

ISM UNIVERSITY OF MANAGEMENT AND ECONOMICS

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**EVALUATION OF HIGHER EDUCATION SYSTEM DIMENSIONS AFFECTING  
NATIONAL COMPETITIVENESS**

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## **INTRODUCTION**

### **Relevance of the topic**

In early 2000, Europe's heads of state set for themselves a ten-year timeline and defined a series of specific policy measures to make the European Union (EU) "the most competitive and dynamic knowledge-based economy in the world, capable of sustainable economic growth with more and better jobs and greater social cohesion." This became known as the Lisbon Strategy of economic and structural reforms, named after the host city of the March 2000 European Council in which it was launched.

Specifically, the Lisbon Strategy is an action and development plan aimed at improving Europe's productivity and competitiveness through the formulation of various policy initiatives. The main areas of concern have been defined as achieving an information society for all, establishing a European area of research and development, creating a business-friendly start-up environment, completing the single market, establishing efficient and integrated financial markets, building a knowledge-based society, ensuring more and better jobs for Europe, modernizing social protection, promoting social inclusion and enhancing sustainable development.

At the core of the Lisbon strategy is the goal of becoming the most competitive economy in the world. The rhetoric of competitiveness – the view that, in the words of United States president Clinton, each nation is "like a big corporation competing in the global marketplace" – has become pervasive among opinion leaders throughout the world.

Nations compete because world markets are open. Why did nations finally agree to lower their barriers, at least for economic reasons? The answer probably lies in the aftermath of the Great Depression. Many scholars, J.M. Keynes in particular, have shown that an economic slowdown in 1929 developed into a worldwide depression in the 1930s because nations adopted protectionist policies.

In order to prevent such a situation from occurring again, the Bretton Woods agreement, in 1944, sought to liberalize international trade. Today, tariffs on goods are less than 4% among members of the World Trade Organization (WTO). In addition, the Organization for Economic Cooperation and Development (OECD),

since its creation, has fostered the development of the free movement of capital, goods and services, at first among industrialized nations, and then worldwide. Finally, free trade areas established by agreements such as the North American Free Trade Agreement (NAFTA) and regional integration organizations such as the European Union have reinforced this development.

Technology and globalization have accelerated the trend towards a world, which is not only open, but also transparent and immediate. Enterprises now benefit from enormous choice in selecting their business locations. Consequently, nations need to promote their respective comparative advantages in various areas. A country's competitiveness was previously defined predominantly in terms of aggressiveness in world markets through exports and foreign direct investments. Today, competitiveness also emphasizes the extent to which a particular nation is attractive, both to foreign and local enterprises, for activities that generate economic wealth.

There is no single "recipe" for competitiveness. Various policies can be benchmarked, and then each individual country needs to adapt them to their own environment. Competitiveness strategies succeed when they balance the economic imperatives imposed by world markets with the social requirements of a nation formed by history, value systems, and tradition.

Some scholars (Temple, 1999; Krugman, 2001) claim that nations themselves do not compete, rather, their enterprises do. There is no doubt that competitive enterprises are the main engines of a country's competitiveness. They are at the center of wealth creation. However, over the past 30 years, the economic responsibilities of governments have increased to such an extent that to ignore their role in modern economics and management policies is to overlook a source of significant influence. Despite globalization, several recent studies continue to underline the key role of nations in shaping the environment in which enterprises operate. Such involvement is more evident when it comes to enhancing the attractiveness of a country. A significant part of the competitive advantage of nations stems from far-reaching incentive policies emphasizing tax breaks, subsidies, etc. which are designed to attract foreign investment. Ireland is an excellent example of such an approach.

Yet, the most convincing support for the argument that there is competition among nations can be seen in the areas of education and skills development. In a modern economy, nations do not rely solely on the quality of products and services.

They also compete on the basis of a highly-skilled labor force. The ability of a nation to develop an excellent education system and to improve knowledge in the labor force through training is vital to competitiveness. The International Association for the Evaluation of Educational Achievement in Washington, DC, makes an annual assessment of the educational performance of nations around the world. In recent years, the results highlight the formidable efforts that East Asian nations have made to improve education. In addition to being competitive at present because of cheap labor, they aim to develop their long-term competitiveness on the basis of an educated workforce.

Knowledge is perhaps the most critical competitiveness factor. Countries move up the economic ladder as they develop a knowledge-based, highly-skilled labor force that can ensure their prosperity and competitiveness in world markets. How that knowledge is acquired and managed is each nation's responsibility.

Marketplace competitiveness goals have not excluded the higher education sector – higher education has in fact become one of the areas that has developed immensely as a result of national efforts to increase competitiveness (see a more detailed definition of competitiveness in Chapter 1). Beyond its role in national efforts, the sector itself has aims to be competitive. In May 1998 Claude Allegre, the French minister in charge of higher education (HE), invited his colleagues from Germany, Italy, and the United Kingdom to Paris to sign a joint declaration on what they called “harmonization of the architecture of the European higher education system” (Sorbonne declaration, 1998). They explicitly did so outside any European Union context. What they did not know at that time is that they would trigger a set of far-reaching reforms of European HE systems that have become known as the “Bologna Process”. Already a year later in June 1999, as many as 29 European ministers in charge of HE had subscribed to similar aims. They signed the Bologna declaration, expressing their intention to build a “European area of higher education” and to achieve “greater compatibility and comparability of the systems of higher education” in order to “promote citizens’ mobility and employability” and increase “the international competitiveness of the European system of higher education” vis-à-vis the rest of the world (Bologna declaration, 1999). By 2006, 45 European countries inside and outside of the European Union (EU) have joined the process and reforms are underway all over Europe that include the restructuring of HE systems in this

context. At the heart of many of these reforms is the objective to be more internationally competitive.

Both nations and higher education systems in the EU are striving to strengthen the competitive position. Thus, the question arises which components of HE systems are having the greatest impact on national competitiveness. What is the exact nature of the changes that occurred in higher education systems through Europe as countries began to seek to be more competitive. Specifically which dimensions of HE systems have changed, and in which way did they change as the countries were trying to be competitive? Taken together these questions form **the main research question** of this dissertation, **“How should nations strengthen the impact of higher education system on national competitiveness?”**

There is no doubt that higher education systems are expected to be a key factor in sustaining the competitiveness of countries in the globalized economy. Investments in research and knowledge developed by the higher education system are considered to be key factors in boosting the economy of a country. Moving from this premise, some scholars and policy makers would aim to strengthen the link between the higher education system and private innovation in business and enterprise which supports the overall competitiveness of countries. Others would instead argue that a tight link between the university system and link between the university system and private sector is potentially disruptive of the concept of a higher education system itself and would drive it toward alternative roles and functions. Indeed, the intersection of national competitiveness and higher education systems gives rise to a wide variety of questions worthy of research.

The main goal of this research is **to evaluate higher education system dimensions affecting national competitiveness.**

Research **objectives** are as follows:

1. After analyzing national competitiveness theories and higher education system models, to identify higher education system dimensions affecting national competitiveness;
2. To propose a theoretical model for studying higher education system dimensions affecting national competitiveness;
3. To evaluate the changes that occurred across the higher education system dimensions of the respective higher education systems within the context of national competitiveness;

4. To expand a theoretical model depicting higher education system dimensions affecting national competitiveness by identifying change tendencies in specific dimensions;
5. To provide recommendations for strengthening the effect of higher education system on national competitiveness in the relatively less competitive European countries.

### **Contribution to Research and Practice**

This study seeks to contribute to research and practice in three major ways: by (1) making a relevant contribution to comparative HE management research theoretically and empirically; (2) by making a theoretical and practical contribution to HE policy formulation and implementation and (3) by making a practical contribution to the HE reform.

*Contribution to Comparative HE Management Research.* Since its emergence as a sub-discipline in the 1970s, international comparative HE researchers have studied the commonalities and differences between European HE systems. (Goedegebuure & Van Vught, 1994; Meek et. al., 1996; Teichler, 1988c, 1990). This study takes up many of the themes dealt with in the comparative HE literature, revisits them from a contemporary perspective, and puts forward an analytical framework for the comparison of key dimensions of HE system. The major difference from other HE comparative research is that this study analyzes the key HE system dimensions within the context of national competitiveness. That is, specific higher education system dimensions affecting national competitiveness were identified.

*Contribution to HE Management Policy Formulation and Implementation Research.* Policy research has faced many challenges posed by the changing political reality and addressed them by successively reviewing and extending its theoretical thrust (Mayntz, 1998). Two of the more recent phenomena researchers in this field grapple with is how to adequately capture the complexities of the policy process in view of failures of implementation theory (Sabatier, 1999) and how to get an adequate theoretical grasp of multi-level policy making in the European context (Scharpf, 2000). Current process in HE fields represent a theoretical challenge at

both of these frontiers: though inherently European, it takes place outside of the European Union on which most of the theorizing on multi-level governance in Europe has so far focused. As an object of policy analysis, for example, the Bologna process constitutes an extreme example of the difficulties encountered by policy analysts to a larger or lesser degree in the study of most contemporary policy fields. Goal ambiguity of initial policies, the blurring of phases and the complexities of the policy require a theoretical approach different from the phase models and top-down approaches of classical policy and implementation analysis (see DeLeon, 1999; Sabatier, 1999). It is a complicated task to study the similarities and differences between European HE systems because it difficult to find a joining point. In this study this joining point has become national competitiveness. Thus, the study contributes to the quest for adequate theoretical approaches for policy analysis in the face of this new complexity (vastly different HE systems across Europe), putting forward a framework tailored to the study of policy change in the HE systems in the context of national competitiveness. A theoretical model which allows evaluation of HE policies along various HE system dimensions is proposed in this study.

*Contribution to HE Reform.* To HE policy makers and university managers across Europe, research-based insights into the process of HE system changes are highly relevant as the successive outcomes of this ongoing process provide the real context for reform decisions that each national HE system and each individual HEI within these systems has to take. The study aims to examine the changes in highly competitive European HE systems through 1999-2006. Findings should provide suggestions to policy makers in countries others than those studied, particularly in the relatively less competitive European countries, for identifying changes that have been the most important in building a competitive nation. It is important for HE reformers to not only get an accurate and timely picture of the ongoing reforms in other European countries, but also to understand the underlying dynamics of the process and the factors that drive it. Evaluation of HE system dimensions allowed to draw major tendencies in the development of the HE area and to offer specific recommendation for HE policy makers.

### **Research Approach**

The focus of the empirical study is four national case studies of the HE systems of Germany, the Netherlands, United Kingdom and Sweden between 1999 and 2006. After the cases are presented, a comparative analysis is performed. The research design deals with the main research question in a three step process that proceeds in ascending levels of abstraction. First, the situation change during 1999-2006 across specific HE systems' dimensions is analyzed. Then, the main differences and similarities in the changes that occurred are identified. Finally, the intensity level of change is determined and the main tendencies identified. These purposes are combined in a comparative case-study analysis that consists of three steps – individual case analysis, cross-case analysis, and review of the theoretical model.

### **Research Limitations**

The research goal of this study is to evaluate higher education system dimensions affecting national competitiveness. This formulation draws attention to the following distinction – not all policy change in European HE systems during the analyzed time period was related to the challenge of strengthening national competitiveness and HE education is not the only factor influencing national competitiveness. Many other factors stimulated change in the HE sector during the same period and HE system has been influenced by many other important processes like globalization or internationalization. Also it should not be assumed that HE was the most significant factor when enhancing the national competition. However this research focuses on the HE system change specific to national competitiveness and this relationship (between HE and competitiveness) is the focus of this dissertation.

### **Publications**

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## **1. ANALYSIS OF HIGHER EDUCATION DIMENSIONS AFFECTING NATIONAL COMPETITIVENESS**

In facing up to the challenges from the rapid international rise of knowledge-driven economies and the dramatic impacts of information technology and globalization, several educational reforms have been initiated in Europe. Given the scope of the impact of these reforms and the magnitude of resources required, inevitably, the economic effectiveness of these educational reforms and related policies have drawn much attention from stakeholders and policy analysts.

Some people are concerned about whether the existing HE systems can meet the needs of new economic developments in this century and how HE should be changed to prepare future generations for the knowledge-based economy (see, for example, Education Commission, 1999, 2000; Klor De Alva, 2000; Walshok, 1999). Others are concerned about how the HE system should be resourced and funded in a more efficient and effective way in order to meet diverse growing demands for HE (see, for example, Davis, 1999; Grosskopf and Moutray, 2001; Psacharopoulos, 1999; Wyckoff and Naples, 2000). The first group of concerns relates to the issue of external economic effectiveness and the second concern to the issues of internal economic effectiveness for using resources to fund different types of educational services. The underlying point still remains the same – the goals of HE systems are more often economic nowadays and aim to lead the country to higher national competitiveness.

Thus, HE systems in European countries are experiencing significant changes. Many of these changes are occurring because countries strive to be more competitive economically at the national and international levels. With the change in goals for HE systems across Europe the change itself has become an interesting research topic. What changes did exactly occur in HE systems and where are the nations headed? To answer these questions, I first turn to analyzing the concept of national competitiveness. Then attention is paid to the definition of HE system and analyze different HE system models. All this is performed in order to integrate competitiveness and HE literature and to identify HE system dimensions affecting national competitiveness. Finally, the chapter ends with the proposition of the theoretical model which should assist to evaluate changes in HE system dimensions affecting national competitiveness.

## 1.1. CONCEPTION OF COMPETITIVENESS

As it was mentioned, the aim of this study is to evaluate HE system dimensions affecting national competitiveness. In order to do that, I will first define the term of competitiveness and then examine what insight this concept provides for the study of changes in the higher education system.

In recent years, competitiveness has become more than a fashionable concept. Alongside with the international opening of developed economies and the globalization of economic relations that ensued, there is hardly any government that has not assigned the improvement of competitiveness as one of the main goals of its economic policy. It was namely the case in the United States, with the creation of the President's Commission on Industrial Competitiveness in 1985, and then of the Competitiveness Policy Council in 1986. It was followed by other national States and, some times later, by the European Union whose Membership Countries adopted the Lisbon Declaration<sup>1</sup> in 2001. This text defines as the main goal that "before the year 2010, the EU becomes the most competitive and dynamic knowledge-based economy in the world capable of sustainable economic growth with more and better jobs and greater social cohesion" (Lisbon Declaration, 2001). There is hardly any developed country that did not create special commissions to analyze the state of competitiveness of its economy and define the ways to improve it.

At the same time, the concept of competitiveness still appears rather ill-defined. It is used in many different ways and a lot of definitions exist, which might lead to some confusion. The vague usage of the term is not only a theoretical problem; it is behind many fruitless discussions and mistaken choices.

As a matter of fact, according to various sources, competitiveness should be:

"The ability of a nation, in free and fair market conditions, to produce goods and services corresponding to the demand of the international markets" – U.S. President's Commission on Industrial Competitiveness (1985).

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<sup>1</sup> Lisbon Declaration – in March 2000, the EU Heads of States and Governments agreed on the overall strategy aimed at preparing the transition to a knowledge-based economy and society, modernizing the European social model and sustaining the healthy economic outlook and favorable growth.

“The capacity to produce goods and services that correspond to the demand of the international markets while giving to the citizens living standards that grow and can be preserved in the long time” - Competitiveness Policy Council (1992).

“The ability of a country to achieve sustained high rates of growth in GDP per capita.” – World Economic Forum, Global Competitiveness Report (1996).

“Supporting the ability of companies, industries, regions, nations or supranational regions to generate, while being and remaining exposed to international competition, relatively high factor income and factor employment levels”. – OECD (1996).

“A field of economic knowledge, which analyses the facts and policies that shape the ability of a nation to create and maintain an environment that sustains more value creation for its enterprises and more prosperity for its people” – International Institute for Management Development’s World Competitiveness Yearbook (2003).

“Competitiveness implies elements of productivity, efficiency and profitability. But it is not an end in itself or a target. It is a powerful means to achieve rising living standards and increasing social welfare – a tool for achieving targets. Globally, by increasing productivity and efficiency in the context of international specialization, competitiveness provides the basis for raising peoples’ earnings in a non-inflationary way” – Competitiveness Advisory Group (Ciampi Group) First Report to the President of the European Commission, the Prime Ministers and the Heads of State (1995).

The least that can be said is that the definition of competitiveness has a rather large extension and that it does not appear as a clear concept. At the same time, there is a growing consensus about the idea that it is a fundamental question of economic policy. Stemming from the various definitions given above, five main factors appear central to the notion of competitiveness:

- **The notion of competition.** First and foremost competitiveness means the capacity to compete. And the notion of competition itself is of a changing nature.

While competition was traditionally concentrated on the capacity to sell more products and generate more profits than one's concurrent, be it a firm or a nation, the progressive transformation experienced by the Fordist paradigm of production has led to significant changes (Blandinieres, 2004). Competition is now more and more concentrated on "non-material" patterns, such as brands, know-how, marketing, and less on the intrinsic value of the good itself. As the nature of competition changes, the keys to being competitive also change.

- **The spatial dimension.** The first question to be asked is: what or who has to be competitive? It is also the first serious topic of debate. All economic agents have, in some sense to be competitive – and not only economic agents, but individuals in various activities like sports, games, etc. Nevertheless, the literature on the topic usually defines three main areas of competitiveness: enterprises, industries and nations.

For the *company*, competitiveness is the ability to provide products and services as or more effectively and efficiently than the relevant competitors (Blunck, 2006). In the traded sector, this means sustained success in international markets without protection or subsidies. Although transportation costs might allow firms from a nation to compete successfully in their home market or in adjacent markets, competitiveness usually refers to advantage obtained through superior productivity. Measures of competitiveness in the traded sector include firm profitability, the firm's export quotient (exports or foreign sales divided by output), and regional or global market share. In the traded sector, performance in the international marketplace provides a direct measure of the firm's competitiveness. In the non-traded sector, competitiveness is the ability to match or beat the world's best firms in cost and quality of goods and services (Blunck, 2006). Measuring competitiveness in the non-traded sector is often difficult, since there is no direct market performance test. Measures of competitiveness in this part of the economy include firm profitability and measures of cost and quality. In industries characterized by foreign direct investment, the firm's percentage of foreign sales (foreign sales divided by total sales) and its share of regional or global markets provide measure of firm competitiveness.

At the *industry* level, competitiveness is defined as the ability of the nation's firms to achieve sustained success against (or compared to) foreign competitors, again without protection or subsidies. Measures of competitiveness at the industry

level include overall profitability of the nation's firms in the industry, the nation's trade balance in the industry, the balance of outbound and inbound foreign direct investment, and direct measures of cost and quality at the industry level (Enright, 1996). Competitiveness at the industry level is often a better indicator of the economic health of the nation than competitiveness at the firm level. The success of a single firm from the nation might be due to company-specific factors that are difficult or impossible to reproduce. The success of several firms from the nation in an industry, on the other hand, is often evidence of nation-specific factors that might be extended and improved. Assessing the competitiveness of an industry in which there is only one important firm requires an assessment of whether its success is due to monopoly rents, government support, or true efficiency. It is also important to note that the competitiveness of a single firm does not necessarily imply the competitiveness of an industry.

For the *nation*, competitiveness means the ability of the nation's citizens to achieve a high and rising standard of living (Porter, 1998). In most nations, the standard of living is determined by the productivity with which the nation's resources are deployed, the output of the economy per unit of labor and/or capital employed. A high and rising standard of living for all the nation's citizens can be sustained only by continual improvements in productivity, either through achieving higher productivity in existing businesses or through successful entry into higher productivity businesses. Competitiveness at the national level is measured by the level and growth of the nation's standard of living, the level and growth of aggregate productivity, and the ability of the nation's firms to increase their penetration of world markets through exports or foreign direct investment. Although it is tempting to equate a nation's competitiveness in certain industries or sets of industries with competitiveness at the national level, or with a positive balance of trade, this temptation should be avoided. Comparative advantage dictates that any nation will be competitive in some industries and uncompetitive in others (Ricardo, 2004). A positive balance of trade has as much to do with the balance of domestic savings and investment as it does with the intrinsic capabilities of the nation's firms.

This way of defining competitiveness at three different levels does not provide a full picture in the wake of the globalization process. A contemporary enterprise is typically made of different production units, often situated in different national territories and sometimes competing between themselves. Moreover, the national

level is circumvented on one side by regions and territories, which gain more and more importance and, on the other, by supranational entities, of which the European Union is probably the best example. At the same time, there are opposite views to what is really the key: competitiveness of enterprises, industries or of nations. Management literature, in the wake of Porter's works, considers that economic value is only created within the context of an enterprise. The only role of a nation in supporting competitiveness is to lead policies that help to build a favorable environment for the creation of value inside the enterprises (Garelli, 2003). This point of view is rather reductive and led to a lot of critics, from scholars as well as from people engaged in applying economic policies. The other interesting development in the research on competitiveness is that it was born in the field of international trade theory, but it has now become a universal topic of economic policy. Being competitive is not only selling a lot abroad anymore. The notion has a much bigger extension now, but – in echo to the question asked above- it can be used only after defining clearly its subject or space of application. It should be noted here that in this paper the focus is on the national level of competitiveness but it is important to remember that all three levels (company, industry and nation) are interrelated.

- **The goal of achieving higher wealth.** The idea that competitiveness is the precondition to increasing prosperity and wealth appears more and more central in its various definitions. At the same time, there are still very different views on what wealth actually means. It can be GDP per capita (World Economic Forum), prosperity (IMD), living standards (US Council on Competitiveness), living standards and social welfare (European Commission). These are not minor differences, the most important being the integration of the notion of fair distribution of wealth, which only a few definitions mention.

- **The role of governments and economic policy.** As it mainly comes from the management literature, definitions of competitiveness are usually reluctant to name the State as a key actor. However the role and responsibilities of the State in a new world of competitiveness are different (Garelli, 2003). The State continues to shape the competitiveness environment in many different ways via taxation, education or health. New domains of responsibility are developing such as Security or Immigration. Prior responsibilities are being redefined. For example, the State has often relinquished its direct involvement in construction and infrastructure. The privatization of most telecom, energy or transport operators underlines this trend.

However, in the eyes of the public, the State remains the ultimate guarantor of the integrity of the infrastructure of a country, even if it has delegated the operational responsibility to the private sector.

- **The role of knowledge.** This is the newest feature of the notion of competitiveness. It is also one of the ways by which the concept goes back to economic theory. While politicians talk about competitiveness, economists talk about the knowledge-driven economy, or sometimes about the new economy. Beyond what seems to be just a game of words, there is the key idea that information and innovation are now central factors driving the evolution of the world economies. Trade and factor inputs are progressively losing their importance, not only in the theory, but also in programs implied by governments to foster the competitiveness of their economy (Department of Trade and Industry, 1999, Debonneuil-Fontagu, 2003). The question of knowledge is nevertheless very new in the field of economic research. Scientific and technological progress is probably going much faster here than economic theory and there are still a lot of questions and fields of analysis that have to be studied to better understand the link between knowledge and competitiveness.

This first glance to the notion of competitiveness, through some of its various definitions, actually led to a lot of questions. It is clearly not an intention to present a global theory of competitiveness. The aim of this section is to look at how the concept of competitiveness evolved and identify some key areas of competitiveness that later in the dissertation can be linked to changing higher education systems in Europe.

Moreover the first look at the term of competitiveness provided significant information for further research. Namely, it is important to name the spatial dimension for competitiveness. In this study it is the national level – here I study the measurements of national competitiveness and take out the most relevant to the HE system. Another competitiveness notion that is important in this study is that the role of the State is very valuable when seeking competitiveness. All the national level policies in the HE sector are introduced by the state; although the private sector plays an important role as well. However when studying the changes in HE system in the context of national competitiveness, it is essential to examine the state's actions and reasons behind it. Finally, the overview of the term competitiveness showed that the feature of knowledge is becoming more important than ever when seeking

national competitiveness. HE is directly related to production of knowledge so its importance as a sector's is also growing, thus it is of great significance to review the policy changes in this sector.

Now it appears necessary to review the most popular theories developed in the management literature, before analyzing their limits and extending the definition of competitiveness as defined by the European Union.

### **1.1.1. Evolution of Competitiveness Conception**

Analysis of the development of the concept revealed that until early 1980s the concept of competitiveness had usually been applied in a narrow sense, capturing the countries' ability to sell their products in the world markets. The indicators of cost-price competitiveness reflected a conventional understanding of international competitiveness for economists. In this context, competitiveness was usually discussed in terms of cost, price and productivity differentials.<sup>2</sup>

The perception changed when, threatened by the competition from Japan, the United States became concerned with the issues of competitiveness. At that time the ways of increasing international competitiveness became an important topic of discussion in American industrial, political and academic circles, and was followed by famous M. Porter's work "A Competitive Advantage of Nations". Porter thus can be called a 'father' of competitiveness.

An obvious way to define the non-price dimension of competitiveness would be to tell that non-price competitiveness is the capacity of an economy to sell its products and adapt to the international demand using factors other than price. This idea was the basis of the theory developed by M. Porter.

After almost 200 years under the rule of the notion of comparative advantage, M. Porter has argued that a new approach must be found, which reflects the dynamic evolving nature of competition that goes beyond cost and, has its foundations in the theory of innovation. His fundamental point is that "National prosperity is created, not inherited. It does not grow out of a country's natural enhancements, its labor pool, its interest rate, or its currency value as classic economics insists" (Porter, 1990). This is why, he argues, competitive – and not comparative – advantage creates wealth.

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<sup>2</sup> Note: since price-competitiveness does not provide any significant insight for this research, it will not be explored further.

*The “Diamond Model” of Competitiveness.* According to M.Porter, highly productive economic regions are those with strong linkages between industries and businesses. These linkages are the defining point for industry clusters. Industry clusters are explained by Porter through “a diamond of advantage.” He said that there is a diamond of four factors that interact, the outcome of which is high productivity growth. The four factors are:

1. Factor Conditions:

- The quantity, skills, and cost of the personnel;
- The abundance, quality, accessibility, and cost of the nation’s physical resources such as land, water, mineral deposits, timber, hydroelectric power sources, and fishing grounds;
- The nation’s stock of knowledge resources, including scientific, technical, and market knowledge that affect the quantity and quality of goods and services;
- The amount and cost of capital resources that are available to finance industry;
- The type, quality, and user cost of the infrastructure, including the nation’s transportation system, communications system, health-care system, and other factors that directly affect the quality of life in the country.

2. Demand Conditions:

- The composition of demand in the home market as reflected by the various market niches that exist, and buyer sophistication and how well the needs of buyers in the home market precede those of buyers in other markets;
- The size and growth rate of the home demand;
- The ways through which domestic demand is internationalized and pulls a nation’s products and services abroad.

3. Related and Supporting Industries:

- The presence of internationally competitive supplier industries that create advantages in downstream industries through efficient, early, or rapid access to cost-effective inputs;

- Internationally competitive related industries that can coordinate and share activities in the value chain when competing or those that involve complementary products.

#### 4. Firm Strategy, Structure and Rivalry:

- The ways in which firms are managed and choose to compete;
- The goals that companies seek to attain as well as the motivations of their employees and managers;
- The amount of domestic rivalry and the creation and persistence of competitive advantage in the respective industry.

The systemic nature of this diamond produces clustering. Porter found that these interactions are magnified and intensified if there is geographical concentration of the leading rivals in the industry (Porter, 1990).

From Porter's Diamond Model it can be observed that HE is reflected in Factor conditions as the HE system prepares and educates the workforce for the labor market. HE system also significantly contributes to the nation's stock of knowledge resources. Moreover HE contribution can be seen in the Demand conditions – as the system educates people, the economy receives more sophisticated buyers.

*National Competitiveness' Key Factors.* Porter's followers (Lopez-Carlos, Blanke, Drzeniek, Mia, Zahidi, 2005) expanded the diamond model and identified "nine pillars" essential to national competitiveness. These are:

1. **Institutions** – the quality of country's public and private institutions constitutes the framework within which the economy's main players interact.
2. **Infrastructure** – the existence of high quality infrastructure is critical for ensuring the efficient functioning of the economy, as it is important factor determining the location of economic activity, and the kinds of projects or sectors that can develop over time.
3. **Macroeconomy** – macroeconomic stability has come to be accepted as an essential ingredient of sustainable growth.
4. **Health and primary education** – a healthy workforce is vital to a country's competitiveness and productivity. And basic education increases the efficiency of each individual worker, making the economy more productive.
5. **Higher education and training** – the quality and quantity of higher education provided within an economy are critical for competitiveness. On-

the-job training has become an increasingly important method of upgrading an economy's human resources.

6. **Market efficiency** – the efficiency with which the various factors markets in the economy function is critical for its underlying productivity and competitiveness, as it ensures the proper allocation of economic factors to their best use.
7. **Technological readiness** – technology has become an increasingly central element in today's knowledge-based global economy, affecting the range, quality, and price of goods produced in, and ultimately exported by, a country.
8. **Business sophistication** – this is conducive to higher efficiency in the production of goods and services, which leads, in turn, to increased productivity, thus enhancing a nation's competitiveness.
9. **Innovation** – one of the principal conditions for a rising living standard is the development of dynamic, national competitive advantages, based on technology and skills-intensive industries, as opposed to static ones, based on lower production costs. Thus, as countries develop, national competitiveness depends to an increasing extent on their innovative potential.

From these listed competitiveness factors it is clear that HE is reflected in many of them. HE system's institutions are part of the Institutions factor and directly contribute to the competitiveness. The quality of HE schools and of institutions initiating major policies in the sector have direct impact on the country's future growth potential. The quality of workforce is the major component in the Market Efficiency factor. HE system hence has a direct impact on the quality of the workforce because it educates and prepares people for the labor market. Moreover HE system is important for the Technological Readiness factor because technological capacity of the country is enhanced by the quality of HE science schools. Lastly the Innovation factor is also influenced by the country's higher education system since the innovative capability can not exist without high quality scientific research institutions, a highly skilled workforce, including scientists and engineers, sufficient R & D spending by private companies and intellectual property protection. HE system plays an important role in seeking national competitiveness because it directly and indirectly influences most of the major competitiveness factors.

*Stages of Development and Transitions.* Related to the key factors of national competitiveness is the differentiation of development stages for countries. Much of the success of a competitiveness policy depends on the stage of development of the economy. These stages are the following: (Porter 2006, McArthur & Sachs 2002):

- **The “factor-driven stage”**, concerns the low level of development countries, for which the mobilization of primary factors of production (land, primary commodities and unskilled labor) is the main condition for macroeconomic growth. At this stage “government’s main job is to provide overall political and macroeconomic stability and sufficiently free markets to permit the effective utilization of primary commodities and unskilled labor both by indigenous firms and through attracting foreign investments” (McArthur & Sachs, 2002). For this category of countries, price remains the first asset in global competitiveness, and the engine of progress towards the second level group is the assimilation of technology through imports, foreign direct investments and imitation.
- **The “investment-driven stage”**, concerns the middle-income status countries where growth is investment driven and competitiveness is achieved by “harnessing global technologies to local production. Foreign direct investments, joint ventures and outsourcing arrangements help to integrate the national economy into international production systems” (McArthur & Sachs, 2002). At this stage, in order to foster attractiveness, “government priorities need to focus increasingly on improvements in physical infrastructure (ports, telecommunication, roads) and regulatory arrangements (customs, taxation, company law) to allow economy to integrate more fully with global markets” (McArthur & Sachs, 2002).
- **The “innovation-driven stage”** concerns the high-income status countries, which have achieved the transition from a technology-importing economy to technology generating economy. In that case “competitiveness is critically linked to high rates of social learning (especially science-based learning) and the rapid ability to shift to new technologies” (McArthur & Sachs, 2002). Nevertheless this transition is considered as the hardest one, the establishment of an innovation-based development “requires a direct government role in fostering a high rate of innovation, through public as well

as private investment in research and development, higher education and improved capital markets and regulatory systems that support the start up of high technology enterprises” (McArthur & Sachs, 2002).

Summarizing these two last sections, to varying degrees, all nine factors matter for all countries and the importance of each for national competitiveness depends on a country’s particular stage of development. Porter and his research colleagues say that four first competitiveness factors (institutions, infrastructure, macro economy and health and basic education) are basic requirements and are especially important for countries in a factor-driven stage. The next three factors (higher education and training, market efficiency and technological readiness) are efficiency enhancers and matter significantly to countries in the efficiency-driven stage. Finally the last two factors (business sophistication and innovation) are critical to countries in the innovation-driven stage.

When measuring national competitiveness it is important to distinguish at which development stage the country is because each group of competitiveness factors carries a different significance.

The specific weights given to each of the factors’ groups for countries in different stages of development are shown in the table below. The table shows that for countries at the factor-driven stage, most weight is placed on basic requirements (50 percent), considerable weight is placed on efficiency enhancers (40 percent), and only 10 percent weight is placed on innovation and sophistication factors. For countries at the efficiency-driven stage, the weights between basic requirements and efficiency enhancers are reversed, with little weight still placed on innovation factors. Finally, for the countries at the innovation-driven stage, considerable weight is still placed on the first two factors’ groups, but the weight placed on the innovation and sophistication factor group is higher, reflecting the fact that at this moment advanced stage of development, these are the factors that matter the most for improving productivity and competitiveness.

Table 1. Weights of the three main groups of factors at each stage of development

<b>Weights</b>	<b>Basic requirement</b>	<b>Efficiency enhancers</b>	<b>Innovation and sophistication factors</b>
Factor-driven stage	50%	40%	10%
Efficiency-driven stage	40%	50%	10%
Innovation-driven stage	30%	40%	30%

Source: Global Competitiveness Report 2005-2006 (2007).

This table illustrates that higher education component is very important for all countries in all stages of development. It does not matter how much the country is developed; it should pay significant attention to the development of the higher education sector if it wants to achieve higher national competitiveness levels. What changes specifically need to happen in the higher education system in order to have increasing competitiveness, I will study in the next chapters.

*What Competitiveness is Not.* Just as it is important to understand what competitiveness is, it is important to understand what competitiveness is not. Consistently subsidized exports are not evidence that a firm or an industry is "competitive." Although there are infant industry arguments that might support some level of subsidies in an industry's early stages, exports that depend on ongoing subsidies are more evidence of the nation's ability and willingness to subsidize than evidence of firm or industry competitiveness. Subsidized exports of agricultural goods from developed nations, for example, do not provide evidence of competitiveness. Unless the firm or industry is self-sustaining and can compete successfully on its own without subsidies, it is not truly competitive.

Competitiveness for the nation does not mean export success in every industry, or even most industries. Clearly, no nation can sustain a trade surplus in every sector of the economy. Indeed, the very specialization required to achieve international success in some industries in the nation implies that other industries will be less successful in terms of their export performance. Competitiveness in some industries allows a nation to improve productivity by allowing it to specialize in the industries and segments in which its firms are relatively more productive than firms in other nations and to import in industries where they are relatively less productive. All

nations, even the most advanced and economically successful nations, have substantial portions of the economy in which they are not competitive.

Competitiveness for the nation does not require the nation to preserve its existing industrial base. Nations progress when their firms improve productivity in industries or segments in which they already compete and when they gradually enter industries or segments that involve higher productivity. In this process, some industries are inevitably left behind. Exit from some industries is the natural consequence of the process of economic development. Governments that fight to save every industry can slow down the advance of the economy by trapping resources that would be best deployed elsewhere. Instead of fighting to hold onto unproductive industries, nations and their firms should seek to find more productive outlets for their resources.

A nation is not "competitive" if it has low labor costs, a "favorable" exchange rate, or borrows its standard of living. Low wages can help a nation's firm to enter international markets. Ultimately, however, the nation's goal should be to achieve productivity that supports high wages. Competitiveness based exclusively on low wages will ultimately be self-limiting unless productivity is increased through the development of higher skill levels, incorporation of more advanced technology, or the institution of better management techniques. Similarly, the nation's goal should be productivity that supports a strong currency. Devaluations in order to gain export competitiveness provide advantages that are short-lived at best. Truly competitive nations are those whose firms compete successfully in international markets with strong national currencies. Finally, competitiveness refers to performance that is earned rather than borrowed. Performance that is fueled by deficit spending and borrowing, rather than by increases in productivity, cannot be sustained indefinitely. Debts eventually have to be repaid. Unless the debt is related to investments that result in higher returns than the interest rate, the debt will ultimately lower rather than raise the nation's standard of living.

The point is that not all nations have to be "competitive" by any single definition. Most nations are not "competitive" by any definition. This does not prevent them from competing in world markets, though it might limit their success in doing so. Rather, the point is that knowledge of what makes a firm, industry, or nation competitive provides a direction for improving firms and upgrading national economies. The

challenge of improving productivity across industries is one faced by every nation. Some simply have farther to go than others.

### **1.1.2. European Union Conception of Competitiveness**

Since this study focuses on the European HE systems, I find it essential to briefly review the notion of competitiveness in Europe.

The topic of competitiveness became popular in the European Union very recently. It happened while the Member States were resolutely engaged in the convergence process towards the Monetary Union and the introduction of the Single Currency. This process supposed and allowed an unprecedented period of macroeconomic stability, while the Member States largely deprived themselves of the traditional instruments of economic policy, the exchange rate and the budget policy.

Nevertheless, this macroeconomic stabilization was not followed by a cycle of strong growth and many of the traditional structural problems of the European economies appeared more obviously. Actually, while European GDP per capita had progressively been catching up with the level in the United States since the 1950s, this process came to an end at the beginning of the 1990s. The gap between the EU, on one side, and the US and Japanese economies, on the other, began to widen again and this widening accelerated after 1995, while the US economy was encountering the benefits of the progress of the communication and information technologies.

The fear of falling progressively into a situation of new “backwardness” towards the most dynamic world economies was therefore the main factor that led European authorities to initiate a reflection about the competitiveness of the member States. Even if the European Commission started to show interest to the topic under the presidency of Jacques Delors, the first concrete step was made when Jacques Santer, immediately after his nomination as President in January 1995, ordered a report on competitiveness in the European Union. This report was achieved in early 1997 and introduced a new approach to the topic (Report on Competitiveness, 1997).

It is based upon the following assumptions:

- **Competitiveness must be considered as a means and not an end in itself.** The end should be to achieve high and sustainable growth with a high

level of employment and social wealth and cohesion. Any reflection about competitiveness should have these principles in mind;

- **A typology of competitiveness is defined.** It is based on three factors: levels (macroeconomic, industrial, sectorial, enterprises); factors (labor, capital, etc.); and policies (supporting innovation, investment, industry, accumulation or redistribution, etc.);
- **A census of various national reports on competitiveness concludes that recommendations are usually the same.** They feature the following advices: strengthening of the competition policy; deregulation and lowering of administrative barriers to business development; improvement of the infrastructure, support to the small and medium-size enterprises, strong promotion of research and development and of innovation; improvement of the cooperation between the research sector and the business one; development of a strong and diversified financial system. There is an overall consensus in the economic theory about the positive effects of these factors. However, views might be completely opposed as regards to other key points of competitiveness strategies, which are namely fiscal and social policies.

*The Lisbon Strategy Definition of Competitiveness.* After a few years of reflections and debates, the topic of competitiveness entered the political arena. It happened in March 2000, when Europe's Heads of State and Governments met in Lisbon and signed a common declaration where they announced their intention to make the European Union "the most competitive and dynamic knowledge-based economy in the world, capable of sustainable economic growth with more and better jobs and greater social cohesion" (Lisbon Strategy, 2001). The goal is to be achieved of before 2010 and, in that order, the Member States adopted what is now usually called the Lisbon Strategy of economic and structural reforms.

According to the European leaders, the following challenges must be won in order to improve the competitiveness of EU economies:

- **The employment challenge.** Taking into account the best employment rates in the U.S. and E.U. economies, Europe's full employment potential corresponds to twice the current number of unemployed (30 million people against 15 million currently unemployed). The supply deficit on the labor market lies on a lot factors: a gender gap (only half of the women in the E.U.

are working compared to two thirds in the U.S.); an age gap (the rate of employment in the 55-65 category of age is much lower); a skills gap (especially in the high-tech and IT sectors); a service gap (the level of employment in the service sector is much lower in the E.U.); territorial imbalances; long term structural unemployment (more than 50% of the unemployed have been in this situation for more than a year).

- **The skill challenge.** The development of IT technologies require a complete redefinition of the education and formation policies. According to the report, there were already 1.5 million vacant jobs in the IT sector in 2000. The Lisbon vision of the gap of competitiveness between the E.U. and the U.S. is actually very much centered on the backwardness in terms of innovation and IT development. In its turn, this backwardness is considered as the result of an inadequate educational system and of the absence of mechanisms of training that help to reintegrate unemployed of every age.
- **The social challenge.** The main social challenge is actually not more than the fight against unemployment. According to the Commission estimation, the under-use of available human resources could cost between 12 and 20% of GDP every year. Being competitive means also being able to solve this situation and to improve social cohesion as a whole and for all the population.
- **The “dynamism” challenge.** The goal here is to promote entrepreneurship and risk taking. European economies still suffer from various barriers to the creation of enterprises and there is an overall lack of incentive schemes which would help to create a much more dynamic and flexible environment.
- **The “knowledge” challenge.** The biggest gap in this field is considered to be the much slower capacity of European economies to take up and integrate IT technologies, the classical example being the much lower development of the Internet in the E.U. than in the U.S.

*The Fields of Competitiveness.* After describing the main features of the gap between EU economies and the US one, the report funding the Lisbon strategy gives six priorities in order to build a New Economy and to win the challenge of competitiveness.

- **eEurope, or creating an information society for all.** This is the expression chosen to describe the need to develop digital and information technologies. Here lies probably the main reason explaining the widening of the gap of productivity between US and the EU during the last ten to fifteen years. The US is far more advanced in Internet penetration and usage, in e-commerce and in the development of high-tech start-ups and technologies. At the same time, Europe has a strong position on the mobile telecommunication market. Competitiveness will therefore increase by fostering competition in local telecommunications networks and ensuring that a global market for IT is progressively built;
- **Improving the functioning of the Single Market.** The internal market has been in place for more than ten years now. The Member States recognize that it is working quite well, especially for goods, but that a lot of structural problems remain, which has to be tackled in order to improve the medium term economic outlook of the EU. It mainly concerns public procurement, regulatory costs, the regulatory environment, protection of intellectual property rights, cross border barriers to trade in services and the incompleteness of some markets, like for example energy and aviation markets;
- **Fully integrating financial markets and improving their efficiency.** Stock market capitalization in the EU is only half the one of the US. This is mainly linked to structural specificities, but also to legal and administrative barriers. The main barrier to the development of the stock exchange in Europe is linked to the feature of national capitalisms. In the biggest EU economies economic development relied traditionally much more on credit institutions than on the Stock exchange. This is why banks still play such an important role. Also, the Member States, as sovereign entities, developed their local financial markets independently. This is why there are 33 stock exchanges in the EU (against 2 in the US) and 11 cross-border payment systems. Another particular feature lies in the weakness of pension funds and in the existence of portfolio restrictions to their activity. One of the main sources of investment in the Anglo-Saxon countries comes from pension funds, which are still at an early stage of development in a lot of European states because of the specificity of pension financing. All these features led the

European Leaders to pronounce a firm commitment to complete the integration of the financial services and capital markets. In addition, a complete reviewing of the Union's financial instruments has been conducted in order to ensure that they can play their fully role in preparing the knowledge based society ;

- **Improving the enterprise environment.** The aim here is to develop entrepreneurship through a twin strategy. First, a dynamic business environment must be built with limited barriers to entry, strong incentives for innovation and as liberal a regulation as it can be. Second, risk taking and the spirit of enterprise must be encouraged through all possible means. This concerns, among other things, promoting a culture of initiative, encouraging women entrepreneurship, lowering the cost of bankruptcies in order to give entrepreneurs a second chance;
- **Developing a true European area for research, development and innovation.** R&D remains fragmented and compartmentalized in Europe and the gap between EU spending and the one of its principal competitors has been constantly increasing in the nineties. This is why the concept of a "European research Area" has been launched in the framework of the Lisbon strategy. Its key elements are networking centers of excellence, promoting a common approach to research infrastructure and promoting top class broad band electronic research network, using tax, patent and risk capital incentives to stimulate research, developing a common system of scientific and technological references for public policies, encouraging research workers to be more mobile and making Europe attractive to the best brains in the world.
- **Ensuring social cohesion.** The main difference between the European approach to competitiveness and the standard management one is that the Lisbon strategy unambiguously affirms that "the key is to put people at the center of the Union's policies". For the European leaders, it means "investing in people; increasing knowledge and skills; establishing life-long learning for life-long opportunities; ensuring full participation in society; helping the workforce to become more adaptable; and making social protection more sustainable and 'active' to deal with an ageing population; and ensuring equality of opportunity – in short enriching the European

concept of public service” (Lisbon Strategy, 2001). In other words, while the management approach considers the people as a means to ensure competitiveness, the European approach considers competitiveness as a means to serve the people. Of course, the first goal for the EU is to tackle the problem of unemployment. It actually assumes the restoration of full employment as the key objective of economic and social policies.

- **Promoting education and training as the best investment for the knowledge economy.** Alongside with social policies, another key specificity of the European approach to competitiveness is the vital role of education and training in the building of the knowledge economy. The knowledge society actually requires a complete rethinking of the functioning of all the national educational systems, from pre-school to secondary systems. Another key point is what is called “lifelong learning”. It means that opportunities must be given to every people from every age category to adapt and participate in the knowledge society at any moment. The main risk is that the development of information and communication technologies will lead to a two tier society, with a large share of the population simply excluded from the process and, therefore, from the whole society. And this actually is the last objective of a competitive European Union: overcoming exclusion.

Again, the listed fields of competitiveness demonstrate that HE system is important in many of them. Lower unemployment goal partly depends on the educated workforce; and research focus and information society directly related to the process in the HE system. Moreover the identified skills mismatch requires HE system changes as well.

Analyzing various definitions and aspects of national competitiveness showed that HE systems and the extent to which countries are able to upgrade the skills and training of the labor force have acquired growing importance as indicators of a country’s future growth potential. A country’s ability to absorb new technologies, to produce goods and services that can reach standards of quality and performance acceptable in international markets, to engage with the rest of the world in ways that value-creating, is intimately linked to the quality of its HE schools, to the priority given

to training in mathematics and science, and to the existence and accessibility of specialized research and training centers.

### **1.1.3. Knowledge Aspect Reflection in National Competitiveness Conception**

In the Competitiveness White Paper published by the Government of the United Kingdom at the end of 1999, the knowledge-driven economy is defined as "... one in which the generation and the exploitation of knowledge has come to play the predominant part in the creation of wealth. It is not simply about pushing back the frontiers of knowledge; it is also about the more effective use and exploitation of all types of knowledge in all manner of economic activity" (Coates, Warwick, 1999). As it was already mentioned in the previous section, the concept of competitiveness is constantly changing and nowadays the aspect of knowledge has become more than ever important in the notion of competitiveness. The notion of a knowledge-driven economy strengthens the importance of higher education to the national competitiveness so it will be briefly examined below.

The perception of knowledge as a key condition for economic growth and increase of wealth has progressively spread out. The World Bank states that "For countries in the vanguard of the world economy, the balance between knowledge and resources has shifted so far towards the former that knowledge has become perhaps the most important factor determining the standard of living [...] Today's most technologically advanced economies are truly knowledge based" (World Bank, 1998).

Nevertheless, there is still much of confusion in the definition of the notions. A way to clarify them is to establish a distinction between knowledge, which is more used as a theoretical concept, and innovation, which is closer to empirical application.

There is still no concise definition of the concept of knowledge in the economic literature on which the majority of specialists would agree. In the narrow sense, a knowledge-driven economy is an economy where technological progress, and more precisely, the rapid development and dissemination of information and communication technologies play a major role. It is therefore linked mainly to the capacity to innovate and to adapt these innovations to the need of the enterprises in order to support their development. Of course, this definition can be applied to any society or economy that encounters a period of sustainable growth. But it has

become particularly relevant in the recent history as innovation has become much more comprehensive and the nature and role of information and knowledge have tremendously increased. They are now created and transmitted at rates previously unthinkable and their costs of transactions have plummeted. They have also become an increasing part of the growth process and they play a direct role in the accumulation of social and financial wealth. Four main factors have played a role here: the rapid development of information and communications technologies, an acceleration of scientific progress, global competition and an evolution of consumers' taste (Coates, Warwick, 1999).

This, the focus of competitiveness is changing and nowadays knowledge has become one of the most important driving forces. Competitiveness is not only about selling at the higher price and producing at the lower but more about producing new knowledge and effectively using the present knowledge. HE system is directly involved in this new knowledge notion since it is a major player in knowledge production, and its usage and application.

*Tacit and Codified Knowledge.* Evolutionary economics is paying much attention to the notion of knowledge. Its main contribution up to now is probably the distinction between codified and tacit knowledge (Nelson, Winter, 1982).

Codified knowledge is formalized and it can be stored, copied and diffused easily. On the opposite, tacit knowledge is not formalized; it is accumulated through personal experience, learning-by-doing, social relations, etc. As a consequence, it can not be easily quantified, stored and transmitted. It goes far beyond technological progress and innovation materialized in products, services or processes. But it is nevertheless fundamental to stimulate it.

One of the main findings linked to this fundamental distinction is directly linked to the problem of competitiveness. As tacit knowledge can only be transferred through individual direct relationship, it means that firms that are located close to their competitors, suppliers or even customers, all of them being a source of tacit knowledge, have better opportunities. As a consequence, it means that location is crucial for a firm to be dynamic and competitive. While codified knowledge (which actually corresponds broadly to information and communication technologies) can easily be de-localized, it is not the case for tacit knowledge (Nelson, Winter, 1982). This distinction is at the root of the further definition of clusters or geographic

networks. It also stresses a fundamental dimension of competitiveness: human capital.

It should be noticed here that HE has more relation to the codified knowledge such as the system produces more formal knowledge. However tacit knowledge development is also important in the HE system and that's why there is an increased cooperation between the HE system and other sectors such as business.

*Knowledge as an "Impure" Public Good.* Economic theory is based on the analysis of the use of resources. The main feature of these resources is scarcity. Knowledge, on the contrary, is almost infinitely expansible and its dissemination does not affect its marginal utility. J. Stiglitz captured well the specificity of knowledge as a production factor by affirming that it has a "scarcity-defying expansiveness" (Stiglitz, 1999). Concretely speaking, it signifies first that there is no additional cost of using knowledge if the number of its users increases. Second, it means that it has very strong and extensive externalities, i.e. their benefits go well beyond the benefit of its creator and first user. Third, it includes a strong dimension of "unknowability" and unpredictability. It is hard to value any knowledge before it is used and diffused. As it is fundamentally non-linear and uncertain, the path of innovation is characterized by complex feedback and interactive relations between actors and institutions and forms a whole system.

However, the fundamental non-frivolousness of knowledge is somehow tempered by the cost of its dissemination. This is why it can not be considered as a pure public good. And this leads to the problem of the protection of intellectual property rights.

*Knowledge as a System more than a Process or a Product.* Assimilating a knowledge-driven economy to one in which high technologies and IT industries play a dominant role in the direct creation of wealth does not exactly fit to the reality. In the United States, for example, high technology sectors only account for about 15% of industrial production, which itself only represents about 18% of GDP. Therefore, their share in the creation of overall value-added does not exceed 3%. As a consequence, the crucial importance of knowledge is not so much the production of high-tech products or services as it is the capacity to use these innovations across all the sectors of the economy in order to improve their efficiency and dynamism.

To put it further, it implies that it is actually to some extent more important for the competitiveness of an economy to be able to use effectively the existing knowledge than to be able to create new knowledge. In that sense, it could well be compared to vitamins for the human organism. They are not enough to make it live, but they might help to improve tremendously all its functional activities. Higher education system is involved in both – creating the new knowledge and using the existing knowledge.

*Can Knowledge be Measured?* The growing importance of knowledge in the economy logically leads to ask the question of how to measure it and how to quantify its effects. Some traditional criteria can be used here but they only cover part of the phenomenon: share of research and development expenditure in GDP, total number of researchers, number of researchers per employees, number of high-level graduates, etc. (many of which are directly related to higher education system). This is why more and more organizations try to combine criteria in order to give an overall assessment of the level of knowledge of national economies. It is, of course, an important element in the construction of composite competitiveness indexes described below. It is also one of the most uncertain, for at least two reasons: the importance of tacit knowledge, which is very difficult to quantify, and the complex interaction between various factors, actors and institutions, which is almost impossible to define through a rigid set of criteria. For example, a country can have the highest number of researchers but they can be lower educated than its competitor and therefore less efficient. A country can have a very productive research system creating a high level of innovation but be incapable of diffusing it properly into its industry.

Another attempt to “quantify” knowledge was made by the World Bank in the framework of the K4D program. It offers two aggregate indexes: the Knowledge Economy Index (KEI) and the Index of Knowledge (IK). The main difference between them is that the first one takes into account the development of IT industries, while the second does not.

Measuring knowledge is obviously a difficult, if not impossible task, especially taking into account the tacit knowledge which is all but corresponding to something measurable. This is why the link between knowledge and competitiveness should be considered in a more qualitative way, especially for countries engaged in a transition or catching up process, where institutional barriers play a greater role than in the

most advanced countries. This qualitative approach largely corresponds to the one developed by the European Union.

This last observation reveals that qualitative research methods to examine the link between competitiveness and knowledge are often more useful than quantitative. Since HE system is the major player in knowledge production and its execution, qualitative methods of research are very valuable to examine the relationship between competitiveness and HE system as well.

## **1.2. COMPETITIVENESS MEASURING METHODOLOGIES**

### **1.2.1. World Economic Forum Competitiveness Measurement**

The concept of competitiveness developed by M. Porter was in fact popularized by the Swiss organization, the World Economic Forum (WEF), through its Global Competitiveness Program. The World Economic Forum is a membership based non-governmental organization which promotes interaction among all stakeholder groups of society e.g. leaders from government, business, academia and the arts with the objective of improving the state of the world. It has the status of a not-for-profit foundation under Swiss law and is officially not tied to any political or regional interests.

The World Economic Forum pursues its aims by organizing high-level meetings and summits, the largest and best-known of which is its Annual Meeting held in the ski resort of Davos, in Eastern Switzerland. This five-day long meeting, brings together over 1,000 chief executives, some 200 government leaders, numerous high ranking officials from regional and international organizations, and some 300 experts, scientists, artists, religious leaders and representatives of the media.

The definition of competitiveness proposed by the World Economic Forum is the following: "The ability of a country to achieve sustained high rates of growth in GDP per capita." (World Economic Forum, 1996).

This definition is legitimized by the prominent role of economic growth when dealing with welfare: "Few things matter more for the welfare of a country's citizens than the aggregate growth rate of the economy. For rich countries, positive growth rates tend to mean higher wages, larger profits, more employment, and expanded business opportunities. For poor countries, positive growth rates tend to lift people

out of poverty as their incomes tend to rise along with average GDP” (Blanke, Sala-I-Martin, 2003).

Based on the definition of competitiveness as the means to achieve high and sustainable growth of GDP per capita, WEF has developed the World Competitiveness Index. This index is a synthesis of two indexes supposed to give an evaluation: the Growth Competitiveness Index (GCI) and the Current Competitiveness Index (CCI). The GCI tries to concentrate on competitiveness as a set of institutions and economic policies allowing high growth rates in the medium term, while the CCI utilizes microeconomic indicators measuring the pattern of institutions, market structures and economic policies ensuring high immediate levels of prosperity. In other words, the GCI is supposed to give a forecast of the growth prospect in the five coming years, while the CCI gives a picture of the current potential level of production capacity.

If to look specifically at the HE portion included in the competitiveness index, these components are included:

- Quantity of education
  - Secondary enrollment ratio (hard data)
  - Tertiary enrollment data (hard data)
- Quality of education
  - Quality of education system (survey)
  - Quality of math and science education (survey)
  - Quality of management schools (survey)

The WEF competitiveness index is based on both objective and subjective criteria. Most of the data come from the processing of questionnaires submitted to senior managers in surveys carried out by the WEF. This does, of course, lend a subjective nuance to the final form of the index. For certain variables the objective data used are converted to a scale comparable with that used for more subjective data, in order to allow the data to be processed together, and this does – without doubt – lead to an element of simplification.

### **1.2.2. International Institute for Management Development Measurement**

The World Economic Forum is not the only organization promoting the idea of a composite index of competitiveness. It has actually become quite fashionable an activity, well diffused in the international economic and business press, and there is

an increasing number of such kinds of ratings from various institutes. The most famous, alongside with the WEF one, is the World Competitiveness Yearbook published by the International Institute for Management Development (IMD).

According to it “The IMD World competitiveness Yearbook (WCY) is the world’s most thorough and comprehensive annual report on the competitiveness of nations” (IMD World Competitiveness Yearbook, 2003). It has been published since 1989 and is based on an evaluation of the environment that sustains the competitiveness of enterprises in each country. It differs from the WEF approach in the sense that it considers that competitiveness can not be reduced to only the evolution of the GDP and of the productivity of factors. The dynamism and growth of enterprises are also affected by social, cultural and political factors.

The IMD World Competitiveness Yearbook (WCY) looks at the relationship between a country’s national environment (where the State plays a key role) and the wealth creation process (assumed by enterprises and individuals). The WCY focuses on the outcome of the interaction of four competitiveness factors, which generally define a country’s national environment. These are:

### **1. Economic Performance**

- Prosperity of a country reflects its past economic performance;
- Competition governed by market forces improves the economic performance of a country;
- The more competition there is in the domestic economy, the more competitive the domestic firms are likely to be abroad;
- A country’s success in international trade reflects competitiveness of its domestic companies (provided there are no trade barriers);
- Openness for international economic activities increases a country’s economic performance;
- International investment allocates economic resources more efficiently worldwide;
- Export-led competitiveness often is associated with growth-orientation in the domestic economy.

### **2. Government Efficiency**

- State intervention in business activities should be minimized, apart from creating competitive conditions for enterprises;

- Government should, however, provide macroeconomic and social conditions that are predictable and thus minimize the external risks for economic enterprise;
- Government should be flexible in adapting its economic policies to a changing international environment;
- Government should provide a societal framework which promotes fairness, equality and justice while ensuring the security of the population.

### **3. Business Efficiency**

- Efficiency, together with ability to adapt to changes in the competitive environment, are managerial attributes crucial for enterprise competitiveness;
- Finance facilitates value-adding activity;
- A well-developed, internationally integrated financial sector in a country supports its international competitiveness;
- Maintaining a high standard of living requires integration with the international economy;
- Entrepreneurship is crucial for economic activity in its start-up phase;
- A skilled labor force increases a country's competitiveness;
- Productivity reflects value-added;
- The attitude of the workforce affects the competitiveness of a country.

### **4. Infrastructure**

- A well-developed infrastructure including efficient business systems supports economic activity;
- A well-developed infrastructure also includes information technology and efficient protection of the environment;
- Competitive advantage can be built on efficient and innovative application of existing technologies;
- Investment in basic research and innovative activity creating new knowledge is crucial for a country in a more mature stage of economic development;
- Long-term investment in R&D is likely to increase the competitiveness of enterprises;
- The quality of life is part of the attractiveness of a country;
- Adequate and accessible educational resources help develop a knowledge-driven economy.

The last factor (Infrastructure) is broken by IMD to sub-factors and provides specific education related measurements. Not all of them however apply to HE (*Note: the factors that apply to HE are identified by italics in the list below*):

- Total public expenditure on education - Percentage of GDP
- Total public expenditure on education - per capita US\$ per capita
- Pupil-teacher ratio (primary education) - Ratio of students to teaching staff
- Pupil-teacher ratio (secondary education) - Ratio of students to teaching staff
- Secondary school enrollment - Percentage of relevant age group receiving full-time education
- *Higher education achievement - Percentage of population that has attained at least tertiary education for persons 25-34*
- Educational assessment - PISA survey of 15-year olds
- Educational system - The educational system meets the needs of a competitive economy
- *University education - University education meets the needs of a competitive economy*
- Illiteracy - Adult (over 15 years) illiteracy rate as a percentage of population
- Economic literacy - Economic literacy among the population is generally high
- Education in finance - Education in finance does meet the needs of enterprises
- Language skills - Language skills are meeting the needs of enterprises
- *Qualified engineers - Qualified engineers are available in your labor market*
- *Knowledge transfer - Knowledge transfer is highly developed between companies and universities*

Besides the components identified in italics, it is noteworthy that the preparation for HE system entrance is also important. Countries seeking to be competitive measure high school students' performance and the number of them.

On the basis of these factors and more than 300 criteria, the WCY assumes that healthy performance in these dimensions creates a national environment that sustains World Competitiveness. In order to give an assessment of the competitiveness of 60 nations included in the sample, 320 criteria are used by the WCY. 83 concern economic performance, 77 evaluate government efficiency, 69 measure business efficiency and 94 cope with the quality of infrastructure. In addition, a survey is sent to business executives in order to have a more qualitative

comprehension of competitiveness. In 2004, 4166 answers were collected in the 60 countries included in the panel.

The methodology is nevertheless not described in detail and it is difficult to understand to what extent the elaboration of the rankings fit scientific principles.

### **1.2.3. European Union Competitiveness Measurement**

There are basically two ways of evaluating competitiveness in the EU that merit some attention. The first one is the one given by the European Commission itself. It is based mainly on the Yearly report on competitiveness presented by the DG enterprises.

*The Yearly Report on Competitiveness.* The European Union has a proactive vision of competitiveness than most of the traditional indexes trying to systematize its measurement. The overall goal is rather clearly defined - it is to overcome the most advanced economies of the world (namely the U.S. and, to a certain extent, Japan) in terms of productivity, wealth and capacity to innovate and grow steadily, before the year 2010. The road to success is, however, not precisely defined. It is based on a list of fields of action more than on a clear measure of pre-defined aggregates.

The assessment of the successes and failures of the ongoing Lisbon strategy is therefore much more based on qualitative analysis and on the appreciation of overall trends, than on a strict set of criteria. It tries to give an assessment of the overall progress by comparing productivity growth or GDP per capita with other economies. But this is merely a way to introduce some benchmarking in the analysis.

*The World Economic Forum Measuring the Progress of the Lisbon Agenda.* The second measure is the one given by the World Economic Forum in its yearly publication named the *Lisbon Review* (Blanke, Lopez-Carlos, 2004). Following its principle to measure competitiveness through a multi-criteria index, the WEF is trying to assess the strategy followed by the European Union using the US economy as the principal benchmark. This assessment is based first on a redefinition of the main dimensions defining the Lisbon strategy according to WEF's own view. It is classified in eight distinct categories:

- Creating an information society for all
- Developing a European area for innovation, research and development;

- Liberalizing by completing the Single Market and improving State aid and competition policy;
- Building network industries in telecommunications, utilities and transportation;
- Creating efficient and integrated financial services;
- Improving the enterprise environment on the legal side and especially for start-ups;
- Increasing social inclusion by returning people to the work force, upgrading skills and modernizing social protection;
- Enhancing sustainable development.

Nevertheless, the aim of the WEF is not as much to understand ongoing developments inside the EU and in comparison with other economic zones, as to classify countries between themselves. There are none any specific HE related factors in Lisbon progress review. The result is more an attempt to put E.U. countries in a kind of internal competition than to assess the global evolution of E.U. It is obviously closely linked to the spirit of the Global Competitiveness Index and the same kind of critics can be addressed here. Nevertheless, it might be used as an instrument of comparison, if not in space, then in time, as it is supposed to be published every year.

#### **1.2.4. The Critics to the Evaluation of Competitiveness through Composite Indexes**

There is a whole range of critics (Temple, 1999; Krugman, 2001) to be addressed to the various ratings of competitiveness defined above:

- Composite indexes are based on **weak theoretical assumptions** and sometimes **unreliable statistical methods**. While their authors try to give a scientific caution to the construction of competitiveness indexes, they are actually far from having rigorous scientific fundaments. They are based on the principle of aggregate multi-criteria indexes. As there is no clear consensus about the roots of growth in the economic theory, the choice of these criteria is linked more to some specific visions and opinions of its author than to a solid scientific approach (Temple, 1999). Moreover, the World Economic Forum as well as the World Competitiveness Yearbook only use distant reference to the theoretical models of growth developed in the

economic literature and to their empirical applications (Temple, 1999). They do not use the comprehensive statistical and econometric data that is available now on the topic;

- As they try to forecast the future evolution of GDP growth and of revenue per capita, composite competitiveness indexes suppose that they are **determined ex ante by the factors that they use as criteria**. The causality link between these criteria and growth is actually far from being proven. The best argument here is given by the authors of the indexes themselves, who change regularly the criteria used in the construction of the index;
- **Composite indexes often change the criteria used in their survey**. This is understandable as they try to follow the latest developments in economic theory or management research. But it means that there is no continuity in the statistical series they use and that it is therefore risky to use their yearly ratings as strong benchmarks.

A comprehensive critic of the most famous index, the GCI of the World Economic Forum, has been given in the framework of the report on competitiveness of the French economy. By using more scientific methods or only by changing the ponderation used by the World Economic Forum itself, the authors end up by establishing radically different ratings than the one presented by the World Economic Forum: ranks for countries like Estonia can vary from the 1<sup>st</sup> to the 26th, China from the 3rd to the 35th, etc. (Gregoir, Maurel, 2003).

The success story of the term competitiveness owes much more to the so-called management literature than to the economic theory. Actually, economists are still very reluctant to use the notion. The best example of the uneasy relation between economic theory and the notion of competitiveness is Krugman's infamous article, where the author suggests that the idea of national competitiveness has become a dangerous obsession (Krugman, 1994). Its rationale lies on two main arguments:

- What politicians and business scholars call competitiveness is actually nothing more in itself than what economists call productivity. This is a quite convincing argument. The various definitions of competitiveness mentioned in the introduction illustrate the difficulty to define the concept in itself. It is also quite common to read articles or reports where competitiveness is just confused with productivity factors. It is especially clear in the approach

developed by the World Economic Forum, i.e. forecasting the growth potential. The most recent developments in the growth theory still consider productivity of factors as the key factor in the long term (Romer, 1996);

- The notion of competitiveness stresses the importance of opposition and competition between economic agents and, as a consequence, **promotes non-cooperative behaviors**. This is contrary to the main lessons of international trade theory, where the mutual interests of nations is at the basis of the rationale. In addition, it might become dangerous and paradoxical if it leads to stress the fundamental rivalrousness of nations in economic relations, while their globalization is deeper and deeper. Krugman's critic was actually not only a scholar's critic, but it was directly aimed at the policy followed by the U.S. administration.

To put it in a nutshell, economists have become more and more aware of the fact that the problem of competitiveness should in some way be integrated to their corpus. They managed to do it mainly through the study of a fundamental concept of knowledge (the knowledge aspect was discussed earlier in this chapter).

### **1.3. IDENTIFICATION OF HIGHER EDUCATION ATTRIBUTES FROM COMPETITIVENESS CONCEPTION AND ITS MEASUREMENT METHODOLOGIES**

This analysis above showed that the notion of competitiveness is still far from creating a consensus. It is understandable for a notion that stands at the border between theory and practice, between economic research and economic policy. The only consensus which has clearly emerged lately is that competitiveness is indeed a key notion. There is hardly any industrialized country that has not introduced a reflection about the competitiveness of its economy. It has even become the key priority for many of them, the best example being the European Union which synthesized its approach in the framework of the Lisbon strategy.

Moreover HE is an important factor when seeking competitiveness. Many different definitions and theories of competitiveness showed that higher education and the extent to which countries are able to upgrade the skills and training of the labor force have acquired growing importance as indicators of a country's future growth potential. As it was mentioned earlier in the chapter, HE system aspects were

reflected in Porter's factor and demand conditions, in many "pillars" of national competitiveness, in the knowledge notion of competitiveness and in the European definition of competitiveness. HE system aspects appeared in all measurements of national competitiveness as well.

In the table below I summarize HE dimensions as they appear in competitiveness definitions and measurements covered in the chapter above.

Table 2. HE System Dimensions as Expressed in Competitiveness Literature

QUANTITY OF EDUCATION	<ul style="list-style-type: none"> <li>- tertiary enrollment data (WEF)</li> <li>- % of population that has attained at least tertiary education (IMD)</li> <li>- Enrollment data (Lisbon Agenda)</li> </ul>
QUALITY OF EDUCATION	<ul style="list-style-type: none"> <li>- quality of math and science education (WEF, Lisbon Agenda, competitiveness' 'pillars')</li> <li>- educated labor force (Diamond model, European definition)</li> <li>- quality of management schools (WEF, Lisbon Agenda)</li> <li>- university education meets the needs of a competitive economy (IMD)</li> <li>- qualified engineers are available (IMD)</li> <li>- knowledge transfer if highly developed between companies and universities (IMD, European definition, knowledge notion)</li> </ul>

To summarize the table above even further, it is important to note that the analysis of the term competitiveness provided the following higher education system dimensions that are significant in the further study:

- Enrollment data in the higher education system;
- Quality of management, math and science higher education;
- A close relationship between higher education system and business;
- An educated labor force.

The analysis of the term competitiveness showed that higher education system is an important driving force when enhancing national competitiveness. While reviewing the competitiveness literature, I identified several HE system dimensions that are significant when seeking national competitiveness. Now I will turn to the HE

system literature review and look what additional dimensions it offers. The goal is to have a comprehensive list of HE system dimensions affecting national competitiveness.

#### **1.4. CONCEPTION OF HIGHER EDUCATION SYSTEM**

The term “higher education system” is used to describe a collection of post-secondary institutions operating within a defined geographical area under a specific government administration (Clark, 1983). In this section I will analyze HE system at a macro level and also provide an institutional approach with identifying additional important HE system dimensions for comparative analysis. Both of these frameworks will contribute to the empirical research in Chapter 3.

##### **1.4.1. Conception of Higher Education System at Macro Level**

Since the context of this dissertation is national competitiveness, I find it essential to review HE system at the national macro level as well. When one assesses the infrastructural changes of societies and communities in the past two decades, one can observe the pervasiveness of neo-liberalism in the globalization of higher education, resulting in “the subordination of higher education to the labor market requirements” (Elliott, 1999). Given that humans are now facing a depletion of scarce resources, thus making productivity improvement a critical concern in all countries, it is inevitable that economic considerations must be appear in higher education policy making. In brief, changing goals of HE systems, changes the focus of the systems as they became more oriented towards economic benefits. From an economic point of view, education policy needs to include economic considerations, such as the following:

- Meeting the short-term and/or long-term economic demands of society at higher education level,
- Identifying, procuring, and allocating appropriate resources for inputs into the higher education system,
- Making appropriate higher education provisions (e.g. number of trained faculty, facilities, levels of higher education, etc.)
- Changing the internal structures of the higher education system to meet different purposes in operation and education,

- Enhancing the efficiency of internal processes of the system and its subsystems (such as universities and colleges, etc.)

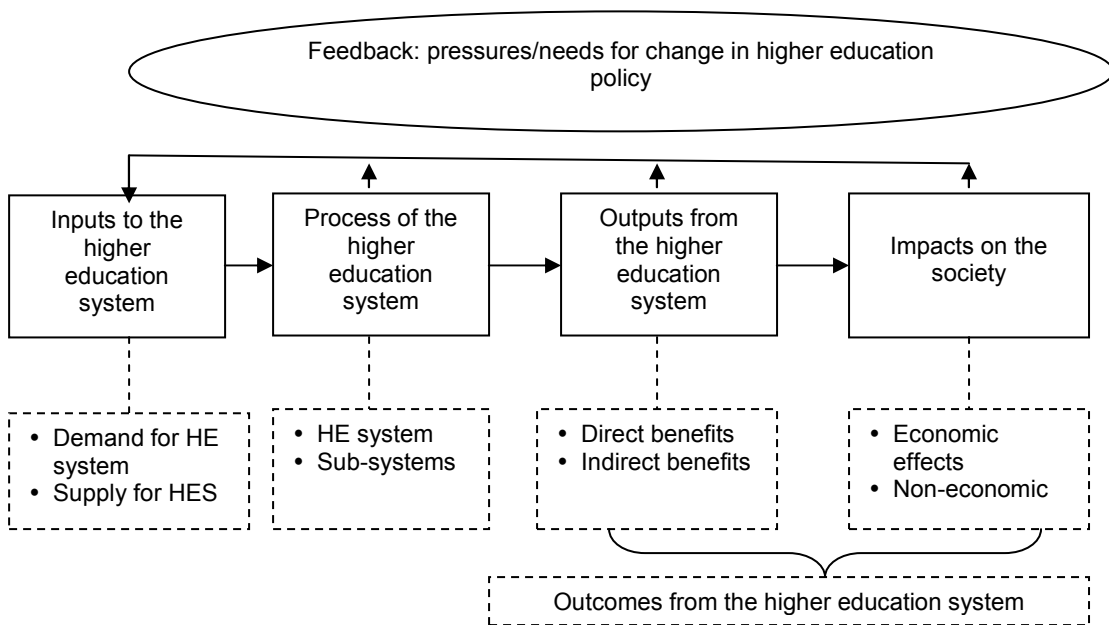
All these considerations and related efforts are aimed at improving higher educational services and practices, enhancing internal and external economic effectiveness and generating other social benefits to different levels of society (Behrman and Stacey, 1997; Solmon and Fagnano, 1994).

*Inputs/Outputs Approach.* The simplified framework presented below, furnishing a basis for clarifying the above economic considerations, rests on a premise that higher education can be considered a system. In brief, an education system comprises all kinds of subsystems – such as educational institutions at different levels and of different modes – receiving different types of inputs from multiples sources (including resources, manpower, needs and expectations of stakeholders, national goals, etc.). As shown in Figure 1, through internal processes of the HE system, some outputs that encompass direct and indirect benefits and impacts are produced to individuals, educational institutions and the local community. Then, these outputs eventually generate long-term impacts on the whole society and even beyond. From this perspective, a new higher education policy often means a set of proposed initiatives, measures, or changes to the inputs and/or internal processes of the education system, with a hope of achieving some planned changes in higher education effects. According to Coombs, HE education policy making is often characterized by extraordinary complexity (involving so many participants and stakeholders at different levels), visibility of the HE system and most policy deliberations (i.e. citizens believe they have the right to change the system and are ‘experts’ in education), dispersion of authority in HE education policy making at different levels, ambiguity about goals in most educational settings, and labor-intensive processes involving the majority of the higher education budget on staffing.

The HE system is by nature an open system that interacts with the external environment. It means that the higher education system produces some outputs to the external environment, and the latter reacts with some feedback to the higher education system. Responding to the feedback, the HE system may change its inputs as well as internal processes of the HE system. Accordingly, weather the performance and efficiency of internal processes of the HE system, the positive or

negative impacts of education outputs, and the subsequent economic benefits can meet the expectations is often a crucial concern. This concern will determine whether or not the existing HE policies should be changed. If the aforementioned cannot meet the expectations and needs, there will be greater pressure from the public and those concerned to change the existing education policies and ask for reforms and new initiatives to induce changes in inputs to the HE system. It forms a feedback loop to the HE policy cycle, as illustrated in Figure 1. With the change in inputs, the HE system may change its internal structures and processes, thus hopefully produce in the next cycle more preferable outputs and effects that meet the needs of stakeholders as well as societal developments.

Figure 1. Higher Education as an Open System



[Source: The framework above is based on Yin Cheong Cheng, Kwok Hung Ng and Magdalena Mo Ching MOK developed framework “Education as an open system” (article “Economic considerations in education policy making: a simplified framework”, 2004). The framework was adjusted to reflect higher education system vs. general education system.]

The framework above includes three main parts: 1) the inputs to the HE system; 2) the structures and processes of the higher education system; and 3) the economic

effects and consequences of higher education from the system. Since the detailed list of inputs, processes and outputs is not important for the scope of this thesis, I will not analyze them in depth. The next section will only briefly describe them.

Among the numerous inputs into the HE system, the demand for and the supply of HE are the two major elements and basic elements. Depending on the demands from different levels of society, HE are often categorized into “national demands”, “social demands”, and “private demands”. The supply of HE education to meet these demands is often limited by the amount and types of available resources. Consequently, the pursuit of a match between demand and supply is the kernel concern of HE policy. In reality, however, the supply often does not meet the demand in certain, if not all aspects, whether it is over-supply or under-supply. Inevitably, how to ensure the match between supply and demand becomes the core issue in higher education planning and financing. Mismatch usually creates serious policy problems related to equity and equal opportunity in higher education (Lynch, 2000, Psacharopoulos, 1987; Woodhall, 1987).

In addition to the concerns with demand and supply and their match at the input level, policy analysis and discussion should also place a strong emphasis on the effectiveness, flexibility and adaptability of the structures and processes of the HE system, with an expectation of maximizing the economic benefits of HE outputs. A HE system can be categorized into formal system and non-formal systems (e.g. open education, professional development programs, etc.), which can be further categorized into different levels and types of higher education sub-systems. The composition and size of sub-systems and the resources allocation among these sub-systems for optimal conditions to provide HE services to meet diverse needs are important issues in HE planning and policy making.

The economic effects of HE system can be classified into direct economic effects and indirect economic effects. Direct economic effects refer to the impacts of HE outcomes on developing, sustaining, or modifying manpower structure and economic structure to meet the demands of an existing traditional economy and developing a new knowledge-driven economy. Indirect economic effects usually refer to the impacts of HE outcomes on production technology, quality of human resources, and social-economic behaviors that indirectly affect the development and productivity of the economy. Of course, all these direct or indirect economic effects can manifest eventually as economic growth, social returns, private returns and

redistribution of income in society (Behrman and Stacey, 1997; Carnoy, 1994; Cipollone, 1994; Hicks, 1994; McMahon, 1987; Owen, 1998; Solmon, 1987; Woodhall, 1987).

In addition to positive economic effects, a HE system, if not well planned and managed in inputs and processes, may have negative consequences on the development of the economy. For instance, the mismatch between HE outcomes and economic demands (e.g. higher education but unemployment or over-qualification for employment) and the phenomenon of brain drain one country to another can both be considered as loss of higher education benefits. These negative consequences may finally cause damage to the development of the local economy. Therefore, HE policy and planning need to consider potential impacts of HE inputs and processes on economic benefits, and search for the best education arrangements within the context of various limitations.

To summarize, the figure 1 identifies that HE system by nature is an open system with external environment. For the purpose of this dissertation that external force has been chosen to be national competitiveness. As countries seek to be more competitive in the international markets, HE systems change their inputs thus modifying the outputs. Responding to the competitiveness challenges, HE system produces some outputs to the external environment, and the latter reacts with some feedback to the HE system. As noted in the chapter earlier, the goal of national competitiveness challenged many aspects of HE system such as quality of math, science and management schools, qualified workforce, enrollment numbers, etc. The quality of HE system outputs' determines whether the system needs to be changed. As the notion of competitiveness constantly changes, with it change all the components of the HE system – inputs, processes, outputs and impact aspects. If the aforementioned can not meet the expectations and needs, there is a great pressure to change the existing education policies and ask for the reforms and new initiatives to induce the national competitiveness. As a result, figure 1 presents valuable foundation for the study of changes in HE system by relating two concepts – national competitiveness and HE system – and by breaking HE system into major groups. The figure stresses dynamism of all processes and shows relations between different parts of the system.

*Supply/Demand Approach.* Taking this above described framework further, HE systems can be classified based on demand and supply sides of the system. Birnbaum (1988) reminds that models are merely representations of phenomena under consideration and that they can neither be right nor wrong but can be more or less informative. Good models, therefore, provide insightful ways to understand complex phenomena and HE systems (as complex phenomena) will continue to benefit from discussions of models that aid understanding of such systems.

Understanding HE systems and the political-economic forces shaping them are crucial to the appreciation of the dynamics within HE institutions. For example, how HE responds to the question of accountability (in terms of what performance indicators to adopt) will depend on whether the system is operating under a social demand approach or a manpower approach, and whether the system is operating under a centralized or decentralized approach. A few of these models are discussed in the coming section.

Several models for classifying HE systems exist in the literature. Some of these attempt to identify common elements among various HE systems with the aim of classifying and categorizing them accordingly. Others seek to classify HE systems on the basis of political-economic systems which shape the structure of HE. For example, the level of economic development influences the type of higher education adopted from country to country (Eurich, 1981). Sims (1982) observed that HE systems would be influenced by a country's economic goals and agenda.

However, Eurich (1981) noted that "perhaps even more formative than economic aspects in influencing higher education systems is the political structure and stance of the government" (p. 7) and that "higher education systems, in overall structure, mirror the political form of their countries" (p. 28). On this note, Maynard (1982) provided a collective- liberal continuum model for classifying HE systems. Maynard stated that:

While the objective of the collective/socialist ideology is to allocate the scarce education resources regardless of the ability and the willingness of the recipients to pay, the objective of the market/liberal ideology is to allocate on the basis of the ability and the willingness of the recipient to pay (p. 60).

In an attempt to classify higher education systems along the centralized-decentralized continuum model, Millett (1979) explained that:

The more pluralistic the socio-political structure, the greater the diversity in the organization and operation of institutions of higher education. The more monolithic the socio-economic structure, the more positive and determined are the thrusts toward governmental planning and management. The more evident the unitary organizational arrangement of the nation, the more highly centralized are the planning practices and the fewer the evidences of institutional autonomy. The more federally organized the nation, the more planning practices are decentralized and the greater are the differences in the types of higher education planning and management practiced (pp. 14-15).

Therefore, the more decentralized the political system is, the more pluralistic the sociopolitical structure, and the more diverse the organization and operation of institutions of HE will be. As noted by Clark (1983), countries with highly centralized governmental controls such as Italy, Spain, and Sweden, adopt a single system of HE, while countries with federal systems (i.e. decentralized controls) such as Canada, Australia, Mexico, and the USA, tend to adopt multiple systems of HE. It is also generally true that countries leaning towards authoritarianism tend to be highly centralized, while countries leaning towards democracy tend to adopt a decentralized approach.

Clark (1983) provided a state-market model for classifying HE systems. This model is based on Lindblom's explanation (as cited in Clark, 1983):

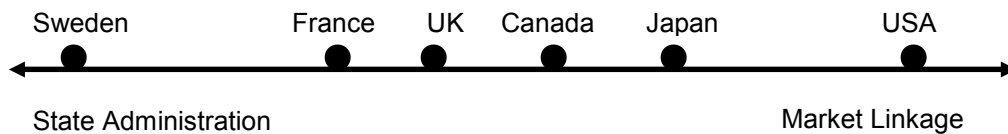
Historically, the alternative to governmentalization of a national politico-economic system has been the market. And just as hierarchical, bureaucratic, and governmental systems arise from the authority relation, so market systems arise from the simple exchange relation ... Not merely a method for reshuffling the possession of things, exchange is a method of controlling behavior and of organizing co-operation among men (p. 138).

Given this understanding, Clark (1983) proceeded to locate six countries on the state-market continuum shown in Figure 2. Clark (1983) argued that nations often move along this continuum and Hextall (1988) observed that Britain has shifted considerably towards the market linkage. Michael (1991) explained that "while Canada may be described as a decentralized system at the national level, there is a considerable bureaucratic influence on HE systems at the provincial level of

government” (p. 62). Therefore, attempts to classify HE systems are often fraught with problems.

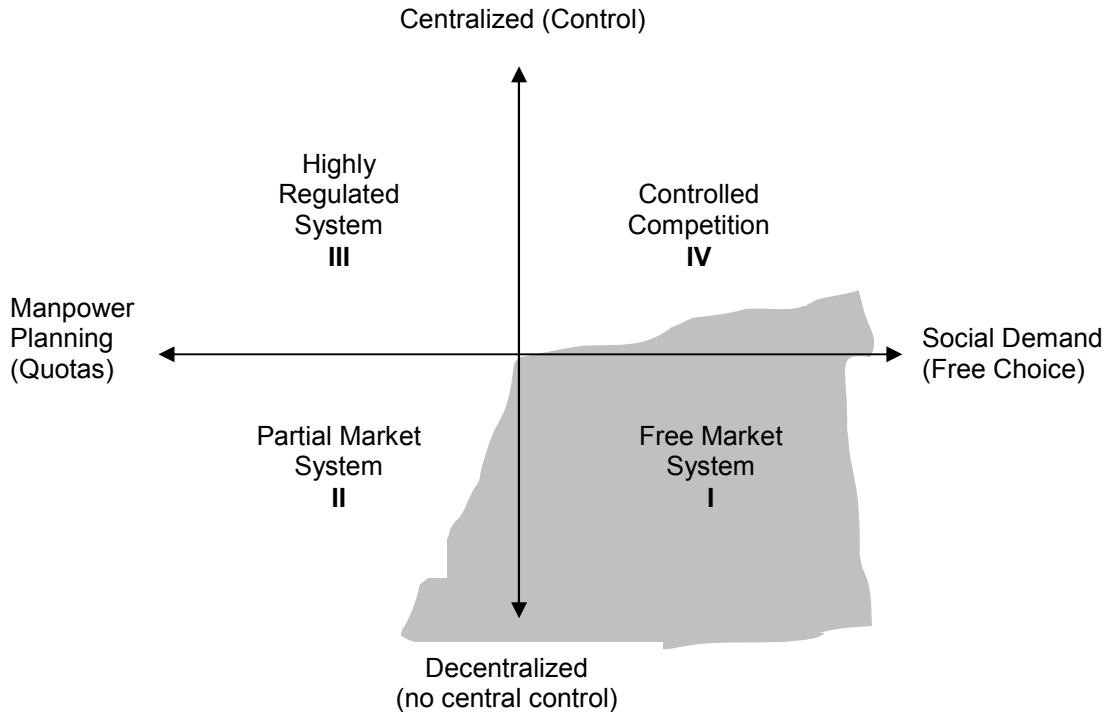
Nevertheless, Michael (1991) observed that most of the models in existence tend to describe HE from the supply side and argued for a model that describes both the supply and demand sides of HE. Figure 2 provides a basis for classifying types of HE systems that takes into consideration both sides. The first continuum describes the extent to which a HE system operates under a social demand approach and a manpower planning approach. Under the social demand approach, demand for programs and courses determines their availability. Under the manpower planning approach, program offerings will be based on a predetermined manpower need for various professions. Therefore, if a country decides that X number of teachers and Y number of medical doctors needed to be produced within the next five years, the allocation of resources will reflect this decision. The second continuum describes the extent to which a higher education system is centralized or decentralized. A centralized system implies that a central coordinating agency determines program offerings and resource allocations, while a decentralized system leaves this decision to each institution.

Figure 2. State-Market Continuum



Source: Clark, 1983

Figure 3. Types of Market Systems of Higher Education



Source: Michael, 1991.

Based on this model, HE systems can be classified as operating under a free market (quadrant I), a partial market (quadrant II), a controlled system (quadrant III), and a controlled competition (quadrant IV). Perhaps it is appropriate to note at this juncture that economists are in agreement that a perfectly free market is only an academic concept since the conditions of free entry and exit and perfect producer and consumer knowledge of market activities hardly exist in reality. However, the use of the term “free market” does not present any serious problems among economists, but the limitation of the term is well understood.

The shaded portion (quadrant I) represents HE systems characterized by high competition, greater participation by private institutions of higher education, greater freedom and capacity of potential students to choose among substitutable institutions, a greater reliance on the market forces to drive up educational quality, and a greater institutional autonomy and academic freedom. This quadrant represents the category to which American and Canadian systems of higher education and several systems in Western nations belong (perhaps more for the

American system than that of Canada). It is no surprise, therefore, to find that systems of HE in Western nations are struggling with similar problems, although the intensity and severity of each problem differs from country to country.

There is a lot of criticism surrounding attempts to develop models for classifying HE systems. For example, it is legitimate to question the need for the exercise given the complexity of HE systems worldwide. It is also legitimate to be concerned about an attempt to lump together systems that are seemingly different, on the basis of only a few factors. However, I believe that the complexity of a task must not be an excuse to decline further deliberations. Models that provide additional or alternative ways of looking at HE systems deserve the attention of scholars.

Clark's and Michael's models are useful in this research because they identify that the important player initiating the changes in the HE system is not only the state, as it has been believed for many years, but the market as well. Increasing relevance of the market to the HE system has forced countries to rethink their HE policies. Market orientation is very much related to the goal of national competitiveness because it stresses many similar aspects – in other words, makes HE system more business oriented. It is generally true that countries shifting towards market tend to decentralize their HE systems and that countries leaning toward state administration have more centralized HE systems. It is important to note that this position of HE system on the state-market continuum is not static and it keeps changing all the time as countries implement new policies. To which direction – state or market – have European countries shifted will be discussed in the coming chapter.

#### **1.4.2. Conception of Higher Education System from Institutionalism Theory Perspective**

Next the tradition of 'new institutionalism' will be examined. This is a highly diverse body of literature stretching across different disciplines in social sciences, the beginning of which is often traced to March and Olsen's (1984) pioneering work "The New Institutionalism: Organisational Factors in Political Life". The goal of reviewing the institutional approach in this chapter is that the institutionalism literature provides specific dimensions for HE system comparison that have lately been used by many HE comparative researchers. So I wanted to stay in touch with the newest tendencies in HE comparative research. The major criterion upon which HE system

dimensions were selected was still based on their relevance to the notion of national competitiveness.

Three strands of new institutionalism are commonly distinguished: a sociological, a historical, and an economic/rational (Aspinwall & Schneider, 2000; Hall & Taylor, 1996; Kariithi, 2001; Powell & DiMaggio, 1991). What unites the different strands of new institutionalism is that all of them aim to answer the question of how “institutions affect the behavior of individuals” (Hall & Taylor, 1996). In the words of March & Olsen (1998), “an institutional approach is one that emphasizes the role of institutions and institutionalization in the understanding of human actions within an organization, social order, or society”. Another commonality of the different strands of new institutionalisms is that their concept of ‘institutions’ differs from the colloquial use of the term. In new institutionalism, the term ‘institution’ is not generally used as a synonym for ‘organization’, but rather to denote sets of rules and norms that can, but do not need to coincide with the rules and norms that constitute an ‘organization’. This having been said, the more specific conceptualization of ‘institutions’ varies greatly between the three streams and indeed, the lack of agreement and precision in the definition of ‘institutions’ is one of the major criticisms forwarded against new institutionalism (Jepperson, 1991; Lepsius, 1997). What distinguishes the three strands besides the definition of institutions, are the assumptions about actor behavior, and the relationship between institutions and actors. There are considerable areas of overlap, as well as cross-fertilization and borrowing of ideas between the approaches (see Aspinwall & Schneider, 2000; Hall & Taylor, 1996; Norgaard, 1996; Thelen, 1999); therefore, the ensuing characterization necessarily remains somewhat crude.

*Economic/rational choice institutionalism.* Though its origins can be traced back to the 1930s (Coase, 1937), it was not before the late 1970s that new economic institutionalism gained importance as a stream within economics (Williamson, 1979). Economic institutionalists sought to render economic models more realistic by adding aspects such as transaction costs, incomplete information, and principal-agent problems to classical microeconomic theory, thereby introducing ‘institutions’ into the previously institution-free world of economic model building. In economic institutionalism, the concept of institutions tends to remain confined to formal rules, laws, and contracts that constitute the ‘rules of the game’ for actors’ utility maximizing

behavior. As usual in economic theory, actor preferences are externally defined and it is assumed that actors maximize their individual self-interest. Comparable to the distinction between rules and players in a game, institutions and players are thus clearly separable. The strength of economic institutionalism is that it allows for clear hypotheses about political outcomes under different institutional settings though this comes at the cost of simplifying assumptions about actor behavior.

Different strands within economic institutionalism have focused on different questions: while Coase (1937; 1960) sought to explain how institutions come about by using the central concept of transaction costs, game theory focuses on the results of different institutional arrangements, and economic historians (like North, 1981) investigate the role of institutions in economic development. The considerable influence that economic institutionalism, especially its game theoretical strand, has had on political science can be traced in the rational choice literature in political science (Scharpf, 1997; Shepsle, 1979, 1989). What is characteristic of this approach is to “posit that the relevant actors have a fixed set of preferences”, to “see politics as a series of collective action dilemmas”, to “emphasize the role of strategic interaction”, and to explain the existence of institutions by reference to “gains from cooperation” (Hall & Taylor, 1996).

Table 3. The Three New Institutionalisms

<b>Dimensions</b>	<b>Sociological institutionalism</b>	<b>Historical institutionalism</b>	<b>Economic/rational choice institutionalism</b>
Concept of institutions	Institutions as ‘culture’; stresses norms and values enshrined in ‘patterns of behavior’, but also includes rules	Equal weight given to formal and informal rules, procedures, norms and conventions	Rules, procedures
Relationship between institutions and actors	Institutions provide ‘moral or cognitive templates for interpretation and action’ (Hall & Taylor, 1996). Institutional norms and values internalized by individuals.	Institutions influence actors perceptions and preferences, but do not determine them	Institutions provide the incentives, scope and limits for action and thus constitute the framework in which utility maximizing behavior of individuals takes place

Actor motivation	Concern with legitimacy and appropriateness	Self-interest as well as normative goals; modified egoism; 'calculus' and 'culture'	Narrowly defined economic self-interest, 'calculus'
Concept of agency	No separate agency	'institutional actor' = agency constrained or structured by common agreement	Methodological individualism
Time horizon	Long term	Long term	Short term
Independent and intervening variables	Institutions as major independent variables and actors as intervening	Institutions as independent variables and actors as intervening	Actors as independent variables and institutions as intervening
Typical research method	Inductive, case studies, thick description	Mixture of inductive and deductive approaches, analytical case studies	Deduction, illustration of hypotheses

Source: Aspinwall & Schneider, 2000.

*Institutional Approach Applied to HE System.* Following the short overview of new institutionalism literature above, it can be concluded that new institutionalism provides significant insights for analyzing HE system. Institutionalism framework allows us to observe how formal and informal system features work together, mirror and influence each other; the ways in which complementary system institutions and nested rules reinforce the status quo; the important role of intermediary or buffer system institutions in shaping paths of change; and the way policy legacies color the political debate about the course of action. What the new institutionalism literature - including North and Scharpf - cannot provide however, is a set of concepts or categories for the analysis of the particular institutional fabric of HE systems. New institutionalism analyses typically broader issues of socio-economic development and rarely of HE. Therefore, an institutionalism conceptualization of the HE system has to come from the field of HE research.

In comparative HE research, there is a tradition of comparing HE systems along a range of key dimensions. These include different issues such as HE steering or governance models, the degree of university autonomy, university organization and

management, HE funding and tuition fees, different aspects of diversity (such as types of institutions or types of programs), access, degree structure and length, quality assurance, the relationship between HE and the labor market, inclusiveness versus exclusiveness of the system, mass versus elite education, internationalization, and many more. At the risk of oversimplification, two main strands of literature can be distinguished in this field: a predominantly political-economic strand focusing on issues of HE steering, such as governance and finance (Becher & Kogan, 1979; Goedegebuure et al., 1993; Goedegebuure & Van Vught, 1994; Huisman, Maassen, & Neave, 2001; Neave & Van Vught, 1991, 1994; Schimank, 2002; Van Vught, 1994, 1989; Walford, 1991) and a more sociological strand dealing with structural features of the HE system (Birnbaum, 1983; Davies, 1992; Halsey & Trow, 1971; Kyvik, 2002; Neave, 1989; Teichler, 1988a, 1990, 1993, 2001; Teichler, Hartung, & Nuthmann, 1980; Trow, 1974, 1979, 1995).

*Six Institutional Dimensions.* Usually there are six institutional dimensions (Becher & Kogan, 1979; Goedegebuure et al., 1993; Goedegebuure & Van Vught, 1994; Huisman, Maassen, & Neave, 2001; Neave & Van Vught, 1991, 1994; Schimank, 2002; Van Vught, 1994, 1989; Walford, 1991; Birnbaum, 1983; Davies, 1992; Halsey & Trow, 1971; Kyvik, 2002; Neave, 1989; Teichler, 1988, 1990, 1993, 2001; Teichler, Hartung, & Nuthmann, 1980; Trow, 1974, 1979, 1995) of HE systems identified that are used in comparative studies. These are:

1. **Institutional types:** i.e., the number of institutional types and the dispersion of HEIs across these types, their nature, tasks and relationship, including status and funding issues, the degrees they are allowed to grant, as well as the way the functions of education versus training and of elite versus mass education are distributed.
2. **Curricular governance:** i.e., the way responsibility and control of curricula, degree programs and degrees is distributed in the system, the extent of curricular diversity deemed appropriate, and systems for the national coordination of program supply.
3. **Curricula:** i.e., predominant goals of HE and concomitant ways of structuring and organizing HE programs such as the balancing of breadth versus depth, facts versus methodology, student freedom versus guidance, research

versus labor-market orientation, the length of studies and the enforcement of time limits.

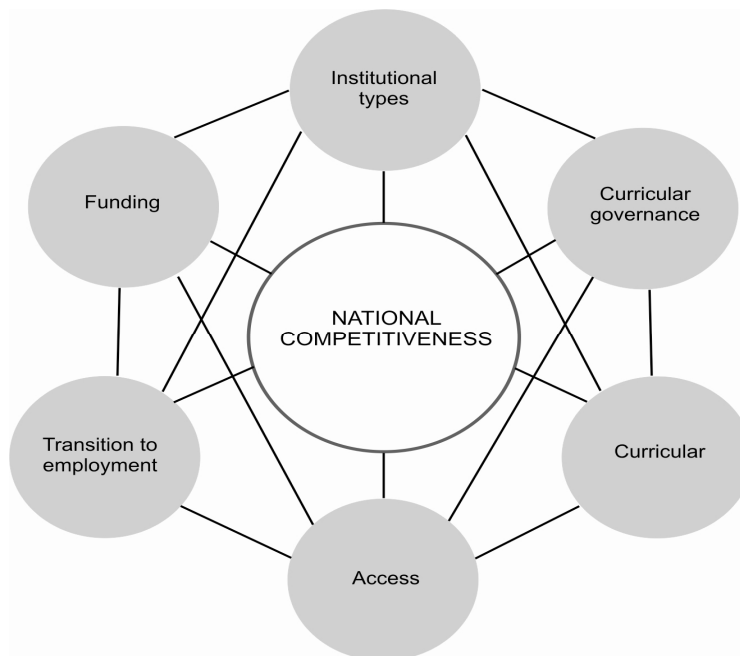
4. **Access:** i.e., the percentage of school leavers qualifying for and admitted to HE, and the way the transition from school to HE and from the undergraduate to the graduate level is organized and regulated, again with reference to the nexus of elite versus mass education.

5. **Transition to employment:** i.e. the relationship between HE and the employment system including conceptions of employability, professional entry regulations and recruitment practices of both the public and private sector, and the permeability between HE and work.

6. Finally, **funding:** i.e., spending on HE (not research), the way different types of HEIs are funded, and tuition fees and student support with particular attention to budget constraints and resulting efficiency-increasing and cost cutting efforts in HE.

The visual representation of these dimensions is presented in figure 4. All identified HE system dimensions are interrelated and all are related to the external environment. In this dissertation, as it was mentioned earlier, the major external force has been chosen to be the national competitiveness.

Figure 4. Institutional Dimensions of National Higher Education Systems



*Formal and Informal Features in the Six Dimensions.* Each dimension includes formal and informal features. The system of curricular governance laid down in laws and statutes is a reflection of normative judgments about the intended degree of institutional autonomy and the tolerable degree of institutional as well as program diversity resulting thereof. While different institutional types in HE systems are distinguished through laws and statutes assigning different rights and duties often involving differential funding arrangements and personnel policies, these reflect deeply rooted role distributions in the system linked to differences in status assigned to these institutions, often springing from specific historical constellations. Curricular governance is directly related to the effectiveness of institutions in the system. Going back to earlier in the chapter, Porter as one of the major “pillars” of national competitiveness names institutions.

Similarly, while access to HE is ordered through legal provisions as well as formally stated entry requirements of individual HEIs, these are an expression of prevalent norms and values in the particular society about the desired level and nature of intellectual and social maturity required for entering HE and reflect a societal consensus regarding the percentage of an age group that should acquire these qualifications. Access as the HE system dimension is reflected in all described above measurements of competitiveness (WEF, IMD and the Lisbon Strategy).

Curricular cultures find their expression in the way curricula are organized and in the weight attached to different aspects of the curriculum. These are to a large degree formalized in academic statutes, written curricular frameworks, and exam regulations. Forming of the curricular has direct impact on the quality of programs provided by HE institutions. As it was discussed earlier in the chapter, quality of management, science and engineering schools is an important factor in seeking national competitiveness. They in turn are directly influenced by the changes in curricula.

The transition from HE to employment includes formal aspects such as entry regulations into certain professions—entry into public service tends to be especially highly regulated in many countries—but also less tangible perceptions of what it takes to be a proper manager, teacher, or engineer, as well as established practices of interaction between the HE and the employment system. All literature on competitiveness stresses the importance of the educated labor force and the cooperation between HE sector and the labor market.

Finally, funding of HE is an expression of the value assigned to HE as a whole and to different types of HE within the system, expressed in funding arrangements, budgeting formulas, and expenditure-per student. Funding aspect was not explicitly reviewed or analyzed in the competitiveness literature however I find it crucial to include it in the empirical study. The amount of funds in the system, the effective usage of funds, the newest tendencies in financial aid – all these, I believe, have direct impact to the well being of the HE system, thus national competitiveness.

The perceived public and private benefits of HE influence the willingness of a society to pay for HE through public and/or private sources. Whenever the changes in higher education systems to enhance competitiveness bring about change in any of the six dimensions, this can be expected to create tensions between the formal and informal features; with perceptions of 'how things used to be and therefore should be' exerting a regressive influence. The asymmetries should be traceable in the empirical research.

In short, institutionalism approach was reviewed in order to provide insight to what are the newest tendencies in HE comparative research. Though these chosen dimensions largely coincide with common aspects of comparison in comparative HE as well as with categories generally used for the description of HE systems, the major criterion upon which they were selected was based on their relevance to the notion of national competitiveness.

#### **1.5. IDENTIFICATION OF HIGHER EDUCATION SYSTEM ATTRIBUTES AFFECTING NATIONAL COMPETITIVENESS FROM HIGHER EDUCATION SYSTEM CONCEPTION**

Analysis of HE system conception provided additional insight into the process of dimensions identification. With the changing approach to national competitiveness, economic considerations frequently appear in HE policy making. Changing goals of HE systems, changes the focus of the system as they become more oriented towards economic benefits. Inputs/outputs model of the HE system revealed that every component of the system is important for it to produce the best results. Also, external system's forces are significant. Supply/demand model portrays the increasing relevance of the market to the HE system is evident and that has changed

for a long time prevailing opinion that only the state can /should initiate changes in the HE system.

To synthesize the higher education system models and the institutionalism theory, it can be noted that the above research has provided new and/or confirmed already identified HE system dimensions in the competitiveness section earlier in the chapter. The HE system dimensions that are important (based on Open system theory and Institutionalism theory covered above) to analyze when studying the HE system policy changes in the context of national competitiveness are the following:

Table 4. HE System Dimensions Affecting National Competitiveness as Expressed in HE Conception

<b>Attributes of HE</b>	<b>Source of the Attribute</b>
Interaction with external environment	Input/output model
Impact on society	Input/output model, supply/demand model
Participation	Input/output model, supply/demand model
Institutional type	Input/output model, institutionalism theory
Curricular governance	Input/output model, supply/demand model, institutionalism theory
Curricular	Input/output model, institutionalism theory
Access	Input/output model, institutionalism theory
Transition to employment	Input/output model, institutionalism theory
Funding	Input/output model, institutionalism theory

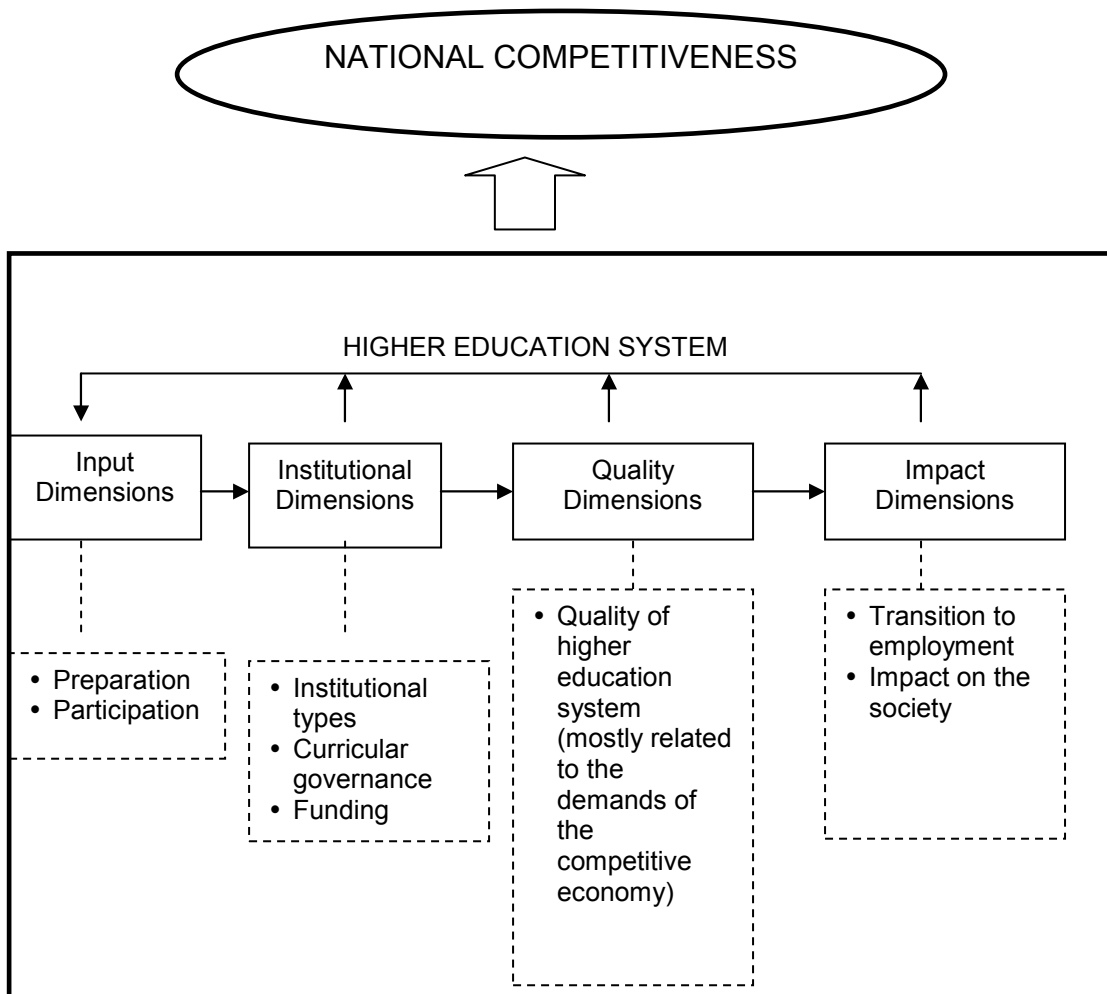
All these HE system dimensions will be directly or indirectly incorporated into the theoretical model presented in the next section.

#### **1.6. THEORETICAL MODEL FOR EVALUATION OF HIGHER EDUCATION SYSTEM DIMENSIONS AFFECTING NATIONAL COMPETITIVENESS**

As it can be seen from the data above, the confusion and subjectivity of different competitiveness measurements does not provide solid grounds for applying a single framework towards observing the change in HE systems. So the combination of theories presented in the chapter above will be used to draw the theoretical model. I

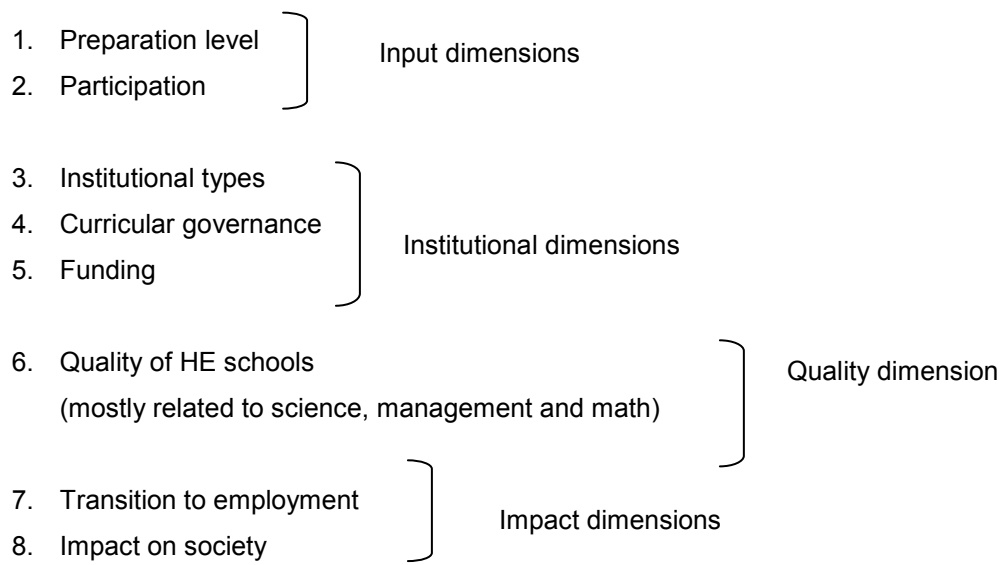
apply Yin Cheong Cheng, Kwok Hung Ng and Magdalena Mo' framework (see page 54) to higher education and propose the following model:

Figure 5. Theoretical Model for Evaluation of Higher Education System Dimensions Affecting National Competitiveness



As it was already mentioned, higher education has an impact on national competitiveness. As countries develop their HE systems, the national competitiveness levels change. In the literature review I identified the key HE system dimensions affecting national competitiveness. Those identified HE system dimensions are divided into four groups – input, institutional (related mostly to

process), quality and impact. The four groups of dimensions can be divided into these specific dimensions:



Cooperation between HE system and various other sectors was broadly discussed in the competitiveness literature. Preparation dimension covers the cooperation between secondary level education and reveals how well prepared students enter HE system, or, in other words, what quality of input HE system receives. Moreover, preparation and participation dimensions are included in WEF, IMD and Lisbon Strategy competitiveness indexes.

Institutional types and curricular governance find support in Porter's works as importance of institutions is depicted in the Diamond model and in nine 'pillars' of competitiveness. The quality of a country's institutions constitutes the framework within which the economy's main players interact.

Quality dimensions are included in all competitiveness measurements (WEF, IMD and Lisbon Strategy). However it should be noted here that quality in the context of competitiveness is mostly related to the quality of specific schools (as management, science and engineering) and not as much to the quality accreditation processes as it is generally accepted in the HE research.

Impact dimensions cover employment data and social impact on society. Educated workforce as the major factor of competitiveness has been discussed in all analyzed competitiveness theories. Social impact aspects also came up in some,

especially in the European understanding of competitiveness. The key is to put people at the Union's HE policies. For the European leaders, it means investing in people, increasing knowledge and skills, establishing life-long learning for life-long opportunities, ensuring full participation in society, helping the workforce to become more adaptable, etc.

Most of these identified HE dimensions find support in the institutionalism theory as well.

To conclude, in this chapter, I reviewed the literature related to national competitiveness and HE system. The goal was to identify specific HE system dimensions affecting national competitiveness. I named, in this chapter, what those dimensions are and in chapter 3 I will analyze to which specific direction the identified HE system dimensions changed and what specific HE policies were implemented to support these changes.

## **2. RESEARCH METHODOLOGY**

Based on the theoretical framework developed in the last chapter, I use a comparative case-study approach to compare the changes in HE systems in Germany, the Netherlands, UK and Sweden between 1999 and 2006. Below I explain the research design, motivation for the case selection and discuss methodological considerations that influenced data collection and analysis.

### **2.1. RESEARCH DESIGN**

The main research question raised in the beginning of this dissertation was the following “How best should nations strengthen the impact of higher education system on national competitiveness?” In order to answer this research questions, I pose the following goal for the empirical research - to examine the changes in specific higher education system dimensions in some most competitive European countries.

The research design deals with the main research question in a three-step process that proceeds in ascending levels of abstraction. First, analysis of changes of HE systems through the identified eight dimensions (see page 70) in each of the four HE systems through in-depth national case studies is performed. Second, the cross-case comparison of the four cases serves to analyze differences and similarities in change that occurred in specific HE system dimensions. Third, key elements of the underlying theoretical framework are reviewed and the intensity of the level of change is discussed with major tendencies in HE system identified. In short, I perform a comparative case study design (Yin, 1984) that consists of three steps: individual case studies, cross case comparison, and review of theoretical model.

#### **2.1.1. Research Process**

The individual country case analysis presents the results of a thorough single case analysis and provides the factual basis for the subsequent comparative analysis.

In terms of Eckstein's (1975) classification, the individual case studies can be classified as “disciplined-configurative”: The configurative analysis aims at the comprehensive, in-depth understanding of each individual case while disciplined by

an overarching framework. In this first step, it is important to provide enough room to account for the specifics of the individual case. I account for this by presenting the initial situation and the changes in a pre-defined structure, but leaving sufficient leeway for country-specific characteristics. Similarly, I chose for an integrated, chronological account of the policy formulation process that allows for country-specific weightings in the presentation. In this regard, the theoretical framework serves as a bridge between the case-study logic and the logic of comparative research; by providing the structure for presentation of data in the individual case studies, it lays the ground for systematic cross-case comparison.

In this study, the term 'country' is often used in a loose way to denote 'HE system'. Even though this is not explicitly mentioned each time, 'national HE systems' are the relevant unit of analysis and it is actually these systems that are compared when talking of cross-country comparisons.

The second step of the research is a comparative analysis across cases. I use the comparative approach not only to identify differences and similarities across cases, but also as an analytical tool to find causal explanations for the observed changes in individual HE systems.

In terms of Mayntz' (2002), the method used throughout the comparative analysis can be classified as 'causal reconstruction'. This method "does not seek static relationships between variables, but seeks to explain the investigated macro phenomenon by identifying the processes and interdependencies that contribute to its emergence [own translation]." In other words, the method serves to develop a tailor-made explanation of each individual case using a common set of explanatory factors but allowing for variety in their country-specific characteristics and interaction. It is common to study multidimensional phenomena such as policy formulation processes with the involvement of many actors. The method does not claim to yield scientific certainty. The resulting explanations thus cannot be tested in the strict statistical meaning of the term. Instead, I see their 'test' in whether they find the consent of intimate connoisseurs of the respective HE system. Here, I combined this method with a comparative approach, based on the premise that a comparative perspective helps to see more clearly which factors made a difference in a particular country.

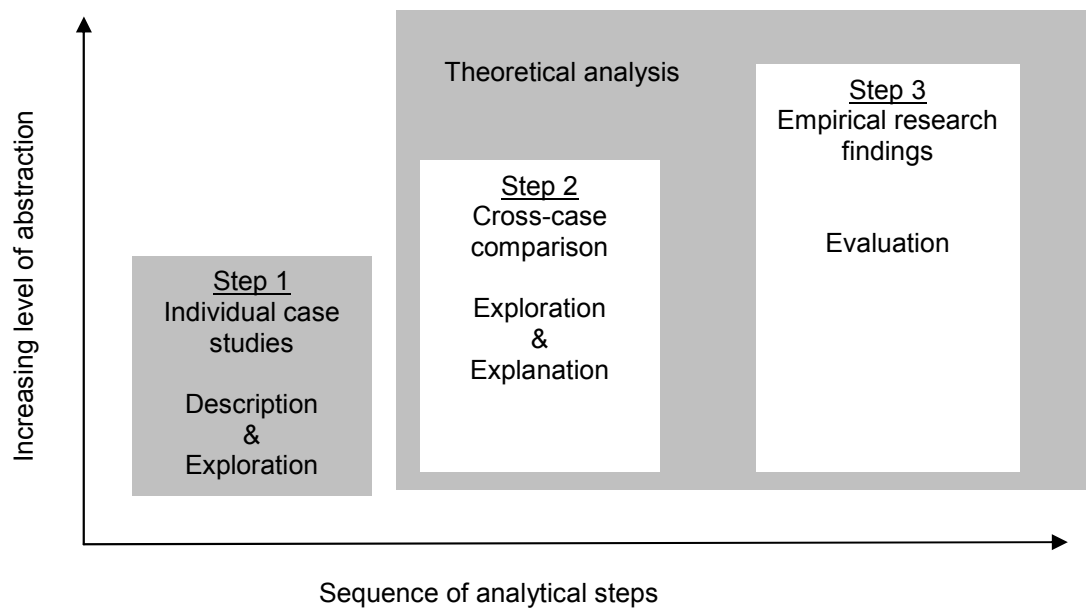
To examine the changes in four European HE systems, the eight institutional dimensions from the individual case studies were examined and systematically

compared along a set of sub-dimensions. To explore and explain the differences in outcomes, a selection of explanatory categories from the theoretical framework (see page 70) was investigated in more depth. In the second step of the research process the main question I seek to answer is “How do the changes that occurred in the eight HE system dimensions till 2006 compare between specific HE systems?”

The third step of the research process is to review the theoretical model and try to draw the major HE system tendencies out of the changes that occurred through 1999-2006 in the highly competitive European countries.

Figure 6 summarizes the three-step research design. The approach moves successively from the case-specific to the abstract—or, in the words of Babbie (1989) from description through exploration to explanation.

Figure 6. Research Design



### 2.1.2. Operationalisation of the Theoretical Model

In the previous chapter, the theoretical model for studying changes in HE systems in the context of national competitiveness was suggested. Here is the operationalisation of the model.

Table 5. Operationalisation of Dimensions of HE System

<b>DIMENSION</b>	<b>SUB-DIMENSIONS</b>
<b>Preparation</b>	<ul style="list-style-type: none"> <li>- mathematics scores</li> <li>- high school credentials</li> </ul>
<b>Participation</b>	<ul style="list-style-type: none"> <li>- enrollment information</li> <li>- participation agenda</li> <li>- access to HE</li> </ul>
<b>Institutional types</b>	<ul style="list-style-type: none"> <li>- degree types</li> <li>- institutional autonomy</li> <li>- demand/supply institutions and cooperation between them</li> </ul>
<b>Curricular governance</b>	<ul style="list-style-type: none"> <li>- nature of curricular governance system</li> <li>- degree of curricular diversity</li> </ul>
<b>Funding</b>	<ul style="list-style-type: none"> <li>- spending on HE</li> <li>- tuition fees and student support</li> </ul>
<b>Quality of Education</b>	<ul style="list-style-type: none"> <li>- skills assessment by the business community</li> <li>- collaboration of HEIs and the business sector</li> <li>- quality of science and business HEIs</li> </ul>
<b>Transition to Employment</b>	<ul style="list-style-type: none"> <li>- first degree seen as qualifying for the labor market</li> <li>- employability of HE graduates</li> </ul>
<b>Impact on Society</b>	<ul style="list-style-type: none"> <li>- Adults with bachelor degree or higher</li> <li>- Increased income from the bachelor degree</li> </ul>

**Preparation.** Here the focus is the number of 18 to 24 year olds in the population holding a high school credential. This indicator measures the extent to which the traditional HE young adult population is minimally qualified to participate in postsecondary education. Moreover it will also be looked at how high schools students perform in mathematics. Since in almost every competitiveness index there is quality of math and science education component, mathematics seems to be the only subject that is present in every EU country and can provide information whether math has received more attention over the past years.

**Institutional Types.** Under 'institutional types', it is important to look at the number of different HEIs, their role and relationship, and possible status hierarchies. Also attention is going to be paid at how centralized or decentralized is the HE system – is it more state administered or market driven.

**Participation.** This dimension assesses the opportunity for residents of varying ages and income to enroll in HE. The first thing that is evaluated here is what is the

enrollment ratio in HE. Also the focus is on features of 'secondary education' that are relevant for the transition to HE. Next, entry rates to HE are assessed, i.e., the percentage of an age group that enters HE, and an increasing participation agenda of a country is discussed.

**Curricular Governance.** Two aspects are considered under this heading. First, the nature of the curricular governance system: who has the final say about curricular and which other actors are involved, and what is the role of accreditation and evaluation agencies in this regard? Next, the degree of curricular diversity and report the eventual existence of national curricular frameworks is assessed.

**Funding.** The sub-dimension 'spending on HE' compares the funding situation of HE across systems. Tuition fees and student support receive some cursory attention as well.

**Quality of Education.** The data here will be mostly qualitative – how does business community assess the skills produces by the HE system. Also attention is paid to what is the quality of science and management schools in different countries. Finally the attention is drawn to what level of collaboration exists between the HE sector and the business sector.

**Transition to Employment.** In the first sub-dimension, the 'first degree seen as qualifying for the labor market' in the respective national context is identified. The next sub-dimensions deals with the relationship between the HE system and the public sectors. It is asked to what extent regulation linking HE to public service' ties two systems together. The employability data is also analyzed here.

**Impact on the Society.** The first sub-dimension here is directed towards educational achievement. The population percentage holding at least bachelor degree is examined. Then attention is paid to the average income of people holding a bachelor degree from a HE institution.

## 2.2. CASE SELECTION

This section explains two decisions: the number of cases chosen, and the choice of countries included in the study. Based on what was said in the last section, neither the number nor the choice of countries was guided by a sampling logic in the sense of yielding a representative set of cases. Following Yin (1984), it was aimed at analytical generalization rather than statistical representation.

### **2.2.1. Number of Cases**

Deciding on the number of countries was subject to a trade-off between the number of cases treated and the amount of attention available for each particular case. On one hand, the complexity of the research topic and the multi-dimensional theoretical framework called for an in-depth treatment of each case. On the other, drawing relevant tendencies about changes in HE systems required including several countries even if the goal was not statistical representation. While a comparison between two or three countries would also have been possible, the intention was to cover a certain range of HE systems in order to capture the diversity of national responses. The selection of four countries thus does not reflect objective necessities, but what this was decided to be a reasonable balance between breadth and depth of analysis in the available time frame for this study.

### **2.2.2. Choice of Country Cases**

Two sets of considerations guided the selection of HE systems: policy relevance and competitiveness rankings.

*Policy relevance.* Given a limited set of country cases and in view of achieving maximum representation of the largest and most influential national institutional contexts in the European HE sector, the goal was to at least represent the two major historical reference models for European HE—namely the Humboldtian and the Anglo-Saxon (Neave, 2001). Consequently, Germany and England were chosen. Sweden portrays a Scandinavian higher education systems. While HE system in the Netherlands combines Humboldtian, Anglo-Saxon, and to some degree Napoleonic influences, its inclusion into the sample is largely justified.

*Competitiveness Rankings.* The other theoretical reason for the countries' choice was the goal to analyze the most competitive countries in Europe. In order to perform an analytical generalization about tendencies in HE systems, it is essential to analyze the best practice examples. After reviewing WEF competitiveness rankings and Lisbon Review competitiveness rankings it was revealed that the four chosen countries have been in the top 15 competitiveness rankings over the years of 1999-2006.

In the Lisbon Review the identified countries have very constantly hold the first five positions. In the WEF competitiveness rankings there were more variations between rankings of the chosen countries during these years.

Table 6. Competitiveness Rankings

<b>COMPETITIVENESS RANKING</b>							
<b>COUNTRY</b>	<b>Year 99-00</b>	<b>Year 00-01</b>	<b>Year 01-02</b>	<b>Year 02-03</b>	<b>Year 03-04</b>	<b>Year 04-05</b>	<b>Year 05-06</b>
Sweden	4	7	9	5	3	3	3
Netherlands	3	4	8	15	12	11	11
UK	8	9	12	11	15	10	13
Germany	6	3	15	14	13	12	15

Source: World Economic Forum, <http://www.weforum.org>

This table should not be interpreted literally. It is only used to support the fact the chosen for analysis countries have been in the world top 15 competitiveness rankings. The term of competitiveness is not absolute (as proved in chapter 1); rather it is very relative. So only by comparison of different countries any general tendencies or observations can be drawn. By observing the changes in higher education systems in Europe's most competitive countries, it was aimed to draw some analytical generalizations about the tendencies in HE sector.

### **2.2.3. Period Studied**

To ensure comparability, common dates across HE systems for the assessment of the initial situation as well as the point in time to assess the changes needed to be defined. A multi-national process does, of course, not begin on a tabula rasa in the nations analyzed but builds on the respective institutional legacies and histories of debate. The starting point was chosen to be the year 1999. 1999 was an important year in HE field. 1999 is the year prior to the Bologna declaration, and thus suited to capture the state of European HE systems before the Bologna process. It is also the year of the Sorbonne declaration, the immediate predecessor of the Bologna declaration signed by the national ministers responsible for HE.

The end date 2006 is mainly dictated by the end point of data collection.

#### **2.2.4. Intensity Level of Change**

Methodologically, the intensity level of policy change in European HE systems between 1999 and 2006 was assessed. The intensity level of change, being a relative concept, could only be judged in an international comparison (specifically, among the chosen countries).

Comparing the degree of change across HE systems unavoidably yielded a 'ranking' in inverted commas to highlight that the position on the scale implies neither a normative judgment of the quality of change of change nor how advanced a HE system was in absolute terms. The analysis is presented as part of the cross-country comparison in the next chapter. To arrive at the results, the following process was used.

In step one, the intensity level of change in each dimension and the respective sub-dimensions and for each of the four HE systems was analyzed. By comparing these changes to their respective initial conditions for each sub-dimension and country, they were ordered on a 5-point scale from low (L) through low to moderate (M) and then to moderate (LM) and high to moderate (HM) to high (H). These judgments were fine-tuned by comparing them systematically across countries for each sub-dimension to account for the relative nature of the assessment. If the intensity level of change in two countries was about the same, the same position on the scale was assigned. The next step was to synthesize the results into an overall dimensional judgment of the relative degree of change, again using the same scale from low to high. This was not achieved by 'counting out scores' in sub-dimensions, but required a qualitative judgment of overall change taking into account the relative importance of changes in different sub-dimensions.

#### **2.2.5. Data Collection**

Data from primary sources and secondary sources was analyzed for the purpose of this dissertation, most of which was of a qualitative nature.

Published academic texts as well as policy-related studies in the HE field formed the basis for mapping the initial situation of HE systems in 1999. This information was complemented with quantitative data from OECD ("Education at a Glance"). Where this was not available, national data was used.

Many primary documents were reviewed to reconstruct national policy formulation processes. Most of them came from online documentation, data bases,

and direct contacts. In addition to national legal provisions, government white papers, policy recommendations, reports of national advisory bodies were analyzed. Also the national coverage in newspapers, HE-specific journals and online newsletters was followed.

### 3. RESEARCH FINDINGS AND IMPLICATIONS

#### 3.1. INDIVIDUAL CASE ANALYSIS

##### 3.1.1. The United Kingdom

The United Kingdom is a unitary state but has seen some devolution in the past years. There are therefore sometimes differences between England, Scotland, Wales and Northern Ireland in the HE policies. When thinking about these differences it is important to keep in mind that 80% of the UK population lives in England, it is for this reason I will mostly focus on the situation in England. When, however, important differences occur in the other countries of the UK, these will be dealt with.

##### *Preparation*

MATH SCORES. For the analysis of math scores Program for International Student Assessment results was used. Developed jointly by OECD member countries, the Program for International Student Assessment (PISA) aims to measure how students approaching the end of compulsory education have acquired some of the knowledge and skills essential for full participation in the knowledge society. PISA examines 15 year olds in OECD member countries and partner countries, covering 90% of the world economy. The tests focus on particular areas such as reading, mathematics and science. PISA performs the survey every 3 years so there are available results for 2000, 2003 and 2006. For the purpose of this dissertation (math skills have more impact on competitiveness than reading; and science results have been available only for one year at the time of research), I will reflect only on the math results.

Table 7. Math Scores 2000-2006 UK

	<b>2000</b>	<b>2003</b>	<b>2006</b>
Score	529	496	495
Rank	9	20	24
<i>OECD Average</i>	500	500	500

Source: PISA, [www.pisa.oecd.org](http://www.pisa.oecd.org)

15 year olds in the UK achieve a mean score of 495 points in mathematics, on a scale that had an OECD average of 500 score points. In relative terms, the UK

ranked 18 among 30 OECD countries, and 24<sup>th</sup> among all participants in 2006. The increase in mathematics from the year 2003 was minimal.

In mathematics, the UK has a below average proportion of top-performers. 11% of 15 years olds in the UK reached at least Level 5 on the mathematics scale (OECD average 13%). 80% (OECD average 78.7%) of students reach the baseline Level 2 of mathematics performance, which requires students to recognize mathematical problems requiring only direct inferences, to extract information from a single source and to make literal interpretations of their results.

HIGH SCHOOL CREDENTIALS. When talking about % of upper secondary graduates to the population at the typical age of graduation, there is 5% increase from 1999 to 2006.

Table 8. High School Graduates in the UK 1999-2006

1999	2000	2001	2002	2003	2004	2005	2006
81	79	77	80	82	75	86	NA

Source: OECD [www.oecd.org](http://www.oecd.org)

### *Institutional Types*

Two main types of HEIs dominated the English HE system in 1999 – universities and colleges of HE. The concept of ‘degree awarding powers’ was constitutive for the distinction between these two institutional types; while some colleges of HE had the right to grant teaching degrees, the right to grant research degrees (i.e., Masters degree based on a major thesis and doctoral degrees) was a requirement for university status. Additionally, universities had to provide a certain range of subjects and enroll a minimum number of students.

The English university sector, the so-called ‘unitary system’, comprised 87 institutions (HEFCE, 1999). It included the former polytechnics which had been given the right to grant research degrees up to the doctorate level by the Higher Education Acts of 1988 and 1992, devoting them to university status. Nevertheless the inherited status differences between the ‘old’ and the ‘new’ universities remained and some aspects such as academic staff structures and contracts were still different.

The ‘old’ universities were all established as universities before 1992. In general terms, the ‘old’ universities do not provide professional training, although they do

provide a range of professionally accredited degree courses including engineering, accounting, teacher training, librarianship and information science and medical studies. Qualifications specific to a profession and required for its practice are more often obtained through successfully completed examinations set or accredited by professional bodies, such as the Chartered Institute of Public Finance and Accountancy and the Council of Legal Education.

Most of the 'new' universities were previously polytechnics. Polytechnics were originally set up by charitable endowment to enable working-class men and women to advance their general knowledge and industrial skills on a part-time or full-time basis. Their role changed with the 1966 White Paper, "A Plan for the Polytechnics and Other Colleges" (GB Parliament House of Commons, 1966), which described the polytechnics as regional centers of higher education linking industry with business, since the Education Reform Act 1988, which removed polytechnics and colleges and HE institutions in England from a local education authority control, these have also been autonomous institutions. Permission to use the word 'university' has also been granted to some other HE institutions.

The second major part of the English HE system was made up of the about 47 colleges of HE in 1999. This sector comprised a wide spectrum of institutions, many of them small and specialized; including colleges of arts and music, teacher training colleges, and colleges with further education (FE) was fluid. They were highly diverse, offering both general and professional courses in secondary and post-secondary education to young and mature learners. Many colleges had one foot in FE and one in HE. Most HE colleges were not degree-granting and provided undergraduate programs in cooperation with universities who validated them. Some HE colleges and award taught and some even research degrees, and offered programs up to the graduate level. Through the college sector, permeable pathways into HE existed for students without the traditional secondary education qualifications, mature learners and professionals. They could begin in a college and continue their studies in a cooperating university.

If to look at the change between 1999 and 2006, the main changes occurred with respect to the rights to award degrees and to carry the university title. The government changed the rules, making it easier for non-university institution to become universities (DfES, 2004). There were two key changes. First, to qualify for university title, it was now enough for an institution to have the right to award

teaching degrees; research-degree awarding powers were no longer a requirement. This meant that all institutions did not need to undertake significant research to qualify as a university, though its staff did not need to engage in 'active scholarship', the requirements for which were more explicitly formulated. Second, specialist institutions could now become universities. It was no longer required for them to cover a certain range of subjects, as long as they surpassed a threshold of a minimum number of 4 000 students, 3 000 of whom needed to be enrolled in degree-level courses. These changes allowed both the non-university colleges of HE and private commercial providers to apply for university status<sup>3</sup>. Allowing a couple of 'border line' institutions to become universities had wider implications, as it made it more explicit that the transition between the university and the HE college sectors was not in reality clearly cut, but rather smooth. In this way it contributed to bringing both sectors closer to each other.

Another less tangible trend was the continued push of the Government for an increasing differentiation of the HE sector into research and training institutions through different funding methods (DfES, 2003); an intention to which Universities UK objected, stating that "research concentration has gone far enough" (UUK, 2003).

STATE VS MARKET DRIVEN SYSTEM. Salter and Tapper (1994) describe the English HE system as a hierarchical three-level system. The first level sets out the parameters for the system, which is done by the government and the department of education and controlled by legislation. The second level is that of managing the system. The goals of the system are decided on level one, but how these are attained is largely left to this level in which the Higher Education Funding Council of England (HEFCE) plays central role. On the third level, the universities have autonomy within the boundaries of what is decided on level one or two. There is some consultation of the lower levels by the higher levels, as well as lobbying by lower levels at higher levels, but the predominant direction of the policy-process is

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<sup>3</sup> The first HEI to take advantage of the opportunity for specialist HEIs to become universities was the London Institute (now University of the Arts, London), but it had already achieved both taught and research degree awarding powers under the previous criteria. The University Colleges with taught degree awarding powers which have subsequently become universities under the new criteria until 2006 are Bath-Spa University, University of Chichester, Canterbury Christ Church University, University of Chester, University of Worcester, Liverpool Hope University, University of Winchester and Southampton Solent University.

top-down. In general, all universities are autonomous in the UK, and as such are responsible for their own internal organization.

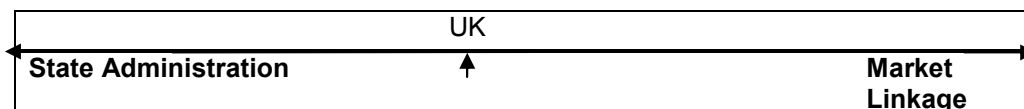
At the end of the studied period 2006, there were four different governing bodies involved in higher education policies: the Department of Education and Employment, in England, the Welsh Office, the Scottish Office Education Department and the Northern Ireland Education Department, in addition, UK-wide, there is a division within the Department for Trade and Industry, the Office of Science and Technology, which is responsible for the budgets of the six research councils and for other R&D activities in universities and colleges. Each department is headed by a Secretary of State, who is also a member of the Cabinet. Junior ministers have specific responsibilities within these departments. In general it is a junior minister who has day-to-day responsibility for higher education policy.

The detailed development of HE policies, however, is the responsibility of the funding councils. There are four councils: the Higher Education Funding Council for England (HEFCE), the Funding Council for Wales (HEFCW), the Northern Ireland Education Council (NIEC) and the Scottish Higher Education Funding Council (SHEFC). These funding councils have three main roles. Firstly, they advise the government on the needs of their particular sector. Secondly, they distribute the available funds among the institutions for which they are responsible. And finally, they ensure that these institutions are financially healthy and that the quality of their academic programs is adequate.

The main changes from 1999 to 2006 occurred in bodies representing the interest of the universities. In the past all universities were represented by the Committee of Vice-Chancellors and Principals (CVCP). This organization has now renamed itself Universities UK. Its success as a lobby group has been varied. One of its problems in recent years is the significant increase in the quantity and diversity of its members. When more polytechnics became universities it became clear that it was difficult to maintain consensus among the universities. Partly in a response to these developments, there are now two groups that lobby for the interests of a selection of universities. The Russel group, an informal self-selected representative body from research-led institutions, so-called because its meetings take place in the Russel Hotel, claims to be representative of the 'Ivy-league' universities. The universities'94 group consists basically of those universities that have not been accepted in the Russel group but claim to be of a similar quality.

If to place UK on the state-market continuum (see page 59), the following picture occurs:

Figure 7. State-Market Continuum Position for UK



In terms of HE strategy, the situation is mostly controlled by the state; however, universities, as independent institutions, are granted freedom.

#### *Participation*

ENTRY RATES. The number of students each year entering HEIs increased by 25% from 1999 to 2006.

Table 9. UK HE Entry Numbers 1999-2006

1999	2000	2001	2002	2003	2004	2005	2006
794 410	864 990	938 057	977 010	1 012 250	1 011 195	1 057 805	NA

Source: OECD, [www.oecd.org](http://www.oecd.org)

Continuing expansion of HE in the longer term remains to be an important goal of the UK Government (Eurybase, 2005). The governmental 2003 White Paper “The future of Higher Education” (DfES, 2003) very clearly states that it wants to greatly expand in terms of student number. It states that the economic case for expanding the provision of HE is extremely strong. But that at the same time expansion must not lead to a compromise on quality and that the courses and patterns of study on offer really match the needs of the economy, as well as the demands of students themselves. The government has set an objective to increase participation in higher education towards 50% of those aged 18-30 by the end of the decade.

The bulk of this expansion will be realized by creating new types of qualifications, tailored to the needs of students and of the economy. The emphasis will be on the expansion of two-year work-focused foundation degrees, as they become the primary work-focused higher education qualification. In other words government strives to support employers to develop more foundation degrees focusing on the skills they really need; and to encourage students to take them by

offering financial incentives for them; finally government has pledged to fund additional places for foundation degrees rather than traditional three-year honors degrees. On top of this, government will encourage other sorts of flexible provision, which meet the needs of an increasing diverse student body, by improving more support for those doing part-time degrees, and supporting the development of “2+” arrangements, credit transfer, and e-learning.

ACCESS. Access to HE in UK is organized in a competitive system and HEIs are free to determine their own admissions criteria without being constrained by a national legal framework defining student rights to entry or formal minimum qualifications. Accordingly, the exact admissions policies varied between universities and often even between programs in one department. The most common requirements were two to three ‘General Certificate of Education’ (GCE) courses at ‘advanced level (the so-called A level; upper secondary education, awarded at the stage of 18) in subject areas suiting the intended degree program, plus a variable number of ‘General Certificate of Secondary Education’ (GSCE) courses (lower secondary education, awarded at the age of 16+). These requirements reflected the traditionally strong degree of specialization in English secondary education. The English schools system was mainly a comprehensive system. Most students studied together up to the GSCE level; those preparing for HE then chose a limited number of A-level courses in areas of their talent and interest, ideally already with a view to the entry requirements of honors programs they were potentially interested in. It means that at the age of 16 already, students made important decisions for their future (Bekhradnia, 2003; Theisens, 2003). The exact subject requirements, their rigidity, as well as required grades varied between subject areas in universities. Motivational essays and references from teachers also played a role; in exceptional cases also personal interviews.

In addition to course requirements, differences in quality between public and private schools also contributed to rendering secondary education an important determinant of access. Still, in 1999 about half of the British students at Oxford and Cambridge were private school graduates, while the percentage of all British pupils was only 10% (Eurydice, 2001). Social inequality in access to HE has remained a major issue in the English media.

Yet it was not impossible to enter a university without A-level or even GSCE qualifications. Colleges of further and HE, but also the 'new universities', offered a range of possibilities for non-traditional students to enter HE, recognizing their formal and informal learning achievements in vocational training and work experience in terms of credits and giving them the opportunity to prove their abilities in sub-degree qualifications that could then serve as an initial step towards a degree. In fact, there was commonly observed tradition of some students being admitted without A levels – even Oxford admitted some each year.

Prior to 1999, increasing the breadth and flexibility of secondary education was increasingly discussed. In this context, the government supports the recommendation the secondary curriculum Sir Ron Dearing had made before 1997 Dearing Report to introduce so-called 'Advanced Subsidiary' (AS) courses, which would allow students to follow a larger number of subjects in less depth through half A-level courses (Dearing, 1996).

The selection process for undergraduate studies was managed by a central service agency called Universities and Colleges Admissions Services (UCAS), which accepted applications for up to six different programs and passed them to HEIs. UCAS published the annual admissions requirements for specific courses based on information provided by institutions and handled the process of matching supply and demand.<sup>4</sup>

Entry decisions for graduate programs were handled directly by HEIs and were administered on a much more individual basis than for undergraduates. Most universities required a good Bachelor with Honors. The ultimate decision was however taken by university departments based on an overall assessment of the applicant's motivation and competencies, equivalent experience could substitute for an Honors degree. Consequently, the drop-out rate was very low among those so carefully selected by HEIs.

When talking about the change between 1999 and 2006, access was one of the most debated dimensions in the UK, and also an area of tangible policy change. Following the Dearing report, increasing and widening participation – notably the difficulty to get more working class children into university – was high on the

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<sup>4</sup> For practical reasons, students had to hand in their applications prior to their final examinations; decisions were made based on expected final grades. Deviations from the projected results had to be balanced in a second round just before the start of the academic year; in the content, additional criteria such as references and essays could become important.

Government's agenda. Reacting to this, the foundation degree concept was introduced (Hill, 2005). Substantial funds were made available through HEFCE to support this goal through measures to reward and support recruitment of students from socially underrepresented groups (HEFCE, 2004). Also, the cap on available places for Honors degrees was lifted (DfEE, 1998a).

With respect to admissions to HE, and 'Office for Fair Access' (OFFA) was set up as a compensatory measure for the introduction of variable student fees (see the next section for details). HEIs were legally required to reveal their plans for assuring that students from underrepresented families were not ignored by the new fee regime. The sector consultations of the Schwartz (2004) review contributed to raising awareness among HEIs for fair and transparent admissions procedures.

Over the entire period, a fundamental reform of secondary schooling was debated and initial steps were implemented. The main area of change was the broadening of secondary education and creation of an integrated school-leaving 'diploma' encompassing different academically and vocationally-oriented qualifications at that level (Tomlinson, 2004). There was a widespread consensus for such reforms, which would constitute a clear departure from the English tradition of highly specialized secondary education as a preparation for university.

#### *Curricular Governance*

In practical terms, English HEIs were not depended upon state authorization for their degree programs. The 'old' universities had their teaching and research degree awarding powers preserved in a Royal Charter; the 'new' universities and the colleges of HE with taught-degree awarding powers operated under an Act of Parliament (Brennan & Williams, 2004).

English HEIs referred to the strong tradition of assuming responsibility for their degrees on the principle of peer review (Brennan & Williams, 2004; QAA 2003). Since 1990, the Academic Audit Unit set up by the CVCP had undertaken systematic 'institutional audits' of universities' internal management of academic quality and standards. These were based on a combination of internal and external evaluation and mostly organized by universities themselves. Since 1992 the 'new' universities had joined these processes, and the tradition was continued by the Higher Education Quality Council (HEQC). In parallel, the Quality Assessment Division (QAD) of the funding councils had undertaken 'subject reviews' since 1993, also referred to as

'teaching quality assessments' (QAA, 2003). They took place at the level of the subject or department and focused directly on the quality of curriculum design and teaching and learning (Findlay, 2004).

In 1997, the HEQC and HEFCE's QAD merged to form the Quality Assurance Agency (QAA), following a recommendation of the Dearing Report. This merger tried to accommodate a compromise between stronger public demands for the accountability of HEIs and the tradition of curricular autonomy. The QAA initially continued to undertake both the inherited audits and subject reviews (Findlay, 2004) according to its mission "to safeguard the public interest in sound standards of HE qualifications and to encourage continuous improvement in the management of the quality of HE" (QAA, 2003).

In some highly professional fields such as medicine, pharmacy, and nursing, programs were accredited by statutory bodies to protect the public interest. In fields such as engineering or law this task was performed by professional bodies. Beyond these sectors, the concept of 'accreditation' was not important in the English HE system (Brennan & Williams, 2004; Harvey & Mason, 1995).

There was no public agency looking after the coherence of the overall provision in English HE. While the procedures for funding partly ensured this by channeling public funds in top priority areas, the main responsibility for meeting the demands of students and labor markets was met by HEIs themselves.

In terms of major changes between 1999 and 2006, the governance of curricular underwent important changes, mainly through the ongoing development of the QAA's approach. As of 2001, subject reviews – the prior teaching quality assessments – were refused and replaced by a new method of institutional audit (QAA, 2002), which would be the main way of QAA interaction with institutions from the academic year 2004-2005 onwards. In the audit, the QAA checked whether institutions held to a 'code of practice' setting out the main elements of internal quality assurance mechanisms they were expected to have. External evaluation at the subject-level would only be carried out if the institutional audit indicated the need for a thorough check. In the transition period until fall 2004, so-called 'developmental engagements' would help institutions develop their own internal quality assurance system at subject level. The audit was set in a wider set of tools for curricular governance, referred to as the 'academic infrastructure'. It included the FHEQ subject benchmark statements and program specifications. Subject benchmark statements were the result of an

effort of academics, facilitated by the QAA, to agree on “expectations about standards of degrees in a range of subject areas” in terms of competencies and skills (QAA, 2003). Although it was not obligatory, HEIs had to demonstrate that they had taken them into account when designing their programs. In the program descriptions, HEIs were expected to give “a concise description of the intended outcomes of learning (...) and the means by which these outcomes are achieved and demonstrated” (ibid). Finally, it was expected that institutions would have to make information on their programs available to students and employers, following a systemic format defined by the QAA and HEFCE.

While abolition of subject reviews meant a marked increase of curricular autonomy of HEIs, the new overall framework including institutional audits and the ‘academic infrastructure’ clearly limited that freedom.

None of the actors in the English HE policy considered moving to a system of program accreditation. On the contrary, they agreed that:

*The UK's experience with course-based review is that it is unnecessarily bureaucratic and costly. Where institutions have strong internal quality procedures, as in the UK, institutional based review/audit has proved to be effective and cost-efficient (HLPF, 2003).*

Furthermore, they were cautious of the European Commission’s initiative in this field, making clear that “the UK would resist attempts to introduce a European system of external course evaluation, a single pan-European quality system or form of course-based system (ibid.)”.

### *Funding*

After the significant funding cuts in HE imposed by the Thatcher government in the 1980s (Schreiterer & Whitte, 2001; Taylor 2003) and further decreases in funding per student since then (Frans Kaiser et. al., 2001),<sup>5</sup> the Labor Party had won the 1997 elections with the promise to end this policy. This was also the intention of the Dearing Report. For this policy to be abolished, both the government and students would pay a share. It was proposed to replace the current system of undergraduate fees funded entirely by grants from the government with a mixed system in which all students would carry a part of the cost of their tuition through fees, but would be

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<sup>5</sup> According to the Government White Paper 2003, “funding per student fell 36 percent between 1989 and 1997” (DfES, 2003b).

supported by low-interest government loans. By early 1998, the funding situation of HEIs had begun to stabilize, following a first additional injection of public funds in September of 1997. In international comparison, the funding situation of English universities looked less severe. With absolute expenditure per student of US\$ 9 699, the UK assumed a middle position among the OECD countries in 1999 (OECD, 2001). With 45% of GDP per capita, relative expenditure per student even slightly surpassed the OECD country mean of 44%.

Despite the fact that English HEIs demonstrate high degree of autonomy, they depended on the government for more than half of their funds (55%). Most of it came from the Department of Education and Employment. It was distributed through HEFCE (38%) and Local Education Authorities (LEAs), which paid the fees on behalf of UK and other EU students (12%). The Office of Science and Technology also contributed a share through the research councils, which provided research funding and support for postgraduate students (5%) (HEFCE, 1999).

The biggest single funding block was thus provided to institutions through HEFCE. Determined annually by the government and voted by the Parliament based on input from the sector and a spending review every few years, HEFCE decided the distribution of that budget between HEIs. It included a research and a teaching component, and some funding projected for special projects (the ratio was about 70:20:10 in 1998-1999). The funding was provided to institutions as a block grant which took into account "the size and activities of individual institutions and the quality of their research" (HEFCE, 1999).

The teaching allocation for universities was largely formula-based and included a significant 'per-student' – component, differentiated by subject categories, modes (full vs. part time) and levels of study (undergraduate vs. research postgraduate (Beverwijk, 1999). At the same time however, the funding model limited the number of students that HEIs could recruit. This measure had been imposed by the Conservative government in response to the previous growth of student numbers, which had not been matched by an equal growth of funds (HEFCE, 1999). Following a review from 1995 to 1997, some revisions of the model had been decided and were effective from the start of the academic year 1998-1999. The basic idea was to fund similar activities at similar rates for all HEIs and ensure that any variation are for explicit and justifiable reasons (HEFCE, 1999), instead of giving differing levels of funding to different institutions for historic rather than education reasons. The revised

method also included measures to support the new government's widening participation policy by taking into account "the extra cost of providing for certain types of student, such as part-timers or mature undergraduates. Subject-related differences were accounted for in four broad price groups. The cap on student numbers of each individual HEI was lifted, but there continued to be disincentives for institutions to recruit more than 5% above the agreed number.

There had been unregulated student fees for graduate students for a long time, but a significant share had so far been paid by research councils or employers. By 1999, the Labor government had decided to make ordinary undergraduate students pay their own fee for the first time. This measure was part of the government's plan to secure and increase funding for HE. As of academic year 1998-1999, undergraduate students would pay a standardized upfront fee of 1 000 pounds, representing about a quarter of the average cost of tuition (HEFCE, 2004). No public loan system was planned, but the underlying idea was not to exclude the students from poorer families, or make them pay only a proportion.

Student support was provided in the form of grants and subsidized loans, but even the maximum amount of both financing tools did not cover the cost of living. Amounts differed depending on whether students lived with or without their parents and in or outside London. In 1999, the maximum grant was 2 000 pounds and the maximum loan was the same. A reform of student support was also planned, effective from 1999-2000 on. While the Dearing Report had recommended that the poorest student should continue to receive a grant covering their living expense, the government planned to move the entire support for living expenses towards a loan system with income-contingent repayment (Beverwijk, 1999; Eurydice, 2000; HEFCE, 1999; Frans Kaiser et. al., 2001).

When looking at the specific changes between 1999 and 2006, it can be stated that funding of HE, including student fees, was one of the main issues in the UK HE. The main changes were a new tuition fees regime and a substantial increase in government spending on HE. These changes occurred mostly to support the widening participation agenda.

The standardized upfront fee of 1 000 pounds per academic year for ordinary undergraduate students that had been introduced as of 1998-1999 academic year was again abolished in 2004, effective from academic year 2006-2007 onwards. It was replaced by a 'graduate contribution scheme' that allowed HEIs to raise

differential undergraduate fees of up to 2 000 pounds per year, though students did not have to pay them upfront. A publicly subsidized income-contingent loan system was set up for this purpose. Furthermore, universities were required to offer bursaries and incentives to ensure that students from poorer families were not deterred by the higher fees. Finally, a modest support grant for students from low-income families was reintroduced, effective from the academic year 2004-2005. Empirically, nearly all universities opted for charging the maximum fee.

Regarding funding for institutions, the major change was a substantial increase of government spending on research and teaching. Much of the increase of the funding allocation was related to the increasing and widening participation agenda; but Universities UK also succeeded in convincing the government that a higher level of funding per student was needed. The government funding per student increased from 9 667 PPP dollars in 1998-1999 to 11 484 PPP dollars in 2004-2005.

The method used by HEFCE to allocate its teaching funds was adjusted several times between 1999 and 2006, but these changes were usually related to the widening participation agenda. The government set “broad policy guidelines” for distributing extra funds (HEFCE, 2004), notably to channel them into Foundation degrees. Following a minor review of the funding method in 2003-2004, HEFCE earmarked specific funding for student support and retention and for “allocations to recognize the additional costs of recruiting and supporting students from disadvantaged and non-traditional backgrounds, and students with disabilities” (ibid.)

Finally, discussions were under way within the Department and HEFCE to base the per-student allocation in the funding formula on credits instead of on the basis of the fraction of the year the student completes. While technically, this would not make much of a difference, it would provide support for the use of credits by institutions.

The table below summarize in number the change in funding of the HE sector in 1999-2005 (2006 data was not available at the time of research).

Table 10. Spending per Student (US dollar converted to PPP) in the UK

	<b>1998-1999 academic year</b>	<b>2004-2005 academic year</b>
UK	9 667	11 484
OECD Average	9 179	11 100

Source: OECD, [www.oecd.org](http://www.oecd.org)

Table 11. Public Spending on HE in the UK

	Public expenditure on HE as % of total public expenditure		Public expenditure on HE as % of GDP	
	1998-1999 academic year	2004-2005 academic year	1998-1999 academic year	2004-2005 academic year
UK	2.6	2.3	1.1	1.0
OECD average	2.8	3.1	1.2	1.3

Source: OECD, [www.oecd.org](http://www.oecd.org)

### *Quality of Education*

SKILLS ASSESSMENT. To describe this dimension in the UK, mostly I will analyze a survey across a sample of UK employers. The survey reveals what skills employers lack the most in their employees and that in turn shows how satisfied employers are with the outcomes of HE systems.

Skills shortages are most prevalent in lower-level occupations. Occupations most likely to recruit graduates have fewer skills problems and vacancies for management occupations have few skills problems. Shortages for graduates are mainly in occupations needing specific higher education skills. Science and engineering continue to be among the top skill shortage areas and there is a relative shortage in public sector associate professionals such as environmental health officers and career advisers. The needs for media skills are being comfortably met by supply. Limited shortage in information technology skills have been achieved with the help of external recruitment particularly from India. More generally, the international labor market has not yet had a major impact on graduates' level. The results of the survey are summarized in the table below.

Table 12. Skills Survey Results 2001-2005 UK

	2001	2003	2004	2005
<b>VACANCIES AND RECRUITMENT PROBLEMS</b>				
% of establishments in any vacancies	14%	17%	18%	17%
% of establishments with any hard to fill vacancies	8%	8%	8%	7%
%of establishments with unprompted skill-shortage vacancies	4%	4%	4%	4%

% of all vacancies that are unprompted	21%	20%	17%	17%
% of establishments with SSVs <sup>6</sup> (unprompted or prompted)	NA	NA	6%	5%
% of all vacancies that are SSVs (unprompted or prompted)	NA	NA	24%	25%
Number of SSVs (unprompted or prompted) in 000s	NA	NA	145	143
Number of SSV (unprompted or prompted) per 1 000 employees	NA	NA	24%	25%
<b>SKILL GAPS</b>				
% of establishments with skill gaps	23%	22%	20%	16%
% of staff described as having a skills gap	9%	11%	7%	6%

Source: British Chamber of Commerce, <http://www.britishchambers.org.uk/>

The main skills lacking among applicants are technical and practical skills, experienced in just over half (53%) the cases where employers encountered skill shortages. The next most common skill shortages were customer handling skills, oral communication, problem solving skills and team working. Each of these was mentioned as lacking in just over a third of all instances of SSVs.

The main skill areas lacking among applicants have little changed over 2001 – 2005. Every year technical and practical skills were the most common deficiency, followed by the skill areas just listed above. The rise that occurred in 1994 in skills shortages caused by literacy and numerosity skill deficiencies has stabilized, though they remain a significant element, each cited as occurring in around a quarter of SSVs.

Manufacturing, engineering and construction industries have perceptions that HE graduates have less than average skill level. Other industries are satisfied with the skill level they receive.

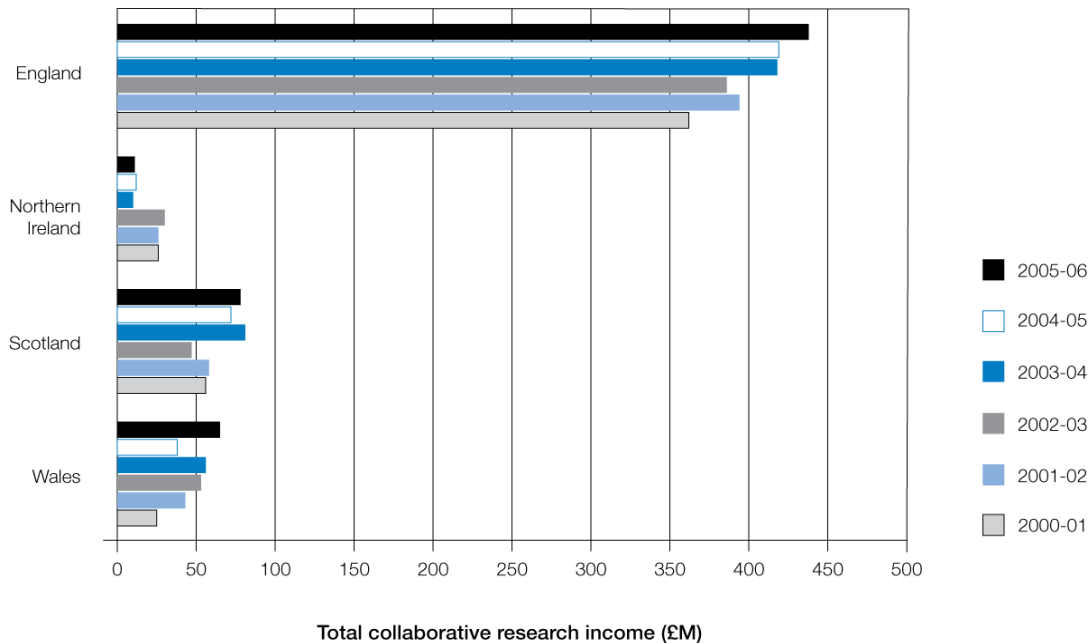
75% of business state that employees lack skills because of lack of experience and because that are recently recruited which directly implies that this group includes the graduates of the HE system.

**BUSINESS AND UNIVERSITIES COLLABORATION.** Over 80% of business in the UK state that they have some kind of collaboration with the universities.

<sup>6</sup> Unprompted skill-shortage vacancies (SSVs) are those vacancies that employers describe as hard to fill where the spontaneous reason cited is that recruits lack the experience, skills or qualifications. In 2004 and 2005 respondents with hard-to-fill vacancies not mentioning one of these reasons were also prompted with these possible causes. For longitudinal comparison with 2001 and 2003 of the report only indicated unprompted SSVs. For comparison with 2004 both measures are used.

Income from collaborative research (Figure 8) between HEIs and business and the community has risen in the UK overall, although this obscures the fact that only England and Wales returned more income in the most recent survey than in 2003-04. However, collaborative research is, by nature, complex and many of the relationships involved in collaborative research include the flow of staff and ideas and often the sharing of equipment and facilities beyond simple task-based collaboration. It is not possible to accurately estimate the value of such in-kind payments unless they are set out in contracts and open to audit.

Figure 8. Income from formal collaborative research (real terms\*) UK



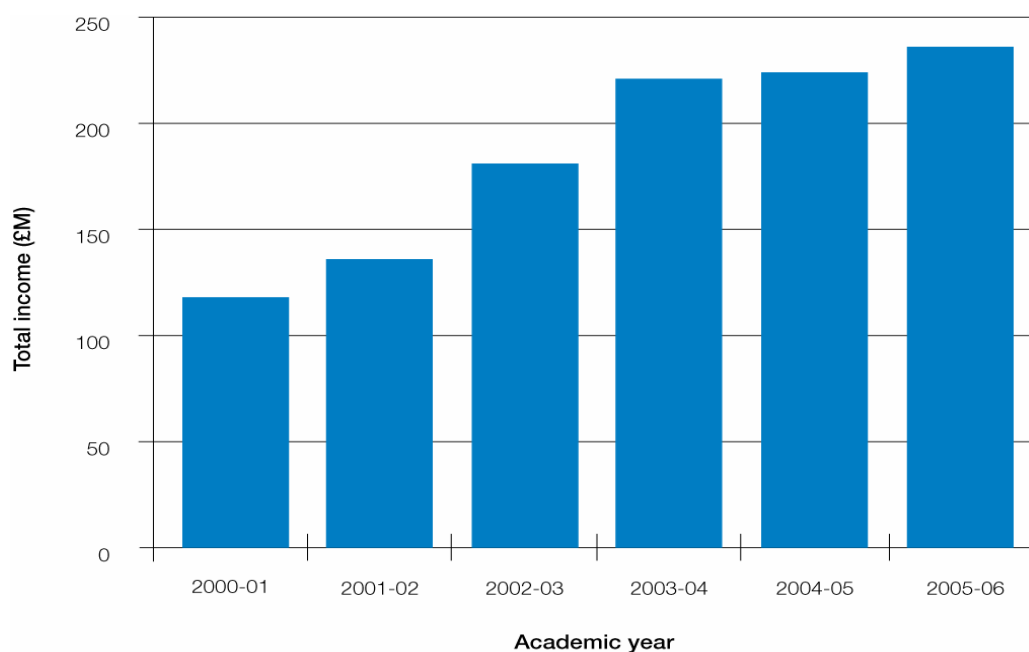
\* Earlier years have been adjusted to 2005-06 prices

Source: HE-BCI Part B Table 1a

The income figures for contract research, however, do not tell the whole story. Commercial spending in 2005-06 on consultancy services (Figure 9) and the licensing of IP have increased by 13 per cent (to £114.8 million) and 29 per cent (to £35.6 million) respectively since 2003-04; non-commercial spending on consultancy has increased by 10 per cent over the same period. The relatively greater increase in the number of clients that HEIs are providing consultancy services to, compared to

the increase in income brought in from consultancy, is likely to be due, in part, to regeneration funded activities.

Figure 9. HEIs' total income from consultancy work\* in the UK



\* Earlier years have been adjusted to 2005-06 prices

Source: HE-BCI Part B Table 2a

When working the universities, business sector identified the following areas as the major areas of concern:

Table 13. Major Challenges between Business and Universities Collaboration

Managing the relationship, customer service, timescales, deadlines	50%
Low quality students, lack of business awareness	24%
Relevance of course content	14%
Intellectual property rights issues	14%
Poor quality career advisers	10%
Math and science 'drift'	8%
Short-term funding	8%

Source: British Chamber of Commerce, <http://www.britishchambers.org.uk/>

Half of the respondents had difficulties managing the relationship, particularly if one person in the university or the business moves on. Customer service is often patchy and businesses reported unhelpful attitudes towards timescales and deadline management.

About a quarter of respondents found it difficult to attract young people of the right quality. In some cases this was due to low business awareness and lack of knowledge of different careers. Respondents felt that some students and academics had prejudiced views of certain type of industry, such as retail, hospitality, transport and energy.

UNIVERSITY RATINGS. Among the best world science universities (top 50), the UK has 6 – Cambridge, Oxford, Imperial College London, University of Edinburgh, King's College London, University of Bristol. And among the best work business schools (top 50), the UK has 8- London Business School, Oxford, Manchester Business School, Lancaster University Management School, Cambridge, Cranfield School of Management, City University, Imperial College London (Financial Times, 2006).

#### *Transition to Employment*

The Honors degree was the normative degree in England. It had strong acceptance in the labor market, largely independent of the applicability of the subjects studied. As noted in the section above, English employers valued individual and interpersonal competencies higher than specific academic subject knowledge or even specific job-related knowledge (Brennan, Williams, & Blaskó, 2003; Harvey, 2003; Harvey & Green, 1994).

In spite of this general consensus, since the mid-90s a debate had developed about the 'employability' of graduates, addressing the question of which competencies and skills HE graduates needed for the labor market (Harvey, 2004; Yorke & Knight, 2003). 'New universities' gradually paid more attention to skills development courses, the development of students' personal planning and reflection competences, and the integration of internships. A visible sign for the importance assigned to this issue was the Enterprise in Higher Education (EHE) project of the Employment Department (1988-1996), which aimed to make HE programs more vocationally oriented and encourage students' personal development via the

improvement of transferable skills. In a similar vein, the Dearing Report (1997) had recommended to “help students to become familiar with work, and help them reflect on such experience”. Among others, it had proposed the creation of a “Progress File” as a means for “recording student achievement” and “by which students can monitor, build and reflect upon their personal development”.

Professional associations like the Institution of Mechanical Engineers or the Chartered Association of Certified Accountants influenced university curricula through the accreditation of programs and the definition of required competencies. In some cases the license to practice as a recognized professional also required further practical training on top of an Honors degree, which was often organized under the control of these professional associations. To enter the legal profession, the law degree (or another degree plus a one-year conversion course) was followed by a vocational stage under the supervision of the Law Society for solicitors or the General Council of the Bar for barristers. In specific fields such as medicine, the public authority was exerted via statutory bodies such as the General Medical Council. England had no tradition of separate ‘state’ degrees in particular fields; the public service traditionally recruited from a wide range of disciplines (Brennan & Williams, 2004; Harvey & Mason, 1995; Scott, 2004).

The Honors degree was not the only HE qualification with which students could enter the labor market. Below this level, the HNC, HND, and to some extent the Certificate and Diploma of Higher Education also provided opportunities. Above this level, it became more common to do a Masters degree to acquire additional competencies in a specific professional field. It was common to do this after some years of work experience, part-time or experience-related, rendering the paths between HE and employment quite permeable.

When talking about the change between 1999 and 2006, it is important to note the introduction of the Foundation degree. It was a new two year degree which was basically focused on employer needs. The providers of these degrees are mostly FE colleges in association with universities but some universities are also offering Foundation degree. One of the key features is that employers play a role in designing courses so as to ensure that graduates have the necessary skills for employment. DfES intends that further expansion of HE to meet its target of towards 50% participation should be primarily through part-time and full-time programs leading to

Foundation degrees. They are seen as having a key role in modernizing both private and public sectors workforces.

With the exception of the introduction of the Foundation degree, the relationship between HE and the employment system did not change much between 1999 and 2006. However, employability and skills of graduates inside and outside HE were a major priority not only of the Department, but of the government as a whole. A number of official documents increased the pressure on institutions to pay attention to the employability of their graduates, such as the Green Paper on Lifelong learning (DfEE, 1998, 1999) and the Lambert Report (2003) which focused on university-industry links. These recommendations were supported by tangible policies with monetary backing. All this contributed to increasing the attention HEIs were paying to the employability of their graduates. HEFCE for example, established a Department funded project on increasing employability. It also started to use quality indicators on the employment of graduates to help HEIs monitor that aspect of their performance. Issues of employability began to be informally included into the QAA agenda when undertaking audits and reviews.

Around 2002, the Department also set up the 'Enhancing student employability co-ordination team' (ESECT), responsible for drawing together all the research and activity on employability in the sector and spread the best practice. It worked closely with the 'Generic Center' of the universities' 'Learning and Teaching Subject Networks'—now part of the HE Academy—that were also supported by HEFCE and among others, looked into employability in the curriculum (Harvey, 2004).

The employment rate of HE graduates has remained the same through 1999-2006 at 88% (OECD average 84.5%).

### *Impact on Society*

The UK has seen an impressive growth in tertiary education qualifications over the generations. However for the period studies in this dissertation, the growth has not been drastic but still it was at 30% above OECD average (26%) in 2005.

Table 14. % of Population Holding HE Degree in the UK

	1999	2000	2001	2002	2003	2004	2005
<b>UK</b>	27	29	29	27	28	29	31
<b>OECD average</b>	26	27	28	23	24	25	26

Source: OECD, [www.oecd.org](http://www.oecd.org)

The labor market and financial incentives for attaining HE qualifications continue to remain high for both men and women, despite the rapid growth in qualifications. This can be seen when contrasting the advantages of HE for individuals in terms of higher average earning, lower risks of unemployment (see the previous section) and the public subsidies they receive during their studies, with the costs that individuals incur when studying, such as tuition fees, lost earning during their studies and higher tax rates later in life. In general 25-64 year olds in the UK with HE degrees command significantly higher salaries than those with only secondary education. Here earnings for HE graduates are 55% higher on average than for those people with only secondary education.

Table 15. Relative Earnings for 25-64 Year Olds Holding HE Degrees and Secondary Education in the UK

	1999	2000	2001	2002	2003	2004	2005
Secondary education	65	67	67	NA	69	67	69
HE	159	159	159	NA	162	158	155

Source: OECD, [www.oecd.org](http://www.oecd.org)

### 3.1.2. Germany

The Federal Republic of Germany is made up of 16 *Länder*, as a result of German unification through a Treaty between the Federal Republic of Germany and the German Democratic Republic on 3 October 1990. Each *Länder* has its own constitution and government. The federal Constitution (Grundgesetz) stipulates that the *Länder* have the right to legislate insofar as the Constitution does not confer legislative power on the *Länder*. Educational legislation and administration of the educational system are primarily the responsibility of the *Länder*. After the Constitutional reform in 2006 the federal level has only minimal influence in educational policies in Germany.

#### *Preparation*

MATH SCORES. For the analysis of math scores I used Programme for International Student Assessment results (see page 82 for the description of the program).

Table 16. Math Scores 2000-2006 Germany

	<b>2000</b>	<b>2003</b>	<b>2006</b>
Score	490	503	504
Rank	21	17	20
<i>OECD Average</i>	500	500	500

Source: OECD, [www.oecd.org](http://www.oecd.org)

15 year olds in the Germany achieve a mean score of 490 points in mathematics, on a scale that had an OECD average of 500 score points. In relative terms, Germany ranked 20 among 30 OECD countries, and 26<sup>th</sup> among all participants in 2006. The increase in mathematics from the year 2003 to 2006 was minimal (1 point).

In mathematics, Germany has a below average proportion of top-performers. 11% of 15 years olds in Germany reached at least Level 5 on the mathematics scale (OECD average 13%). 80% (OECD average 78.7%) of students reach the baseline Level 2 of mathematics performance, which requires students to recognize mathematical problems requiring only direct inferences, to extract information from a single source and to make literal interpretations of their results.

HIGH SCHOOL CREDENTIALS. When talking about % of upper secondary graduates to the population at the typical age of graduation, 8% increase from 1999 to 2006 occurs, bringing Germany to the point where everyone who is supposed to attend and graduate from secondary education does so.

Table 17. High School Graduates in Germany 1999-2006

<b>1999</b>	<b>2000</b>	<b>2001</b>	<b>2002</b>	<b>2003</b>	<b>2004</b>	<b>2005</b>	<b>2006</b>
92	92	92	94	97	99	100	NA

Source: OECD, [www.oecd.org](http://www.oecd.org)

### *Institutional Types*

The German HE system in early 1999 portrayed two major types of HEIs - universities and *Fachhochschulen* (the major type of non-university HEI in Germany abbreviated as FH). Of the 257 HEIs, 82 were universities and 121 were *Fachhochschulen*. The 54 other HEIs consisted of 38 colleges of Arts and Music with

university status, six teacher training colleges in Baden-Württemberg, nine church-run institutions, and a private university (HRK, 1998).

The *Fachhochschulen* had been created in the late 1960s, mostly from existing engineering colleges or business academies to meet the increasing student demand through applied degree programs. These were to be offered by a type of institution that was supposed to hold close links with the business sector and employ lecturers that held PhDs and were also practically experienced. They had to teach more than university lecturers and were paid less.

However, the political plan to channel the majority students into the FH sector did not work out for a variety of reasons (Wissenschaftsrat, 2002). Instead, the university sector continuously expanded without adequate funding and organizational or curricular changes. This was the consequence of a far-reaching political decision of the Federal and *Länder* governments in 1977 to open up universities without providing adequate funding.

They incorrectly assumed that the high student numbers of the late 1970s and the 1980s were only transitory (Regierungschefs von Bund und Ländern, 1977). As a consequence, universities soon turned into mass institutions with high drop-out rates; a situation exceedingly at odds with universities' self image to provide excellence and a close connection between teaching and research (see also G. Turner, 2000).

Contrary to political intention, only 24% of students were enrolled in the FH sector in early 1999; the remaining 76% were in universities (Wissenschaftsrat, 2002a). This distribution clearly demonstrated imperfections of procedures. FH capacities in many subjects were very limited and stricter grade point averages (GPAs) were imposed as entrance prerequisites in the 1980s than in corresponding university programs.

The relationship between the two types of HEIs was unclear. According to officials, universities needed to focus on basic and applied research and to offer research-oriented degree programs up to the doctoral level, and *Fachhochschulen* to offer professional education to a level between Bachelor and Masters, as well as conducting applied research. In reality however, a status hierarchy between the two types of institutions was never fully overcome.

From the *Fachhochschulen* point of view, they always struggled for 'equal opportunity' with the university sector. This coincided with a general paradigm shift towards competition and market-based differentiation of individual HEIs over the

legally defined role description underlying the binary system (Muller-Boling, 2000). The FH sector was able to gain some sympathy from political and economic elites, as it stood for cost-effective education and training of some practical value (Ruttgers, 1997). By 1999 it became a widely accepted idea that the FH sector should be upgraded, permeability between the institutional types increased, vocational links of university education enhanced and the overcrowded universities unburdened (KMK, 1996; Wissenschaftsrat, 2000).

The main changes in the studied period (1999-2006) reflect Germany's unification of degrees and degree titles between universities and *Fachhochschulen* in order to increase the status of *Fachhochschulen* relative to universities. In the new degree system, universities and *Fachhochschulen* could grant the same degree titles. The distinction between research and practical orientation reminiscent of the traditional profiles of universities and *Fachhochschulen*, was decoupled from institutional types, confined to the Masters level, and made irrelevant for degree titles. Institutional type, as well as de facto differences in program profiles, could now only be inferred from the degree certificate and the Diploma Supplement.

These changes were only partially reflected in entrance requirements for the public service however. In this regard, the political intention of KMK and HRK that degrees offered by universities and *Fachhochschulen* convey the same entitlements was not fully realized. Given the signaling function of the public service for other employers, this continued to be an issue of debate.

Permeability between institutional types was formally increased, as Bachelor graduates from *Fachhochschulen* could now formally continue their studies at a university. According to a recent HRK (2004) survey, many universities have not yet conformed to this regulation.

Moreover, other aspects that defined the profiles of universities and *Fachhochschulen* such as funding, personnel requirements and academic pay, staff teaching load, and teacher-student ratios remained largely unchanged, so that different institutional realities persisted behind the common degree titles. Also, since no additional funding was made available for the introduction of the new degrees, and the traditional degree length of FH degrees was shorter than that of university degrees, it was not always easy for *Fachhochschulen* to free resources for the provision of Masters Degrees in practice.

Accordingly, the implications of the unification of degree titles for the relationship between universities and *Fachhochschulen* remained subject to debate. While widespread consensus that the traditional status hierarchy should be overcome existed, it was disputed whether a blurring of borders between the institutional profiles was desirable. Some held that each institutional type should focus on its respective traditional strength, others envisaged the strengthening of institutional profiles independent of institutional types, and yet others feared the complete blurring of profiles. Most actors in domestic HE policy had not yet formulated an organizational view on this by 2006, as opinion formation had only begun (for a state of the current debate (Muller-Boling 2005, Witte 2005 and Fachhochschule Dortmund 2004)).

The only step that occurred in clarifying this was that in 2005 KMK decided on a framework of qualifications of German HE degrees. This framework is seen as a step in making HE degrees more transparent. The qualification framework contains a general description of the qualification profile of a graduate, a list of targeted learning outcomes, a description of graduates' competencies and skills and a description of the formal aspects of the training level. The framework includes a list of qualification requirements for Bachelor, Master and Doctoral degrees.

STATE VS MARKET DRIVEN SYSTEM. The tradition of HE in Germany is marked by a number of basic principles including the internal autonomy of institutions of HE (despite their being maintained by the state), freedom of teaching and research, and the unity of teaching and research. According to the principle of cultural sovereignty, the reconstruction of the HE system is a matter of *Länder*. Their policy on HE is coordinated by the Standing Conference of the Ministers of Education and Cultural Affairs of the *Länder* in the Federal Republic of Germany, whereas the Federal Government initially exerted no influence on the development.

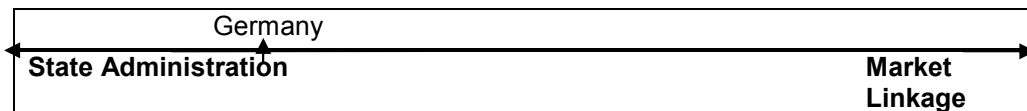
The expansion of HE made national planning more and more imperative; concomitantly, financial requirements began growing beyond the means of the individual *Länder*. As a result, the Federal Government became increasingly involved in matters of HE. In 1969, the constitution of the Federal Republic of Germany was amended to take this development into account. Under articles 91a and 91b of the constitution, the expansion and construction of HEIs including university clinics, as well as educational planning and the promotion of research activities are now among so-called "joint tasks" of the federal government and *Länder*. The federal government

was also thereby empowered to enact framework legislation concerning the general principles of HE, a right that resulted in the *Hochschulrahmengesetz* (HRG) or Framework Act for HE in 1976. This HRG has been adapted rather drastically in 1985, 1998 and 2002. The constitutional reform that took affect in 2006 might lead to abolishment of the HRG in 2008 and provide the *Lander* with all responsibilities to organize HE in Germany.

The constitution provides for special forms of cooperation between the state and the *Lander*. The state and the *Lander* can cooperate, on the basis if agreements, in educational planning and in the promotion of institutions and projects of scientific research which are of supra-regional importance.

In short, Germany's HE governance is moving from the national level to the *Lander* level. If to place Germany on Clark's state-market continuum (see page 59), the picture would be the following.

Figure 10. State-Market Continuum Position for Germany



#### *Participation*

ENROLLMENT RATES. The enrollment of students in HEIs has grown till 2003, after which the trend was reverse to decline slightly.

Table 18. Germany HE Enrollment Numbers 1999-2006

1999	2000	2001	2002	2003	2004	2005	2006
292 131	320 673	345 635	361 747	376 789	355 425	353 634	346 873

Source: OECD, [www.oecd.org](http://www.oecd.org)

Although the real enrollment numbers have been dropping, the rate of enrollment (sum of net entry rate for each year of age enrolling into HE) increased by 6% from 2000 to 2005.

Table 19. Germany HE Enrollment Rate 1999-2006

	2000	2001	2002	2003	2004	2005	2006
Germany	30	32	35	36	37	36	NA
OECD Average	47	48	52	53	53	54	NA

Source: OECD, [www.oecd.org](http://www.oecd.org)

In 2006 the Federal Government and *Länder* concluded the *Hochschulpakt* (Higher Education Pact 2020) in order to face new challenges in German HE. Although for a few recent years, the number of students entering HEIs has dropped slightly, projections on the future numbers of secondary school graduates enrolling in higher education show rapidly increasing demand for higher education. At the same time, the supply of study places is under pressure due to ongoing transition to Bachelor and Master Programs. These programs require higher staff capacity than the traditional programs. One of the measures agreed in this Pact is to increase the study places by 90 000 by 2010. Federal government and the *Länder* will spend about 1 billion Euros on these new study places.

ACCESS. Regulations on admissions to HE in Germany differed by institutional type. With only a few exceptions, in 1999 HEIs were not allowed to take entrance exams or select their students according their own criteria. Rather, graduation from secondary school conveyed entrance qualifications. The graduation from a Gymnasium (a secondary school streaming the best 30-40% of pupils as of lower secondary education) after 12 or 13 years of schooling entitled students to take up any degree program at any HEI, subject only to capacity limits. The only exceptions were architecture, fine arts, and music, where applicants had to undergo entrance exams. Below the Gymnasium graduation was subject-specific graduation awarded by the subject-specific Gymnasium after 12 years of schooling. It entitled one to join any *Fachhochschul* program and a limited set of university programs in certain subject areas. Finally, the graduation from the vocational school (after 12 years of schooling) entitled students to enter any *Fachhochschul* program. In addition, each of the *Länder* had their own specific entry possibilities for applicants with vocational qualifications and professional experience (see for example Jonen, 1995).

Derived from the constitutional right to freely choose a profession, Gymnasium graduates were entitled to freely select the subject and place of study. When demand outgrew program capacities in the 1970s in subjects such as medicine and

psychology, the constitutional court ruled that a complicated national system for the calculation and assignment of program capacities (*numerus clasus*, in other words) had to be put in place. Class numbers offered had to be calculated according to norms laid down in the capacity regulation (germ. *Kapazitätsverordnung*) and so-called 'curricular norm values' (germ. *Curriculumnormwerte*, CNW), leading to a high degree of homogenization of teacher-student ratios in the fields it controlled. Applications were handled and assigned by a central agency based on GPA, waiting time, and social criteria (Frackmann & de Weert, 1993).

In 1999, the entry rate to HE in Germany was 30.4%; about 70% to universities and about 30% to Fachhochschulen (Wissenschaftsrat, 2002; 2004). The comparatively low percentage of students entering HE was subject to repeated criticism. Others attributed it to the fact that Germany had a comparatively well-developed vocational training system (Duales System) encompassing fields which, in other OECD countries were covered by the HE sector. For nursing, pre-school education, parts of social work, and most trades and technical vocations, this system offered three-year dual programs combining schooling and training at corporations (see for example Ulrich & Krekel, 2001).

Even prior to 1999, many features of HE access had been criticized (Meyer & Muller-Boling, 1996; G. Turner, 2000). First, with a greater percentage of an age group obtaining the study credential the concept of 'general maturity' increasingly clashed with reality as the high rates of students changing subjects or dropping out completely showed. Second, as HEIs were not allowed to select students based on their criteria, student abilities/interests and programs matched poorly. Third, limited capacities of the FH sector drove up their entry criteria so that the required GPA sometimes exceeded that of universities in the respective field, and half of *Fachhochschul* entrants were in fact Graduates from the Gymnasium. Fourth, even though vocational training partly accounted for low HE participation rates, it was widely agreed that in the medium run, HE participation would have to increase rather than decrease.

By 2006, much had changed in the area of access. The effect of the move to the new degree structure on participation in HE was ambiguous. Entry to HE to 40% of an age group had become an official aim of Federal government (SPD & Bündnis 90/Die Grünen, 2002); entry rates to HE did indeed increase significantly from 30% in 1999 to 36% in 2005 (OECD, 2000; Statistisches Bundesamt, 2006). On the other

hand, the increasing participation-agenda was overshadowed by the context of austerity at the *Länder* level. The preoccupation of *Länder* ministries was how to make it possible to maintain undergraduate places, possibly improve teaching quality and still be able to offer Masters programs (Schmoll, 2004; Witte & Schreiterer, 2003).

By 2006, the majority of *Länder* had shortened the number of years of schooling for Gymnasium students from thirteen to twelve (Burtscheid & Rubner, 2003), and tighter regulations for a common core curriculum in upper secondary education were discussed.

In subject areas with nationwide excess demand, the Framework Act now allowed universities to select a greater percentage of new entrants according to their own criteria (60%), and applicants with good GPAs had a better chance to be admitted to the university of their choice. The reform did not increase the selectiveness of entry, but only changed the mode of selection for a handful of subjects (less than 3% of degree programs). However, the change had an important domino effect on degree programs with local excess-demand (about 43% of program supply), as many *Länder* used the opportunity to extend the new rule (special analysis, HRK, 2004).

Entry to the Masters level was selective, and there was a tendency among the *Länder* of setting more or less formal overall 'quotas' for the transition between the Bachelor and Masters degrees. While the Framework Act did not make provisions in this regard, the KMK structural guidelines ruled that access to the Masters level should be made subject to "further specific entry requirements" in addition to a first degree (KMK, 2003). The existence of such requirements was to be checked in the accreditation process; additionally, the *Länder* had the right to reserve to themselves the authorization of the criteria set by the HEIs. Furthermore, the Bachelor degree was defined as the 'normative degree' (Regelabschluss) legally interpreted such that at most 50% of Bachelor graduates were supposed to continue to the Masters level (ibid.). The precise implementation of this general idea differed between *Länder* and by subject area, and was strongly disputed.

Given the level of dispute, further adjustments in the transition from the Bachelor to the Masters phase seemed likely. However, in light of the strong pressure exerted by the capacity logic of the *Länder*, it seems likely that transition rates from the

Bachelor to the Masters level will be determined more by supply constraints than by the level of demand.

### *Curricular Governance*

Curricular governance was mostly in the hands of the 16 individual *Länder*. Federal legislation however, should ensure “the equivalence of program and examination achievements and degrees and the possibility to change HEIs throughout Germany (Art. 9 HRG). Moreover, with the principle of “freedom of research and teaching” (Art. 4 HRG) constitutionally granted (Art. 5 Grundgesetz, GG) individual academics and institutions had considerable leeway as to the content and method of teaching. Hence, the traditional curricular governance in German HE combined authorization of programs through *Länder* ministries based on a control of input measures such as teaching capacities, contact hours, rooms and the like; as well as a system of national subject-specific curriculum frameworks (Rahmenprüfungsordnungen, RPOs) on the one hand, and distinct autonomy of HEIs and individual academics on the other. Prior to 1999, a broad consensus had developed that the system of RPOs should be abandoned to allow for more diversity and innovation in degree programs (Erichsen, 2004; Fangmann, 2004).

Between 1999 and 2006, curricular governance moved from a system predominantly based on state authorization of programs by the *Länder* to a nationwide, decentralized accreditation system with stakeholder participation, as the national curriculum frameworks (RPOs) specifying subject-specific curricula were phased out. The new system initially conceived only for Bachelor and Masters programs, was extended to all programs. The new architecture for curricular governance was characterized by the following key features: (1) the *Länder* retained the ultimate responsibility for the quality and comparability of degrees, but delegated operational responsibility to the accreditation system; (2) state authorization and accreditation coexisted; the *Länder* were responsible for macro and resource planning, the accreditation system for curricular design, subject-specific standards and professional relevance; (3) a small central Akkreditierungsrat (AR) accredited and supervised a number of decentralized accreditation agencies; (4) the AR had a ‘corporatist’ composition, with representatives from HEIs, the *Länder*, academia, employers, and students; (5) new individual programs rather than entire institutions had to be accredited; (6) HEIs carried the cost of accreditation. While the transfer of

the AR into a public foundation was envisaged, it still lacked proper legal basis in 2006.

Whether the new system indeed increased curricular and program diversity as intended when abolishing the national curriculum frameworks, was still unclear in 2006. Isomorphic pressure emanated from subject and professional networks promoting inherited standards via accreditation, as well as from the risk aversion of HEIs.

Several aspects of the accreditation system were subject to ongoing dispute in 2006, particularly: (1) problems of scale and capacity, given the small size of the AR itself and the limited supply of only six agencies; (2) costs of about €15,000 per program; (3) lack of acceptance with some disciplinary and professional associations, and with some HEIs questioning the competence of the agencies; (4) lack of transparency, as the accreditation reports were not published and failed programs were unknown; (5) lack of rigidity, given strong political and financial pressure to pass the new programs; (6) tensions between the principles of common standards and competition between the agencies; (7) limited competition, given that only 6 agencies existed, some of them were subject group-specific and most related to a *Lander* in practice; (8) mimetic pressure resulting from the lack of subject-specific criteria and the dependence upon peer judgments; (9) opposed to the last criticism, a loss of comparability and compatibility as national curriculum frameworks had been abandoned; and (10) only a small percentage of Bachelor and Masters programs accredited so far (16% or 417 programs in May 2004 according to the HRK 2004). Given this assessment, policy formulation in curricular governance was still far from complete by 2006.

### *Funding*

For many years prior to 1999, the German HE reform debate had been overshadowed by the under-funding of the sector (1.1% of GDP was spent on all higher education in 1999 by private and public sources, which was below the OECD mean of 1.2% (OECD, 2001)). The KMK (1996) had noted that:

*to all indicators (...)—increase further in the coming years, does not allow for the realization of important projects in all areas of structural reform of HE or at least renders it very difficult. Moreover, the scarcity of funds makes that the reform*

*efforts are frequently misunderstood as cost saving measures, which paralyses the reform will of many stakeholders.*

Funding of HEIs was entirely the responsibility of the *Länder*, with the exception of buildings and large investments which were co-financed by the Federal level, and some project funding from the Federal Ministry. A significant part of research funding also came from the Federation and was channeled through a national research council (Deutsche Forschungsgesellschaft, DFG). The funding method varied between the *Länder*, rendering it difficult to make overall statements. In most *Länder*, the biggest funding block personnel was directly paid for by the *Länder* ministries. Formula- or contract-based funding only applied to a small part of the overall budget. Resource planning for degree programs was based on the KapVo and CNW which prescribed the numbers of students an institution had to admit based on the number of academic staff. Consequently, the link between student numbers and direct budget allocations to HEIs tended to be weak, and worked through the regulated personnel structure instead. This system perpetuated under-funding in subjects with low teacher-student ratios, as CNW had not been adjusted since the late 1970s (see also Hoffacker, 2000).

Although the introduction of tuition had been heavily debated for many years, in 1999 no student fees were introduced in the German HE system (see also Ziegele, 2001c). According to the Federal Education and Training Assistance Act (Bundesausbildungsförderungsgesetz, BAföG), students whose parents' income was below a certain minimum level were entitled to grants and loans, the exact amount of which varied according to circumstance. The maximum amount of both in combination came close to covering the full cost of living (slightly above 500 Euros per month at the time). 18% of students were BAföG recipients (Johnstone, 2005).

From 1999 to 2006, the HE system continued to operate under extreme budget pressure, and no extra funding was made available for the introduction of the new degrees.

In principle, the allocation of teaching funds through the KapVo system remained unchanged until 2006. However, the reform of the degree structure had put the system under pressure for two reasons (a) the extension of total degree length for the Masters level to five years, and (b) teaching staff intensive curricular requirements in the Bachelor phase. In light of the federal aim to increase entry rates to HE to 40% of an age group, this pressure was even more acute. Given that no

additional funds were available, *Lander* ministries had to make a tough trade-off between teacher-student ratios and the number of student places at the Bachelor and Masters levels (KMK, 2003; Weegen, 2004; Witte & Schreiterer, 2003). The general tendency was to keep the undergraduate provision of study places about constant, slightly improve teacher-student ratios at that level, and restrict access to the Masters level. Most *Lander* had not yet formalized their policies in this regard however. The introduction of the new degrees also raised more fundamental challenges: as RPOs had been abandoned, HEIs were now expected to develop their own curricula and the standardized CNWs were at odds with the new philosophy. By autumn 2004, it became increasingly clear that the introduction of the new degrees would significantly contribute to overcoming the prevailing system of capacity planning. Initial ideas for alternative instruments were already consulted within the KMK (KMK Sekretariat, 2004).

The debate over tuition fees had intensified from 1999 to 2006 but no fees were introduced except for long-term students studying for a second degree (other than Masters degrees as part of the new degree structure, see below). The regulations for student support under the Federal Training Assistance Act (BAföG) were adjusted; an amendment of the act had been passed in 2001 lowering eligibility barriers, slightly increasing the maximum grant, and limiting the maximum loan burden on graduates to 10 000 Euros (BMBF, 2006). Student aid was only paid up to the age of 30, and for students who had worked for more than three years after their Bachelor degree, and eligibility was based on their own rather than their parents' financial situation.

Table 20. Per Student Spending (US dollar converted to PPP) in Germany

	<b>1998-1999 academic year</b>	<b>2004-2005 academic year</b>
Germany	10 393	12 254
OECD Average	9 179	11 100

Source: OECD, [www.oecd.org](http://www.oecd.org)

Table 21. Public Spending on HE in Germany

	Public expenditure on HE as % of total public expenditure		Public expenditure on HE as % of GDP	
	1998-1999 academic year	2004-2005 academic year	1998-1999 academic year	2004-2005 academic year
Germany	2.3	2.5	1.1	1.2
OECD average	2.8	3.1	1.2	1.3

Source: OECD, [www.oecd.org](http://www.oecd.org)

### *Quality of Education*

Employers are directly involved in HE system in Germany through apprenticeships. The dual apprenticeship system is the backbone of professional qualifications. Over the years the system has been particularly popular with businesses for providing employees with skills and aptitudes they require. More recently, however, the system has been accused by the business sector of failing to adapt to changes in the labor market and new skill requirements (Gibbons-Wood, 2000). Employers now find that they require employees to possess an interdisciplinary and broad skill base. These core skills of modern business and industry stand in contrast to the work or task specific skills associated with old production methods. In 1999 Germany, old patterns of work associated with mass production and specialization became increasingly outdated and businesses did not receive the skills they needed. Businesses wanted individuals to understand the operations as a wide variety of machines as well as “cultural patterns” of work (Gibbons-Wood, 2000).

In attempt to alleviate shortages of these core skills the federal government encouraged a number of pilot schemes, designed to enhance and innovate apprenticeship system. The projects have mostly been run within large companies. Organization of these pilot projects was the responsibility of the Federal Institute for Vocational Training (Bundesinstitut für Berufsbildung (BIBB)). A major aim of BIBB was to develop innovative projects with employers and to report the outcome to various labor market collaborations. BIBB’s report, *Good Examples of Developing Core Skills in Germany* (BIBB, 1999), outlines a number of projects designed to develop and build on the core skills of employees. The projects were undertaken in companies like Siemens, Ford and Audi and below are descriptions of skills that those companies identified as mostly missed.

Siemens' investigation came to the conclusion that employees lack "not only occupation-specific knowledge and skills but also interdisciplinary (core) skills" (Hiedack and Schulz, 1999). It is important to note that Siemens believed the shortage of core skills to be both a result and a cause of weak in-company training. The following core skills and learning outcomes were identified as essential at Siemens.

Table 22. Core Skills and Specific Learning Outcomes

<b>CORE SKILLS</b>	<b>SPECIFIC LEARNING OUTCOMES</b>
<b>Organization</b>	Self-management
	Systemic approach
	Accuracy and care
<b>Communication</b>	Oral and written expression
	Ability to cooperate
	Ability to integrate
<b>Application</b>	Applying theoretical principles to practical problems
	Reasoning centered on problem solving
	Abilities to draw analogies
<b>Independence</b>	Ability to take decisions
	Ability to criticize oneself
	Recognition of one's limitations
<b>Resilience</b>	Ability to adjust
	Motivation
	Endurance

Source: Federal Institute for Vocational Training, [www.bibb.de/en/](http://www.bibb.de/en/)

Ford believed that their employees lacked certain non-specific skills. BIBB (1999) identified three main competencies that were found to be poorly developed in the Ford plant: (1) professional competence, (2) methodological competence, (3) social competence.

Audi identified these main necessities: (1) group communication, (2) self-organization, (3) IT competencies.

Examples from these three large companies demonstrate the core skills that employers found lacking in their employees and wanted apprenticeships to incorporate that into learning. These core skills and key competencies in Germany were associated primarily with individual development. Skills and attributes such as enthusiasm, independence and communication were all believed to be vital goals in a successful training program and BIBB emphasized that some of them can not be

taught but rather developed and encouraged. The results of the above case studies demonstrate the potential of cooperative self-development.

The required skills were identified but the number of apprenticeships reduced significantly by 1999 when over 40 000 apprenticeships were seeking vacant training places. This was mainly caused by the recession in Germany, which in turn forced companies to cut back on their training budgets. So the issue had become a political – the dual system had to change in order to adapt to internal changes in the country.

In 2005 the German Bundestag passed the Vocational Training Reform Act where the objective is to improve training opportunities as well as the high quality of training for all young people. The Federal government's task is to achieve this objective nationwide in Germany, not least in order to serve the innovative ability and competitiveness of industry by skilled young people. The new law gives decision-makers at Federal government, Lander and regional level more room to maneuver to obtain these goals.

One of the bureaucratic burdens has been eased. Passing the instructor aptitude examination administered by the chambers of industry and commerce is no longer a binding prerequisite for offering training. This is an asset especially for small and new businesses which will now be able to start offering apprenticeships without prior investment of time and money.

**COLLABORATION BETWEEN THE BUSINESS SECTOR AND HEIs.** The collaboration between HEIs and business in Germany is very limited. Also there is no reliable information available about contract teaching and training. It could be stated however that HEIs do not earn much in the field of contract research and teaching. This contributes only about 4% of the total HEIs revenues.

**UNIVERSITY RATINGS.** Among the best world science universities (top 50), the Germany has one – Heidelberg University. And among the best work business schools (top 50), Germany does not have (Financial Times, 2006).

### *Transition to Employment*

HE degrees in Germany were always legally defined as “qualifying for a profession” by the HE Framework Act, even though the degree to which they achieved this goal varied in practice. Yet, a high degree of job preparedness was

traditionally expected from graduates. In some professions such as architecture, engineering, and psychology, professional recognition was tied to the Diploma degree. This also implied that in subjects such as engineering and architecture, the Diploma degree directly conveyed the right to practice. In contrast, the Master degree never really became well established in the job market (Wissenschaftsrat, 1999), partly due to the fields covered (humanities and social sciences) and the long average duration of studies. Nevertheless, even the Master degree was legally defined as “qualifying for a profession”. Particularly in the humanities, the need to shorten courses and increase the employability of graduates had been a widely-shared concern for quite a long time. In the *Staatsexamen* programs, long supervised internships— in teaching, legal, pharmaceutical, and medical training— were part of the education, and the second exam after that directly qualified for entry to the profession.

Hiring policies for the public service both reflected and perpetuated the hierarchy between universities and *Fachhochschulen* in that university degrees qualified for the higher ranks while FH degrees qualified only for the middle ranks of public service, which meant that the pay scale for university graduates began where that for FH graduates ended. In the 1980s and 1990s, the number of unemployed graduates from HE had risen, even while the percentage of about 4% was still clearly below those for other groups (Wissenschaftsrat, 1999:). Prior to 1999, employers had started to call for a curricular reform that would improve the international and vocational experience of graduates, internationalize and de-specialize the curricula, pay closer attention to key skills, and decrease the de facto length of studies (BDI et al., 1999) .

In the university sector, the legal requirement for the new university Bachelor degree to “qualify for a profession” implied a much earlier common exit point from studies to employment than before. While the regulatory framework was set, few Bachelor graduates had yet entered the labor market. The fact that policy formulation had resulted in such an ambitious reform reflected a considerable degree of paradigm change although considerable adaptations among academia and employers were still required for implementation.

Resistance was concentrated in fields regulated by professional organizations or where traditional disciplinary self-conception was at odds with a short first degree. Ultimately, the degree of change might come to differ strongly between disciplines,

and be more pronounced in business administration and social sciences than for example, in law, pharmacy, or theology.

In the *Fachhochschul* sector, the establishment of Bachelor and Masters degrees (Bologna process) also implied profound changes in the relationship between HE and the labor market, as the new Bachelor degree was usually one year shorter and the new Masters degree one year longer than the traditional Diploma (FH). Paradoxically, the dominance of the three-year Bachelor in *Fachhochschulen* had often come at the cost of sacrificing one of the traditional internships or the experience-related final thesis. In spite of the reduction of the program by one year compared to the Diploma (FH), the qualification level was largely considered equivalent. The existence of Bachelor and Masters degrees at both universities and *Fachhochschulen* also called for the adjustment of pay scales and career paths in the public and private sector. Access to careers in the higher public service for Masters graduates from *Fachhochschulen* was still dependent upon special authorization in the accreditation process and further impeded by cultural barriers.

While encouraging lifelong learning had been among the initial rationales for the reform, this was not fully reflected in the design of the new degree structure. Consecutive and non-consecutive programs could be studied after some years of work experience, but students then lost the entitlement to student support above the age of 30 or if they had earned too much. The classification of Masters programs included experience-related programs, but these occupied a niche in overall provision. Moreover, the differential treatment of these programs with respect to fees and student support was at odds with the political intention to encourage the labor market entry of Bachelor graduates.

To sum up, while the legal provision for a changed relationship between HE and the labor market was largely in place, mentalities and practices still needed to adjust, and the overall outcome was not yet clear in 2006.

### *Impact on Society*

For the period studied in this dissertation, the growth of people holding HE education has been stable, slowly reaching OECD average of 26%.

Table 23. % of Population Holding HE Degree in Germany

	1999	2000	2001	2002	2003	2004	2005
<b>Germany</b>	22	22	22	23	24	25	25
<b>OECD average</b>	26	27	28	23	24	25	26

Source: OECD, [www.oecd.org](http://www.oecd.org)

The labor market and financial incentives for attaining HE qualifications continued to remain high for both men and women, despite the rapid growth in qualifications. This can be seen when contrasting the advantages of HE for individuals in terms of higher average earning, lower risks of unemployment (see the previous section) and the public subsidies they receive during their studies, with the costs that individuals incur when studying, such as tuition fees, lost earning during their studies and higher tax rates later in life. In general 25-64 year olds in Germany with HE degrees commanded significantly higher salaries than those with only secondary education. Here earnings for HE graduates are 53% higher on average than for those people with only secondary education. Also the average salary has grown by 13.5% for graduates from higher education from 1999 to 2005, where for people with secondary education it grew only 4%.

Table 24. Relative Earnings for 25-64 Year Olds Holding HE Degrees and Secondary Education in Germany

	1999	2000	2001	2002	2003	2004	2005
Secondary education	70	71	71	74	74	73	73
HE	135	143	NA	143	153	153	156

Source: OECD, [www.oecd.org](http://www.oecd.org)

### 3.1.3. Netherlands

At the governmental level, Dutch HE from 1999 to 2006 was the responsibility of the Minister of Education, Culture and Science. For some subject areas, the Minister of Agriculture, Nature and Food Quality also had responsibility. HE was regulated by the HE and Research Act (WHW, 1992). New policies were formulated in the *Hoger Onderwijs en Onderzoeksplan* (HOOP) – since 2000; this was done in a four year cycle and could lead to proposals to change the HE Act.

Like the Dutch political system in general, the policy-making process in HE was characterized by a high degree of consensus orientation (Theisens, 2004). This implied lengthy discussions by the Minister, not only with a wide range of actors and stakeholders but also the Parliament, before any change of legislation was decided. Advice from expert commissions and commissioned studies played an important role. The Education Council (Onderrwijsraad) stood out as the permanent advisory body set up by the government specifically for the area of education.

### *Preparation*

**MATH SCORES.** For the analysis of math scores I used Programme for International Student Assessment results (see page 82 for the description of the program).

Table 25. Math Scores 2000-2006 Netherlands

	<b>2000</b>	<b>2003</b>	<b>2006</b>
Score	532	538	531
Rank	3	2	5
<i>OECD Average</i>	500	500	500

Source: PISA, [www.pisa.oecd.org](http://www.pisa.oecd.org)

15 year olds in the Netherlands achieve a mean score of 531 points in mathematics, on a scale that had an OECD average of 500 score points. In relative terms, Netherlands ranked 2nd among 30 OECD countries, and 5th<sup>h</sup> among all participants in 2006. Overall Netherlands has been doing very well in math preparation with the decrease in mathematics score from the year 2003 to 2006 by 1 point.

In mathematics, Netherlands have an above average proportion of top-performers. 21% of 15 year olds in Netherlands reached at least Level 5 on the mathematics scale (OECD average 13%). 89% (OECD average 78.7%) of students reached the baseline Level 2 of mathematics performance, which requires students to recognize mathematical problems requiring only direct inferences, to extract information from a single source and to make literal interpretations of their results.

**HIGH SCHOOL CREDENTIALS.** When talking about % of upper secondary graduates to the population at the typical age of graduation, 7% increase occurs from 1999 to 2006.

Table 26. High School Graduates in Netherlands 1999-2006

1999	2000	2001	2002	2003	2004	2005	2006
91	94	93	97	94	98	98	NA

Source: OECD, [www.oecd.org](http://www.oecd.org)

### *Institutional Types*

The Dutch HE system in 1999 was characterized by a strong binary divide between the 14 universities providing academic education and about 50 higher professional institutions (*hogescholen*). This conceptualization was maintained in spite of the fact that universities also traditionally offered a wide range of clearly professional programs, such as engineering, law, medicine, accountancy, or pharmacy. Research was part of the mission of universities and they were publicly funded for it, while *hogescholen* were not. Accordingly, only universities could grant doctoral degrees. The divide was also reflected in strongly differing qualification levels and the pay scales of faculty at universities and *hogescholen*, with few *hogeschool* faculty holding doctorates. The perception that ‘academic education’ was superior to ‘higher professional education’ was widespread in the Netherlands, thus implying a status hierarchy.

The binary divide also found expression in different entry requirements for students of universities and *hogescholen*, with schooling paths for the two institutional types already diverging at the age of 12. This was linked to the widespread idea that there were two types of students, ‘thinkers’—to be trained in universities—and ‘doers’—to be trained in *hogescholen* (Report Committee Review Degrees, 2005). Permeability between the two systems was possible, but not without obstacles: *Hogeschool* students could either enter the first year of university upon successful completion of the first year of *hogeschool*, or seek admission into a higher year of a university program upon completion of a full *hogeschool* degree, based on exemptions granted in individual cases.

Overall, *hogescholen* made up an important part of the Dutch HE system. Massification in the Netherlands was by and large accommodated by the *hogeschool* sector, so in 1999 about 2/3 of students studied at *hogescholen* (290 530 students; 64,5%) and only 1/3 at universities (160 304 students 35,5%) (Huisman & Kaiser, 2001).

Accordingly, the pressure to 'professionalize' university degrees was quite low. The Dutch way of dealing with the fundamental tension between the inherited binary divide and the logic of the consecutive system was to basically leave the binary structure unchanged, but open the boundaries regarding two clearly circumscribed aspects. First, *hogescholen*, too, were allowed to offer Masters degrees under Dutch law, even though—as opposed to university Masters degrees—they were generally not publicly funded. Second, a unified accreditation system was introduced for both universities and *hogescholen*, albeit with separate frameworks for 'academic' and 'higher professional' degrees. Both types of institutions could in principle submit both types of programs to accreditation, but the criteria made it difficult for *hogescholen* to get 'academic' degrees accredited in practice. Until 2006, the possibility was not used. The tensions inherent in these partial adjustments are evident. Besides, a number of other developments such as the creation of centers of competence and of lecturer positions at *hogescholen*, as well as sometimes very close co-operation between the universities and *hogescholen* contributed to convergence of the two institutional types.

The following issues remained subject to continued debate beyond 2006. First, Dutch *hogescholen* continued to argue that the decision not to allow them to grant degree titles with the accretions "of Arts" and "of Science" led to confusion abroad as these were, according to them, internationally used to signal the field of study rather than the 'academic' orientation of studies. They also pointed out that universities had always offered professional degrees in many areas. The VSNU and employers on the other hand, were anxious to safeguard the state of the negotiations reached by 2006. Second, related to the increased permeability between the two sectors, it was still open whether the entry requirements for legal professions in the public service would be adjusted to allow for student mobility between the *hogeschool* and the university sectors, or whether the entire education up to the Masters degree had to be of the academic type. The Ministry dealt with both of these open issues by announcing to set up expert commissions. Finally, the long-run implications of the 'deinstitutionalization' of accreditation criteria for the future delineations between universities and *hogescholen* were open; but it had certainly created a dynamics working in the direction of blurring boundaries with separate frameworks for 'academic' and 'higher professional' degrees. Both types of institutions could in principle submit both types of programs to accreditation, but the criteria made it

difficult for *hogescholen* to get 'academic' degrees accredited in practice. Until autumn 2004, the possibility was not used. The tensions inherent in these partial adjustments are evident. —Besides, a number of other developments such as the creation of centers of competence and of lecturer positions at *hogescholen*, as well as sometimes very close co-operation between the universities and *hogescholen* contributed to convergence of the two institutional types.

STATE VS MARKET DRIVEN SYSTEM. A distinctive feature of the Dutch education system is that it combines a centralized education policy with the decentralized administration and management of educational institutions. However, institutions of higher professional education and universities have different management structures.

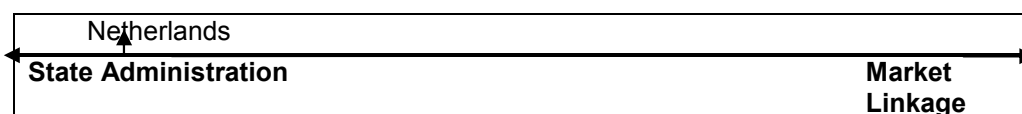
The overall strategy for HE is the responsibility of the Ministry of Education, Culture and Science. There are several advisory bodies to the Ministry. The Education Council is a permanent advisory body established by Act of Parliament in 1919. The Council may make recommendations on its own initiative as well as at the request of the Minister. The responsibility of the Council changed in 1997 and its main task became to advise the government on the broad outline of educational policy and legislation on the basis of a working program. In this working program the Minister of Education, Culture and Science will specify the topics on which he wishes to be advised. Other bodies which advise the government on science and education are: the Socio-Economic Council (SER), the Advisory Council of Government Policy (WRR) and the Advisory Council for Science and Technology (AWT).

With regard to higher education, the Minister consults within the Higher Education Consultative Committee (*HO Kamer*) with the HBO Council (*HBO Raad*), association of universities (VSNU) and teaching hospitals and the national research organizations. Consultation takes place within the Student Consultative Committee (*studentenkamer*) between the Minister and representatives of the national student organizations.

HE institutions have autonomy. However it should be noted the management structure of *hogescholen* is more centralized than that of the universities. *Hogescholen* is managed by the executive board, whose chairman is appointed by the Minister of Education, Science and Culture. The advisory board at *hogescholen* also does not include people from the public; just staff, faculty and students.

In short, Netherlands' HE system could be described to be more state administered than market oriented. If to place Netherlands on Clark's state-market continuum (see page 59), the picture would be the following.

Figure 11. State-Market Continuum Position for Netherlands



### *Participation*

**ENTRY RATES.** The enrollment in HEIs has grown significantly from 1999 to 2006 (11%). The highest growth occurred in 2003 and 2004.

Table 27. Netherlands HE Enrollment Numbers 1999-2006

1999	2000	2001	2002	2003	2004	2005	2006
364 329	365 674	367 252	369 582	383 882	397 704	406 764	407 753

Source: OECD, [www.oecd.org](http://www.oecd.org)

The rate of enrollment (sum of net entry rate for each year of age enrolling into HE) increased by 6% from 2000 to 2005.

Table 28. Netherlands HE Enrollment Rate 1999-2006

	2000	2001	2002	2003	2004	2005	2006
Netherlands	53	54	54	52	56	59	NA
OECD Average	47	48	52	53	53	54	NA

Source: OECD, [www.oecd.org](http://www.oecd.org)

The HBO sector is the largest sector in higher education, with over 350 000 students enrolled. In the 2006 edition of *Education at a Glance* (OECD, 2006), which compares 25-34 age group, the Netherlands has 34% higher education graduates, a percentage that is higher than the overall OECD mean and the EU mean. The Dutch Government has in the context of the Lisbon goals expressed its goal of increasing the participation in HE and rise the educational level of the population. As a reaction to the advice by the Dutch Educational Council (Onderwijsraad 2005, Kaiser and Weert 2006) the Dutch government formulated the objective for the coming decades:

in 2050 50 % of the labor force in the age group of 25 to 44 should at least have a Bachelor degree. Four ways have been proposed to reach this 50% goal:

- Qualify more students to enter HE, especially by increasing the number of students that proceed from vocational education to HE;
- Increase the success rate of students and decrease the number of drop outs;
- Increase the number of graduates in the age group above 30 who are still lagging behind the younger age group;
- Attract more foreign graduates for the Dutch labor market.

As a response various HEIs have created various pathways in learning which respond to individual demands, and it is expected that these demands will increase explosively. Examples are more customized education, assessment procedures, e-learning, cooperative education (combining education and work).

ACCESS. Generally, access to HE was open to those who fulfilled the respective state defined entry qualifications unless capacity or labor-market constraints necessitated the imposition of a *numerus clausus*, which was the case only in the university sector and only in very few subject areas, notably medicine. In those cases, available capacities were distributed on the basis of a weighted lottery system. In 1999 however, changes of that system were under way that would give good secondary school graduates priority in the procedure and allow HEIs to select on their own criteria, within limits.

Entry requirements between universities and *hogescholen* differed regarding type and length of schooling, and streaming for those types already begun from the age of 12 years. While entry to university required six years of general 'academic' schooling, *hogescholen* could be entered upon completion of five years of general secondary or senior secondary vocational education. This was preceded by eight years of primary education starting at the age of four years, so university entrants would usually be 18 and *hogeschool* entrants 17 years old. For some *hogeschool* programs, particularly in the arts, additional entry requirements (such as musical talent) could be imposed. Furthermore, it was possible for universities to require a maximum of two secondary school subjects as requirements for enrolling in a particular program; though there was ample room for compensation (Boezeroy, 1999; Broekhof, 1995; Eurydice, 2000).

Looking at qualifications held by *hogeschool* students, in 1999 13.4% held a VWO certificate (HBO-raad, 2005), i.e., they could potentially have opted for a university program. Overall, the net entry rate into tertiary education type A— mostly universities and *hogescholen*—was 53% in 1999 (OECD, 2000).

As participation in HE had grown only moderately and gradually in the 1980s and 1990s, and the growth had largely been absorbed by the *hogeschool* sector, massification and overcrowding was not a major issue in Dutch HE in 1999. Overall the access regime was based on an egalitarian tradition, and so-called ‘selection in front of the door’ was seen as problematic while ‘selection behind the door’ through tight examinations after the first year, was common practice.

From 1999 to 2006, the access regime of Dutch HE underwent certain changes. At the Bachelor level there was a general trend towards increased selectivity of access. HEIs could now generally set a certain secondary school profile (i.e., a particular combination of courses) as a requirement for enrolling in a particular program. A legal amendment in 1999 changed the national access regime for *numerus clauses* programs. Besides the weighted lottery system, certain contingents were set aside allowing the best students to apply to the HEIs of their choice, and HEIs to select part of their students according to their own criteria.

Following positive evaluation of this change, by the academic year 2004/2005 public money for experiments with student selection (and differential fees) was made available at both the Bachelor and the Masters levels even in areas without capacity constraints in the context of the initiative ‘unlimited talent’. A change of law to mainstream such policies was envisaged by 2007.

This movement coincided with the universities’ keen interest in ‘top Masters’ programs. Selectivity at universities was however restricted to a segment of program supply: for the bulk of programs the status quo was perpetuated in that universities had to guarantee entry to at least one suitable Masters program for each of their own Bachelor graduates, irrespective of the grade achieved. In addition, they were allowed to offer selective, high-quality and highly-demanding, so-called ‘top Masters’ programs. Until fall 2004, the concrete scope for doing so—outside the framework of the above-mentioned experiments—was however limited as institutions were not allowed to charge differential fees. Moreover, the basis for selection was confined to “knowledge, understanding and skills”, a formula which precluded selection based on grades alone or on formalities such as a “wrong” prior degree. In the *hogeschool*

sector, all Masters programs were selective, usually requiring a certain type and amount of work experience. This did not imply a change however, as the *hogeschool* Masters programs that existed prior to the 2002 amendment of the HE Act—albeit not recognized under Dutch law—had been selective as well.

Overall, these developments represent a first step to deviate from the egalitarian tradition of Dutch HE (MOCenW, 2003). A paradigm change that took place anyway gained extra momentum with the new possibilities and arguments for differentiation of degrees and the context of international competition.

### *Curricular Governance*

The Dutch system of curricular governance could build on a long-standing tradition of quality assurance based on self-evaluation and peer review conducted by the academic community under the co-ordination of the VSNU and HBO-raad. This system was supervised by the Inspectorate of Education in the Netherlands, which monitored the evaluation process and its follow-up and intervened in problematic cases (the so-called ‘meta-evaluation’), but in fact it was largely run by academics themselves. Curricular frameworks were agreed by disciplinary associations working under the VSNU and HBO-raad. Curricular diversity was significantly higher in the university than the *hogeschool* sector, where about 2/3 of the curriculum tended to be commonly defined in terms of learning outcomes.

The government did not interfere with the development of curricula, which was a matter of HEIs with one exception. A commission called *Adviescommissie Onderwijsaanbod* (ACO) ensured the overall coherence, relevance, and efficiency of the national program offer of Dutch HEIs.

Their agreement was conditional for registration in a national register which was simultaneously the precondition for public funding of the program. This system did not cover the ‘post-initial’ Masters programs.

As *hogescholen* were not allowed to grant degrees under Dutch law, they had developed an international route for offering their Masters degrees. They partnered with British universities (mainly former polytechnics), which through their degree granting power accredited the degrees offered in the Netherlands by the *hogescholen*—a practice referred to as ‘u-turn construction’. To enhance the legitimacy of these degrees in the Dutch context, the Dutch Validation Council (DVC) was established in 1997. This was however, an interim solution.

The Netherlands intended to use the reform to complement their inherited peer-review based evaluation system with an accreditation system that would provide a more 'external' quality label, predominantly meant to signal and guarantee a high minimum standard of quality vis-à-vis other countries, but also to complement the formative function of the traditional system by a summative 'yes/no' judgment. To do so, the existing system was not only complemented, but partly transformed. The existing departments for quality assurance of the VSNU and the HBO-raad that had carried out the site-visits under the traditional system became independent VBIs ('visiting and judging agencies') under the new system. Besides the traditional role of these VBIs in formative evaluation, they would now also send a summative report to the newly established National Accreditation Organisation (NVAO), a single body for the Netherlands and Flanders. Based on this report, the NVAO would decide whether accreditation was granted.

Besides the two 'sectoral' VBIs, the market was opened for further agencies. By 2006 a total of seven agencies were on the NVAO's list. The role of the Education Inspectorate changed as well; as its previous task of 'meta-evaluating' the peer-review system was now assumed by the NVAO, it was assigned the task of supervising the overall functioning of the accreditation system. This was a light-touch role which it fulfilled through a seat on the board of the NVAO and a number of monitoring reports. Its influence on HE thus decreased. The commission that had formerly been responsible for ensuring the 'macroefficiency' of the Dutch program supply (ACO) was abolished. Contrary to initial intentions of the Ministry however, its function—deciding on the relevance and efficiency of new programs from a macro-perspective—was maintained and now assumed by the Ministry, a solution regarded as interim by the Ministry itself. The 'post-initial' Masters programs had come under the quality regime and were accredited according to the same criteria as the other programs. As the accreditation frameworks of the NVAO were broad, generic, and developed in close consultation with the sector, adaptations with respect to curricular governance were not expected to affect the curricular autonomy of HEIs.

What was still open however, was the extent to which the strengthened accountability function of the new system might impede the traditional formative evaluation (i.e., improvement) function of the site-visit system—a possible unintended side effect (Scheele, 2004). Another open question was the effect of the newly created competition between VBIs on the quality of programs. Finally, the

consistency and transparency of degree denominations in the central register of publicly recognized and funded programs (CROHO) was an open issue, as the transition to Bachelor and Masters programs seemed to have increased the diversity maybe not of programs, but of denominations and degree specifications (Onderwijsinspectie, 2003, 2004, 2005).

### *Funding*

The main funding of HEIs was provided by the Ministry of Education, Culture and Science and constituted about two thirds of the total income of HEIs. The distribution of that budget between HEIs was determined according to a formula that was partly performance-based. It was provided as a block grant, which for universities included a research (about two thirds) and teaching component (about one third); for *hogescholen* only teaching. While the funding model was adjusted several times prior to 1999 and the model operational in 1999 constituted an interim solution, the teaching allocation for universities always included a significant “money follows the student” component where funding was based on the number of new entrants as well as the number of graduates, thus setting incentives for recruitment and retention. The incentives were further strengthened by student fees, which amounted to €1,248 per student per academic year in 1999/2000 and could be kept by the institution (Frans Kaiser, Vossensteyn, & Koelman, 2001). The funding of *hogescholen* had remained largely unchanged over the years and was based primarily on graduation rates and time to degree, making it performance-based as well.

In the decade prior to 1999, overall public expenses for universities and *hogescholen* fell from about 1.2% to about 1.0% of gross domestic product (GDP), a development that mostly went back to the reduction of the overall university budget, as public expenses for *hogescholen* remained nearly stable (CBS-statline, 2005). Funding per student declined in real terms over that period in both university and *hogeschool* education (VSNU, 2001).

Public student funding consisted of three components: first, a basic loan for the nominal duration of a degree program which was converted into a non-repayable grant if the student met the performance requirements (obtaining at least 50% of the stipulated credits in the first year and the entire degree within the nominal duration plus an extra two years, i.e., six to seven years); second, a means-tested (based on

parental income) supplementary grant received by about 30% of students; third, an additional voluntary loan at a subsidized interest rate (Frans Kaiser et al., 2001; Vossensteyn, 2005). In the academic year 1999/2000, the maximum basic loan/grant was €193 for those living away from home (otherwise €57), the supplementary grant €196, and the voluntary loan €169 (MOCenW, 2003).

The table below summarizes the change in funding of the HE sector in 1999-2005 (2006 data was not yet available at the time of research).

Table 29. Per Student Spending (US dollar converted to PPP) in the Netherlands

	<b>1998-1999 academic year</b>	<b>2004-2005 academic year</b>
Netherlands	12 285	13 846
OECD Average	9 179	11 100

Source: OECD, [www.oecd.org](http://www.oecd.org)

Table 30. Public Spending on HE 1999-2006 in the Netherlands

	<b>Public expenditure on HE as % of total public expenditure</b>		<b>Public expenditure on HE as % of GDP</b>	
	1998-1999 academic year	2004-2005 academic year	1998-1999 academic year	2004-2005 academic year
Netherlands	2.9	2.9	1.3	1.4
OECD average	2.8	3.1	1.2	1.3

Source: OECD, [www.oecd.org](http://www.oecd.org)

Institutional as well as student funding underwent a number of changes from 1999 to 2006. In 2000, the performance-orientation of Dutch university funding was strengthened, with a significant part of the budget now distributed based on the number of graduates. In the 2002 legislation, this model was adjusted to account for both Bachelor and Masters graduates. Towards this end, the previous teaching allocation was divided more or less proportionally between the two phases. The mode of *hogeschool* funding for the Bachelor phase remained unchanged. With the following exceptions, these measures can be characterized as a “neutral” adjustment that simply prevented unintended disincentives for HEIs to make the transition.

Universities could now obtain funding for two-year Masters degrees in fields that previously only took four years up to that level—implying funding for an additional year; they either had to get them accredited as research Masters programs, or demonstrate that the extended length was needed to fulfill the requirements of the

labor market and international academic standards. By 2006, more than 80 research Masters programs had been created using the new possibilities. In special cases, *hogescholen* could also now obtain public funding for Masters programs on the basis of macro-efficiency and societal need; a number of precedence cases in health and nursing had been created by 2006.

The adjustment of student funding was neutral too, in that the existing facilities continued to be granted up to the Bachelor level for *hogeschool* and up to the Masters level for university students. University students were granted an extra possibility to change their loan into a grant upon receipt of the Bachelor degree, to give them a real option to enter the labor market if they wished. If they decided to do so, they did however lose the entitlement for public support in the Masters phase. Alternatively, they could keep the option to do a Masters degree and retain their rights as long as they completed their studies within ten years upon entering HE, took them up again before the age of 30, and did not interrupt them afterwards. Even if these regulations allowed for quite some flexibility at the students' side, the adjustment was incomplete - there remained tension between the government agenda of lifelong learning and the age limits attached to public support.

Beyond these immediate changes, the discussion was around the creation of a unified funding model for university and *hogeschool* Bachelor programs, a more demand-driven funding model for the Masters phase, also with a view of international mobility, and the introduction of differential student fees particularly for Masters programs (Boezerooy, 2003; MOCenW, 2004).

### *Quality of Education*

The structure of Netherlands HE is organized with an unusually strong orientation towards working life. About two thirds of undergraduate students are enrolled in *hogescholen*. These institutions offer higher professional education, the aim of which is to prepare students for working life. This percentage is far higher than that of other binary systems within OECD (Finland 47%, Germany 25%).

Dutch *hogescholen* are linked to working life and employers through pedagogy and instructional staff; through employer participation in the supervisory boards of HBO institutions; and in advisory relationships with between employers and *hogescholen* than extend from the development of programs to their quality assurance. All HBO courses are to have one or more trainships, thus students

experience part of their learning in a work-based setting. *Hogescholen* instructors are professionals drawn from working life. Ideally, instructors remain professionally engaged throughout their teaching careers, providing a bridge between working life and classroom instructions. Quality assessment panels are required to have employers from the related field of work as panel participants. Student labor market outcomes are monitored by the *arbeidmarkt* monitor (labor market monitor), HBO labor market monitor and HBO council publication that has since 1993 monitored the employment and wages of HE graduates.

Such close relationships between HEIs and the labor market guarantees that businesses are satisfied with the quality of graduates. The table below identifies that only 9.5% of workers are undereducated according to businesses. Almost 16% of graduates from HEIs are even overeducated for businesses.

Table 31. Education Level as Assessed by Businesses

<b>Comparison of HE level with job level in the business sector</b>	<b>Male workers (%)</b>	<b>Female workers (%)</b>	<b>Overall (%)</b>
Overeducated workers	12.3	19.5	15.9
Undereducated workers	13.3	5.7	9.5
Correctly allocated workers	74.4	74.8	74.6

Source: Netherlands Labor Market Monitor

If to look at changes between 1999 and 2006, one can note that the new HE and Research Act (2006) seeks to forge even closer links between HE and the labor market. The goal is to try and equip students with specific skills and knowledge required in the business world by strengthening the collaborations between HEIs and businesses. To this end, the Act stipulates that institutions which train students for a particular profession or occupation should hold regular talks with the relevant professional field on curriculum content. It is up to the institutions and stakeholders to take this initiative. The new Act is based on horizontal accountability, which does not square with top-down structures.

COLLABORATION BETWEEN THE BUSINESS SECTOR AND HEIs. The collaboration between HEIs and business in the Netherlands is mostly expressed through from contract research and teaching and commercial activities for companies and international organizations. If to look at the percentage of revenues received by

HEIs from this collaboration, it makes about 30% and this figure has not changed much through 1999 and 2006 (Ministry of Education, Culture and Science, 2005).

There was a proposal by the independent committee on Science Dynamics to the Dutch government in 2005 to stimulate the involvement of companies and other social organizations in research policy (participation in boards of the research council) and stimulate companies with larger R&D funds to invest part of their budget on a jointly basis in university research.

UNIVERSITY RATINGS. The Netherlands had one university – Utrecht University – in the top science university list, and one – Erasmus University – in the business school list. There was no change in university ratings between 1999 and 2006.

#### *Transition to Employment*

Transition from HE to work in the Netherlands in 1999 could generally be described as comparatively unproblematic. Links between the *hogescholen* and employers were traditionally close, and different innovative models existed for combining studies and work (Boezeroy, 2003). As they made up 1/3 of HE graduates, there was an under- rather than an oversupply of university graduates and employers valued the supply of both academically and professionally trained graduates (Allen, Boezeroy, de Weert, & van der Velden, 2000). The Netherlands had no tradition of separate ‘state’ degrees in particular fields. The public service traditionally recruited from a wide range of disciplines from universities and *hogescholen*, and pay was not based exclusively on degree types, but also on individual qualification. In some professions— in some fields of psychology for example –, the HE degree did not convey the immediate right to practice, but further training was required upon graduation. There was no major problem with graduate unemployment, but there was a scarcity of graduates in the fields of engineering and the sciences. In fields related to information and communication technology, students were often recruited even before graduation.

Although the need for lifelong learning and more permeable pathways between HE and the world of work were important driving forces for the Dutch reforms, they were not translated into concrete policies, and the relationship between HE and the employment system remained largely unchanged until 2006.

First, the newly introduced university Bachelor degree was not meant to qualify for the labor market. Nor was there political pressure on universities in this direction, or interest from universities themselves or employers. It was of course possible for Bachelor graduates from universities to enter the labor market, but as the first regular cohort was expected autumn 2005, it was not yet clear whether this will be the case. Second, the transition to Bachelor and Masters degrees had so far created little new dynamic on the supply side of the lifelong learning and further education market. Most universities had concentrated on the creation of so-called “transition Masters” programs, which were the immediate translation of the final year(s) of the traditional programs, and were supposed to be studied immediately upon receipt of the Bachelor degree. Conditions for *hogescholen* to offer Masters degrees as opportunities for lifelong learning did not become more attractive, as they would normally not receive public funding and were still not allowed to grant the desired degree titles “M.A.” and “M.Sc.” under Dutch law. Third, and partly due to the speedy transition to the new system, little consultation with employers had taken place on the design of the new programs (Onderwijsinspectie, 2005). Finally, the student funding system, though granting some flexibility, provided strong incentives to complete studies within a period of ten years total and before the age of 30, meaning that serious labor market experience between the first and the second degree was difficult to obtain.

#### *Impact on Society*

For the period studied in this dissertation, the growth of people holding HE education has been stable, slowly increasing beyond OECD average of 26% by 2005.

Table 32. % of Population Holding HE Degree in the Netherlands

	1999	2000	2001	2002	2003	2004	2005
<b>Netherlands</b>	25	27	27	25	25	28	31
<b>OECD average</b>	26	27	28	23	24	25	26

Source: OECD, [www.oecd.org](http://www.oecd.org)

The labor market and financial incentives for attaining HE qualifications continued to remain high for both men and women, despite the rapid growth in qualifications. This can be seen when contrasting the advantages of HE for

individuals in terms of higher average earning, lower risks of unemployment (see the previous section) and the public subsidies they receive during their studies, with the costs that individuals incur when studying, such as tuition fees, lost earning during their studies and higher tax rates later in life.

The Netherlands labor market offers graduates of tertiary education comparatively modest returns on their investment. One recent estimate of the *average* rate of return to tertiary education suggests that it is about 6.95 per cent – well below the EU-14 average rate of 8.78 per cent, and far below that of economies such as Germany (9.13), Finland (9.98), and the UK (12.25).<sup>7</sup> Closer analysis of the Netherlands case suggests that comparatively modest returns are not due to the high costs of tertiary study (direct costs or opportunity costs), but rather the comparatively modest impact that tertiary qualifications have in the Netherlands - relative to upper secondary qualifications - with respect to the probability of unemployment and wages. The private rate of return to schooling for those who graduate from a HBO program is, on average, significantly smaller than that of university graduate: an unpublished 2001 study by the CPB estimated of the private rate of return for an HBO degree to be approximately half that of a university degree (5.5 per cent, as opposed to 10 per cent).

In general 25-64 year olds in the Netherlands with HE degrees commanded higher salaries than those with only secondary education. Here earnings for HE graduates are 43% higher on average than for those people with only secondary education. However the data is available only for the year 2002.

Table 33. Relative Earnings for 25-64 Year Olds Holding HE Degrees and Secondary Education in the Netherlands

	1999	2000	2001	2002	2003	2004	2005
Secondary education	NA	NA	NA	84	NA	NA	NA
HE	NA	NA	NA	148	NA	NA	NA

Source: OECD, [www.oecd.org](http://www.oecd.org)

#### 3.1.4. Sweden

Sweden enjoys a rich history and a firm standing among the world's leading countries. Sweden was placed fifth in the 200 United Nations Human Development Index (United Nations Development Program, 2006) and its welfare state is often

seen as an example in other countries. Located in northern Europe between Norway and Finland, the country's approximately 9 million inhabitants are largely concentrated in the southern part of the country and along the Baltic and North Sea coasts. Sweden; foreign policy is one of neutrality, and had resulted in Sweden acting as mediators in conflicts around the world. Its neutrality and openness to other cultures can further be seen in the fact that approximately 12% of the population was foreign born in 2004 (Integrationsverket, 2006).

In terms of higher education, Sweden constantly ranks above the average when compared to other European or OECD nations in most categories. That Sweden's population is highly educated can be explained, in part, to the country's relatively strong commitment to funding all levels of education. For HE 64.2 percent of the funding comes directly from the state, while in total 87 percent of the finance for the activities of the HEIs comes from public funds (Hogskoleverket, 2005).

### *Preparation*

MATH SCORES. For the analysis of math scores I used Programme for International Student Assessment results (see page 82 for the description of the program).

Table 34. Math Scores 2000-2006 Sweden

	<b>2000</b>	<b>2003</b>	<b>2006</b>
Score	510	509	502
Rank	16	15	21
<i>OECD Average</i>	500	500	500

Source: PISA, [www.pisa.oecd.org](http://www.pisa.oecd.org)

In mathematics Swedish students perform at the average OECD level. Sweden is not significantly better than the OECD average.

Four fifths of the Swedish students in 2006 reached at least the proficiency level considered necessary to meet the demands of mathematical competence needed in adult life. The highest performing students performed at a significantly lower level in 2006 compared to 2003 but that did not change the country's total score significantly – it dropped from 509 to 502.

HIGH SCHOOL CREDENTIALS. When talking about % of upper secondary graduates to the population at the typical age of graduation, 22% increase occurs from 1999 to 2006 which is very significant.

Table 35. High School Graduates in Sweden 1999-2006

1999	2000	2001	2002	2003	2004	2005	2006
62	75	71	72	76	78	78	84

Source: OECD, [www.oecd.org](http://www.oecd.org)

Upper secondary attainment levels are high in Sweden with more than 84% of the population having attained this level of education (68% OECD average). Among younger individuals 91% have at least attained upper secondary education. With such a large portion of the population having achieved upper secondary education, the growth has been moderated in recent years.

#### *Institutional Types*

HE is provided in five institutional types: universities (*universitat*), university colleges (*hogskola met vetenskapomrade*), other colleges (*overiga hogskolor*), art colleges (*konstnarliga hogskolor*) and other higher education institutions. There are 14 state universities and two private universities in Sweden. University colleges are marked by a wide variation in size and programmatic offerings, some conduct research and provide advanced training whereas others are limited to only a few, professional programs like teaching, education, and business administration. Oftentimes a university college's specializations are strongly linked to the local industry. There are five university colleges (one of which is private), 11 other colleges, 9 art colleges (including two private ones) and 20 'other' higher education institutions. The latter are mainly single subject institutions (mainly psychotherapy) and their size in terms of enrollment is limited.

The main difference between universities and university colleges is linked to entitlement to award doctoral degrees. Swedish universities are financed by the state and have a general right to choose for themselves in which subjects they wish to provide doctoral studies. Non-university institutions may receive accreditation in

specific “area(s) of research” (*vetenskapsområde*), entitling them to award postgraduate degrees within the broad subject area.<sup>7</sup>

Sweden’s higher education system underwent considerable reform with the passage of the Higher Education Act of 1977. The most visible change involved assimilating the four distinct sectors into a unified single system, the *hogskola*.<sup>8</sup> As a result, all HEIs were now administered centrally by the Ministry of Education and Science. Through these reforms the government hoped to create more equality between different kinds of education and to initiate an era of greater cooperation between the old sectors. In addition, it anticipated that a unified system would give students from a diversity of social backgrounds equal access to HE, and thus another significant change in 1977 was also incorporate a strong vocational slant into most undergraduate programs in order to provide students with the practical skills necessary for entry into the workforce. So the main changes in trying to increase differentiation of institutional types happened with the reform of 1977.

The changes between 1999 and 2006 in institutional types were minimal. To meet the growing enrollments the existing HE infrastructure continued to expand. For example, the government permitted university colleges to apply for full university status and also has granted some “special status” to grant post-graduate degrees in select fields.<sup>9</sup> By 2006, four university colleges were infused with additional funding and upgraded to university status in order to stimulate scientific achievement outside the traditional university sector.

The Bill (2004/05) New World – New University created a number of important reforms but they were all related to convergence of degrees then of international types. In order to retain their value on the international market and to be ore in line with the Bologna Mandate, the structure of HE programs and degrees will change from a two-cycle to a three-cycle. In addition, a new credit system will be implemented starting 2007 academic year. This new system aims to be compatible with the European Credit Transfer system.

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<sup>7</sup> Five university colleges are accredited for an area of research: Blenkinge Institute of Technology – technology, University College of Malmo – medicine, University College of Kalmar – natural science, University College of Malardalen – technology, University College of Jonkoping – humanities and social sciences.

<sup>8</sup> The term “university” however, continued to be used after the reforms: the institutes were subsequently referred to as *universitet* and *hogskolon*.

<sup>9</sup> The University College of Kalmar, for example, has the right to grant post-graduate degrees in the area of natural sciences while the University College of Karlkrona/Ronneby offers post-graduate degrees in the area of technology.

Sweden is continuing on the path of what can be called “aggressive expansion” as demand for many programmatic offerings is perennially greater than what is currently being supplied. Economically, it sees further development of the higher education sector as the key catalyst driving regional economic development in the years to come.

STATE VS MARKET DRIVEN SYSTEM. If one was required to attach a “theme” to this subsection it would have to be decentralization. Throughout recent history, this issue has repeatedly been stressed through major reforms, particularly in 1977, 1984 and 1993. Efforts at decentralization have had a profound influence on the current structures of higher education governance, from the federal level all the way down to individual institutions themselves.

The responsibility for managing and administration of HE at the national level falls to several government ministries and a host of national agencies. The Ministry of Education and Science has the greatest role, particularly in fiscal and financial matters. Ministry responsibilities are divided into six divisions, including one for HE, one for research policy, and one for study support and admissions. These divisions, in turn, have at their disposal a collection of the 12 national agencies also sharing oversight responsibility for Swedish HE. In general, four of these agencies focus specifically on HE: the national Agency for Higher Education, the National Admissions Office for Higher Education, the National Board of Student Aid and the Agency for Sweden’s Internet University.

The National Agency for Higher Education has jurisdiction over all HEIs in terms of evaluation, accreditation, and issues related to quality and pedagogy. It is also responsible for evaluating aspects of foreign education and monitors the recognition of their educational programs. The National Admissions Office operates as a service office designed to assist universities and university colleges with student admissions issues. The National Board of Student Aid is responsible for overseeing the allocation of student aid as well as its repayment. In addition it also serves in a quasi-research capacity by internally evaluating and studying different methods of financing study programs. Finally there is the Agency for Sweden’s Internet University. In operation since March of 2002, SIU is a gateway coordinating the registered distance education courses and programs provided by various universities and university

colleges. The agency's responsibility is to promote the development of distance education courses through the Internet and provide information about its offerings.

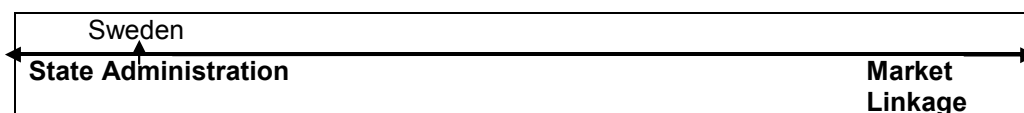
There is also one intermediary organization in HE. It is the Council for Renewal of Higher Education (CRHE). It was established in 1990 and had the mission to aid the development of undergraduate education as well as to stimulate experimentation in teaching. In 1999 its mission was expanded to include post-graduate studies. The council acts as an intermediary funding organization with broad authority.

The passage of a second round of major HE reforms in 1993 continued to drive Swedish HE down the path of decentralization. For example, for its first time, institutions were given the authority to determine their own admissions criteria. In addition, vice chancellors and deans were granted more extended powers to the point that some researchers suggest individuals in these roles have become a mixture of business manager, fund-raiser, and politician (Streffert, 1992). Research and education may be jointly administered, and the links between undergraduate and postgraduate education have been strengthened. Only in the case of external representation on all boards below the governing board level did greater decentralization not occur. Academic staff now forms the majority on all boards below the governing board level. HEIs have the right to determine their own governance structures (at the institutional and departmental levels).

Between 1999 and 2006 there was a general tendency towards more decentralization. The Association of Swedish Higher Education, which represents Sweden's 42 institutions of higher education, published a manifesto in June 2006 asking the national government for greater autonomy. In the last years, as the demands on the HEIs have grown, central political authorities have increased reporting requirements and extended the legislation governing the institutions. The increasing reporting requirements have been criticized by HEIs. From this point of view, a transition to a greater degree of detailed control is undesirable. Also, many institutions would like to see a better match of goals and requirements to the individual institutions, rather than more general assignments.

In short, Sweden's HE system could be described to be more state administered than market oriented. If to place Sweden on Clark's state-market continuum (see page 59), the picture would be the following.

Figure 12. State-Market Continuum Position for Sweden



*Participation*

**ENTRY RATES.** The enrollments in HEIs have grown continuously till 2003 (it should be noted however that enrollments in HE in Sweden more than doubled between 1990 and 2000). That year, enrollments leveled off and started to decrease. General program enrolments in natural sciences, technical sciences and health are the least affected by the decrease, whereas humanities and economics (the largest disciplines) show a sharp decline. Professional programs in health and social sciences/services show a steady increase, whereas natural sciences and technical sciences are here the big losers.

Table 36. HE Enrollment Numbers in Sweden 1999-2006

1999	2000	2001	2002	2003	2004	2005	2006
477 250	493 458	527 271	566 261	578 350	567 384	556 370	554 672

Source: OECD, [www.oecd.org](http://www.oecd.org)

The rate of enrollment (sum of net entry rate for each year of age enrolling into HE) increased by 13% from 2000 to 2005. The growth in HE enrollment rate has risen sharper in Sweden than OECD as a whole/ 67% entered HE in 1999 and in 2003 reached 80%, and then dropped to 76 by 2006. This largely reflected improved employment prospects for younger individuals. Though, the growth in HE enrollment suggest that attainment will rise considerably in the future.

Table 37. HE Enrollment Rate in Sweden 1999-2006

	2000	2001	2002	2003	2004	2005	2006
Sweden	67	69	75	80	79	76	NA
OECD Average	47	48	52	53	53	54	NA

Source: OECD, [www.oecd.org](http://www.oecd.org)

The government's target is that 50% of those born in any given year are to have embarked on university education by the age of 25. In 2004, just below 44% of those

reaching 25 that year had started HE plus approximately another 2 percent who began HE abroad without any previous studies in Swedish HE.

ACCESS. Admission to HE program or single-subject course requires matriculating students to have either: 1) completed one of several forms of secondary school, or 2) reached the age of 25 and have at least 4 years of work experience on at least a half time basis. In addition, all students are required to have achieved proficiency in both Swedish and English at the level of the second-year upper secondary school student.

For admission to many programs further admission requirements are specified, the specific admissions requirements. Generally these specific requirements refer to the knowledge attained in one or several courses in the upper-secondary school or to corresponding proficiency. The specific admission requirements are organized in a system referred to as “standardized admission requirements”. The Swedish National Agency for Higher Education lays down the standardized admissions requirements for programs that lead to the award of a professional qualification, with the exemption of programs in the fine arts. The HEIs determine the standardized admissions requirements for courses and programs in which no professional qualifications are awarded.

In 1993 the government decentralized admissions decisions. For the first time, individual institutions were free to determine their own selection criteria, or to coordinate their efforts with other institutions through a central agency. At the same time, they were also granted the authority to determine the number of students they would enroll as well. While indirectly limited by the use of formula-based, enrollment-driven forecasts, institutions were still free to accept more students than the number financed provided they could guarantee quality.

The 1990s witnessed growing numbers of applicants to higher education programs and a less than commensurate growth in the physical capacity to accommodate them. The effects of such changes would prove to be significant. In the early 1990s approximately half of all applicants were offered places in HE programs. However, by 1998 that ratio dropped considerably, to slightly more than 40%. In 2006, the percentage of accepted applicants was back up to 55%.

When talking about policy changes from 1999 to 2006, one can mention the 2001 bill passed by the Parliament on “open higher education” which addressed a

broad array of policy issues including access, lifelong learning, vocation-oriented programs and degrees, ICT in HE and steering and governance (Ministry of Education and Science, 2001). The primary thrust of the bill is to broaden recruitment and open new paths to HE. Targets have been established to have 50% of each age cohort embarking in university-level studies by the age of 25. To broaden recruitment, the Higher Education Act was amended to establish a recruitment commission whose primary task would be to stimulate recruitment activities at universities and university colleges. Institutions were requested to draw up local action plans for broadening recruitment and develop preparatory courses for incoming students not meeting admission criteria for specific university programs. A final provision in the bill provides institutions the flexibility to develop and implement new admissions processes (for up to 10% new entrants). Starting the fall of 2003, applicants are allowed to use accreditation of prior and experimental learning as the basis for a HE course or program.

Also it is the government's policy goal that HE should be more flexible and easily available both geographically and in terms of age. Distance education, especially via the Internet, has a long tradition in Sweden. In 2002 a Swedish Net University was inaugurated in order to support and promote the provision of information technology supported distance HE. The objective is to widen access to HE and encourage lifelong learning. In the fall of 2004, 38 000 students – or more than one-tenth of the total students' population – were taking one or more courses offered through the Net University (Hogskoleverket, 2005).

### *Curricular Governance*

In 1995 quality assessment functions were taken over by the National Agency for Higher Education. The Agency's primary task was to conduct quality audits (i.e. accredit) of all HEIs on a triennial basis. Each institution would be judged according to broad goals and guidelines established in the government's Degree Ordinance. During its first "quality program" (from 1995 – 1998) all higher education institutions were audited: external teams of reviewers were assembled, visits conducted, reports prepared, and finally detailed discussions undertaken with the respective institutions. A second phase of the quality program, began in 1998 under a modified set of rules. Rather than replicate the extensive auditing procedure in the first phase, the focus shifted to a follow-up approach. The reason for this was to not necessarily measure

the absolute level of institutional quality but to instead determine the extent to which quality changes had occurred.

January 2001 saw the implementation of the most recent quality assessment framework, which notably includes several changes. Most significant is that the unit of analysis has shifted from the institutional level to that of the programs or subjects. In addition, evaluations will occur on a six year basis and include graduate as well as undergraduate programs. Student influence in the assessment process is also enhanced by being formally recognized in the Higher Education Act. In terms of accreditation concerns lodged on behalf of the university colleges, the new system goes to a much greater extent in defining the link between notions of quality and the right to award academic degrees. In the event that revoking a degree is being considered, the institution can expect to be notified in advance and given a year to redress any perceived deficiencies. Only if those deficiencies remain after a year's time will degree rights be revoked (Hogskoleverket, 2001).

The quality evaluation system was replaced in 2006 with a new quality evaluation system, for several reasons. The evaluation undertaken by the National Agency revealed that the system worked well, but even so there are reasons for making changes. Experiences from Sweden as well as from other countries show that new rounds of quality evaluations that are conducted in the same ways as previously do not lead to equally valuable outcomes as their predecessors. The additional information provided is often restricted and it can at times be difficult to summon up the same commitment for self-evaluations as during the first round.

Another reason for making changes was linked to a potential shift of emphasis where responsibility for quality assurance is concerned. As a result of the large number of national subject and program evaluations that have been made, the higher education institutions are now much better equipped than they were to assume the responsibility for their own quality assurance and quality development. Increasing responsibility for the HEIs themselves also coincides with international developments.

Greater responsibility for the HEIs means that the National Agency's evaluations of the quality subjects and programs need not to be as extensive. At the same time the state must be able to guarantee that reasonable minimum standards are being maintained in all higher education. This can be achieved by undertaking a smaller number of in-depth evaluations of subjects and programs after an assessment of "the

risk of failure to maintain good standards” based on key statistics, monitoring and simplified self-evaluations. There is also a greater need for international participation in the evaluations. It is important to broaden perspectives and compare Swedish quality evaluations with those conducted in other countries. This means that certain evaluations should be carried out using English as the working language.

There are also grounds for focusing greater attention than before on activities that maintain very high standards. The National Agency therefore wants to test the possibility of providing greater stimulation of local quality procedures by distinguishing centers of education excellence.

Yet another reason for introducing changes in the possibility of making the evaluations simpler, less time consuming and more cost effective – both for HEIs and for the National Agency for Higher Education.

To summarize, the points of departure of the new system were:

- Greater emphasis on the quality procedures of the HEIs themselves;
- External quality appraisal based on risk assessment;
- Greater degree of international participation in the evaluations;
- Distinction of centre of educational excellence;
- Reasonable work loads for HEIs and the National Agency;
- Support for an acceptance of the entire system.

### *Funding*

Historically, HE finance in Sweden was heavily centralized. Funding came down from the central government to institutions through line-item budget appropriations based on input-oriented goals and detailed planning efforts. Reform efforts in 1987 and 1988 largely decentralized much financial decision-making in the HE sector. Since that time, institutions have been generally free to determine their own internal allocation system

Another important change was a shift from “supply-side” to “demand-side” funding. Before 1993, across the system programs and numbers of students accepted were determined in advance (i.e. the use of *numerus clausus*), hence was the funding. With the reforms, minimum enrollment and degrees guidelines were established as well as maximum funding allowances per full-time equivalent studies. This would, in principle, now link funding to the successful graduation of students and

to the extent to which their programs could draw in enrollments (i.e. making course popular for students).

The total revenues of the HEIs in Sweden amounted to 44.8 SEK billion at the end of 2005 academic year. The vast majority of these revenues came from direct state allocations and other public funds. This is particularly noticeable in the case of undergraduate programs, where the direct state funding accounts for 87 percent of the finance and another 8 percent comes from the other public sources. The costs of operations of the HEIs in 2005 totaled 44.6 SEK, which is 1.67 percent of Sweden's GDP. As the GDP is rising although there has been no growth in the HE sector, the proportion accounted for by these costs has declines for the third year in succession and is now at the same level as in 2001. From a longer perspective, however, the share of the GDP devotes to the HE has risen.

The government commands little in the way of direct oversight over individual institutions' internal allocation of government resources. Funding is largely distributed based on enrollment driven funding formulas and appropriations for basic research. Government control, or steering, then exists only to the extent that it sets particular research priorities and controls the aggregate amount of R&D funding to faculties. In short, institutional funding mechanisms have changed considerably since 1970s. An increasingly decentralized structure has given local authorities much of the responsibility for allocating public funding and shifted the central government's role from planning to evaluation.

The table below summarize in number the change in funding of the HE sector in 1999-2005 (2006 data was not yet available at the time of research).

Table 38. Per Student Spending (US dollar converted to PPP) in Sweden

	1998-1999 academic year	2004-2005 academic year
Sweden	14 222	16 218
OECD Average	9 179	

Source: OECD, [www.oecd.org](http://www.oecd.org)

Table 39. Public Spending on HE in Sweden

	Public expenditure on HE as % of total public expenditure		Public expenditure on HE as % of GDP	
	1998-1999 academic year	2004-2005 academic year	1998-1999 academic year	2004-2005 academic year
Sweden	3.7	3.7	2.1	2.1
OECD average	2.8	3.1	1.2	1.3

Source: OECD, [www.oecd.org](http://www.oecd.org)

In 2006, HEIs received funding on a triennial basis. Allocated funding is a function of both input – and performance – based measures. Minimum numbers of degrees across disciplines are mandated and particular objectives. Like increasing/decreasing the numbers of students in given fields, may also be specified. The incremental funding tariffs per full-time-equivalent students and for performance measures are determined by the national government annually and specified in their yearly budget.

Funding for research and postgraduate study (as well as for capital maintenance) comes from special grants and is determined on an institution-by-institution basis. Rather than directly fund the particular faculties, government funding is instead allocated to each institution across four general areas of research: 1) humanities/social sciences, 2) medicine, 3) natural science, and 4) technology. In general institutions have considerable latitude to internally distribute these funds though some broad stipulations are attached, including a minimum percentage of the funding that must be used for postgraduate study.

Taken together, the funding in these three broad areas (undergraduate education, graduate education, and basic research) constitutes approximately 60% of each institution's total resources. The remaining resources come mostly from research through the various research councils, local authorities and the private sector.

HE in Sweden, apart from doctoral studies, is almost exclusively state financed (with the exception of contract education, which is paid by the commissioner). Tuition fees for individual students are not permitted at any level of the system.

The major change in this area is that in 2006 January special commissioner proposed that fees be introduced for students coming to study in Sweden from outside the EU/EEA area. At the same time the HE Act would be amended to guarantee the fundamental principle of freedom from fees for Swedish/EU students. It has generated criticism, mainly from student organizations, which regard it as a first step towards fees for all. HEIs are divided in their opinion of the proposal. With some see the proposed fees as a potentially important funding source, others fear that fees will lower the attractiveness of their institution to foreign students.

Another change was concerning doctoral studies. It consisted of legislative changes that, in practice, made guaranteed financing during the entire postgraduate

study period a prerequisite for admission. The bottom line is that admissions are to be adapted to the resources available, and only as many doctoral students as can be offered supervision and acceptable conditions of study are to be admitted. The rationale was the ambition to reduce the time required to earn a postgraduate degree by making it financially possible for students to pursue their studies full-time or nearly full-time. Unless the prospective student can be offered funding by the HEI, the admission process was decided to include an assessment of whether the prospective student has secured some other form of funding, and only those who have done so may be admitted.

Moreover one problem that has surfaced is the short-term nature of the performance-related funding system and thus its sensitivity to fluctuation in the number of students. An institution's revenues can decrease sharply from one year to another while it has little scope to adapt its costs as quickly, due, for example, to the long-term character of obligations to students and commitments regarding staff and premises.

The fact that the funding for HE is partly based on student performance (in terms of FFE credits) has given rise to criticism that it provides an incentive for the HEIs to increase the student numbers and pass rates. For example, the supreme audit institution of Sweden (the National Audit Office) sees the risk of HEIs lowering standards in order to pass more students.

Small subjects, such as some modern languages, frequently experience financial problems since they do not attract adequate numbers of students to bear their own cost. A review of the situation of the small language subjects in 2002 recommended that the Government create a separate funding situation, in the shape of specific directives and allocations, for languages that attract few students in Swedish HE and that are considered indispensable (Hogskoleverket, 2003). In response to these problems, several HEIs have started to cooperate on dividing responsibilities for some languages.

A review of the funding system presented in 2005 (SOU, 2005) has proposed amendments to the system that would reduce the HEIs dependence on short-term student demand. In this proposal 65% of the total allocation would be performance-based (FTE students and FTE credits), and 35% would constitute a basic allocation, which the HEIs would receive irrespective of its quantitative performance.

Supplementary funding would be allocated for long-term special commitments, such as certain language subjects.

### *Quality of Education*

As in many other countries, the qualifications required by businesses have risen during 1999-2006, a result of restructuring of the Swedish economy towards what is called 'more knowledge-intensive production'. Sweden is not alone in noting a decrease in the population of jobs for which no specific qualifications are required, while the proportion requiring more advanced technology is adopted in the workplace (Hogskoleverket, 2004). There are, however, researchers who claim that there is a growing proportion of 'overqualified' workers in Sweden, as result of a more rapid rise in the average level of education of employers, it is argued, the proportion of highly qualified individuals in jobs below their qualification level has increased (le Grand, et. al. 2002 and 2004).

AVE is an important element in the policy of training which offers a better match between supply and demand in the labor market. It is expressly aimed at filling labor market needs and is characterized by the active participation of employers. An AVE program can be initiated by employers with, for example, a sectoral organization or an enterprise applying to the Swedish Agency for AVE to start a program. It can also be initiated in cooperation between an educational organization, such as HEIs, and a municipality or an educational enterprise with the required competence. It should be noted that one-third of a program like this should always comprise advanced workplace learning.

Irrespective of who initiated the program, a prerequisite is that there is a real need in the labor market, and that employers take an active part. What constitutes need is assessed by the Swedish Agency for AVE, on the basis of statistical data, contacts with employers' organizations, and other forms of input. Also providers must be able to prove that there is a real labor market demand for their courses. Another distinguishing feature of AVE is its flexibility. Programs are created, changed, or discontinued, depending on the development of the relevant commercial area. The existence of the programs is therefore reviewed on a regular basis, and employer interest and the results and quality of the programs determine whether programs continue.

Businesses have criticized the relevance of HE to the labor market. One organization, the Confederation of Swedish Enterprise, wants HE to be planned to a greater extent with the aim to achieve a better match between supply and demand. The confederation is critical of the funding system to HE, which it claims does not provide incentives to raise quality or adapt programs to labor market needs. Instead, the system should promote 1) education corresponding to the need of private enterprises as well as 2) a greater focus of education and division of responsibilities between HEIs. Also, HEIs should follow both up the relevance of their education to labor market needs and to what extent their students are employed after graduation. In order to complement HE there is also a need for more practical post-secondary vocational training that can be planned and offered in close collaboration with the social partners (Svenskt Näringsliv, 2006).

Another business organization, the Federation of Private Enterprises claims that smaller enterprises have difficulties finding staff with the right qualifications (mainly vocationally oriented upper secondary school graduates). The organization also finds that the enterprises increasingly demand staff with HE, not only because of an actual rise in the level of qualifications needed, but also of the fact that employers think that the quality of upper secondary vocational programs has decreased (Foretagarna, 2006).

Following informal discussions with Sweden's Ministry of Education and Science, the Ministry of Labor and the Ministry of trade and Industry it appeared that, although on some concern to employing organizations, very little research was being undertaken to clarify and define relevant core skills and respective shortages. Additional efforts in the form of a literature review confirmed this impression.

With minimal published evidence and in the absence of any targeted policy response to a shortage of core skills it was left to a representative in the Ministry of education and Science to provide the following informal definition of what Swedish researchers and policy makers refer to as social skills. The skills identified entail:

- An ability to get along with people;
- Cooperation;
- An ability to work in a team;
- A willingness to move between jobs and positions within a company (job flexibility).

Some of the new programs which aim to assist with the development and delivery of these skills include the industrial program, the modern apprenticeship system and firm-based schooling.

The industrial program takes, as a rule, three years of completion and is delivered vocational schools with the assistance of business and industry instructors. The program has been described as a change from traditional 'workshop techniques', but only in that relatively more time is spent on theoretical subjects. This in turn has led to an increase in the educational component as the expense of opportunities to 'practice skills'. However, a characteristic feature of the program still remains as 'education in workshops', which means that at least 15 weeks should be spent on company-based lessons. This continues to pose demands on forms and some have already begun to decline to take part in the system arguing that they have neither the personnel nor the time to give students the proper instructions. Thus a paradoxical situation has arisen. Although the industrial program allows for time at, and a close collaboration with, practice-oriented workshops, the situation in some places has worsened because employers are unwilling to invest the required resources to develop relevant core skills and competencies. Another problem related to the fact the program enjoys a very low status among students.

One of the alternatives to the industrial program was the renewal of the old apprenticeship system. The change included that students study theoretical subjects to the same extent that students of the industrial program do, but in addition spend the remainder of a normal working week in job-related training. In other words, the system combines on-the-job training and school based general education. It is this combined approach which is hoped will provide sufficient specific skills coupled with the delivery of core and social skills.

The disappointing provision of both specific and social skills in state education has also led some companies to run their own 'educational institution'. There is, in principle, little difference between apprenticeships and firm-based education. Both are initiated and financed by companies. The only distinction lies in the areas of theoretical instruction, with firm-based education placing particular emphasis in the latter. It is hoped that these initiatives will lead to both job-specific knowledge and a general and universally usable skills base.

COLLABORATION. Private companies fund about 5% of the research at HEIs. In addition to the project funding paid to the institutions there is also some degree of indirect funding, for instance through guest/adjunct professorships, 'industrial' PhD studentships or providing facilities for research. All in all SEK 4.8 billion comes from private funding. This corresponds to 20% of research revenues. If to look at the change from 1999 to 2006, this has increased by 33%, from 3.2 billion in 1999 to 4.9 billion SEK in 2006.

One central theme of the recent research policy bill is the transfer of knowledge between HEIs and the commercial sector. The Government ascribes a central position in economic growth to the HEIs as it has in many previous research policy bills. Several programs and measures in the bill aim at emphasizing their role in the knowledge and innovation system. Measures proposed to this end include extra resources to the holding companies, appointment of a special negotiator with instructions to propose a more effective holding company structure at HEIs and a commission to the HEIs to develop action plans to improve commercialization of research results and ideas and knowledge transfer. The bill also stresses that postgraduate programs should prepare students for careers in both HE and the labor market elsewhere. It also underlines the importance of increased collaboration between the research institutes and HEIs.

UNIVERSITY RATINGS. Among the best world science universities (top 50), Sweden has none. And among the best world business schools (top 50), Sweden does not have any (Financial Times, 2006).

### *Transition to Employment*

The Swedish decentralized system for governing HE applies also to employment issues. The responsibilities for making the 'right' choices in regard to labor market needs are essentially delegated to the 'market', that is to the HEIs and individual students. The Government's directives to HEIs in this respect are either general – the requirement to collaborate with the surrounding community and to take into account both student and labor market demand in planning programs or very detailed in terms of target numbers for a few specific degrees.

The HEIs are required to collaborate with the surrounding community. This requirement, though very generally formulated, is intended, among other things, to

contribute to aligning labor market supply with demand. The intent in this respect is for HEIs to collaborate with employers and other interested parties in society and in doing so identify what skills are needed (Hogskoleverket, 2004).

The Government sets targets for the HEIs with regard to the number of graduates to be produced in teaching, nursing and engineering each year for a four-year period. The Government also sets targets for the number of full-time equivalent students in the natural sciences. Furthermore, the appropriation directives for HEIs entitles to award Doctorates contain targets for the number of such degrees to be awarded in different areas of research. No economic incentives are linked to these targets. There is also an upper limit to the number of state-funded study places in the fine arts. The educational targets and funding limits are set on the basis of assessments of labor market needs as well as of the overall economic situation of the HE sector.

The Government also requires HEIs to offer contract education, which may be purchased by organizations for their employees. Contract education still accounts for a very small share – a few percent – of the total offerings in HE apart from doctoral studies in Sweden. Nearly all HEIs provide this kind of teaching in varying ways and extent. For employers, contract education provides a possibility to meet short-term skill needs by purchasing courses from HEIs for their employees. For institutions, contract education can serve as a source of labor market information. According to several HEIs, the demand for courses like this serves as guidance on how to develop programs that can better meet the needs of the labor market (Hogskoleverket, 2004).

In the HE sector there are a number of shorter, vocational courses, leading to national degrees (for example, the two-year *yrkeshogskoleexamen*). There are also specific courses organized, often for a limited period, for specific target groups (frequently with a focus on improving individual employment prospects) or aiming to provide eligibility for a certain program of education.

In general the transition to employment is smooth. Within 12-18 months of graduation 78% of all HE graduates are established in the labor market. There are great variation in how well graduates from different areas fare on the labor market. For example, within 12 months of graduation, more than 90% of new physicians have a job in the field in which they are trained. Other groups, with a strong footing in the labor market, according to this indicator, are nurses and engineers (despite the downturn on the engineering labor market in the last years). Difficulties are

experiences especially by those with degrees in the fine and applied arts. Graduates with bachelor's and master's degree in languages, the humanities, social sciences or natural sciences constitute other large categories with low 'establishment rates' (Hogskoleverket, 2004). A similar study regarding the establishment of PhD's on the labor market shows that 85% were established within 3 years of the award of their degree. Within 10 years the figure was 90%.

During 1999-2006 employment issues have resurfaced in the HE policy debate. Part of the explanation for this renewed interest in the labor market can probably be found in indications that the labor market is increasingly difficult for HE graduates, also at doctoral level, in terms of rising unemployment. There also appears to be a growing awareness among policy makes of imbalances – shortages and surpluses of graduates – on the graduate labor market.

In general, graduates from HE have a better footing in the labor market than those with upper-secondary qualifications or only compulsory education. However rising unemployment levels for PhD's has emerged as an area of concern during 1999-2006. According to a report by the Swedish Association for University Teachers (Sveriges Universitetslarar-forbund, 2005), unemployment for holders of postgraduate degrees was 4.3% in 2005. It was claimed in the report that unemployment is especially high for younger graduates and in some subjects, reaching 12.7% in biology and 10.4% in computer science in 2005. The Swedish Association for University Teachers argues that there are two positions for new Doctors in HE and that demand is low in private enterprises.

A compilation of data, forecasts and analyses of the labor market for graduates from professional programs shows imbalances between supply and demand in several areas. There were surpluses in engineering and information technology (although demand for those with master's degrees in engineering is expected to rise in a few years). A surplus is also foreseen in business/economics and journalism. Shortages are found in health care (physicians, dentists, and specialized nurses), teaching (especially pre-schooling and pre-school classes), and qualified social workers.

84% students from Advanced Vocational Education were employed within six months of graduation in 2005. This constitutes a significant improvement of their employment situation, since 59 of those stating their AVE training in 1999 had been registered as unemployed in the preceding year.

In short, the Government requires taking the needs of the labor market (as well as students demand) in account when planning their educational offerings. In order to counter unemployment, special programs have been created in HE aimed at improving the employment situation of the individual, to alleviate shortages on the labor market, and/or to stimulate a general enhancements of skills.

One example is a temporary teacher training program, which is aimed at those already working as teachers but who lack formal qualifications. It involves employees (municipalities), HEIs and the Government. The program admitted students for the last time in 2005. The goal was to produce 4,000 qualified teachers by 2006. The Government recently decided to launch a similar project for teachers in vocational upper-secondary programs during 2005 to 2008.

### *Impact on Society*

For the period studied in this dissertation, the growth of people holding HE education has increased by five percent – from 32 to 37 (with slightly more variations in between). During this period this number has always remained above OECD average.

Table 40. % of Population Holding HE Degree in Sweden

	1999	2000	2001	2002	2003	2004	2005	2006
<b>Sweden</b>	32	34	37	33	34	35	31	37
<b>OECD average</b>	26	27	28	23	24	25	26	27

Source: OECD, [www.oecd.org](http://www.oecd.org)

In general 25-64 year olds in Sweden with HE degrees commanded higher salaries than those with only secondary education. In 1999 graduates from the HE earned higher salaries by 32% and in 2006 this difference was 30%, which for the purposes of analyses does not provide significant variations and can be concludes that it remained stable.

Table 41. Relative Earnings for 25-64 Year Olds Holding HE Degrees and Secondary Education in Sweden

	1999	2000	2001	2002	2003	2004	2005
Secondary education	89	88	86	87	87	87	89
HE	131	131	131	130	128	127	128

Source: OECD, [www.oecd.org](http://www.oecd.org)

In Sweden, the earnings advantage for university graduates is one of the lowest earning differentials among countries with data on this indicator. The low earnings advantage of obtaining a university level degree also manifests itself in relatively low private rate of returns of investing in HE. Sweden shows one of the lowest internal rate of return for an individual obtaining a university degree, 8.9% for males and 8.2% for females. Despite large public subsidies to HE private returns to HE are less than in most other countries, indicating that the incentives to invest in and to complete HE is not as pronounced as in other European countries. The private rate of return for completing upper secondary education is in comparison substantially higher (18.7% for males and 13.1% for females) in Sweden.

The benefits of HE in Sweden are instead visible in improved employment prospects. Employment rates for those with HE is 6% higher relative to upper secondary and post-secondary educated individuals and 21% higher than those without upper secondary education. The employment advantage of having a tertiary education has not decreased over the last decade.

### **3.2. COMPARATIVE CASE ANALYSIS**

In the individual case studies section above, I tried to reveal specific HE policy changes in individual countries. This was done by reconstructing the policy formulation process and analyzing secondary data indicators along eight dimensions of the HE system (preparation, institutional types, participation, curricular governance, funding, quality of education, transition to employment and impact on society). Building on this work, I now will turn to the comparative case analysis and try to determine the main similarities and difference between occurred changes.

Similar to the case studies, the comparative analysis is performed along the eight dimensions of HE systems (see page 70). For each dimension I focus on the change between 1999 and 2006 and do not pay attention to the initial situation in the dimension (as done in the individual case analyses).

#### *Preparation*

**MATH SCORES.** For the analysis of math scores I used PISA (see page 82 for the description of the program) results. Specifically math scores analysis assesses to

what extent educational systems succeed in ensuring that young adults acquire the key competencies and dispositions to learning believed to contribute to the foundations for further learning and successful transition into adult life.

It should be noted however that PISA started to assess math proficiency only in 2000. The organization itself claims that for the purposes of comparison, it is advisable to use only the information from 2003 and 2006 because many improvements in the methodology have been made from 2000 and more countries joined the assessment process (63 countries in 2003 and 2006).

All four countries portray minimal change in math results over the studied period. Only England can be viewed as demonstrating slightly more significant decrease in scores. The country itself does not name any specific reasons for this decrease and understands it as minimal change.

All countries, except England, portrayed above OECD average math results and all countries have smaller than average proportion of poor performance.

Table 42. Change in Math Scores 1999-2006

	<b>2000 Score and Rank</b>	<b>2003 Score and Rank</b>	<b>2006 Score and Rank</b>	<b>Change in Score and Rank</b>
<b>Germany</b>	490 (21)	503 (17)	504 (20)	14 (-1) (L)*
<b>Netherlands</b>	532 (3)	538 (2)	531 (5)	-1 (-2) (N)
<b>UK</b>	529 (9)	496 (20)	495 (24)	-33 (-15) (N)
<b>Sweden</b>	510 (16)	509 (15)	502 (21)	-8 (-5) (N)
<i>OECD Average</i>	<i>500</i>	<i>500</i>	<i>500</i>	

\* L – low, ML, - moderate low, M – moderate, MH – moderate high, H – high, N – negative change. All change will be measured in these qualitative terms (see page 82 for a more in depth explanation). If the change is negative, it is considered to be no change or 0 change.

**HIGH SCHOOL CREDENTIALS.** The highest change in the high school graduates rate was demonstrated by Sweden. Germany and Netherlands also portrayed a high increase because their starting point was much above average in 1999. So even though the rate grew by 8% in Germany, the overall rate reached 100% so the growth rate is being evaluated as high. All the studied countries demonstrated above OECD average graduation rate. Only the UK has moderate growth in high school graduation rate.

Table 43. Change High School Graduates 1999-2006

	1999	2000	2001	2002	2003	2004	2005	2006	Change
<b>Germany</b>	92	92	92	94	97	99	100	NA	<b>8% (H)</b>
<b>Netherlands</b>	91	94	93	97	94	98	98	NA	<b>7% (H)</b>
<b>UK</b>	81	79	77	80	82	75	86	NA	<b>5% (M)</b>
<b>Sweden</b>	62	75	71	72	76	78	84	NA	<b>22% (H)</b>
<i>OECD</i>	76	77	76	77	77	78	80	82	6%
<i>Average</i>									

#### *Institutional Types*

The most radical policies in the institutional types dimension were formulated in Germany, followed by the Netherlands. In both countries, the strict typology assigning theory – or research-oriented programs to universities and professionally – or practice-oriented programs to *Fachhochschulen/hogeschulen* was relaxed. This development went further in Germany, where both universities and *Fachhochschulen* could now submit both types of programs and a considerable number of *Fachhochschulen* research Masters programs were accredited. In the Netherlands this ‘deinstitutionalization’ was explicated by the fact that *hogescholen* were allowed to offer Master degrees. Also *hogescholen* were offered a right to receive accreditation for ‘academic’ degrees. In England, the change included the defining criteria of one of the institutional types – universities themselves; the conditions for university status were revised to include teaching only and specialist institutions. At the same time however, criteria for taught-degree awarding power were tightened to include the proof of active ‘scholarship’ of academics in the institution in question. These changes allowed a number of HE colleges to become universities. In Sweden, the change was similar to the one in England. To meet the growing enrollments, the government permitted university colleges to apply for full university status and also has granted some ‘special status’ to grant post graduate degrees in selected fields.

A general trend towards increased cooperation between different institutions can be observed across four countries. The change was more significant in the Netherlands where many *hogescholen* entered cooperation agreements with universities to ease the transfer of their Bachelor graduates into university Masters programs. In Germany, access of *Fachhochschule* Bachelor graduates into university Master programs was still be handled rigidly by the latter. In England, traditionally close cooperation between universities and HE colleges was further intensified

through the joint provision of foundation degrees. In Sweden, non-university institutions cooperated with universities in order to expand their specific 'area (s) of research' and receive accreditation.

Going even further than cooperation, mergers between HEIs of different types were discussed in Germany and the Netherlands. In Germany, one merger between a university and a *Fachhochschulen* had occurred. In the Netherlands, universities and *hogescholen* could merge their boards, yet had to stay institutionally separate. This possibility was used by two pairs of institutions to maximize synergies from the delivery of different degree types under one roof.

Table 44. Institutional Types – Change 1999-2006

	<b>Institutional types</b>	<b>Degree types in relation to types of HE</b>	<b>Cooperation between HE system institutions</b>
<b>Germany</b>	<b>Unchanged:</b> universities and <i>Fachhochschulen</i> (L)	<b>Unified:</b> both universities and <i>Fachhochschulen</i> grant theoretical-oriented and practice-oriented degrees, subject to accreditation (H)	<b>Improved:</b> each <i>Fachhochschulen</i> bachelor graduate can do University Masters degree and in special cases may even be directly admitted to doctoral studies, but universities still handle this rigidly. One merger between university and <i>Fachhochschulen</i> (H)
<b>Netherlands</b>	<b>Unchanged:</b> universities and <i>hogescholen</i> (L)	<b>Unified:</b> both universities and <i>hogescholen</i> can formally grant theoretical-oriented and practice-oriented degrees, no precedence case so far (M)	<b>Improved:</b> many universities signed agreements with <i>hogescholen</i> for transition of their Bachelor graduates. Two mergers of university and <i>hogescholen</i> boards. (H)
<b>UK</b>	<b>Unchanged:</b> 'old' and 'new' universities and HE	Conditions for university status <b>changed:</b> now	<b>Improved:</b> introducing joint delivery of

	colleges (L)	possible for teaching-only and small specialist institutions (H)	foundation degrees (M)
<b>Sweden</b>	<b>Unchanged:</b> universities and university colleges (L)	<b>Unified:</b> both universities and university colleges can grant theoretical-oriented and practice-oriented degrees. There is a possibility for university colleges to get the status of university. (H)	<b>Improved:</b> (M)

In all four countries, massification of HE system and the demands of the knowledge economy on the function of HE system provided significant incentives for bringing different institutional types closer together; depending on the different history, these incentives came in different ways. The distinction of institutional types as such did not change in any of the countries studied but the defining criteria became less clear-cut, the types became more similar, and the status hierarchy flattened.

STATE VS MARKET DRIVEN SYSTEM. All four analyzed cases portray more signs of the state administration than market control at the governing level of the HE system. In all countries, one can very clearly observe a combination of a centralized education policy with the decentralized administration and management of educational institutions. In Germany, the expansion of HE makes the national planning more imperative and this portion of planning is moving from the state to the *Lander*. English HE governance is often described as having three layers with close cooperation between all of them.

Table 45. HE System Governance Change 1999-2006

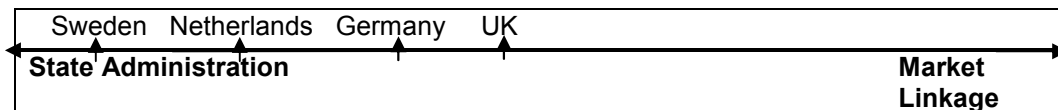
	<b>State vs. market influence</b>	<b>Institutional autonomy</b>	<b>Cooperation between HE system governing layers</b>
<b>Germany</b>	<b>Unchanged:</b> state	<b>Increased:</b>	<b>Increased:</b>

	control prevailing (L)	universities have more power to decide key institutional issues (M)	between national government and Lander (H)
<b>Netherlands</b>	<b>Unchanged:</b> state control prevailing (L)	<b>Increased:</b> universities have more power to decide key institutional issues (M)	<b>Increased:</b> between national government and universities (MH)
<b>UK</b>	<b>Unchanged:</b> state control prevailing (L)	<b>Increased:</b> the organization Universities UK has been established (MH)	<b>Increased:</b> between central government funding bodies and universities (MH)
<b>Sweden</b>	<b>Unchanged:</b> state control prevailing (L)	<b>Increased:</b> universities signed a petition asking for more autonomy (MH)	<b>Increased:</b> between national government and universities (ML)

To sum up, state vs. market influence in general has not shifted (change level L). However, an increased institutional autonomy and strengthened cooperation between governing bodies can be clearly observed.

If to place all four countries on the state market continuum (see page 59), the following picture occurs:

Figure 13. State-Market Continuum – UK, Germany, Netherlands and Sweden



*Participation*

ENTRY RATES. All the studied countries clearly demonstrated increasing participation in HE. The highest growth occurred in the UK, while Germany, the Netherlands and Sweden portrayed similar results.

Table 46. HE Enrollment Numbers – Change 1999-2006

	1999	2006	Change
<b>Germany</b>	292 131	346 873	16%
<b>Netherlands</b>	364 329	407 753	11%
<b>UK</b>	794 410	1 057 805	25%
<b>Sweden</b>	477 250	554 672	14%

Table 47. HE Enrollment Rate – Change 1999-2006

	1999	2000	2001	2002	2003	2004	2005	2006	Change
<b>Germany</b>	29	30	32	35	36	37	36	NA	7% (M)
<b>Netherlands</b>	52	53	54	54	52	56	59	NA	7% (M)
<b>UK</b>	46	47	46	48	48	52	51	NA	5% (ML)
<b>Sweden</b>	66	67	69	75	80	79	76	NA	10% (H)
<i>OECD Average</i>	46	47	48	52	53	53	54	NA	8%

By 2006, all countries had formalized increasing participation agenda which was not the case in 1999.

Table 48. Increasing Participation Agenda

<b>Germany</b>	the government pact states the increase of study places by 90 000 by 2010 and 1 billion funds dedicated to this (H)
<b>Netherlands</b>	In 2050 50% of the labor force in the age group of 25-44 should at least have a Bachelor degree (H)
<b>UK</b>	White Paper of 2003 states the goal of expansion (H)
<b>Sweden</b>	50% of those born in any given year are to have embarked on university education by the age of 25 (H)

ACCESS. When talking about access, there are three main areas of change. The first is that admissions processes to HEIs gained more flexibility. All countries aimed for a larger number of students; which required them to review the admissions processes. Even the Netherlands that had very conservative processes were able to drop a *numerus clausus*. Moreover all countries except England made a significant step forward in allowing HEIs to select their own admissions criteria. In Sweden, this was possible to apply to 10% of the student body where in Germany up to 60%. The Netherlands also allowed HEIs to set their own admissions criteria but within the strict limits. This did not apply to England because here even prior to 1999, HEIs were able to set their own admissions requirements.

Another aspect of the increased access was the attention to distance education. All countries had usually one grant size university that handled all distance education. This allowed students from different geographical areas and with busy schedules to have access to HE.

Table 49. Access – Change 1999-2006

	<b>Flexibility in the admission processes</b>	<b>Flexibility in admissions criteria</b>	<b>Distance education</b>
<b>Germany</b>	<b>Increased:</b> less formal quotas for the transition between the Bachelor and Masters studies (M)	<b>Changed:</b> in subject areas with nation wide excess demand, universities were allowed to select a greater percentage of new entrants according to their criteria (M)	<b>Increased (H)</b>
<b>Netherlands</b>	<b>Increased:</b> abolishment of <i>numerus clausus</i> (M)	<b>Changed:</b> HEIs allowed to set their own criteria, within limits (M)	<b>Increased (H)</b>
<b>UK</b>	<b>Increased:</b> advanced subsidiary courses, which would allow students to follow a larger number of subjects in less depth through half A-level courses (easing admissions). Introduction of foundation degrees. (H)	<b>Unchanged:</b> HEIs were able to have their own admission criteria prior to 1999 (L)	<b>Increased (H)</b>
<b>Sweden</b>	<b>Increased:</b> Preparatory courses for students not able to meet regular admissions requirements. The possibility to transfer from one HEI to another. (H)	<b>Changed:</b> 10% of students can be admitted based on the HEI admissions criteria (ML)	<b>Increased (H)</b>

### *Curricular Governance*

Germany and the Netherlands introduced accreditation systems, Sweden reformed its system and England modified and developed its audit system. Curricular diversity increased in Germany and Sweden and remained unchanged in the Netherlands and UK.

Although Germany and the Netherlands both introduced accreditation systems, the changes in respective curricular governance systems as well as the outcomes were very different. In the Netherlands, an existing peer-review system was transformed and complemented to be able to provide a central, external 'quality label', while the German system moved from state authorization based on input criteria to a decentralized peer-review system. Although Sweden did not formally introduce an accreditation system, the reforms of the system they had included greater emphasis on the quality procedures of the HEIs themselves and external quality appraisal based on risk assessment. England also showed the reform trend toward greater curricular autonomy of HEIs. Between 1999 and 2006, the audit system was transformed and the subject reviews replaced by institutional reviews. These were only complemented by subject reviews in cases of concrete signs of deficiency. The audit was embedded in a wider set of tools for curricular governance referred to as 'academic infrastructure', including the national framework for higher education qualifications.

The reforms in all countries were headed towards finding a new balance between what was seen as desirable curricular diversity. An increase in curricular diversity in Germany and Sweden was achieved by abolition of national curriculum frameworks. In both countries, the abolished curricular frameworks did continue to serve as orientation points however disciplinary and professional associations continued to have a standardizing effect. Informal change – in terms of common practices of the ministerial bureaucracy and accreditation agencies, respectively – was thus lower than formal changes in terms of the adapted regulatory and contractual framework (Kruchen et. al., 2005; Musselin, 2006). In the Netherlands, the introduction of accreditation was associated with neither an increase nor a decrease in curricular diversity. Accreditation criteria were generic and did not interfere with the curricular autonomy of institutions; this was true at least at the system level. Overall, the Dutch and Swedish systems were more successful than the German in beating back informal tendencies to re-regulate. It gave more

curricular autonomy to HEIs in practice, perhaps due to their longer tradition in respect. In England, the efforts of the QAA to establish a qualifications framework for England and Wales increased clarity on qualification levels and associated competencies without interfering with curricular.

Table 50. Curricular Governance – Change 1999-2006

	<b>Nature of curriculum governance system</b>	<b>Degree of curricular diversity</b>
<b>Germany</b>	Accreditation system <b>introduced</b> . <i>Lander</i> responsibility for quality delegated to new national accreditation council and six accreditation agencies, although authorization of programs by <i>Lander</i> ministries partly continues to overlap with accreditation function (H)	<b>Increased</b> : national curriculum frameworks abandoned and curricular innovation encouraged, although disciplinary/professional associations and accreditation agencies continue to exert somewhat standardizing influence (H)
<b>Netherlands</b>	Accreditation system introduced. Creation of national accreditation organization (jointly with Flanders) and visiting committees, building on existing peer-review system. Role of representative organizations of universities and <i>hogescholen</i> limited, role of Education Inspectorate diminished. (H)	<b>Unchanged</b> : no curriculum frameworks as basis for accreditation decision (L)
<b>UK</b>	Move from subject-specific review to institutional audit, introduction of 'academic infrastructure'. Accreditation of private teaching-only HEIs for university status introduced (H)	<b>Unchanged</b> : no curriculum frameworks as basis for accreditation decision (L)
<b>Sweden</b>	Accreditation system changed: unit of analysis is a program or subject (not institution) Increasing responsibility on the institution itself for quality assurance. (H)	<b>Increased</b> : national curriculum framework abandoned and curricular innovation encouraged. Shift from in-depth evaluation of subjects and programs to an assessment of the risk of failure to maintain good standards based on key statistics. (H)

## Funding

Regarding spending on HE, the newest available numbers from the OECD (2007) are for 2005, so a comparison across the full period until 2006 can not be made. Between 1999 and 2006, expenditure on HE as a percentage of GDP changed positively in Germany and the Netherlands and negatively in the UK. Since the OECD mean increased from 1.2 to 1.3% in that period, this means that only the Netherlands and Sweden reached the average.

Expenditure per student increased in all countries and stayed above the OECD average on the whole. The funding level of HE did not change significantly in the period. The English government made significant funds available for HE under the increasing and widening participation agenda, but that was not yet evident in the UK numbers of 2005.

Table 51. Per Student Spending – Change 1999-2006

	1998-1999 academic year	2004-2005 academic year	Change
<b>Germany</b>	10 393	12 254	15% (M)
<b>Netherlands</b>	12 285	13 846	11% (M)
<b>UK</b>	9 667	11 484	16% (M)
<b>Sweden</b>	14 222	16 218	12% (M)
OECD Average	9 179	11 100	17%

Table 52. Public Spending on HE – Change 1999-2006

	Public expenditure on HE as % of total public expenditure			Public expenditure on HE as % of GDP		
	1998-1999	2004-2005	Change	1998-1999	2004-2005	Change
<b>Germany</b>	2.3	2.5	8% (M)	1.1	1.2	8% (M)
<b>Netherlands</b>	2.9	2.9	0% (L)	1.3	1.4	7% (M)
<b>UK</b>	2.6	2.3	(-13%) (N)	1.1	1.0	(-10%) (N)
<b>Sweden</b>	3.7	3.7	0% (L)	2.1	2.1	0% (L)
OECD Average	2.8	3.1	10%	1.2	1.3	8%

With respect to tuition fees and student support changes occurred in all countries, with the least significant change taking place in Sweden because this country does not charge tuition fees. In Germany, tuition fees were allowed and introduced by some *Länder* for 'non-consecutive' and 'experience-related' Masters programs. A political debate on the differentiation of fees was started in the Netherlands, and focused particularly on Masters programs as universities hopes to

raise additional funds for the creation of excellent study conditions. The student support systems were adjusted in Germany and the Netherlands to the transition, but in both countries they were still aimed at student below 30 years, thus only partially supporting the life-long learning agenda. A range of other changes occurred in this dimension in Germany. Most notably, in early 2005 the constitutional court ruled that the national government was not allowed to forbid the *Lander* to charge tuition fees. The English system of tuition fees and students support experienced profound changes in the period. A 'graduate contribution scheme' was accepted in the summer of 2004 to become effective from the academic year 2006-2007 onwards. Upfront undergraduate tuition fees were abolished at the same time that that differential 'graduate contribution' were introduced of up to 3 000 pounds per year. These were to be paid through an income-contingent loan system. Support grants for students from low-income families were reintroduced, effective from the academic year 2004-2005 onwards. In Sweden, legislative changes were passed that made guaranteed financing during the entire postgraduate study period a prerequisite for admissions. The bottom line is that admissions are to be adapted to the resources available, and only as many doctoral student as can be offered supervision and acceptable conditions of study are to be admitted.

Table 53. Tuition Fees and Student Support – Change 1999-2006

<b>Country</b>	<b>Changes in tuition fees and student support</b>
Germany	<ul style="list-style-type: none"> <li>- Fees for 'experience-related' and 'non-consecutive' Masters programs allowed by the Federal HE Framework Act and introduced by several Lander.</li> <li>- BAfoG reform in 1998 introducing student support for 'consecutive' Masters programs, in 2001 to include any Masters programs if student is younger than 30 years old.</li> <li>- Fees for students significantly exceeding regular time to degree introduced by several Lander.</li> <li>- Tuition fees for first degree forbidden by national HE framework act 2002, allowed by constitutional court decision, starting the academic year 2005-2006.</li> <li>- BAfoG reform 2001 broadens student support scheme by lowering eligibility barriers.</li> </ul>

**(H)**

Netherlands	<ul style="list-style-type: none"> <li>- No change in tuition fees in addition to incremental increases, but differential fees for Masters phase debated.</li> <li>- 'Neutral' adjustment of student support scheme to allow for interruption of studies between Bachelor and Master phase, but only up to age of 30.</li> </ul> <p><b>(M)</b></p>
UK	<ul style="list-style-type: none"> <li>- new 'graduate contribution scheme' passed, abolishing upfront undergraduate tuition fees but allowing for contributions up to 3 000 pounds per year, paid through an income-contingent loan system, effective from academic year 2006-2007.</li> <li>- Support grant for students from low-income families reintroduced, effective from 2004-2005.</li> </ul> <p><b>(H)</b></p>
Sweden	<ul style="list-style-type: none"> <li>- Guaranteed financing during the entire PhD study period was made a prerequisite for admissions.</li> </ul> <p><b>(M)</b></p>

### *Quality of Education*

SKILLS ASSESSMENT. It should be noted that analyzing this dimension was a great challenge since no country performs an annual report where it would clearly state how does the business community perceive the skills that HEIs produce. There was minimal research published in this area and all used data for the analysis of this dimension was of a national level. However in each country there were organizations established that intend to start monitoring this more closely and it also indicates that this dimension is important to analyze. Thus for now the analysis of this dimension is more general and does not portray specific changes from 1999 to 2006.

In general, the skills required by businesses changed during 1999-2006 and this could be identified as a high (H) level change. There was a decrease in the population of jobs for which no specific qualifications were required, while the proportion requiring more advanced technology adopted in the workplace. Businesses now find that they require employees to possess an interdisciplinary and broad skill base. These core skills of modern business and industry stand in contrast to the work or task specific skills associated with old production methods.

Table 54. Change in Skills most Required by Businesses

<b>Country</b>	<b>Skills</b>
Germany	Communication, application, organization, independence, resilience
Netherlands	74.6% correctly allocated workers with 15.9% overeducated. No specific report on the most required skills.
UK	Technical and practical skills, customer handling skills, oral communication, problem solving skills and team working.
Sweden	An ability to get along with people, cooperation, a ability to work in a team, a willingness to move between jobs and positions within a company (job flexibility)

**COLLABORATION BETWEEN THE BUSINESS SECTOR AND HEIs.** The collaboration between the business sector and HEIs can best be analyzed through looking at how much revenues HEIs receive from private funds. However this indicator was not reported by any of the countries in 1999. So it is assumed that the change is from 0% to whatever the countries reported in 2006. All countries, except Germany, demonstrated significant growth in this sub-dimension and all countries have clear intentions to continue to increase this collaboration between the business sector and HEIs.

Table 55. Private Funds in the HEIs (as% of total HEIs funds) – Change 1999-2006

	<b>1999</b>	<b>2006</b>	<b>Change</b>	<b>Intention for collaboration</b>
Germany	NA	3%	(M)	
Netherlands	NA	10.4%	(H)	Proposal to the government in 2005 to stimulate the business sector and HEIs collaboration.
UK	NA	11.1%	(H)	Clear intentions to increase the collaboration between the business sector and HEIs
Sweden	NA	11.6%	(H)	Research policy bill stating the need for increased transfer of knowledge between businesses and HEIs.

**UNIVERSITY RATINGS.** The change in this sub-dimension is minimal because no country acquired new science and business HEIs that would be included in the top list of each field according to Financial Times ratings.

Table 56. University Ratings – Change 1999-2006

	<b>Science Universities</b>	<b>Business Schools</b>
Germany	<b>Unchanged:</b> Heidelberg (L)	<b>Unchanged:</b> None (L)
Netherlands	<b>Unchanged:</b> Utrecht University (L)	<b>Unchanged:</b> Erasmus University (L)
UK	<b>Unchanged:</b> Cambridge, Oxford, Imperial College London, University of Edinburg, King's College London, University of Bristol (L)	<b>Unchanged:</b> London Business School, Oxford, Manchester Business School, Lancaster University Management School, Cambridge, Cranfield School of Management, City University, Imperial College London (L)
Sweden	<b>Unchanged:</b> None (L)	<b>Unchanged:</b> None (L)

#### *Transition to Employment*

The transition to employment in general is smooth in every country and has remained stable over the analyzed period. Significantly over 80% of HE graduates are employed in the market.

Table 57. Employment Rate for the Population with HE – Change 1999-2006

	<b>1999</b>	<b>2000</b>	<b>2001</b>	<b>2002</b>	<b>2003</b>	<b>2004</b>	<b>2005</b>	<b>2006</b>	<b>Change</b>
Germany	83	83	83	84	83	83	83	83	0% (L)
Netherlands	87	86	86	86	86	85	86	86	(-1%) (N)
UK	88	88	88	88	88	88	88	88	0% (L)
Sweden	86	87	87	86	86	85	87	86	0% (L)
<i>OECD Average</i>	84	84	85	85	85	84	84	84	0%

Unemployment rate for HE has changed negatively in all analyzed countries.

Table 58. Unemployment Rate for the Population with HE – Change 1999-2006

	<b>1999</b>	<b>2000</b>	<b>2001</b>	<b>2002</b>	<b>2003</b>	<b>2004</b>	<b>2005</b>	<b>2006</b>	<b>Change</b>
Germany	4.9	4.0	4.2	4.5	5.2	5.6	5.5	5.5	(-11%) (N)
Netherlands	1.7	1.9	1.2	2.1	2.5	2.8	2.8	2.8	(-39%) (N)
UK	2.7	2.1	2.0	2.4	2.4	2.3	2.0	2.1	(-29%) (N)
Sweden	3.9	3.0	2.6	3.0	3.9	4.3	4.5	4.4	(-11%) (N)
<i>OECD Average</i>	4	4	3	3	4	4	4	4	0%

Germany made the most ambitious national reform effort to transform the existing mainstream university programs and establish a new entry point to the labor market at the Bachelor level for the majority of graduates. Here the Bachelor degree was legally defined as 'qualifying for profession'. The entry level for *Fachhochschule* education to the labor market was also adjusted. While the regulatory framework for these adjustments was set by 1999, and initial positive signals from employers could be observed, implementation was not compulsory in all *Länder*, and it was also obvious that attitudes in both academia and among employers had not completely adjusted.

Change in the Netherlands was very limited in this area. University Bachelor degree was not intended to prepare for immediate entry into a job and the *hogeschool* degrees were renamed without a requirement to adjust their length or concept. However, both universities and *hogescholen* reformed their curricula in the studied period. In this context, the efforts to broaden university Bachelor education – while differently motivated – were seen to improve the employability of graduates. Although this was not explicitly intended, the university bachelor would become an established entry point, simply because graduates equipped with a Bachelor degree can easily decide not to continue their studies and take the job.

England established an explicitly professional niche program in addition to the mainstream Honors program. This Foundation degree is however only two-years long and builds on the existing HNC and HND which shall be gradually replaced.

In Sweden, university Master degree was formally seen as the point of entry into the labor market. This degree was offered by universities and university colleges. In Sweden it is regarded as an undergraduate degree.

Although the reforms were quite different in regards to the first degree as qualifying for the labor market, it can be stated, that the overall change reflects lowering academic qualifications for the entry point into the labor market. Even if it did not formally happen in the Netherlands and Sweden, the topic was discussed frequently during 1999 – 2006.

Table 59. First Degree as Qualifying for the Labor market – Change 1999-2006

Country	First degree as seen qualifying for the labor market
Germany	Formally changed to Bachelor level (H)
Netherlands	Formally unchanged – Universities Masters level, <i>hogeschole</i> Bachelor level (L)
UK	Remains at Bachelor level, but some ambiguity about Foundation degrees as ‘sub-degree level degree’ which gradually replace HND and strengthens formal labor market entry level after two years of HE (M)
Sweden	Formally unchanged – for Universities Masters level (L)

#### Impact on Society

Population holding HE degree rate grew in all countries above OECD average of 1%. In the Netherlands and Sweden it is being evaluated as high since the beginning (1999) and the ending (2006) points are significantly higher than in Germany and the UK.

Table 60. Population Holding HE Degree – Change 1999-2006

	1999	2000	2001	2002	2003	2004	2005	2006	Change
Germany	22	22	22	23	24	25	25	27	5% (M)
Netherlands	25	27	27	25	25	28	31	33	8% (H)
UK	27	29	29	27	28	29	31	31	5% (M)
Sweden	32	34	37	33	34	35	31	37	5% (H)
OECD Average	26	27	28	23	24	25	26	27	1%

If to look at the earnings change between 1999 and 2006, a negative change in the UK and Sweden can be observed and positive in Germany. Although the overall ratio of earnings (secondary divided by HE) has not changed significantly the; the difference between the value of earnings for secondary schools graduates and HE graduates has remained on average high at 47%.

Table 61. Relative Earnings for 25-64 Holding HE Degrees – Change 1999-2006

	1999		2000		2001		2002		2003		2004		2005		Change
	S*	HE	S	HE	S	HE	S	HE	S	HE	S	HE	S	HE	
G	70	135	71	143	71	NA	74	143	74	153	73	153	73	156	5% (M)
N	NA	NA	NA	NA	NA	NA	84	148	NA	NA	NA	NA	NA	NA	(L)
UK	65	159	67	159	67	159	NA	NA	69	162	67	158	69	158	(-6%) (N)
S	89	131	88	131	86	131	87	130	87	128	87	127	89	128	(-2%) (N)

\* S stands for secondary.

In this section a comparative analysis of four most competitive European countries along eight HE system dimensions was performed. Now the next part will be presented where more analytical generalization will be performed in order to draw some tendencies from the findings above.

### 3.3. EVALUATION OF HE SYSTEM DIMENSIONS AFFECTING NATIONAL COMPETITIVENESS

This section starts by summary of the findings of comparative analysis above in one table. This allows seeing what level of intensity of change was identified in all analyzed countries in eight HE system dimensions and their sub-dimensions.

Table 62. Overall Change in HE System Dimensions and Sub-Dimensions 1999-2006

DIMENSION	SUB-DIMENSION	Germany	Netherlands	UK	Sweden
PREPARATION	Math scores	L	N	N	N
	High school credentials	H	H	M	H
PARTICIPATION	Enrollment rate	MH	M	ML	H
	Increasing participation agenda	H	H	H	H
	Access	M	M	MH	MH
	- flexibility	M	M	H	H
	- admissions criteria	M	M	L	ML
- distance education	H	H	H	H	
INSTITUTIONAL TYPES	Degree types	H	H	H	H
	Cooperation (institutional types)	H	H	M	M
	Institutional autonomy	M	M	MH	MH
	Cooperation (governance of the system)	H	MH	MH	ML
CURRICULAR GOVERNANCE	Nature of curricular governance	H	H	H	H
	Degree of curricular diversity	H	L	L:	H
FUNDING	Per student spending	M	M	M	M
	Public expenditure as % of total public expenditure	M	L	N	L

	Public expenditure as % of GDP	M	M	N	L
	Changes in tuition fees and student support	H	M	H	M
QUALITY OF EDUCATION	The nature of skills needed	H	H	H	H
	Collaboration	M	H	H	H
	University rankings	L	L	L	L
TRANSITION TO EMPLOYMENT	Employment rate	L	N	L	L
	Unemployment rate	N	N	N	N
	First degree as qualifying for the labor market	H	L	H	L
IMPACT ON SOCIETY	Population holding HE degree	M	H	M	H
	Relative earnings	M	L	N	N

When summarizing the table above, the following level of change is observed in every HE dimension and every country.

Table 63. Overall Change in HE System Dimensions 1999-2006

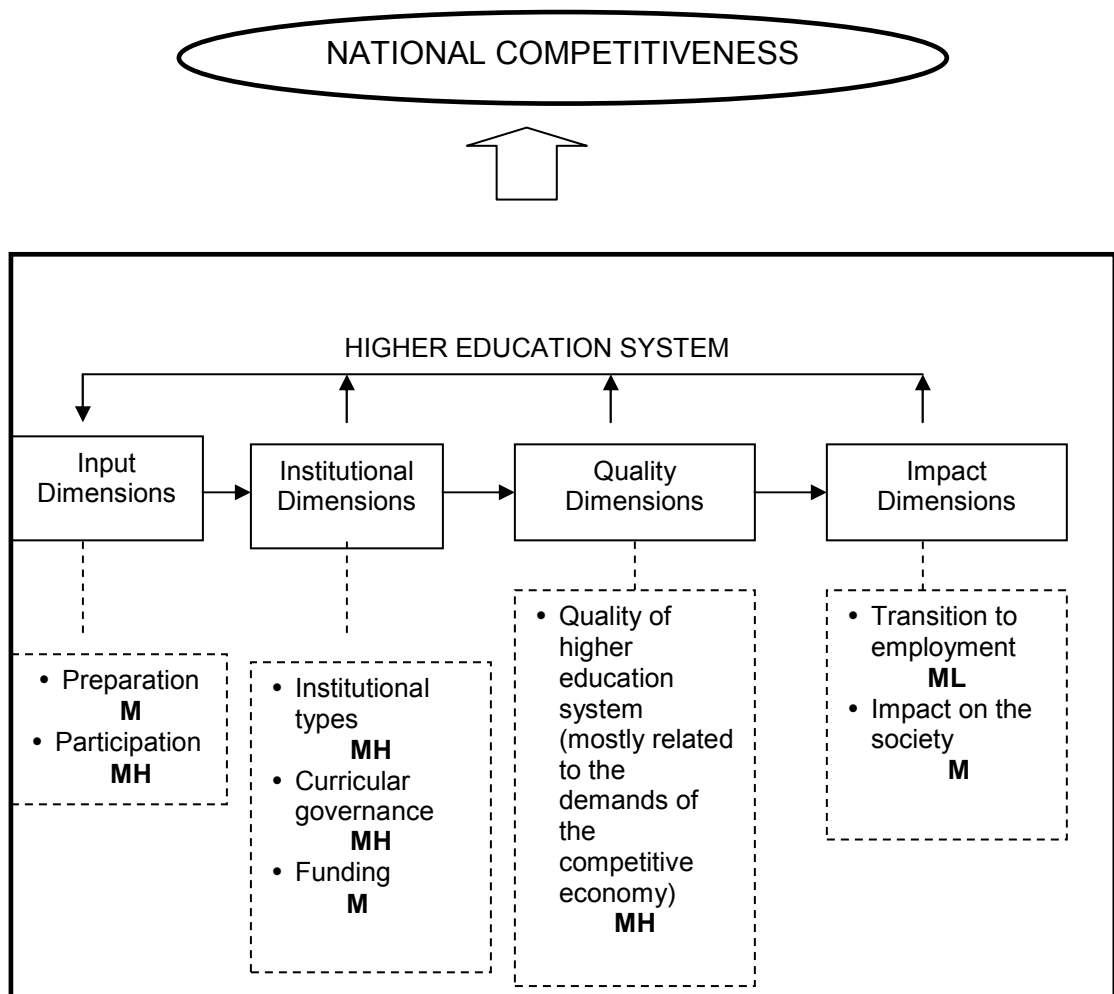
	Preparation	Participation	Institutional types	Curricular governance	Funding	Quality of education	Transition to employment	Impact on society	Overall for every country
<b>Germany</b>	M	MH	MH	H	M	M	M	M	<b>MH</b>
<b>Netherlands</b>	M	MH	MH	MH	M	MH	L	M	<b>M</b>
<b>UK</b>	M	MH	MH	MH	M	MH	ML	M	<b>M</b>
<b>Sweden</b>	M	MH	H	H	ML	MH	L	M	<b>M</b>
<b>Overall for every dimension</b>	<b>M</b>	<b>MH</b>	<b>MH</b>	<b>MH</b>	<b>M</b>	<b>MH</b>	<b>ML</b>	<b>M</b>	

All identified HE system dimensions were **evident** in the HE policies performed by examined countries. Medium and medium high intensity level of change was observed in input dimensions (preparation and participation). Institutional dimensions experienced the most severe level of change with two dimensions –

institutional types and curricular governance – demonstrating moderately high change level and funding dimension portraying moderate intensity of change. Quality dimensions experienced moderately high level of change. The lowest level of change of observed in the impact dimensions, specifically transition to employment dimension demonstrating moderately low intensity of change level and impact on society dimension moderate.

When to put these results into the theoretical model, the following visualization follows.

Figure 14. The Level of Change in HE System Dimensions Affecting National Competitiveness



To evaluate the empirical research results further, it can be said that the most intensive change is observed in participation, institutional types, curricular governance and quality of education dimensions, moderate change took place in preparation, funding, impact on society dimensions and moderate low in transition to employment dimension.

The first analytical observation that is very clear from the table above is that all eight higher education dimensions experienced change during the period of 1999-2006. Change in all the studied cases was a steady ongoing process or, in other words, there were no rapid changes in any areas of the HE system. This is illustrated by the fact that in all dimensions generally observed level of change varied from medium to medium high. Only in Germany and Sweden curricular governance area experienced high intensity change and in Sweden institutional types dimension underwent high level changes. It also should be noticed that all change was positive because negative change did not show up in the above table although it appeared in some sub-dimensions when analyzed individually.

This supports the idea expressed in the theoretical model that HE system, by nature is an open system, which interacts with the external environment. It means that all units of the HE system – inputs, institutions, quality factors and impact dimensions – changed when reacting to the challenge of competitiveness. All the countries responded to the challenge of competitiveness in the European market by changing. The change is crucial requirement for the HE system if a country seeks to be competitive.

The reality of constantly changing HE systems hints to the fact that these systems need to be flexible in order to continually change. HE systems have to drop many bureaucratic regulations, monitor the environment and become structurally flatter, as observed in the comparative analysis. More economic goals of competitiveness require HE systems to draw models from the private sector since accountability, evaluation and corporate responsibility have become a significant part of HE systems. The idea of competitiveness is something that HE systems have almost never had to contend before. In the competitive economy, higher education is becoming a commodity. In this context an important characteristic for the delivery of quality higher education is agility, as programs and processes need to be constantly defined and redefined to match the needs of the external environment. No system can achieve agility without flexibility of the system. This is exactly what the

comparative analysis demonstrated – all countries are striving for flexibility by changing policies in the admissions and accreditation processes, by offering more creative studies options to students (i.e. distance education), by abolishing curricular frameworks, etc. Flexibility also led to the fact the processes in the HE system became more bottom-up than top-down. Governing bodies in HE systems were willing to put more responsibility on HE themselves.

Table 62 also showed that the dimension that experienced the lowest level of change was transition to employment. This supports commonly discussed fact in the competitiveness literature that European labor market has extremely rigid rules, in particular, in the spheres of hiring and firing. Although the HE system in cooperation with the labor market correctly identified the need for lowering academic requirements (i.e. movement towards the bachelor degree becoming the first degree as qualifying for the labor market); in reality, it did not change the employment rate of people holding a HE degree as it remained stable at about 80%. It might be that the effects of this HE system policy are still in the future but at this point the labor market remains a weak area of all countries' competitiveness and HE system is not contributing enough to change that.

The observation above pinpoints to another important finding. HE system has become an important player in many different economic processes so the cooperation between HE system and other bodies of the economy is a crucial requirement to ensure the effectiveness of many economic processes. A country's ability to learn new technologies, to be able to improve the skills of the labor force, to produce goods and services that can reach standards of quality and performance acceptable in the world, to engage with the international markets in the way that are value-creating requires HE system's cooperation with the labor market, with the business sector, with the public sector, with the primary and secondary education sectors, etc. In order for the HE system to contribute effectively to a country's competitiveness it needs to work hand in hand with various other bodies in the economy. The findings of the empirical research clearly support this as many HE systems have increased revenues from the business sector, they cooperate with different public sector institutions, they react to the labor market demands, etc.

If to have performed this study for the period of 1980-1990, the preparation dimension would have had no data available. This shows that inputs part of the HE system has been put on the policy agenda very recently. Partly it supports the

findings discussed above that HE system need to cooperate with other sectors, namely with the sector that prepares inputs for it; however another insight here is that quality of the HE system outputs depends on the inputs that are provided by another sector (secondary education) and they need to be closely monitored and improved. Jointly developed by OECD member countries the Program for International Student Assessment supports this finding. PISA was created to measure how students approaching the end of compulsory education have acquired some knowledge and skills essential for further participation in the knowledge economy that strives for competitiveness.

Moreover it can be stated that funding is important for HE system but most of the changes that occurred in the analyzed systems did not require some kind of additional funding. So change does not necessarily have to be funded. The change intensity level in the funding dimension is moderate and it is mostly related to changes in tuition and student support and to per student spending. Public expenditure as % of total public expenditure and as % of GDP changed very slightly and in some countries even decreased. It supports the fact that in order for HE system to change in seven other dimensions no significant additional funding was required. None of the studied cases assigned more funds to the HE system because they were striving to be more competitive.

Another dimension with one of the highest intensity of change is quality of education. This shows that HE system again needs to react to the external environment. HE system needs to return to the question exactly what forms of knowledge and intellectual skills students need to be effective in the workforce. As research showed, those skills are changing. Necessary workforce skills have changed from one field specific to a broader range of skills. Employers no longer demand employees who know one specific field. Instead they want graduates who are able to adapt to different situations. This leads to further social implications. One of the central tasks that higher education faces in all countries is to ensure that opportunity to participate fully in the society is open to all. With economies striving to become competitive, society's needs for every person are at record high. The more higher education became a gatekeeper for good jobs and the middle class, the more important it is that policies that govern both the system of HE and the institutions themselves take into account the need to ensure that this opportunity is real. This is supported by the fact that graduates from the HE system have a better chance to

enter the job market and earn more. With the increasing importance of HE system in the country's competitiveness; it ought to meet the increasing people's needs and to make them effective and equal players in the society.

In general, the quality and quantity of higher education provided within an economy are critical for competitiveness, for preparing qualified staff for more complex roles in areas, such as a production, marketing, management, and R&D (Lucas, 1988; Kremer, 1993). More generally, the technological adaptation required in a fast changing globalizing world economy demands a large pool of well-educated talent. Higher education and the extent to which countries are able to upgrade their skills and training of the labor force have acquired growing importance as indicators' of a country's competitiveness. A country's ability to absorb new technologies, to produce goods and services that can reach the standards of quality and performance acceptable in international markets, to engage with the rest of the world in ways that are value-creating, is intimately linked to the quality of its schools, to the priority given to training in mathematics and science, and to the existence and accessibility of HE institutions.

It also is useful to observe the general tendencies in all dimensions from the performed comparative analysis. The table below provides a comprehensive list of tendencies in all the examined dimensions of the HE system.

Table 64. General Tendencies in HE System Dimensions

<b>DIMENSION</b>	<b>TENDENCY</b>
PREPARATION	<ul style="list-style-type: none"> <li>- Math scores – all countries intend to monitor this more closely</li> <li>- High school credentials – steadily increasing</li> </ul>
PARTICIPATION	<ul style="list-style-type: none"> <li>- Enrollment rate – steadily increasing (from 5% to 10%)</li> <li>- Increasing participation agenda – every country intends to expand significantly in HE participation numbers</li> <li>- Access               <ul style="list-style-type: none"> <li>--flexibility – admission processes are made more flexible</li> <li>--admissions criteria – HEIs are gaining power to determine their own admissions criteria</li> <li>--distance education – increasing everywhere</li> </ul> </li> </ul>
INSTITUTIONAL TYPES	<ul style="list-style-type: none"> <li>- Degree types – more unification between universities and non-</li> </ul>

	<p>universities degrees</p> <ul style="list-style-type: none"> <li>- Cooperation (institutional types) – mergers and acquisitions of HEIs present and increasing</li> <li>- Institutional autonomy – increasing everywhere</li> <li>- Cooperation (governance of the system) – increasing between the national players and HEIs</li> </ul>
CURRICULAR GOVERNANCE	<ul style="list-style-type: none"> <li>- nature of curriculum governance – accreditation systems introduced; a shift to institutions themselves.</li> <li>- degree of curricular diversity – national curriculum frameworks abolished or do not exist</li> </ul>
FUNDING	<ul style="list-style-type: none"> <li>- per student spending – increasing steadily (from 11% to 16%)</li> <li>- public expenditure as % of total public expenditure – varying (from 8% increase to 13% decrease)</li> <li>- public expenditure as % of GDP – varying (from 7% increase to 10% decrease)</li> </ul> <p>Changes in tuition fees and student support – lower student fees and more student support</p>
QUALITY OF EDUCATION	<ul style="list-style-type: none"> <li>- the nature of skills needed – from specific to interdisciplinary and broad skills</li> <li>- collaboration – increasing</li> <li>- university rankings – unchanged (no national policy)</li> </ul>
TRANSITION TO EMPLOYMENT	<ul style="list-style-type: none"> <li>- employment rate – no change (at 80%)</li> <li>- unemployment rate – increasing (verifications of increase from 2.1% to 5.5%)</li> <li>- movement towards the bachelor degree becoming the first degree as qualifying for the labor market – lowering academic qualifications.</li> </ul>
IMPACT ON SOCIETY	<ul style="list-style-type: none"> <li>- population holding HE degree – increasing (from 5% to 8%)</li> <li>- relative earnings – very slightly decreasing but the difference remains significant (47%)</li> </ul>

This list might serve policy makers in other countries as a comprehensive list of what direction did the most competitive European countries changed their HE

systems through 1999-2006. By this it is not intended to imply that this should serve as guide for other countries where exactly they need to be headed. Every country and every HE system is very different but it is always useful to have examples of the best practices. HE system contributes to the national competitiveness the most when it incorporates a wide variety of factors, policies and institutions. All parts and all levels of the system matter and the external environment is not less important.

In short, in this chapter the change in eight dimensions of HE system in the most competitive European countries through 1999-2006 was examined. Now the conclusions of this dissertation will be presented.

## **CONCLUSIONS**

When European Union heads of state and government met at a summit in Lisbon in 2000, they set the goal of making Europe 'the most competitive and dynamic knowledge based economy in the world'. Today, it is worth remembering that the development of a modern 'knowledge economy' reflects a larger transition from an economy based on land, labor and capital to one in which the main components of production are information and knowledge. Because of that, the most effective modern economies will be those that produce the most information and knowledge and make that information and knowledge easily accessible to the greatest number of individuals and enterprises.

In order to become more competitive economies, countries rely greatly on their HE systems. In this dissertation, it was aimed to evaluate HE system dimensions affecting national competitiveness. The author analyzed what specific changes took place across HE systems dimensions and what tendencies those changes formed. It was looked at the 'what' and 'how' of change. The 'what' of change was revealed in Chapter 1 by identifying HE system dimensions affecting national competitiveness. The 'how' of change was analyzed in Chapter 3 by conducting a comparative analysis of four highly competitive European countries during 1999-2006 across HE system dimensions and critically evaluating the changes that occurred within the context of national competitiveness. Below are several conclusions of the process.

1. After reviewing a combination of theories on national competitiveness and HE system models, the HE system dimensions affecting national competitiveness were identified. They fall into four major categories – input, institutional, quality and impact. Input dimensions are preparation and participation; institutional dimensions group includes institutional types, curricular governance, and funding dimensions; quality dimensions group entails the quality of HE institutions (primarily related to science, management and mathematics); and impact dimensions include transition to employment and impact on society. For operationalization purposes, all these dimensions were divided into sub-dimensions. The preparation dimension includes mathematical scores for high school students and high school credential measuring the extent to which the traditional HE young adult population is minimally qualified to participate in post secondary education. The participation dimension covers enrollment information, national participation agenda and access to HE aspects. The institutional types dimension focuses on the degree types offered by various HEIs,

institutional autonomy issues, and demand/supply HEIs and cooperation between them. The curricular governance dimension considers the nature of the curricular governance system (who has the final say about the curriculum, what is the role of accreditation and evaluation agencies in this regard), and the degree of curricular diversity. The dimension of funding analyzes trends in spending on HE and takes a deeper look at tuition fees and student support systems. The quality of education dimension concentrates on skills assessment by the business community, collaboration of HEIs and the business sector, and quality of science and business HEIs. The transition to employment dimension evaluates the first degree seen as qualifying for the labor market and the employability of HE graduates. Finally, the societal impact dimension analyzes the number of adults with a bachelor's degree or higher and increased income from the bachelor's degree aspect.

2. The above identified HE system dimensions affecting national competitiveness form a theoretical framework designed to critically evaluate changes in specific HE system dimensions in highly competitive European countries. The model indicates that higher education system affects national competitiveness levels. Namely the four groups of higher education system dimensions were identified for further study of this relationship. These groups of higher education system dimensions are input, institutional, quality and impact. Specifically eight HE system dimensions are said to affect national competitiveness. These are preparation, participation, institutional types, curricular governance, funding, quality of higher education system, transition to employment and impact on society.

A three-step research process proceeding in ascending levels of abstraction (from description to evaluation) is used. First, an analysis of changes in HE systems across the eight identified HE system dimensions affecting national competitiveness is performed. This is achieved through in-depth individual case studies of highly competitive European countries – Germany, Netherlands, UK and Sweden. The choice of countries is based on policy relevance and competitiveness rankings. All the chosen countries represent different and the most influential national institutional contexts in the European HE sector (Humboldtian, Anglo-Saxon, Scandinavian and Napoleonic). Based on various competitiveness rankings, the chosen countries remained on the list of ten most competitive European countries during the period chosen for analysis (1999-2006). Second, the cross-case comparison of countries

serves to analyze differences and similarities between changes in HE systems. Third, a critical evaluation of changes in specific HE system dimensions is performed and the intensity level of change and direction of change identified.

3. In order to become more competitive, countries are leveraging their HE systems. All the identified HE system dimensions are important when seeking national competitiveness. The HE system functions more effectively when it incorporates a wide variety of factors, policies and institutions. All parts and all levels of the system matter. The external environment is not less important.

After analyzing the intensity level of change in the eight HE system dimensions it was observed that the most intensive change occurred in participation, institutional types, curricular governance and quality of education dimensions, moderate change took place in the preparation, funding, and impact on society dimensions. Only moderately low change occurred in the transition to employment dimension. In terms of individual countries, the highest intensity of change was observed in Germany and the three other countries shared a medium intensity level of change.

The evaluation of change draws attention to the following aspects. Change in the HE system is a requirement in order for a country to be competitive. All analyzed HE system dimensions experienced a steady positive change during the analyzed period. This supports the idea expressed in the theoretical model that HE system, by nature is an open system, which interacts with the external environment. It means that all units of the HE system – inputs, institutions, quality factors and impact dimensions – changed when reacting to the challenge of competitiveness. All the countries responded to the challenge of competitiveness in the European market by changing. This change is a crucial requirement for the HE system if a country seeks to be competitive.

Moreover if HE systems are constantly changing they need to be flexible. HE systems have to drop many bureaucratic regulations, monitor the environment and become structurally flatter, as observed in the comparative analysis. All countries are striving for flexibility by changing policies in the admissions and accreditation processes, by offering more creative study options to students (i.e. distance education), by abolishing curricular frameworks, etc. Flexibility also led to the fact that the processes in the HE system became more bottom-up than top-down.

Governing bodies in HE systems were willing to put more responsibility on HE themselves.

In addition the cooperation between the HE system and other players of the economy is an important precondition for the country's competitiveness. A country's ability to absorb new technologies, to be able to upgrade the skills of the labor force, to produce goods and services that can reach standards of quality and performance acceptable in international markets, and to engage with the rest of the world in ways that create value requires the HE system's cooperation with the labor market, with the business sector, with the public sector, and with the primary and secondary education sectors, etc. In order for the HE system to contribute effectively to a country's competitiveness it needs to work hand in hand with various other bodies in the economy such as the business sector, the labor market, the secondary educator sector, etc.

The inputs dimension of the HE system is gaining increasing importance in the policy area. The quality of the HE system outputs depends on the inputs that are provided by another sector (secondary education) and they need to be closely monitored and improved. Jointly developed by OECD member countries, the Program for International Student Assessment (PISA) supports this finding. PISA was created to measure how students approaching the end of compulsory education have acquired some knowledge and skills essential for further participation in the knowledge economy that strives for competitiveness.

It can be stated that funding is important for the HE system, yet most of the changes that occurred in the analyzed systems did not require additional funding. Thus, change does not necessarily have to be funded. The change intensity level in the funding dimension is moderate and it is mostly related to changes in tuition, student support and to per student spending. Public expenditure as a percentage of total public expenditure and as a percentage of GDP changed very slightly and in some countries even decreased. This supports the fact that in order for the HE system to change in seven other dimensions no significant additional funding was required. None of the studied cases assigned significant funds to the HE system because they were striving to be more competitive.

4. A comparative case analysis of HE systems in Germany, Netherlands, UK and Sweden revealed the following tendencies in HE system dimensions. In the

preparation dimension, all countries started to monitor mathematics scores more closely and, in general, high school credentials have steadily increased. In the participation dimension, the greatest tendency was towards increasing national participation agenda since every country had major intentions to expand significantly HE participation numbers. Enrollment rate has steadily increased in the analyzed sample. In terms of access to HE, admissions processes are becoming more flexible and HEIs are gaining power to determine their own admission criteria. Distance education is increasing everywhere and is gaining significant attention. In the institution types dimension, there is a tendency for unification between universities and non-universities degrees, cooperation between national players and HEIs and between HEIs themselves as well as increased institutional autonomy. In the curricular governance dimension, national curriculum frameworks have been abolished or do not exist. The nature of curricular governance is shifting to HEIs and accreditation systems introduced. The funding dimension faced minimal changes – a general tendency here is that student fees decreased and student support increased. Financing of HE as a sector increased only slightly in analyzed countries. In the quality of education dimension, the nature of skills the HE systems are required to produce changed dramatically from specific to interdisciplinary and broad skills. Collaboration between the business sector and HE has grown. In the transition to employment dimension, the tendency is towards lowering qualifications for the first degree as qualifying for the labor market where the bachelor's degree is increasingly becoming the entry point. Generally, it is quite easy for HE graduates to enter the labor market. With regard to societal impact, the overall population holding HE degrees is increasing and that group is earning significantly higher incomes.

5. Based on the completed research, several recommendations can be provided for HE policy makers in relatively less competitive European countries. However it should be kept in mind that every country and every HE system has its own peculiarities and they should be dealt with. The recommendations are based on the tendencies of the best practices in Europe and that makes them reliable. The HE system contributes most to national competitiveness when it incorporates a wide variety of factors, policies and institutions.

HEIs collectively value highly their stability and their ability to survive for long periods of time without revolutionary change. The value structure that has evolved for

HEIs is one that creates high barriers to entry for new players and numerous barriers to rapid change. However, stability is no longer an asset in HE and HEIs should prioritize change.

The agenda to increase national participation should be accepted by countries to increase the overall enrollment numbers in HE. When countries introduce increasing participation agendas, they need to make their admissions processes more flexible such as no *numerus clausus*, HEIs selecting their own criteria, etc. Also, HEIs need to increase competitive pressure through more vigorous applications of well known approaches. Internet mediated distance education is one example. Through distance education the HEIs can compete in a manner which eliminates many previous size and geographic limitations on competition.

Skills highly correlate with the individual's performance in the labor market and the country's ability to compete. HE systems should focus on developing broad and interdisciplinary skills since these are the most required by the labor market.

Countries should aim to improve international and national mobility, to improve recognition, to make joint efforts to strengthen the quality of HE and to engage in dialogue between HEIs themselves and different sectors of society. Cooperation at all levels is obligatory for HE system to enhance competitiveness.

Curricular governance should be oriented towards HEIs. They should be granted the opportunity to build their own curriculum frameworks rather than having national curriculum frameworks imposed by governing bodies.

Countries should look for creative ways to help students afford HE. A wide spectrum of student financing tools needs to be developed. Further, countries should move towards the bachelor degree becoming the first degree for the labor market. Countries should not forget the quality of the inputs to HE. Monitoring fundamental skills (such as math) and ensuring high school enrollments greatly contributes to the quality of HE and thus to the country's competitiveness.

An educated workforce is one of the major factors of competitiveness. The key is to put people at the center of HE policies. For policy makers this should mean investing in people, increasing knowledge and skills, establishing life-learning opportunities, ensuring full participation in society and assisting the workforce in becoming more adaptable. All of this will lead to significantly higher competitiveness.

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