Mendel University in Brno
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Level of construction industry in the Czech Republic, Austria, and the EU

Diploma thesis

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Abstract
Bc. Hanáková, M. *Level of construction industry in the Czech Republic, Austria and the EU*. Diploma thesis. Brno: Mendel University in Brno, 2015.
This diploma thesis deals with strategic analysis of construction environment in the Czech Republic, Austria and the European Union. It focuses on suggestions of strategies for the Czech businesses based on deep assessment and comparison of level of industry environments in selected areas. Evaluation of the sector is provided from the perspective of factor conditions, demand conditions, strategy, structure and rivalry, and supported and related industries. Based on elaboration of the sectors in selected areas opportunities and threats are determined for building construction forming the background for formulation of strategies and recommendations. Among all, three basic strategies are develop and that is to implement "green" building in form of timber-framed construction, to focus on building of developer projects of residences for elderly to enhance the declining demand for construction works, and lastly to prepare for implementation of Building Information Modeling system, which is new data-based software capable of informing about the whole life-cycle of construction from design to demolition.

Key Words
Strategic analysis, Industry analysis, Porter's Diamond, Construction sector, Building Construction

Abstrakt
Bc. Hanáková, M. *Úroveň odvětví stavebnictví v České republice, Rakousku a Evropské Unii*. Diplomová práce. Brno: Mendelova Univerzita v Brně, 2015.
Tato diplomová práce se zabývá strategickou analýzou stavebního odvětví v České republice, Rakousku a Evropské Unii. Na základě podrobné evaluace a porovnání úrovně odvětví ve vybraných oblastech se tato práce zaměřuje na navržení strategií pro české stavební firmy. Odvětví stavebnictví je analyzováno z hlediska faktorových podmínek, podmínek poptávky, strategie, struktury a rivality, a v neposlední řadě také podpůrných a příbuzných sektorů odvětví stavebnictví. Na základě rozboru jednotlivých oblastí v českém, rakouském a evropském stavebnictví jsou determinovány příležitosti a hrozby pro pozemní stavitelství, které slouží jako podklad pro návrh strategií a doporučení. Mimo jiné jsou formulovány tři základní strategie. Využít trendu udržitelného „zeleného" stavebnictví v podobě implementace výstavby dřevostaveb, věnovat pozornost developerské výstavbě rezidencí pro seniory a podpořit tak klesající poptávku po stavebních pracích. Poslední strategie navrhuje připravení se na implementaci informačního modelování budovy BIM, nový databázový software, který sesbírává informace o celém životním cyklu stavby od návrhu až po demolici.

Klíčová slova
Strategická analýza, analýza odvětví, Porterův Diamant, stavebnictví, pozemní stavitelství

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1 Introduction

Construction sector plays a significant role for national economy. It creates tangible property for public and private sector, it urbanizes the landscape for people and cultivates natural environment. Construction is important for population because it creates housing, infrastructure, leisure, sport and cultural facilities. From the economic point of view, construction output contributes greatly to Gross Domestic Product. It is typical for its cyclicality as it fluctuates along business cycles and thus in accordance with development of output of the economy. It represents important segment of employment as it can employ also low-skilled labor and thus to lower social tension in society. Construction industry has a high multiplication effect supporting for instance employment in other sector such as supplying sector, industry and transport. Moreover infrastructure building enhances the competitiveness of countries. Therefore construction industry is a branch that should be taken seriously as far as its level of development.

Current situation in the field of construction is very unwelcoming. Moreover in recent times, construction industry in Europe is one of the most observed branches of national economies due to negative impacts of economic downturn. Economic slowdown in the whole Europe has origin in world financial crisis in 2008, which was followed by economic crisis. Negative development was very identical in all European countries. Nevertheless some countries have already recovered but some countries including the Czech Republic are still fighting the downturn.

Entrepreneurship nowadays is quite tough. It is a period of turbulent changes. The external business environment of each operating firm is a determinative factor for future survival of a company and decisive factor whether to enter certain market or not. Simply attractiveness of an industry is a fundamental for decision-making whether to start a business or not, or whether to leave the market or keep fighting.

In order to decide it is necessary for business leaders to assess the industry in which they want to operate. Any branch or industry can be evaluated on the grounds of different elements and factors. For instance from the strategic management point of view, an assessment of political, legal and economic outlook as well as of social-cultural and environmental development plays important role in analysis of the business environment. Also perfect knowledge of competitors and their strategies is essential source of advantage. As one says “keep your friends close but your enemies even closer.”

Running a construction business is not simple deal anymore. CEOs of firms are not just bosses but have to be good leaders and strategists in order to succeed in this fast-paced world. Survival of the fittest as Darwin claimed is very true in business environment as well.

Construction industry as any other branch adapted to changed perception of customer. This customer-oriented approach evolved to the point that every

firm is forced to fulfill what customer (investor) desires. If not others will. Within-the-budget, on-time-schedule, quality-with-no-defects, and flexibility, these are the keywords on which investors hear.

Strategic evaluation of business environment, especially of the outside setting of the enterprises that is often uncontrollable, is very critical. Not only one has to consider the competition but also the size of the market, flexibility and interconnections with the supplying industries, the stage of life cycle of the whole branch, whether the market is profitable and what are the barriers to enter. The remaining businesses and potential new entrants for their decision-making should know all of these factors.

Such evaluations should be an ongoing process and part of strategic planning of every entity. They reveal the attractiveness of the branch and prepare background for forming strategies and recommendations. Based on these sources some future scenarios can also be drawn which can help to adjust firms' goals and strategies.

Assessment of external setting of construction businesses in European countries is nowadays quite challenging but interesting topic to elaborate. As the financial crisis stroke all of the European countries the results of the evaluation might not be as positive as in the period of construction booms. However it may show how each country faced the development of the external setting differently.

Neighboring countries, the Czech Republic and Austria are both members of the European Union have a similar population size as well as geographic area. However there exist many differences in the external environment of businesses operating within these two countries. Those two countries together with the EU average were chosen for elaboration in this thesis.

2 Objectives and Methodology

2.1 Objectives

The objective of this diploma thesis the assessment of current level of construction industry and of its stage of development mainly in the Czech Republic and Austria, and linked to the average of countries of the European Union. Based on the evaluation of the business external environment in selected countries, the thesis aims to formulate possible strategy for remaining businesses and potential new entrants of the construction market in the Czech Republic. By application of analytical methods used in field of strategic management, the thesis tends to recommend improvements to the Czech construction companies on the grounds of comparison of achieved results in selected countries.

2.2 Methodology

As far as structure, this diploma thesis is divided into two major parts. The first part accounts for literature review, which demonstrates the theoretical background of examined topic, more specifically the theoretical knowledge of professional experts in strategic management. The second part is the practical part that implements the explored theoretical models into the evaluation of the Czech, Austrian and on average European Union's construction industry.

Methods used for the purpose of this thesis are mainly analytical used in strategic management to provide quantitative description and identification of the attributes of researched events.

In particular, the evaluation of the level of the industry of the abovementioned countries is depicted by Porter's Diamond. Such model involves four groups of factors influencing the level of the environment (Strategy, structure, and industry rivalry, Demand conditions, Factor conditions, and Related and supported industries). Moreover factor conditions are elaborated with a help of so-called PESTE analysis, which involves evaluations of political, economical, social, technical and ecological factors of a business environment. The assessment of rivalry is built upon Porter's model of Five competitive forces (force of current competitors, force of potential competitors, force of suppliers, force of customers, and force of substitute producers) enlarged with Grove's 6th force of complementors. Organizational strategies are identified by elaboration of secondary sources. Assessment of supplying and related industries as well as the demand conditions is based on statistical input data depicting the development of these aspects.

Based on the theoretical review of strategic models, comparison of assessment of the different construction external environments is done with a presumption that each industry reveals certain elements (opportunities and threats). Significant resulting threats and opportunities are further critically weighted in accordance with the importance for the sector. Opportunities and

threats are then applied for formulation of strategies and recommendations for the Czech constructors. Concrete resulting recommendations are interpreted from the economic perspective, mainly by quantification of necessary resources used to employ the recommended strategies. For computation of economic viability, formula of return on investments (ROI) and return on sales (ROS) is used.

$$ROI = \frac{Net\ profit}{Initial\ Investment}$$

$$ROS = \frac{Net\ profit}{Sales}$$

As far as sources used for this diploma thesis, primary sources are mainly literature sources of the strategic management experts and of the authors of construction management publications. Also input data are gathered from the official statistical offices of the Czech Republic, the Czech Statistical Office and of Austria, the Statistik Austria. The primary source of data is however Eurostat, which uses the same methodology and therefore provides data, which are hundred percent comparable. Also primary data are collected from personal interviews of managers of construction firms and from internal documents of firms.

Secondary sources of data are mainly official publications of public institutions including Ministries, Chambers and European institutions, professional magazines and journals (Stavebnictvi), and other reliable Internet sources.

3 Literature Review

3.1 Construction Management

Construction management is very complex area of study. According to Harris & McCaffer (2013) it covers four areas: 1.) site construction management – management of the physical production; 2.) project management – management of all functions that help to complete certain projects; 3.) organizational management – management of participants in the construction; 4.) sector management – management of industry through formation of facilitating business environment.

Construction management involves many diverse actions, which need to be accomplished to produce or alter buildings and infrastructure. Such actions comprise design and management decisions, which are based on variety of negotiations of owners, customers, construction specialists and different legal and financial entities. People, component parts, materials, tools and equipment, and machines, time are resources to be coordinated within field of construction management (Radosavljevic & Bennett, 2012).

Mrs. Jackson identifies different functions of construction management such as planning, scheduling, evaluation, and controlling to be undertaken to realize specific goals. In order to reach the set objectives, effective allocation of resources is important because it minimizes the construction costs on the one hand, and maximizes customer satisfaction on the other (Jackson, 2010).

According to publication Construction Management Strategies, there are 7 basic and essential construction actions to be completed to construct a new facility. These are preparing a brief, designing, planning, procurement (tendering), manufacturing, producing, and commissioning. "*Ensuring the actions are undertaken effectively, efficiently and on time is construction management*." (Radosavljevic & Bennett, 2012)

More precisely, the first essential construction action is to prepare a **brief**, a detailed document that determines what the new facility must provide and lists all the possible limitations and constraints including finance, safety, and time, etc.

The second essential action is to prepare a **design**, clear depiction of the construction fulfilling the requirements set in the brief. A design represents paper based drawings and specifications of the new facility. Drawings are also recorded in electronic three-dimensional form, which is able to detect required resources and can determine the duration and costs of necessary actions.

Preparing a **plan** is the third fundamental action involved in construction management. Mostly, it includes document as a project execution plan, a time schedule of all action for completion, financial budget, cost plan deliberately specifying how and on what the budget will be spent. Also it determines the organizations necessary to produce the new facility. Briefly, "a plan should form a basic framework, which ensures that design, plan, all actions of procurement,

manufacturing, production, and commissioning are undertaken efficiently, safely, at times, costs and quality standards, which satisfy the requirements of the brief." (Radosavljevic & Bennett, 2012)

The fourth essential construction action is **procurement**, actions when companies are selected to undertake the direct production of the new facility. This includes procurement of materials and other supplying firms. Procurement occurs in the mean time between design and plan preparation. Such procurement or sometimes called a tendering process involves competitive bidding. George Offori in his book The Construction industry presents a definition of tendering process used by Flangen and Norman (1985) that it is "a sealed bid auction where construction contracts of unknown costs are allocated to contractors on the basis of sealed bids (based on incomplete information) submitted by them." He adds that the criterion for selection is mainly price (1990). According Radosavlijevic & Bennett, in procurement process there is usually a great emphasis on competitive biding, which results in tough contracts that only focus on individual interests and hence it all leads to inefficient performance.

Manufacturing is the fifth essential construction action and involves all actions connected with manufacturing of components prior to the delivery and installations to the site. Large components such as big steel columns cannot be produced on the site but have to be prepared in advance. The delivery and assembly right on time when it is needed is also critical part of managerial activities in construction.

The sixth essential construction action is **production**. This activity is usually the one, which others think that construction is all about – to build. Production is basically transforming materials and installing components into the new facility.

The seventh and last essential action is **commissioning**, which includes the actions when the completed facility is tested in order to verify that it functions according to the customer requirements, design objectives and specifications (Radosavljevic & Bennett, 2012).

Moreover to these seven construction actions, Jackson (2010) distinguishes three different types of project delivery methods how construction management is carried out:

- Design-bid-build method – it is a three-party method, where designer (the planner) and constructor communicate through the owner. It is usual method when owner contracts a designer who will prepare the design / plan of the project. Then by procurement or competitive bidding owner chooses on constructor.
- Construction management delivery method – providing construction management services to the owner independently. Then construction manager works as advising entity to the owner in the part of design and then real construction part.
- Design-build delivery method – two-party method, where owner signs contract with a designer who then is also the main constructor.

This method is very simple, and efficient since it decrease number of groups involved and therefore it became very trendy.

3.1.1 Environment of construction industry

Concerning the management in construction industry, one may say that it offers an exciting and dynamic environment full of distinctive projects, diverse problem solving, and hence requires creative and innovative approach to work. Since construction environment involves unique projects, classification of market sectors is necessary. According to the International Standard Industrial Classification of All Economic Activities, there are two sectors of general construction:

- Construction of buildings
- Civil engineering

Construction of buildings comprises of *Residential buildings* (family houses, apartment houses - dwellings) and *Non-residential buildings* (factories, assembly plants, offices, hospitals, schools, hotels, stores, restaurants, parking garages, indoor sport facilities, religious buildings, warehouses).

On the other hand civil engineering includes: motorways, streets, bridges, tunnels, railways, airfields, harbors, irrigation system, sewerage system, pipelines, electric lines, outdoor sport facilities (2008).

European Classification of Economic Activities so-called NACE uses similar classification of activities as mentioned above. In order to reliably compare international statistics, it was necessary to establish such classification that is common and available to all entities and is based on common statistical standards. Construction is part of sector F with division 41, 42, 43. 41 accounts for construction of building, 42 represents civil engineering, and 43 states for specialized construction activities involving demolition, site preparation, electrical installations, plumbing, heating, air conditioning, plastering, flooring, and painting. Some of the activities of code 43 are usually called trades or crafts (Eurostat).

3.2 Strategic Management

Strategic management is a branch of general management. The expression management is very broad term that is not easy to define. There is not single formula that would stand for the term management. It has been defined as an activity and functions to be executed, as a social process since it deals with people, as a discipline and science that can be studied and generally applied. Also management may stand for group of people, leadership, profession, as well as it is viewed as it seeks goals.

There have been many authors focusing on the area of business management. For instance Peter Drucker (1974) says "*management denotes both a function and the people who discharge it. It denotes social position and authority, but also a discipline and field of study.*" More precisely he considers management as tasks, people, and discipline.

Most of the contemporary management publications define management as the process of accomplishing organizational goals and objectives effectively (doing the right things to accomplish a goal) and efficiently (doing things right without wasting resources) through certain functions such as planning, organizing, leading and controlling the human, material, and financial resources which are present. (Hannagan, 2008).

Managers or leaders in an effort to attain the agreed targets must choose firm strategies to overcome and adapt to the environment that they are facing, and which is very turbulent. A good strategy and its implementation is a cornerstone of business survival.

3.2.1 Evolution of strategic management

Origin of strategic management dates back to the history of wars where kings were the managers of their armies and had to form strategies to win over their enemies. Therefore strategic management originates in militaristic terminology. Armies and analogically businesses need strategy to give direction, to utilize resources in the most effective manner, and to coordinate the decisions made by different individuals.

The first author on strategy is well-known Chinese military general and strategist Sun Tzu, who wrote about strategy in his piece called Art of War 500 BC. This writing has become a foundation for many publications on strategic management. His quotes on strategy are still applicable to the world of business today. For example he says "*to know your enemy, you must become your enemy"* (transl. Wing, 1988).

Evolution of strategic management went through long development. In 1950 it was more about a financial budgeting when management focused more on control of operating budgets. In 1960 management was more about formal corporate planning, which included economic forecasting. Within another decade the management shifted more to strategy creation and focused more on positioning a company in market and comparison of the competitors. Nevertheless still keeping in mind profit maximization efforts. Hence period of 1970 was a time when the term strategic management appeared for the first time. Thanks to Michael Porter, American professor at Harvard Business School, the central attention was at so-called competitive advantage gained through analysis of competition and of business environment.

Continually, 1980's were more about analyzing the industry profitability. However 10 years later, the emphasis of strategic management was put on the internal environment of a firm examining the capabilities and resources, which were suddenly the source of competitive advantage. In the first decade of new millennium, strategic management was altered by face-paced technological progress and Internet and affected the development of industries. Emergence of new business models, such as blue ocean strategy, was a basis for strategic innovations.

Currently the development of strategic management is no longer about having a long-term competitive advantage but more about being able to flexibly respond to change and create at least temporary advantage. Approaches to strategic management were also reformed due to negative implications of crisis in 2008. Topic of corporate social responsibility and collaboration within network of strategic alliances is the main theme of strategic management in concurrent management studies (Grant, 2010).

3.2.2 Definition of strategic management

The term strategic management can be broken into two determinants, strategy and management. Strategy is the mean through which objectives can be reached. It is a plan of goal-oriented actions. It sets the directions and navigates through the uncertain environment full of threats and opportunities. Management, on the other hand, is mixture of fundamental managerial functions such as planning, organizing, leading and controlling. Hence the aim of strategic management is to plan and form strategies, organize necessary resources and then implement and control given strategies (Hanzelkova, Kerkovsky, Mathauser & Valsa, 2013).

Very concurrent definition of strategic management uses FitzRoy, Hulbert, and Ghobadian (2013), who say that it is "*a process that involves leadership, creativity, passion and analysis, building an organization that both generates and responds to change, ensuring necessary resources are developed and allocated to worthwhile opportunities.*" They continue that generating value of a running organization is the main aim of strategic management in today's unpredictable and challenging environment.

Top managers who perform activities aimed at attainment of long-term directions commonly realize strategic management. Firstly they set a company's mission, which is a statement that expresses long-term purpose or reason for existence of the firm. Mission is usually linked to vision, which describes "final" desired state or development, where company want to be in the far future. By mission and vision statement top managers declare certain goals that they want to reach. Particular goals are embedded in to strategy formulation. It is common that goals or objectives of a strategy are defined by using a framework called SMART goals. The acronym stands for goals that should be Specific, Measurable, Acceptable, Realistic, and that should have a Time frame to be realized. (Hanzelkova, Kerkovsky, Mathauser & Valsa, 2013).

Nevertheless for an appropriate strategy formulation it is necessary to execute **strategic analysis of business environment**. Any start-up company or mature enterprise must continually monitor and evaluate its business surroundings and internal development. In order to prepare a sustainable but flexible and responsive strategy, managers must perform strategic analysis of its environment. Every analysis decomposes the whole to parts, which are subsequently elaborated and then evaluated how they influence the whole. Strategic analysis of business environment applies the same scientific method. More spe-

cifically, strategic analysis breaks down business environment of management into two sections: analysis of external business environment and of internal environment. Category of external analysis is further broken down into specific elements that have impact on the business environment.

Strategic analysis of external environment

The external environment is unpredictable and sometimes uncontrollable setting. Rapid change, turbulent period, uncertainty are conditions that are nowadays usually present in the external environment of businesses. Hence such situation forces managers to continually scan the setting and to analyze the past and current development to be able to forecast the future happenings and trends. Thus analysis of external environment (general and task environment) should result in conclusion what threats and opportunities certain environment generates (Hanzelkova, Kerkovsky, Mathauser, Valsa, 2013).

To be precise some authors such as FtitzRoy, Hulbert, and Ghobadian (2012) distinguish three levels of environmental analysis. These are: analysis of remote environment, industry environment, and competitive environment[1] (see Figure 1).

Concerning the **remote environment**, the classification represents the same as the general or macro-environment. However it puts greater emphasis on the breadth of factors, which may have powerful influence on strategy. Such broad scope of socio/technical/economic environment is expected to affect a number of industries.

As far as the **industry environment**, it signifies the environmental deviations that affect all competitive firms in a specific industry; probably in distinctive way. Competitive forces of industry proposed by Michael Porter usually represent analysis of an industry structure. Moreover the level of competitiveness and possibility to gain competitive advantage within the industry is usually evaluated by Porter's diamond, which represents four basic groups of factors that affect the level of a branch.

Analysis of **competitive environment** according to FitzRoy and others represent all changes in customers, direct and indirect competitors that impact the competitive strategy of a particular business unit. Examples are: emergence of new channels of distributions, new customer values, new competitive products, etc.

The researched factors gained from analysis of individual environment should lead to conclusion of opportunities and threats that arise in the external environment. The method to conclude the results is called **ETOP method**. The abbreviation stands for *Environmental Threat and Opportunity Profile*. This method divides the industry into different sectors (analyzed issues) and evaluates their impacts as a threat, opportunity or neutral influence. Finally appro-

[1] For the purpose of this thesis only the industry/branch environment will be further elaborated. Still analysis of industry combines commonly used tools and frameworks usually assigned to assessment of the remote and competitive environment.

priate strategies can be formulated to utilize opportunities and avoid threats (Hanzelkova, Kerkovsky, Mathauser & Valsa, 2013).

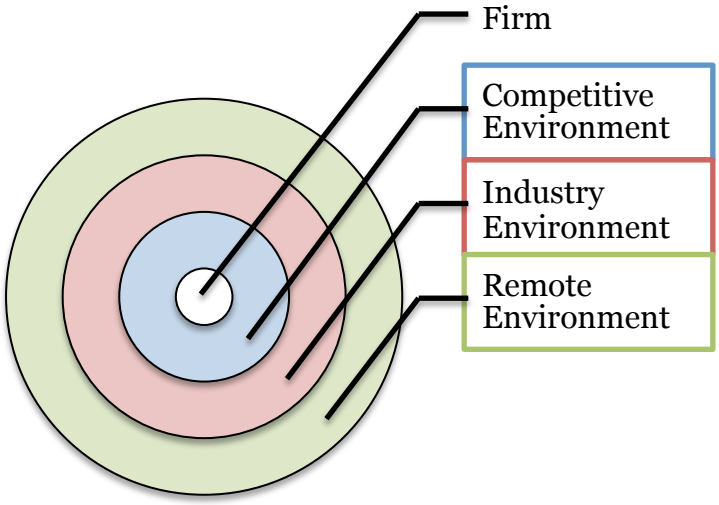


Figure 1 Levels of environmental analysis
Source: FitzRoy, Hulbert, Ghobadian (2012), edited by author

3.2.3 Formulation of strategies

Strategic assessment helps to generate incentives in form of input variables for formulation of strategies. Strategic management distinguishes different types of strategies, which lead to attainment of a company's objectives. There are strategies based on so-called SWOT analysis, strategies presented by Ansoff, generic strategies introduced by Porter, and other different diversification and integration strategies. These types of strategies are further elaborated in subsequent chapters.

When formulating a strategy it requires a number of strategic decisions. The main issues to be considered are: where is the company aiming to compete (including vertical and horizontal positioning), how is the company desiring to compete, how or is the company planning to grow (including selection of growth path and innovation) (FitzRoy, Hulbert & Ghobadian, 2012).

Strategies of SWOT analysis

A useful framework for strategic analysis of a firm's environment is supposed SWOT analysis, which integrates results gained from analyses of internal and external environment. The first half of abbreviation SWOT describes factors of internal environment, which result in either Strengths or Weaknesses. The second half of this acronym stands for factors analyzed in external environment, list of Opportunities and Threats. These two perspectives of business environment are than recorded into the matrix (see Figure 2). This so-called SWOT matrix is a framework that helps to generate four types of strategies based on

the four inputs of the analysis. Grasseová, Dubec, & Řehák (2010) name these strategies as follows: searching, utilization, avoiding, and confrontation.

Internal Factors / **External Factors**	**Weaknesses (W)**	**Strengths (S)**
Opportunities (O)	**WO strategy "Searching"** Overcoming a weakness by taking advantage of opportunity	**SO strategy "Utilization"** Taking advantage of a strength to support an opportunity
Threats (T)	**WT strategy "Avoiding"** Minimization of a weakness and avoiding a threat	**ST strategy "Confrontation"** Taking advantage of a strength to turn away a threat

Figure 2 SWOT matrix
Source: Grasseová, Dubec, & Řehák, 2010, edited by author

Examples of strategies:
- *Searching*: overcoming insufficient production capacity by cooperation with competitors
- *Avoiding*: buying a license when products are not competitive to overcome the danger of low demand.
- *Utilization*: a firm with sufficient resources (human, physical, financial resources) utilize opportunity of unsaturated market
- *Confrontation*: eliminating a threat of potential new entrant by acquisition of different business and hence strengthening market position.

Strategies by Ansoff

Ansoff, Russian American business manager introduced concept of four types of strategies based on combination of two criteria: new/existing market, new/existing product (see Figure 3). His 2-by-2 matrix focuses on strategic decision in regards to product/market growth.

	Existing market	New market
Existing products	MARKET PENETRATION	MARKET DEVELOPMENT
New products	PRODUCT DEVELOPMENT	DIVERSIFICATION

Figure 3 Product/market growth strategies
Source: FitzRoy, Hulbert & Ghobadian, 2012, edited by author

Market penetration aims to increase a sale of currently existing products on established markets by intensification of marketing efforts to acquire more customers. Market development strategy focuses on presentation of existing products on new markets. Product development is a strategy aimed at effort to develop new products to satisfy customer needs on existing markets. Diversification is intended to develop new products for new markets and hence diversify business risk.

Strategies by Porter

Michael Porter is representative of generic strategies. He claims that a company can gain competitive advantage only by two ways:

- offer the lowest delivered price to the customer
- provide a differentiated product

Cost leadership strategy requires understanding the cost drivers as scale of economies, having limited product range, utilization of production capacity, geographic location, institutional factors (taxes and fees, legislature), etc. Offering the lowest possible price often include downsizing. This type of strategy is appropriate when there is not opportunity for product differentiation,
Differentiation strategy is based on supposition that a firm wants and is able to offer product or service with features that are unique and valuable to customers in comparison to competitors' offerings. Hence the firm can charge higher premium. Differentiation is one of the ways of how to reduce a threat of high negotiating power of buyers who are more than willing to buy pricy but unique products.

Porter also introduced *segmentation strategy* or sometimes called focus strategy. Such strategy supposes division of industry into target segments in order to perform either cost leadership or differentiation strategy in certain target segment and thus to gain competitive advantage. Segmentation is based on ability of a business to identify a group of customers, who has specific needs and expectations (Kozak, 2011).

Diversification

Diversification strategies are based on principle of extension of a company's portfolio of activities generally to new industry. This strategy is usually selected in following situations:

- Industry, where a firm operates, does not have growth potential and thus the firm 's growth is limited,
- Industry, where the firm wants to enter, is attractive and promises higher profits
- Firm has free capital and wants to utilize it effectively
- Portfolio of firm's activities enables to diversity risk and hence to eliminate negative impact of failure of some other activities

- Firm wants to manage synergic effect of economies of scale.

Diversification strategy can be implemented by: acquisition, merger, subsidiary formation, or expansion of production capacities. Textbooks distinguish different groups of diversification strategies: Concentric diversification, Conglomerate diversification, Horizontal diversification, and Divesture (see Figure 4).

Diversification strategy	Description
Concentric	Addition of new products and services, which are related to current main activities of a firm
Conglomerate	Addition of new products and services, which are not related to current main activities of a firm
Horizontal	Addition of new products and services, which are not related to current main activities of a firm but are intended to be sold to current customers
Divestment	Narrowing portfolio of a firm's activities

Figure 4 Types of diversification strategies
Source: Ticha, Hron, 2011, edited by author

Integration strategies can be divided *vertical integration* and *horizontal integration strategies*. Vertical integration occurs when a firm acquires or develops a business, which is the current concern of either their customers (forward integration) or their suppliers (backward integration). In other words, a business under strategy of forward integration enters the buyers' market because it wants to have bigger influence on its product distribution and delivery to customers. This strategy is appropriate in situation when a firm has expensive or unreliable distributors. Example is opening new shopping centers.

Concerning the backward integration a business enters supplier's market to have control over the supplies of materials and other inputs. Again reliability and price of suppliers is the usual determinant for consideration of this strategy. For instance furniture producers buys share in a sawmill.

Implementation of vertical integration strategy can be done by acquisition, merger, by establishment of subsidiary, by buying an ownership in another company, or by expansion of activities.

Horizontal integration aims to gain control over the competition by acquisition of competing firm, or just by buying an ownership or by merger.

Nevertheless both integration strategies try to eliminate negotiation power of buyers or suppliers introduced in the Five competitive forces model by Michael Porter. (Kozak, 2011).

Blue oceans strategy describes how organizations can approach the market space to enter uncontested market, hence appeal to new group of customers. "*Blue oceans mean all the industries not in existence today, where demand is created rather than fought over.*" These industries with great growth and profitability potential can be created in two ways. A company can introduce totally

new industries (eBay – online auction industry) on one hand, and on the other hand a company can alter the boundaries of an existing industry (so-called red ocean with tough competition) (Kim & Mauborgne, 2005).

As mentioned above a strategy has its roots in military strategy where kings tried to win over the competitor, however approach of blue ocean strategy is completely different. It aims to create yet not existing markets where there are no competitors. Moreover, compared to traditional strategies, it rejects the trade-offs between low cost and differentiation strategy. It denotes that both of these strategies can be attained simultaneously. As an example is shown Cirque du Soleil, a company performing circus within theater, which stripped away costs (no animals, starring performers, expensive tent) but offered value (theme and story line, music, lightening, timing of acts). Kim and Mauborgne (2005) call this approach Reconstructionist view, compared to the old *Structuralist* and *Environmentalist view,* where "*structural conditions are given and firms are forced to compete within them.*"

Strategies for declining industry

Strategic management defines 4 main strategies that a firm can apply to deal with a decline of industry:

- Leadership – strategy that aims to develop position of market leader within the declining industry by taking the market share of companies leaving the market. Such strategy should be adopted in case that company has advantageous strengths and can capture the demand and intensity of competition in declining industry is moderate
- Niche – strategy that focuses on certain segment where the demand is relatively stable or declines very slowly. Such strategy should be adopted when a firm has unique strengths relative to the niche segment, where demands remains quite strong
- Harvest – strategy tries to reduce its assets (stop investing) and hence cost structure (cutting costs) in order to optimize its cash-flow. This strategy should be used when firm know that it will leave the market since it expects a sharp decline, intense competition and does not possess distinctive strength.
- Divestment strategy – strategy when company decides to leave the industry by selling all assets early (Hill, Jones, & Schilling, 2014).

3.2.4 Analysis of branch environment

Evaluation of industry environment is vital prerequisite for a strategy formulation. When analyzing an industry, it is fundamental to observe basic characteristics of an industry and main underpinnings of industry structure.

Industry can be defined as a group of firms that offer goods or services that are close substitutes for each other, and thus products that satisfy the same basic customer's needs (Hill, Jones, & Schilling, 2014).

There are several industry characteristics to be described: market size and geographic scope, market growth, industry life cycle, level of competitiveness of industry, number of competitors and their relative size, dependency of industry on different factors, and profitability and attractiveness of industry. These characteristic factors of industry are general results of application of different analytical methods used in field of environmental analysis. (Posvar & Erbes, 2002).

In order to systematically evaluate the level of branch environment, it is purposeful to use Porter' diamond of 4 different elements (see Figure 5). Each factor in this diamond has essential meaning in branch environment. The better each category performs, the higher possibility for a firm to succeed, gain and keep competitive advantage (Slavik, 2009).

Porter's national diamond framework

In the beginning of this chapter, different characteristics of industry environment were mentioned as determinants to be analyzed. Among these factors Posvar and Erbes (2002) assign also the level of competitiveness of industry. Subsequently as a tool or a framework to determine the level of industry, these authors use Porter's diamond of national advantage, which focuses on assessment of competitive advantage.

Porter in his effort to analyze international competitive environment of a business comes up with a diamond of four aspects, which describes sources of competitive advantage on national and international level, in other words a framework that explains how companies succeed beyond national borders.

This model is based on a notion that there exist striking differences in the patterns of competitiveness in every nation. He compares competitiveness at national level to productivity, since the principal goal of a nation is to produce high standard of living for its citizens. In order to depict competitiveness at national level, one must understand the determinants of productivity and has to look at different industries not at the national economy as a whole. He claims that nation's competitiveness depends on the capacity of its industry to innovate and upgrade. The answer why some industries are able to innovate or overcome obstacles to change is explained within Porter's model (1990).

Porter's national diamond framework comprises of four attributes that form the playing field for industries, and which is always established by individual nations. In other words, such attributes form the characteristics of nation, which allow its companies to create and sustain competitive advantage in particular fields. These attributes are: Factor Conditions, Demand Conditions, Related and Supporting Industries, and Firm Strategy, Structure, and Rivalry (see Figure 5).

All of these aspects are interconnected. Effects of one are dependent on the state of the others. Therefore this model of four aspects of nation's competitiveness works as a system, where weaknesses of one element impact the industry's potential for improvement.

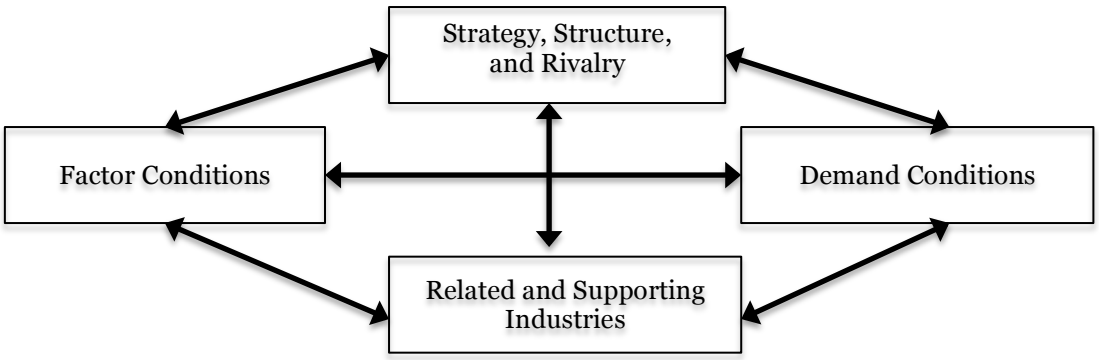


Figure 5 Determinants of national competitive advantage
Source: Porter, 1990, edited by author

These four attributes will be further examined in following chapters. However it is important to mention the influence of **government** that stays aside the model. Government's role on one hand is to establish legal system and institutional structure that creates business environment motivating firms to gain competitive advantage, and on the other hand it must not propose such policies, which in the long run hurt firms instead of help. Government should stimulate businesses to higher competitive performance indirectly by creation of such business setting that enables firms to gain competitive advantage. Porter (1990) uses Japan as an example of country with correct involvement of government, where the role of government shifts according to the progress of economy its stage of competitive development.

Fundamentally, government should be supportive and encourage innovation through certain policies. These are for example: concentration on specialized factor formation, avoid intervention of factor and money markets, enforce safety, product and environmental standards, constraint direct collaboration among industry competitors, promote goals that lead to sustained investment, deregulate competition, etc. (Porter, 1990).

3.2.4.1 Factor Conditions

This category comprises of factors of production including natural resources, skilled labor, telecommunications, or infrastructure – highly specialized resources to an industry's needs and which are not inherited but rather "homemade" and their advancement is significant for sustaining a nation's competitive advantage (Porter, 1990). Moreover it includes nation's legal system enabling or regulating entrepreneurship, natural resources and their suitability for particular industries (agriculture, heavy industry), education and standard of living linked to costs of workforce, etc. (Posvar & Erbes, 2002).

For analysis of factor conditions it is necessary to understand that conditions within industry are very dynamic and turbulent. Therefore it is necessary

to be able to adapt to uncertainty and complexity that these conditions may encounter (Grant, 2010).

There exist many different ways how to analyze factors of environment that influence business companies. Common tool for analysis of such factors, in other words, the general environment is PESTE analysis. This framework evaluates the macro-level environmental factors that a company faces from the external business environment. Such analysis is commonly used to describe the external remote environment as mentioned above.

The main aim of **PESTE analysis** is to predict and forecast future trends of the area in which company operates (region, nation, international environment). The abbreviation of PESTE stands for external factors classified as Political, Economic, Social, Technological, and Ecological factors. Some authors only uses the first four classifications (PEST analysis), some authors also include the fifth category of Legal factors (PESTLE).

Concerning the **political** factors, these are often also connected with the legal factors and stand for development and changes in legislature involving state regulations, recommendations, and municipal decrees. Political and governmental stability may also determine the state of business environment including the degree of corruption, approach or attitude to international trade, taxation policy and process of integration.

Economical factors define the macro-economic trends within certain area. Statistical offices use these factors as determinants of state of economy. The major indicators are: trend of GDP, interest rate, inflation, and unemployment. Another valuable statistics includes monitoring of investments, consumption, and energy prices.

Among the **social** factors belong especially determinants regarding demographics trends of population, migration of people, level of education and standard of living, also the life style and consumption characteristics. Some authors add to this category also the cultural influences including religious views. Cultural aspect of society has become an issue to be considered by businessmen when they move their business from domestic to foreign countries.

Pace of technological progress is extremely rapid and such movements have pervasive influence on firms and their strategy. Therefore, **technological** factors are important determinants of business landscape. Examples to be evaluated are for instance expenditure on Research & Development, new discovery and innovations, overall level of technological progress, and also speed of moral obsolescence (Kostan & Suler, 2002).

The final category of analysis of the remote environment is assigned as **environmental** factors. Certain environmental variables such as environmental legislation, carbon emissions, global warming, social responsibility, and sustainability are issues that may have significant impact on companies' future prospect. Therefore it is necessary for managers to deal with these topics since there has been increasing pressure given by different regulatory requirements with respect to the environment on business management (FitzRoy, Hulbert, Ghobadian, 2012).

3.2.4.2 Strategy, Structure, and Rivalry

The second group of conditions that determine the competitive advantage of nation and hence level of development of an industry describe diversity of managerial systems and rivalry within certain industry.

The way companies are managed, organized, and established differs among different countries. According to Porter there is no universal managerial system applicable everywhere. Different goals, strategies, and structures of firms determine competitive advantage of firms.

The other aspect that Porter emphasizes in terms of enhancing the competitiveness is that intense domestic competition is driving force for innovation, efficiency, and ability of firms to upgrade. Local rivals pressure each other to lower prices, to improve quality of products and services, to come up with new process and products (1990).

The higher the level of development of management (knowledge and capabilities of managers), the more intense the competition and rivalry, the quicker technological progress, and thus the more developed industry (Posvar & Erbes, 2002).

In order to analyze this category of Porter's diamond, which focuses on competition and strategy formulation to survive, it is necessary to implement other perspectives of strategic analysis of external environment. It is essential to identify such factors, which are determinative for gaining competitive advantage. In other words, look at the *industry competitive structure*, *rivalry and relative competitive position*, and hence prepare a background for a *strategy* formulation.

Michael Porter (1985) as a guru on analysis of industry environment and on competition developed framework of the *Five competitive forces* to understand the **competitive structure of an industry**. According to his theory, the industry structure is constituted from factors, which affect all firms within certain industry. These determinants are generally divided into five categories: existing competitors, potential entrants, substitutes, suppliers and customers. Hence buyers, suppliers, and competitors are variables to be analyzed, and which affect profitability of an industry. Through assessment of an industry Porter explains its attractiveness, however, he claims that results of the evaluation should serve as guidance for strategic decision (2008).

Porter's analytical framework assesses industry attractiveness, which is characterized by interplay of five competitive forces: threat of new entrants and substitutes, and competition from established rivals, the power of buyers and suppliers (see Figure 6)

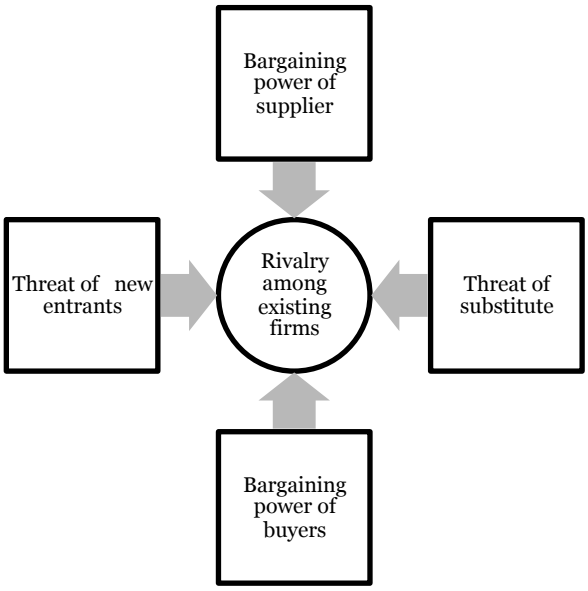


Figure 6 Porter's five forces of competition framework
Source: Porter, 1980, 2008, edited by author

The strength of each force is determined by a great number of various underlying drivers. Nevertheless each industry observes only several structural factors of these forces that are relevantly important.

- Threat of new entrants – new firms desire to gain certain market share, hence put pressure on prices and costs and thus on the profitability. Therefore the threat of entry depends on entry barriers. The higher the barrier, the lower the threat and hence the higher profit to share with established firms (the more attractive industry). Examples of barriers to entry are: capital requirements, economies of scale, customer switching cost, incumbency advantages, (technology, location, raw material), an access to distribution channels, and restrictive government policy (Porter, 2008).
- Threat of substitutes – the more close substitute products certain industry or industry segment have, the more likely customer tend to switch to similar alternative. Hence when price of a product changes buyers will substitute. The sensitivity to switch is given by buyers' propensity to substitute. When a threat of substitutes is high, industry profitability lowers.
- Rivalry among established competitors – intense competition limits the profitability, hence lowers the attractiveness. The higher the concentration of established competitors, the worse coordination of prices and the higher likelihood of a price-cutting. Excess capacity and high exit barriers also depress industry profitability. On the other hand the more differentiated products and firms are, the weaker price competition tends to be.
- Power of buyers – powerful customers means price reductions by competition and thus lower profitability. The bargaining ability of customers depends on a few factors: price sensitivity (responsiveness to price

change given by importance and differentiation of a product, and quality) and relative bargaining power (given by size and concentration of buyers relative to suppliers, buyers' information, and ability of buyers to integrate vertically) (Grant, 2010).

- Power of suppliers – supplier power depends on amount of switching costs buyers face, whether the product is differentiated with no close substitutes, on concentration of suppliers relative to buyer. The higher the bargaining ability of supplier that the more money spent on supplies of materials and component, the lower the profitability (Porter, 2008).

Summary of how the five forces influence the profitability of industry is briefly described in following table (see Tab.1).

Tab. 1 Influence of the five forces on profitability

Force		Result			Reason
IF threat of entry	↑	Profitability	↓		Prices ↓ Costs ↑
IF threat of substitutes	↑	Profitability	↓		Prices ↓ Costs ↑
IF rivalry intensity	↑	Profitability	↓	because	Prices ↓ Costs ↑
IF power of suppliers	↑	Profitability	↓		Costs ↑
IF power of buyers	↑	Profitability	↓		Prices ↓ Costs ↑

Source: Magretta, 2012, edited by author

This structural analysis of industry environment by Porter was updated and enhanced by American businessman, Andrew Grove, who restated the category of substitute products and enlarged the model with sixth force.

Grove, former chairman of Intel Corporation and professor of strategic management at Stanford University, revised the term substitutes. Instead of threat of substitutes given by Porter, he identifies such force "*possibility that what your business is doing can be done or delivered in different way*." He assumes that this force is the most damaging. New techniques, technology and approaches can destroy old manners and fundamentally change the climate of business. In his book Only the Paranoid Survive (1999), he uses examples such as emergence of air transportation and trucking at the expense of railroad transportation, construction of shopping malls and superstores at the expanse of small local stores.

His second and major contribution to industry analysis is that he adds sixth force to Porter's model: "*the power, vigor and competence of complementors*", which was according to his view neglected from the assessment. He calls this group "fellow-travellers" as firms that follow the same business road pursuing the same interest, offering complementary products that support each other. Complementary products are goods or services, which cannot be used independently but always with some other goods or service. Hence one product adds value to the other, when the two are used together. Thus when complementary products are used in tandem it better satisfies customer demands. Examples are computers and software, or skis and ski boots.

Grove's emphasis on substitutes and complementors was based on economic theory that these types of products impacts demand and profitability of industry. When complements are critical variable of demand within certain industry, then industry profits depend on a sufficient supply of the complementary products. Moreover when number of complementors is increasing and producing attractive complements, demand increases and opportunity for value creation raises and thus profitability of industry. However when complementors are very powerful they can extract the profit out of industry in which they are producing the complements (Hill, Jones, & Schilling, 2014).

However, Porter still argued against adding complementors as the sixth force to the model, since he claimed that it is only worthy when it affects the overall demand for an industry's product. He said that it is a common pitfall that neither complements, nor technologies and government determine industry profitability. These factors impact profitability only through the effects they have on the five forces (presence of complements may increase or decrease barriers to entry, may affect the threat of substitutes as well as other forces). Their involvement in an industry does not necessarily mean good (bad) for industry profitability (2008).

Rivalry within industry

Previous model that analyzed industry structure led to determination of industry's potential for profit. Nevertheless it is important for a competing firm to decipher how this profit is then going to be shared among the competitors. In other words, it is necessary to understand the relative position of a firm among competition. In order to gain certain market share the fundamental is to acquire competitive advantage. Porter considers competitive advantage as a tool for creating value and thus as a tool to differentiate from competition (Magretta, 2012). Hence sources of competitive advantage are necessary to assess since these factors are determinants of survival and prosperity for a firm. These factors are called the key or critical success factors.

Critical Success Factors are a limited set of aspects or key areas of a business where things must go right for a firm to prosper and gain competitive advantage, and hence to reach preset goals. Critical success factors can be found within different levels of business environment. According to Rockart (1979), sources of critical success factors can be: industry specifics (e.g. demand and competition), competitive strategy of firm, macro-environmental factors (see Chapter 3.2.2.1.), temporal factors and managerial position[2] (Howell, 2009).

Nevertheless, identifying key success factors within the competitive environment, which uncovers the relative position among competitions, means that two categories must be analyzed: customers and competition. Basic framework is presented in Figure 7. Concerns that are questioned in this model result in specification of key success factors.

[2] Temporal and managerial factors as a source of critical success factors are subject of analysis of internal environment, which is not presented in this thesis.

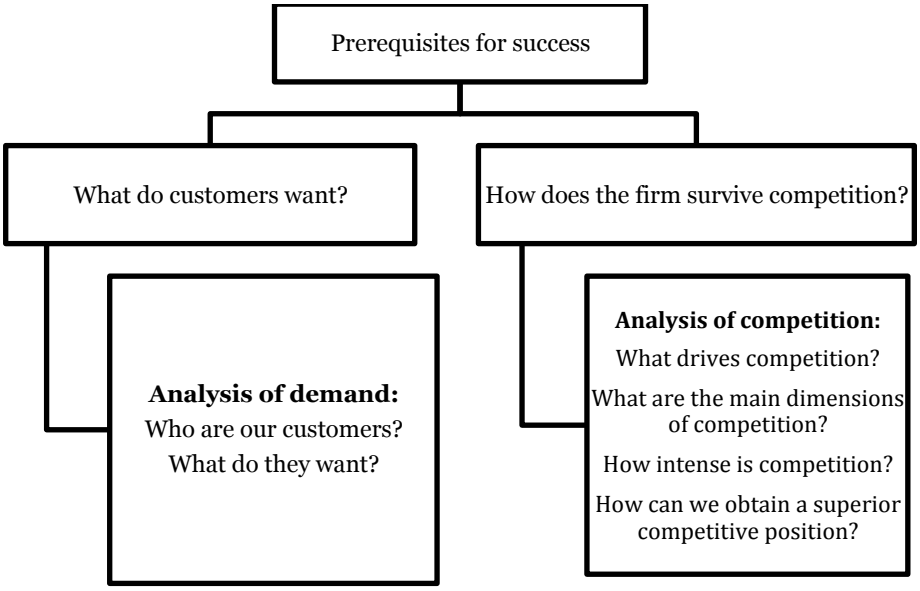


Figure 7 Identifying key success factors in competitive environment
Source: Grant, 2010, edited by author

Example of determination of key success factors based on analysis of demand and competition Grant (2010) presents on retail industry of supermarkets. By answering the questions above he realizes that customers prefer: low prices, convenient location, wide range of product adapted to local preferences, good quality of product and services, parking. In this industry, competition in regards to price depends on number and proximity of competitors, bargaining power a critical determinant of cost of bought-in goods. Thus key success factors are to provide low cost, which require operational efficiency, large aggregate purchases, low wage cost, and differentiation, which requires large stores for wide product range, convenient location, familiarity with local customer preferences[3].

In order to provide a correct explanation of key success factors, which enable firm to gain competitive advantage, it is essential to analyze direct competition from different perspectives based on diverse criteria. One of the many tools to assess the microenvironment is to form strategic maps of competing groups. This so-called **strategic group mapping** focuses on strategic groups that exist in industry, hence provide different view on industry. Strategic groups comprises of rivals with similar market approaches. These groups are distinguished from others by e.g. used business strategy, product quality, price level, geographic markets, reputations, technical progress, intensity of marketing activities or size of a business.

[3] Analysis of demand will be further assessed in following chapter, which aims at analysis of demand conditions specifically.

As mentioned above this analysis uses mapping technique to depict differences among strategic groups (see Figure 8). Two axes are assigned with two evaluating criteria and hence two-dimensional map is formed. Manager who undertakes such analysis can create many maps based on different criteria and thus can determine the competitive position of a business from different viewpoints. A map construction is done in five steps: 1. Evaluating criteria are defined, 2. Based on assessment of competitors firms are recorded into the map, 3. Companies that appear close to each other form strategic groups, 4. Ellipse or circle is then drawn around these clusters, 5. Strategic map is evaluated.

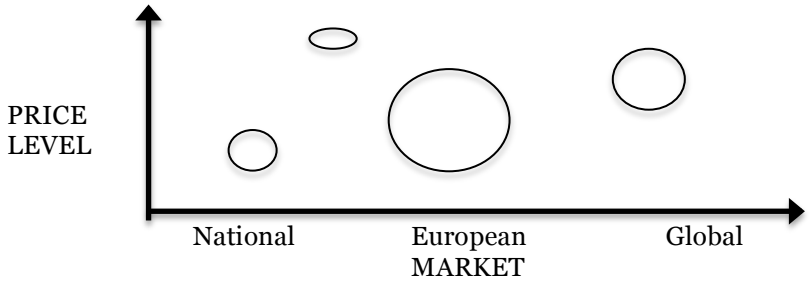


Figure 8 Strategic map
Source: Kozak, 2011, edited by author

Another analysis that focuses directly on competitors can be based on the comparison of a firm with competing firms within an industry. Indicators that are compared within such analysis are for instance turnover, costs, ability to innovate, quality, reputation, and production capacity utilization. The aim of **analysis of direct competition** is to uncover the firm's position among other competitors, which contributes to strategic choice. First step is to identify rivals (this can be drawn from strategic group mapping). In the next step it is necessary to formulate comparative criteria. Third step draws comparison of the identified competing firms based on predetermined measures assigning them different ranks. The last step is to define the causes of deviations and its analyses (Kozak, 2011).

As mentioned above it is proposed to depict at what stage of life cycle the industry currently is. It is essential to analyze the stage of development of any branch, since time alters the strengths of competing forces that form the structure of industry as it evolves (Hill, Jones, & Schilling, 2014).

Industry life cycle model involve five sequential stages in the evolution of an industry, and hence classify five types of industries: embryonic industry, growth industry, industry shakeout, mature industry and declining industry (see Figure 9).

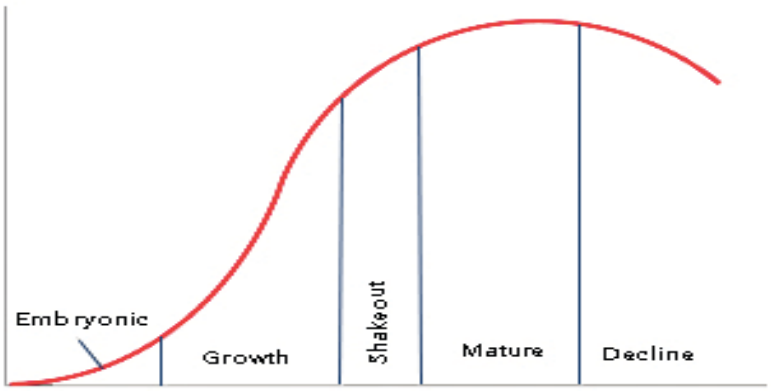


Figure 9 Stages in the Industry Life Cycle
Source: Hill & Jones & Schilling, 2014, edited by author

Embryonic industry is industry that is just beginning to develop with slow growth due to lower demand given by the unfamiliarity of industry's product. In such stage industry does not use advantages of economies of scales nor of diverse distribution channels. Barriers to entry are based on technological knowhow rather than brand loyalty. Rivalry in this phase is more about educating customers and perfecting the design of the product within industry.

Growth industry is a phase when customers become familiar with the product and demand starts increasing due to the attainment of economies of scale by a few companies and certain distribution channels were established. Barriers to entry are quite low and hence potential for new entrants is higher, however the competition is not intense yet.

Industry shakeout is third stage of industry evolution, which is described by slowdown of growth because demand is approaching saturation point since fewer first-time buyers remain. Hence rivalry intensifies. Also being accustomed to growth, overproduction often occurs and therefore companies must cut prices to get rid of it. Such situation leads to price wars, which cause firms leaving the industry and deterring new entry.

Mature industry means that market is saturated, demand is limited, growth is almost zero, exception may occur if there population growth. Intense competition and price wars in shakeout force companies to minimize costs and to start building brand loyalty (e.g. frequent flier programs). Hence mature stage enters only the leftovers that operate efficiently at low-cost and built strong brand-loyalty with customers. This creates high barrier to entry. Companies are interdependent and avoid price wars. The demand is relatively stable.

Declining industry is the final stage of industry evolution. Growth becomes negative thanks to substitutions, social changes, demographics, etc. Competition again intensifies and also the excess of production capacity emerges as demand is falling. Height of exit barriers plays a role to reduce the excess. Companies cut prices and price wars emerge (Hill, Jones, & Schilling, 2014).

Before strategies are formulated, it is recommended to forecast the evolution of different industry elements to the future. Technique named **Scenario Forecasting** is an instrument that managers can use to audit the environment and to envision long-term future. The main aim of scenario planning is to generate an alternative view of what the future could be.

Nevertheless recognition and diagnosis of future is very complicated and difficult and moreover the results are still uncertain. Therefore David Mercer developed simple process of scenario planning, which requires only six steps:

1. *Decide drivers for change* – this step follows environmental analysis and aims to identify important factors (drivers for change), which will be decisive determinants of the nature of the future environment, where the a firm operates. The second part of this step is to allow brainstorming to determine variability and flexibility of drivers. This step is finalized by selection process based on rule 80:20, so that the focus is only on limited number of the most important issues.
2. *Bring drivers together into a viable framework* – the goal of this step is to identify the linkages between factors (e.g. technology progress may affect market development and vice versa) and organize them into meaningful patters. In this step intuition of managers plays important role.
3. *Produce initial seven to nine mini-scenarios* – the outcome is stated number of mini-scenarios derived from previous logical groupings of drivers.
4. *Reduce to two to three scenarios* – Reduction of scenarios aims to get the fundamental insights of really important issues that affect the organization. Recommended two scenarios should be complementary which avoid choosing single preferred scenario, hence it does not necessarily means optimistic and pessimistic scenarios. These scenarios need to be tested for viability, whether they make sense and are realistic.
5. *Write the scenarios* – this step involves writing up scenarios in most suitable word form for managers who are going to base their strategy on them.
6. *Identify issues arising* – the final step of the process is to examine the scenarios and thus generate what are critical issues potentially generating crisis in the future (Ambrosini, Johnson & Scholes, 1998).

Thanks to elaboration of the environment and researching influential factors, the final step can be made; strategy formulation. By synthesis of results from provided strategic assessments of business environment, a basis for a generation of different strategies is built. Different types of strategies were already elaborated in Chapter 3.2.3.

3.2.4.3 Demand Conditions

This second group describes the landscape of domestic market demand for the industry's products. It involves both the structure and the character of home-demand. However the size of domestic buyers is less significant than their characters. Yet highly sophisticated demands of customers on quality standards, durability and function influence the level of industry since the most demanding buyers create competitive advantage for firms to be gained. Buyers challenge the companies to enhance, to innovate and upgrade. Porter emphasizes that a nation grasps competitive advantage in industries where firms receive signals of emerging buyers' needs in advance and well defined (1990).

For instance, great examples are the Swiss who suffer from obsessive punctuality and thus support superiority of the Swiss producers of watches; or Japanese who are enthusiastic about photography and hence pressure the cameras innovation (Grant, 2010).

Highly demanding customers and supply is greater than demand it positively affects the level of environment and on the other hand when the demand is larger than the quality of level of industry is negatively affected.

Nevertheless Porter (1990) signifies three characteristics of demand:

- **Home demand composition** – this characteristics determine how companies perceive, interpret and respond to customer's needs. *Segment structure of demand* is important to evaluate, because some segments can grasp large share of home demand but can be unsuccessful abroad. Another factor of elaboration of home demand to is to access the *buyer's level of sophistication* as mentioned above. Complexity of buyers does pressure firms to enhance its products and operations. Final component of home demand is *anticipatory customer needs*, which show how quickly and early customer manifest what they desire. Successful segment of market, sophisticated buyers and early reflecting buyers are predisposition for gaining competitive advantage.
- **Demand Size and Pattern of Growth** – it is necessary to consider the *size* of home demand. Extent of home demand (and size of a market) can be critical for firms. With so many buyers firms can implement economies of scale, invest into technology development to improve productivity. According to Mceachern (2012) demand indicates how much of a product are buyers willing and able to buy at given price level. However size of demand can also be expressed by number of buyers within given market (corresponds to market size). Another aspect of this characteristic is the rate of *growth* of home demand. Growing demand is prerequisite for quicker new technology adoption and efficiency increase.
- **Internationalization of Domestic Demand** – this characteristic stands for mechanism that transforms preferences of home demand to international markets. This enables firms to gain competitive ad-

vantage since it transfers nation's products abroad. For instance, a preference of high quality German cars by German citizens is often transmitted to other foreign buyers who then desires too the high standard cars.

3.2.4.4 Related and Supporting Industries

This last aspect of Porter's diamond describes supplying and related industries. According to Porter when suppliers offer most cost-effective inputs efficiently, early, and quickly, then it brings a competitive advantage to the industry, thus to a nation. Yet low quality and standard of products and services from supplying and supporting industries (technologies, material and components) decelerate the competitive level of the industry, which uses these variables in assembly of its final product (Posvar & Erber, 2002).

However the strength of national competitiveness is enhanced when supplying and related industries tend to associate into so-called clusters, close working relationships. These associations benefit from information flow and technological interchange, which accelerate the innovation (Porter, 1990).

Pavelkova and collective (2009) defines a cluster as a group of independent companies and associated institutions which:

- cooperate together and at the same time compete against one another (which is a phenomenon of so-called co-opetition)
- are geographically concentrated in one or more regions; however cluster can operate globally
- specialize in a certain area and are interconnected with common technologies

OECD (2005) defines clusters as association of horizontally and vertically interconnected firms from related branches cooperating with supporting organizations. As supporting and associated institutions Agency Czech Invest considers institutions of tertiary education (universities) (czechinvest.cz).

According to Anderson, Schwaag-Serger, Sorwig, Hannsone (2004), who prepared *The Cluster Policies Whitebook*, a cluster has seven basic characteristics:

1. local concentration: firms are located in close working distances
2. core of a cluster and its specialization: cluster focuses on key activity, which interconnects all its members
3. members of a cluster: members are companies of the same industry, institutions of public administration, educational institutions, and representative of financial sector
4. dynamics and relations within cluster, which characterize relationship of competition and cooperation of all its members
5. critical amount of members is required to reaching certain level of a cluster's dynamics
6. life cycle of a cluster: clusters are not only short-term association rather they are long-term continually evolving associations

7. Innovation: firms are involved in process of technological, commercial and organizational changes.

Pavelkova and collective (2009) and Porter (1990) agree that cluster associations have an impact on competitiveness of firms, regions and countries. Moreover study on national cluster strategy (NKS, 2006) stated that clusters create such conditions, which enable to stimulate innovation and more effective utilization of research and development. This contributes to growth and increasing returns on public investments to public sector (tertiary education, research institutes). Strong clusters are centers of specialized capabilities, knowledge, research and development, know-how and participating qualified suppliers. Clusters also attract investments.

A vivid example presents Grant (2010), who mentions Silicon Valley's as a cluster of industries including semiconductor, computer, software, and venture capital firms. Hence an industry, where supporting industries are closely related, possesses critical resources and capabilities.

4 Results

This part of the diploma thesis is aimed at actual assessment of industry environment of construction sector. Using Porter's diamond of determination of level of branch environment, single elements of this framework will be embedded into building industry and evaluated accordingly. Such analysis will be divided into four fundamental steps, hence four sub-chapters, based on the attributes of the model.

4.1 Factor Conditions in the Czech Republic

In order to identify factor conditions, it is necessary to understand the nature of environment, in which a company operates. Therefore PESTE analysis, which describes the factors of turbulent macro environment, is presented in following chapters. Construction industry as a sector that contributes greatly to economic performance is greatly dependent on development of the macro elements of remote environment. Therefore it is essential to analyze them in details.

4.1.1 Political and Legal Environment

Role of the Czech state is fundamental for construction industry. On one hand, it creates almost a half of demand for construction (as public investor), and on the other hand it influences investing sentiment of the private sector (the other half of the demand). Thus the state should take responsible actions.

Nonetheless, political environment in the Czech Republic (CR) has been very intimidating especially for construction companies for quite a long time. Construction sector has been suffering from **insufficient institutional support** from government or other public structures. Branch of construction in CR is administered by Ministry of Industry and Trade. However, it is affected by at least four other ministries: Ministry of Transport, Ministry of Regional Development, Ministry of Environment, and Ministry of Agriculture. This stretch of interests has disabled a formation of long-term strategy and conception. In other words, there has not been a partner in political sphere, which would work in favor of constructions and have responsibility for public investments in this sector. Nevertheless, after many years of efforts of the Association of Building Entrepreneurs of the Czech Republic, a position of **Deputy Minister for Construction** of the Ministry of Industry and Trade was established in April, 2014. Jiri Koliba was named the new Deputy for Construction. His main responsibility is unification of the agenda of construction, which is not going to be easy task. Introduction of such position is promising to development of long-term concept for construction and public investments (Journal Stavebnictvi, 2014).

The Czech construction environment is affected by instability of political personnel. **Personnel changes within government** have occurred so many times that some people in exaggeration say that the most frequent profession is

Minister. For instance, in preceding government of Nečas (July 2010-July 2013[4]) there was four different Ministers of Transport, two Ministers of Industry and Trade, two Ministers of the Environment, and two Ministers of Agriculture. New cabinet of Bohuslav Sobotka has recently "hired" new Minister of Transport. Such personnel turnover causes distrust in public governing system. Also publicly owned company, Road and Motorway Directorate, assigned to manage motorways in CR has changed its CEO seven times since 2010. Therefore Czech transportation infrastructure, especially the main net, D1, is not very developed.

Government instability has converted to a standard. Parliamentary vote of confidence has become a common phenomenon. In following table (see Tab.2) **turnover of the entire** (publicly elected) governing **cabinet** is presented since 2002. Since year 2002, none of the cabinets has lasted the full 4-year election period.

Tab. 2 List of publicly elected governing cabinets in the Czech Republic[5]

Prime Minister	Governing period
Vladimír Špidla	July 2002-August 2004
Stanislav Gross	August 2004-April 2005
Jiří Paroubek	April 2005-September 2006
Mirek Topolánek	September 2006-May 2009
Petr Nečas	July 2010-July 2013
Bohuslav Sobotka	January 2014-until now

Source: Vláda České Republiky, available at: www.vlada.cz, edited by author

By accession of CR to the European Union in 2004, CR agreed to harmonize certain policies, moreover it passed some authorities to Union's level in order to meet common Union objectives. Even though it meant implementation of new policies, it also meant a possibility to draw **EU subsidies** from the EU structural funds (SF). The Czech Republic belongs among the largest receivers of the EU funding (see Chapter 4.3). Nevertheless high turnover of personnel in public sphere and horrible audit of applied projects affected the drawing for CR. European Commission criticized subsidies allocation in the Czech Republic for certain operational projects. Thus despite the fact that the EU subsidies create opportunities for many entrepreneurs, an unsystematic and non-transparent procedures may cause serious problems for national government if refunding from the EU is stopped.

Political representation influences **public spending**, a measure of fiscal policy. Attitude towards public investments has changed after year 2008 when the financial crisis erupted. Priority of government in period of recession was to implement policies aiming at great reduction in public investments. This negatively affected construction sector, which is greatly dependent of public demand.

[4] Cabinet of Petr Necas was terminated earlier than planned election period (2010-2014)

[5] In addition to the list, there were two caretaker governments: a Fišer's and Rusnok's cabinets.

Public investment, based on indicator gross fixed capital formation (GFCF) meaning spending on buildings, dwellings, roads, software and such decreased from 4,6 % of GDP in 2008 to 3,2 % of GDP in 2012 (Eurostat). Portion of public construction orders has been declining since 2009. In following graph (see Figure 10), the development of portion of agreed public construction contracts at the end of a given period, which were not yet implemented, is recorded. This indicator vividly show that Czech government has not been acting anti-cyclically as it is supposed to when a country is in recession and rather deepened the crisis of construction by stopping the public investment construction (ex-Minister Barta stopped construction of infrastructure). Furthermore, the activity of both transition caretaker cabinets, which were not allowed to pass any important policies, a sudden fall of Nečas'cabinet in 2013 and subsequent uncertainty about future development affected the development of investment in construction.

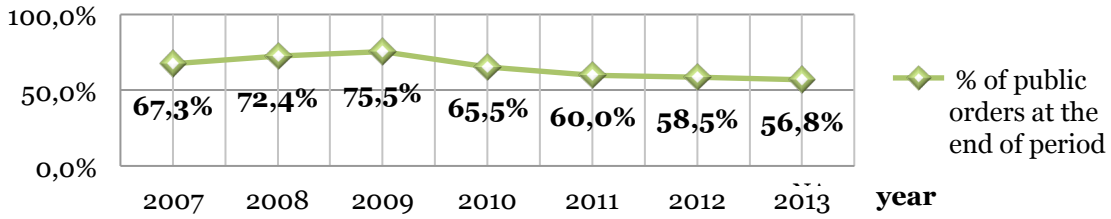


Figure 10 Share of public orders in construction in CR
Source: Czech Statistical Office, available at: www.czso.cz, edited by author

Corruption is another aspect that can transform the political environment of entrepreneurship. According to Transparency International, organization that evaluates the perception of corruption in public sectors each year, Czech Republic has been continually assigned to the lower half of scoring Corruption Perception Index (hereinafter CPI). The higher the CPI, the cleaner and less corrupted public sector is perceived. In years 2012 and 2013, CR was ranked 54th and 57th respectively among 177 countries, and on the scale of 0-100 it scored around 49 CPI points. According to Transparency International countries that are perceived between 0-50 can suffer some serious corruption problem.

The issue of transparency and corruption belonged to the main objective of Government policy statement of Nečas' cabinet in 2010. That government made a commitment to take necessary measures that would lead to higher transparency in issue of public contracts and that would lower possibility for corruption in public sector. In year 2012, the amendment to the Act on Public Contracts (Act No 137/2006 Coll. based on Directive 2004/18/EC) entered into effect.

The impacts of the amendment were horrifying for construction industry. Vaclav Matyas, president of Association of Building Entrepreneurs (SPS CR), concluded that administration connected to public tenders increased (process of preparation of public contract takes longer and is more complicated), which also influenced a decline in number of public tenders and hence a willingness of public authorities to issue public contracts. Also this Act increased pressure on price of construction works (the awarding criteria in § 78 are either economically ad-

vantageous tender or the lowest bid price), which gave a rise to price wars and aggressive pricing strategy. This last implication has been a major problem for competitive environment of the industry threatening quality of construction since the only deciding factor has become a price. Nevertheless, the EU directive on public procurement was amended in January 2014, and has not been yet implemented in the Czech legislation (see Chapter 4.3).

Other Acts, which form legal environment for construction industry are: Act No 183/2006 on town and country planning and building code (hereinafter Building Act), Act No. 100/2001 Coll., on environmental impact assessment (hereinafter EIA)[6], and finally new formulation of Social Housing Act not yet created. The Building Act and EIA have been under criticism of construction practitioners. The former is very complicated and has higher requirements on administration of processes. Preparation of construction is very long involving two stages obtaining zoning decision first and then building permit. Simplification and shortening the time of project preparation are subjects of amendment to the Act. Single stage construction permitting process, which is being prepared, should lower the complexity. Another problem is a long administrative process before start of linear structures. Process is too long that structures deteriorate, original terms are consequently lengthened and hence the project becomes more expensive (Journal stavebnictvi, 2013).

As far as Social Housing Act, there is a necessity to prepare this law, since there is no conception for that matter yet. This Act will influence Residential construction in the Czech Republic since it should affect the investment intentions in field of Housing Policy. The new law is on the agenda of the Ministry of Labor and Social Affairs.

In conclusion, Sobotka's cabinet (2013) in Government policy statement, made a commitment to take necessary measures to solve all these issue: allocation of subsidies, corruption, investment intentions, and amendments to Public contract Act, Building Act, EIA Act. The only problem remaining in question is changes of government personnel.

4.1.2 Economical Environment

Czech Republic is a small open market economy greatly influenced by accession to the EU. It is a country dependent on export to the EU member states, mainly to Germany. In the following table (see Tab.3) important macroeconomic indicators are recorded.

[6] Issue of EIA legislature is presented in chapter 4.1.5

Tab. 3 Key macroeconomic indicators in CR

	2005	2006	2007	2008	2009	2010	2011	2012	2013
GDP growth rate [%]	6,8	7	5,7	3,1	-4,5	2,5	1,8	-1	-0,9
GDP at c.p. [bn. €]	104,6	118,3	131,9	154,3	142,2	149,9	155,5	152,9	149,5
Final Consumption Expenditure [% of GDP]	70,8	69,3	67,5	68,7	72,1	71,9	71,3	71,1	71,4
Export [% of GDP]	64,4	67,0	68,2	64,4	59,0	66,6	72,9	78,0	78,6
Exchange rate [CZK/EUR]	29,78	28,34	27,77	24,95	26,44	25,28	24,59	25,15	25,98
Inflation rate [%]	1,6	2,1	3	6,3	0,6	1,2	2,1	3,5	1,4
Interest rate [%]	3,54	3,80	4,30	4,63	4,84	3,88	3,71	2,78	2,11
Unemployment rate [%]	7,9	7,1	5,3	4,4	6,7	7,3	6,7	7,0	7,0
Volume index of construction [%]	5,2	6,4	6,9	-0,1	-0,5	-7,6	-3,6	-7,4	-6,8

Source: Eurostat, available at: http://epp.eurostat.ec.europa.eu/, edited by author

Gross Domestic Product (GDP) is main indicator of the economic activity, which measures value of all goods and services that were made (or consumed) within a given year. Annual rate of growth of GDP is often used to compare the dynamics of economic progress over time.

According to collected data from Eurostat Database, absolute volume of GDP was at EUR 149,5 in 2013. Still, the Czech economy in that year experienced period of recession[7]. Main cause of this diagnosis was initiated in year 2008, when world struck financial crisis. In following year 2009 real GDP growth recorded a slump of -4,7 %. Production in the economy slowed down and stopped. However, according to the Czech National Bank, it is projected that real GDP will grow by 2,5-2,8 % in 2014-2016. Hence the projection is quite favorable for the economy (see Tab. 3).

Growth rate of GDP is greatly impacted by **final consumption expenditures** (% of GDP). Final consumption expenditure of all economic agents was growing till 2009 when in reached 72,1 % of GDP. In three following years these agents started staving and the spending declined. In 2013, the final consumption expenditure slightly raised to 71,4 % of GDP (see Tab.3).

Influence on GDP has also international trade balance. Czech Republic is dependent on export mainly to the EU countries amounted for almost 80 % of GDP in 2013. **Export** grew since entry into the EU till 2007. It fell significantly to 59 % of GDP in 2009 and since that time export has been steadily growing.

[7] Recession is usually characterized by a state of economy, which experience negative growth of GDP in two consequent quarters (six months)

Fundamental effect on volume of export has among others state of foreign exchange rate. When Euro becomes expensive it supports Czech exporters. Since the introduction of EURO currency in 2000, the exchange rate (CZK/€) has been slowly decreasing until 2008. In that year, one could obtain €1 for only CZK 24,95. For the next five years the exchange rate stabilized on value about 25 CZK/€. In order to fight the potential of emerging deflation[8] and to support the exports, the Czech National Bank (hereinafter CNB) devalued Czech currency and set new fixed rate with respect to foreign currency (e.g. 27 CZK/€) in November 2013. CNB currently predicts exports to grow in next three years by 7,5 to 9,3 % also as a consequence of devaluation of CZK.

Two of convergence criteria and also determinant of macroeconomic situation are inflation and interest rate. In both indicators, CR currently fulfills the conditions of Maastricht Treaty for entrance into Eurozone.

Inflation measured by Consumer Price Index (CPI) grew until 2008, when it increased by 6,3 % year on year. Boom in 2008 and bust in 2009 slowed down the growth of prices. Except year 2012, CPI has been very low and increased a possibility for deflation to occur (see Tab.3). As already mentioned CNB in November 2013 devaluated Czech currency to stop the possibility of deflation, which could lead to deflationary spiral and affect the consumption spirit and real wage unemployment. Nowadays, CNB predicts inflation to grow in next three years (by around 0,9-2,3 %).

Inflation can be influenced by interest rates, a measure of monetary policy. CNB keeps interest rates lower to motivate spending, demand, and hence increase price levels. Harmonized long-term **interest rates** for accessing convergence moved in 2013 around 2,11 % but the trend has been downward sloping and it is apparent that soon this long-term yield on government bonds will drop bellow 2 % (Eurostat).

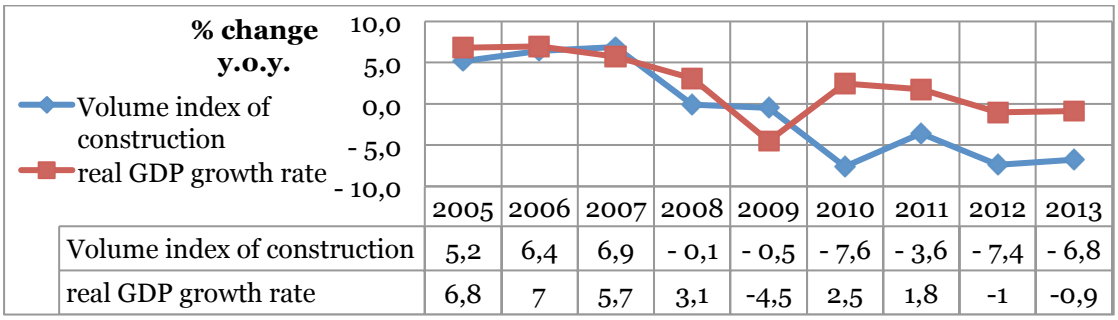
As far as labor market, for almost 5 years according to Eurostat **rate of unemployment** fluctuates around 7 % of labor in productive age. Lower rate of unemployed people occurred in years 2007 and 2008 when the economy was reaching its peak (see Tab.3). CNB forecasts that unemployment rate should drop by 1% point in next three years (2014-2016).

One of the main indicators of economic activity of a country is construction output, which in CR forms around 6 % of GDP. Construction industry has strong multiplication effect since it contributes to economic output, provides employment, state income in form taxes, social and health insurance.

As noted in the table above (see Tab. 3) the **sector of construction** is currently in deep recession and has been since 2008. None of the three governments has been able to realize pro-growth measures in construction industry. In following graph (see Figure 11), it is shown how development of constructions (expressed by volume index of production in year on year change) copies the trend of growth of real GDP, and hence it may be used as a benchmark for pro-

[8] Deflation discourages consumer spending, increases real value of debt, and causes real wage unemployment.

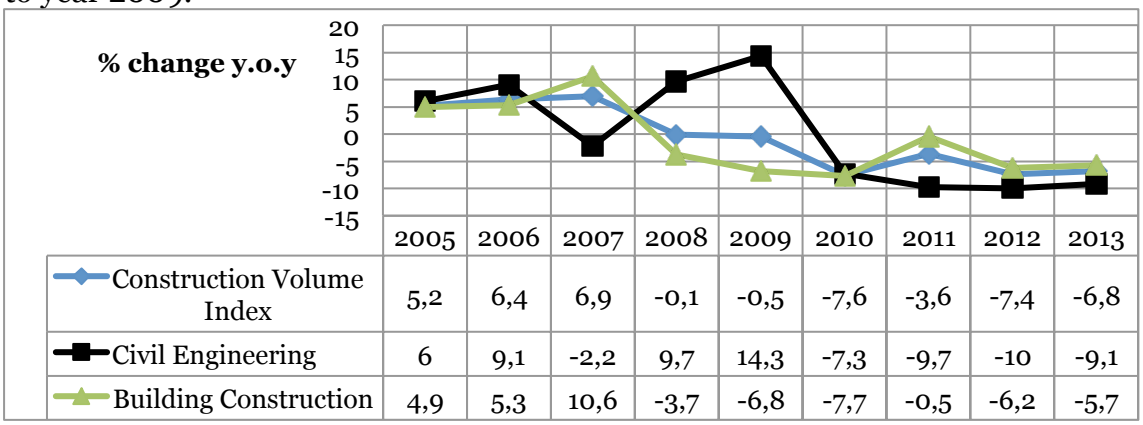
jection of construction development. Economic slowdown in 2009 affected construction with a delay of one year as construction involves long-term projects, but the fall in 2010 was much larger and continued to decline since that time (Eurostat).



	2005	2006	2007	2008	2009	2010	2011	2012	2013
Volume index of construction	5,2	6,4	6,9	- 0,1	- 0,5	- 7,6	- 3,6	- 7,4	- 6,8
real GDP growth rate	6,8	7	5,7	3,1	-4,5	2,5	1,8	-1	-0,9

Figure 11 Trend of real GDP and Volume Index of Construction in CR
Source: Eurostat, available at: http://epp.eurostat.ec.europa.eu, edited by author

In next graph (see Figure 12), individual components of construction output are shown to depict that the worst drop experienced subsector of civil engineering when from growth of 14,3 % fell to negative 7,3 %. Decline in demand especially by public entities had devastative influence on firms operating in civil engineering. A fall experienced also subsector of building construction. Firms dependent on public investments were affected by lack of work. According to Journal Stavebnictvi, for instance value of public orders decreased in 2010 decreased by 12,9 % in building constructions and by 46,2 % in civil engineering as opposed to year 2009.



	2005	2006	2007	2008	2009	2010	2011	2012	2013
Construction Volume Index	5,2	6,4	6,9	-0,1	-0,5	-7,6	-3,6	-7,4	-6,8
Civil Engineering	6	9,1	-2,2	9,7	14,3	-7,3	-9,7	-10	-9,1
Building Construction	4,9	5,3	10,6	-3,7	-6,8	-7,7	-0,5	-6,2	-5,7

Figure 12 Trend of development of construction output components in CR
Source: Eurostat, available at: http://epp.eurostat.ec.europa.eu, edited by author

For comparison in the next graph (see **Figure 13)** it is shown how prices of residential construction works developed in period 2005-2013. Not only the volume of construction has declined but also the prices construction has decreased significantly as a consequence of lower demand (Eurostat). Further elaboration of construction costs covers chapter 4.4.

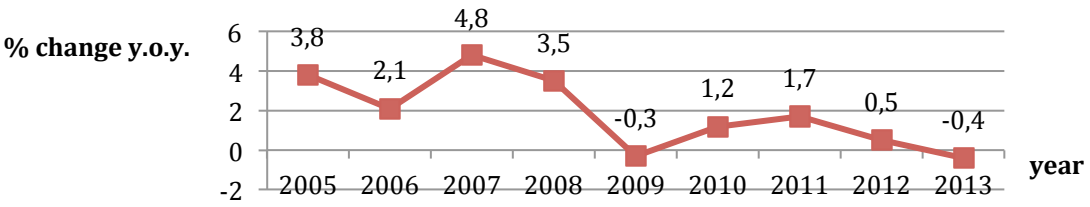


Figure 13 Level of inflation and growth of construction prices in CR
Source: Eurostat, available at: http://epp.eurostat.ec.europa.eu, edited by author

Another measure of level of economic stability is size of government debt and deficit. Maastricht criteria (convergence requirements) demand to keep the level of government deficit to GDP under 3 % of GDP and government debt to GDP under 60 % of GDP. In following graph (see Figure 14), the development of these two ratios is recorded.

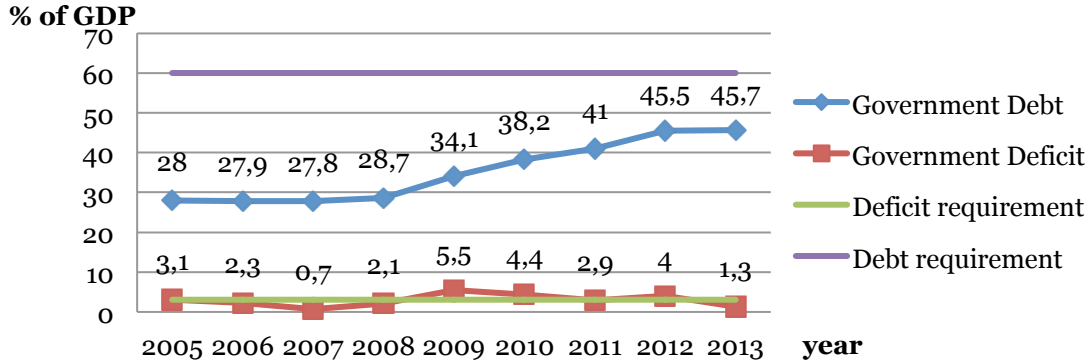


Figure 14 Government Debt and Deficit in CR
Source: Eurostat, available at: http://epp.eurostat.ec.europa.eu, edited by author

Indicator of **Government Debt** shows General government gross debt at nominal value comprising debts of central, regional and local governments. This determinant has been growing since 2007 and currently (2013) is at 45,7 % of GDP and threatens sustainability of government financial position. However CR moves under the average of the EU28, which is now at 83,5 % (Eurostat).

Development of **government deficit** was more or less steady until 2008. Since that year, government deficit has increased, moreover more than doubled in 2009. Reduction of deficit was managed to the level required by convergence criteria to 2,9 % in 2011. In that year Miroslav Kalousek, Minister of Finance at that time, received a reward for Finance Minister of the year 2011 for emerging Europe. In 2013, the size of government deficit moved around 1,3 % of GDP (Eurostat). According to Standard and Poors, CR ranking is AA+, which signifies a reliable debtor.

4.1.3 Socio-cultural Environment

Czech Republic is a landlocked country with more than 10,5 million inhabitants. Current demographic analysis shows that CR belongs to the group of countries

that encountered issue of **ageing**. In following table (see Tab. 4) it is depicted how group of people at age of 65+ has been increasing and group of people at age of 0-14 has been fluctuating around 14,5 %. In 2013, there was 1,77 million of elderly, which was about 210 000 more than of people in age group 0-14. According to Eurostat projection in 2060, 30,7 % of population in the Czech Republic will be at the age of 65+ (Eurostat). Ageism can have negative impacts on the future economy, since there will be less people at productive age. Necessary care for this expanding pool of people must be provided.

Tab. 4 Age Demographics in CR

% of total	2005	2007	2009	2011	2013
Age: 65+	14,1	14,5	14,9	15,6	16,8
Age: 0-14	14,9	14,4	14,2	14,5	14,8

Source: Eurostat, available at: http://epp.eurostat.ec.europa.eu, edited by author

Another trend in demographics in CR is rapid growth of **single households.** Since 1995 it has almost doubled. In 2010 it was estimated that there was 1,2 million of people living alone. Moreover the amount of incomplete household is growing. Great contribution to the trend has percentage of divorces, which recently moves around 49 % (Czech Statistical Office).

Another factor representing demographic characteristics is **migration**. According to the CZSO in year 2012, there was 436 946 foreign citizens (counted without asylum seekers). The biggest foreign community was citizens of Ukraine (112 500), followed by the Slovaks (85 800), then the Vietnamese (57 000), and the Russians (almost 33 000). Based on the situation in Ukraine, it is assumed that many Ukrainian workers will go back to Ukraine to take care of their families and to participate in the army. This would be detrimental for many construction firms.

The largest foreign community registered at labor office and employed in construction industry was estimated group of Ukrainians (37 %) followed by Moldavians (30 %). Number of emigrants has been fluctuating; the highest was when CR accessed the EU in 2004. Amount of immigrants has been decreasing since 2007; more specifically since that time it has reduced by almost double amount. In year 2010 it was estimated that the net migration moved around 15 548 people. As far as internal migration, it has been growing since 1996 and currently is at 240 695. Such trends show that people are more and more willing to move within CR (Czech Statistical Office).

The level of attained education is also part of demographic description. In construction as well as in other technical sectors, there has been declining trend in number of apprentices. Students do not find it attractive to work with hands, and possibility of acceptance to university is now higher. Hence amount of technically **skilled labor** has decreased. In following graph (see Figure 15) there is vividly shown that a number of students at vocational schools (upper secondary education) has reduced by more than 50 000 since 2008. Number of students at general grammar schools (upper secondary education) slightly decreased as

well. On the other hand, amount of university students attaining the tertiary education (both stages) have been growing.

No only there is insufficient amount of skilled labor but also there is high level of youth unemployment. According Eurostat, unemployment rate of youth (25>) in 2013 was 18,9 %, which still below the average of EU (23,5%).

The Czech construction firms usually solve the situation of unskilled labor by employment of foreigners, mainly Ukrainians. Ukrainians substitute the lack of Czech qualified craftsmen (e.g. bricklayers, mechanics, floor covering craftsman). According to Evzen Korec, CEO of construction firm Ekospol, massive leave of Ukrainians would negatively affect many construction companies (idnes.cz).

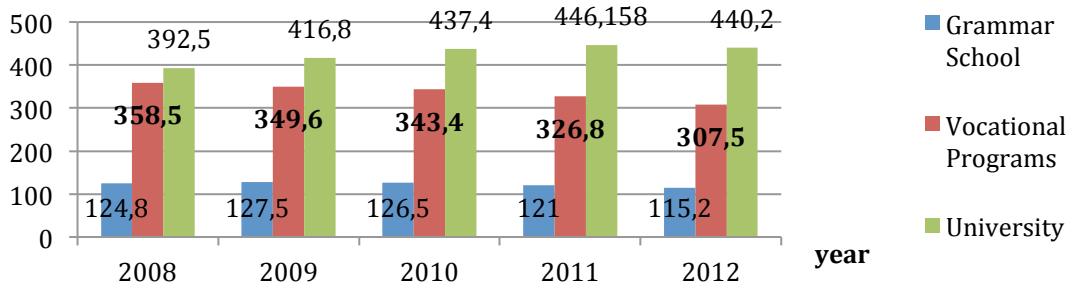


Figure 15 Number of students on given level of education (in 1000) in CR
Source: Eurostat, available at: http://epp.eurostat.ec.europa.eu, edited by author

As far as **employment**, in year 2013 the average number of people employed **in construction** sector was 375 661 and total number of evidenced employees was 218 933. Both values have been declining since 2008, when the employment in constructions reached its peak. Since that time more than 50 000 registered employees left (or were laid off) the sector. Among other sectors of economy, construction is ranked the seventh in amount of people employed. Over a million people in CR work in manufacturing, and twice as many as in construction work in wholesale and retail trade. Slightly more people work in a sector of education, health and social activities, etc. (Český Statistický Úřad).

Concerning **wages and salaries**, current gross average monthly wage in construction is EUR 803 (own calculation at 27,5 CZK/EUR), which is EUR 109 less than wage in all sectors (mpsv.cz). Real labor productivity recorded about 13,1 EUR per hour worked in 2013 (Eurostat).

As far as the standard of living, life in the Czech Republic has been approaching **living standards** of the Western countries. GDP per capita (real expenditure per capita in PPS EU28), which measures the wealth of countries, is EUR 20 600. Further indicator determining the standard of living is portion of people at risk of poverty and social exclusion or materially deprived or living in households with very low work intensity. In 2013, it was 14,6 % of total population. This is quite scary but this portion is the third lowest in the EU (Eurostat).

4.1.4 Technical Environment

Scientific and technology infrastructure are prerequisites for country's competitiveness. Therefore scientific research and sector of information technology are evaluated.

Gross domestic **expenditure on Research and development** (R&D) in CR accounted for 1,91 % of GDP in 2013, which was about CZK 77,9 bn. (EUR 3,1 bn.). Volume of expenses into innovation has been following the long-term rising trend. CR was ranked among the first half of the EU member states concerning R&D spending (Czech Statistical Office). According to Research, Development and Innovation Council, approved government budget for 2013 provided resources in value of CZK 40 bn., of which only CZK 4,5 bn. was spent at Ministry of Industry and Trade. On the other hand CZK 21,8 bn. was allocated to education.

According to CZSO, private enterprises in 2013 invested mostly into own sector by own means and insufficiently utilized scientific capacities of universities and the Academy of Sciences of the CR. Government policy statement (2013) specified that the cabinet will facilitate cooperation of public educational and scientific institutions and private sector, and will motivate strengthening of international excellence in research, and will stimulate engagement in international projects. Government further promised to give favorable tax treatment to firms cooperating with universities in research.

The level of R&D in construction has been quite low since the cooperation of firms, universities and private institutes is not very common. The improvement of the situation appears in some institutions, which is also acknowledged by a growth of employment in construction R&D. In 2005 there were only 27 institutions with 379 scientists, however in 2013, the amount of entities doubled to 62 institutions with 879 workers (Czech Statistical Office). Technological progress in construction is given mainly by innovations in materials such as new thermal insulation materials, modern approaches to construction such as passive (low-energy) houses construction, usage of recycling materials etc. This field is further assessed in chapter 4.10.

Information and Communication Technologies (ICT) have a great impact on daily life of people, at home and at work. It is the fastest source of information and facilitator of communication. Use of these technologies in business sector affects competitiveness. Usage of ICT in private sectors has evolved greatly. In January 2013 it was recorded that 97,8 % of the Czech firms used Company computer network, 96,3 % use Internet (in 2001 it was only 77,1 %). Furthermore 80,2 % of firms use web pages to promote their business, only 55,3 % use electronic invoicing, only 16,7 % use social networks for its business, and lastly 49,1 % buy products online. All of these percentages have been steadily growing (CZSO).

As far technology within households, 73 % of Czech households have access to Internet (2013), which is over 50 % more than in 2004. Such improvement

presumes positive development of competitiveness for all sectors of the economy (Eurostat).

Thirty-three thousand firms employing more than 138 thousand people represent ICT sector in CR. In the last 10 years export of the Czech ICT products and services has rapidly grown. Czech firms such as AVG, 2N telecommunications, LANGMaster International are very successful abroad. ICT sector in CR has been greatly supported by investments of foreign ICT firms such as: Sun Microsystem and Microsoft, and IBM, Hewlett-Packard, Honeywell and Red Hat. Two main centers, where ICT firms cluster, is Brno and Prague (mpo.cz).

4.1.5 Ecological Environment

Ministry of the Environment (hereinafter MZP) is responsible for administration of ecological legislation in CR. Nowadays mainly due to the enforcement of the EU, there has been a great pressure on sustainable development and environmental friendly production. MZP follows legislation in accordance with the EC law. Important Acts of legislative settings of the environment in the CR are: Act No 76/2002 Coll. on Integrated Pollution Prevention and Control (based on directive 2010/75/EU on industrial emissions), on the Integrated Pollution Register, Act No. 100/2001 Coll., on Environmental Impact Assessment (EIA), and Act No 17/1992 on the Environment (based on directive 85/337/EEC[9]).

Act on Integrated Pollution Prevention aims at regulation of industrial and agricultural activities to protect environment. It emphasizes preventive approach to pollution, which should be controlled prior to its occurrence leading to savings including technologies and resources.

Act on the Environment focuses on sustainable development greatly pressured by the EU. The purpose of this Act is to ensure sustainable development, which means that needs of current generation should be attained without harming the satisfaction of needs of future generation.

Concerning the EIA, the main aim is to systematically assess the impacts on environment to reduce the negative consequences of production (construction of buildings, roads, changes in technologies and capacity). This means that investor must send a business intention of a new project to MZP or to a regional public authority, which assesses the project on basis of environmental impacts. Public building authority, when providing Zoning decision or Building permit, has to obtain so called coherence stamp (green statement) from MZP or region that the project is within set environmental limits.

This Act is now being amended (in accordance with 2014 Directive) and should be in effect by January 2015; otherwise the EU will stop funding current and future Operational programs in the Czech Republic. This amendment should not allow possibility for a constructor to appeal to this green statement. However it allows to public (“green complainers”) to challenge the screening decision and appeal to court, and the court has option of suspensive effect. This

[9] Directive on EIA has been amended many times. Last amendment was in 2014.

means that the construction must wait until the court makes decision. Hence this amendment has harmful impacts on construction sector. Construction cannot wait! Many constructors hope that as opposition to this issue, there will be high sanctions in the Act in case court decides in favor of constructors (Journal Stavebnictvi, 2012).

Ecological taxes play an important role in business environment. The Czech authorities collected in 2012 EUR 3,6 bn. on ecological taxes such as: energy tax (EUR 3,3 bn.), transport tax (EUR 0,2 bn.), and pollution/resource tax (only EUR 38 mill.) (Eurostat).

In regards to **funding programs**, the Czech State Environmental Fund (SFZP) started a funding program New Green to Savings. This program provides funds on insulation of residential buildings, revitalization and reconstruction of existing buildings, and new low-energy consumption buildings. Total funds with 2020 horizon are about CZK 27 bn. (EUR 981,8 million at 27,5 CZK/EUR), and in 2014 will be allocated CZK 1,9 bn. Support of construction of multi-apartment houses will be started in 2015. Moreover currently MZP elaborates operational program for period 2014-2020 aimed at enhancement of energetic performance of buildings. Also government is challenged to prepare long-term strategy for renovation of old buildings and hence improving their energetic performance. This requirement is enforced by Directive 2012/27/EU on energy performance of buildings, which request to renovate 3 % of public buildings, to ensure savings of energy of 1,5 % for final customers by energy suppliers. The purpose is based on objective of the EU to lower energy consumption and dependence on energy supply. The other environmental signal is to lower greenhouse gas emission (Journal Stavebnictvi, 2014). List of basic environmental subsidies are recorded in following table (Tab.5).

Tab. 5 List of environmental subsidies in CR

Name of subsidy	Total allocation
New Green to Savings	CZK 27 bn. (2014-2020)
Operational Program Environment	CZK 71 bn. (2014-2020)
Panel 2013+ (revitalization of panel houses)	CZK 600 mill. (2014)
Jessica (modernization of public apartment houses)	CZK 609 mill. (until 2015)

Source: tzb-info.cz, edited by author

Situation of environment usually show **Greenhouse gas emissions.** These have rapidly decreased. According to the Eurostat statistics, the climate in CR in 2012 was threatened by 132,4 million tons of carbon dioxide equivalents. However, since 2002 the amount has decreased by more than 10 million tons of CO_2 equivalents. In manufacturing industries and construction the emission of greenhouses gases amounted for 16,6 million tons in 2012 (Eurostat).

Primary **natural resources** of energy in CR are hard coal, lignite, natural gas, oil, nuclear fuel, and renewable sources such as biomass, biogas, biofuels, hydro, solar, heat pumps and wind. Consumption of coal reduced by more 30 % since 1993, on the other consumption of nuclear fuel has increased by almost 15 % since 1993. Renewable sources form around 8 % of all resources and it has

been increasing (Czech Statistical Office). Around one third of country is covered by forest.

4.2 Factor Conditions in Austria

Nature of factors impacting the development of construction industry in Austria is also determined by given remote environment. In the next chapter, Austrian Political, Economic, Socio-cultural, Technological, and Ecological environment will be assessed.

4.2.1 Political Environment

Republic of Austria (AT), member of the EU since 1995, is federal republic with Parliamentary democracy comprising of 9 autonomous federal Länder (provinces): Burgerland, Carinthia, Lower Austria, Upper Austria, Salzburg, Styria, Tyrol, Vorarlber, and Vienna. Each of the nine states is governed by provincial governors. The highest country representative is Federal president, currently Heinz Fischer (in 2010 started his second term) who is elected for 6 years and has executive power together with the Federal Chancellor (currently Werner Faymann), the head of government, and the Cabinet.

Austria is at this time governed by a grand coalition of Social Democratic Party of Austria (SPÖ) with 52 mandates, and center-right Austrian People's Party (ÖVP) with 47 mandates. It is quite interesting that political party die Grüner (the Greens) have 24 mandates in current Parliament and in the Czech Republic there are none (Advantageaustria.org). Nevertheless SPÖ and ÖVP have been at power since 1987 (except for years 2000-2007). Since 2007 there has been always Federal Chancellor from SPÖ and Vice-Chancellor from ÖVP. Werner Faymann's cabinet was re-elected in 2013 after 5 years of governance. Therefore the **political representation** with its ideology in Austria has remained stable. Hence as far as political representation, Austria is often considered as a politically stable country (Bundeskancleramt Österreich).

Accomplishments of Austrian construction and other sectors within political environment are backed by different associations, chambers, cooperation and partnership, which bridge the communication of the public authorities with the private sector. Moreover the Federal Ministry for Transport, Innovation and Technology has a strong partner ASFiNAG (Motorways and Express Roads Financing Corporation) owned by Federal Government, where the personnel representation is pretty stable. According to International transport forum of OECD, the transport networks in Austria are highly developed, and belong to the best-equipped EU countries by infrastructure length per capita, and with very high quality.

In order to promote high quality of built facilities and building environment, Austrian Federal Government established in 2008 the Council for Building Culture in the Federal Chancellery. This Council operates in wider scale of sectors looking at architecture, energy efficiency, social development, construc-

tion economy, spatial planning or education. It gives advices to all federal institutions and aims to enhance the awareness for applied principles of high quality in building construction (on all political levels) and acts as mediating forum between politicians, architects, and management. Such Council comprises of 28 members (representatives of all Federal Ministries, the Federal Real Estate Agency, the Federal Office for Monuments Preservation, the Associations of Municipalities, NGO's experts and social partners). Provincial representatives can participate only as observers. This Council is appointed for 5 years and meets two times a year (Bundeskancleramt Österreich).

Also, in Austria there is so-called Austrian Federal Economic Chamber (**WKO**), which is the umbrella organization of all provinces representing interests of all professional businesses (membership is compulsory – there is more that 450 000 members) within national and international level. This Federal Chamber is self-governing entity established by public law. It aims to take care of all businesses in Austria (including crafts and trades, industry, finance, banking, transport, tourism, etc.); it initiates, mediates, and partners regional, national and international economic promotion activities for the advantage of the Austrian economy. It cooperates on policymaking for all industries on all levels. Social partnership is very typical for Austria. Representatives of all chambers cooperate on different issues. There is also social partnership in construction (Bau Sozialpartner), which acts on behalf of construction firms e.g. battle for subsidy provisions, cooperation on public procurements not to allow problem of social dumping of wages and salaries, etc. (WKO).

Political representatives also use **public investments** as a measure of fiscal policy. The approach of Austrian government towards spending is further assessed. According to the Eurostat, the gross investment by general government (based on GFCF) has decreased after crisis eruption as in some other countries of the EU. However the drop was not as huge. In 2012 public investments comprised 1 % of GDP and since 2007 it declined by only 0,1 %. Concerning construction production, even with lower domestic production, the percentage of construction ordered by public authorities at the end of given period was increasing till 2010 and then dropped to 33,5 % in 2011. Thanks stimulus packages by government, the publicly ordered production rose till 2010 and then fell. Government acted against the cycle and eliminated the consequences of the crisis (see Figure 16).

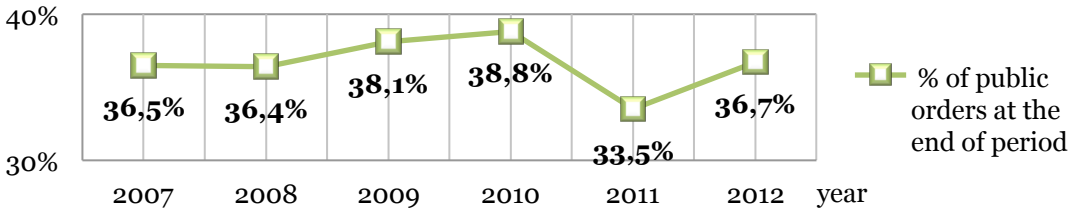


Figure 16 Share of public orders in construction in Austria
Source: WKO, available at: https://www.wko.at/, edited by author

Even though the economic crisis affected Austrian economy negatively, the downswing was not so obvious as in other EU countries. The reason was that

Federal government applied measures in form of two **stimulus packages** to absorb the recession. These measures allocated EUR 3 bn. in 2009 and 2010, which is about 1,1 % of Austrian GDP. As far as fiscal policy, the Ministry of Finance in Austria did personal income tax reform and lowered the tax burden by about EUR 2,5 bn. to boost household spending in 2009. To motivate private sector spending it accelerated depreciation allowances. Further aims of the packages were to benefit small and medium sized enterprises (hereinafter SME) and even micro firms (up to 9 employees). It provided low-interest investment loans for SME (EUR 600 million), for micro firms (EUR 50 million). In order to improve the construction sector it boosted planned investment into infrastructure (rails and roads in amount of EUR 900 million) and public buildings (thermal retrofitting, refurbishment, new construction in amount of EUR 270 million). Moreover these packages allocated EUR 100 million of a subsidy to enhancement of residential and commercial buildings based on attained energy savings. Concerning the labor market, these packages created regional employment programs, added subsidies for short-time work for limited periods. Furthermore it benefited the research and education, provided free-of-charge year of kindergarten and etc. (Ecologic Institute).

Concerning **corruption**, according to Transparency International, Austria was ranked 26th out of 177 states in regards to corruption perception index scoring 69 points in 2013. Austria is perceived as less corrupted country compared to the Czech Republic that is ranked as 57th. Influence on corruption has legal framework on public procurements.

Austria also implemented the Directives on Public Procurement 2004/17/EC and 2004/18/EC under code the BVergG 2006 for federal level and under 9 national procurement law (Landesvergabegesetze). This law aims to stimulate competition and preserve equal treatment of all potential bidders. Public tender must inform about the contracting party, competent review body, technical requirements, and awarding criteria (either lowest price and economically most advantageous offer). In Austria, there exist supervisory body (Rechnungshof), which controls the conduct of federal, state, and municipal authorities. This law also involves review bodies, which can nullify decision of contracting authority revising the procurement procedure (publicprocurementnetwork.org).

As far as building law, there has never been a single construction act in Austria. In other words there is no building law established on a central level. Primary authority for construction laws has provinces. Hence there are nine provincial systems covering building legislation including processes and functional requirements for building works, regulations and technical requirements.

In order to harmonize the **building legislation** among provinces, new guidelines were set by the Austrian Institute of Construction Engineering (hereinafter OIB). This institute is a non-profit organization founded by state governments, which operates along Federal Constitution Act, and is targeted at cooperation of provinces in construction sector. The OIB is a European technical evaluative body, which ensures that the building products in Austria do not

threaten health and safety and fulfill necessary conditions, and which provides concurrently valid technical standards. The guidelines (6) introduced by the OIB are structured in accordance to EU Construction Products Directive. Majority of Austrian states have already declared these guidelines as binding in their building codes (Austrian Institute of Construction Engineering).

4.2.2 Economic Environment

This next chapter pays attention to evaluation of economic environment. The key macroeconomic indicators are recorded in following table (see Tab. 6). Each factor is further assessed.

Tab. 6 Key macroeconomic indicators of Austria

	2005	2006	2007	2008	2009	2010	2011	2012	2013
GDP growth rate [%]	2,4	3,7	3,7	1,4	-3,8	1,8	2,8	0,9	0,3
GDP at c.p. [bn. €]	245,2	259	274	282,7	276,2	285,2	299,2	307	313,1
Consumption Expenditure [% of GDP]	73,4	72,4	70,9	71,4	74,5	74,5	73,7	74,1	74,2
Export [% of GDP]	53,8	56,4	58,9	59,3	50,1	54,4	57,3	57,2	57,4
Inflation rate [%]	2,1	1,7	2,2	3,2	0,4	1,7	3,6	2,6	2,1
Interest rate [%]	3,39	3,80	4,30	4,36	3,94	3,23	3,32	2,37	2,01
Unemployment rate [%]	5,2	4,8	4,4	3,8	4,8	4,4	4,2	4,3	4,9
Volume index of construction [%]	4,9	5,9	3,9	-0,8	-1,7	-4,0	2,0	3,4	0,5

Source: Eurostat, available at: http://epp.eurostat.ec.europa.eu, edited by author

Republic of Austria is a small open economy closely tied to Germany, which turned into one of the richest countries in the world with GDP EUR 313 bn. at market prices in 2013 (see Tab. 6). That is per capita EUR 33 350 (real expenditure per capita in PPS EU28), which is way above the average of the EU28. The **real GDP growth** as recorded in the table, has been rising till 2007 then in 2009 it experienced sharp decline (-3,8%) as consequence of financial and economic crisis. Nevertheless real growth of Austrian output increased again by 1,8 % in 2010 and even more in 2011 (+2,8 %) thanks to great investment of government into infrastructure. Since that time Austrian economy has been growing very slowly or rather stagnating. The reason for that may be an employment of consolidation plan since 2012, which is elaborated below. Nevertheless according to the OECD statistics real GDP should grow by 1,5 % in 2014 and by 2,1 % in two following years. Quick recovery of Austrian economy after the crises in 2008/2009 was possible thanks to governmental investments mentioned above (Eurostat).

Austrian policies positively impacted also **final consumption expenditure** of economic agents. Consumption spending kept rising from 2007 till 2010 peaking at 74,5 % of GDP. In 2013, the final aggregate consumption expenditure fluctuated around 74,2 % of GDP (Eurostat).

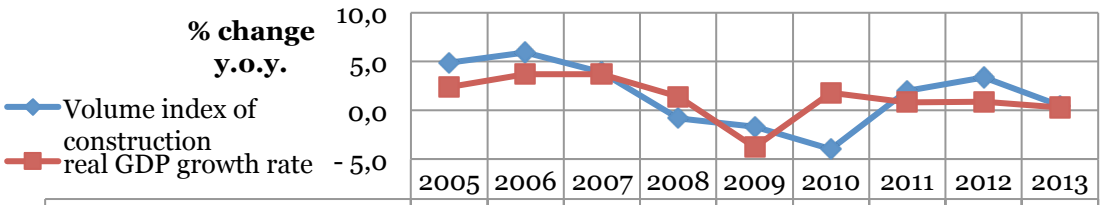
As already stated Austria is open economy and tightly linked to Germany. Hence the economy is dependent on **export** mainly to Germany. 57,4 % of good and services produced in Austria were sold abroad in 2013. Export was peaking in 2008 after steady growth. In 2009, export hit the bottom declining to 50,1 % of GDP and since that year on it kept on rising. Major trading partners are Germany, Italy, USA and Switzerland, France (Advantageaustria.org).

Concerning **inflation** determined by harmonized indices of consumer prices, (HICP) level of prices of goods and services in Austria were fluctuating around 2,1 % in 2013, which is pretty stable. Large stagnation of prices was recorded in 2009. The European Central Bank's (ECB) target is inflation at 2 %, which was reached in Austria in long-term. By accession to the Eurozone, Austria lost its ability to alter monetary policy, which is now performed by the ECB. Hence Austria lost the major instruments of monetary policy, and cannot individually alter the deflation potential. According to Oesterreichische National Bank (OeNB), the HICP is projected to be 1,8 % in 2014, 1,7 % in 2015, and 1,9 % in 2016.

Instruments of monetary policy can impact inflation. For instance decision of national bank on interest rate can alter inflation through transmission mechanism. Currently the ECB set the level of **interest rate** (for open market operation) at 0,5 %. These so-called repo rates influence the market interest rates. Current harmonized long-term interest rates in Austria fell to 2,01 % in 2013, which is the lowest rate since 2005. The trend of interest rates has been rather declining (see Tab. 6).

Another indicator recording the economic activity of Austria is **rate of unemployment**. In previous table (Tab. 6), it is shown that harmonized rate of unemployment based on ILO definition was 4,9 % in 2013. Austrian economic stability is determined by very low and modest unemployment, one of the lowest in the EU. In 2008, the unemployment rate fell to only 3,8 %. According to the OeNB, the rate of unemployment is estimated to stagnate around 5 %. Austria applies many social policies concerning the labor market; working in Austria is quite beneficial.

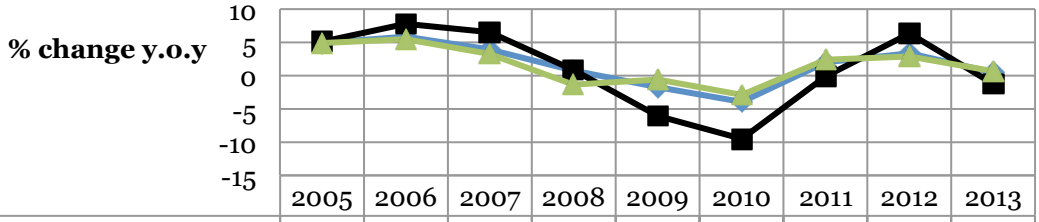
Construction industry in Austria adds 7 % of a value to GDP hence plays an important role in the economy. As a result of world crisis, Austrian construction also experienced negative growth in year 2010, a year later after the economic slowdown in 2009 (see Figure 17). Investment policies into infrastructure and building refurbishment in 2009 and 2010, recovered the economy in 2010 and following years, and with one-year delay also the construction. In 2013, construction production stagnated around 0,5 %



	2005	2006	2007	2008	2009	2010	2011	2012	2013
Volume index of construction	4,9	5,9	3,9	- 0,8	- 1,7	- 4,0	2,0	3,4	0,5
real GDP growth rate	2,4	3,7	3,7	1,4	-3,8	1,8	0,8	0,9	0,3

Figure 17 Trend of real GDP and Volume Index of Construction in AT
Source: Eurostat, available at: http://epp.eurostat.ec.europa.eu, edited by author

In following graph (see Figure 18), production of **Civil Engineering and Building construction** is recorded. Building construction was negatively affected in year 2008 and in subsequent two years it touched the bottom and slowed down by 2,9 % in 2010. Since that time construction was growing thanks to rising demand for residential buildings. On the other hand civil engineering experienced further drops in 2009 and 2010. After upswings in 2011 and 2012, thanks to public investments into infrastructure in 2010, civil engineering fell again to negative growth of -1,3 % year on year in 2013.



	2005	2006	2007	2008	2009	2010	2011	2012	2013
Construction Volume Index	4,9	5,9	3,9	0,8	-1,7	-4	2	3,4	0,5
Civil Engineering	5,1	7,8	6,5	0,9	-6,1	-9,5	-0,1	6,3	-1,3
Building Construction	4,9	5,5	3,3	-1,4	-0,6	-2,9	2,4	2,9	0,7

Figure 18 Trend of development of construction output components in AT
Source: Eurostat, available at: http://epp.eurostat.ec.europa.eu, edited by author

As far as **prices of works of residential construction**, prior to the crisis they were growing faster than inflation signifying boom in residential housing. When in 2009 the bust came, the prices of residential construction stagnated at 0,6 %. Nevertheless the prices of works increased in 2010 and since that time have been slowly growing (see Figure 19). For further elaboration of price, see chapter 4.5.

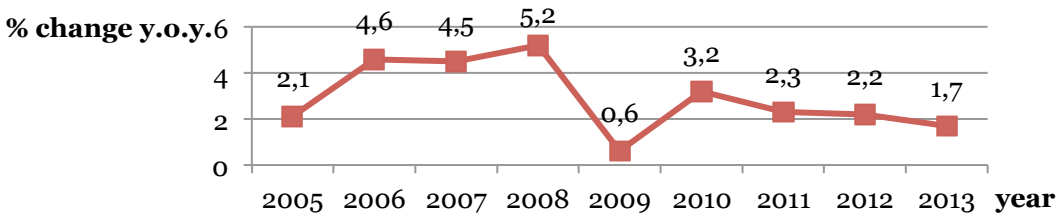


Figure 19 Level of inflation and growth of construction prices in AT
Source: Eurostat, available at: http://epp.eurostat.ec.europa.eu, edited by author

Another determinant defining the economic situation of a country and its stability is **governmental debt** and **budget deficit**. Austria is currently in the effort of consolidating public finances and implementing structure reforms. Government debt in 2013 amounted 81,2 %, which is way above the value predetermined by Maastricht criteria (see Figure 20).

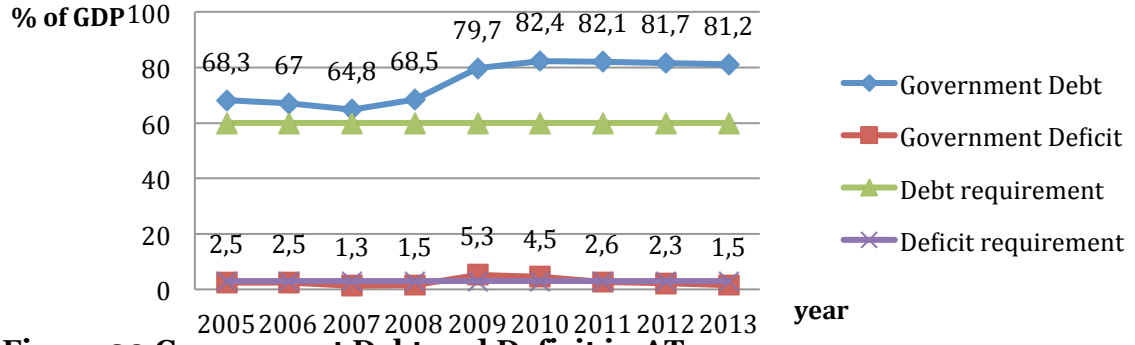


Figure 20 Government Debt and Deficit in AT

Source: Eurostat, available at: http://epp.eurostat.ec.europa.eu, edited by author

Concerning the budget deficit, the trend has been very positive in past three years. Austrian government, in 2009, prepared a fiscal consolidation plan for four years and in 2012 prepared another consolidation program (austerity package and debt brake) for period 2012-2016 worth EUR 26,5 bn. This package is legally binding for federal and provincial level. Such program states that the general government deficit will reach 0,6 % of GDP in 2016 and the debt level will fall to 71 % in 2016 (OeBFA Austrian Treasury). Implementation of austerity programs of 2009 and 2012 are already visible in the graph above (see Figure 20) showing the decreasing trend of government deficits since 2009. Austria still belongs to the AAA-rating countries showing that the country is considered as a trustworthy debtor (Standard and Poors).

4.2.3 Socio-cultural Environment

Austria is a landlocked country with more than 8,45 million inhabitants living on the area of 83 879 km². Similarly as in the Czech Republic and other European countries, Austria detects the issue of ageism. According to the Eurostat, in 2013 18,1 % of total **population**, which means 1,53 million is at the age of 65 and older. It is shown in following table (see Tab. 7) that the trend has been increasing. On the other hand, the group of young at the age of 0-14 has been getting smaller. Hence population has been ageing in Austria as well. Moreover Eurostat projects that by 2060, there will be 29,1 % of people at the age of 65+ out of 9,69 million of people, which is 2,8 million of older inhabitants.

Tab. 7 Age Demographics in AT

% of total	2005	2007	2009	2011	2013
Age: 65+	15,9	16,9	17,4	17,6	18,1
Age: 0-14	16,1	15,6	15,1	14,7	14,4

Source: Eurostat, available at: http://epp.eurostat.ec.europa.eu, edited by author

Another issue of **demographic structure** in Austria is as obvious as in the Czech Republic, the growth of single households. According to the Statistic Austria, there is 1,34 million of people living alone. In 1984, there was only 0,74 million. As far as the rate of divorces, in Austria slightly less people are divorced compared to CR but in 2013, it amounted for 40 %.

Furthermore, there were almost a million of **foreigners** living in Austria, which was 11,9 % of total population (recorded in 2013). The biggest group of foreign citizens comprised the Germans (almost 158 000), followed by the Turks (113 000) and the Serbs, (111 000) then the citizens of Bosnia and Herzegovina. There has been a trend of positive migration since 2009 (currently at 54 728 people). Number of immigrants has been increasing since 2009 and number of emigrants has been on the upward trend since 1996. Hence Austria has become multinational and multicultural country. Internal migration is also popular. 716 436 people moved within Austria in 2013 and this number has been increasing (Statistik Austria).

As far as level of attained **education**, number of university students at both tertiary levels is greatly increasing (see Figure 21). Number of students at upper secondary grammar schools is stagnating around 90 thousand. Moreover pupils at upper secondary school in vocational programs decreased in since 2009 but the drop is not as evident as in the Czech vocational programs, where it was by more than 50 000 since 2008.

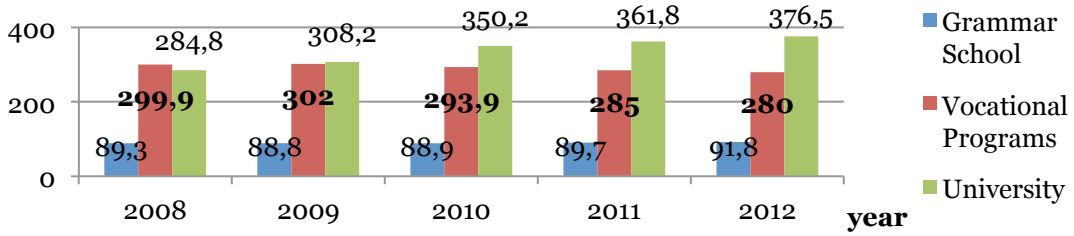


Figure 21 Number of students on given level of education (in 1000) in AT
Source: Eurostat, available at: http://epp.eurostat.ec.europa.eu, edited by author

Nevertheless, the Austrian apprenticeship model of vocational education and training (VET) is very sound. It is based on so-called dual system combining practical training and general education. After nine years of compulsory primary schooling, pupils can chose to go to VET school. Apprentices gain practical on job training within companies as well as theoretical background at schools. VET schooling offer options of 200 professional occupations. Graduates of the VET school receive a vocational qualification of high standard after passing Apprenticeship Leave Exam in front of group of experts. Furthermore students have a chance to enter tertiary education by taking another exam.

Around 35 000 companies participate in the training program in Austria and hence in long-term view, they contribute to the benefit of the economic sectors. In 2012, 34,5 % of the former students worked in the company where they took the training. Such system is possible mainly due to the cooperation of government and major economic partners. The Federal Ministry of Science, Research and Economy cooperates with Austrian Economic Chamber (WKO) and

participating companies regularly to enhance the dual training system (austria-ninformation.org).

Such scheme of vocational training positively contributes to the issues affecting the whole EU, high level of unemployment of the youth, less skilled labor, and insufficient amount of technicians. In Austria it solves all three problems. Austrian youth unemployment is around 9,2 % among the lowest in the EU (Eurostat).

Concerning **employment statistics within construction** (ONACE rev. 2, code F), in 2013 it was detected that there were 282 812 people employed and total number of evidenced employees (registered) was 258 000. Employment in construction sector has been increasing even in 2009, the economic slowdown. Gross monthly wage of full time workers in construction moves around EUR 2172, which is about EUR 70 less than average gross mo. wage within all sectors (ranked 12th highest among the different sectors). As far as real labor productivity in Austria it is EUR 39,9 per hour worked. Since 2004 productivity of Austrians increased by more than EUR 4,5 (Statistik Austria).

As already mentioned Republic of Austria has a high **standard of living**. GDP per capita is EUR 33 350 (PPP), which declares that Austrians are "quite" wealthy nation. As far as standard of living based on risk of poverty and social exclusion indicator, in Austria, 18,8 % of total population is at the risk of poverty and social exclusion or materially deprived or living in households with very low work intensity (Eurostat). Immense number of foreigners in Austria greatly affects this number (Statistik Austria).

4.2.4 Technological Environment

Austria belongs to those EU countries, which contributes to the technological innovations and development the most. **Scientific and technology infrastructure** is on high level.

Gross domestic expenditure on **research and experimental development** was in 2013 2,81 % of GDP amounting for EUR 8,96 billion, the fifth highest among other EU member states. Such a contribution increased by 2,9 % from previous year. There are three main sources of financing R&D in Austria: Private sector (contributed by 43,9 %), public sector (contributed 40,4 %, federal government 34,4 %), and foreign investors (contributed 15,2 %). In year 2013, firms provided 3 % more year on year (total EUR 3,93 bn.), public budgets increased its expenditure to R&D by another 2,8 % (total EUR 3,09 bn.) and finally foreign companies supported R&D by 2,7 % more (total EUR 1,36 bn.). External funding from these international firms is given mainly from other European companies, which are connected to local enterprises in Austria. Funds into research and development of the three mentioned sources have been steadily growing for a long time. No wonder that contributions to innovation in Austria move way above average of the EU28. Furthermore there are 81 enterprises in Austria performing R&D with 905 workers (Statistik Austria).

Concerning **ICT** usage by private business sector in Austria, 97,6 % firms use Internet, 85,7 % have web pages, only 39,3 % use electronic invoicing for their business, however more 38,6 % use social networks, and 60,4 % buy products online (CZSO). As far as number of households using Internet, there are 81 % of households with access to the Internet, which is almost twice as many as in 2004 (Eurostat).

Austrian ICT industry is characterized by a large number of SME and high-quality environment for research and development. Many companies such as Alcatel, Hewlett-Packard, Siemens and Sony utilize numerous benefits of Austria as it is considered as a country with highly developed information technologies. Therefore many firms established international research departments and workshops for production of quality products (Advantageaustria.org).

Furthermore Austrian firms respond to the future challenges by offering innovative solutions also in construction. Support of development by construction firms relies on cooperation and partnerships. A great opportunity is for instance "Building of the Future" (Haus der Zukunft), program supporting ecological construction. Austria has become a leader in green construction, thanks to application of innovative techniques in energy efficiency, thermal insulation, solar architecture, renewable energy sources, and green-building materials (Advantageaustria.org).

4.2.5 Ecological Environment

According to the OECD report on environmental performance (2013), Austria always was a leader in environmental protection among other EU member states. No wonder that Austria played major role in development of EU environmental legislation, and moreover the implementation of the laws in Austria was performed above average. Hence Austrian citizens are satisfied with the good environmental quality of life. Water quality is one of the best in the world, huge portion of land is under nature protection, and carbon emission and energy consumption has declined. Still green house gas emission and quality of air did not meet the domestic objectives. Nevertheless strong environmental policy and substantial funding enhanced the development of the environmental performance in Austria.

Concerning environmental policy, responsibilities for environmental issues are distributed to the federal state (represented by Federal Ministry of Agriculture, Forestry, Environment and Water Management) and the nine provinces. Construction environmental issues are within scope of federal state. On the other hand provinces are responsible for example for nature conservation. Many Austrians are part of some kind of environmental (alpine) organization pursuing their interest in environment policy making (OECD).

Laws that relate to environment in Austria are for instance: Environmental Impact Assessment Act 2000 (EIA), Federal Waste Management Act 2002 and provincial acts, the nine Building Act of the provinces and many others.

Austria is among few countries that implemented the EIA Directive of the EU. Austria hence issues permits with limitation values and recommendations of best possible techniques to reduce pollution. In other words, projects are subjected to very intense licensing procedures. However federal roads and rails are excluded from these measures. As far as statistics around 71 % of all EIA projects (1995-2012) were approved and only 3 % were not granted or rejected. The rest is still being evaluated. Austria does not have a central system of inspection and control of pollution. Only provinces have inspection plans. Therefore group of ministries and Lander representatives prepare national system for Integrated Pollution Prevention and Control (IPPC) (OECD).

Austria imposes high taxes in regards to ecologic matters. According to the Eurostat, Austrian authorities collected EUR 7,5 bn. in 2012, which is about 2,44 % of its GDP. The most was collected in energy taxes (EUR 5 bn.), and transportation taxes (EUR 2,4 bn.). Only EUR 63 mill. was collected in form of resources/pollution taxes (Eurostat).

The Ministry of Agriculture, Forestry, Environment and Water Management launched an initiative called "klima:aktiv" on promoting climate protection to reduce greenhouse gases. There are four fundamental issues that this initiative considers: future oriented construction, energy efficiency, and intelligent mobility, use of renewable energy. For this cause were developed many programs promoting climate-friendly technologies and activities. In the section of construction this initiative aims at energy-efficiency of new buildings and high-quality renovations of old buildings. These are two important areas to long-term climate protection (klimaaktiv.at). As far as **subsidies**, Austria offers funding for great energy performing constructions. There are 82 environmental subsidies for thermal building refurbishment amounting for EUR 45,9 mill. and 36 environmental subsidies offered in amount of EUR 311,9 mill. in 2014 (bmlfuv.gv.at). Furthermore according to Statik Austria, in 2011 there was more than EUR 11 bn. spent on ecologic matters in Austria. Amount of these finances almost doubled since 1995.

Concerning the **emission of greenhouse gases**, along with the Eurostat statistics, the climate in Austria in 2012 was threatened by 82,2 million tons of carbon dioxide equivalents. Since 2002 the overall number has decreased, however during the ten-year period greenhouse gases emission raised up to 97,5 million tons of CO_2 equivalents. Still Austria is positioned among countries with the lowest gas emission. In manufacturing industries and construction emissions amounted 15,6 million tons in 2012 (Eurostat).

Consumption of **natural resources** in Austria accounts for oil (35,6 %), natural gas (21,8 %), other renewable resources (19,1 %), and coal (9,7 %). Austria is against atomic energy rather it is among leaders in usage of renewable energy sources such as wind power. As far as forests, 40 % of the country is covered by forest (Advantageaustria.org).

4.3 Factor Conditions compared and linked to the EU

In the following chapter, factor conditions elaborated above will be briefly compared and linked to the perspective of the European Union.

POLITICAL ENVIRONMENT

Nowadays 28 countries form the EU and the political stability differs among countries. In 2014, new European Commission (common "EU government") was elected and Jean-Claude Juncker became a president. Challenges that have occurred within the EU starting with financial crises, indebting the governments, considering whether to expel Greece, energy dependency on Russian gas, and situation in Ukraine will be issues to be reconsidered by the next "government." Juncker said that this new cabinet should deliver change to the Europeans, trigger more investments, improve digital market connectedness, and ensure energy security. This will be tough and decisive period for the EU.

Political situation is further more stable in Austria than in the Czech Republic. Personnel turnover of public representatives is much less prevalent in Austria, especially on critical position influencing construction (Ministry of transport). Institutional support in form of some partner negotiating construction matters has been greatly developed in Austria (this include formation of social partnership that influence the legislation). Impact of the new deputy on construction in CR will be seen in the future.

Austerity packages around Europe were a typical phenomenon in Europe after crisis. Public investments measured by (GFCF) have decreased in both countries in question. Still the major difference was that Austrian gross public investments in 2012 (1,1 % of GDP) decreased by 0,1 % since 2007, whereas in CR, it declined in 2012 (4,2 % of GDP) by 1,0 % since 2007. The EU17 average public investments dropped from 2,6 to 2,1% of GDP. Biggest fall encountered countries like Spain and Ireland. The reason why industries in Austria were not as affected was due to quick public stimulus packages that absorbed the crisis. This help construction sector significantly. Such measures were not realized in Czech Republic.

Legal framework for construction is based on regulations and directives of the EU policies. One of the major and controversial Directive on public procurements has been recently revised by Directive 2014/24/EC. This amendment offers: more flexible and shorter negotiating procedures between public entity and firms, only winner submits full documentation, bidders submit only self-declaration of eligibility to fulfill the contract. It supports SME in tender participation of rather more and smaller companies than a few, large firm. Also environmental policies are reflected in the amendment affecting the awarding criteria. Public entity should decide not on the lowest price but on MEAT (most economically advantageous tender) given by price/quality ratio including the focus on "the best life cycle cost". Some of the EU countries have already implemented it; Austria and Czech Republic are still in the process of implementation. Nevertheless, it should enter into effect by April 2016 (European Commission).

Important legislation in construction is mainly building law, energy performance of buildings, and EIA. Building Acts differ among EU member states. For instance, in Germany 16 Federal states have own building codes (Bauordnung) paying attention to individual projects in regions given so-called Model Building code (Musterbauordnung), and there exist also one Federal Building code covering use of land, property rights, administrative procedures binding to all the states (bauordnungen.de). In Austria there are nine different building laws by provinces, which follow certain guidelines, hence the legislation is more flexible for given region. No single building code is present in Austria. Whereas the building Act in CR is administratively very complicated and static towards specificities in single regions.

As far as energy performance of buildings, both countries implemented Directive 2010/31/EU on the energy performance of buildings in their building legislation. Moreover Czech Republic has a problem with implementing the Environmental Impact Assessment legislation. Assessment of long-term linear constructions, which could be stopped, was the controversial issue for the Czech Republic unwilling to implement it. On the other hand, Austria, as eco-leader, already embedded EIA into the Austrian legislation, however, excluding federal roads and rails from the assessment.

Concerning the corruption perception, Czech Republic is far behind Austria in amount of corruption perceived. According Transparency International, Austria was ranked 11th within the EU and CR was ranked 24th in front of Slovakia, Italy, Romania, Bulgaria and the most corrupted (perceived) Greece. On the other end Denmark was perceived as the least corrupted. On average the EU countries are well performing compared to the world; moreover, the northern EU member states are leaders in perception as the least corrupted countries in the world.

As far as the EU subsidies, the European Union provides certain funding through its Cohesion policy. In period 2007-2013 Czech Republic was the fourth member state with the largest allocation of funds. EU allocated EUR 26,5 bn. to CR and it has still not been fully drawn because of improperly prepared projects. On the other hand, Austria was allocated with only EUR 1,2 bn. The highest amount was allocated to Poland followed by Spain and Italy. The lowest drawer was Denmark. Moreover for period 2014-2020 the Cohesion Policy plans to allocate EUR 351,8 bn. CR will receive the fifth highest amount (EUR 21,98 bn.) and Austria on the other end of the scale will be allowed to receive again EUR 1,2 bn. (European Commission).

ECONOMIC ENVIRONMENT

Austria is very strong market economy twice as bigger as the economy of Czech Republic. According to the Eurostat Database, in 2013 the Czech GDP moved around EUR 149 bn. compared to Austria's EUR 313 bn. Real growth of output as pictured in following graph (see Figure 22), shows that CR recorded the biggest fall in 2009 after the crisis compared to Austria and average of the EU28. Moreover in 2013, CR still was in recession (-0,9 %). Fastest and stable recovery registered Austria, which has been since 2010 in positive numbers. The so-

called PIIGS countries (Portugal, Italy, Ireland, Greece, Spain) still experience negative growth and strong Germany recorded in 2013 similar growth as Austria (0,4 %). European economic forecast by European Commission positively projects that CR, AT, and EU28 should grow, moreover the CR the fastest way (by 2,7 % in 2015 and 2016).

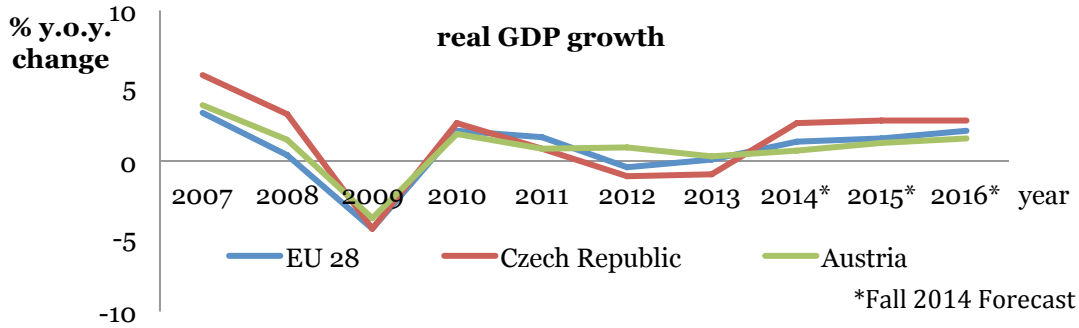


Figure 22 Real GDP growth
Source: European Commission, available at: http://ec.europa.eu/, edited by author

Inflation and long-term interest rate has been low in both countries. Interest rates specifically were declining for a quite a long time. Inflation among member states holds around 1 %. This percentage is very low, which creates potential for deflation, which has already occurred in Greece. CNB therefore used exchange rate as monetary policy instrument, devaluated Czech currency (bought CZK 200 bn. on foreign exchange markets) and is expecting for prices to increase. Austria as other Eurozone countries cannot use such instrument. Hence ECB cut interest rates and will buy asset-backed securities, as recently announced to fight the deflation (ECB.Europa.eu).

Unemployment rate in both countries was quite low compared the EU28 (10,8 %) in 2013. Austria, thanks to its social policies and good labor market situation, has one of the lowest unemployment within the Union (4,9 %). Also there is very low unemployment of the youth only 8 % compared to the Czech youth unemployment (18,9 %) and the average of all EU countries (25 %) (Eurostat).

The crisis that occurred in 2008 had a harming impact on construction. Production in most of the EU member states dropped. In CR, the decline in production was significant mainly due to reduction in public investments followed by deterioration in demand for investment goods. The Czech sector was still in recession in 2013. On the other hand, Austrian construction was saved thanks to Governmental stimulus packages to both construction of buildings and civil engineering and currently is growing very slowly. From the European countries were mainly affected countries like Spain and Ireland, where public investments were stopped after previous booming period till 2008 (Eurostat).

Even though Austria is one of the wealthiest countries in the world with GDP per capita EUR 33 350, this social kind of market economy has high level of public debt. Austrian public debt was in 2013 about 81,3 % of GDP, Czech Republic only 45,7 % (GDP per capita EUR 20 600). Still it is under the average value of EU 28 (85,4 %). Again the PIIGS countries “scored” much higher. Aus-

tria has been applying some austerity programs, which enabled to continually lower public deficits. In 2013 the public deficit was about 1,5 % of GDP, which was by almost 4 percentage points lower than in 2009. Also Czech government acted very responsibly as far as debt formation. Since 2009 budget deficit decreased by more than 4 points and marked 1,3 % of GDP in 2013. The average budget deficit among EU member states was 3,2 %. Indebted governments are quite common in the EU nowadays. This careless public binge spending questions the ability of the EU as an association of states to function.

SOCIO-CULTURAL ENVIRONMENT

Total population of the EU is about 507,4 million. CR forms only 2,1 % and AT only 1,7 % of total population. It is nothing new to say that the oldest continent is really getting old. Within the EU, in 2013 18,3 % people were at the age of 65 and older (CR 16,8 % and AT 18,1 %). According to the Eurostat projections, by 2060 there will be 1/3 of total EU population (525,5 million) at this age group. Therefore governments have to count with such an evolution (Eurostat).

Structure of households has changed. Nowadays the sum of single households has been increasing in the whole Europe. According to Eurostat there was almost 77 million single households in 2013, which is 10 million more than in 2007. Czech Republic (1,2 mill.) and Austria (1,34 mill.) do not stay behind. Number of singles is also affected by the divorce rate in both countries in questioned the divorce rate account for around 40 % (Eurostat).

Process of globalization caused that the world is becoming a melting pot of cultures. In Austria there is around a million of foreigners, which is twice as many as in the Czech Republic. While Austrian foreigners are mainly Germans and Turks, and Serbs, Czech foreigners are Ukrainians, Slovaks and Vietnamese. Amount of foreigners in the EU was in 2010 6,5 % (32,5 million) and non-EU residents form the majority (Turks, Moroccans, Chinese) (European Commission).

As far as education, the increasing trend of amount of university students is the same in both countries and the EU. On the other hand number of students at vocational programs (including construction trades and crafts) has been declining. Popularity of crafts and trade suffers and hence there is lack of skilled workers in industrial sectors (Eurostat). This is mainly typical for CR. Furthermore in most EU countries there is high level of youth unemployment. In CR, students that leave education system without tertiary degree get skills, which are not demanded as far as quality and field of focus. Austrian system of vocational training is much more developed and is a good benchmark for many European countries. Vocational training is done within firms and theories are supplemented at vocational schools. The training does not have a dead end and assists the graduates in finding a job. Cooperation with firms is the major contribution to the system.

Construction sector (NACE rev.2 F) employs 218 000 of evidenced people in the Czech Republic and 258 000 people in Austria.[10] While number of Czech employees in this sector has been decreasing in Austria the amount was rather growing. In countries such as Spain number of employees has dropped by more than 1,5 million since 2007. Similar falls recorded also other countries (Italy and Ireland). The average gross monthly wage is very dissimilar in both countries. While Austrians employees in constructions receive over EUR 2000, the Czech earn on average only EUR 800. European average monthly salaries, according calculations based on Eurostat data (annual wage and salaries/number of employees/12), moved around EUR 2065 in 2012. Also the real productivity of labor differs. Austrians produce EUR 39,9 per hour worked and Czechs only EUR 13,1, which is deep below the average of EU28 (EUR 32,1 per hour worked) (Eurostat).

TECHNOLOGICAL ENVIRONMENT

Both countries spend great amount of money on R&D. Volume of expenditure on research in CR has been continually increasing and it amounts for 1,91 % of GDP. Austria spends enormous amount of funds on research, the fifth largest spender in the EU (2,81 %). The EU28 has been continually increasing the expenditure on research, in 2013 contributed in total 2,02 % of GDP (Eurostat).

Great support of funding comes from the **EU funds**. Targets of the EU Cohesion policy for period 2014-2020 aim at research and innovation and information and communication technologies. Initial Commission proposal for funding of innovation with 2020 Horizon is just now at EUR 70,2 bn. (European Commission).

Both ICT sectors are well developed including mainly domestic SME. Czech Republic ICT sector grew very fast in past 10 years. Both countries attract foreign IT firms, which settled development centers in Vienna, Brno and Prague. ICT sectors in Europe are among the leading sectors greatly affecting economic growth. The total value added of the sector is 8,5 % and employment comprises 3 % of total private sector employment in the EU. Effective use of and ICT investments promoted by the EU helped to raise productivity of labor, efficiency and competitiveness of businesses (European Commission).

Furthermore firms use information technologies on daily basis in both countries at high level. The usage habits are pretty much similar. However companies in CR use more of electronic invoicing, on the other hand Austrian firms use more of social networking for their business.

Usage of IT technologies is accustomed in both countries. Internet availability in households is higher in Austria (80 %), which is just above the EU 28 (79 %). In the Czech Republic it is slightly less; 73 % of households have access to Internet. 95 % of households in Netherlands have Internet access. On the other hand only a half of the households of Bulgaria have Internet (Eurostat).

[10] Number of persons employed (including also not registered people) differs. In Czech Republic there more people employed in CR than in AT.

ECOLOGICAL ENVIRONMENT

Legal framework for national legislation follows the environment policy of the EU. This policy aims to protect European natural resources, initiates green approach of businesses in their operations, and cares about the health and wellbeing of the Europeans.

Important legislation concerning construction involves Directive 2010/75/EU on industrial emissions (integrated pollution prevention and control), Directive 85/337/EEC on Environmental Impact Assessment amended as Directive 2014/52/EU, and Directive 2010/31/EU on the energy performance of buildings. This last directive requires each building to be assigned with certificate showing the energy demand of buildings. All of the three directives are implemented into Austrian legislation. On the other hand Czech Republic implemented all three but the amendment to EIA has still not been applied in Czech legislation. However CR is now forced by EU authorities to do so, otherwise will not be receive EU funding.

EU elaborated so called 2020 strategy, which aims to reduce energy consumption by 20 percent by 2020. Such strategy will have an impact on constructions, which will be forced to use eco-friendly materials, which are energy efficient. Moreover EU provides different funding in field of environment protection: such as LIFE fund, the Eco-Innovation and Competitiveness and Innovation Framework Program, the 2020 European Fund for Energy, Climate Change and Infrastructure As far as buildings there is European Energy Efficiency Fund (EUR 265 mill.), Intelligent Energy – Europe (EUR 730 mill.), Cohesion Policy for sustainable energy investments (EUR 9,4 bn.) (European Commission).

As far as funding in the Czech Republic, renewed program New Green to Savings was opened to support revitalization of buildings and will allocate EUR 982 mill. until 2020 and some others. In Austria there are many subsidies for buildings. In 2014 it was provided EUR 456 mill. in field of environment towards construction.

Austria also imposes high environmental taxes (EUR 7,5 bn.), Czech Republic gets less than a half of Austrian tax revenues (EUR 3,6 bn.). EU28 collects totally EUR 311,7 bn. Very high environmental taxes have UK, Sweden and Denmark (Eurostat).

Furthermore Austria has quite low emission of greenhouse gases (82 million tons) compared to Czech Republic (132,4 mill. tons). Emission of GHG has been decreasing within EU. EU 28 GHG emission amounts 4,6 billion tons and since 1990 it decreased by 1 bn. tons. The most CO2 equivalents emission is in Germany (964,6 million tons) followed UK (613 million tons) and France (506 million tons) (Eurostat).

Natural resources for energy consumption in Austria are much greener than in Czech Republic. While CR uses preferably coal and atomic energy, AT prefers oil, natural gas, and renewable resources (19 %). CR uses only 8 % of renewable resources. Share of renewables in energy consumption of the EU 27 moved around 14 % in 2012 and the trend has been increasing (Eurostat).

4.4 Demand Conditions in the Czech Republic

Based on types of contracting authority, there are two types of domestic investors forming demand for constructions: public entities (state) and private entities (firms or households). Furthermore demand can be divided by territory of orders placed abroad, domestically and regionally. Number and volumes of orders of these entities hence can determine demand in construction.

Construction sector in Czech Republic faced significant slump in demand after the crisis in 2008 (see Tab. 8) when economic agents cut their spending. Mainly public demand dropped significantly in volume of money spent on the construction. Still number of public orders kept fluctuating around 4-5000. Concerning the private sector, volume of money invested into construction has also declined since the crisis eruption. In 2007, private sector spent CZK 58 bn. in construction and in 2013 it was only around CZK 50,6 bn. Number of orders by private sector fluctuated around 4-6 000. Taking into account the amount of orders, the demand was during the recession restructured. Number of private contracts exceeded the number of public tenders, which was not usually the case prior to the crisis. However still the larger pool of money flew from the state authorities. Also the downward sloping trend of demand experienced sub-sector of Building construction. In 2008, there was CZK 118 bn. of new orders, and in 2013 the value fell to almost a half (CZK 67 bn.) (Český statistický úřad, 2013).

Nevertheless the size of demand is currently very low compared to previous years representing the total volume of orders CZK 141 bn. within 10 206 orders. With significant decline of volume of orders and rather higher number of orders, the average value of an order fell substantially from CZK 19,9 mill. in 2009 to only CZK 13,8 mill. in 2013.

Tab. 8 Construction orders at the end of period based on contracting authority CR

Yr.	Total [CZKmill.]	Total #	Public [CZKmill.]	#	Private [CZKmill.]	#	Abroad	Avg. Price
08	215 132	NA	144 129	NA	56 209	NA	5 %	NA
09	174 896	8785	117 600	4366	38 186	4329	11 %	19,9
10	149 277	9857	85 488	4072	44 779	5678	12 %	15,1
11	143 078	11164	78 967	4852	52 681	6157	8 %	12,8
12	140 373	9302	73 379	4064	52 023	5110	11 %	15,1
13	141 023	10206	66 662	5093	50 654	4914	17 %	13,8

Construction enterprises with 50 and more employers.
Source: Český statistický úřad, 2013, edited by author

The structure of demand based on territory has also changed. Austerity of public authorities forced enterprises (mainly those dependent on public tenders) to find their luck abroad. In 2008, the value of demand abroad was only 5 % of total orders. However the concurrent data at the end of the period shows that almost 17 % of total value of orders was earned and demanded abroad (2013).

Concerning regional segmentation, most of works of Building construction subsector have been realized in Prague and South-Moravia region (see Fig-

ure 23). Nevertheless these were the only two regions, which experienced an increase in 2013 year on year (Český statistický úřad, 2013).

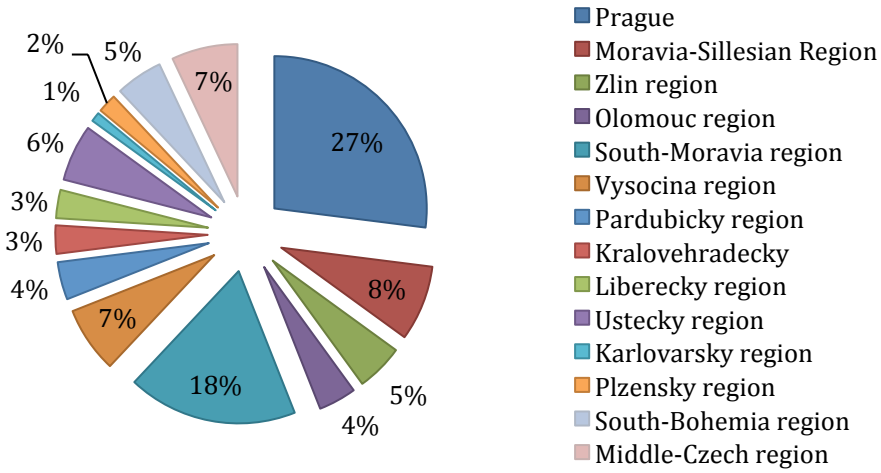


Figure 23 Constructions of buildings based on region 2013 CR
Source: Český statistický úřad, 2013, edited by author

State authorities, which represent public investors in the Czech Republic are: governmental sector, municipal sector (including regions and cities), and other sector representing state owned companies. Most of public demands occur at municipal level (see Tab.9). These numbers were also declining during the recession.

Tab. 9 Public orders by different contracting party 2012

Public sector	Number of orders	Value of orders CZK mill.
Governmental sector	1312	36 484
Municipal sector	2801	58 219
Other sector	282	17 050

Source: Kunc, 2013, edited by author

Concerning the private business sector (business investors), it is very hard to generally quantify the number of these customers and describe their characteristics. The general characteristic that has been observed by CEOs based on CEEC research and KPMG (Q2 2014) is that private investors have increasing needs on project realization, however the decision factor for them is the price. Construction companies also have been experiencing another concurrent characteristic of these private investors and that is late payments. Later payments of investors have negative influence on the whole value chain so main contractors sometimes own to their suppliers. Therefore some of the smaller suppliers cannot bear a loss for a long time.

When looking at the three possible source of demand (state, private firms, and households), consequence of lower investments into sector of construction was influenced by the total sentiments towards investments along the economy development during the recession. In following table (see Tab. 10) investments

by institutional sectors is recognized as a percentage of GDP. It is apparent that all agents of the economy applied austerity.

Tab. 10 Investment by institutional sectors % of GDP in CR

Year	Total investments	Business investments	Government investments	Households investments
2008	26,8 %	17,0 %	4,6 %	5,2 %
2012	23,1 %	15,3 %	3,2 %	4,6 %

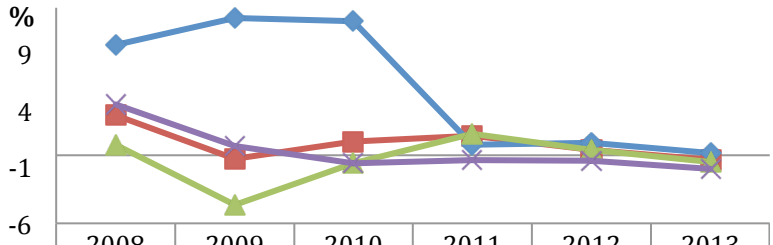
Source: Eurostat, available at: http://epp.eurostat.ec.europa.eu, edited by author

Having such a large decrease in demand it was inevitable and obvious that **excess of supply** in construction appeared during period of recession. Lower volume of orders has impacted the usage of production capacities of firms. According to the research done by CEEC research and KPMG (Q2 2014), CEOs of construction firms stated that surplus of production capacities over demand was about 28 %. Production capacity utilization was around 78 % (April, 2014). However in order to keep such capacity utilization, it was necessary for some firms to restructure. Lower demand deteriorated the cost of construction works (also price of producer). The prices of construction works decreased as a consequence of excess of supply by more than 1/5 compared to situation prior to the crisis. In 2013, the prices of construction works reached historical minimum (Vondricka, 2014).

However, according to the last quarter analysis of 2014, there was an increase in demand by 27 % in volume of public orders from January to October 2014 compared to the same period of last year. Such growth impacted the rise of construction prices and capacity utilization to 90 % at the end of 2014 (CEEC Research & KPMG, Q4 2014).

The development of construction costs of new residential buildings (excluding community constructions) is shown in following graph (see Figure 24). Construction costs are influenced by material cost component and labor cost index. Moreover the output price index (producer price) shows the development of prices paid by client. Prices of construction works dropped significantly in 2009, even though there was a decent growth of labor cost till 2010. More important role played material throughout the whole period, of which prices fell in 2009 with lower demand. However rising prices of energy (electricity, natural gas and oil products) until 2012 affected growth of material costs. While labor cost grew very slowly since 2011, growth of prices of material slowed down significantly in 2013 again thanks to fall in energy prices (Eurostat). Output price, which includes also the profit margin, signifies the deterioration of the market. To be precise, low demand, tighter competition and price wars occurred pressing the prices down sometimes under the edge of profitability. Many CEOs in CEEC research and KPMG (Q3 2013) research noted, in some tenders, firms had to offer very low or even dumping prices, which helped to employ its capacities in short-run, however in long-run it was unsustainable.

Price wars were intensified mainly due to the fact that the only deciding factor was a price especially in public tenders, which were enforced by terrible legislation framework on public procurement.



	2008	2009	2010	2011	2012	2013
Construction cost index	3,5	-0,3	1,2	1,7	0,5	-0,4
Labor cost index	9,7	12,1	11,8	0,9	1,1	0,2
Input prices for materials	0,9	-4,4	-0,7	1,9	0,5	-0,6
Output prices	4,5	0,8	-0,7	-0,4	-0,5	-1,2

Figure 24 Development of construction cost index annual change in CR
Source: Eurostat, available at: http://epp.eurostat.ec.europa.eu, edited by author

The crisis had an impact on channels, which generate new orders most effectively. According to the research done by CEEC and KPMG (Q2 2014) the most effective channel of generating orders (customers) is for many Czech CEOs personal networking followed by long-term cooperation with an investor. The third way of generating orders is a direct channel when a client approaches the firm directly, and least effective is participation in tenders. Popularity of tenders due to price wars and lower profits deteriorated the relationship between investor (demand) and construction firms. Most contractors have been pressured by price, time schedule, and late payments (CEEC research & KPMG).

In summary, long-term decline of demand, greater requirements of investors awarding tenders by the lowest price, and private investor insolvency concludes that the level of sophistication of demand in the Czech Republic has been quite low.

Individual customers for residential construction

In residential construction, customers are either investment speculators or buyers/users, who are demanding a newly constructed dwelling. They either approach a single construction firm to build a house, or they approach developers to buy a new dwelling. Current market also provides combination of both a construction developer company, which self-finances, builds and sells the new family houses or apartment houses. Individual households are its main customers and influence the volume of construction.

New construction of dwellings based on number of approved permits for new dwellings indicates that throughout the recession new construction declined by 42 % (from 20 545 in 2008 to 11 880 in 2013). Low investment sentiment of developer/construction firms and low demand for houses, as everybody tightened their belts, affected the initiation and thus approval of new residential construction (Cesky statisticky urad).

According to the research by CEEC and KMPG (Q2/2014) most developers stated that Czech customer decides mainly on the grounds of price of the real

estate, location and convenience of transport. Less important role plays energy efficiency of buildings and somewhere in the middle of the scale is quality.

Despite the fact that most developers saw the energy efficiency of housing as the least important for their customers, the results of energy efficient constructions is very slowly becoming a contrary.

On one hand, most Czech constructions are still made of traditional bricks and mortar, not very energy efficient material causing GHG emissions. However, brick and concrete family houses, still comprise 85 % (based on number of completed houses). Green renewable material (wood/timber) forms only 8,3 %. Moreover in multi-dwelling constructions, timber-framed buildings amount only 1,3 % of total construction (Cesky Statisticky Urad, 2013). Hence current numbers of construction acknowledges the conviction of the CEOs that energy efficiency is still unimportant for customers.

Nonetheless, the trend of substitution of wood for concrete is very slowly increasing even during the recession. In 2009 there was only 6,5 % of wooden Family houses and in 2013 there was 8,3 %. While traditional bricks-and-mortar residential completed dwellings kept falling number of wooden houses grew during the recession. Still it is only true in case of Family housing. Completed wooden multi-dwelling houses show no trend and its share is negligible. Also there is one big issue to consider, Czech demand does not trust in durability of timber-framed construction (Bilek, 2012).

On the other hand, legislation enforced by the EU and its 2020 strategy on energy performance of building will indirectly impact the customer perspective. Also long-term trend of energy prices will play more significant role in decision making to purchase a real estate (Eurostat).

Concerning price of a dwelling as first determinant to buy or not, it has been rather declining since the burst of housing bubble in 2008. Transaction price of new dwellings has decreased by -0,2 % year-on-year in 2013 (see Figure 25). However the residential market in 2013 experienced a relative recovery notwithstanding the slight slowdown in the economy. In 2013, the average prices, according to Deloitte property research, moved approximately around EUR 1100/m^2 (including all types of housing), which is quite low compared to other EU member states. As far as affordability of own housing, in order to obtain 70m^2 apartment, Czech customer has to work seven years to purchase it when counting all of the monthly gross wages[11] (Deloitte). Taking into account that people in Czech Republic spend 26,1 % of their consumption on housing and energy, then it would take them 27 years of saving to obtain the new apartment.

[11] Gross monthly wage in the Czech Republic is approximately EUR 912.

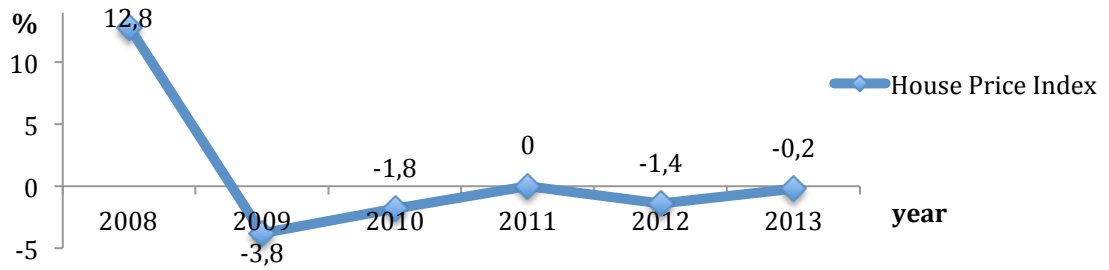


Figure 25 Development of house price index in CR
Source: Eurostat, available at: http://epp.eurostat.ec.europa.eu/, edited by author

As already mentioned the second most important deciding factor for a customer when demanding a dwelling is location. Even though the amount of completed dwellings decreased in all regions, the highest demand was always positioned in urbanized areas such as Prague (and Stredocesky region) and Brno. However, convenient location means higher price. While in Prague the average purchasing price of apartments moves around EUR 1635/m² (own calculation at 27,5 CZK/EUR) in Vysocina region the avg. price of apartment moves around EUR 586/m² (Czech Statistical Office).

Based on regression analysis of Hlavacek & Komarek from CNB, evolution of price of dwellings is determined by a few factors. For instance, divorce rates, internal migration, gross wages and salaries, unemployment rate, housing affordability, and also the accessibility to mortgages. These are all statistically significant factors determining demand for housing.

Increasing divorce rate (49 % in 2013), growing amount of single households, larger internal migration (currently 240 695 moved within the country especially to Prague), and lower rate of unemployment (currently at 7 % and is projected to decrease) therefore plays a major role for growing demand for housing/construction. Residential market has hence potential to grow.

It is important to mention that based demography there is a new group of people in need for housing and potential customers of constructions; these are elderly. Ageing of population brings consequences to social care as far as housing facilities. According to statistics of Ministry of labor and social affairs (2009-2013) number of elderly homes and beds (see Figure 26) has been increasing. As already mentioned there is 1,77 million of people at elderly age (2013) and capacity of beds in regular senior homes is only 38 thousand. Moreover the elderly age group is projected to increase. Lack of capacity is mainly due to insufficient legislature on Social housing.

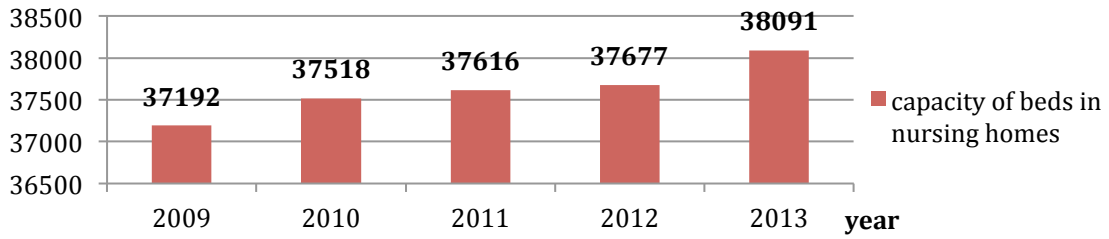


Figure 26 Capacity of senior homes for elderly in CR
Source: http://www.mpsv.cz/, edited by author

Retirees can definitely enhance the demand either through construction developers, who will construct and sale or rent the apartments to them, or by support of state, who will have to eventually invest into institutions for elderly. New Act on Social housing that is being prepared right now should have a positive impact on public demand for construction. Social policy should delegate the duty to municipalities to build social housing for elderly (among others) financed by the state budget or EU funds (mpsv.cz).

Nowadays, most developers acknowledged a growing demand for housing (new residential construction) and increasing house prices. According to Study of project development firms 2014 by CEEC research, demand of private sector has revived due to low cost of mortgages and more positive attitude of private sector to investment (Kliment, 2014). In October 2014, average interest rate on mortgages with five year fixation declined to 2,5 % p.a. and in November dropped even more. Some banks offer mortgages with interest rate around 1,79 % (Hypoindex.cz). It is therefore common that this development supports investment spending of households and firms into residential sector. Interest for new residential buildings has already reflected in Prague and Brno the two most urbanized cities. For instance in Brno there was 59 % more of new apartments sold within the first three quarters of 2014 compared to the same period of last year. With higher demand for housing the prices started recently slowly growing. Furthermore prices of real estate are being recently affected by slow growth of costs of construction works (Mareckova, 2014).

Situation in residential and construction market as far as demand seems to improve in 2014. During the recession demand and prices fell and the main decisive factor for a client was a price. Thus the level of demand sophistication was very low. Recently the demand for newly constructed residential housing increased (mainly in Brno and Prague), and according to the research many developers observe rising needs of customers on quality (CEEC research, 2014). This on the other hand reflects the increasing sophistication of demand. Still demand in large scale does not require eco-friendly construction. This will be rather enforced by legislation.

4.5 Demand Conditions in Austria

Domestic public entities, private entities and foreign investors also form demand in Austria. In the table below (see Tab.11) there is depicted how production output value developed from 2009 to 2013 divided by type of ordering party. The first column stands for total production including civil engineering, building construction, and related crafts. The second and third columns then record the division of the production made for public entities and private agents. It is obvious that private demand is in majority as production for public entities forms only around 36 % of total production. Private demand thus keeps the construction industry running. Both public and private demand experienced downswing in 2009 and 2010. Decrease in public orders was more significant

across the regions in 2010 and 2011. Still some public austerity is remaining in different provinces however it is improving (Statistik Austria).

According to Peter Russegger (the Chairman of the Board the Czech division of former ALPINE Bau) the tighter public budgets in period after 2008 affected mainly subsector of civil engineering. The decisive factor for investors has been a price also as the Act on public procurement suggested (Billigstbieterprinzip). Firms now are expecting the change of law, which should include the life cycle costs principle. Therefore it can be concluded that for this period demand for civil engineering is rather less sophisticated since it prefers price before anything else.

Tab. 11 Technical production by different ordering party in AT

Year	Total F NACE [EURmill.]	Private [EURmill.]	Public [EURmill.]	% of new orders abroad
2008	16 185,1	10 117,0	6 068,1	5,1 %
2009	14 972,6	9 199,9	5 772,7	4,6 %
2010	14 281,6	8 907,1	5 374,5	3,8 %
2011	14 666,7	9 510,5	5 156,2	4,9 %
2012	15 539,5	9 988,7	5 550,8	3,3 %
2013	15 912,4	10 116,4	5 796,0	3,3 %

Source: WKO, available at: https://www.wko.at/, edited by author
Statistik Austria available at: http://statcube.at/

When looking at the division of territory, majority of construction occurs within national borders of Austria. In 2013, only 3,3 % of new orders were ordered abroad. Considering stock of orders at the end of period foreign demand moves around 4-6 % (Statistik Austria).

Construction industry has been recently driven by Building construction (Hochbau), which forms around 50 % of total production (NACE F41-43). However only around 35 % of public orders go to this subsector (EUR 2 bn. in 2013). Even though it encountered a slight fall just after the eruption of the crisis in 2009 and 2010, the increased production in residential housing and public support in those years in form of stimulus subsidies for housing renovation smoothed out the consequences of the crunch. In year 2013 the value of output moved around EUR 9,4 bn (Statistik Austria).

Segmentation of demand for Building construction based on regional division is further recorded in following pie chart (see Figure 27). The highest demand for buildings was realized in Vienna in 2013 since there is an immense housing market due to large urbanization area. Demand for buildings positions to the largest and the most populated area Lower Austria (suburbs of Vienna), Upper Austria (Linz) and Styria (Graz).

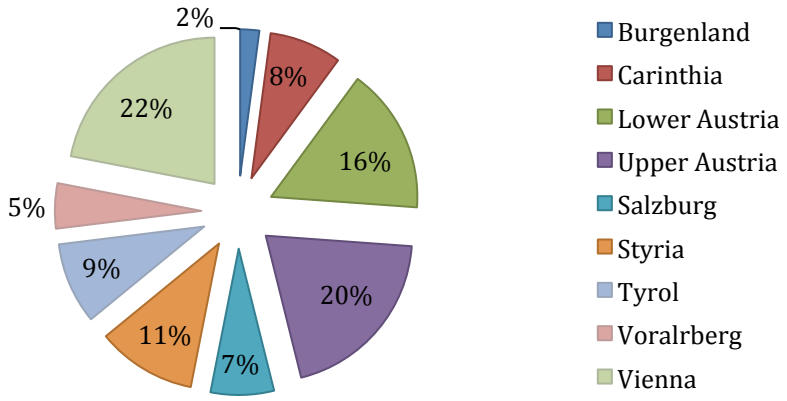


Figure 27 Construction of Buildings based on region in AT 2013
Source: Statistik Austria, available at: www.statistikaustria.at, edited by author

When comparing the investment sentiment for fixed assets (tangible and intangible) including dwellings and other buildings for different sectors of the economy, the willingness of each sector to spend its finances decreased just slightly comparing years 2008 and 2012. Even though a minor decline occurred in between those years, the will to spend has recovered. This table also confirms that demand in Austria is much more dependent on private spending.

Tab. 12 Investment by institutional sectors % of GDP in AT

Year	Total investments	Business investments	Government investments	Households investments
2008	21,6 %	15,5 %	1,1 %	5,0 %
2012	21,4 %	15,3 %	1,0 %	5,1 %

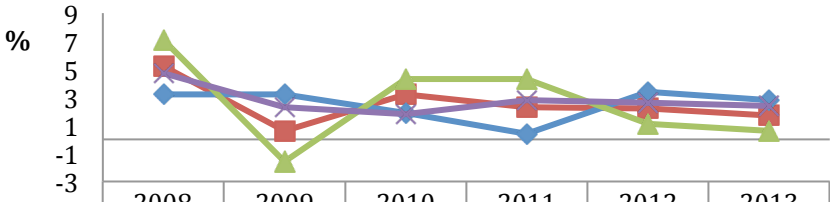
Source: Eurostat, available at: http://epp.eurostat.ec.europa.eu, edited by author

As mentioned lower demand for construction products in Austria was observed in years 2009, and 2010 including both civil engineering and buildings. Construction sector in those years had to reduce its capacities as well. Almost 2000 employees left the industry comparing years 2008 and 2010. However in 2012 there was registered 8 000 more of employees compared to 2010 and hence capacities were enlarged again (Statistik Austria).

Construction costs for residential buildings (excluding community buildings) have been over the observed period still steadily growing even with the swing in demand in years 2009 and 2010 (see Figure 28). Decisive factor was again development of material costs. While cost of labor held positive growth between years 2008 and 2013 copying the needs of firms on the labor market, material prices experienced serious decline in the "bumper year" 2009. Then they suddenly grew significantly by 4,3 % in year 2010 despite the lower demand in that year. Major reason for that was rise in prices of raw materials and energy prices (Euroconstruct).

The output (producer) prices paid by client also recorded a slowdown as a response to lower demand in the first two years after the crises initiation in

2008. However the demand for residential buildings was soon restored (with help of public stimulus packages). Therefore the prices kept growing steadily around 2,6 % since 2011. Since the output prices has grown faster than the costs great potential for profitability was obtained.



	2008	2009	2010	2011	2012	2013
Construction cost index	5,2	0,6	3,2	2,3	2,2	1,7
Labor cost index	3,2	3,2	1,9	0,4	3,4	2,8
Input prices for materials	7,1	-1,6	4,3	4,3	1,1	0,6
Output prices	4,7	2,3	1,8	2,8	2,6	2,4

Figure 28 Development of construction cost index annual change in AT
Source: Eurostat, available at: http://epp.eurostat.ec.europa.eu, edited by author

Individual customers for residential construction

Concerning the residential construction, the demand for new housing has been at stable level in last few years. In some regions there has been excess in demand for housing, especially in Vienna. New constructions of dwelling based on number of received building permits on new dwellings in Austria indicate that there has been a growth of demand for new constructions by 21 % comparing years 2008 (37 995) and 2013 (46 048) (Statistik Austria). Stability of residential demand in Austria is mainly given by state subsidies with long-term focus on housing development and energy efficiency of buildings, enhanced by positive role of banking sector towards approved housing projects.

As far as characteristics of choices of demand, according to research done by S real and wohnnet.at, the main decisive factors after price are healthy housing conditions, location close to public transportation to green public areas, and civic amenities. For 54 % of respondents, energy efficiency is important but it is not a must. And more than a half would buy a passive house[12] (immonet.at). Furthermore in February 2014, immobilien.net did a survey including 512 respondents and the results showed that two thirds of Austrians want to live in so-called smart cities. Smart city stands for measures in housing construction reflecting the changing climate situation, energy efficiency of buildings, enhancing the quality of life, and modern construction technologies involving utilization of renewable resources. Based on that research people are further sensitive to lowering energy consumption. 40 % of people already use some kind of barrier increasing energy efficiency (thermal insulation and gentle cooling systems).

[12] Passive house is an energy-efficient building with low space heating and cooling demand. The building almost heats itself by solar system and heat gains from equipment in the house. Ideal building material is wood (timber).

65 % of respondents believed that every household should have own energy generating system incorporated in their homes. However, only 15 % of surveyed people have solar panels and similar self-heating systems,.

Demand for eco-friendly and cheaper construction is also supported by the percentage of wooden construction in Austria. According to the Statistical survey on share of timber (wooden) construction, the portion of wooden structures increased from 25 % to 39 % (between years 1998 and 2008) based on number of received building permits (Teischinger, Stingl & Zukal, 2011). Currently the participants of wood marketing platform proHolz Austria stated that the timber share reached 40 % (whatwood.ru, 2014).

Decisive factor for some Austrian still is the financial burden. Prices of all dwellings have been growing the whole time during the observed period 2008 and 2013 thanks to growing demand (see Figure 29). Moreover the residential market is one of the most developed among all EU member states.

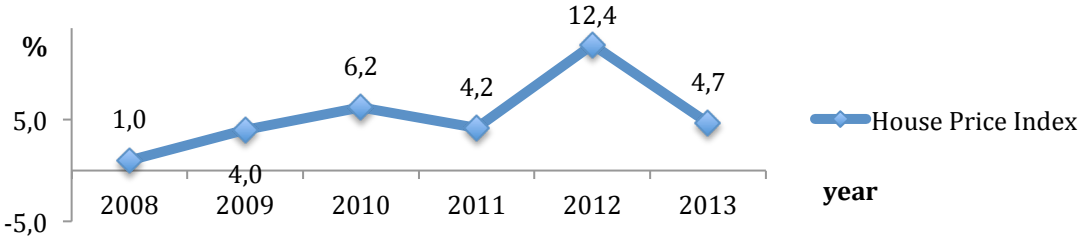


Figure 29 Development of house price index in CR
Source: Eurostat, available at: http://epp.eurostat.ec.europa.eu/, edited by author

Considering the overview of property index 2014 done by Delloite, in Austria the growth of housing prices was the highest in Europe in 2013. The transaction costs for new dwelling moved around 2000/m². Location plays an important role in price determination also in Austria. In Vienna the housing is 50 % more expensive than in the rest of the country. In 2013, it moved around EUR 3,500-4,200/m2. Still there is an excess of demand for housing. Also high demand for housing is in urbanized areas such as Linz and Salzburg (Lugger & Amman, 2013).

As far as the affordability according to Deloitte, in Austria it would take 3,5-5,6 years to obtain new 70 m² dwelling considering all gross monthly wages spent on the housing.[13] However taking into account that 21,6 % of total consumption of households goes to housing and energy then people would need to save at least 24 years.

Nevertheless the demand for housing and hence constructions is relatively lively, as number of small households is increasing (single households amount 1,34 million) mainly due to aging population (1,53 million at age of 65+) and increasing number of divorced people (40 %). Also the immense number of foreign incomers (1 million foreigners) has an impact on demand for housing in Austria. Moreover the development of mortgage interest rates has been favora-

[13] With gross monthly wage EUR 2242, it would take around 5,2 years to obtain the new 70-m2 dwelling at EUR 2000/m2 assuming all income is spent.

ble for the housing market (Lugger & Amman, 2013). Currently the costs of mortgages move around 2,0 % for five year fixation (wohnnet.at).

Overall the housing market has dynamically developed in last few years, with Vienna. The sharp upswing in prices also reflects the growing demand of individual speculative investors; as the real estate market seems to be more trusted than other financial instruments. These private investors rather invest in smaller 40 m2 squared condominiums than to invest in some financial derivatives. Even though the prices have boosted in recent years, the housing is still relatively affordable. The main reason for that is that Austrian government has been providing many subsidies on residential construction, which also target the ecological aspects of the construction (Lugger & Amman, 2013).

As in the Czech Republic, Austria had to react on increasing demand for housing for the elderly age group. Growth of people at **older age has structural consequences** for state social system. Austria compered to the Czech Republic encountered such issue early and currently there are 76 104 beds in 850 homes for elderly around Austria. 400 of these institutions are publicly owned and 450 homes have a private owner. The number of users of homes for elderly is increasing (see Figure 30). With rising standard of living and higher perception of quality, Austrian public authorities support age group of seniors increasingly more. The Federal Senior Citizens Act No. 84/1998 promotes the interest of the older generation. As a part of the Act, Federal senior citizens Advisory council was established and based under Ministry of Social Affairs. This umbrella entity of seniors makes proposals for social, economic, health and housing policy, and cultural issues in senior policy (Social Ministerium).

In 2012, in accordance with the Federal Act, there was a Federal Senior Citizens Plan prepared. The main objective of this plan was to sustain and enhance the quality of life of the elderly. One the main recommendation is establishment of certificate of national quality (NQZ) for senior houses in Austria (Social Ministerium). Social policy towards the senior age group is further developed than in the Czech Republic.

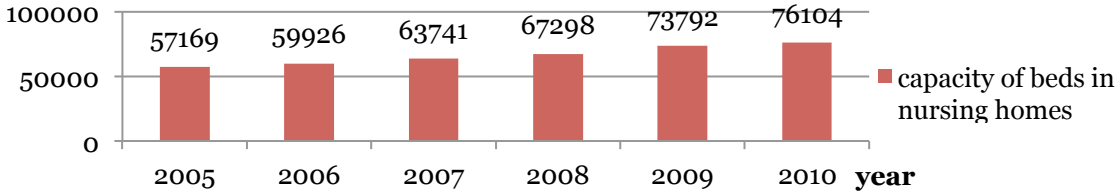


Figure 30 Capacity of senior homes for elderly in AT
Source: Statistik Austria, available at: http://www.statistik.at/, edited by author

Perception of the seniors as the potential customers was observed in Austria sooner. Many private developers constructed senior homes across the Austria. One of the firms running senior homes in Austria is firm Sene Cura, which is currently entering the Czech market. Its senior homes in Austria runs due to cooperation with the federal and provincial public entities. The company offers its capacity to the public sector and in return draws subsidies.

Concluding the demand for construction in residential market, the sophistication of demand is further developed thanks to higher standard of living and enhanced attitudes towards ecological and technological matters. Moreover in Austria new type of demand emerged in residential construction: die Baugruppen. Right now choices of people for residential housing are limited. They can either live in family house or multi-dwelling buildings, which are either being constructed or already are constructed. Baugruppe is a type of community living so-called cohousing, where a group of people gets together prior to any construction and decide where, how, and with whom they want live in co-owned residences. The group works with architects and designers and prepares the whole projects in community (elaborated based on individual needs) prior to the actual construction. They leave out the middleman, the developer. Then they tender a construction firm for the real construction. Usually the Baugruppe is founded on the grounds of commonalities such as protection of environment and energy efficiency, or social dispersion of individual mothers, people at elderly age and so on. One the biggest development project of different modules of Baugruppen has been prepared in Vienna. New city quarter of 240 ha has been developing in new quarter named Seestadt (Roberts, 2013).

Complexity and sophistication of customers for residential construction in Austria is hence further more developed than in the Czech Republic. Requirement on quality and energy efficiency is farther more enhanced. Moreover Austrians let the constructors know in advance what is going to be demanded. Thus construction firms can prepare for the needs of the customers.

4.6 Demand Conditions compared and linked to the EU

The construction industry has faced a long and deep downturn, which was widespread within the EU28. Considerable fall in consumer and investment demand was recorded across the EU member states. According the Eurostat every member state experienced at least two years of slowdown in output growth in period of 2009 and 2013. The slowdown in the subsector of building construction is recorded in the following table (see Tab. 13). Czech Republic belonged to those states that suffered the most from lowered demand as majority of volume of orders came from the public sector. While development of building constructions in Austria were more or less bearable thanks to governmental anti-cyclical stimuli, the average of the Euro area (17 m.s.) was deteriorated thanks to countries like Spain, where the housing bubble left overcapacity of unused buildings.

Tab. 13 Production in Building constructions annual growth

GEO/TIME	2009	2010	2011	2012	2013
Euro area (17 countries)	-8,7	-6,1	-3,1	-4,4	-2,7
Czech Republic	-6,8	-7,7	-0,5	-6,2	-5,7
Austria	-0,6	-2,9	2,4	2,9	0,7

Source: Eurostat, available at: http://epp.eurostat.ec.europa.eu, own elaboration

Demand for construction works during the observed period was mainly affected by willingness to invest. Based on indicator gross fixed capital formation includ-

ing buildings, dwellings, roads, software and such (as percentage of GDP) recorded in following table (Tab.14), it is noticeable that the investment motivation across Europe decreased. Countries of the Euro area on average saved in all sectors of the economy. A kind of exception was Austria were the sentiment to spend overall slightly declined however the enthusiasm for consumption was during the deadly period restored. On the other hand the spending ability in the Czech Republic deteriorated significantly compared to the other observed countries. Both participants of the private sector and also public representations skimped.

Tab. 14 Investment by institutional sectors % of GDP

Area	Year	Total investments	Business investments	Government investments	Households investments
CR	2008	26,8 %	17,0 %	4,6 %	5,2 %
	2012	23,1 %	15,3 %	3,2 %	4,6 %
AT	2008	21,6 %	15,5 %	1,1 %	5,0 %
	2012	21,4 %	15,3 %	1,0 %	5,1 %
Euro area (17)	2008	21,8 %	12,1 %	2,7 %	7,0 %
	2012	18,7 %	10,7 %	2,1 %	5,9 %

Source: Eurostat, available at: http://epp.eurostat.ec.europa.eu, own elaboration

Once more, public and private investors (firms and individuals) form demand side in construction. When comparing the situation of Austria and Czech Republic, the former is less dependent on public assistance as only around 36 % of total production is performed for the public sector. The situation in the Czech Republic is rather different because more than 50 % of volume of orders is done for the public entities. Hence a debt crisis and followed by governmental cuts as it occurred in some European countries including the CR can be detrimental for the development of such industry.

When looking at the division of demand based on territory, majority of Austrian construction is demanded at home and this proportion was rather decreasing since 2008. In 2013 the abroad new orders accounted around 3,3 %. In the Czech Republic domestic demand is also in majority, however the development after crisis eruption was the opposite. When looking at portion of orders at the end of the period the there was rather increasing trend in demand initiated abroad. Furthermore the export of construction services of the EU-28 forms only about 2,2 % of total services exported. Therefore it is assumed that majority of construction works are performed domestically among all of the EU member states (Eurostat).

As far as the production of Buildings among all the member state, the largest proportion was constructed, and hence demanded, in UK (17 %), Italy (15 %), France (13 %), Spain (12 %) and Germany (10 %). Austrian construction of buildings comprised only 2,2 % and the Czech Republic was at 1,9 % in 2012.[14]

[14] Own calculation based on production values collected from Eurostat, amounting all EU member states except Ireland, where the production value was not determined for the given year.

Considering the development of the construction cost index (of residential buildings) of the EU28, it was mostly impacted by the material cost component, while the cost of labor sustained to rise even during the recession, although at a fairly gentler pace than before. Considering the three observed areas, construction costs experienced negative growth only in the Czech Republic. In 2009, it was result of the crisis eruption and in 2013 it was result of lower demand falling energy prices (see Figure 31).

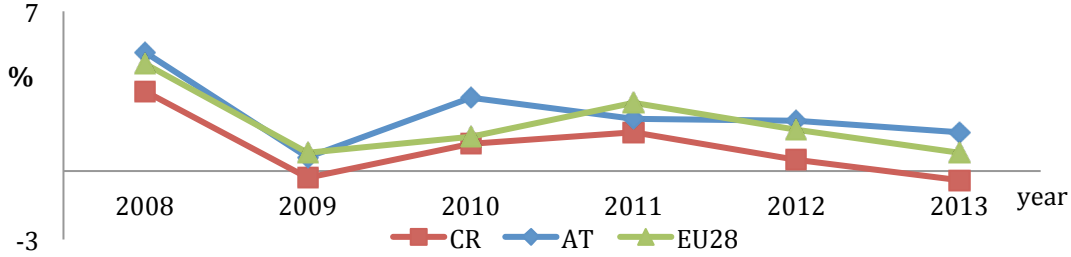


Figure 31 Development of construction cost index annual change
Source: Eurostat, available at: http://epp.eurostat.ec.europa.eu, own elaboration

Fewer customers, less tenders, tight competition of the survivors, terrible legislation on Public procurements by the European Commission and falling material costs affected the decision-making process in public tenders across the EU. It was simple the cheaper bid wins. From this point of view, the investors were forced by external factors to have only one-way focus, price. In the EU and even more in the Czech Republic, where the dependence on public sector is large, the nature of customers (investors) was less complex. Proportion of investors in CR was rather decreasing. On the other hand Austrian demand decreased significantly in 2009 however within two years was restored thanks to governmental support.

Concerning the demand for residential construction increasing standard of living around the world enhances the demands for convenience. Customers are demanding better performance of construction including automation, energy efficiency, eco-friendly environment, and different modern features. These all would be true if the recession did not diminish the needs of customers and the customers did not start saving.

Number of approved building permits for new residential constructions among the EU28 has greatly decreased in years 2008 (-35 %) and 2009 (-29 %) as the demand in countries like Spain and Portugal declined significantly. Since that time the EU was trying to fight its way back up. However, comparing year-or-year change of 2012 and 2013, it still slowed down by -6,4 %. Similar trend of new residential construction has been observed in the Czech Republic, where the demand until 2012 remained very low. The only growth was realized in Prague and Brno year-on-year 2012 and 2013. On the other hand, Austria popularity of new residences grew substantially. Fundamental driving force were the Austrian subsidies for residential buildings aiming to enhance the energy efficiency of buildings (Eurostat).

Concerning the orientation of demand for environmentally sustainable construction, the trend has been increasing. When looking at the proportion of eco-

friendly construction, Austria belongs among the leaders of energy efficient housing construction. Timber framed construction (wooden structures) has realized growing development in Europe (Manninen, 2014). Even though the main driver of the trend may not be the individual demand directly, but the enforcement of the EU to lower GHG emission, it greatly influences the proportion of timber-framed construction. According to the European Commission (Harwell, 2010) the market share of timber-framed construction in Europe is now 22 % and the popularity is increasing.

Financial burden belongs to the main decisive factors when buying a new dwelling. According to report done by Deloitte in 2013, the annual prices changes of new dwellings varied significantly among countries. The largest growth experienced Austria and Germany (4,9 %), Denmark (4,4 %), followed by UK, Belgium around (3 %). Transitive economies such as Czech Republic and Poland recorded a small decline (-0,2 %). Significant decrease in prices of new housing continued in Italy (-4,9 %) Spain (-13,5 %). Average transaction prices of the new dwellings was the highest in UK, Israel and France (almost EUR 4000/m2), the least expensive on the other hand were new dwellings in Hungary, Poland and Portugal (almost EUR 1000/m2). Czech Republic belongs among the cheaper countries.

As far as the affordability, it differed also within the EU. In order to buy a 70 m2 new dwelling taking into account the number of all gross salaries, the affordability ranged from 2,1 years in Denmark to 12,1 in Israel. Housing is more affordable in Austria compared to the Czech Republic (Deloitte).

The residential market in Europe and its potential is also affected by trends in demography of the demand side. Aging population (18,3 % of total EU population at the age group 65+), increasing number of single households (77 million), increasing number of divorces, increasing number of immigrants (32,5 million), these are factors that stimulate the demand for construction indirectly.

Residential markets, hence demand for residential construction has had diverse development in the EU member states. Some countries such as UK, Germany and Austria, markets with strong demand for housing, recorded positive growth, on the other hand very fragile residential market still remains in countries Spain and Italy, where the construction sector was hit significantly.

The development of European demographics signifies the potential for new housing construction, however an important question will be social housing, since the structure of the demand for housing are low-income individuals (single parents, elderly, and immigrants).

While the Czech demand for construction is not recognized internationally, the Austrian demand especially for green buildings is well known abroad. Moreover, the evolution of Baugruppe and cohousing is the other pattern that distinct Austrian demand from other countries. The growing need for green buildings and more sustainable environment can also promote innovation in Austrian construction industry. Demand for green buildings also is well-known in Nordic countries of Europe such as Denmark, Finland, Norway and Sweden (Sand et. al, 2012).

4.7 Strategy, Structure, and Rivalry in the Czech Republic

Development of strategies, industry structure and rivalry among the Czech construction firms are further examined in following chapters 4.7.1 and 4.7.2.

4.7.1 Strategy

Association of entrepreneurs in construction (SPS) together with external experts published strategic document for period of crisis 2009-2012. According to this document, crisis has demonstrated a need for qualified strategy. Firms, that have developed a good strategy, have been able to overcome the crisis. However, based on this document, majority of companies have not even had any strategy and hence were unable to react to a crisis or their responds came too late. Many firms confused long-term plans, which were applicable in period of relative stability, with strategies. Long-term plans were based on evaluation of previous periods and stipulated detailed plan of future achievements and did not reflect the possibility of future developments. Modern strategies aim to prepare the construction firms to all future scenarios, which are likely to occur. On this behalf and to inform the Czech government about expected development of the Czech construction, SPS prepared three probable scenarios to provide some guidance about expectations of future even at risk of error. Optimistic variant (at the time the most probable) expected stabilization of GDP growth in year 2010 and an increase of government investment as anti-cyclical measure to affect the declining industry. No measures were applied. Restrictive variant expected the same development of GDP as in the optimistic variant, but limitation of public spending to construction. Restrictions of public investments were applied. The third catastrophic scenario expected both governmental cuts and GDP decline and hence a decline in the industry. The third scenario did occur in full.

Construction industry has been suffering from lack of strategic policies of government towards the sector. A long-term strategy for investments in the construction sector just does not exist. There are many strategic documents concerning Civil engineering and Building construction published (e.g. Strategy of international competitiveness for 2012-2020 including section of investments), which have never been fulfilled (Matyas, 2013).

In 2014, new policy of architecture and construction culture in the Czech Republic was introduced as a strategic document, which aims to support development of architecture and construction and thus to enhance the quality of environment formed by construction. Some of the strategic goals of the policy, which can impact strategies of individual construction businesses, are following:

- To ensure the continuity of new construction to the character of current construction;
- To strengthen the role of chief city or regional architects
- For awarding of public contract for zoning, design, construction activities to ensure the highest quality of fulfillment, use architectural and design competition

- To pay extra attention to the economy of implementation, operation and maintenance of buildings
- To promote and develop research activities focused on the fields of architecture, urban planning, landscape architecture and building culture.

After the analysis of construction culture in the Czech Republic, some of the following measures to be taken were identified:

- To support the use of abandoned buildings and sites encouraging investors and realization firms by targeted incentives (lower taxes, subsidy titles), particularly in reconstruction and transformation.
- To set standard of quality architecture, construction design and urban integration by using highly qualified referential public buildings
- To enhance the professionalism of procurement competitions based on formal, legal and content grounds
- To promote public education, along with basic and secondary education
- To award quality and efficient construction projects with exceptional energy performance, construction and architectural value (MMR, 2014).

The fulfillment of individual strategic targets should lead to higher quality of architecture, more energy efficient buildings properly located into the surrounding environment, friendlier public spaces, and higher respect for local specifics in individual regions. These strategic targets were formulated by enforcement of strategic document Concept for housing in the CR till 2020 elaborated by Ministry for regional development, which sets three important goals can indirectly affect the building constructions:

- Affordability - Adequate affordability of all forms of housing (e.g. support of construction of rental apartments for people threatened by social exclusion, lowering the housing costs by decreasing the energy consumption of current housing stock, ensuring higher standards of new construction, cooperation with private sector on financial support of housing development through Public-private partnerships, higher utilization of the EU funds, etc.)
- Stability – creation of stable environment in field of finance, legislature, and institutions for all participants of housing market (defining duties of state in housing policy and enhancing the involvement of towns and villages)
- Quality – permanent enhancement of housing quality (support the reconstruction of undeveloped housing stock, revitalization of residential in field of new construction utilize the knowledge gained from modern architecture) (MMR & KPMG, 2011).

All of these strategic objectives are only concepts and background documents for preparation of different supporting programs and legislature changes, which should be eventually realized.

Most of the businesses are still skeptic about the governmental support. Current, not favorable situation of constructions forces most of the construction firms to follow a simple strategy: to survive. These companies aim to ensure their daily operation and to meet their financial obligations (Linhart, 2013). Even though prior to the crisis firms aimed to differentiate from each other, current low amount of work transformed the strategy to lower cost strategy. This

does not mean that construction firms provide standardized products. It is impossible in construction, as each construction is unique. Lower cost in this period rather means that a firm, which fulfills requirements of investor, and which offers the lowest price, usually wins. In the market, there are price wars and it is hard to obtain any work (Hanak, 2014). According to Quarter analysis of construction Q2/2014 by CEEC research and KPMG, most CEO's are trying to win any tender available to cover its capacities and not to be forced to lay off highly qualified engineers. The managers are worried to lose talented technicians and engineers because they expect the situation to improve and then it would be hard to find such capable employees considering the declining trend of qualified labor.

Another strategy that was observed is formation of association among competitors to have better negotiating power towards the customer (ordering party). Two or more competitors create a construction consortium agreement (something like single-project joint stock formation), commonly prepare for a procurement, which both firms enter as one association. The purpose of such strategy is to lower the entrepreneurial risk because the temporal project may have high capital requirements (including technologies and labor capabilities). Moreover in period of recession it gives an advantage to gain at least some work to cover unused capacities, which otherwise would not be obtained when entering the tender alone. For instance Biotechnological pavilion M and X of Mendel University in Brno was built by consortium: IMOS Brno a.s., Metrostav a.s., and Unistav a.s (is.mendelu.cz).

Some of the bigger firms for instance PSJ group reacted on negative development of the market by diversification strategy. Firm PSJ operates in Building construction diversified recently its portfolio of activities by acquisition of Czech division of Austrian firm ALPINE Bau, which operate in Civil engineering as road constructor. PSJ group had also acquired firms Hydrotransit (producing high-capacity tanks), Ekoklima (operating in health-technology installations), Inovat SE (electro installations) to enlarge the pool for attraction of current and new customers. Strategy that the firm used is horizontal and concentric diversification to confront the threat of lower demand. Earnings before taxation in year 2013 has tripled compared to previous year (psj.cz).

Moreover Czech firms have been motivated to expand across borders as consequence of negative situation on domestic markets. Most firms did not aim to expand permanently but rather temporally again to utilize its capacities and avoid dismissal of employees. Such firms were for instance Metrostav a.s. the largest firm in the Czech Republic (regarding sales, value of assets, number of employees), OHL ZS, a.s. (among the top five performing firms based on poll TOP STAV for 2012 of professional Journal Stavebnictvi). The internationalization strategies can be according to Mr. Vacek risky because the initial costs for expansion abroad are quite high, therefore the internationalization strategy should be used with long-term vision (metrostav.cz).

Fulfillment of the catastrophic scenario forced some firms to apply innovative managerial approaches such as lean construction management. Lean construction aims to make all business activities more flexible, efficient hence no

wasting of resources and maximal fluency of construction (Hana, 2012). Company that has applied such strategy was for instance firm Hinton, which was established by former top managers of Skanska, a.s. in 2011 having lean organizational structure and low overhead costs. Hinton's business representative, Jan Fiedler, stated: "*We are convinced that in this period of economic slowdown, investors expect from construction firms fundamental changes, especially the approach to innovations. One of our goals is therefore to find new technological solutions for construction realization, which provide to investor financial and time savings still ensuring the quality requirements*."

Firms also integrated vertically to have higher influence on the supply chain. Vertical integration is further elaborated in chapter 4.10.

The remaining strategies that have been observed among competitors in the period of recession were the illegal ones: use of exceptional contacts (corruption and abuse of power) and price cartels. For instance the case of bribery of David Rath by construction firm Konstruktiva Branko concerning drawing EU subsidies and construction of castle Bustehrad. Potential cartel agreement was recently observed in re-construction of the National stud farm Kladruby nad Labem and the accused were construction firms: Enteria, Geosun group, Strabag, and Metrostav (CT 24).

4.7.2 Structure and Rivalry

This chapter evaluates rivalry and structure of the industry considering the competitive forces, except power of suppliers, which are assessed in whole new chapter Supplying and Related Industries (4.10).

Established competitors

In 2012 it was recorded that in the Czech Republic there is 175 800 of construction firms performing building activity. Almost 80 % of these firms were involved in Specialized building activities (including trades like plumbing, heating, flooring), 18,5 % formed companies in Building constructions and Civil engineering firms amounted only about 1,5 %. More than 95 % of firms are micro firms with 0 to 9 employees. The industry is highly fragmented. While the number of micro companies has been increasing even during the recession, number of medium enterprises (50-249) and of large firms (250+) has been decreasing (Eurostat). This does not necessary mean that new small firms were established and the bigger firms left the market. According to Journal Stavebnictvi (December special 2013) the size of firms has decreased as enterprises have been forced to lay off some employees due to insufficient demand and hence those companies fell into lower category. Moreover the decreasing trend of construction employment signifies the reduction of companies in size. Considering turnover of the sector, based on data collected from Eurostat, turnover of constructions was EUR 27,9 bn. This volume has been declining the since 2008.

Economic recession affected the competitive structure of construction environment significantly. The rivalry among firms intensified, as the demand dropped and suddenly there was a great deal of unused capacity and the overall

industry output was declining. As Jiri Vacek, the CEO of CEEC research, s.r.o. stated, there have been too many fishermen sitting around drying up pond. Great amount of firms hence limited the profitability of the industry and led to price-cutting. According to director of Chamber of construction engineers, Mr. Matyas, thanks to recession the market has been cleared out. Firms that should have not been on the market, left the industry. Radim Martinek, the CFO of construction firm VCES, added that persistence of intense competition and low prices will continue to pressure the market clearing (ceskatelevize.cz, 2014), hence lowering the fragmentation of the market. Vacek furthermore noted that the unfavorable development of the industry will lead to consolidation of the market. Quite recent consolidation has been already mentioned when PSJ Group, a.s. acquired the surviving division of Alpine Bau.

In following graph (see Figure 32) the rivalry and market position of ten largest construction companies in the Czech republic based on sales in 2012 is depicted[15]. In this strategic map firms such as Metrostav, Skanska, Strabag, OHL ZS, PSJ are companies that diversified its portfolio of construction activities (involving Civil Engineering and Building Constructions) to enlarge the market. Metrostav is currently firm holding the premium position in the market. Still the market is strongly fragmented. Metrostav with almost EUR 1 bn. turnover in 2013 shared only about 3,5 % of the market turnover. Eurovia focuses strictly on Civil engineering and hold largest market share among other firms in this subsector. Also Subterra and SWIETELSKY stavebni focus on civil engineering only but their market share is much smaller and furthermore they are major competitors to one another. Similarly PSG International and Syner only concentrate on construction of buildings and belong to firms with highest market share among companies, which specialized its strategies to this building subsector.

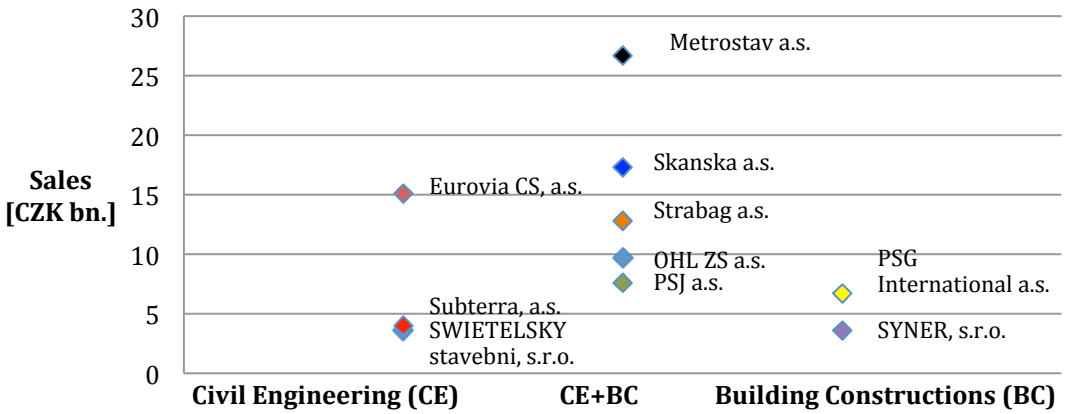


Figure 32 Strategic position of 10 biggest firms in CR based on sales
Source: Journal Stavebnictvi, 2013, own elaboration

[15] Data are collected from poll of top performing firms based on different indicators called TOP STAV 2012 published in professional Journal Stavebnictvi, December special, 2013.

New entrants

According to Journal Stavebnictvi (December special 2013) some new firms entered the market, however, the number of new construction establishments was since the crisis rather decreasing. On the other hand the proportion of firms leaving the market has been increasing. Construction industry is usually typical for its high barriers to entry. However currently mainly the capital requirements (e.g. machinery) and complexity of incorporation of economies of scale stop new firms from entrance. Today, there are rather low customer switching costs, differentiation is not important as the demand is low and there are too many firms able to perform the basic building activities. Current situation of declining industry does not offer a great potential for a new entry.

The motivation of firms to enter the Czech construction sector could be potentially enhanced if a new firm offered innovative and break-through technological products, which are not yet offered to the Czech customers. In other words, entry of new substitute is rather possible (Hanak, 2014).

Over a long period there has been many speculation for a potential new competitors from the Asian countries. China has been expanding all over the world. Current cross-country cooperation between China and the Czech Republic, ensured by the political representation, signifies the increasing threat for new market participant. Chinese firms have enormous capital and would like to build rails and roads here. Also they would like to participate in a tender for completion of Temelin. Still they do not have necessary license from the EU to enter the market (idnes.cz).

Power of buyers

Heterogeneity of buyers on the market is large. However investors in the past five years rather saved, and when they invested, it was always cautious decision where a budget played a major role. The demand has been rather low and with an excess of firms capable of building activities, their bargaining power has been enormous. This so-called client leadership means that customers in the Czech Republic have had a significant negotiating power over the suppliers in the value chain as a consequence of low amount of buyers. Again switching costs have been low, however additional costs could easily occur when a general contractor went bankrupt in the middle of a project and the investor had to find another supplier. Furthermore investors are aware that the pool of demand diminished.

Substitutes

As already mentioned, majority of buildings in the Czech Republic are traditionally framed with the same materials, mainly brick and mortar. Hence substitutes for the construction firms operating within CR are firms offering different construction materials. Major substitute products for traditional residential constructions are timber-framed buildings.

Despite the fact that popularity of energy efficient homes has been increasing, the timber-framed buildings still are in minority; only about 8 % of family houses, the share of wooden multilevel buildings is trivial. On one hand, the negotiating power of substitutes is quite high taking into account the EU legislative pressure on sustainable and energy efficient buildings. Moreover wooden buildings are cheaper for the final client and the portfolio of different alterna-

tives of timber-framed homes has been increasing. On the other hand, the Czech demand is not yet ready for such products. Most people still do not believe in the durability of timber-framed buildings. The tradition of brick and mortar buildings is just too strong (Bílek, 2012). In conclusion, the negotiating power of substitutes would be greater if the firms were able to persuade the demand about the functionalities.

Complementors

To determine complementors for construction firms is quite tough and tricky. From one point of view, construction of buildings does not have any important complements, without which they could not be individually handed over to investors or offered to individual consumer for its use. But on the other hand, a building cannot be used without energy supply and interior equipment or technology based on the building's purpose. Technology and interior equipment providers are businesses hard to generally quantify, as there are countless purposes, for which a new building can be used and hence how a building can be equipped. Taking into account general equipment by furniture, according to cabinet-maker and designer at VYTO Interier, s.r.o., Mr. Vykoukal,, there is an intense competition among firms as there is a great concentration of diverse providers of furniture and the barrier to start business is low.

Concerning the supply of energy, based on client requirements and his or her pre-signed agreement with energy providers (gas, electricity, water), a building firm only ensures (constructs) the connection of building to public network of energy supplies. When the building is completed and handed over, the client then has to pay for supply of energy. According to Miroslav Hroch, project manager of the Czech construction firm, investors are increasingly more interested in excluding the gas connections and rather want only electricity connection as the construction of gas pipelines and fixture is much more expensive.

According to last population census in 2011, number of people using gas heating has been growing very slowly, but still remains as the main source of heating. 99 % of domestic consumption of gas is imported (over 60 % from Russia). Use of coal diminished by 40 % in past 10 years. On the other hand households that use wood (renewable source) for heating increased by 76 % in past 10 years. Electricity is the fourth source for heating. Renewable resources form only 8 % of energy consumption (Czech Statistical Office). In long-term prices of energy has been growing, currently as people are saving and demand decreased during the recession, the prices under tougher competition lowered. Concerning the electricity retail market, the concentration of providers is high (CEZ, E.ON and PRE has 95 % of market share) and the share of clients' supplier switching has increased. In 2010, four times more households switched their supplier compared to previous year. Concerning gas, the market concentration is very high (RWE and PP hold share of 62,3 % in 2011) and the switching of suppliers was the highest among the EU member states (European Commission).

As far as the water supply, investor cannot freely choose its provider, as the supplier of water are publicly owned water companies established in certain city

and based on the territory the water is supplied according to its distribution network.

Stage of life cycle of the industry

As many times concluded, construction sector in the Czech Republic has been declining in past five years given the negative growth of production and turnover, lower demand, excess of unused capacities, emergence of price wars. All of these are the indicators of construction slowdown. The stage of development within the life cycle diagram is depictured below (see Figure 33).

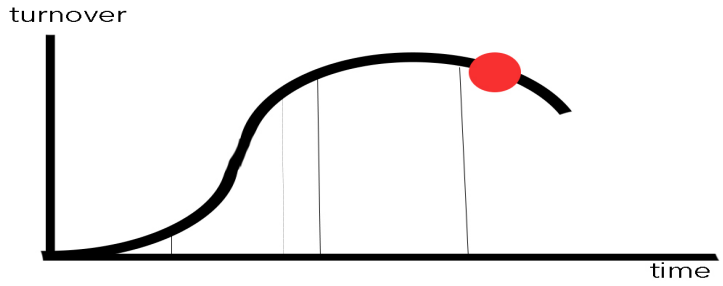


Figure 33 Stage of life cycle of the Czech constructions
Source: own elaborations, based on Hill, Jones, & Schilling, 2014

4.8 Strategy, Structure, and Rivalry in Austria

Strategy orientation of the whole industry and observed strategies of individual companies are further elaborated together with the analysis of industry structure and rivalry considering competitive forces except power of suppliers, which be evaluated in whole next chapter 4.11 Supplying and related industries.

4.8.1 Strategy

Construction policy in Austria is much more stable than in the Czech Republic. Concerning the transportation policy, which also impacts the subsector of civil engineering, the strategic targets are further more developed and executed. Ministry for transport, innovation and technology presented the overall transport plan, spelling out the objectives, guidelines, and implementation strategies of the Austrian transport policy until 2025. Among these goals are construction of modern infrastructure, support of technology and innovation, and environmental protection and resource efficiency (bmvit.gv.at).

Austrian housing policy and report on construction culture create a strategic framework of objectives and recommendations, which impacts the management of construction businesses. Austrian Building Culture Report 2011 developed by Advisory Council for Building culture, elaborates three main topics, for which certain recommendations for buildings are generated. These themes are Future (thermal renovation, economic sustainability, innovation), Citizen (municipalities and spatial planning, municipalities as authorities, municipalities as builders), and Competent knowledge (building education, building culture for the youth). Based on these dimensions following recommendations were developed:

- To combine ecological efficiency and architectural quality
- To continue thermal renovation in full, not as single façade insulation
- To consider building life cycle costs rather than construction costs
- To find location economically sustainable; use existing infrastructure
- To incorporate innovations in all activities (including procurement, funding system, administration, organization)
- To support and promote building culture at all public levels (funding research, provide housing subsidies)
- To set innovation as criteria for awarding and for public funding, to enhance the competitiveness,
- To create legal basis for effective land policy measures in spatial planning
- To enhance the cooperation among municipalities
- To promote building culture and enhance communication toward the public
- To ensure building culture centers at the country level
- To tie up public funds to quality standards
- To enhance innovation by promoting the participation in education facilities
- To expand the building culture to education system, support the education of designers and builders

These strategic recommendations are very straightforward and builders can easily adapt their strategies to them.

Concerning the housing policy model based on deep evaluation by Institut für Immobilien, Bauen und Wohnen GmbH Wien, the policy (including housing subsidies and finances) is one of the best in Europe. Social objectives focuses on affordability, social integration rather than segregation, secured residential care for the elderly and etc. Economic goals strive for stabilization of construction industry (building and land prices), orientation on competitiveness and innovation, provision long-term stable and favorable investments and influencing the housing market. Environmental and spatial policy emphasizes the fulfillment of EU objectives, reduction of energy consumption, emission and energy dependence, improvement of environmental standards, contribution to special and urban development, urban and village renewal, and quality of building environment. This strongly embedded policy has been under revision for a reform to be more specific about cost-effective building (to reduce construction costs as an adaption of energy requirements), simple and straightforward standards, standards for social housing, lower car orientation and moderate apartment sizes, implementation of climate targets, etc.

Given this strategic framework, the construction companies have adapted accordingly. Most of the larger observed businesses in Austria (Strabag SE, Porr AG, Hochtief, Austria, Habau Group, Schmidt Baugruppe, and many others) claim that they offer sustainability, flexibility, and try to diversify its portfolio of activities.

Sustainability and life-cycle management is a part of strategy of many firms (e.g. Strabag SE, Rhomberg bau, i+R Gruppe). For instance, Rhomberg holding, is a former family run business, which directly states: "*Essentially, we consider*

building over their whole life-cycle and therefore contribute to the responsible use of our plant's resources with a deep-rooted consciousness of sustainability" (Rhombergbau.at).

Flexibility of construction firms towards the customer is nowadays very important. Based on research done by Deloitte (2010), in order to stay competitive international firms offer services tailored directly to requirements of clients. Companies hence provide exactly what a customer wants at required price and time. In order to increase the satisfaction of a client, it is possible to use IT software, which enables reliable customer care through Customer Relationship Management (CRM), customer-oriented cooperation, which connects clients, partners, and construction teams. For instance according to Bernd Raica from department of existing buildings of Rhomberg Bau Holding, the CRM software julitecR, which they use, simplifies their project work and enables them to individually respond to customer demands. Systematic cooperation with clients and their needs enables to lower their negotiating power. Austrian clusters of businesses that cooperate together also use CRM system. For example, the Upper Austrian cluster and the Lower Austrian cluster. Long-term cooperation with competitors (partners) is very popular strategy in Austria. The competitiveness of a single business can be enhanced by entry to a cluster and accessing the know-how of other companies and innovation opportunities, which otherwise could not be realized. One of the most famous clusters is the Lower Austria Cluster, which comprises of five different clusters. One of them focuses on construction, the Green Building Cluster of Lower Austria. It is a network of 230 Austrian companies (e.g. Hartl Haus Holzindustrie GmbH, Aust-Bau Gesselschaft mbH) focusing on energy efficient and sustainable construction, refurbishment, and energy technologies. The participation yields synergy effects, new and shared markets can be entered. Innovative production, which initiates new demand, seems like blue ocean strategy. Cooperation with competitors definitely lowers the risk of bankruptcy of smaller firms.

Also in Austria, construction firms form consortium (one-time cooperation) to fulfill larger or more sophisticated projects, which would be too risky to be completed individually. Public constructions are usually the case. For instance, construction of FH Campus Laaer Berg, Vienna was performed by cooperation of Strabag, Porr, and Siemens, where the leader constructor was Strabag. Also, Habau GmbH participated on construction of the first passive house for commercial and industrial buildings (eco²building) with WIEHAG Timber Construction, ebok Institute fur angewandte Effizienzforschung GmbH, Poppe*Prehal Architekten, and the STIWA Group – AMS Engineering. Each entity was responsible for different activities. Together they completed an excellent construction and are motivated to cooperate in the future (Goforwood.info). Nonetheless cooperation among competitors often opens the option for cartel cooperation.

Diversification and internationalization are the other strategies applied in Austria. Expanding geographically and diversifying the portfolio of offered services are implemented to reduce a potential risks coming from the external environment. For instance, Haubau Group tactics is to "Think globally and act lo-

cally." Habau Group is Austrian family-run corporation that applied the same multi-brand strategy as the Czech PSJ Group acquiring different corporations across Austria and abroad and hence is able to provide services from construction of rails to construction of senior houses. Strabag SE, the largest Austrian company, prefers diversification across different construction segments as it balances out cyclical and seasonal effects, which are typical for construction industry. Hence 85 % of Strabag's business forms construction, 7 % services, 4 % from concessions and 4 % from construction materials (Strabag.at).

4.8.2 Structure and Rivalry

Established competitors

According to Eurostat database there were 32 174 of construction businesses in 2012[16]. 84 % are firms involved in Specialized building activities (crafts), 13 % forms Building construction companies, and Civil Engineering businesses comprise only 3 %. Majority of all firms (81 %) are micro firms up to 9 employees. The industry is also quite fragmented. Number of companies in Austrian construction sectors has been increasing even throughout the world recession. Only the amount of largest companies (250+) has not changed much. The change between years 2008 and 2012 was negligible (-1 firm). Concerning the turnover, micro and large companies have the highest turnovers (25 % each out of total turnover EUR 42,5 bn.). Especially large companies in civil engineering form the majority of turnover. On the other hand the turnover of micro firms is mainly generated by Specialized building activities.

According to Bank Austria, there has been an intense competition among construction firms in Austria. Companies are increasingly focused on operating under function of general contractor to lower the costs and hence they outsource most of their work to other sub-suppliers (Bank Austria). This is noticeable from the industry structure as the majority of companies are individual specialized trades. The industry has been recently slowly growing mainly driven by the Building constructions due to high demand for residential constructions. Growth of the sector hence supported the intensity and amount of the competitors. Nonetheless, companies operating in civil engineering had to deal with lower amount of public procurements and with legislation on public procurements, which set the price as the main indicator for awarding a tender. Hence some cost-cutting occurred also in Austria. Cost-cutting strategy for instance adopted the second largest construction company Alpine Bau GmBH. The expansion of Alpine was huge, but number of orders obtained was high just because Alpine offered aggressive pricing. Spanish owners of Alpine (FCC), which were greatly indebted, let the giant firm collapse in 2013. One of the reasons was the indebtedness of Alpine itself, as it applied under-budget pricing. This bankruptcy is considered as the largest one in Austrian postwar history (Russegger, 2014).

[16] Eurostat provides data on construction by size class only up to 2012.

The largest company in Austria is currently Strabag SE with EUR 12,5 bn. on sales in 2013, thus hold the strongest market position. With such turnover, it holds 30 % of the market turnover. Strabag SE is one of the leading construction providers in Europe involved in civil engineering and building construction. It belongs among top 50 European Powers of construction companies in Europe based on Deloitte rankings. The second largest company considering the sales is Porr AG, the closest Strabag's Austrian competitor, which also diversified its portfolio to civil engineering and building construction. Actually most of the big Austrian firms operate under both civil engineering and building construction to expand its pool of activities to enlarge the market. The exceptions are Swietelsky B., which focuses on road and rails construction, and Wolf Systembau and i+R Gruppe, which concentrate on building construction. For clear picture of strategic position of the ten largest companies in Austria, please see Figure 34.

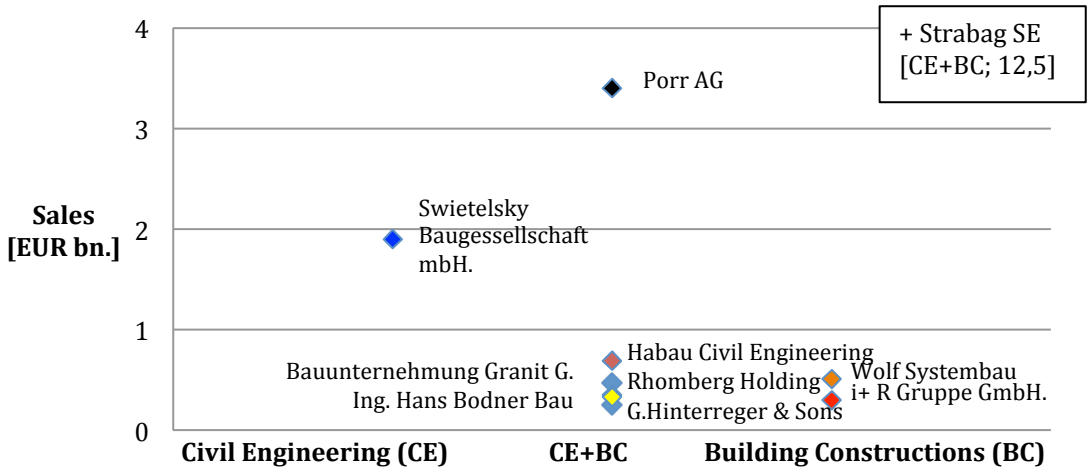


Figure 34 Strategic position of 10 biggest firms in AT based on sales
Source: SOLID bau, available at: www. Solidbau.at, own elaboration

New competitors

As already stated, number of firms in Austrian construction sector has been increasing together with rising amount of employees. Based on data collected from Bank Austria, there has been a boom in start-up companies. Modification of the commercial law and restructuring of bigger firms created the potential for new start-ups to enter the market. Globalized world economy triggered by use of modern IT in project management are challenges that restructured the Austrian market. Moreover, new firms found potential in simplicity of the operation under multi-supplier system. There has been a growing trend of new contractors, which focus on coordination of outsourced building activities enabling them to lower costs. In other words, it decreased initial capital requirements on construction and barrier to entry. On the other hand capital needs remain high considering such company, which aims to complete larger scale construction.

Based on research of Czech and Austrian cooperation in construction done by Zathurecky, Kesler, Schweiger, and others (2013), construction firms in Aus-

tria have been afraid of new entry from abroad. Such statement only confirms the threat that Austrian construction companies have been facing from the EU enlargement. In May 2011, the transitional period for 8 new eastern member states of the EU (joined in 2004) expired hence the market opened for movement of employees and employers. Thus Austrian companies and people were afraid of engagement of wage and social dumping as the eastern block offers cheaper labor. Therefore new wage and social dumping prevention act (*Lohn- und Sozialdumping-Bekämpfungsgesetz,* LSDB-G) was implemented to ensure nondiscriminatory competition between Austrian and foreign businesses stipulating that the manpower awarding has to be done according to the Austrian Collective Agreement. Similarly the Act is applied in case of Bulgaria, Romania, and Croatia. This great threat of new entry is thus limited by legislative barrier, but the illegal action can still be present (Eurofound).

Power of buyers

Negotiating power of construction clients is moderately high in Austria. Despite the fact that public entities slightly diminished their investments, private sector still leads the market. In residential construction specifically, some regions such as Vienna have abundant amount of individual clients in need for new residences. Quite many potential buyers hence lower their negotiating power. Still client leadership is typical for the Austrian construction sector.

Substitutes

Increasing importance of green construction has given a rise to eco-friendly materials. These materials assembled into projects then act as substitutes to classical cement building. For instance, these materials are the above stated wood (timber), different prefabricated panels, new brick system, insulation and other recycled materials. Use of alternative materials and especially timber-framed construction in Austria in residential housing has become so popular, it might no longer act as substitute for traditional brick and mortar construction, but rather as the important construction materials. Established businesses are hence forced to learn to work with such supplies. Nevertheless, Austrian businesses positioned themselves among the world leaders in eco-friendly construction providing green building technologies (including passive house technology) (Austrian Embassy Washington). Innovation of green building materials is greatly supported by klima:aktiv initiative and Building of tomorrow research and technology program. Klima:aktiv issues building standards for sustainable and energy efficient buildings and is most frequently used in Austria among many other assessment systems (Total Quality Building-ÖGNB, German sustainable building council DGNB, in Austria ÖGNI, EU green building from EU commission, BREEAM from UK, LEED from the US). These standards, which are increasingly desired by investors and developers, slightly differ but more or less have the same purpose of high quality and sustainable buildings.

Complementors

It was assumed in previous chapter 4.7.2 that firms producing additional complementary interior equipment and technologies, and providers of energy supplies could be perceived as businesses, which offer such product that when used

in tandem with new construction, it adds value to clients. Again, number of providers of building equipment is hard to generally quantify.

Concerning the supplies of energy, according to Statistik Austria, popularity of wood as source for heating has been increasing (by 15 % between years 2003 and 2012), gas, however, is still the most popular source (78 % of domestic consumption is imported, over 60 % from Russia) though, its consumption has been growing very slowly or rather stagnating. Coal creates only negligible portion. Renewable sources of energy comprises of 19,1 % of energy consumption. Concerning the retail market of electricity, the concentration in 2010 was moderately high. The three largest suppliers (Wien Energy, ENV, and BEWAG) cover 58 % of the market, the switching between suppliers was quite low only 1,5 % clients changed supplier. Taking into account the retail gas market, the concentration was quite high, the three largest suppliers combined shared 74 % of the market in 2011. Energieallianz held over 60 % (European Commission).

Stage of life cycle of the industry

Current development of Austrian construction industry is rather stable compared to the Czech Republic. The demand of public entities slightly decreased but the private clients remained relatively unchanged. Steady but slow growth of the sector is recognized considering the growth of production and turnover (sales). Still, negative implications of world crisis and being accustomed to growth have caused in some cases price wars and thus price-cutting. Based on this evaluation, the stage of development of Austrian industry appears to be close to so-called industry shakeout almost reaching the maturity. Rivalry intensifies and new strategies, cooperation and innovation can lead to overcoming of obstacles of the external environment and further growth of the branch stimulating a new demand (see Figure 35).

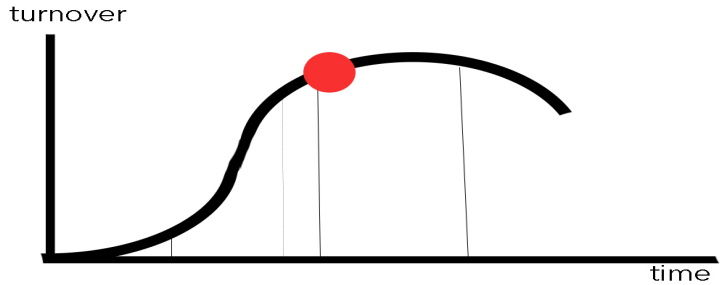


Figure 35 Stage of life cycle of Austrian construction
Source: own elaboration, based on model by Hill, Jones, & Schilling, 2014

4.9 Strategy, Structure, and Rivalry compared and linked to the EU

Strategy

European Commission has outlined European strategy for construction industry to enhance the competitiveness of the sector and its enterprises (2012). This strategy has five key targets:

- stimulating investment conditions to enhance growth, research and innovation and low-carbon economy (e.g. building renovation and infrastructure maintenance, utilize EU funds, enforcing energy performance of buildings directive)
- improving the labor situation in construction to combat the shortage of qualified craftsmen (e.g. BUILD UP Skills initiative adapting the vocational education and training system to skills and qualification requirements creating training and certification schemes in terms of energy efficiency)
- enhancing resource efficiency, environmental performance and business opportunities
- strengthening the Internal Market for construction to improve the legal framework for construction without increasing the bureaucratic burden
- fostering the global competitive position of EU construction enterprises (providing financial support to aid internationalization of small specialized firms, enhancing the cooperation with 3rd countries – Africa, South America, EU-Russia dialogue, Mediterranean Partnership – concerning sustainable construction).

Main idea of the whole strategy is to sustainably encourage building renovation as the opportunity to revitalize business and employment in the construction industry. The success of the developed strategy is dependent on the commitment of EU member states and construction firms and other stakeholders.

As far as national strategies of the two observed countries, the biggest difference in strategic background of construction sectors in Austria and the Czech Republic is given by Austrian stability of public authorities. Austrian public sector prepared and has been fulfilling a straightforward long-term concept concerning construction (including public investments, housing subsidies, encouragement of energy efficient constructions etc.), which is now and then being amended based on development of environment. On the other hand, the Czech authorities prepared many strategic documents, which were only promising and never realized or even could not be realized as the personnel turnover was so frequent. Non-strategic position of the Czech state has had an impact on management of many construction firms. Most companies did not prepare any strategies. Only long-term plans based on previous operation led to problems in period of crisis. According to the Study of Austrian and Czech construction firms by Zathurecky, Kesler, Schweiger, and others (2013) the crisis forced the Czech entrepreneurs to prepare at least operative strategies as firms had to solve immediate problems. On the other hand, Austrian companies have had a better attitude towards long-term strategic planning of its activities. It makes sense considering the Austrian strategic framework is steadily set.

Development of crisis led to evolution of two basic strategic trends in Europe among construction firms in years 2012-2014. First major trend has been followed by larger companies, which have sufficient resources and experiences; strategies of internationalization and diversification. At the same time, a large group of construction companies, incapable of dealing with such long-term

strategies as businesses clamp all their effort to ensure daily operations and to meet financial obligations, has followed strategy of survival, the second major trend. Concerning internationalization, the top 50 European companies generated over 50 % revenues at foreign markets in 2012. As far as example of diversification, Spanish Ferrovial SA enlarged its portfolio and acquired 70 % of Ingenieria Steel, Chilean mining firm for EUR 21 million. German Hochtief on the other hand reduced the portfolio to focus closer to field of construction and sold airport division to Canadian investment fund PSP for EUR 1,1 bn. (Linhart, 2013).

Furthermore, based on Journal SMART Stavebnictvi (2013), more and more companies have been trying to adopt new strategic approaches to offset potential changes of the environment. Examples are life cycle management of construction focusing on sustainability, and lean management aiming to increase effectiveness and flexibility of all corporate activities.

Concerning the strategic management based on cooperation, the Czech and Austrian strategic approach towards cooperation and innovation greatly differs. While the Czech firms collaborate only short-term on a single project, the Austrians are not afraid of long-term cooperation. Furthermore, while the Czech construction companies, which try to innovate, protect and hide their know-how, the Austrian businesses are willing to share the information and moreover participate in clusters combining all the know-hows together to enhance the innovation.

Structure and Rivalry

Construction sector in Europe is highly fragmented and characterized by a large amount of SME and great differences in performance among the EU member states. There were 3 280 371 construction companies in the EU (EU28) in 2012, 94 % were enterprises up to 9 employees. Majority of firms (74 %) operated under specialized crafts. Amount of construction companies in the EU28 decreased by more than 75 thousand between years 2007 and 2011. Considering turnover of the EU28, it moved around EUR 1 545 bn. in 2012 and it decreased significantly (by 24 %) since 2008 (Eurostat).

Similar fragmented market structure appears in both countries Austria and the Czech Republic. Majority of firms are micro businesses running some specialized building activity. However, there are much more construction firms in CR employing just slightly more workers, still generating only approximately 66 % of turnover of Austrian firms. This vividly shows the lower productivity of the Czech labor (Eurostat).

Decreased amount of works intensified the competition mainly in civil engineering. Competition under building construction differed from country to country based on local culture and approaches, which play a significant role of how and with what materials are buildings constructed (European Commission). All of European construction powers diversified their portfolio to civil engineering and building construction. Among the top 8 European construction firms based on sales in 2013 belonged following: Vinci SA from France (EUR 40,3 bn.), ACS Gruppo from Spain (EUR 38,4 bn.), Bouyguess SA from

France (EUR 33,3 bn.), HOCHTIEF AG from Germany (EUR 25,7 bn.), SKANSKA AB from Sweden (EUR 15,8 bn.), EIFFAGE SA from France (EUR 14,3 bn.), COLAS SA from France (EUR 13 bn.) and STRABAG SE from Austria (EUR 12,5 bn.) (Deloitte, 2014).

Concerning the power of buyers, clients of construction (investors) in Europe have high negotiating power desiring high quality building for tight budgets and schedules. As the economic agents tightened their belts, the amount of customers diminished, the market consolidated (also in France, Finland). Client's leadership has been present across Europe however better customer care in form of customer relationship management has created potential to lower bargaining force of a client.

Concerning the role of substitutes, the overall threat is relatively low as people will always need to live and function in constructed buildings, except if they desire to sleep in a tent their whole life and walk on destructed roads. However taking into account the different materials a construction company use, the threat is then much greater. Higher demands on sustainability, quality, and ecology pressure the builders to engage otherwise substitute materials. Use and innovation of alternative materials is further more developed in Austria than the Czech Republic. Green construction is highly developed in Finland, Denmark, and Sweden. Especially timber-framed construction in Finland belongs among the best in Europe (Manninen, 2014).

Considering the threat of new entry, the new challengers for the global construction business, according to The Economics (2012) are Chinese firms. Chinese construction companies operate with low margins. Also they are good at finishing projects on time but have a lack of expertise and management skills. Still there exist barriers to entry in form of different licenses provided by the EU. Firms, which are technologically capable and cheap, endanger the industry. EU enlargement (mainly the last three enlargements) also threatens construction environment of the Western Europe by influx of Eastern construction firms with cheaper labor creating potential for wage and social dumping. This issue also endangered Austrian market.

Taking into account that complementors for construction are mainly utility companies providing energy to constructed structures then it is necessary to claim than the EU is greatly dependent on energy imports. More than 50 % of the EU energy consumption is imported and mainly from Russia (Eurostat). European countries therefore plan to reduce energy dependence by enhancing energy efficiency. Considering the energy market, there are significant differences among countries of the EU in terms of retail market structure. According to report on Energy market in the EU in 2011 (2012), the concentration of utilities providers is high in most of the member states. On the gas retail side, while all except 6 countries had 10+ suppliers of natural gas offered to final consumers, the market share of the largest retailer exceeded 50% in 13 countries (and it even exceeded 80% in 8 states). On the electricity side, there were 18 countries in the power retail markets with more than 20 electricity suppliers. The largest providers of electricity are EDF (France), GDF Suez (France), E.ON (Germany),

and RWE Group (Germany). The largest retailers of gas and oil are: BP (UK), Royal Dutch/Shell (UK and Netherlands) and Total (Spain).

The attractiveness of construction environment in the EU differs. Taking into account the whole EU, the development of the industry has not been very favorable. It has been rather declining. Number of firms operating in the sector significantly decreased as well as the employment. Also the overall turnover has diminished notably. Competition intensified especially in infrastructure building, competition in building sector remained rather limited. With lower demand many firms started entering different markets to enlarge the portfolio of activities and the rest was trying to survive, the other went bankrupt and the market slightly consolidated. Construction has been led by investors' willingness to buy and profitability has been lowered given the investor's pressure on price. New substitute materials has been threatening traditional bricks and mortar construction, however, engagement of these substitutes into operation has provided opportunity for larger pool of clients reflecting the current trend of demand.

The Czech construction has been declining for last 5 years due to financial crisis and irresponsible actions of government, while the Austrian construction has been rather almost reaching maturity.

4.10 Supplying and related industries in the Czech Republic

Construction branch is greatly dependent on its suppliers. However, suppliers greatly rely on construction firms. Construction companies distinguish three types of supply: supply of raw materials, supply of manufactured products, and supply of work (sub-contracting). Development of the supplying sector is briefly depicted in the table bellow (see Tab. 15). Single items are furthermore evaluated below.

Tab. 15 Situation of construction supplying sector in CR

Number of enterprises	**2011**	**2012**	**2013**
F43 Construction: Specialized building activities	140,411	140,053	135,136*(p)*
B 08.1 Quarrying stone, sand and clay	257	270	273*(p)*
C 23 Manufacture other non-metallic mineral products	6,865	6,576	6,184*(p)*
Production value [EUR mill.]			
F43 Construction: Specialized building activities	10,657.5	9,431.8	8,679.4*(p*
B 08.1 Quarrying stone, sand and clay	596.1	555.5	529.4*(p)*
C 23 Manufacture other non-metallic mineral products	5,115.8	4,814.8	4,523.9*(p)*
Domestic Consumption [000 tons]			
Non-metallic minerals	77,430	68,808	64,628*(ps)*
Wood	5,565	5,711	NA

p: provisional, s: Eurostat estimate

Source: Eurostat, available at: http://appsso.eurostat.ec.europa.eu/ own elaboration

Suppliers of work are mainly trades (craftsmen), businesses performing specialized construction activities (NACE rev.2 F 43) such as plumbing, floor-

ing, demolition, air-conditioning and electricity installations. Many construction firms (civil engineering and building constructions) in the Czech Republic operate under multi-supplier system. In other words, the trades are outsourced (sub-contracted) to multiple suppliers and the ordering firm, general contractor, acts as a coordinator. Construction companies usually do not have all of the necessary capabilities therefore they tender single building activities to other subcontractors. The other reason for subcontracting is that it provides cost advantage for them. In Tab. 15, development of trades is recorded (F43). Companies performing specialized construction activities comprises grand majority of total construction companies. In 2013, the provisional data shows that there was 135 136 of businesses in construction trades, of which most are micro firms. Nevertheless amount of these firms and value of their production has been declining for at least past three years. This situation only reflects the conditions of the construction industry as a whole and the lower demand for construction works. Bargaining power of these suppliers from the viewpoint of number of providers is very low, there is too many of them. However, these suppliers have large and direct impact on the quality of construction. According to project manager of construction firm PS-estate, s.r.o. Miroslav Hroch, currently with lower amount of work, sub-contractors are wiling to accept work for very low price, hence have lower room for profit or make nothing just to cover their capacities. In order to make some money, they sometimes use cheaper technologies and materials. Sometimes they also tender the work further to some other supplier to earn a profit without work. Also quality of craftsmen worsened, as there are fewer apprentices at vocational programs. Such practices endanger the quality of construction and thus put emphasis on better quality control of individual craftsmen more than before. Hroch also added that these firms, as they are the last in value chain getting the tiniest profit, tend to go bankrupt because they cannot bear long-term negative margins. From the viewpoint of quality, these suppliers create a threat for the industry. Still overall power is low because if one goes bankrupt in the middle of a project, another is waiting in line to finish it.

Sector supplying raw building materials develops also according to the construction sector. Major suppliers for traditional raw materials are firms quarrying stone, sand, and clay (non-metallic minerals). As a consequence of recession in construction, the suppliers of raw materials have not performed well. Based on data recorded in Tab.15, number of these providers has been increasing, however when compared to year 2009, not stipulated in the table, the number of firms fell from 502 to provisional 273 in 2013. Production value in the table furthermore declares, that the output has been declining. Moreover when looking at the domestic consumption of raw non-metallic minerals (gravel, sand, stones, etc.) it shows that consumption of domestic demand has been decreasing to 64,6 million tons in 2013. Such situation only reflects how the unfavorable situation of construction greatly affects the supplying sector. For comparison the table above also shows the increased consumption of wood (not

used for manufacture of furniture), which can act as a substitute material for building.

The bargaining power of these suppliers is much greater than of trades as there is limited amount of firms. Nevertheless lower demand intensifies competitive pressure and affects prices of material inputs, which were rather falling since the crisis eruption.[17] Furthermore heterogeneity of demand with different requirements on alternative materials has increased the threat of substitute materials altering the market.

Similar development is seen in **supply of manufactured building materials**. Number of manufacturers of other non-metallic materials (e.g. bricks, clay building materials, cement, sanitary fixtures, concrete products, plaster products, etc.) has been declining as well the value of their production (Tab.15). Based on data collected by Eurostat in 20011, most manufacturers of non-metallic materials (92 % in 2011) were enterprises up to 9 employees, however they made only 6 % of total turnover. While large firms (with 250+ employees) made 49 % of the sector turnover and these were only 40 companies (forming 0,58 % of total). Concentration of competitors is noticeable. Larger firms have greater influence in the sector. The best suppliers of building materials up to 200 employees in the Czech Republic for 2013 were awarded BETON Broz, s.r.o., CEZ Energeticke produkty, TECHNISTONE, a.s. Larger firms with more than 200 employees were: BAUMIT, s.r.o., KAMEN ZBRASLAV, s.r.o. and LASSELBERGER, s.r.o. (URS Praha, 2014).

It is obvious that both construction and construction supplies are mutually impacted. Therefore, as result of technological and economic ties, some firms expand their operating activities by linking these two sectors together. For instance, Skanska, a.s. owns quarry Březín, which ensures supplies of crushed rock such as backfill material, gravel and quarry stone, and 18 concrete plants, which provide manufacture and supply of concrete (Skanska.cz). Company OHL ZS, a.s. integrated backwards having trades such plumbing, heating, air conditioning, installation of thermal technology, medical equipment, installation, repair, inspection and testing of electrical equipment and design (OHLZS.cz). Small or medium sized firms usually do not have resources to extend to such measure and so they establish only a manufacture of product or employ such trades, which are at the core of their operation. For instance firm PS BRNO, s.r.o. owns a manufacturing plant for windows, as one of its major productions is cladding.

Commonly Czech suppliers cooperate with construction companies on a single project, where the collaboration is based on just-in-time method. Not many constructors stock their resources. The supplies come when they are needed in the process of construction (Pavlicek, 2014).

Concerning the quality of supplied materials, nowadays established producers of these inputs are equipped with modern technologies, which work individually excluding the threat of human factor. Especially technical situation of

[17] Development of material input prices is elaborated in chapter 4.4

larger firms is favorable, however, for the sector it is important to continually invest into research and development to ensure the competitiveness of the declining sector. According to Strategic vision prepared by URS Praha and SPS CR (2009), it is important not only to increase amount of traditional building materials by use of established technologies, it is necessary to innovate these materials and technologies based on results of effectively functioning research.

Technological research is one of the related sectors of construction, which positively impacts its development. According to study of Deloitte, URS Praha and SPS CR (2012), only small portion of firms have been engaged in R&D, as companies have not not willing to change and conduct applied research. Cooperation of firms with public research institutions (universities) still is negligible based on data from Czech Statistical Office. Even though expenditure on research and development has been growing, R&D investments into construction are still quite low as there has not been long-term public concept towards research. The major funding comes from the EU. Concurrent institutions conducting a research in construction are Research Institute of Building Materials in Brno, Building department of Klokner Institute by CVUT Prague, University Centrum of Energy Efficient Buildings (UCEEB) by CVUT Prague, and newly established center of Advanced Materials, Structures and Technologies (AdMaS) by University of Technology Brno and others. The most promising entity is the AdMaS center in Brno established mainly from the EU funds (CZK 818 mill.), which was recently built (approved in November 2014) and focuses on research, development and application of advanced building materials, structures and technologies. Its mission is to ensure the application of researched results to practice in form of innovative building materials and technologies, which have qualitatively enhanced properties such as lower production costs reduced by limitation of negative impacts on the environment considering the lifecycle of the materials (during production, usage and after its lifespan). In the Czech Republic it is unique project of interdisciplinary construction research center aiming to restore experimental and computational platform in field of construction engineering (Drochytka, Bydzovsky & Vacenovska, 2012). This is a positive movement to enhancement of the Czech constructions and improvement of the competitiveness of the Czech Republic. Examples of the most significant findings from applied research in field of construction in CR are the spacer for vertical structure based on technical hemp, shotcrete concrete resistant to sulfate environment, thermal insulation plaster for humid masonry and masonry with high salt content, modified wood-plastic composite panel for external cladding and many others. Within AdMaS, there were three main research groups set, one of which is EGAR - Environmental and Geo (Geotechnics and Geodesy) Applied Technological Research – focusing among others on Geo informatics, Smart regions, and Numerical simulation and data processing. The working group EGAR hence participates in the implementation and marketing of so-called BIM system in the Czech Republic. BIM (Building Information Modeling) is new 3D software solution of modeling and optimizing design, implementation and management of buildings. BIM contains geometric and spa-

tial relations, lighting analysis, geographic information, bills of quantities, characteristics of building components (e.g. producer details), demonstrates the whole lifecycle of buildings including process of construction and facility management. This system is based on an open exchange of comprehensive information and data across disciplines, which increases the efficiency of design and construction, reduces the possibility of the risk of errors and optimize investment costs. BIM system is a new trend, however not yet accustomed in the Czech construction environment. Martin Cerny (2014), member of the professional council for BIM, stated: *"Generally I come across opinions that widespread use of BIM will occur in long-term future in the Czech Republic because for one, the government is not flexible enough to encourage the BIM usage, and for two, if firms are not forced by legislation they are not willing to cooperate."* Moreover Miroslav Vycital, project manager responsible for BIM implementation, noted that one of the major problems of BIM is that it requires capability of people to work with these technologies and enforces higher cooperation among single professions and designers. It is hard to change the pattern of behavior.

Nevertheless, according to Journal Stavebnictvi (2012), for example the cooperation between University of Technology in Brno and the private sector has been enhancing every year. Domestic companies but mainly foreign companies collaborate in applied research increasingly more, as Brno has become thanks to CEITEC (Central European Institute of Technology) European center of science, competitive to other European research centers. Hence more and more foreign enterprises are interested in research. Hopefully, the Czech cabinet meets the obligations of the government declaration (2013) to encourage collaboration of private and university sector in research and innovations.

Long-term cooperation and partnerships among different entities in the Czech construction environment is still not very common. The official portal for Czech export and entrepreneurship BusinessInfo.cz acknowledges that one of the problems of the Czech entrepreneurial environment is persisting isolation of firms. For this reason, the EU funds (OP Cooperation) aim to allocate finances into development of **clusters**. Participation in a cluster potentially leads to innovations and hence enhances competitiveness of its members. In the Czech Republic there exist already some cluster initiatives and some clusters are still in the phase of mapping, identifying sectors with potential cluster formation. The established clusters in the Czech Republic are very young. In field of construction the most developed cluster NIPAS (Nizkoenergeticke Pasivni Stavby) in South Bohemia was founded in 2006 on the basis of European territorial cooperation between Austria and the Czech Republic. It focuses on construction of low energy and passive houses. This cluster wants to contribute to expansion of passive buildings among standard types of construction in the Czech Republic. It creates a database of vendors, of information about technological equipment, and the latest trends in the field. Cooperation of providers and interchange of experiences and know-how is also supported in this program. This initiative has already a great number of members. Furthermore, a new cluster called Ji-

homoravsky stavebni klaster was established in Brno in 2012. It focuses on popularization of the principles of sustainable development, strengthening cooperation among cluster members to ensure sustained supply of information about innovations, technology, legislative, economic and social context, and process of sustainable construction. However it still has only 13 members and it is not much active[18] (Businessinfo.cz).

Related sectors to construction are also the residential sector and banking sector. **Residential market**, which impacts new residential constructions, was in details elaborated in chapter 4.4. Briefly, a number of provided approvals for new dwellings has been declining since the crisis eruption. However since 2013, number of sold new apartments in urbanized areas has been growing. The potential demand is hence increasing creating an excess of demand in those areas. Residential market is a form of distribution of constructed buildings. Therefore, to utilize the synergic effect of cooperation of construction firm and real-estate mediator, construction companies sometimes collaborate with realtors who become responsible for selling their construction projects. Nevertheless, the Czech realtors currently suffer from bad image, because people here perceive real estate agents either as scammers or those who want to get "fat" provision from the mediation. Therefore more and more people are excluding the real estate agents when buying or selling a real estate and address directly the seller or buyer (Novotny, 2014). Therefore construction/developer firms (forward integrated firms) are in greater demand as they exclude the mediator.

Synergies exist between **banking sector** and constructions as well. Provision of loans and mortgages has an immense influence on construction. According to Vera Roucova, business representative of developer company DS beta, s.r.o., it is common that firms establish cooperation with banks on financing of a construction project and then further cooperate on provision of individual clients' mortgages, who search for housing.

Based on analysis of KB in 2014, the Czech banking sector remains stable and strong disposing of huge capital buffer, which enables to balance negative development of economy impacting quality of credit portfolio. Position of Czech banks concerning liquidity is strong. The volume of loans is continually increasing in 2014, although the last five years the rate of growth decreased. The situation of non-financial corporations is reversed. Here, the share is decreasing, and in June 2014 it was 33.8%. During the first half of 2014, housing loans recorded a slight growth dynamics. At the end of June 2014 this type of lending grew by 5.7% year on year, which was supported by record low interest rates and an improving labor market situation. Yet in the long term the development shows that the dynamics are at historically minimum levels, which demonstrates a cautious approach to household indebtedness in this segment of lending (Frayer, 2014).

In conclusion, supplying sector is declining and has low power to bargain. Quality and technology is in general quite high, but period of crisis encouraged

[18] After online subscription to participate in the cluster no response was received from the cluster facilitators.

bad practices endangering the quality. Some construction firms, which have resources, integrate backward to supplying sector or specialize. The rest cooperate with suppliers mainly on just-in-time basis for single projects. Cooperation with suppliers, competitors and related sectors (R&D, banking sector and real estate service) is quite low as firms are very isolated and hence the innovation potential is limited. Enhancement of research activities and new cluster formation supported by the EU create a potential for enhancement of the competitiveness.

4.11 Supplying and related industries in Austria

Suppliers in Austrian construction are again providers of work, raw material, and manufactured material. Moreover, the multi-supplier system is also present. In following text these three supplying subsectors, which are quantified in table below (see Tab. 16), are evaluated.

Tab. 16 Situation of construction supplying sector in AT

Number of enterprises	2011	2012	2013
F43 Construction: Specialized building activities	26,558	27,062	27,068*(p)*
B 08.1 Quarrying stone, sand and clay	320	322	307*(p)*
C 23 Manufacture other non-metallic mineral products	1,332	1,324	1,306*(p)*
Production value [EUR mill.]			
F43 Construction: Specialized building activities	19,898.6	20,825.8	21,077.5*(p)*
B 08.1 Quarrying stone, sand and clay	792.3	817.4	827.9*(p)*
C 23 Manufacture other non-metallic mineral products	6,184.4	6,104.6	5,860.3*(p)*
Domestic Consumption [000 tons]			
Non-metallic minerals	108,531	101,291*(s)*	100,269*(ps)*
Wood	17,255	15,431*(s)*	NA

p: provisional, s: Eurostat estimate

Source: Eurostat, available at: http://appsso.eurostat.ec.europa.eu/ own elaboration

Sub-contracting, the cost effective way of running construction firms became very popular in Austria. Therefore many startups appeared in the sector in past ten years (Bank Austria). Also number of businesses performing specialized building activities (trades and crafts that are mostly sub-contracted), has been growing as well as the volume of their production (see Tab. 16). Crafts comprise more than 80 % of all firms in construction sector. Most of them are only micro companies with max.9 employees. In 2013 provisionally, there were 27 068 enterprises, which is a great pool of companies to be sub-contracted relative to demand of firms in Civil Engineering and Building Construction. Based on this fact is hence suppliers' power very low and cost of switching is negligible. Though similarly, as in the Czech construction, supply of work has always a direct impact on quality of a project. Given the study of Zathurecky, Kesler, Schweiger & others (2013) on construction firms in Austria, companies perceive that there is a lower amount of highly qualified providers of trades and specialized firms as a consequence of market restructuring. From the quality point of view suppliers always have high bargaining power, which is usually limited by

intense quality control and construction quality standards, which are embedded into legislation.

Suppliers of raw building materials (stone, sand, clay) were only represented by about 307 firms in 2013 and the value of production reached provisionally EUR 827,9 mill. (see Tab. 16). Amount of suppliers relative to buyers is definitely low and the market is quite concentrated. Therefore the power to bargain is on the side of raw material producers. Nevertheless, when considering domestic consumption of the raw non-metallic minerals (traditional building materials including sand, gravel, stones, clay, etc.) it has been rather decreasing. Also report of Bank Austria (2012) stipulates that suppliers of traditional building materials experience slow growth due to for one, lower demand in civil engineering, and for two, market restructuring as the trend in building is towards green construction using alternative and innovative materials. Such trend has deteriorated the importance of these traditional construction supplies. For comparison, the table also includes domestic consumption of wood. Even though the volume of wood consumed significantly decreased to estimated 15,4 million tons in 2012, Austria is still among the six largest consumers of wood in the EU. Also based on Eurostat database, year 2011 was the peak for Austrian wood consumption since 2004.

Hence the suppliers' force to negotiate appears to be a neutral but is endangered by many new substitute materials as a result of technology development and ecological trends greatly supported in Austria.

As far as the supplier **sector of manufactured building materials**, number of manufacturers of other non-metallic mineral products has been falling slightly as well as the value of their production (see Tab.16). It depicts the similar trend as in the supply of raw materials. Based on last data from Eurostat in 2011 most manufacturers were only micro firms (963 enterprises out of 1332), and there were only 20 large companies. However the turnover of the 20 firms comprised of almost a half of total turnover of the market. High concentration, intense competition and quite undifferentiated products assign these suppliers with smaller power to negotiate. Among the best performing suppliers in concrete, gravel and cement were awarded: Asamer Kies & Betonwerke GmbH, Bern Egger GmbH and Zementwerk Leube GmbH (SOLIDbau).

Cooperation of construction firms with its suppliers is mostly based on establishment of long-term relationships. Based on the study by Zathurecky, Kesler, Schweiger & others (2013) construction companies in Austria do not often switch supplier but rather form long-term partnerships.

Nevertheless backward integration is present in some Austrian construction companies as well. For example, corporation HABAU Group owns a plant for a manufacture of prefabricated materials. Also group of Ing. Hans Bodner Bau owns (among others) concrete plants such as WeberTransportbeton Ges.m.b.H., Wimpissinger Transportbeton and Weber Beton. Furthermore Rhomberg BAU Group owns a quarry (whole own resource center) Rhomberg Steinbruch Gesellschaft m.b.H. & Co OG providing water blocks, chippings, sand, road construction materials, and natural stones, etc. (rhombergbau.at) Considering backward integration into specialized crafts, this is common for many firms. For

instance, Leyrer + Graf, have highly qualified and certified technicians, who are able to develop and maintain telecom copper networks (specialized trades, which otherwise would have to be sub-contracted) (SOLIDbau).

According to Reasearch Institute for Housing, Building, and Planning (FGW), advantages of the supplying sector of construction are: relatively high level of innovation in the sector and presence of firms providing innovative, high quality and sustainable products. One of the reasons why Austrian construction has reached some international success is due to **research and development**. Austrian authorities have been supporting R&D in the whole economy for a long time. Austria has well-established instruments of research funding. Still according to Johann Jastrinsky, head of the national construction association, research intensity in the construction industry is significantly lower compared to other sectors. However, the portion of research funding has been increasing (Affenzeller, 2014). In Austria there are many institutes, which focus on research in construction sector. For example Institute of Technology and Testing of Building Materials by TU in Graz, Institute for Building Construction and Technology by TU in Vienna, Institute for Structural Concrete, Building Materials and Building Physics by University of Innsbruck, BVFS - Constructional Research Institute of Salzburg, FGW - Research Institute for Housing, Building and Planning and many others (iibw.at).

To further enhance the research Jastrinsky admitted that in 2009 very important innovation and research center (Innovations- und Forschungstelle Bau) by BAUAkademia in Salzburg was developed. This center has a great potential focusing on energy efficiency, effective mass storage, component activation, construction new technologies, creative construction, senior-friendly construction, and improvement of construction processes. It is supported by the EU, National chamber of commerce and state of Salzburg. Gunther Graupner, the head of the competence center for building research, he stated that the center currently works on BIM and construction cybernetics, and life cycle costs. BIM is rapidly transforming the landscape of the construction industry throughout Austria (Affenzeller, 2014). Especially in Tyrol (at University of Technology in Innsbruck), they focus on implementation of the system. In Tyrol, they created project called FreeBIM Tyrol, which provides starting package of BIM software to firms. Current issue that BIM system in Austria faces is necessity for standardization, because the system does not work if everybody uses own sets of parameters. Practical experience with BIM already have Gernot Wagner, head of PORR design and engineering GmbH, who stated: "*It has great benefits for our clients. The project can be accessed from anywhere in a real-time 3D model.*" (tugraz.at).

BIM system and other innovations in Austria are based on one important prerequisite and that is cooperation and partnerships. Collaborations of construction companies, suppliers and public institutions are increasingly more common. A great example of cooperation was the already stated Green Building **cluster** of Lower Austria. Innovation through cooperation is their motto. This cluster is part of national initiative klima:aktiv, member of Austrian and EU cluster platform (clusterplattform.at) and its participants are mainly SME, lead-

ing companies in green construction (Saint Gobain ISOVER, Wienerberger and others). Projects of the cluster have international success (e.g. in USA, Canada, China, Finland, Russia). For instance, 17 companies of the cluster built the first passive house village allowing their customers to test the house by living in it for a while before buying it (more on probewohnen.at). Participants of the cluster developed light-weighted board including agricultural by-product (maize cop), built houses with triple zero (zero emission, zero energy, zero waste), and introduced so-called LOPAS construction method of pre-fabricated timber construction passive house with straw insulation and loam rendering, and many others.

There are also many wood clusters e.g. in Styria, Upper Austria, Tyrol, Salzburg. Concerning the R&D there is a consortium of seven institutions (Bautechnisches Institute Linz, BVFS, FGW, KMU Forschung Austria, Österreichisches Forschungsinstitut für Chemie und Technik, Austrian Institute for Applied Telecommunication) focusing on construction related research (iibw.at). The Austrian experts believe that cooperation is the basis for innovation. According to Romy Sigl, Graupner's colleague, "*competition may provide short-term drive, however in the long-term it usually leads to energy waste. If entities put together their know-how through cooperation, it would save countless of development cycles.*"

Important related sector, where forward integration may apply, is **residential sector**. This branch was in details analyzed in chapter 4.5. Housing in Austria has been experiencing positive trend for a long time. Speculative investing, development of demographics, and governmental housing subsidies encouraging energy efficiency have been the main drivers for new building construction. Concerning the quality of real estate brokers, in Austria now and then a black sheep, which may ruin the industry image, appears. In order to distinguish professional real estate broker from unscrupulous traders, Association of real estate agents and property administration in the Chamber of Commerce introduced so-called real estate cards. These cards can be posted on real estate portals and clearly identify reputable realtor (immobilien.net). Nevertheless increasing demand on obtaining a full package (without intermediation) enhanced the popularity of developer/construction firms. Firms such as i+R Gruppe, PORR, Rhomberg Bau and so on are selling their developed projects directly to final individual customers.

Banking sector is important related branch for construction. Cooperation with banks is necessary to finance construction projects and moreover banks assist in the sale process of the new constructed building. For instance Sparkasse offers on its website different new residential construction projects, which it financed and now it provides mortgages to final buyers. Current situation in Austrian banking system is quite favorable. In 2013, the bank financing market continued to strengthen and Austrian banks decreased their exposure to liquidity risks. Provided housing loans grew by 3 % year on year thanks to reasonable financing conditions (mortgage rate moved around 2.83 % in April, 2014). Nevertheless share of mortgages is still low compared to situation prior crisis. Growing trend in real estate price (especially in Vienna) and growth of housing loans requires a great due diligence and strict monitoring whether the credit

standards and risk pricing are adopted. Concerning non-financial businesses, the financing remained subdued as the firms used their internal sources for financing of their activities rather than external (OeNB).

Even though the traditional building supplier sector seems to have overall low negotiating power, the potential for better competitive positions is given by the enhanced attitude towards partnerships. Long-term cooperation of entities in the value chain (forward and backward integration) and competent position of the public sector towards R&D enabled the establishment of many cluster associations or synergies, which increased the competitiveness of construction sector.

4.12 Supplying and related industries compared and linked to the EU

Construction sector in the EU is also characterized by wide use of **subcontracting** through design and building processes as it provides flexibility and lowers the building costs. Such characteristic is already obvious from the industry structure as most businesses are involved in specialized building activities (mostly micro firms), which are usually carried out under subcontract. There has been an increasing trend of number of companies performing trades in the EU 28 (see Tab. 17), which comprised over 70 % of total construction businesses in 2013. There are definitely more craftsmen relative to building construction and civil engineering companies. Their turnover makes 50 % of total construction turnover. Similar situation of sub-contracting phenomenon is also present in both evaluated countries. Many micro trades relative to demand means lower power to bargain and low switching costs. However, it is always important to keep in mind that multi-supplier system can directly deteriorate the quality of projects (European Commission).

Tab. 17 Situation of construction supplying sector in AT

Number of enterprises	2011	2012	2013
F43 Construction: Specialized building activities	2,327,758	2,358,383	2,382,518*(p)*
B 08.1 Quarrying stone, sand and clay	15,208	14,704	15,262*(p)*
C 23 Manufacture other non-metallic mineral products	101,708	98,020	106,501*(p)*

p: provisional,

Source: Eurostat, available at: http://appsso.eurostat.ec.europa.eu/ own elaboration

When looking at the **material producer sector**, development of amount of firms in the EU28 involved in quarrying stone, sand and clay (see Tab. 17) does not really show any trend. However when comparing years 2008 and 2013 based on Eurostat numbers, the amount of firms has decreased. Number of largest providers of these traditional building materials in Italy, Spain and France fell quite significantly. Lower demand in construction caused more intense competition. In Austria, there have been steadily above 300 of these producers. While in the Czech Republic number of firms dropped to almost a half (around 250). In both countries there has been a high concentration of larger producers, who hold majority of demand. Differentiation of these products is

usually low and threat of substitutes is large, therefore power to bargain is rather low.

The **sector of manufacturers of nonmetallic mineral products** in the whole EU also deteriorated when comparing the number of firms involved in 2012 and 2008 based on Eurostat data. In 2013, the provisional result shows that total sum of manufacturers of these traditional building materials amounted 106 501 enterprises (see Tab. 17) and this number has improved to situation prior crisis. Large companies have better market position, since, despite great majority of micro enterprises, larger firms conclude almost 50 % of total turnover; micro companies make only 9 %. Higher concentration of these manufactures is present in Austria and the Czech Republic as well.

Quality of construction suppliers differs throughout Europe. Austrian and the Czech materials and technologies are considered by the European Commission as quite highly developed. In order to absorb the challenge of quality of construction materials and all structural components of construction, the EU developed the European Standardization System relating to construction and its design standards. This system includes material, product, execution and test standards along with EN Eurocodes. 10 European Standards cover areas such as the basis of structural design, actions on structures, steel, concrete, composite steel and concrete, timber, masonry and aluminum structures, as well as geotechnical design and seismic design (European Commission). These standards are vital prerequisite for enhancement of durability, reliability, and quality of construction products and hence competitiveness of the sector.

Concerning backward integration (of supplying and construction sector), it is a common practice in construction environment all over Europe. Construction is a supplier intensive industry and necessity to gain control over its suppliers is quite demanding. Larger businesses like Spanish Ferovial SE have resources to obtain e.g. a quarry, but the smaller firms are usually dependent on cooperation. Enhanced cooperation of suppliers in the construction process has a direct impact on quality and potential for innovation. While the Austrian suppliers are in long-term cooperation with construction sector, the Czech construction firms are rather more isolated.

To enhance the competitiveness of construction, joint **research and innovation** by enterprises, universities and other institutions is necessary. Larger and multinational construction companies perform research activities and sometimes cooperate with different technological institutes (e.g. Federal Institute for Materials Research and Testing in Germany, Centre Scientific et Technique du Batiment in France, Technical Research Institute of Sweden and many others) (enbri.org). On the other hand, SME do not have enough resources to engage in research. European Commission has introduced several initiatives to support innovation and growth of SME through clusters cooperation. In the Czech environment, there has been a lack of cooperation and know-how sharing, which is contrary of how it works in Austria. **Clustering** and forming partnerships have become quite common in Austria. On the other hand, clustering in the Czech business environment is at the beginning. The Green Building clus-

ter of Lower Austria is one of the most well managed clusters in Europe. Together with the Spanish Cluster de Madeira de Galicia (CMA) were evaluated by a gold label of the European Cluster Excellence Initiative (cluster-analysis.org).

In relation to the increasing emphasis on climate change, the market for eco-efficient buildings, which initiates a great variety of concepts, is a key area for construction companies to invest in technology and innovation. Construction firms around Europe (mainly Finland, Sweden and Denmark) have recognized this eco-trend. However demand conditions, unwillingness of companies to change, low-skilled labor, low accessibility to innovation are the major obstacles for future development in most European countries (European Commission).

Another element that drives construction innovation is use of information technologies. One of the gadgets currently trending in construction is use of BIM. This building information modeling system is adopted in Norway, Finland, and Denmark, where the use of the BIM is compulsory for all public orders. In Great Britain, the use of BIM will be compulsory for public orders since 2016. In the Czech Republic the experience with BIM is quite negligible (Cerny, 2014). Based on SmartMarket Report by McGraw Hill Construction, in 2010 over one third of the industry in Western Europe has adopted BIM. Primary adopters were architects (47 %) followed by engineers (38 %) and contractors (24 %) (autodesk.com). In Austria contractors such as PORR and STRABAG use it. Other EU member states pursue the implementation of BIM as well, however for effective functioning necessary standards must be legislatively prepared. For now, CEN (European committee for standardization) established a working group, which in cooperation with ISO and buildingSMART alliance will work on BIM standards issues (Cerny, 2014). Green and smart technologies are the major trends and opportunities in construction sector all over the world.

Important role for construction plays **residential market** and banking sector. In the EU 28, the residential construction declined during the crisis, but year 2013 the situation has improved (see Chapter 4.6). The improvement of the housing market situation was mainly present in countries were governmental subsidies for residential construction were provided. Demographic trends in the EU and speculators create a good potential for enlarging the housing stock, and hence new residential construction. Forward integration establishing construction developer firm was a good tactic to cover its capacities and to get closer to customer and exclude the intermediary (realtor) as people in recession are sensitive to price change. Real estate service experienced negative development as well as construction as most of real estate activities directly rely on prospect of prices and construction (European Commission). Furthermore many countries have to deal with unreliable realtors, as the standardization of people is quite difficult. Austria solution with real estate property cards is one of the ways to lower the possibility of such issue.

Concerning **banking sector** in the EU, during the recession it was very cautious in providing loans and the accessibility to credit was low. Real estate loans, which were provided, were generally expensive. Current development of interest rates in the EU is favorable for obtaining a credit. The ECB stipulated to keep

low interest rate to facilitate investments until the economy recovery is safer. Overall recovery in the Euro Area was more financed by internal sources rather than by banks. Year 2013 was exceptionally strong year in property investments volumes. Financing of new real estate development (cooperation of banks and construction developer) is an opportunity for the banks to enlarge the portfolio of real estates offered to customers and provision of housing mortgages. This is a mutually advantageous cooperation, which is quite common (KPMG.com). An example of new real estate development financing is residential housing in Charlottenhoffen in Berlin, Germany, developed by CESA Investment GmbH & Co. KG and offered by Deutsche Postbank AG (Postbank.de). Both Austrian and the Czech banks are opened to this type of cooperation (KPMG.com).

To conclude, situation of suppliers of traditional building materials differs among countries. However in general, alternative green materials has been substituting traditional building materials. Power of suppliers has been low in most countries. Quality of supplied products differed among the EU countries, however Eurocodes and European Standardization system should contribute to improvement of quality of supplies. Clustering initiatives based on cooperation of entities of the value chain is greatly supported by the EU as well as cooperation with R&D entities and involvement of IT. Backwards and forward collaboration are present among the member states.

4.13 Opportunities and Threats and sector evaluation

In this chapter, all the results in form of opportunities and threats in all observed areas are generated and the most significant are listed and weighted in accordance to their importance for construction sector in given region (see Tab. 18-20). Final evaluation of construction sector in all three areas is provided at the end of this chapter.

Czech Republic

Opportunities:

- New Deputy for construction of Ministry of Industry and Trade
- EU amendment of legislation of public procurements – awarding criteria include life-cycle costs (not yet implemented)
- EU subsidies (ecological subsidies) and New green to savings
- Ageing population, insufficient amount of facilities,
- New social housing act (not yet created)
- Single households, high divorce rate, projected low unemployment
- Low interest rates, low mortgage rates
- Projection of GDP growth in the next three years
- New government policy statement of 2013 aiming at public investment, support of cooperation and innovation of public and private sector
- Increasing resources to R&D
- High level of IT sector, growing usage of IT services

- Growing demand for residential construction
- Increasing internal migration
- Eco-trend – energy performance of buildings, slow increase of popularity of timber-framed construction
- Building Information Modeling and Customer Relationship Management
- Lean Construction management
- CNB intervention - weaker currency supporting export
- Cooperation with R&D institutions (AdMaS) and cluster collaboration (NI-PAS, Jihomoravsky stavebni klaster) to enhance innovation by know-how sharing
- Declining construction – consolidation of market (market clearing of insolvent companies)
- Overall quality of supplied building materials used in construction is high

Threats:

- Government personnel turnover, corruption, bad audit of allocation of EU subsidies
- Lack of public concept towards construction and investment and its fulfillment
- Current legislation of public procurements – awarding criteria is price
- Reduced private and public investments, lower value of an order
- EIA and other environmental requirements
- Current economy in recession
- Ageing population – less productive labor
- Low demand, intense competition (price wars), threat of substitute materials, high negotiating power of customers, late payments of investors – low profitability of the sector
- Declining construction threatens the quality of supplies
- Road infrastructure
- Decreasing trend of technical apprentices, high level of youth unemployment
- War in Ukraine – potential for massive leave of Ukrainians construction workers
- Insufficient cooperation with universities and suppliers on research and innovation
- Isolation of firms, negligible horizontal cooperation; on a single-project only
- Excess of supply – unused capacities of construction firms
- Eco-trend – energy performance of building – material requirements, necessary skills
- Czech customers do not trust the durability characteristics of timber-framed construction
- Low level of strategic management of construction firms
- Low level of innovation

Tab. 18 Importance of opportunities and threats weighted in CR

Opportunity/Threats	Weights
O: Eco-trend green building	10 %
O: Ageing population	12 %
O: Building Information Modeling (BIM)	7 %
O: Growing residential demand	11 %
T: Political instability (turnover, no concept)	15 %
T: Low amount of investments	19 %
T: Declining amount of technical apprentices	9 %
T: Low profitability of the sector	17 %
Total	100 %

Source: based on data collected in the thesis, edited by author

Austria

Opportunities:

- Political stability
- The Green political party has stable position in the Parliament
- Active engagement of political authorities in construction sector: klima:aktiv initiative, Haus der Zukunft,
- Stable partnership of construction companies, Federal Economic Chamber WKO and the state authorities and other important chambers on formation of legislation
- Highly developed infrastructure
- Substitutes of traditional building materials are no longer a threat, their inclusion is a must
- Strong environmental policy – involvement of individuals
- Perceived corruption is low
- EU amendment of legislation of public procurements (2014) – awarding criteria include life-cycle costs (not yet implemented)
- Well developed housing policy – housing subsidies
- Ageing population – subsidies provided to private firms engaged in building senior homes
- Demographic trends – single households, high divorce rate
- Well developed vocational education and training
- Low real estate mortgage rates
- High standard of living – one of the wealthiest country in the world (GDP per capita)
- High productivity of labor
- Use of life-cycle management
- Low negotiating power of suppliers
- Increasing resources to R&D
- High willingness of firms to innovate
- Horizontal and vertical cooperation – long-term collaborations

- Engagement in clusters – know-how sharing
- High level of IT sector, growing usage of IT services
- Growing demand for green residential construction and living in smart cities
- European leadership in green building
- Increasing use of renewable resources
- High level of sophistication of demand – Baugruppen (Cohousing)
- Building Information Modeling and Customer Relationship Management
- Lean Construction management
- Overall quality of supplied building materials used in construction is high
- Flexible building law

Threats:

- High level of public debt and deficit
- Current austerity of government – consolidation plan
- Current legislation of public procurements – awarding criteria is price
- Reduction of public investments
- Non-Harmonized building law
- Slow growth of GDP
- Cyclicality of the industry
- Ageing population – less productive labor
- Intense competition (price wars), high negotiating power of customers
- Threat of new entry from abroad
- Boom in start-ups – subcontracting has low barrier to entry
- EU enlargements
- Wage and social dumping
- Too big to fail – does not hold (Alpine Bau)
- Large number of foreign incomers
- Slow decreasing trend of technical apprentices
- Environmental policy – high environmental taxes

Tab. 19 Importance of opportunities and threats weighted in AT

Opportunity/Threats	Weights
O: Eco-trend green sustainable building	18 %
O: Active participation in clusters	12 %
O: Building Information Modeling (BIM)	8 %
O: Sophistication of demand - Baugruppen	13 %
T: EU enlargement – competition, social dumping	11 %
T: Current legislation on public procurements	14 %
T: Declining amount of technical apprentices	9 %
T: Cyclicality of the industry and public debt	15 %
Total	100 %

Source: based on data collected in the thesis, edited by author

EU

Opportunities:

- EU amendment of Directive on public procurement including life-cycle costs in 2014
- Projection of growth of GDP
- EU subsidies in research and innovations, energy-efficient buildings, sustainable development, increasing competitiveness of regions
- EU supports engagement of firms in clusters and collaboration horizontally and vertically – to enhance innovation
- Ageing population – need for facilities
- Expansionary monetary policy of ECB to fight deflation – low interest rates, buying of asset-backed securities
- Engagement of substitute materials create new potential demand
- Standardization system of building products – enhances the quality
- Awarding certifications of quality such as BREEAM, LEED, DGBN, ÖGNB
- The EU makes large investments into infrastructure
- Demographic trends – single households, high divorce rate
- Low mortgage rates
- The EU promotes of sustainable development – strong environmental legislation
- Increasing ecological trend of construction
- Increasing usage of IT services in all sectors of economy
- Building Information Modeling and Customer Relationship Management
- Lean Construction management

Threats:

- Different development of the member states threatens the stability of the EU as a whole (PIIGS countries were hit the most in construction as well)
- Declining trend of the industry
- Cyclicality of the sector – dependence of government actions
- Current legislation of public procurements – awarding criteria is price
- Reduction of public investments in most EU countries – e.g. Spain, Ireland
- Slow growth of GDP
- Deflation may discourage consumer spending, increase real value of debt and cause real wage unemployment
- Ageing population – less productive labor
- Intense competition, high negotiating power of customers
- Threat of new entry from non-EU countries (China)
- EU enlargements – eastern low-income countries endanger social dumping
- Decreasing trend of technical apprentices
- High youth unemployment
- Potential for social exclusion – some countries have low level of social care
- Demographic trends – increasing group of low-income earners

- EU environmental laws – may slow down process of construction
- War in Ukraine – leave of workers, transitory country for gas – EU dependent on gas from Russia
- EU countries have high public debts – binge spending of governments (PIIGS)

Tab. 20 Importance of opportunities and threats weighted in EU

Opportunity/Threats	Weights
O: Eco-trend in sustainable building	17 %
O: EU subsidies	14 %
O: Building Information Modeling (BIM)	10 %
O: Vertical and horizontal cooperation (clusters)	11 %
T: EU enlargement – competition, social dumping	9 %
T: High youth unemployment	11 %
T: Declining amount of technical apprentices	13 %
T: Cyclicality of the industry and public debts	15 %
Total	100 %

Source: based on data collected in the thesis, edited by author

Final Evaluation

The level of construction environment in the Czech Republic has been greatly affected by the financial crisis impacting the domestic demand and by irresponsible and unsystematic actions of public representation. Lower demand for construction, private and public, decision-making of demand based on price only supported by improper legislation caused significant slump of the construction branch leading to insolvencies, intense competition, and price wars, enhancing the negotiating power of demand and leaving the supplying sector with tiny or zero profits. Stage of life-cycle hence signifies declining industry, which also denotes that in 2013 the industry was still in the recession, where it has been since 2008. Isolation of firms and unwillingness to cooperate on legal basis and to innovate has not supported the development either.

On the other hand, Austria with stable political background and strategic concept, did not suffer from such slump because of active participation of government motivating the domestic demand to keep spending. As more productive and richer country, Austria transformed the traditional construction based on mortar and bricks to eco-friendly construction now internationally recognized (so that the substitute materials of construction became an important source of supply). Success of Austrian construction is mainly based on cooperation at all levels. Partnerships and cooperation among the public and private authorities including umbrella organization WKO, cooperation between competitors sharing each other's know-how opened potential for innovation increasing the competitiveness of all entities cooperating. Nonetheless, Austrian social politics and support has its own dark side and that is large value of public debt. Cyclicality of construction environment also among other sectors contributed to

increase of government debts. However Austria has been trying to lower the debt by adoption of austerity consolidation plans quite successfully. Austrian construction has been endangered by social dumping practices thanks to EU enlargements when after the transition period mainly eastern European countries threatened to flood the market with cheap labor. However the legislation in Austria promptly resolved this by imposing equal pay on all works performed in Austria. Even though that Austria underwent two tough years in 2009 and 2010, it absorbed the negative implication of the crisis quite quickly and therefore continued on the growth path.

As far as the evaluation of the European Union, in general the construction was hit quite massively and all countries experienced at least two years of negative growth. The housing bubble deteriorated the construction markets for instance in Spain, Ireland and Greece and the following government's austerity affected mainly the subsector of civil engineering (infrastructure building). However the development differed from country to country. Nordic countries put more effort into innovation and therefore ranked among the leaders in alternative and sustainable building construction (mainly timber-framed construction). In general, the turnover of the industry as well the number of firms and employees has been decreasing, which are signs of market clearing or market consolidation. With lower demand the competition in most countries intensified and created space for aggressive pricing.

Moreover the EU member states have been suffering from low amount of skilled labor and decreasing trend of technical apprentices at vocational programs as well as from high level of unemployment of the youth. Furthermore most European countries have been facing the influx of EU and non-EU foreigners and foreign business entities, also the population has been ageing and number of single households in the whole EU has been increasing. This clearly depicts that the structure of demand of residential construction has changed. It is assumed that now smaller and affordable housing units will be demanded. Moreover the member states will have to deal with low-income earners and hence the question of social housing.

The level of construction environment can be enhanced by utilization of opportunities such as: Sustainable construction, which is more and more demanded by the EU legislation (including timber-framed construction), cooperation of public and private entities on legislation formation, on research and development and cooperation of construction entities among the value chain, which includes cluster formation. A good facilitator for cooperation in the value chain can be Building Information Modeling gadget, which interconnects all agents, supports the quality of construction and involve the life-cycle management of construction. Working with BIM also enables lean management implementation creating more flexible and efficient processes with zero defects and resource wasting. Also appropriate utilization of allocation of EU subsidies for sustainable building, for innovation and competitiveness enhancement forms an opportunity as well as engagement in development of the educational system of vocational programs.

4.14 Strategies formulation for Czech republic

Based on previous analysis of construction in the Czech Republic with a benchmark in Austria and the EU, basic strategies are developed for current and future competitors. The first three strategies are deeply assessed in chapter 5.

First of all, demographic trends signify the ageing population and excess of demand for elderly homes. Austrian model has proven that housing for seniors, which is built and operated by private sector could undoubtedly help to resolve the unsatisfactory situation in the Czech Republic. Construction firms should focus on development of residences for elderly. This niche strategy or even blue ocean strategy altering the current boundaries of existing practice may be one of the ways to confront the limited demand in construction.

Second strategy also is generated based on comparison of Austrian construction. Austria is a leader in green construction and cluster collaboration. Furthermore, European union legislation enforces sustainable building. Therefore, building companies should be able to construct timber-framed low-energy building. Cooperation in clusters will enhance company's knowledge increasing the ability to construct such project hence will lead to innovation and gaining competitive advantage.

Growing trend of IT usage, standardization, environmental requirements, high negotiation power of investors, and control of suppliers are sources for generation of the third strategy: implementation of Building Information Modeling system to enhance the cooperation among the actors of the value chain. BIM is already implemented in some countries of the EU and will be soon required in the Czech Republic.

Another strategy reflecting the decline of technical apprentices (potential leave of Ukrainians) aims to enhance the cooperation of construction enterprises with the vocational programs to motivate students to work in segment of construction. This strategy does not only aim to increase the number of apprentices but mainly to enhance their quality. There are a few ways to implement it. One, to create own vocational school. This approach, due to high financial costs is especially suitable for large corporations that have a strong position in their regions. Pupils are motivated to apply for such vocational school to be able to work in such prestigious company. Two, to form a long-term cooperation with vocational schools e.g. by provision of scholarships, provision of practical platform for students, engaging firm's professionals in teaching within vocational programs, and by concluding agreements about future employment. Not all firms can afford to invest into education of future apprentices, however collaboration among firms can create synergic effect. Cooperation among competitors in supporting education of crafts creates a great potential for SME and augments the industry's competitiveness.

Firms should utilize the possibilities to draw EU subsidies. EU Cohesion Policy allocate for 2014-2020 EUR 351,8 bn. and the Czech Republic will draw EUR 21,98 bn. Moreover, Czech national fund of environment re-started program New green to savings offering subsidies for construction of family houses

and from 2015 construction of multi-dwelling houses. This offers two options: one, to build a whole new construction or two, to refurbish and revitalize current building fund. However, it is necessary to prepare a project with due diligence to be able to obtain the funds.

Furthermore, companies should increase cooperation in clusters. Current market of construction is greatly saturated and only innovation or offering some alternative product and materials can attract more customers. Sharing know-how in the Czech Republic will be though quite complicated. However government, which aims to enhance cooperation between universities and firms in research preparing better tax treatment for companies involved in such cooperation, could influence decision-making of firms on participation in clusters. The only well-developed cluster is currently in South Bohemia region NIPAS focusing on green construction.

Construction companies should lower the negotiating power of customers by involvement in customer relationship management (CRM) approach. World leaders are doing exactly what customers want, when they want it and at a price that represents an adequate customer value. Most construction companies today do not determine what customers really want and they do not ask for feedback of customer satisfaction. Pricing is too often based on a cost-plus method without finding and accentuating added value or savings for the customer. Construction companies should begin to work systematically with their customers, their needs and perceptions of added value and quality. CRM can be implemented by use of electronic software. In the Czech Republic there exists software hellios.eu using model RSV (Rizeni stavebni vyroby). In this software CRM involves working with partners such as customers and suppliers and monitor competitors. The model RSV enables to record all business meetings and tasks related to the contract. It also includes monitoring of customer satisfaction, including graphic evaluation (hellios.eu).

Construction companies should also consider lean construction to work more efficiently and flexibility in all activities. For the engagement of lean management it is necessary to perform deep audits of all processes and activities to avoid wasting of resources and fluency of construction. Common issues, which need to be assessed are: time delays of construction, performing activities, which are not necessary, unreasoning movement of people, machines, materials, mistakes that cause time delays and waiting of downstream resources (machines, people), or inappropriate processes (use of bigger machines, unnecessary steps, redundant design). The essential presumption of lean construction is fluency and continuity of supply of materials, if possible “just in time”. Such implementation also requires elimination of redundant storage of materials at a construction site, greater control of managers over the delivery of construction, and checking the project in advance and set expectations (ex-ante) rather than ex-post.

Large firms should focus on strategies of foreign expansion confronting the low domestic demand. However, firms should deliberately evaluate the business environment in selected countries.

5 Recommendations

Declining construction industry in the Czech Republic and decreased spending of private and public sector motivate construction firms to look for different direction to find some demand. Current unattractive, unprofitable, declining stage of development is not suitable for entrance of new competitors into the industry. Large firms with huge capital or company bringing breakthrough technology, which has not yet been offered on the market, comprise the only potential for new entrants.

Nevertheless three basic recommendations combining opportunities and threats observed in the Czech Republic, Austria and the European Union are developed. All three strategies consider certain investment activity and therefore may not be suitable for all companies in general in the construction industry. The first strategy is developed for one concrete firm but shows possible directions for other companies, and the second and third strategies are developed as scenario for any company but also require certain investments.

Strategy 1

Excess of supply and unused capacities forced companies to undertake the developer activities based on Design-build delivery method to cover its capacities and to earn some profits. Construction companies develop and build own projects financed by own equity or by external sources. However finding a product, which is demanded, is quite tough considering that the market is quite saturated. In a way diversification strategy (offering new product to new market) or rather blue ocean strategy offering new product to totally new demand with smaller or no competition forms theoretical background for the first developed strategy.

There is nothing new to say that population in Europe, CR included, is ageing. And the commercial world is trying to come up with ideas how to make money out of it. Construction relates to elderly people in way that it can build facilities, which are greatly required. Austrian firms utilized this potential quite quickly. A half of Austrian homes for elderly is provided by private firms. In CR, particularly, there is an excess of demand for senior housing facilities, as the public institutions do not provide sufficient amount. Participation of construction firms in social care service is however quite off topic. Since construction firms know how to build and maybe sell a house but do not know how to run a senior homes with 24-hour care. Therefore this first strategy aims at project development of residences for elderly with outsourced social care. Social care would be provided by external services based on individual needs of clients. This strategy presumes to focus on elderly people, who do not require 24-hour care, they are self-contained and their health is still in good conditions.

Given the background intentions, three sub-strategies are developed for a construction/developer companies to choose.

1. Development of senior residence and selling it directly to 1 operator/investor

2. Development of senior residence and selling apartments to individual clients
3. Development of senior residence and renting apartments to individual clients

These strategies are developed for a specific construction firm, company A. Project of senior residence with outsourced social care is prepared for 47-apartments facility located in South-Moravian village. The project design involves one main building with 17 apartments, with common social room, room for facility manager (repairman) and room for a doctor and 30 small housing units with own entrance in the courtyard of the site. Only 5 apartments are 2+kc and the rest are 1+kc. The disposition of the design is recorded in Annex 1.

Elaboration of each sub-strategy focuses on economic viability of the construction investment. The pricing strategy in the first two directions is based on costs plus markup pricing strategy. Costs of the construction are CZK 48 988 174 (see Annex 2). Then prices are compared to only benchmark project in South Moravia, Brod nad Dyji. Since the project of company A has more convenient and favorable location being situated on village square[19], closer to Brno, and costs of construction are higher due to building of complex technical infrastructure, the prices are set higher then the benchmark. It is also considered that there is small competition hence the higher prices are bearable. Final prices are then computed with CZK 35 400 to CZK 38 000 per m2 based on apartment's disposition multiplied by usable area plus prices of garden and balcony. Selling prices moves from CZK 1 162 780 to CZK 1 694 540 without VAT (see Annex 3).

As far as the third sub-strategy including rent, this setup deliberately considers affordability of clients paying rent (elderly).

All three strategies assume that the final user of the dwelling must be a senior (a person receiving old age pension). This provision must be stipulated in declaration of ownership; an abuse can lead to filing to court. On the other hand, a buyer (payer) of dwelling can be a person at any age.

Sub-strategy 1: build and sell to one investor

Taking into account that people or firms, who have money to invest, consider residential market as more profitable than different financial instruments, this strategy aims at investors, which are proficient in residential facility sale or renting or want to operate a senior residence. This strategy for company A, as far as time of repayment, would be the quickest. This solvent company A can obtain up to 70 % of external financing from KB, a.s., bank where company A has account. According to Renata Pospisilova, representative of KB, as a loyal client of KB, a.s. the firm A can obtain short-term mortgage of CZK 34,4 mill. for period of 2 years at 3 % interest rate. There are two variants to consider concerning sale. Variant A is to value individual apartments at their market price

[19] Ing. arch. Dagmar Glossova, author of Bydleni pro seniory (2006), stated that seniors do not want to live in facilities separated from towns and villages as it is in Brod nad Dyji.

similarly as they would be sold to individual clients. Then the return on investment would be 21,8 % earning CZK 10,7 million on mark-up. More realistic however is Variant B, to offer the whole object with 8 % mark-up, a usual margin the firm takes on other projects ordered by investor. This would earn to the company CZK 3,9 million. Each CZK of the sale would earn CZK 0,074 on profit (see Tab.21). The repayment period of construction and finding investor is expected within one year after final inspection, so the mortgage would repaid prior its maturity.

Tab. 21 Economic viability of direct sale of senior residence to 1 investor

	Variant A – full valuation	Variant B – discounted valuation
Cost of construction	CZK 48 988 174	CZK 48 988 174
Selling price	CZK 59 686 878	CZK 52 913 899
Mark-up	CZK 10 698 704	CZK 3 925 725
Return on sales	17,9 %	CZK 7,4 %
Return on investment	21,8 %	CZK 8 %

Source: Internal documents of company A (Annex 1-3), own elaboration

Sub-strategy 2: build and sell to multiple clients

Heterogeneity of demand implies that people who are in search for senior homes are elderly themselves, their children, or residential investors. Seniors sometimes cannot afford to finance new housing, therefore this strategy suggests that these seniors would sell their own housing (where many times they live alone and cannot take care of the whole property), and therefore could afford to buy a new one. It is expected that some children would be obstacles unwilling to sell the older housing stock but also some children would be willing to help to finance such apartment. Individual investors would buy the apartment with intention that there will be always of queue of potential renters.

For this strategy, there are two scenarios developed, optimistic one suggests that all the apartments would be sold within a year and a half after final inspection and pessimistic one suggests all apartments to be sold within three years after final inspection. The overall earnings from such investments considering full market valuation would be CZK 10, 7 mill., which is 21,8 % from CZK 49 mill. invested, and 17,9 % of return on the sale (see Variant A of Tab.21). This strategy also considers taking 2-year mortgage under same interest condition (monthly repayments) and with 30 % financed by own equity (see schedule of the mortgage repayment in Annex 4). This means that company A can start drawing the mortgage after 30 % own equity investments (which would be approximately 6th month after initiation of construction). Based on cooperation with the project manager of firm A, the construction itself would take one year (2013).

Optimistic variant suggests that 40 % of apartments will be sold prior to inspection (in 2013), 40 % will be sold after the inspection (2014), 20 % in the

first 6 months of 2015. Thus this scenario would repay all the money invested the second year after final inspection in full potential earnings. Following table (Tab.22) shows the calculation of payback. It is assumed that some savings can be made since the budget for the first variant is very loose.

Tab. 22 Build and sell to multiple clients - optimistic scenario

	2013	2014	2015
Share of sold apts.	40%	40%	20%
Sale	23 874 751	23 874 751	11 937 376
Investment	46 512 750		
Marketing	204 000	204 000	102 000
Insurance		19 529	9 765
Costs on mortgage	528 995	501 968	55 167
Operating costs		510 000	340 000
Balance	-23 370 994	22 639 254	11 430 444
Payback	-23 370 994	-731 740	10 698 704

Source: Internal documents of company A (see Annex 1-4), own elaboration

Pessimistic variant suggests that the sales would not be as frequent prior to the building completion. Some people just like to see the building finished before they purchase it, especially cautious retirees. Therefore this variant assumes 20 % to be sold during construction, 40 % the first year after final inspection and next 40 % within two more years. This scenario suggests the budget to be very tight, moreover some extra costs may be realized (in form of additional costs on marketing and operating). For the company A it is necessary to realize that the investment would be making great losses the first two years since the start of the project and the full value of earnings will be reached in the third year after final inspection (see Tab. 23).

Tab. 23 Build and sell to multiple clients - pessimistic scenario

	2013	2014	2015	2016
Share of sold apts.	20%	40%	30%	10%
Sale	11 937 376	23 874 751	17 906 063	5 968 688
Investment	46 512 750			
Marketing	204 000	204 000	68 000	34 000
Insurance		19 529	7 812	1 953
Costs on mortgage	528 995	501 968	55 167	
Operating costs		510 000	255 000	85 000
Balance	-35 308 369	22 639 254	17 520 084	5 847 735
Payback	-35 308 369	-12 669 115	4 850 969	10 698 704

Source: Internal documents of company A (see Annex 1-4), own elaboration

Since this second sub-strategy approaches new demand, quite wealthy retirees, children of these seniors, and residential investors, it is very hard to predict the development of sales. Therefore these previously mentioned two scenarios were developed based on consultation with Vera Roucova, sales manager of developer company with 12 years of experience in real estate.

Sub-strategy 3: build and rent to multiple clients
There are also retirees, whose property does not have much value to buy new housing. Moreover, some children are unwilling to sell the retirees former home. Therefore these customers prefer paying rent. The basis for calculation of price of rent is average market price per squared meter benchmarked with calculation of Brod nad Dyji, where it moves around 1900 CZK/m2. Average monthly rents currently move around CZK 6-8 thousands. After all these considerations, prices are developed moving from CZK 6010 monthly rent (1+kc) to CZK 10 105 (2+kc) (see Annex 3). External care services are arranged with local housekeepers, which charge 60 CZK/hour (provided services are recorded in Annex 5). Monthly utilities for such apartment move around CZK 2500. Assuming that a person spends around CZK 4000 monthly for food and orders help services once a week, this would add up to CZK 12 750 of monthly basic living costs. Assuming average monthly pension is CZK 10 973, a retiree can ask for housing benefit, which would be at CZK 8510 of housing costs allowance of CZK 1517,10. Also a retiree can ask for widow's/widower's pension, which would be extra CZK 2159 assuming the death spouse would be an average-income pensioner. Moreover, if a person is required to obtain some health care ordered by doctor, a retiree can obtain CZK 800 monthly as care allowance (mpsv.cz). If all benefits were possible a senior's pension could be CZK 15 4491,1. Moreover all the apartments are big enough to be shared by two persons. Even though it might seem quite not affordable for average-income pensioner, living in calm community, where an old person do not have to take care of a large property and does not have to walk the stairs every day are the benefits, which needs to be considered. Still it is assumed that this type of housing, a residence, is for rather wealthier seniors in good health conditions.

If company A decides to act as an investor itself and rent all 47 apartments, it is necessary to consider that market rents in the Czech Republic are low due to purchasing power, therefore repayment of initial investment would take quite a few years. In case that company would take a long-term mortgage for 70 % of the investment (lets assume 10 years at 4 % interest), it would add up extra CZK 7,4 million in interests (own calculations) to initial CZK 49 mill. No extra operating costs would incur, as the operation of the facility (including insurance) would be paid in utilities of tenants. Total monthly revenues from all rents are calculated for CZK 316 595 (yearly CZK 3 799 145). Therefore simple calculation of payback period would take for CZK 56 387 900 investment 15 years. Annual return on investment would then be 6,7 %. It is also important to mention that obtaining such loan would be quite difficult. Therefore company A should rather use internal resources to finance the whole investment then the repayment would be within 13 years and return on investment would be 8 % (see Annex 3).

Strategy 2
Strategy of building a low-energy timber-framed construction is viable if the construction is cost-effective and advantageous for buyers. In order to claim that green construction is economically viable, budgets of conventional and eco-

logical construction are developed for a 2-floor family house with usable area of 105,7 m2 (ground floor 55,6; first floor 50,1 m2), built up area 64,9 m2 designed by Ing. Jan Salek, Brno (see Annex 6). Disposition of the house is 4 rooms plus kitchen corner. Conventional system uses bricks as the bearing construction, and ecological system uses timber-framed construction. For this purpose, two construction firms were quoted to prepare a cost budget for such project. One of them is traditional construction company PS BRNO, s.r.o., and the other is company involved in wood construction, Mondi,s.r.o. Simple version of the two cost budgets below (see Tab. 24) shows that the total cost of wooden house and total cost of brick-layered house is cheaper by CZK 164 421, which is in the whole cost volume of construction not as significant difference, however for some families could be (for detailed budgets see Annex 7). The main advantage hence lays in speed, simplicity of construction without use of heavy machinery and minimization of wet processes, thereby saving costs of fuel and energy and cost of labor. Such construction is also independent on temperature and weather conditions.

Tab. 24 Costs of a family house construction based on bearing technology

Name	timber	bricks
Main Building Production (HSV)	606 299 CZK	1 181 207 CZK
Associated Construction Production (PSV)	1 583 724 CZK	1 169 758 CZK
Installations	253 726 CZK	253 955 CZK
Basic budget costs (ZRN)	2 443 749 CZK	2 604 920 CZK
Total budget costs	2 492 684 CZK	2 657 105 CZK

Source: PS BRNO, s.r.o and Mondi,s.r.o.; own elaboration

In case that a construction firm would implement wooden building in its portfolio, it would require expansion of employment of craftsmen such as carpenters and joiners and purchase of simple equipment such as nailers, staplers, planer and saw. Furthermore in the Czech environment it is necessary to consider that Czech demand is not very persuaded about the functionalities (durability) of the construction. Therefore, it would be quite necessary to build up a referential construction, which would be offered to customers to test it as the Austrians did with “probewohnen” initiative building a village of timber-framed construction allowing customers to try it before purchase. This would include a purchase of land. Advertisement would be necessary in real estate magazines.

Any solvent construction firm can adopt a simple scenario. Timber-framed family houses would be built as turnkey projects to individual buyers who already own a land. Common practice of Mondi and PS BRNO on own residential projects is to add 15 % as a markup. Taking this margin, it would cost CZK 2 492 684 to build it earning CZK 373 903 extra on profit. However as stated it is recommended to stimulate the demand by development of a family house, which would function as a referential building for at least three years. After that period the house should be sold for at least 60 % of its total project

price. For this intention it is necessary to purchase a building land and obtain necessary permissions from public authorities. Such scenario is recorded in following table (see Tab. 25) considering currently offered land on sreality.cz in Holubice (CZK 1350/m2), necessary building fees (based on stavebni-rizeni.cz) and cost of construction project as the one designed above. Hence CZK 3 106 184 would be spent initially and in three years sold for CZK 1 863 710 (60 %).

Tab. 25 Project's costs of timber-framed construction

Items	Amount	Unit cost [CZK]	Total [CZK]
Land	450	1 350	607 500
Building fees			
- zoning decision	1	1 000	1 000
- building permit	1	5 000	5 000
Construction (incl. labor costs)	1	2 496 586	2 492 684
TOTAL PROJECT COSTS			**3 106 184**

Source: Mondi, s.r.o., sreality.cz, stavebni-rizeni.cz, own elaboration

Since it is recommended to build a referential house for customer testing, it is necessary to consider overhead costs, which are connected with 3-year period of unsold house. Operating cost of the one house moves around 3 000 per month and required marketing expenses move around 5000 per each print of Grand Reality each month estimated by Eva Kafkova, business agent of Grand Reality. In three years the overhead costs would accumulate to CZK 288 000 (see Tab.26). Furthermore the expansion of specialization requires purchase of necessary equipment. Based on prices of store vseprodrevo.cz, the total price of required equipment amount 61 109. To see itemized list of equipment, view Annex 8.

In the next table (Tab. 26), the assumed incurred costs and revenues are recorded. Moreover, profit from single turnkey project is shown in the last row to see how many of these projects it would take to cover the investment of the 3-year referential house and necessary equipment. Almost CZK 1,6 million of negative balance would be repaid after construction of 5th house. Furthermore, considering that average length of timber-framed construction according to Mondi takes 4 months. With full capacity utilization, the balance could be repaid by the profits increments within 1,7 years.

Tab. 26 Final balance of incurred revenues and costs

Item	CZK
Initial cost on necessary equipment	61 109
Accumulated overhead costs over 3 years	288 000
Development of referential house	3 106 184
Total costs incurred	**3 455 293**
Revenue from sold referential project	**1 863 710**
Balance	1 591 583
Profit from a single turnkey project	**373 903**

Source: own elaboration on previously stated data

Strategy 3

The growing utilization of information technologies, growing requirements of clients on quality constructing error-free products, time and price, bigger importance of sustainable building and life-cycle management are the basis for formulation of third recommendation: to be prepared for implementing so-called Building Information Modeling system.

For centuries entities involved in construction used paper with drawings and specifications as the primary tool to create design for customer, for bidding, procurement, pre-manufacturing, construction and assembly. Now technological development brought a new technology BIM, which enhances the collaboration among agents in the construction process and increases the efficiency of design and construction and diminishes possibility of errors. BIM is information database, which include complete data about primary design, construction, facility management, possible reconstruction, demolition, and restoration of construction site to former state. Basically it can include all information about the whole life span of the building. This system is dependent on contributions of results all participants in the construction process into the database. It is therefore challenging to engage it, as some workers are not skilled enough to work with such system. Also in the Czech Republic do not exist specific standards for BIM using 3D model. However a working group for development of standards for BIM in the EU was already established. Potential for BIM is embedded also in Directive on public procurement, which put greater emphasis on quality and life cycle costs of constructions.

When implementing BIM it is necessary to define, what the objectives of implementation of BIM are (e.g. to improve communication with clients, to be able to generate itemized budgets, to minimize errors in documentation, to derive 2D drawings from 3D model) and to determine criteria, which assist to evaluate the objectives fulfillment. BIM implementation also requires audit of internal processes because BIM will change current procedures and practices. When adopting new technology, a leadership of top managers is necessary to convince all workers that BIM is the right way. It is also recommended to introduce a person that is responsible for BIM implementation known as BIM manager or BIM committee. To transfer from current practices it is necessary to involve management of change (outlining urgency for change, stating the strategies and the risks, engaging the workers, sharing success stories, providing training, obtaining software, choosing a pilot project, rewarding early movers, setting up progression path). During change management it is necessary to obtain appropriate software having checked that current hardware has large enough memory, as BIM projects cover much space. The constructor can decide either to buy a new software and install it on each hardware or the firm can subscribe such software in form of application kept in the software-provider's servers and pay only for the time used (for a given project). Issues, which are necessary to consider, are copyright problems. It has to be clearly stipulated, what entities have an access to the model and what section they can alter. Contracts and agreements must be concluded about the information management. Indi-

vidual steps are developed on elaboration of BIM Guide by Martin Cerny at el. (2013), the BIM Essential Guide by Building and Construction authority in Singapore (2013) and the Czech entity CEGRA (Center for computer graphic support in Czech Republic).

Total price of implementation of BIM comprises of software, arrangements of firm's processes, and training of workers. Autodesk Revit Architecture 2015 is BIM software offered on the Czech market, where full license costs CZK 169 174; yearly subscription costs CZK 25 376. The advantage of subscription is that a firm does not have to pay extra for software updates. As far as the training costs, basic 3-day training for this type of BIM moves from CZK 7200 per person. Rearrangements of the company's processes are hard to quantify in general. Therefore prices of software and trainings are only mentioned to illustrate the detectable costs. It is also important to mention that a company can draw EU subsidies for purchase of IT software and connected trainings. For period 2014-2020 the EU allocates EUR 20 bn. is so-called Frames programs (cadstudio.cz).

6 Discussion

Analytical methods of strategic management were used for elaboration of the thesis. Basic framework formed Porter's diamond of competitive advantage. Using PESTE analysis for evaluation of factor conditions was suitable tool however too extensive as the construction sector is greatly affected and affects many aspects of the general environment. Mainly the political environment had to be elaborated in details to show what negative implications of actions of political representation have had on the sector since public spending forms a half of demand for construction works. Thanks to the deep elaboration of political factors, the main difference in development of construction sector was revealed. Irresponsible, unsystematic, no anti-cyclical governmental actions were the reason, why Czech construction has been suffering, while Austrian has been prospering. Important role also played elaboration of functioning of the EU in direction of construction environment. Current climate change has had a great impact on environmental policy and view at sustainable development and ecological construction of the European Union.

Demand conditions were divided into general demand, which was however very hard to quantify, as there can be immense number of diverse investors, which want to construct some structure. And the other half of the elaboration paid attention to residential construction and individual demand for housing. In both elaborations were identified developments of construction costs. There was nothing obviously new observed in the demand for Czech construction, the demand has been declining, all economic agents decreased its investment activities. However thanks to research of Austrian demand for residential construction the new type of demand was recorded "Baugruppen". These cohousing initiatives, groups of individuals, comprise totally new way of demanding residential construction. Commonly a developer construction firm prepares and constructs a project, of which apartments then individually offers to clients. Supply finds its demand. Baugruppen however are individuals, who decide to live together, find the land where they want to live, prepare a project of the residence themselves with help of designers and then they come to constructor to build it. Demand finds its supply. The probable reason why it functions in Austria is that Austria is a country more socially responsible and people are democratically more developed therefore are able and willing to share.

In elaboration of demand conditions data collected from domestic statistical offices were used in case of comparison of domestic demand based on ordering party. In case of the Czech Republic available data showing construction production at the end of the period were used, while in case of Austria data for given year were used. Therefore the comparison may show distorted results, however it clearly depicts the decomposition of domestic demand. The challenge was that data of construction orders at the end of period from Statistik Austria were not free of charge demanding more than EUR 200 to view it.

Aspect of strategy, structure and rivalry was basically divided in to two subchapters. It was important to elaborate common strategy of the public representation for the sector and to identify different strategies adopted in observed areas. In this section data were gathered as secondary sources in Austrian construction and the European construction. The second subchapter than assessed the industry structure and rivalry of firms using model of Porter's five competitive forces (suppliers' power was elaborated in further aspect of Supporting and related industries) also including the Grove's sixth force of complementors. Enlarging the model with the sixth force was quite challenging to come up with firms offering complementary products to construction projects. As hardware is a complement for software, construction is a complement for firms offering furniture, technology, and most importantly providers of energies. Due to extensity of the thesis topic mainly the providers of energies were elaborated in all observed areas. An alternative approach to elaboration of complementers could be to look at diverse synergic effects presented in the construction sector. Analysis of competitive forces revealed that construction sector in the EU is greatly fragmented with mainly micro firms operating in the market. Declining trend of industry with lower demand caused price wars connected with aggressive pricing, which was unsustainable. Therefore many companies went bankrupt. A surprise during the research was realization that the second largest company in Austria, Alpine Bau, which belonged to the biggest European construction powers, went bankrupt n 2013 as it was greatly indebted (and suspicious in using under-budget pricing) and its indebted Spanish shareholders let it fail. Intense rivalry on the European market was observable, however, market clearing has been present.

Elaboration of supported and related industries was divided into sectors providing supplies to construction sector, sector of research and development including assessment of cooperation among competitors and then sectors closer to clients, the banking sector and residential sector. It was detected that situation of the supplying sector of traditional building materials is similar in all observed areas. There are many suppliers relative to buyers with lower cost of switching. However, unprofitability of construction threatens the employed practices of suppliers and hence quality of construction. Moreover traditional building materials are loosing their importance as they are being substituted by alternative building materials such as wood and other renewable resources. Backward cooperation with suppliers is present in the construction sector and forward cooperation towards banking and residential sectors should be more greatly encouraged.

It was researched that important role in development of construction sectors among member states plays attitude of firms toward research and innovation. Innovation and willingness to change are basics for enhancement of the competitiveness of the sector. Austrian construction prospers because companies are willing to partner, share know-how and are not as isolated as in the Czech Republic. Austria as well as Denmark, Finland and Sweden utilized the potential of green building and therefore restructured the industry and use of

alternative, former substitute materials into regular components. Austrian "building of tomorrow", where energy efficiency of building plays an important role has become internationally recognized. Based on this benchmark and potential of ecological trend all over the world, the strategy number 2 was developed: to be able to offer and construct timber-framed family house. This strategy involved building a referential house for clients to test as it was done in Austria (probewohnen.at). This was an important part of the strategy due to current demand condition in the Czech Republic. Czech customers are not persuaded about durability and functionality of wooden construction. Since it costs more or less the same as bricks and mortar and the advantages lay mainly in time, simplicity of construction and future lower costs spent on energies, the Czech demand must have a hands-on experience with such construction supported by well-maintained marketing communication. Hence if a construction company wants to enlarge the portfolio of products it should allow its clients to try it. This strategy thus involves initially quite large investment for the referential house. On the other hand, enlargement of portfolio excluding the referential house requires only a few joiners and carpenters and simple sets of equipment, which are not as costly. In order to gain knowledge about timber-framed technologies it is assumed that the firm could participate in the Czech cluster called NIPAS to have better access to innovation.

Furthermore results of the external environment showed that Austrian concept of privately owned homes for elderly, which are currently in a great need in the whole EU, is one of the market, which can be also utilized by the Czech construction/developer firms as well. The three created sub-strategies were developed for a concrete firm but each had its own positives and negatives. Building and selling directly to one investor or operator, fits more to traditional construction firm, which is solvent and is able to simply sell the project to one entity. This strategy has the fastest repayment period, however it is necessary to find the future buyer, skilled operator in residential market. Sub-strategy number 2, where the apartments of the constructed senior residence are individually sold, is the strategy that company A has selected. In reality, the scenario of worse sales has occurred. The main reason for that have been probably bad marketing initiatives and communication towards the buyers (buyers can be anyone, user must be a retiree). As this project aiming at quite wealthy and healthy retirees is new, it requires well-maintained communication towards the public. The third sub-strategy of building and renting of a senior residence is suitable for such construction/developer company that is capable of operating on residential market. This is an investment with long-term repayment period promising solid annual earnings and therefore is suitable for a firm with large amount of capital, which can be used to finance such project in full. Since this strategy focuses on healthy retirees it is assumed that each retiree should sign an advance application to senior home with 24-hour care prior signing the tenant's agreement of the constructed facility to avoid the situation of sudden illness and dependency on 24-hour care. Residential construction market for seniors and new customers based on demographic trends (singles, divorced, foreigners) forms a great

potential for the construction sector. Important role will play currently prepared Social housing act, which delegate investment decisions on social care on municipalities.

The third strategy was created as a reaction (among other reasons) on development of public procurement legislation of the EU, which newly sets the awarding criteria on most economically advantageous tender including the life-cycle cost of a project; to prepare for implementation of Building Information Modeling system. This system enables to enhance cooperation among all participants on the project, improve control of quality and thus lower the threat of suppliers and additional costs, to actively communicate with clients. This 3D software is a database full of information about the projects from the design to life-span of the construction. Downside of this strategy is that it is necessary to continually put data into database by all participants otherwise it will not have the synergic effect. It also requires special training and software and hardware. BIM implementation is a strategy that will be in the near future required by the public authorities as it is currently in Denmark and Finland and since 2016 will be compulsory in the UK as well.

Elaboration of the thesis was extensive as it tried to assess all aspects of construction environment in all selected areas. The major obstacle was mainly the language barrier combining English, Czech and German sources and availability of data, which are comparable in all areas

7 Conclusion

The aim of this thesis was to assess the level construction environment in the Czech Republic, Austria and the EU and based on the evaluation to suggest possible strategies for established competitors and new entries. Using the Porter's Diamond, four aspects (factor conditions, demand conditions, strategy and rivalry of firms, and supported and related industries) were elaborated.

The results showed that construction sector in Czech Republic has been declining and the overall level of development was low. The situation in the EU greatly differed among member states, but in general the EU construction has been declining and unattractive as well. On the other hand, Austrian construction belonged to those countries, where construction sector was not hit as hard by financial crisis and after quick recovery the branch continued to grow and further develop. Level of construction industry in Austria is hence greater than in the Czech Republic. Obviously an important role plays a fact that Austrian economy has forty years in advance compared to the Czech Republic.

It was founded that political stability and systematic anti-cyclical policies were determining factors for development of construction sector in the EU. While Austrian government has been stable and adopted stimulus packages after the crisis, which positively impacted construction sector typical for its cyclicality. On the other hand, the Czech public representation having no strategic concept applied cuts, declined constructions investments and this has negatively impacted the situation in the Czech construction. That is also the one of the reasons why the Czech economy was in 2013 still in the recession, while Austrian economy continue to slowly grow.

Development of demography in the whole EU showed that the potential for construction lies in changes in population structure, which has been enlarging the pool of clients for residential construction. These are divorced, singles, foreigners, and elderly, who are currently in search for housing. On the other hand, demographic development showed the declining trend of technical apprentices and their quality in all three observed areas.

Construction sector has been also greatly affected by climate change and hence by environmental policy adopted by the EU. The EU has been enforcing the member states through its legislation to lower carbon emissions, energy consumption of buildings motivating to use renewable resources. Austria belonged to those countries with very positive attitude towards environmental protection and therefore cooperated on such policy creation. That's why Austria has become internationally recognized for energy efficient "green" construction.

By evaluation of demand conditions, it was revealed that the declining demand for construction works in the Czech Republic is rather unsophisticated deciding mainly on the basis of price, however, heavily influenced by the current legislation on public procurement, where the awarding criteria included the cheapest tender. Furthermore there have been an excess of supply and many unused capacities in the Czech sector. Investors in the EU also were character-

ized by late payments practices. Demand conditions in Austria further more than in CR depend on private demand and as the country has been in better shape and belonged to the wealthiest countries comparing GDP per capita, the demand is greatly enhanced. Potential in most EU countries including Austria and the Czech Republic is in increasing demand for residential construction mainly in urbanized areas. Moreover the Austrian residential demand is very sophisticated caring about the environment forming so-called "Baugruppen", groups of customers, which meet in advance and decide how the construction project should look like along with their needs.

Concerning the aspect of strategy and structure and rivalry five competitive forces were analyzed. It was detected that two trends appeared among strategies in the EU. The first trend was simply to survive, to cover unused capacities and to meet financial obligations and the second trend was to diversify or internationalize the portfolio of activities, which was typical for the larger firms. As far as the structure and rivalry, it was founded that construction sector in the EU is greatly fragmented with majority of micro competitors. Number of firms, employment and the turnover has been declining in the Czech Republic, and the EU in general, which was contrary in Austria. The whole industry restructured, many insolvencies have occurred, some large firms fell to lower category. Thanks to lower demand compared to high amount of competitors, the negotiating power of customers has increased and the rivalry practices has intensified applying aggressive pricing strategies. Substitute products as far as material used have become a great threat for companies using traditional building materials (bricks and mortar). Austria as well as the Nordic countries however turned such threat into opportunity using alternative material such as timber as the main material component of construction.

As far as the related industries, mainly the supplying sector, sector of research were assessed. It was detected that the supplying sector has more or less neutral negotiating power. The crisis of construction sector greatly affected the supplying sector of traditional building materials and works leaving the branch with very tiny or zero profits. This development endangered the quality of supplies in the whole EU. On the other hand, with large amount of suppliers compared to demanding contractors, their negotiating power was small thanks to low switching costs.

Important related branch is a sector of research and development. The EU continually increases the allocation of resources into research and development and support cooperation of entities in research and innovation. Austria belongs to those countries, which contributes to the R&D the most. Moreover, while long-term cooperation is present in the Austrian construction environment, isolation of the Czech construction companies is observable. The reason why construction companies are further developed in Austria is thanks to cooperation on all levels of the value chain (including cooperation with research institutions) allowing know-how sharing. Austria masters in cluster formation and its Green building cluster of Lower Austria is one of the best-managed clusters in the whole EU. Through legal and long-term cooperation, small and medium-sized

enterprises can achieve innovation and enhancement of competitiveness. New innovative technology has been trending in the European construction and that is Building Information Modeling, a data-based software, which interconnects all participants on the projects and considers sustainable building and hence the life-cycle of construction from its design to the end of life-span.

Based on these briefly concluded prerequisites three basic strategies were developed. First of all it must be stated the current state of construction environment is not suitable for new entry to start a business; profitability of the sector is very low. Nevertheless, dropped demand, green building trends and ageing of population were the background for generation of the first two strategies. Finding a new market and offer new product.

Building and selling or renting residences for quite wealthy and healthy seniors is strategy number one. Such strategy however requires investment into own project development and capability to operate in residential market. Development projects create potential for utilization of unused capacities of the construction firms. Privately owned senior residences typical for Austria is one of the ways to solve the unfavorable situation of social housing facilities in the Czech Republic.

Trending green building enforced by the EU, however, low conviction of the Czech demand about functionality of timber-framed construction are backgrounds for strategy number two. Timber-framed construction in the Czech Republic will have its potential if demand is persuaded about the durability. Therefore the strategy suggests incorporating timber-framed construction with presumption of investment into building a referential house for customers to test.

The third basic strategy focused on implementation of Building Information Modeling, trending software used in construction already in Denmark, Finland and will be used for public procurement in UK since 2016. New amendment of legislation by EU on public procurement suggests the life-cycle cost, and such model includes all information relative to life-cycle of construction. The problem remains that it is necessary to continually contribute results into the database by all participants.

Construction companies should further consider cooperation among competitors on research and development including the public sector. They should cooperate on improvement of quality and amount of technical apprentices, which has been declining. Companies should utilize the funding of different operational programs of the EU and the Czech subsidies. Moreover firms should audit all their operation activities to implement the lean construction structure of processes with zero defects and resource wasting.

Declining Czech construction can be restored by increased cooperation between private and public sector and establishment of strong partnership, and cooperation between competitors and suppliers to enhance the innovation. Companies, which are concerned about long-term business concept and perceive innovation and process of increasing efficiency as their competitive advantage, will be successful.

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Annex

Annex 1: Disposition of the senior residence
Annex 2: Budget of the senior residence construction
Annex 3: Computations of selling prices and returns on investment
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