates to reflect their skills onto other fields when they cannot find a job in their own fields. The report, which includes protocols for developing VHS along with industrial collaborations and projects for harmonizing the structure, equipment purchase of VHS, and VHS programs, also involves the objective "Initiating Turkish Business Life: Manpower Planning Project" (YÖK, 2005, pp. 90-92).

As part of World Bank Higher Education Industry Studies, a research team from the Turkish Economy Policies Research Foundation (TEPAV) conducted research inquiring into the aspects and nature of qualification and skill mismatches between higher education and the private industry. During the research, people from private industry, higher education, and local İŞKUR offices were interviewed. The survey was conducted with students, company employees, unemployed people from 14 cities, and with 1900 companies in 57 cities. It was observed that employers had a more critical view towards universities despite their moderate criticisms about the graduates. It was mentioned that there were significant problems in information flow from higher education to private industry and challenges about cooperation. While demand cannot be met in certain regions, there is a supply beyond the demand in other regions. The research indicated that mismatches

between supply and demand are wide within the regions and it was suggested that higher education programs present an approach that considers regional needs. In short, it was seen that there are important barriers between the relations of universities and the private industry (World Bank-TEPAV, 2007, pp. 9-20).

One of the important subjects in labor market analysis is the transition from school to work. The report issued by the World Bank Human Development Industry (Turkey Unit) conducted researches for reviewing the conditions of youth in the local labor market, employment facilities for youths, the quality and role of education and training systems in their transition from school to work, and second chance programs applied in situations for dropping out of school. According to the report, skill deficits are among the significant issues that make entry into the labor market more difficult. Companies see a mismatch between the skills graduates bring to the labor market and the skills companies need. The main factors they consider are: preparations for the challenge of transitioning from school to work are insufficient (26%), lack of experience (25%), insufficient information about the existence of work (19%) and school preparations are not in compliance with existing jobs (17%) (Dünya Bankası-World Bank, 2008, pp. 2-5). Insufficiency of school preparations together with the in compliance of existing jobs with new graduates' qualifications are the indicators of mismatch between qualification and skill.

In the document on higher education strategy issued by the Higher Education Council in 2007, the employment issues of technical education faculty graduates were mentioned as a field in which matching the number of graduates from higher education programs with the demand cannot be ensured in the labor market. It was mentioned that the number of graduates employed by the Ministry of National Education since the beginning of the 1990's gradually decreased to 5%, and only 19 out of the 1,669 candidates who applied for the KPSS (Public Personnel Selection Examination) in 2005 were appointed jobs. This caused a visible disappointment, decline in motivation, and a feeling of hopelessness about the future in existing students, turning into disappointment and social issues for the graduates (YÖK, 2007, p. 112).

One of the strategic objectives in the document is listed as "increasing the responsiveness of the higher education system to meet the demands of society and labor markets." Under this headline, it was stated that increasing the capacities of higher education programs without considering the demands of labor markets will cause an increase in unemployment

among the graduates from higher education. Considering the nature of skill mismatches, “a deficit is underlined in respect to generic skills aside from occupational knowledge,” (YÖK, 2007, p. 189).

One research was conducted on the entry and early careers of higher education graduates into the labor market in the scope of the Higher Education as a Generator of Strategic Competences (HEGESCO) Project executed by the European Union Lifelong Education Program. Turkey was also included in the sampling of the research. Covering a total of 70,000 higher education graduates in more than 20 European countries, the research revealed the following findings with respect to mismatches between the competences of Turkish graduates and their existing jobs:

- 30% of graduates were found to work at a job which does not require higher education according to the International Standard Classification of Occupations [ISCO].
- 38% of graduates felt that their job was completely appropriate for their field of education.
- 11% of graduates thought their job didn't require a higher education diploma.
- 30% of graduates felt their skills were not used sufficiently in their current job.

With these findings, Turkey was ranked among the 5 worst-matching countries among 20 countries in terms of a mismatch of the qualifications and skills of the labor force to higher education (Allen & van der Velden, 2009, p. 115). The findings of the research indicate underemployment in at least 30% of employees.

In summary, the mismatches of the qualifications and skills of the labor force with higher education are very persistent in Turkey. The main reasons for these mismatches are thought to come from a lack of information on which higher education graduates will be needed in the future as well as to what extent, setting the student capacities of higher education programs without considering the demands of labor market, and failure to ensure skills-matching in higher education programs with the business world requirements due to insufficient communication between the higher education system and business world.

Fundamental Approaches and Tools in Forecasting Skill Needs

Since an education system review takes a long time for learning how to meet skill needs in the labor

market, required preparations in the education system must be made in advance by forecasting future skill needs to eliminate mismatches between qualification and skill. Studies conducted on how to best identify skill needs and reflect such needs for choosing the number of students and curricula in the education organizations are supplied from two different approaches positioned against each other. These approaches are manpower and social demand.

Manpower Approach

The manpower approach was developed to allow education institutions to plan in line with the needs of the economy. The manpower approach is based on the demand aspect of labor in eliminating qualification and skill mismatches and has found a wide range of applications since the 1960's. This approach and the models used in it were developed in line with its criticisms over time. In the broadest sense, this approach aims at directing the existing labor force and employment in line with the future manpower needs of the economy, thus ensuring a match between labor supply and demand. This approach requires interweaving the qualifications and skill structures of the labor market in order to achieve the desired economic objectives and ensure a balance between the supply and demand of skills in labor markets (Richards, 1994, pp. 1-15). This perspective is considered to be a product of Keynesian economy.

Manpower approach is an element of the planned economic development model. One of the main tools of economic policies in the Eastern and Western Block countries since the 1930's has been development plans. The need for planning was put forth as a precaution against the continuous danger of recession in Western economies based on the free market. Planning is considered to be a mechanism for preventing trends that damage the market system or as compensation for damages caused by poor performance in the market. The comprehensive and central planning model has been used in the Eastern Block as opposed to the Western Block. In less developed countries, planning is considered to be a resource-allocation mechanism in terms of catching up economically with developed countries. Research into development economics indicates that the distribution of resources is different in less developed countries and the market economy plan does not work in such countries. Therefore, an effective distribution of resources was imposed on planning in these countries (Hesapçioğlu, 2001, pp. 4-6).

One of the main items of such plans is manpower planning. Manpower is considered to be the human element that ensures economic development and production. It is thought that manpower qualifications must be appropriate for the requirements of an economy so that production at an expected level and quality can be performed during the plan period. Manpower planning mainly aims to match manpower supply and demand. Manpower planning is considered to be a tool for ensuring a match and overlap between the education system and economy, as well as a tool for regulating labor markets. In this approach, its initial aim is to forecast the manpower needed by the end of a planning period then later plan the education system in accordance with such needs (Hesapçıoğlu, 2001, pp. 23-25). However, it was understood that manpower forecasts are not sufficient at regulating the education system themselves, and therefore an obligatory bond with education planning was abandoned due to failures in forecasting manpower demand. Manpower forecasting or manpower projection concepts were used instead of manpower planning over time (Wilson, 2001, pp. 569-570).

Manpower requirement is used as the dominant model although there are various versions. This approach found itself a wide range of application in the scope of the Mediterranean Regional Project [MRP] of the OECD in the 1960's. This model includes three stages in general: (a) projection of demand for educated manpower, (b) projection of educated manpower supply, and (c) balancing supply and demand. On the side of demand, the number of employees taking place in the labor market according to education level is studied over time. The function for demand is calculated using the following formula and process-steps for the educated labor force (Hopkins, 2002, pp. 3-4):

$$L_{ijk}^D = f(X, X/X, L/X, L/L, L/L)$$

i = economic industry, j = occupation, k = education level, a = age, s = gender;

1. Forecasting the national income for a given year in the future (X)
2. Forecasting possible changes in the structure of the economy and, accordingly, the distribution of national income to the industries over time (X/X)
3. Forecasting the labor force productivity and change of productivity according to industry over time (L/X)
4. Forecasting the occupational structure of the labor force according to industry and the structure of this distribution in the future (L/L)

5. Forecasting the education structure of people who will hold various positions within the economic industries and the change of this structure over time (L/L)

The model contains the following four-phase process chain in forecasting the supply side. Supply projection is made with the following formula for the educated labor force:

$$L_{ijk}^S = f(P_{a,s,k}, E_{a,s,k}, I_{a,s,k}, M_{kj})$$

1. Expressing the population according to age, gender and education level ($P_{a,s,k}$)
2. Expressing the number of graduates and those dropping out of school according to age, gender, and education level ($E_{a,s,k}$)
3. Identifying the participation rate of graduates in labor force according to age, gender, and education level ($I_{a,s,k}$)
4. Forecasting the supply of occupational staff and creating an occupation-education matrix according to education levels depending on the labor force supply (M_{kj})

Finally, the manpower planning approach aims to ensure a balance between supply and demand once supply and demand projections are made. If there are significant differences between two values, the data based on forecasts is first examined. For example, increases in labor force productivity will decrease labor force demand. The realism of forecasted values is questioned at this point. Despite that, if there is still a significant gap between supply and demand, policy suggestions are developed to eliminate this gap.

The manpower model developed and applied in the scope of the OECD Mediterranean Region Project (MRP) received a lot of criticism. The researches that reviewed the manpower forecasting approaches used in Canada, USA, England, France, Thailand, Nigeria, India, and Sweden made the following criticisms with respect to these studies (Ahmad & Blaug, 1973): (i) employment projections according to occupation using the MRP resulted in significant forecasting errors, (ii) errors are basically caused by the fixed coefficients model with increases in the assumed labor-force productivity, (iii) forecasting errors increase as the length of a forecast is extended, (iv) no evidence was found indicating manpower forecasts are associated with education policies.

Macroeconomic policies were taken as the basis in Europe following the oil crisis of the 1970's in order to increase the flexibility of the supply side of the economy. In this understanding, it is more important to make market mechanisms function

well. In terms of labor markets, it was required to abandon the education planning approaches of the 1960's. In order to ensure the matching of education and labor markets, an approach based on making the labor market transparent for people to select an education program and invest in education by providing sufficient information about the labor market as opposed to direct intervention through the education system. It was thought that the forecasts that were created using this approach would assist companies in taking precautions against bottlenecks that might be experienced in some skill categories. Companies would be able to produce options such as developing some policies in order to organize in-service training in fields where skill-bottlenecks might be experienced so as to retain employees in that field (Cörvers, Grip, & Heijke, 2002, p. 187). Around the same date, one sees the belief in the predictability of future manpower requirements in labor markets and economy was shaken once the Fordist-Taylorist production style was abandoned and flexible production came up. Despite that, manpower planning was not completely abandoned; it has maintained its presence until today, having turned into a more flexible and developed instrument.

Social Demand Approach

While the manpower model was revised as a result of the failures from manpower approach, various skill-need determination models were developed which were philosophically and theoretically contrary to the manpower approach. A majority of these models suggest grounding on the options and needs of individuals, not the forecasted requirements of an economy, for forecasting skill needs and identifying the student capacities of education institutions. On the other hand, they also criticize the view of education as just a function of economy because education can have different advantages for individuals. Ignoring these advantages in the forecasts of the manpower approach has been a significant factor (Sheehan, 2012, pp. 19-30; Vanderstraeten, 1997, pp. 326-327). Not only individuals but also governments pursue social objectives while identifying the capacities of education institutions. For example, the objective of 100% schooling at the primary school level is determined with social objectivity. Such models are accepted within the social demand approach since they prioritize the social demand for forecasting skill need and identifying the capacities of education institutions.

The Labor Market Signals model is the most significant one among the models based on social demand as opposed to the manpower model. This model, which defends that the structure of a labor market is unpredictable, also considers long term projections in the labor market as unproductive. The definition of occupations also changes with rapid technological advances. Therefore, the attempt to identify labor force demand and make manpower projections before occupation brings along various challenges. This model focuses on labor market analysis (instead of forecasting future need) for members of occupation, and it focuses on developing short-term policy suggestions based on this analysis. The labor market signals that are often used are wages, employment trends according to education and occupation, unemployment rates classified according to education, qualification and occupations, costs of various education programs, education institutions, number of people registered in education programs and various courses, and job advertisements in newspapers and magazines. In this model, it is thought that labor market signals will provide healthier data with respect to the manpower requirement of the market (Adams, Middleton, & Ziderman, 1992, pp. 7-22).

It is clear that this model is opposed to planning or forecasting manpower requirements considering past trends and macroeconomic trends. The deterioration of plans and forecasts is considered a function of the market mechanism. This model is based on the assumption that labor-force supply is responsive enough to the demands of the market. If healthy data is available on labor market signals, then it is claimed that individuals, companies, and education institutions will make arrangements according to such signals. For example, an increase in the wages of an occupation is a signal indicative of insufficient human sources in that field. If information concerning this indicator is easily accessible, people will demand that this occupation be trained for more, and education institutions will begin more training related to this occupation (Psacharopoulos, 1991).

Another model that can be ranked within the approach of social demand is the rate-of-return model since it is based on individual and societal returns (the demand) in identifying the capacities of education programs as well as not reacting to long term projections. The rate of return is calculated by comparing the net income obtained over a lifetime as a result of education to an income obtained in the absence of such education. According to this

model, education programs which have a positive impact on a person's income should be increased and supported; programs which don't have a positive contribution, however, should be reduced and abandoned. Claiming that manpower forecasts use educational resources unproductively, the rate-of-return model has also received a lot of criticism. The main criticism for this model is that it doesn't have the tools or variables which can substitute for manpower forecasts (Richards, 1994, pp. 3-4). Following these criticisms, multiple regression equations using more independent variables were used, as per Mincer, in order to explain earnings. Mincer added other trainings, experience, and the number of weeks being employed to school education. However, he maintained the assumption that earnings play a key role in identifying the qualified manpower demand for the future (Hopkins, 2002, p. 7).

One of the issues raised by the rate-of-return model is whether generic academic education or occupational and technical education has a higher return. The majority of researches conducted by the World Bank indicate that generic academic education has a higher return. Almost all research indicates that the education category with the highest one-year return is primary school. Therefore, World Bank started to support primary education and generic secondary education instead of occupational education (Psacharopoulos, 2004, pp. 30-32). On the other hand, one research examining these studies methodologically claimed that primary education seems to have a higher return since the subjects employed in the rate-of-return calculations are the people who received primary education during the time when primary education facilities were much more limited compared to today (Lauglo, 1996).

Despite such criticisms, it can be mentioned that the rate-of-return model is a significant tool in terms of education policy and that such a cost-benefit analysis will make important contributions for education investments in less developed countries and developing countries where resources are more limited and educational investments are important costs.

Table 1

Comparison of the Manpower and Social Demand Approaches

Manpower Approach	Social Demand Approach
Keynesian Economy School	Neoclassic Economy School
Labor-Demand Oriented	Labor-Supply Oriented
Requirements of Economy	Requirements of Individuals
Long-term planning	Short-term policy
Future skill needs are predictable.	Skill needs of economy are unpredictable.
Skill needs can be determined best with national-scale forecasts.	Skill needs can be determined with labor market signals.
Economic function of education	Societal function of education
Capacities of education institutions and programs should be identified in line with the skill needs of the economy.	Capacities of education institutions and programs should be shaped according to the demands and choices of individuals.

Increased criticism against the manpower and rate-of-return approaches has caused distrust of all quantitative projections made for the purpose of matching education and employment relations. As a result, methods including combinations of qualitative and quantitative approaches have been developed. It can be said that pragmatic approaches will be needed where data quality is problematic.

Tools, Techniques and Mechanisms Used in Skill Need Predictions

Education plans made in line with both manpower and social demand approaches start by identifying skill needs. Employment projections according to occupation and education are the tools that indirectly allow identification of skill needs. In realizing these projections, the economy that is prepared at a national level and periodical information systems that are created for the labor market are generally used. For the purpose of identifying skill needs directly, various tools are used to collect information through the employers who are demanding skills and the employees who provide the skill supply. Principal among these are employer surveys, sectoral and local labor market studies, and the labor market experiences of graduates. Aside from these, skill predictions can be developed through various corporate mechanisms.

Labor Market Information Systems: Labor Market Information Systems have come to the fore as a result of the insufficiency with the manpower and rate-of-return approaches with respect to employment predictions. It is mainly important to have more information about the business market in this system. When more information is obtained with

respect to the labor market, it is assumed that labor force will be directed to fields with skill shortages and education programs will be regulated according to this information. The statistical information created from representative samples concerning the monthly or quarterly labor market emerges as a product of this thought. These are conducted in the form of household labor-force surveys.

The main problem about these data systems is when too many questions are asked to the survey participants without using a sufficient analytical framework. The data generated in this manner does not provide enough benefit for setting policy. On the other hand, the fact that the data used in forecasts is insufficient is another basic criticism against the manpower approach. Mainly, there is a problem with respect to making the information systems of labor markets usable for forecasting employment according to education and occupation. One of the criticisms towards the labor market is that it ignores the demand side of the economy. Economic growth forecasts are the basic parameters for employment projections. However, labor market information systems do not take this aspect of the economy into consideration (Hopkins, 2002, p. 10).

Employment Projections According to Occupation and Education: The main tool used in forecasting skill needs at a national level is employment projections. Such resources act like a guide for individuals who are making their occupation choice as well as for higher education institutions that are planning to open a program in that field. There are various versions of the main model described within the manpower approach in the projections. Projections calculate how to distribute employment in the future according to education and occupation groups. Such calculations are made for providing results to distinguish industries and regions. In the projections, it is basically estimated how far the existing employment demand will reach in the target year. Labor force supply is then calculated for the target year (how many graduates will be supplied by the education institutions based on their existing capacity) and any gaps between the two are indicated (Neugart & Schömann, 2002).

Employment projections according to occupation and education constitute a solid basis for education planning and occupational consultancy. The most successful example in terms of concrete products of occupational employment studies that were created on this basis is the "Occupational View Manual" issued by the Bureau of Labor Statistics

(BLS) in the USA. Each occupation is considered to be a market within itself. For example, the section reviewing sociologists indicates how many sociologists are employed in each state (in the USA), in which economic industries they are employed, which positions they are employed in within the businesses, and how many sociologists will be employed 5 years and 10 years later according to employment projections (Bureau of Labor Statistics, 2012). Published online, such data is updated at regular intervals.

The BLS Occupational Employment Projections start by establishing macroeconomic models including many dependent and independent variables for providing growth forecasts in the industry and at regional levels. Then, the total industrial productions that will provide the estimated growth are calculated and the amounts that will be produced by each industry are calculated in terms of money as a result of the relations between industries by using input and output charts. In the next stage, the amount of labor required to perform such industrial productions are revealed hourly while considering the past trends of industries in their usage of labor. Based on this, employment demand on the basis of industry is distributed over paid, salaried, self-employed, and unpaid family workers. Industrial employment demand is separated according to occupation using an industry-occupation matrix obtained by wide workplace counts. The results obtained are reviewed by experts employed for each occupation group and adjustments are made accordingly. Apart from growth-oriented employment, the gaps to be created by those leaving the labor market for various reasons are revealed by examining the age structures in occupations. Thus, jobs that will be opened in each occupation group are calculated. When new jobs that will become available are presented using the required education and competence levels, it will also identify which education-level programs need to become available so that employment demand can be met. The occupational employment statistics issued by the BLS for creating the industry-occupation matrix are prepared using surveys conducted on 20,000 businesses every six months. These surveys cover almost 450 industries investigating 800 occupations (Barnow, 2002).

Employer Surveys: Employer surveys are often used in forecasting short-term needs in labor force demand. Such surveys ask the employers or their representatives what open positions are already available in their businesses. Then, the qualifications and skills they expect from employees in the short and

medium term are asked. These surveys are generally useful in identifying the skills that require short-term training. In particular, the different skills needs for local labor markets are identified using these surveys, then these skills are improved through the opening of courses. The accumulation of survey data to cover the long term might constitute an important source of data on the transformation of qualification and skill structures in the labor market [European Centre for the Development of Vocational Training (CEDEFOP), 2008, p. 17]. Various criticisms have been made with respect to the value of employer surveys and what they measure since the meanings imposed on concepts such as skill deficit and need differ. Therefore, it is suggested that people should be careful in interpreting employer-survey results for identifying skill needs. It is also mentioned that conducting in-depth interviews with respect to the situation of certain skills in the market will render healthier results for the purpose of overcoming the risks related to measurement (Shah & Burke, 2003, p. 68).

Researches on Transition from School to Work: Labor Market Experiences of Graduates: Different types of researches are conducted to evaluate the conditions experienced by graduates from various education institutions in the labor market. The most common one is the type of research measuring the employment status and employment conditions of graduates from higher education institutions over a certain time. Particularly, such surveys investigate how many graduates are employed within six months after graduation, what positions they are employed in, and the wages they receive. While some of the higher education institutions themselves apply such surveys, superior entities related to higher education may also perform these studies in some countries. The results of surveys are used as a quality indicator by higher education institutions and they are allowed to review their education programs and institution policies based on these survey results (Higher Education Statistics Agency [HESA], 2013).

These studies, which can be called the “first stop” of graduates, reflect a very limited part of the labor market experiences of graduates. Therefore, researches are conducted to review the labor market experiences of graduates in the years following graduation. For example, these studies question the process of transitioning from school to work in 2000 and their experiences in the labor market until 2005. These researches can be performed internationally as well as nationally. For example, CHEERS (Careers after Higher Education, a European Research Study) was conducted with the participation of nearly 3,000

graduates from higher education in 13 countries between the fall of 1998 and summer of 2000 (Schomburg & Teichler, 2006, pp. 151-168). Hundreds of scientific studies have been conducted using the data generated in the scope of research. The most questioned subject in these studies is the relationship between competences obtained by graduates and the competences demanded (Kellerman, 2007; Kivinen & Nurmi, 2007). Also questioned are the factors that define professional success of higher education graduates and which competences are awarded in the labor market (Aracil, Ruiz, & Vila, 2004; Schomburg, 2007). Many international comparisons have also been made thanks to the research performed under international cooperation (Yoshimoto, 2003). In short, the research provides information on the structure and expectations of the business world based on labor market experiences of higher education systems, and it contains very useful data in terms of reflecting the same on education programs.

A similar study was conducted in 16 countries with funds from the European Union. Around 70,000 graduates from 2000 comprised the sample of the research. Data was collected by reaching these people five years later in 2005. The research attempted to find answers to questions such as “Which competences are required for higher education graduates to function in an information society?” “What could be the role of higher education institutions for helping people gain such competences?” and “What types of frustrations occur between graduates, higher education institutions, and employers while trying to achieve their goals and how can they be solved?” (Allen & van der Velden, 2011, p. 19). Comparable data was generated for the comparison of five countries (including Turkey) by using the measurement tools from Higher Education as a Generator of Strategic Competences (HEGESCO), which was conducted in the scope of the European Union Lifelong Learning Program and REFLEX Project.

Sectoral and Local Labor Market Information: Manpower forecasts at the national level generally present quantitative data according to industrial and regional distinctions. However, it is not possible to provide sufficient detail about the industry, questions that are specific to an industry or region, or trends or requirements; this is natural in such forecasts. On the other hand, prepared data which is sensitive to industrial or regional structures are more effective in meeting skill needs. Recently, there have been efforts to engage industrial and local actors in the process of forecasting skill need.

For these purposes, industrial skill councils and committees have been established under different names. Such structures organize activities such as research, meetings, and reports in order to identify the industrial or regional skill needs. Manpower forecasts at the national level are also based on such structures. Institutions with a budget can prepare reports by conducting comprehensive field researches. Such structures which are not institutionalized enough in many countries act as a bridge between education institutions and the business world for providing the necessary qualifications and skills. For example, the Sector Skills Councils in England issue reports by making analyses related to the sector included in the employment forecasts from the national level, conducting surveys for the employers in the industry, organizing common sense meetings, and compiling data from various resources (Econ Pöyry, 2008, p. 47). Some councils have also released publications which can be considered in the scope of career consultancy for people planning to work in an industry, such as the members of an occupation employed in the industry, the skills required for such occupations, the duties of different positions, wages received, and which of these positions are expected to be open in the future.

In summary, the criticisms against the manpower model have resulted in improving the model. There are already very different versions of the manpower model. The USA and EU countries keep using long-term projections based on the manpower model. However, synthesis arising from the combination of the aforementioned techniques with the manpower model has emerged. For example, the model used in the USA is a combination of the manpower model and labor market signals. Additionally,

employment projections in almost all countries are prepared according to different scenarios. Differential values are used instead of point values in order to make projection data flexible. Each of the abovementioned approaches has various advantages and disadvantages, as is summarized in Table 2.

As can be seen from the table, it is not possible to forecast skill needs healthily with a single method. It can be stated that the general trend for this condition is the use of too many methods and information resources in researches related to skills and employment.

Occupational Standards and Higher Education Qualification Frameworks: Occupational standards can be defined as the criteria created by listing the information, skills, and competences required to perform an occupation. These standards are guide texts with respect to the knowledge and skills employees should acquire. Prepared by the National Vocational Qualification Institutions or by people or institutions qualified with respect to that occupation, these documents naturally constitute a resource for the process of identifying curriculum in education institutions (Allais, 2010).

In the qualification systems, qualification levels are created according to the difficulty level of knowledge, skill, and competence. These systems were developed over years in some European countries and have been turned into a system that includes grades one through eight as the European Qualifications Framework (EQF) by standardizing under the leadership of the European Commission for the purpose of making such qualifications comparable, movable, and transparent between countries. This framework covers lifelong education as well as all education levels. The Qualification Framework for European Higher Education Area

Table 2
Advantages and Disadvantages of the Tools for Forecasting Skill Needs (Strietska-Ilina & Tessaring, 2007, p. 38).

Approach	Advantage	Disadvantage
Surveys questioning employers or other groups with respect to skill deficits	<ul style="list-style-type: none"> • Direct • Beneficiary participation 	<ul style="list-style-type: none"> • Subjective • Inconsistent • Failure to see far ahead • Focuses on positions not filled while ignoring skill deficits in existing employees
Projections at the national level based on a quantitative model	<ul style="list-style-type: none"> • Comprehensiveness • Consistency • Transparency • Quantitative 	<ul style="list-style-type: none"> • Too many data requirements • Costly • Fails to quantify everything • Possibility of giving wrong impression about precision
Studies specific to sector or occupation (quantitative and qualitative)	<ul style="list-style-type: none"> • Strength in subjects specific to sector 	<ul style="list-style-type: none"> • Partiality • Presence of inconsistencies among sectors
Other methods such as focus groups, round table and delfi	<ul style="list-style-type: none"> • Integrative • Direct • Beneficiary participation 	<ul style="list-style-type: none"> • Nonsystematic • Inconsistent • Subjective

(QF/EHEA) was created by harmonizing the triple qualification system as determined for the European Higher Education Area (bachelor's degree, master's degree, PHD) along with the Bologna Process and European Qualifications Framework (Higher Education Area [EHEA], 2010).

Social Dialogue and Cooperation: Governance practices, consultancy organs, and university-industry cooperation models which can be considered within the scope of social dialogue may have significant functions in identifying the qualifications required for workers with higher education and in increasing the sensitivity of higher education programs to labor markets.

The education strategy titled "Qualified Labor Force for Strong, Sustainable, and Balanced Growth" for G20 countries by International Labor Organization (ILO) states that a high-quality and extensive primary education is a requisite for skill development and an occupational education system focused on the right skills is needed after emphasizing the significance of the skills during development. It is also underlined that measurement of the right skills is the ability to respond to changing demands of labor markets and businesses and that strong bridges and social dialogue should be created between the education world and business world, as well as creating a qualified skill forecasting system (ILO, 2010, p. 2). The possibility of investing in the right skills at the right times for all parties upon creating partnerships between the government, employers, and employees for a meaningful bond between the business world and education world is highlighted. This partnership will be ensured through the participation of employers and employee representatives in the design and implementation of skill policies (ILO, 2010, p. 23).

The governance approach, which has been discussed widely in the field of management since the 1990's, is generally accepted in the management of higher education institutions. Speaking of higher education, governance focuses on establishing the rules and mechanisms in which stakeholders can affect decisions, how to ensure accountability of the system, and who will hold responsibility. On the other hand, governance provides a framework for institutions to maintain their goals and policies in an integrated and coordinated manner (The Information Network on Education in Europe [Eurydice], 2008, p. 12). This understanding leads institutions to be managed in a participatory and sharing manner. Since both the parties it affects

and the parties it is effected by vary, it is often mentioned that higher education institutions need to be organized in a manner in which relevant parties can take part in the management.

Since there is an increase in expectation from universities to meet economic and social needs in today's understanding of information society, higher education remains the focus of governments. On the other hand, the setbacks of performing knowledge production and teaching in a centralized manner will depend on higher education institutions being structured independently enough to respond to market changes quickly (OECD, 2003, p. 61). The autonomy level of higher education institutions is highly important in terms of quick response to local, regional, and sectoral changes. It can be stated that autonomy will increase the sensitivity of higher education to the needs of the business world in ways such as opening new programs, new courses, recruiting relevant employment rapidly, and designing and implementing research projects according to local and regional needs. For this purpose, the participation of local, regional and sectoral actors in university management is appropriate for the understanding of governance.

The framework of the policies for higher education institutions in European Union countries is often drawn by the ministries of education. However, there are structures at the national level with names such as Higher Education Council, Advisory Council, and Research Council which give recommendations to the relevant ministry with respect to higher education, science, and art policies. Such councils can also perform analyses that will be the ground for suggestions on trends at the European and international level. Representatives from other ministries, chambers of commerce, political parties, local administrations, and students can also take place in such structures as well as the senior managers of higher education institutions (Eurydice, 2008, p. 26). The corporate structures focusing directly on qualifications and skills in the labor market, as different from advisory structures, may also affect the higher education system. The European Commission also keeps working in order to establish councils on sector skills at the EU level (European Commission, 2008, p. 26).

Starting in the 1980's, it was witnessed that university demand for working in cooperation with the economy and increasing its contribution to innovation has increased. This approach, with the slogan 'university-industry cooperation,' intends to conduct projects

with businesses from industries relevant to the trainings and researches of those higher education institutions. It is mentioned that this cooperation will bring many contributions to both the universities and companies. The primary impacts of the university-industry cooperation on the parties are summarized as follows in a study related to the subject:

Table 3
Impacts of University-Industry Cooperation on Parties (Kiper, 2010, p. 42)

Results of Cooperation	Industry	University
Industrial value and knowledge accumulation (intellectual and industrial property rights, prototype instrumentation, know-how, solutions)	X	X
Increase in scientific inventions and knowledge		X
Academic output (book, publications, title, experience)		X
Access to scientific knowledge and expertise	X	
Scientific problem solving and consultancy	X	
New or expanded cooperation models, relations	X	X
Access to research tools	X	X
Access to industry-oriented problems		X
Increased demand for academic and industrial outputs	X	X
Revision in education programs, motivation for new education programs and researcher education designs		X
More funding for postgraduate researches		X
Increase in the number of shared researches within the industry, the number of doctorate studies, access to competent researches		X

As seen in Table 3, both parties have significant acquisitions in university-industry cooperation. University-industry cooperation contributes to the in-service training of academicians, the industry training of students with internships, and the relation between them is improved. A match is thus provided between the education programs and demands of the business world thereby increasing employability.

Which Studies Must Be Carried Out to Identify the Skill Needs at the Higher Education Level in Turkey?

The studies that must be carried out to decrease mismatches between the qualification and skills in the labor force with higher education in Turkey are expected to comply with the *effectiveness*, *efficiency* and *productivity* principles of management sciences.

Efficiency measures whether the work performed achieves the desired objectives, productivity measures how much input is used to produce the outputs, and effectiveness reveals if the process of the work functions properly (Yükçü & Atağan, 2009). The most important thing concerning the efficiency of the approaches and the tools to be selected depends on defining which problems and needs are to be solved, that is, on defining the theoretical basis and justifications. The ability to perform the selected approaches and tools along with a proper functioning of them will be achieved by making sure that they comply with the economic, social, and corporate infrastructures of the country.

As the geography of the Ottoman Empire narrowed down, a significant decrease was observed in the variety of people and qualifications of people performing economic activities. During the years of war between the 1910's and the middle of the 1920s, non-Muslim trade bourgeoisie abandoned the country. New merchants took their place in the same period (Keyder, 2009). Therefore, it was emphasized in the İzmir Economic Congress that capital should be saved and such capital must be a national capital. It was thought that the state should intervene in fields where capital saving is not sufficient. One can say that this understanding continues today.

Import substitution industrialization strategy was accepted in Turkey in the 1960's. Also, planned development periods started with the state planning organization established in the aftermath of the new constitution. The development plans which were mandatory for the public sector and a guide for the private sector legally constituted the basis of the mixed economic system (Akiş, Soyuyigit Kaya, & Çağlar, 2011, p. 107).

The Turkish economy moved from an import-subsidized industrialization strategy with protective policies to an export-based industrialization strategy with liberal economic policies as a result of the Resolutions of January 24, 1980. There have been changes in Turkey's economic planning approach since that time. An understanding of flexible planning started to develop with the economic and social plans issued by the State Planning Organization. By the 1990's and 2000's, the state had reduced its economic activities to a great extent through privatization and began to undertake a supervisory and regulatory function.

Considering the societal dynamics of Turkey such as population and education, Turkey has a young population firstly. However, the birth rate has been decreasing steadily. It is assumed that the population of Turkey at a working age will be high until the 2030's (Türkiye İstatistik Kurumu-Turkish Statistical Institute [TÜİK], 2013d). However, the condition of the youth in terms of qualification and education is not heartwarming compared to developed countries. According to TÜİK data, the percentage of higher education graduates in the 25-and-older age group is 16% as of the end of 2012 (TÜİK, 2013a). This ratio is around 50% in developed countries. Only 18% of the labor force is a higher education graduate as of the end of 2012 (TÜİK, 2013c). On the other hand, the percentage of the population at the age of higher education is recently 35% (as of the end of 2011-2012 academic year) with expansions in higher education (TÜİK, 2013b). Such developments indicate that the rate of higher education graduates in the labor force will increase. Considering the problems to be caused by an expansion not in compliance with the requirements of education, the need for skills forecasts is highly important. However, skill needs forecasts do not intend to limit the capacities of education. This is because education is not an activity performed only for economic purposes. On the other hand, a qualified labor force supply also has the power to change the economic structure. As a result, higher education programs will maintain the developmental trend depending on social demand to a great extent. In this setting, skill need forecasts and researches should be designed to guide in identifying the occupational consultancy activities, individual education program options, and academic units to be opened in higher education institutions.

Considering the current trends of the Turkish economy and community, it is clear that manpower forecasts and plans must be conducted with a more flexible understanding at a national level. Despite the criticisms towards the manpower approach, no macro-level tool has been developed that will allow education plans to be made by forecasting the long term skill needs. For these reasons, Turkey should prefer a mixed approach based on the criticisms towards the manpower approach and social demand to be developed. With this approach, it would be possible to make the manpower model flexible and enrich the macro-level forecasts with micro data.

An activity set involving three main items which combine worldwide experiences in the skill need identification studies is suggested to be carried out for the purpose of reducing skill mismatches in the

labor force with higher education in Turkey. They include: a) manpower forecasts to be identified according to the growth and trends of economy and industries at a national level, b) skill need researches generating more micro data to enrich national forecasts, and c) corporate studies in which social parties can contribute to and engage in education planning. The details are given in Table 4.

Table 4
An Activity Set Suggestion for the Studies to be Performed for Identifying Skill Needs at Higher Education Level in Turkey

Field of Study	Types of Study	Main Content of Study
Skill Need Forecasts at National Level	Developing Labor Market Information Systems	Household Labor Force Surveys, Workplace Counts, generating high quality data such as Social Security registrations and Public Organization Personnel registrations. Ensuring coordination between the organizations collecting this data.
	Employment Projections According to Occupation and Education	Forecasting the employment futures of occupations and education programs with labor market information systems, national counts, and expert opinions from occupations and industries.
Skill Need Researches	Researches on Transition from School to Work and Experiences of Graduates in Labor Market	Conducting researches on labor market experiences with respect to employment condition 6 months and 1 year after graduation and either 5 or 10 years after graduation.
	Local and Sectoral Skill Need Researches	Identifying skill needs in the sector by way of interviews and meetings with the experts. Additional researches on local labor markets and analyzing national data with local needs.
	Employer Surveys	Conducting researches with employers on which fields they have difficulty finding employees for, which skills they expect.
Corporate Studies	Social Dialog and Cooperatives	Receiving feedback on skill needs by way of cooperation and coordination between education institutions, employers (companies and employer representatives) and regulators (public organizations, unions, chambers of commerce and occupation).
	Studies for Identifying Occupational Competences	Identifying occupational standards, competences, and skill needs for the studies to be conducted with the experts and managers of the industry and occupation.

Employment projections to be made at the national level according to occupation and education require the highest corporate capacities, know-how, human resources, and budget to be among such studies. Countries with experience in this field use similar methods in making supply and demand projections

according to occupation and education. It is possible to implement or develop projection and forecast studies by making use of their experience. The occupational employment projection study of the USA's BLS, which was mentioned previously, offers an advanced view in terms of methodology. Therefore, it is useful to base the calculation model on this by making the required revisions in studies to be conducted in Turkey.

The studies indicated on the table can be performed by way of a work-share between organizations with legal liabilities concerning education employment relations, manpower policies, skill need forecasts, and researches such as the Higher Education Council, State Planning Organization, Turkish Labor Institution, Ministry of National Education, Turkish Statistics Institution, Social Security Institution, State Personnel Department, and so forth. Parts of such studies or similar studies are already being conducted. Examples include household labor force surveys, workplace counts, social-security registrations, public organizations' staff registrations, employer surveys, and occupational competence studies.

Conclusion

The labor supply arising with its unique dynamics and the labor demand arising as a result of the demands of companies are not equal due to their nature. Mainstream approaches in the economy have mostly dealt with the quantitative aspect of the balance of labor supply and demand (amount of supply and demand). These approaches claim that the market mechanism (especially wages) will have an impact on eliminating such mismatches. However, labor market analyses indicate that there may be unemployed people while there are open positions, and this imbalance may continue for a long time. This disproves the thesis that labor market will reach a balance by itself.

Researches on the subject also reveal that the market mechanism does not always impact elimination of the imbalances in labor markets. Segmentation in labor markets, dual labor markets, efficiency wage, job seeking, and implicit employment contract theories suggest explanations why wage does not serve to balance supply and demand in the labor markets. Labor market institutions and regulations that have been applied in developed economies may also be a setback for wages in regulating supply and demand. The failures with the market mechanism model prevent supply and demand from balancing in less developed countries.

Mass higher education has been adopted worldwide since the 1960's, and with this, the population of higher education has increased. The skills required in working life tend to change more quickly with the pace of technologic developments. It takes time to update education institutions so they can provide the skills required by the economy. Therefore, there are mismatches with the required number and qualifications of labor markets to the numbers and qualifications of the graduates provided by the higher education system. While there are open positions, some graduates still cannot find work. On the other hand, some employed people work in a field other than their course of education, while others work in positions requiring a qualification under or above their educational level. People employed at a position at their own educational level and related to their field of education are considered to be fully employed. The magnitude of people in other groups indicates the size of the qualification and skill mismatch. There are many researches underlining that qualification and skill mismatches cause financial loss for people and a growth loss for the economy.

There are various findings indicating that the mismatch between qualification and skill is significantly high in Turkey. However, there is no data with sufficient quality and detail indicating the graduates of which field are under or above compared to the manpower requirements of the economy. The studies conducted on employers, higher education administrators, graduates and other social parties offer an opinion as to the nature and results of the mismatch. The primary reasons for the qualification and skill mismatches in the labor force with respect to higher education in Turkey are the lack of information on which higher education program graduates will need and to what extent in the future, setting the capacities of higher education programs without considering the demands of the labor market, and a failure to ensure the matching of skills provided in education programs with the requirements of the business world since the relation and communication between the higher education system and business world is insufficient.

The fundamental policy tools for reducing such mismatches include identifying the capacities of higher education programs based on skill needs, corporate structures ensuring participation of relevant parties in the education process, matching and consultancy services for jobseekers and lifelong education for the unemployed. The ability to design such activities in accordance with the objective depends on identifying the skills required in the labor markets.

When the approaches and tools for forecasting the skills of a higher education level as required by the economy are reviewed, it is understood that the skill need predictions must be made with a flexible understanding that considers the current tendencies of the Turkish economy and society. For these reasons, different information collecting tools should be preferred in Turkey with a mixed approach combining the strengths of the manpower approach and social demand. With this

approach, it will be possible to make the manpower model flexible and enrich the macro level forecasts with micro data. The main items that combine worldwide experiences should take place in the model. They include a) manpower forecasts to be identified according to the growth and trends of the economy and industries at a national level, b) skill need researches generating more micro data to enrich national forecasts, and c) corporate studies in which social parties can contribute to and engage in education planning.

References

- Adams, A. V., Middleton, J., & Ziderman, A. (1992). *Manpower planning in a market economy with labor market signals* (Policy Research Working Paper, Report Number WPS837). World Bank Publications. Retrieved from <http://www-wds.worldbank.org/>
- Ahamad, B., & Blaug, M. (1973). *The practice of manpower forecasting: A collection of case studies*. Amsterdam: Elsevier.
- Akerlof, G. A. (1984). Gift exchange and efficiency-wage theory: Four views. *The American Economic Review*, 74(May), 79–83.
- Akiş, E., Soyuyiğit Kaya, S., & Çağlar, Ü. (2011). Türkiye'de 2000 sonrası uygulanan maliye politikaları. In Y. Alpaydın & H. Tunalı (Eds.), *2000 sonrası Türkiye iktisadının dönüşümü* (pp. 105–149). İstanbul: İTO Yayınları.
- Allais, S. (2010). *The implementation and impact of national qualifications frameworks: Report of a study in 16 countries*. Geneva: ILO Skills and Employability Department.
- Allen, J., & van der Velden, R. (2001). Educational mismatches versus skills mismatches: Effects on wages, job satisfaction, and on-the-job-search. *Oxford Economic Papers*, 53(3), 434–452.
- Allen, J., & van der Velden, R. (2009). *Competencies and early labour market careers of higher education graduates*. Retrieved from <http://www.hegesco.org/content/view/36/108/>
- Allen, J., & van der Velden, R. (2011). *The flexible professional in the knowledge society: New challenges for higher education*. Dordrecht: Springer.
- Aracil, A. G., Ruiz, J. G. M., & Vila, L. E. (2004). The rewards of human capital competences for young european higher education graduates. *Tertiary Education and Management*, 10(4), 287–305.
- Arın, T. (1988). Keynesçi akımlar: Keynesçiliğin krizi ve iç tartışmaları. *İstanbul Üniversitesi İktisat Fakültesi Mecmuası*, 45(1-4), 32–70.
- Aykaç, G. (2010). *İşgücü piyasalarına yönelik regülasyonların işgücü arz ve talebi üzerine etkileri: Türkiye üzerine bir inceleme* (Doctoral dissertation, Gazi University, Ankara, Turkey). Retrieved from <https://tez.yok.gov.tr/UlusalTezMerkezi/>
- Azariadis, C. (1975). Implicit contracts and underemployment equilibria. *Journal of Political Economy*, 83(6), 1183–1202.
- Baily, M. N. (1974). Wages and employment under uncertain demand. *Review of Economic Studies*, 41(January), 37–50.
- Barnow, B. (2008). Occupations and skills in the United States: Projection methods and results through 2008. In M. Neugart & K. Schömann (Eds.), *Forecasting labour markets in OECD countries: Measuring and tackling mismatches* (pp. 26–65). Cheltenham: Edward Elgar.
- Belot, M., & van Ours, J. (2004). Does the recent success of some OECD countries in lowering their unemployment rates lie in the clever design of their labour market reforms. *Oxford Economic Papers*, 56(4), 621–642.
- Biçerli, K. (2007). *Çalışma ekonomisi*. İstanbul: Beta Yayınları.
- Budria, S., & Moro-Egido, A. (2007). *Education, educational mismatch, and wage inequality: Evidence for Spain* (Munich Personal RePEc Archive [MPRA], Paper No. 93). Retrieved from <http://mpra.ub.uni-muenchen.de/93/>
- Bureau of Labor Statistics. (2012). *Occupational outlook handbook*. Retrieved from <http://www.bls.gov/ooh/>
- Çelik, N., & Üzmez, U. (2014). Üniversite öğrencilerinin meslek seçimini etkileyen faktörlerin değerlendirilmesi: Çağrı merkezi hizmetleri örneği. *Elektronik Mesleki Gelişim ve Araştırma Dergisi (EJOIR)*, 2(1), 94–105.
- Chatterton, P., & Goddard, J. (2000). The response of higher education institutions to regional needs. *European Journal of Education*, 35(4), 475–496.
- Cörvers, F., de Grip, A., & Heijke, H. (2006). Beyond manpower planning: A labor market model for the Netherlands and its FORECASTS to 2006. In M. Neugart & K. Schömann (Eds.), *Forecasting labour markets in OECD countries: Measuring and tackling mismatches* (pp. 185–223). Cheltenham: Edward Elgar.
- Di Pietro, G., & Urwin, P. (2006). Education and skills mismatch in the Italian graduate labour market. *Applied Economics*, 38(1), 79–93.
- Dickens, W., & Lang, K. (1985). A test of dual labor market theory. *The American Economic Review*, 75, 792–805.
- Doeringer, P., & Piore, M. (1971). *Internal labour markets and manpower analysis*. Lexington: Heath.
- Dünya Bankası. (2008). *Türkiye'nin gelecek nesillerine yatırım yapmak: Okuldan işe geçiş ve Türkiye'nin kalkınması* (Rapor No. 44048 - TU). Dünya Bankası İnsani Kalkınma Sektörü Türkiye Birimi Avrupa ve Orta Asya Bölgesi.
- Dur, R., & Teulings, C. N. (2004). Are education subsidies an efficient redistributive device? In J. Agell, M. Keen & A. Weichenrieder (Eds.), *Labor market institutions and public regulation* (pp. 123–162). Massachusetts: MIT Press.

- Econ Pöyry. (2008). *Forecasting skill needs: A review of national and European practices* (Econ-Report no. 2008-125). Oslo: Author.
- European Centre for the Development of Vocational Training. (2008). *Systems for anticipation of skill needs in the EU member states* (Working Paper No 1). Thessaloniki: Author.
- European Commission. (2008). *New skills for new jobs: Anticipating and matching labour market and skills needs*. Directorate-General for Employment, Belgium: Social Affairs and Equal Opportunities & Directorate-General for Education and Culture.
- European Higher Education Area. (2010). *Overarching framework of qualifications of the EHEA*. Retrieved from <http://www.ehea.info/article-details.aspx?ArticleId=67>
- Fisunoglu, M., & Köksel Tan, B. (2009). Keynes devrimi ve Keynesyen iktisat. *Ekonomik Yaklaşım*, 20(70), 31–60.
- Geylan, R. (2007). *İnsan kaynakları yönetimi*. Eskişehir: Anadolu Üniversitesi Açıköğretim Fakültesi Yayınları.
- Gordon, D. F. (1974). A neoclassical theory of Keynesian unemployment. *Economic Inquiry*, 12(4), 431–459.
- Haskel, J., & Martin, C. (1996). Skill shortages, productivity growth and wage inflation. In A. L. Booth & D. J. Snower (Eds.), *Acquiring skills, market failures, their symptoms and policy responses* (pp. 147–173). Cambridge: Cambridge University Press.
- Hernández-March, J., Martín del Peso, M., & Leguey, S. (2009). Graduates' skills and higher education: The employers' perspective. *Tertiary Education and Management*, 15(1), 1–16.
- Hesapçioğlu, M. (2001). *Türkiye'de makro düzeyde insan kaynakları planlaması*. Ankara: Am Yayıncılık.
- Higher Education Statistics Agency. (2013). *First destinations supplement*. Retrieved from <http://www.hesa.ac.uk>
- Hopkins, M. (2002). *Labor market planning revisited*. Hampshire: Palgrave Macmillan.
- International Labour Organization. (2010). *A skilled workforce for strong, sustainable and balanced growth: A G20 training strategy*. Geneva: Author.
- Kazgan, G. (1980). *İktisadi düşünce veya politik iktisadın evrimi*. İstanbul: Remzi Kitabevi.
- Kellermann, P. (2007). Acquired and required competencies of graduates. In U. Teichler (Ed.), *Careers of university graduates: Views and experiences in comparative perspectives* (pp. 115–130). Dordrecht: Springer.
- Keyder, Ç. (2009). *Türkiye'de devlet ve sınıflar*. İstanbul: İletişim Yayınları.
- Kiper, M. (2010). *Dünyada ve Türkiye'de üniversite-sanayi işbirliği ve bu kapsamda üniversite-sanayi ortak araştırma merkezleri programı*. Ankara: Türkiye Teknoloji Geliştirme Vakfı.
- Kivinen, O., & Nurmi, J. (2007). Job requirements and competencies: Do qualifications matter? In U. Teichler (Ed.), *Careers of university graduates: Views and experiences in comparative perspectives* (pp. 131–142). Dordrecht: Springer.
- Kurtulmuş, N. (1997). *Sanayi ötesi dönüşüm*. İstanbul: İz Yayınları.
- Lalve, R., & Zweimüller, J. (2004). Benefit entitlement and the labor market: Evidence from a large-scale policy change. In J. Agell, M. Keen & A. Weichenrieder (Eds.), *Labor market institutions and public regulation* (pp. 63–100). Massachusetts: MIT Press.
- Lauglo, J. (1996). Banking on education and the uses of research: A critique of World Bank priorities and strategies for education. *International Journal of Educational Development*, 16(3), 221–233.
- Leontaridi, M. R. (1998). Segmented labour markets: Theory and evidence. *Journal of Economic Surveys*, 12(1), 63–101.
- Lewis, A. (1954). Economic development with unlimited supply of labour. *The Manchester School of Economic Studies*, 22(2), 139–191.
- Montgomery, J. D. (1999). Adverse selection and employment cycles. *Journal of Labor Economics*, 17(2), 281–297.
- Mourre, G. (2006). Did the pattern of aggregate employment growth change in the Euro area in the late 1990s? *Applied Economics*, 38, 1783–1807.
- Neugart, M., & Schömann, K. (2002). *Forecasting labour markets in OECD countries: Measuring and tackling mismatches*. Cheltenham: Edward Elgar.
- Nickell, S., Nunziata, L., & Ochel, W. (2005). Unemployment in the OECD since the 1960s. What do we know? *The Economic Journal*, 115(500), 1–27.
- Nordin, M., Persson, I., & Rooth, D. (2008). *Education-occupation mismatch: Is there an income penalty?* (IZA Discussion Paper Series, No. 3806). Retrieved from <http://ftp.iza.org/dp3806.pdf>
- Organisation for Economic Co-operation and Development. (2003). *Changing patterns of governance in higher education*. Retrieved from <http://www.oecd.org/education/skills-beyond-school/35747684.pdf>
- Psacharopoulos, G. (1991). From manpower planning to labour market analysis. *International Labour Review*, 130(4), 459–474.
- Psacharopoulos, G. (2004). *Linking research, policy and practice. Identifying Skill Needs for the Future: From Research to Policy and Practice* (Reference series No: 52). Luxembourg: CEDEFOP.
- Richards, P. (1994). Issues in manpower analysis. In P. Richards & R. Amjad (Eds.), *New approaches to manpower planning analysis* (pp. 1–14). Geneva: ILO.
- Rosenweig, M. (1988). Labor markets in low-income countries. In H. Chenery & T. N. Srinivasan (Eds.), *Handbook of development economics* (pp. 713–762). Amsterdam: North-Holland.
- Salop, S. C. (1979). A model of the natural rate of unemployment. *The American Economic Review*, 69(March), 117–125.
- Schomburg, H. (2007). The professional success of higher education graduates. *European Journal of Education*, 42(1), 35–58.
- Schomburg, H., & Teichler, U. (2006). *Higher education and graduate employment in Europe: Results of graduates surveys from 12 countries*. Dordrecht: Springer.
- Shah, C., & Burke, G. (2003). Skills shortages: Concepts, measurement and policy responses. *Australian Bulletin of Labour*, 31(1), 44–71.
- Shapiro, C., & Stiglitz, J. E. (1984). Equilibrium unemployment as a worker discipline device. *The American Economic Review*, 74(June), 433–444.
- Sheehan, J. (2012). *The economics of education*. Oxford: Routledge.
- Sicherman, N. (1991). Overeducation in the labor market. *Journal of Labor Economics*, 9(2), 101–122.
- Strietska-Ilina, O., & Tessaring, M. (2007). *Systems, institutional frameworks and processes for early identification of skill needs* (Panorama series No: 135). Luxembourg: CEDEFOP.
- Teichler, U. (1999). Higher education policy and the world of work: Changing conditions and challenges. *Higher Education Policy*, 12, 285–312.

- Tessaring, M. (1998). The future of work and skills: Visions, trends and forecasts. In M. Tessaring (Ed.), *Vocational education and training - The European research field background report* (Vo. 1., pp. 271-316). Luxembourg: CEDEFOP.
- The Information Network on Education in Europe. (2008). *Higher education governance in Europe: Policies, structures, funding and academic staff*. Brussels: Author.
- Türk Sanayicileri ve İşadamları Derneği. (2002). *Türkiye'de işgücü piyasası ve işsizlik*. İstanbul: Author.
- Türk Sanayicileri ve İşadamları Derneği. (2004). *Türkiye'de işgücü piyasasının kurumsal yapısı ve işsizlik*. İstanbul: Author.
- Türkiye İstatistik Kurumu. (2013a). *Eğitim durumu (ADNKS-Nüfus Sayım Sonuçları) dinamik sorgulama*. Retrieved from <http://tuikapp.tuik.gov.tr/adnksdagitapp/adnks.zul?kod=2>
- Türkiye İstatistik Kurumu. (2013b). *Eğitim istatistikleri*. Retrieved from http://tuik.gov.tr/VeriBilgi.do?alt_id=14
- Türkiye İstatistik Kurumu. (2013c). *Hanehalkı İşgücü Anketi dönemsel sonuçları*. Retrieved from http://tuik.gov.tr/VeriBilgi.do?alt_id=25
- Türkiye İstatistik Kurumu. (2013d). *Nüfus Projeksiyonları 2013-2075 (TÜİK Haber Bülteni, Şubat 2013)*. Retrieved from <http://www.tuik.gov.tr/PreHaberBultenleri.do?id=15844>
- Vanderstraeten, R. (1997). Circularity, complexity and educational policy planning. *Oxford Review of Education*, 23(3), 321-332.
- Weiss, A. (1991). *Efficiency wages: Models of unemployment, layoffs and wage dispersion*. Oxford: Clarendon Press.
- Wieling, M., & Borghans, L. (2001). Discrepancies between supply and demand and adjustment processes in the labour market. *Labour*, 15(1), 33-56.
- Wilson, R. A. (2001). Forecasting skill requirements at national and company levels. In P. Descy & M. Tessaring (Eds.), *Training in Europe* (Second Report on Vocational Training Research in Europe 2000: Background Report) (pp. 561-609). Luxembourg: CEDEFOP.
- World Bank-TEPAV. (2007). *Higher education and the labor market in Turkey*. World Bank Human Development Sector Unit Europe and Central Asia Region. Retrieved from <http://siteresources.worldbank.org/EXTECAREGTOPE/EDUCATION/Resources/444607-1192636551820/TEPAV.pdf>
- Wozniak, A. (2010). Are college graduates more responsive to distant labor market opportunities. *Journal of Human Resources*, 45(4), 944-970.
- Yoshimoto, K. (Ed.) (2003). *Higher education and work: Comparison between Japan and the Netherlands*. Tokyo: Japan Institute of Labour.
- Yükçü, S., & Atağan, G. (2009). Etkinlik, etkililik ve verimlilik kavramlarının yarattığı karışıklık. *Atatürk Üniversitesi İktisadi ve İdari Bilimler Dergisi*, 23(4), 1-13.
- Yükseköğretim Kurumu. (2005). *Türk yükseköğretiminin bugünkü durumu*. Retrieved from http://www.yok.gov.tr/index.php?option=com_docman&task=cat_view&gid=178
- Yükseköğretim Kurumu. (2007). *Türkiye'nin yükseköğretim stratejisi*. Ankara: Author.