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Welcome to issue number 49 of the International Journal of Management and Economics. As usual, you shall find in it a range of interesting topics discussed.

The current issue includes six papers written by eleven authors from Europe and beyond.

We start this issue with a paper about an important topic concerning the European Union strategy. It is titled “The Role of Government and Markets in the Strategy ‘Europe 2020’ of the European Union: A Robust Political Economy Analysis”, and is written by Jürgen Wandel. Based on a robust political economy framework, the author assesses the EU strategy “Europe 2020” and discusses the roles ascribed in it to the government and markets from the perspective of their influence on European Union member states’ future growth. Jürgen Wandel describes numerous shortcomings of the social market strategy idea. His analysis leads the author to conclude that the social market strategy is a technocratic concept offering selective interventionism, which is unlikely to boost economic growth and employment.

“Okun’s Law and Youth Unemployment in Germany and Poland” by Sophie Dunsch is our second article. We welcome the topic, as youth unemployment is a problem faced by many European countries and comparisons can shed more light on it. The author investigates unemployment developments after the financial crisis in Germany and Poland – two countries with different GDP growth rates and unemployment dynamics. According to Okun’s law, there is a negative relationship between changes in the unemployment rate and the growth rate of the GDP. The paper’s objective is to test whether youth is more sensitive to the business cycle than adults. The results of the author’s data analysis is that youth in Poland are much more prone to business cycle fluctuations than are adults. In Germany the gap between the age cohorts is small and not statistically significant. The author discusses the possible causes of the observed differences between these two countries.

Adam Karbowski, the author of the third paper “The Elasticity-Based Approach to Enterprise Innovation” develops a model of firm innovation (measured by R&D intensity) that simultaneously analyzes innovation factors from the perspective of the Schumpeterian strand of industrial organization literature and the know-how strand. The model presented is a formal description of innovation factors and the relationships between them. It indicates that corporate R&D is determined by: “the company’s technological competence (supply-side factor), consumer preferences towards quality and price of goods (demand-side factor), as well as a moderating factor, which refers to knowledge spillovers”.

Jolanta Mazur

Editorial
The fourth article, dealing with “Effects of Network Capabilities on Firm Performance across Cultures” was written by an international group of researchers, i.e. by Julie Papastamatelou, Rainer Busch, Begüm Ötken, Elif Y. Okan and Karim Gassemi. Their empirical study is aimed at identifying key factors related to network capabilities that enhance the performance of Chinese, Turkish and German firms. According to their findings, four of the analyzed twelve factors, i.e. “information sharing”, “trust”, “network coordination” and “network human capital resources” are predictors of firm performance. But this result was not confirmed in all the countries researched, suggesting each country has its own drivers of firm performance.

“Socio-Economic Implications of Female Inclusion in Organizational Structures and in Leadership Positions” by Alaxandra E. Krawiec is the fifth paper. Using the numerous research publications, the article analyzes determinants of female underrepresentation in organizations, with a focus on leadership positions, as well as their implications. The paper presents determinants’ systematization and in-depth analysis. The author also looks into the future, forecasting the potential developments of female inclusion in organizational structures, and describing possible tools that can be employed to speed up this process, resulting in more women in leadership positions.

The sixth article titled “In Search of Excellence in E-Customer Logistics Service” by Barbara Ocicka and Marta Raźniewska discusses the relationships between the development of online distribution channels and companies’ logistics systems enhancing e-customer service quality. This relationship results from the obvious requirement that the development of online commerce often must be complemented by a physical logistics system. The paper focuses on determining e-commerce business models, modern distribution channels and management tools, developed to continuously improve e-customer logistics service. Using the literature and interviews with e-commerce services providers, the authors propose good practices for measuring and enhancing e-customer service level.

I hope that the variety of subjects under discussion in the current issue will appeal to a large number of readers.
The Role of Government and Markets in the Strategy “Europe 2020” of the European Union: A Robust Political Economy Analysis

“There is no other choice: government either abstains from limited interference with the market forces, or it assumes total control over production and distribution. Either capitalism or socialism; there is no middle of the road.” [L. v. Mises, 1976/1996, p. 26].

“To imagine that the economic life of a vast area comprising many different people can be directed or planned by democratic procedure betrays a complete lack of awareness of the problems such planning would raise. Planning on an international scale, even more than is true on a national scale, cannot be anything but a naked rule of force, an imposition by a small group on all the rest of that sort of standard and employment which the planners think suitable for the rest.” [F.A. v. Hayek, 1944/2006, p. 229].

Abstract

The EU’s current ten year strategy “Europe 2020” aims to set out a vision of a European social market economy for the 21st century that will promote economic growth with social and ecological attributes. This article analyzes the roles ascribed to the government and the market and the extent this role allocation is suitable to enhance growth of the European Union’s member states. Based on a robust political economy framework it is argued that this new economic policy concept is in essence a technocratic approach and a form of selective interventionism. As such it suffers from three major shortcomings: (1) it underestimates the difficulties of gathering and analyzing the relevant information necessary for steering the economy in the desired direction, (2) it encourages rent-seeking rather than productive entrepreneurship, and (3) it may cause a subtle transformation of the societal
order through the diminution of individual liberties. It is contended that while an interventionist policy approach meets the preferences of large parts of the population, not the least in Germany, it is unlikely to boost economic growth and employment in the EU.

**Keywords:** European Union, economic development, robust political economy, Austrian economics  
**JEL:** B 53, D 72, H 77, P 50

**Introduction**

On June 17, 2010 heads of the European Union governments passed a new long-term growth agenda for the next 10 years called “Europe 2020: A strategy for smart, sustainable and inclusive growth,” as a follow-up program to the Lisbon-Strategy of 2000. The declared objectives of “Europe 2020” are overcoming the euro and debt crisis and preparing the European Union (EU) for the next decade by fostering economic growth, and a high level of employment and productivity, as well as social cohesion and ecological sustainability. In doing so, according to the then-president of the European Commission José Manuel Barroso, “Europe 2020” attempted to set out and implement a vision of a European social market economy for the 21st century.

A central and controversial question is the appropriate role of government in promoting economic growth. The goal of this article is to analyze the role that “Europe 2020“attributes to the government, European institutions and markets and the extent that these roles will offer Europe new economic perspectives and enhance their growth performance. In this analysis we rely on a robust political economy framework, which allows checking the feasibility of policy approaches by examining (1) whether the economic and political actors are able to gather and analyze the relevant information necessary for achieving the desired goals (knowledge problem); and (2) if they have the incentives to refrain from destructive rent-seeking behaviour (incentive problem).

The remainder of the article is organized as follows: Next section develops the notion of robust political economy. Following section highlights the major goals and policy instruments of “Europe 2020” in order to identify the main features of the proposed economic policy concept. Later the robustness of that policy concept, and its possible implication for the economies of its member states with a particular focus on Germany, which economically is the most powerful EU member country and a key player in the on-going eurozone crisis, are discussed. The model of a social market economy to which Barroso referred in EU’s current ten year growth strategy has its origin in this country. Therefore, Germany suggests itself as a reference model. The paper ends with concluding remarks.
The Robust Political Economy Framework

The robust political economy framework has been developed by Boettke and Leeson [2004], Leeson and Subrick [2006] and Pennington [2011a and 2011b]. They have synthesized major insights of the Austrian School of Economics, Public Choice Theory and Institutional Economics into a unified analytical framework for evaluating economic policies and institutional designs. Here robustness is understood as resilience and a criterion by which policies can be assessed by testing their performance in real-world situations across time and space where human beings are imperfect. In the ideal neoclassical world, policy-makers are both omniscient and benevolent social wealth maximizers. They have the knowledge to find optimal economic policies and do not hesitate to pursue them. Robust political economy requires checking the feasibility and desirability of a policy approach in the face of conditions that deviate from the ideal neoclassical assumptions of perfect knowledge (omniscience) and benevolence.

The assumption of omniscience was questioned in the literature by the most prominent representatives of the Austrian School of Economics – Ludwig von Mises [e.g. 1920] and Friedrich August von Hayek [1945] – and the assumption of government benevolence by the Public Choice School of economics, particularly James Buchanan and Gordon Tullock (see e.g. Buchanan et al., 1980). Institutional economists [e.g. North; Olson, de Soto, Acemoglu and Robinson] have shown that when market and political actors have imperfect knowledge and motivations, wealth creation relies on the right rules of the game as they structure the incentives underlying individual action [Pennington, 2011b, p. 2; Boettke and Fink, 2011, p. 2f]. The institutional environment thus determines if people engage in productive, unproductive, or destructive behaviour [Baumol, 1990; Boettke and Coyne, 2009].

Hence, there are two central problems that all policy recommendations have to address: (1) the knowledge problem, and (2) the incentive problem of decision-makers to implement policies that increase welfare. The first problem addresses the question: Even if individuals are assumed to be benevolent, how will they obtain the information needed to make the right decisions in any given situation? With regard to the overall goal of “Europe 2020” the question is who has the knowledge necessary to promote smart, sustainable and inclusive growth – scientists and politicians or private entrepreneurs? The central question underlying the second problem is: Given that policy-makers and private businessmen are “omniscient,” what incentives do they face in making their decision? [Boettke and Leeson, 2004, p. 101]. Since the incentives for political and economic actors are shaped by the institutions (rules of the game) the way they are arranged is crucial to achieve robustness. These institutions should constrain self-interested policy-makers in such a way that they cannot do much harm, if they only strive to maximize their own utility and if they possess only limited information. Following the insight of Hayek this
ability can best be achieved if rules are universalizable. This requires that rules apply to an unknown number of persons, do not prescribe certain behaviours, merely prohibit a finite number of actions, and are unequivocally clear about the legality of those actions [Hayek, 1973, p. 73]. If institutions have these traits, it is less likely that interest groups will be able to receive privileged treatment at the detriment of society because legislation promising this will be impossible. At the same time, they ensure the openness of the entrepreneurial discovery process.

According to this analytical framework, the economic policy concept of “Europe 2020” is only robust, if the proposed goals are not undermined by either difficulties in capturing the information required to achieving those goals (knowledge problem) or/and by the self-interested behaviour of individual actors gaming the system to their own advantage (incentive issues). Or, as Moberg puts it, “a robust political economy is an institutional set-up that yields beneficial outcomes despite the flaws of policy makers and people in business” [2014, p. 3f].

Of course, testing for robustness need not be limited to issues of actor information and motivation, but can include additional aspects, e.g. socio-political or ethical challenges [Pennington, 2011b] to test what implications policy measures may have on individual freedom and democracy or on the moral attitudes of a certain society and its individuals forming it. Arguments in this context have also been put forward by Hayek, Mises [Pies, 2010, p. 28], and Hazlitt [1964/94]. The following analysis will therefore not only attempt to evaluate how “Europe 2020” deals with the knowledge and incentive problems, but will also discuss potential negative impacts of suggested policy measures on the societal order.

**Goals and Instruments of “Europe 2020”**

“Europe 2020” has been adopted against the background of persistent economic problems of the European Union. As figure 1 shows, the EU’s growth was already disappointing before the global financial crisis of 2007 as well as the euro and debt crises of 2009. This is reflected in the low annual GDP growth rates which, since the mid-1990s, have usually lagged behind not only those of the United States but also of several emerging markets, including the BRIC countries.

The low growth rates are related to low levels of investment (Figure 2) and innovation. As a result, productivity developments have remained weak. Since 2000, total labour productivity per worker grew annually by a mere 0.8% in the EU, compared to 1.2% in the OECD on average [OECD, 2014, p. 20]. Not surprisingly, unemployment continued to grow and set new records (Figure 3) as unemployment rates reached double-digits in several member states, and were often twice as high for young people.
FIGURE 1. **Annual rate of growth (in %) in real GDP for the EU (28), USA, Germany, China and Russia, 1997–2014**

![Graph showing annual rate of growth in real GDP for different countries from 1997 to 2014.](image)

*Source: Eurostat and OECD statistics.*

FIGURE 2. **Gross fixed capital investment in the EU, Germany, USA and Japan, 2000–2014 (annual growth in %)**

![Graph showing gross fixed capital investment growth for different countries from 2000 to 2014.](image)

*Source: Eurostat, OECD & World Bank statistics.*

This is in contrast to developments in the United States and the two largest BRIC countries – Russia and China. In the USA, the initial impact of the recession on employment following the financial crisis was much worse, but job creation then resumed and the unemployment rate declined from its post-2007 heights.
FIGURE 3. Unemployment rates in the EU, Germany, USA, China and Russia, 1998–2014 (as a percentage of labor force)


The EU’s “Europe 2020” strategy aims at tackling these economic challenges after the Lisbon Strategy of 2000 failed to make Europe the most dynamic region in the world. The current agenda calls for three mutually reinforcing priorities: “developing an economy based on knowledge and innovation, promoting a more resource efficient, greener and more competitive economy; and fostering a high-employment economy delivering social and territorial cohesion” [European Commission, 2010, p. 3]. These three priorities are also expected to form the pillars of a European social market economy model for the 21st century.

Like the Lisbon Strategy, “Europe 2020” seeks to reconcile economic growth with social justice, social cohesion and environmental concerns. In fact, the new strategy lays even greater emphasis on these issues as evidenced by the attributes sustainable, inclusive and smart in the agenda’s subtitle. Thus, instead of quantitative growth the EU obviously has shifted its priorities towards qualitative growth.

The major policy measures proposed to achieve the key targets and priorities of “Europe 2020” are laid down in seven so-called flagship initiatives. Their analysis allows reveals the role attributed to governments and markets in promoting growth and the nature of the market economy envisioned in “Europe 2020”. Particularly insightful are the flagships: “innovation union”; “industrial policy”; and “resource efficient Europe”. Table 1 illustrates the major policy measures suggested in these flagships. Strategic planning, steering, and regulating the economic process to achieve certain ends by the EU-Commission and member country governments – as well as collective coordination procedures between the Commission and business associations – are expected to play an important role in “Europe
Even the policy instruments characterized as “market-based” in the flagship initiative “resource efficient Europe” are, to a large extent, actually typical instruments of investment steering.

**TABLE 1. Policy measures of selected flagship initiatives**

<table>
<thead>
<tr>
<th>Innovation Union</th>
<th>Industrial policy</th>
<th>Resource efficient Europe</th>
</tr>
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<tbody>
<tr>
<td>Develop a <em>strategic</em> research agenda focused on challenges such as energy security, transport, climate change and resource efficiency, health and ageing, environmentally-friendly production methods and land management</td>
<td>Close <em>cooperation</em> between the Commission with stakeholders in different sectors (business, trade unions, academics, NGOs, consumer organisations) to draw up a framework for a modern industrial policy</td>
<td>To mobilise EU financial instruments (e.g. rural development, structural funds, R&amp;D framework programme, TENs, EIB)</td>
</tr>
<tr>
<td>Enhance joint <em>programming</em> with Member States and regions</td>
<td>To <em>guide</em> and help industry to meet these challenges to promote the competitiveness of Europe’s primary, manufacturing and service industries</td>
<td>Market-based instruments (e.g. emissions trading, revision of energy taxation, state-aid framework, encouraging wider use of green public procurement)</td>
</tr>
<tr>
<td>Make full use of <em>demand side</em> policies, e.g. through public procurement and <em>smart regulation</em></td>
<td>To help industry seize opportunities of globalisation and the green economy</td>
<td>To accelerate the implementation of <em>strategic projects</em> with high European added value to address critical bottlenecks</td>
</tr>
<tr>
<td>To launch ‘<em>European Innovation Partnerships</em>’ between the EU and national levels to <em>speed up</em> the development and deployment of the technologies needed to meet the challenges identified, <em>i.e.</em> ‘<em>building the bio-economy by 2020</em>’</td>
<td>To develop a horizontal approach to industrial policy combining different policy instruments (e.g. “smart” regulation, modernised public procurement, competition rules and standard setting), promote clusters and improve affordable access to finance</td>
<td>To establish a vision of structural and technological changes required to move to a low carbon, resource efficient and climate resilient economy by 2050</td>
</tr>
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*Source: European Commission [2010].*

This is further reinforced by suggestions made in section 3.2 of “Europe 2020,” where it is emphasized that “social and territorial cohesion will remain at the heart of the Europe 2020 strategy” [European Commission, 2010, p. 20] and that cohesion policy and structural, agricultural and rural development funds are key instruments for reaching the overall goal of the agenda. In order to improve the effectiveness of these tools the European Commission [2010] calls for the development of “innovative financing solutions” fostering investment, e.g. public-private partnerships, better targeting of EU-funds, which are considered to “have an important catalytic effect” as well as a prominent role of the European Investment Bank and the European Investment Fund in kick-starting innovative ventures.
In addition to these measures where EU institutions and national governments attempt to direct private entrepreneurs in a desired direction with targeted benefits like financial incentives or smart regulation, the Commission also proposes structural reforms, particularly in labour markets (see the flagship initiative: “An Agenda for new skills and jobs”). Furthermore, it advocates steps to finalize a single market through removing remaining barriers to the free flow of people, goods, services and capital [European Commission, 2010, chapter 3.1] and initiatives to foster trade liberalization both within the WTO and bilaterally (section 3.3).

In order to achieve these goals and overcome the repercussions of the eurozone crisis the Commission suggests strengthening the economic governance mechanism through an open method of coordination with the aim of improving surveillance of national economic policies and their coordination among member states. This includes setting priorities and quantitative targets at the EU-level for all member states (“benchmarking”), an annual monitoring of the economic situation in member countries using a number of indicators to evaluate overall progress towards fulfilling given targets („peer pressing“), publishing country-specific policy recommendations („best practices“) and issuing policy warnings if a member state fails to fulfill policy recommendations in the agreed time frame [European Commission, 2010, p. 26]. The governance mechanism sketched in chapter 5 of “Europe 2020” has, to a large extent, retained the character of indicative planning without compelling member states to adopt certain policies with the threat of sanctions if they do not comply with the Commission’s policy recommendations [Wagner and Eger, 2014]. Yet, in the so-called “six-pack” legislation, which was passed in December 2011 to counter the European sovereign debt crisis through reinforced economic governance, the possibility to impose sanctions was foreseen. Sanctions in the form of fines and the temporary suspension of payments from EU’s structural and cohesion funds3 can now be levied on member countries not only within the reformed Stability and Growth Pact, where this possibility was already present in its pre-crisis version, but also in the Macroeconomic Imbalances Procedure and the Treaty on Stability, Coordination and Governance (Fiscal Compact) of 2013. However, the imposition of sanctions can still be blocked if a large majority of governments in the EU Council oppose it [European Commission, 2015].

This relatively centralized approach to economic governance and the economic policy suggestions outlined in the flagship initiatives of “Europe 2020” disclose still a quite dirigiste and technocratic understanding of a market economy, which is characteristic of the French economy [Schüller, 2006, 2011a, 2011b]. “Europe 2020” surely does not propose a very strict form of constructivism where politicians and bureaucrats on the top level of the polity, i.e. on the supranational level of the EU, engage in an all-encompassing vertical planning of individual economic sectors. Instead, in “Europe 2020” politicians and bureaucrats predefine the path of economic and societal development and try to induce private economic actors to fulfill higher-ranked technological, social and ecological goals by offering selective, targeted benefits (e.g. tax reliefs) and by harmonizing national
regulations. So understood, “Europe 2020” advocates a softer form of interventionism, which Schüller [2006, p. 151] calls selective interventionism. It is kind of a middle way between a free market economic policy and rigid government dirigisme. Nevertheless, it reveals the belief that political actors must and can direct markets in a certain direction and hence align the microeconomic foundation of the economy with political goals.

The Investment Plan for Europe, which was launched by the European Commission on November, 26, 2014 to mobilize over EUR 315 billion of investment over the next three years, supports this view [European Commission, 2014]. Its aim is to overcome the low level of investment in the EU due to “low investor confidence,” which in turn is attributed to a lack of sufficient risk-bearing capacity [ibid.]. For this a new public development entity at the European level was established in June 2015; the European Fund for Strategic Investments (EFSI), which performs this risk-bearing or sharing role. The EFSI is endowed with a capital base of EUR 21 billion EU funds and expected to activate private sector funds for so-called strategic investments, e.g. transport infrastructure, energy, research and development and for small and medium-sized companies by providing investment guarantees. Projects eligible for support are to be selected by an independent investment committee whose members, are to be appointed by the EU Commission in accordance with the member states. This, however, entails the danger that national interests will drive the selection of projects rather than only economic viability [DB Research, 2014].

The key question is whether a policy concept in which a central authority predefines the path of economic development and aspires to impose tighter surveillances on the member states’ economic policies is really robust enough to achieve the goals set by the EU Commission.

The Robustness of “Europe 2020”

In the following subsections the problems of inadequate knowledge, adverse incentives, and potential political and societal side-effects and backlashes are examined.

Underestimation of the Knowledge Problem

The economic policy concept outlined in the document of “Europe 2020,” and subsequent policy initiatives to weather the eurozone crisis, assume that the knowledge necessary to promote economic and social progress is known primarily to scientists and technocrats and needs to be gathered, evaluated and directed according to a certain plan in order to ensure its most efficient and politically desired use. In addition, as the attempts to strengthen more and more economic surveillance of member states indicate, it reveals the conviction that political mechanisms of control are superior to the disciplinary property of the market process. According to Hayek, this is a “fatal conceit” [1991]. He [1937, 1945] has shown that the capability of human beings to acquire full knowledge of complex
structures, such as modern economies based on the division of labour is, in fact, very limited. This concerns not only the economic agents acting on markets but also economists and politicians watching an economy. The reason is the limited cognitive abilities of any person to capture and process all relevant information used in making economic decisions. The most important information pertains to what is needed, who needs it, and who has the means to meet these needs.

Since this imperfection is irremediable, Hayek speaks of insuperable or “constitutional” limits to knowledge. In fact, the knowledge needed for economic decision-making is dispersed and fragmented among the many individuals who compose society. It is held separately and locally, and frequently contained in inarticulate forms. Even those who possess this so called tacit knowledge are often unaware of it. Therefore, this knowledge can never be entirely given to anyone. This is the problem of the division of knowledge [Hayek, 1945, p. 528]. Consequently, it is impossible for a centralized body of experts and politicians to have the knowledge required to redefine promising technologies, sectors, markets and business structures as envisaged in “Europe 2020” and target prospective strategic investments as envisioned in the 2014 Investment Plan for Europe. In fact, the distance between decision makers and those with market knowledge is the root cause of the knowledge problem in policymaking. Therefore, centralizing a growing number of strategic economic policy issues on a supranational level makes the knowledge problem more severe.

The essential question for Hayek [1937 and 1945] is how society can make use of this dispersed knowledge to ensure economic growth and prosperity. This requires a mechanism that is able to activate and communicate information about which goods and services best meet the needs of the people. According to Hayek [1945] this information can only be generated and transmitted by market competition through profit-and-loss feedbacks and changes in relative prices. These profit-and-loss feedbacks provide the necessary incentive for individuals to constantly acquire new knowledge about consumer needs and the best ways to meet them. If successful they are rewarded by profits; otherwise they suffer losses which force them to correct their errors. This is why Hayek [1978] called competition a “discovery procedure.”

Of course, in this decentralized trial-and-error process mistakes occur. However, when many different decision-makers are involved in different decisions, in a free market environment the consequence of any particular error is minimized as errors are quickly corrected through either bankruptcy or the takeover of inefficient enterprises. As a result, a process of trial-and-error learning is facilitated that ensures that “more of the potentially useful objective facts will be taken into account than would be done in any other procedure we know” [Hayek, 1990, p. 68]. By contrast, if the search for relevant economic information and strategic decision-making is collective and centralized and the people engaged in it make mistakes, then the consequences are much more far reaching than if the decision-making power is more dispersed. Now many economic agents are being guided
in the wrong direction by politically set incentives like those proposed in “Europe 2020”. In the end, taxpayers usually have to pay for the mistakes of centralized decision-makers [Pennington, 2011b, p. 2f]. The knowledge problem is also underestimated when it comes to finding and implementing an appropriate economic policy design for the EU that is conducive to “smart, sustainable and inclusive” economic growth and resistant to crises. From a robust political economy perspective the need for centralized non-market control and sanction mechanisms for surveillance and coordination of member states’ economic policies and performance with ever more sophisticated top-down provisions, as outlined in the European economic governance mechanism in section 3, is highly questionable. Because of irremediable ignorance there is no plausible reason to assume that centralized bodies of specialists are better able to detect and prevent crises and declining competitiveness across all member countries no matter how skilled the experts are and how intensively and frequently they carry out their analyses. In the Hayekian understanding of competition, the market process is a much more efficient discovery and control mechanism also for appropriate policy designs. People and capital would exit EU countries with unfavourable policies for EU countries with better conditions thereby exerting pressure for reforms. Admittedly, the element of sharing best practices in the EU’s open method of coordination contains a component of institutional or regulatory competition because member countries are free to apply the policies that they consider appropriate to reach the goals agreed to on the EU level. This points to the possibility of policy experimentation. At the same time, however, the European Commission provides recommendations to the member states about the best practices they should apply and monitors their implementation under the threat of blaming and shaming and sanctions. This reduces the intensity of regulatory competition. Taken to the extreme, harmonization of economic policies might be compelled within the EU economic governance mechanisms if sanctions are threatened. Similarly, institutional competition would be severely hampered if the harmonization of taxes, labor, environmental and technological standards is pursued because this impedes the mobility of the factors of production, which is the most effective sanctioning mechanism for economic policy [see also Berthold, 2014].

The need for increased political control mechanisms and state-provided targeted benefits from EU institutions and national governments in the attempt to ensure the “right” results is usually justified by market failures. Much of mainstream literature and public opinion blames the failure of “unregulated” financial markets and institutions and irrational exuberance for the financial and euro zone crises, underpinning the call for tighter political oversight over markets. The offer of subsidies and other state-provided benefits for investment is often justified by coordination failures, information and other externalities, which are thought to be responsible for the shortage of private investment in projects considered valuable to society [see e.g. Rodrik, 2014; Greenwald et al., 2014; Wruuck, 2015]. There are two objections, empirical and theoretical to these arguments
from the viewpoint of robust political economy. First, there many studies within the Austrian School of Economics and German ordo-liberalism that show that the root cause of the crises were not various market failures, but instead distortions brought about by various government interventions [see e.g. Bagus 2010; Erlei 2014; Balcerowicz, 2015]. In particular, these interventions weakened, if not suspended, the accountability of economic actors, an element which Walter Eucken, the most prominent representative of the Freiburg ordo-liberal school of economics, considered central to the functioning of a market economy. Second, the market failure argument only makes sense in the neo-classical theory of the market with perfect competition as the benchmark model. It views competition as an allocation mechanism generating Pareto-optimal outcomes in the form of market equilibrium. However, since real-world markets are never in perfect competitive equilibrium they necessarily “fail” all the time, if compared to this ideal [Carden, Horwitz, 2013]. Yet, in the Austrian understanding the market mechanism does not possess goals and benchmarks against which one can compare its performance [Buchanan, Vanberg, 1991] and therefore markets cannot fail. As previously noted, competition is primarily understood as a discovery procedure. But the precise outcomes of this discovery procedure are unpredictable because of the complexity and openness of the market process in conjunction with the limited cognitive abilities of individuals. Otherwise, competition would be unnecessary [Hayek 1978]. In order to perform its discovery function market competition does not need to be perfect [Hayek, 1990]. On the contrary, as Kirzner [1973] showed, it is precisely these so called “market failures” that offer an unexploited profit opportunity for alert private entrepreneurs.

Kirzner [1973, 1982, 1997] highlighted that the driving force in the discovery procedure of the market process are private entrepreneurs and not politicians and technocrats. Driven by the prospect of profit and the penalty of loss they try to discover and use gains from trade that were hitherto unknown to market participants. Because they invest their own resources, they are careful when making their investment decisions. In contrast, as Kirzner [1978] explained, government bodies face completely different incentives. They usually do not capture pecuniary profits in the course of their activities and are not subject to the same constraints as private firms. Typically they use taxpayer money and do not face bankruptcy in the case of long-term losses. This encourages risky behaviour and frequent investment in large-scale, visible projects deemed to contribute to economic growth, but that in fact often are not economically viable. Therefore, it is questionable whether public financial and development institutions like the EFSI are able to identify profitable projects, as the EFSI is expected to support investment projects which private investors would not finance because of lack of profits [DB Research, 2014].

Given these insights, from the perspective of robust political economy the unhampered entrepreneurial discovery process of the market is the only way to find out innovative technologies, products, and organizational forms that best serve consumers’ preferences and overcome EU’s stagnating growth. Seen in this light, large parts of “Europe 2020” can
be considered as being prone to the “pretence of knowledge” [Hayek, 1989], because this strategy predefines certain market outcomes like, for example, building a bio-economy by 2020, the use of certain forms of business organization (clusters) or a specific amount of renewable energy resources. Section 3 of “Europe 2020” also suggests policy and governance instruments to push the market process into a direction yielding desired results. Hayek [1990, p. 169] considers such an approach “the extreme of hubris” and points out that such guided progress would in fact be no progress at all.  

The constitutional ignorance of human beings, in combination with the complexity and openness of market processes, make it unlikely that politicians will have superior knowledge of profitable innovations as compared to private entrepreneurs. It can also not be expected that they will have the knowledge needed to precisely steer economic activities in a desired direction. Instead, there will often be unintended and unexpected side-effects. As Ludwig von Mises [1976/96] demonstrated, politicians usually do not abandon wrong policy measures, because “either governments don’t want to lose face, or, more commonly, politically powerful interest groups impede the ability of governments to abandon their interventions” [Baumol et al., 2007, p. 70]. Instead, policy-makers will try to correct unwanted side-effects with further interventions, setting in motion a destructive spiral of more government controls. Numerous empirical evidence from the EU supports this insight, e.g. EU’s Common Agricultural Policy, the support for Airbus (e.g. A 380) or Germany’s capital airport in Berlin and renewable energy policy.  

The logical consequence should therefore be abstention from government-intervention into the market process to attain certain outcomes, no matter how “soft” or “smart” they look. Instead the EU’s economic policy should focus exclusively on supporting institutions that enhance competition and productive entrepreneurship. A growing body of empirical literature underscores the central importance of the right institutional set-up for economic growth and prosperity [e.g. Douglass North, 1990; Mancur, Olson, 2000; Hernando de Soto, 2000; Acemoglu, Robinson, 2012]. Crucial institutions are: freedom to action and contract; free market entry; well-defined and protected property rights; a simple, non-confiscatory tax system; and, given the experience of the global financial and European sovereign debt crises, the rigorous and impartial enforcement of accountability. Against the background of these insights the call for structural reforms and deepening the single market in “Europe 2020” goes in the right direction and is in line with robust political economy, because it improves the discovery properties of market competition. However, as shown in section 3 this is only one part of the current ten year strategy. Political control and coordination, rather than the knowledge-generating, coordinating and disciplining power of the unhampered market mechanism, are still central elements of this strategy and seem to have gained importance and popularity in the wake of the eurozone crisis as indicated by calls for “more Europe” and “economic government.” [Wohlgemuth, 2012; Berthold, 2014]. The report of the presidents of the EU’s five central institutions, “Completing Europe’s Economic and Monetary Union” of June 22, 2015 [Juncker et al.,...
Jürgen Wandel, points to this same direction. It restates the conviction that the EMU needs more centralization of competences at the European level and calls for the creation of Competitiveness Authorities and the stipulation of more binding “high-level standards that would be defined in EU legislation” (for a more detailed discussion see Issing [2015]).

In the view of robust political economy, this aspect of the EU’s current economic policy not only underestimates knowledge requirements, but is also susceptible to big incentive problems in suggested economic policy measures to promote smart, sustainable and inclusive growth and in configuring the EU’s economic governance mechanism.

Promotion of Rent-Seeking

As Baumol et al. [2007] described, any form of state-guided economic development leads to a non-transparent enmeshment of political and economic interests that promotes rent-seeking and corruption. The more the government intervenes and allures with subsidies or other selective benefits, the more people will be induced to divert investment from better serving consumer needs to influencing politicians to obtain and maintain these targeted benefits [Buchanan, 1987].

Targeted government benefits are esteemed by enterprises because they provide advantages over rival firms that are not selected to obtain them. Therefore, companies will undertake considerable efforts to signal to policy-makers that they are a worthy recipient. They will also lobby for more rent opportunities, which may lead to “regulatory capture” [Laffont, Tirole 1991], i.e. to situations where interest groups have become influential in shaping government policies. Regulatory capture is a much more advanced form of rent-seeking and requires considerable resources to influence government policy, for example for the elaboration of adequate policy suggestions and mobilization of political support. As a result, productive entrepreneurial activities are superseded by unproductive or even destructive activities [Baumol, 1990]. Conversely, self-interested policy-makers have an incentive to engage in rent-provision to secure re-election and retain power. This can easily lead to a self-enforcing process, as government favours can quickly turn into vested rights. Any attempt to abolish these favours may cost the political support of the favoured group, while the simple preservation of existing regulation does not necessarily guarantee future support [Coyne and Moberg, 2014, p. 22f].

Usually the introduction and maintenance of regulations that ease rent-seeking is justified under the rubric of public-policy goals, in particular with the blank terms “social justice” and “sustainability”, i.e. environmental protection. Both of these aspects play a key role in the strategy “Europe 2020” (see section 3), and enable policy makers and interest groups to constantly introduce new interventions to redistribute wealth, which further undermines the productive power of the market order. That is why Hayek [1979/2004] called the byword “social” in the term social market economy a weasel word, i.e. a word that deprives terms of their actual meaning when they are added to them. The same can be said of the other popular adjectives “ecological” and “sustainable.” Nobody knows what
they actually mean. This led Hayek [1979/2004] to conclude that a social market economy is in fact no market-economy. In a similar vein, Mancur Olson [1982] has shown that if economic life becomes increasingly controlled by rent-seeking organized interest groups under the disguise of social or other alleged public concerns, it loses economic dynamism. Consequently, economic performance declines, because the policies are typically protectionist and stifle economic growth. Olson called this situation institutional sclerosis. Herbert Giersch in the 1970s applied this term to the EU’s economic stagnation at that time and coined the term “eurosclerosis.” This does not mean that EU policy-making in the current context of “Europe 2020” and the European sovereign debt crisis is unaware of the stifling effects of regulated markets. The call for structural reforms and the plea to finalize the single market by removing the remaining barriers to the free flow of factors of production, goods and services indicates this. Nevertheless, the importance attributed to social and ecological goals in the EU’s economic policy strategy maintains its susceptibility to these incentive problems with its negative repercussions on economic growth. Therefore, from the robust political economy perspective, the most effective way to minimize this danger is to provide as few opportunities as possible to obtain income transfers.

Missing Credible Incentives for Structural Reform

An additional incentive problem arises from the EU’s reinforced economic governance mechanism, which is based on the questionable belief that without a stronger surveillance of EU member states by EU institutions, sluggish growth cannot be overcome and future crises cannot be prevented. Even if there was a convincing rationale for this normative conclusion, such a mechanism lacks credible and effective incentives for national governments to implement policies conducive to these goals, because the power of EU institutions to force member states to undertake certain behaviors is very limited. First, the sanctions foreseen in the Stability and Growth Pact, the Macroeconomic Imbalances Procedure and Fiscal Compact in the form of fines and suspensions from EU transfer payments are relatively weak and might not be perceived as sufficiently painful by non-complying countries to compel them to make desired changes. Second, EU institutions lack tools to enforce sanctions, other than to hold back transfer payments. There is nothing they can do to prevent actual “sinners” from refusing to pay. This is even more so as the sanction cannot be imposed against the consent of the member countries. The emasculation of the Stability and Growth Pact by Germany and France in 2005 demonstrated that potential sinners are usually reluctant to sanction actual sinners. Moreover, the commitment to solidarity among member countries, expressed in “Europe 2020” and through the existence of the cohesion fund, the non-enforcement of the no-bail-out clause and the stated will to avoid dissolution of the European Monetary Union add to this reluctance. But even if there were the means to enforce sanctions this would be politically very risky, because, as discussed in the next sections, it would endanger the peaceful cooperation of the European countries. As long as there is no credible threat of far-reaching sanctions,
the costs of poor national economic policies can be socialized and, in effect, outsourced to be borne by other European states. In such a situation, there is little reason to expect that national governments will apply politically unattractive economic policies that are imposed on them from outside. Hence, there is no convincing reason to believe that more centralized political control is more efficient in keeping the behavior of member states in line and accountable for their actions than market process [see also Wohlgemuth, 2012, Apolte, 2015; Issing 2015].

Potential Societal Backlashes

Interventionist economic policies not only inhibit economic growth through the described insurmountable epistemic constraints and perverse political incentives, but may also in the long run have negative effects on the societal order because they can lead to a transformation of society through the growing diminution of personal liberty and self-determination. The reasons why this may occur not only in totalitarian systems, but also in western democratic welfare states (which most of EU’s member states are) were laid down by Hayek in 1944 in his book “The Road to Serfdom”. It shall be noted that these arguments, which we will apply to EU’s current growth strategy, do not assert an iron-clad inevitability of the future development of the European society. Instead, they point to other often overlooked side-effects of government interference in the economy and explain why despite – good intentions – the popular belief that regulated markets for social, ecological or other reasons completely go together with individual freedom, democracy and an impartial rule of law is a fallacy [see also Boettke, 2014].

The starting point for the threat to individual freedom in modern societies through interventionist policies is the desire for economic security, which is understood as the guarantee of a certain level of standard of living as well as recent requests for ecological security (environmental protection). Hayek [1944/2006, p. 157] shows that such security, as well as any other higher-ranked societal goals, are only attainable through the regulation and, ultimately, the elimination of the market. There are numerous examples of such regulations in the EU, the most prominent being the ban of incandescent and halogen light bulbs or powerful vacuum cleaners with motors above 1,600 watts for energy efficiency reasons in the attempt to tackle climate change [FAZ, 27.08.2014].

The suppression of the free market mechanism, in turn, continuously diminishes and liquidates individual liberty, because when more prohibitions and commands regulate economic life they simultaneously reduce the scope for general individual freedom. As Hayek [1944/2006, p. 95] explained, this is because “economic control is not merely control of a sector of human life which can be separated from the rest; it is the control of the means for all our ends. And whoever has sole control of the means must also determine which ends are to be served, which values are to be rated higher and which lower, in short, what men should believe and strive for”. Hence, the demand to steer economic development for everyone into a certain direction for the sake of social or environmental goals
requires the concentration of power of a magnitude never before known in the hands of a central authority over individuals [Hayek, 1944/2006, p. 185]. If, according to Hayek, this road is followed it may eventually lead (however unintentionally) to a socialist-totalitarian society deprived of individual liberty, prosperity, and peaceful national and international cooperation.

Conversely, in a competitive society, there is “nobody who can exercise even a fraction of the power which a socialist planning board would possess” [Hayek, 1944/2006, p. 149]. Since the decentralization of power means reducing the absolute amount of power “the competitive system is the only system designed to minimise the power exercised by man over man” [ibid.]. In this context, “the separation of economic and political aims is an essential guarantee of individual freedom” and “the substitution of political for economic power” means replacing power from which there is no escape with power which is always limited. So called economic power, which can be an instrument of coercion, is in the hands of individuals never exclusive or complete power over the whole life of a person. But centralised as an instrument of political power it creates a degree of dependence scarcely distinguishable from slavery“ [Hayek, 1944/2006, p. 150].

Also from an ethical and moral point of view it is doubtful that the direction of economic process according to higher-ranked, “ideal” objectives as expressed in the adjectives “inclusive” and “sustainable” in “Europe 2020” raises society’s moral standards. Rather the opposite is the case. With regard to government prescribed or provided poverty relief measures or top-down enforced ecological programs to compel citizens to what is held environmental friendly behaviour, Hayek [1944/2006, p. 216f] has pointed out “only where we ourselves are responsible for our own interests and are free to sacrifice them, has our decision moral value. We are neither entitled to be unselfish at someone else’s expense, nor is there any merit in being unselfish if we have no choice. The members of a society who in all respects are made to do the good thing have no title to praise.” And he [p. 218] continues: “A movement whose main promise is the relief from responsibility cannot but be anti-moral in its effect however lofty the ideals to which it owes its birth”. There is a big the difference “between demanding that a desirable state of affairs should be brought about by the authorities or even being willing to submit provided everyone else is made to do the same, and the readiness to do what one thinks right oneself at the sacrifice of one’s own desires and perhaps in the face of hostile public opinion“ [ibid.]. As Erlei [2014], with regard to Germany, demonstrates there is in fact much evidence for the first tendency in at least some European societies. In Germany national economic policy focuses increasingly on redistribution rather than on providing an institutional environment conducive to creating wealth.

Hayek [1944/2006, p. 227ff] further shows that the societal and ethical problems are caused by the conscious direction of economic affairs on a national level “inevitably assume even greater dimensions when the same is attempted internationally”, for example on the EU level. “The conflict between planning and freedom cannot but become more
serious as the similarity of standards and values among those submitted to a unitary plan diminishes”. The reason for this is that the amount of agreement on the order of ends decreases as the scale of a community increases, so that the necessity to rely on force and compulsion grows. Hayek [1944/2006, p. 229] concludes: “Planning on an international scale, even more than is true on a national scale, cannot be anything but a naked rule of force, an imposition by a small group on all the rest of that sort of standard and employment which the planners think suitable for the rest”. As a result a tendency towards growing centralized control over national policies and certain markets in a community like the EU with widely divergent traditions, ideals and levels of economic development can threaten its cohesion and integrity and become what Röpke [1959] called dynamite and an instrument of disintegration. Hence, in addition to the knowledge and incentive issues this threat is a further reason why the preference expressed in the EU’s economic governance mechanism towards more centralized control is not an appropriate way to achieve a sustainable future for the EU. Instead, reinforcement of the principle of subsidiarity is more likely to ensure a democratic and free European society and the public’s support for it [Issing, 2015].

Otherwise, as Hayek [1944/2006, p. 231] argued “it is fairly certain that in a planned international system the wealthier and therefore most powerful nations would to a very much greater degree than in a free economy become the object of hatred and envy of the poorer ones: and the latter, rightly or wrongly, would all be convinced that their position could be improved much more quickly if they were only free to do what they wished.” Such signs have in fact become visible in the EU in the wake of the European sovereign debt crisis and the rescue measures undertaken to remedy it. In particular, Germany with its insistence on austerity, structural reforms and adherence to rules is perceived as an oppressive power, disciplining hegemon or an egoistical economic occupier in the countries affected by the eurozone crisis, with Greece being the most prominent example [Spiegel Online, 23.03.2015]. A further indication is the rising support for euroskeptic, anti-establishment and populist parties of both the right and the left in a number of European countries like France, Spain, the United Kingdom, Greece or Hungary [Economist, 31.05.2014]. As Mayer [2016] pointed out, irrespective of the political spectrum in which they are located the economic policy concept of most of these parties is similar in its anti-free market and trade and highly interventionist orientation. As such they are largely ignorant of knowledge constraints, the incentive problem and the societal side-effects. Therefore, they do not offer a robust economic policy alternative.

Implications for the Member States

Irrespective of these flaws, with regard to robustness of the economic policy of “Europe 2020” and subsequent economic policy arrangements and initiatives it is far from certain that a uniform European economic policy and unified model of a social market economy can be implemented throughout the European Union. This would require two
preconditions: first, compliance with the preferences member state populations, and second, the concentration of power on the supranational level and credible commitment to exercise impartial control on member countries’ economic development.

Rooted in the school of economic ordo-liberalism, Germany is traditionally considered an advocate of more market-oriented economic policies, alongside the United Kingdom (UK), while France usually stands for a centralized and dirigiste approach. Meanwhile there is some evidence that the preferences for economic policies in Germany have shifted towards the French attitude, while Great Britain is still an adherent to a decentralized and much more market-driven economic policy for the EU. Indications of this dismissive attitude towards “more Europe” include the speech of the British Prime Minister, David Cameron, in January 2013 on the UK’s relation with the EU, the planned referendum on the UK’s EU membership, and Cameron’s resistance to the appointment of the new president of the EU Commission in May 2014.

Conversely, Germany seems to have gradually given up the legacy of the father of its social market economy, Ludwig Erhard, who unequivocally stood for a market-oriented economic policy both on the national and European level. For Erhard the social market economy was always first and foremost a market economic system [Goldschmidt, 2004, p. 12]. He was convinced that “the freer an economy is, the more social it is” [Erhard, 1966, p. 320]. Since Erhard left politics, this view has been abandoned throughout the post-war period until present. In particular, since the Maastricht Treaty of 1992 and under the government of Gerhard Schröder (1998-2005) Germany adopted more French ideas of economic policy with a preference for supranational collective actions and the “primacy of politics” [Schüller, 2011b]. Under Chancellor Angela Merkel this course has been continued. Major decisions of the latest German federal government formed by the grand coalition of Christian Democrats (CDU/CSU) and Social Democrats (SPD) in 2013 are even further unswerving steps towards more interventionism. Examples are the introduction of minimum wages and price ceilings on the rental market as well as the continuation of a centrally-planned energy transition policy.

This is in stark contrast to what Germany demands from the member countries affected by the eurozone crisis. While it vigorously insists on profound market-oriented structural reforms in exchange for financial support, on the national level the German government intervenes into markets by setting certain desirable market outcomes. At the same time on the European level it advocates tax harmonization, its centrally-planned renewable energy policy, and supports France’s idea of a European economic government. However, left open is precisely what this economic government is meant to do. In Jamet et al. [2011] Mussler argues that in the German understanding such an economic government should focus primarily on a rule-based economic coordination and surveillance of competitiveness. This means tightening the stability pact and other existing rules and ensuring their impartial automatic enforcement. It remains to be seen whether this different emphasis is really substantial or only semantic.
Apparently, the soft interventionist approach of “Europe 2020” as well as the interventionist policy measures of Germany’s grand coalition government meet the preferences of large parts of the German population and seem to be in line with the “public” opinion pronounced by the media. Both increasingly blame unhampered market forces for all existing economic problems, instead of excessive government interventionism. The results of a survey carried out by the Allenbach Institute underscore this change in attitudes towards a market economy. More Germans favour stronger government intervention, and some even desire the introduction of a planned economy (Deutsche Wirtschafts Nachrichten, 28.11.2013). This attitude has gained popular support since the outbreak of the global financial and eurozone crisis.

Nevertheless, the experiment with the introduction of a common currency for countries with relatively heterogeneous economic development levels has demonstrated that a one-size-fits-all-economic policy is not feasible, can lead to economic and social upheavals as well as political deformations and would require a further concentration of power in a centralized EU economic government. Yet, at present, the member states are reluctant to delegate power to Brussels that allow far-reaching interventions into their national economies. Most prominently, the United Kingdom demands the decentralization of decision-making, and otherwise threatens a Brexit. But even if there was consensus on a European economic government with far-reaching competences, this would require a credible self-commitment by the member countries to implement policy prescriptions from Brussels, as well as a credible commitment of the EU Commission and the European Council to effectively impose sanctions on member countries who fail in their commitments. Given the many violations of treaties, rules and commitments there is so far no reason to believe that this credibility exits (see also [Issing, 2015]).

As discussed above, from the perspective of robust political economy there is no rationale to implement a unified economic model from above through a centralized governance mechanism. Instead, the only robust and economically and politically efficient mode to foster convergence is to make use of institutional competition where local policy makers offer citizens institutional arrangements and public services conducive to growth and employment and meet the preference of the population. In order to function, institutional competition requires the ability to relocate and, most importantly, that the subnational federal or supranational entity remain accountable for their policies, i.e. that they have no option to externalize the cost of bad policies onto others. In fact the only binding agreement needed is the commitment to not bail out lower level jurisdictions. For even if at this level the free flow of goods and resources was restricted, competition could nevertheless exert its disciplining power on local policy-makers, as people could still voice their dissatisfaction with a deteriorating economic situation. As in the business world the outcome of the discovery process of institutional competition is not predictable. Based on studies of the federal system of Switzerland it is far from certain that this may lead to a “race to the bottom” or a full convergence of policies and institutional arrangements.
across political jurisdictions (see e.g. [Wohlgemuth, Adamovich, 1999; Bessard, 2013]). As Hirschman [1970] argued “loyalty” can be a strong countervailing factor to “exit” and “voice” that creates inhibition thresholds for business to relocate. As a result a high degree of diversity can be preserved with a federal state or supranational polity.

Conclusions

Like its predecessor, the Lisbon-Strategy, “Europe 2020” suggests a model of a targeted interventionism and administrative coordination and control of economic processes in the Union. Although the importance of structural reforms is acknowledged, these features demonstrate a firm trust in the capability of policy-makers to steer economies into a desired direction and at the same time a great distrust towards the self-coordinative and self-healing powers of unhampered free markets. Thus, “Europe 2020” obviously meets the reservations of large parts of the population towards free markets and their preference for state intervention, not the least of which being its economically largest and powerful member – Germany. However, such a policy approach lacks robustness as it overlooks, or at least underestimates, the crucial pitfalls of any form of interventionism – as shown by the robust economic policy analysis in this paper: the knowledge and incentive problem as well as the impact on the societal order through the diminution of individual liberties. The less economic policy supports the market mechanism understood as an entrepreneurial discovery process, the more unlikely that “Europe 2020” will lead the European Union out of its economic stagnation, because such an institutional environment fosters unproductive rent-seeking rather than productive, wealth enhancing entrepreneurship. As Mises [1976/1996, p. 26] argued there is actually “no middle of the road” between a free market system and an economic system with full government control. Even a light form of interventionism faces the problem of how to deal with its unintended consequences, either to undo the interference or to undertake additional interventions. In the end, such a system with selected interventions can never provide the stable business environment that is crucial for long-term sustainable economic growth.

As early as the 1950s, German economists pointed to the economic, political and societal flaws of centralized and interventionist strategies of European integration. Ludwig Erhard [1959] warned: “The will to organize and harmonize must inevitably end in the precipice”. Instead, he argued that the best way to advance European integration is not the creation of more and more commissions, administrative bodies and bureaucracies, but the restoration and maintenance of an international order that allows economic mobility [Erhard, 1957]. Therefore, the EU’s current quest for sustained economic growth ignores his policy conclusion from 1962 that: “We do not need a planning program for Europe, but a program for building a market friendly and competition enhancing institutional
environment” [Erhard, 1962/1988, p. 770]. As Hayek [1944/2006, p. 234] concluded, in this process “an international authority can be very just and contribute enormously to economic prosperity if it merely keeps order and creates conditions in which the people can develop their own life.” This requires the extension of freedoms for private economic actors and member states rather than restrictions through ever new mandatory targets and controlling agencies. In fact, in the past EU institutions have successfully fostered economic freedom and liberalization across Europe through the establishment of a single market [Wohlgemuth, 2007]. From a robust political economy perspective, Europe will only be able to successfully mitigate the knowledge and incentive problems and avoid unintended backlashes on personal liberties if it recalls this liberal tradition and concentrates on providing an institutional environment conducive to unfold the productive power of competition as an entrepreneurial discovery process to the fullest extent possible. Then the EU will indeed have good prospects to become one of the most competitive and prosperous regions with a high quality of life.

Notes

1 Author’s e-mail address: jwandel@gmx.de; jwande@sgh.waw.pl
2 Already in March 2000 the special European Council in Lisbon adopted the so-called the Lisbon Strategy with the broad objective of turning the EU into “the most dynamic and competitive knowledge economy in the world capable of sustainable economic growth with more and better jobs and greater social cohesion and respect for the environment” [Kok et al., 2004, p. 6]. This rather abstract objective of enhanced competitiveness was translated into specific quantitative targets. Among these were an annual GDP growth rate of 3%, full employment by 2010, and gross domestic R&D expenditure of 3%. However, by 2004 it had became clear that the objective of turning the EU into the most competitive economy by 2010 was far out of reach. While in the USA, GDP had grown annually by 2.7% since 2000, EU’s GDP only increased by 1.7% p.a. [Euractiv, 25.11.2009].
3 In the Stability and Growth Pact fines can be up to 0.2% – 0.5% of GDP, and in the Fiscal Compact 0.1% of GDP. In the Macroeconomic Imbalance Procedure sanctions initially are in the form of interest-bearing deposits that can be then converted into fines (up to 0.1% of GDP) upon a member country’s second failure to comply [European Commission, 2013].
4 These interventions were inter alia perverse credit weights in the Basle capital accords that encouraged domestic banks to lend to governments, tax regulations that favored debt relative to equity financing; subsidized mortgages that encouraged excessive borrowing; federal deposit insurance that eliminated market discipline, monetary and bailout policies [Balcerowicz, 2015].
5 In “The Road to Serfdom” Hayek [1944/2006, p. 169] argues: “To ‘plan’ or ‘organise’ the growth of mind, or, for that matter, progress in general, is a contradiction in terms. The idea that the human mind ought ‘consciously’ to control its own development confuses individual reason, which alone can ‘consciously control’ anything, with the interpersonal process to which its growth is due. By attempting to control it we
are merely setting bounds to its development and must sooner or later produce a stagnation of thought and a decline of reason".

6 “The fact that the system functions poorly is blamed exclusively on the law that does not go far enough, and on corruption that prevents its application. The very failure of interventionism reinforces the layman’s conviction that private property must be controlled severely. The corruption of ‘the regulatory bodies does not shake his blind confidence in the infallibility and perfection of the state; it merely fills him with moral aversion to entrepreneurs and capitalists” [Mises, 1976/96, p. 30].

7 The five presidents are: Jean-Claude Juncker (EU Commission), Donald Tusk (European Council), Jeroen Dijsselbloem (Eurogroup and Board of Governors of the European Stability Mechanism ESM), Mario Draghi (European Central Bank) and Martin Schulz (European Parliament).

8 As Hayek explains: “In a small community common views on the relative importance of the main tasks, agreed standards of value, will exist on a great many subjects. But their number will become less and less the wider we throw the net: and as there is less community of views, the necessity to rely on force and coercion increases” [1944/2006, p. 228].

9 For example the British newspaper “The Guardian” of January 28, 2015 called Angela Merkel “the most monstrous Western European leader of this generation” and compared her to Charlie Chaplin’s The Great Dictator.

References


The Role of Government and Markets in the Strategy “Europe 2020” of the European...


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Okun’s Law and Youth Unemployment in Germany and Poland

Abstract

Unemployment rates, especially among youth, have increased in various countries of Europe over the last years. This paper examines changes in youth unemployment in Germany and Poland with Okun’s law, testing that young employees are more vulnerable to the business cycle. I estimate country specific Okun coefficients for five different age cohorts. The results show that youth in Poland is more sensitive to business cycle fluctuations than adults, while in Germany the difference between the age cohorts is not that distinctive. In addition, cohort differences in Germany are not statistically significant, while they are significant in Poland but only with regard to the two oldest age cohorts.

A further examination of the different labor market institutions affecting youth employment suggests long-term policy recommendations extending beyond GDP growth, such as structural reforms in education, as well as job-search assistance as short-term recommendation.

Keywords: youth unemployment, Okun’s Law, Poland, Germany

JEL: E24, J64

Introduction

The financial and economic crisis strongly affected European labor markets, but its impact varied in different countries. In this study I investigate unemployment developments in Germany and Poland, which were selected because their cases in the recession...
are unique. In Germany, the youth unemployment rate remained stable after the financial crisis, declining slightly after 2009, even as the growth rate of the real gross domestic product (GDP) turned negative in 2009. In contrast, Poland experienced positive GDP growth rates throughout the period, but the youth unemployment rate increased. Data for the aggregate EU-15 countries are used for comparison and include all member countries of the European Union before the enlargement in May 2004. Using Okun’s law [Okun, 1962], which expresses a negative relationship between changes of the unemployment rate and the growth rate of the GDP, I examine whether youth is more sensitive to the business cycle than adults [Boulhol, Sicari, 2013]. My hypothesis is that if the economy is in a recession, young employees are the first to be dismissed and are therefore more vulnerable to cyclical shocks. Additionally, I examine how strong the differences between the various age cohorts are and therefore estimate country specific Okun coefficients for five different age cohorts. The results show that youth in Poland is much more prone to business cycle fluctuations than adults, while in Germany the difference between the age cohorts is not distinctive.

These results lead to an examination of the two labor markets to find the causes of those differences. As there are labor market institutions that affect youth unemployment more than adult unemployment, I examine e.g. employment protection legislation, the minimum wage and the extent to which temporary contracts are used [Berlingieri et al., 2014, Brada et al., 2014]. Specific policy recommendations beyond GDP growth are formulated, tackling both the demand and supply side of the youth labor markets.

The structure of the paper is as follows: the next section provides a brief literature overview on the main aspects of youth unemployment; afterwards I describe the data set and discuss the empirical results based on Okun’s law. I then examine the labor market institutions in Germany and Poland to better understand my empirical findings. The final section concludes with short and long-term policy recommendations.

Literature Review

The link between unemployment and real GDP growth can be explained from the demand side. An increase in aggregated demand will lead to an increase in production. This will lead to an increase in demand for labor and therefore to a decline of the unemployment rate. Following this line of reasoning, a negative GDP shock will lead to a lower demand for labor and, therefore, a rise in the unemployment rate. This is valid for the whole labor market as well as for different age cohorts [O’Higgins, 1997].

According to Choudhry et al. [2012], a decrease in labor demand implies less job openings, which means that young people are more likely to be affected by unemployment. And job destructions are also excessively affecting youth, because young employees have a higher tendency to work under temporary contracts. On the other hand, temporary
contracts may stimulate job creation in periods of economic downturns or for specific groups of workers without qualifications or work experience, such as labor market entrants [Dietrich, 2012].

The unemployment rate depends on various country-specific factors, e.g. the extent of „skills mismatch” and the transition from school to work, which tend to influence the youth unemployment rate [Dietrich, 2012]. However, changes in the youth unemployment rate can also be caused by cyclical fluctuations. Young people are more sensitive to cyclical changes, because companies have lower opportunity costs when discharging young employees. Following O’Higgins [1997] young employees have less company-specific skills and less dismissal protection in comparison to older employees. In addition, Bell and Blanchflower [2011] argue that youth finds itself in a so-called „experience trap”, i.e. firms select employees with experience, and therefore, labor market entrants are never employed and cannot increase their own experience. This might lead to higher unemployment rates for young people, especially in an economic downturn where they must compete with more experienced and skilled workers for fewer jobs [Unt, 2012].

In contrast, it is argued that youth unemployment is shorter in duration and less problematic, because young people change their workplace more easily and more often to find appropriate “skill-matching” positions [O’Higgins, 2003]. But even if youth is experiencing shorter unemployment duration, it can have other effects: Berlingieri et al. [2014] argue that a failure in integrating young people means a loss of output, productivity and very likely also a loss in innovation potential. Furthermore, there is a fiscal cost connected with youth unemployment besides the associated loss in GDP, because welfare payments are increasing and tax revenues are lost [Berlingieri et al., 2014].

Additionally, Mroz and Savage [2006] find that unemployment among young workers has profound negative effects on human capital accumulation leading to lower future earnings. Youth unemployment experienced today will lead to higher social cost tomorrow and negatively impact well-being, health status and job satisfaction [Bell, Blanchflower, 2011]. Further effects can be deskilling and a degradation of physical and mental health [Berlingieri et al., 2014].

With this in mind, I test the hypothesis that young employees are more sensible to cyclical shocks.

Data Set and Descriptive Statistics

I rely on annual real GDP, measured in 2010 prices and published in the Annual Macro-Economic Database (AMECO) of the European Commission [EC, 2015], as well as annual unemployment rates for various age cohorts provided by the Organisation for Economic Co-operation and Development [OECD, 2015b]. The data set includes the
earliest available entries for each country (Germany: 1992, Poland: 1993 and EU-15: 1992) and ends in 2014. The unemployment rate is based on International Labour Organisation (ILO) standards to ensure that the relevant countries are comparable with each other.

Figure 1 shows GDP growth in Germany, Poland and EU-15. Poland has only positive GDP growth rates during the financial crisis, while Germany and EU-15 show a negative GDP growth in 2009. Figure 2 highlights youth unemployment rates for Germany, Poland and EU-15 from 1992 until 2014, i.e. for the 15-to-24-year old age cohort. The rates vary between the countries: Germany has very low rates and even after the crisis, those rates decline. Poland had declining rates before the crisis, but after 2009 rates rose again despite the fact that Poland maintained a positive GDP growth, even during the crisis. The EU-15 (in the aggregate) experienced an increase in unemployment rates after the financial crisis. For all countries the rates decreased in 2014.

The youth-to-adult unemployment ratio shows whether the labor market prospects of youth are worse than the employment prospects of adults [Berlingieri et al., 2014, Bell and Blanchflower, 2011]. Calculation of the ratio is done by dividing the youth unemployment rate (age cohort as defined above) by the adult unemployment rate (here: age cohort of the 25-to-64-years old). It measures whether youth or adults are struggling more in the labor market, with a higher ratio indicating that youth suffers disproportionately to adults. Figure 3 shows the ratios calculated for Germany, Poland and EU-15. In Poland, youth unemployment rates are more than twice than those of adults, while in Germany, the ratio is considerably smaller. But in both Germany and Poland, even before the great recession this ratio increased, while in the EU-15 adult unemployment rates increased more rapidly, showing a slightly decreasing youth unemployment rate/adult unemployment rate ratio after 2008.

In the next section I examine the relationship between youth and adult unemployment rate.

Regression Analysis

Relationship between Youth and Adult Unemployment Rates

I analyze the relationship between youth and adult unemployment rates by regressing the youth unemployment rate on the adult rate [Bell, Blanchflower, 2011, O’Higgins, 2012]. The equation can be written as:

$$ u_{it}^y = \alpha_i + \gamma_i u_{it}^a + \epsilon_{it}, \quad (1) $$

where $u_{it}^y$ is the youth unemployment rate (age cohort 15–24) for country $i$ at time $t$ and $u_{it}^a$ is the corresponding adult unemployment rate (age cohort 25–64). This simple analysis
does not consider other factors, such as cohort size, prices or marginal products of youth and adult labor. The results are shown in Table 1 for Germany, Poland and the EU-15.

The unemployment rate of the 15-to-24-year-olds in Poland changes by 2.19 percentage points for each 1% change in adult unemployment rates. While in the EU-15 it is as high as in Poland with 2.18 percentage points, in Germany the youth unemployment rate changes by 1.01 percentage point for a change of 1% in the unemployment rate of adults. The German result could mean that youth and adults are complements and a decrease in adult unemployment is accompanied by a decrease in youth unemployment [O’Higgins, 2012].

This result confirms my hypothesis that young employees, especially in Poland, are more sensitive to changes in aggregate demand for labor than adults [OECD, 2009]. In the next step I attempt to answer the question: how strong is the difference between the different age cohorts?

**Okun’s Law**

There are several versions of Okun’s law. The original ones were suggested by Okun [1962], the so-called gap and difference version. Furthermore, there are derivations developed in the course of time, so-called dynamic versions (see e.g. Knotek [2007]). Here, the difference version will be used to analyze the sensitivity of the unemployment rate to changes in the growth rate of GDP. The regression is based on the following model:

\[
\Delta u_t = \alpha_i + \beta_i GDP_{growth_t} + \epsilon_{it},
\]

where \(\Delta u_t\) is the change in the unemployment rate from period \(t-1\) to \(t\) for country \(i\), \(GDP_{growth_t}\) represents the GDP growth rate\(^3\) and \(\epsilon_{it}\) is an assumed white noise error term. The parameter \(\beta_i\) is the so-called „Okun coefficient“. According to Okun’s law, the coefficient should be negative, i.e. positive GDP growth should lead to a decrease of the unemployment rate [Hutengs and Stadtmann, 2014b].

In addition to the regression via Ordinary Least Squares (OLS)\(^4\), a balanced panel for each country is constructed and used for further estimations. The panel resolves the problem of a limited number of observations available for single OLS estimation. It includes changes in the unemployment rate from year to year for the five different age cohorts plus the GDP growth rate. Instead of estimating each beta coefficient for each age cohort individually, the panel will be estimated via a least squares dummy variable model (LSDV) for each country:

\[
\Delta u_{jt} = \alpha_j D_j + \beta_j D_j GDP_{growth_t} + \epsilon_{jt},
\]

where \(\Delta u_{jt}\) is the change in unemployment rate for cohort \(j\) at time \(t\), \(D_j\) symbolizes a dummy variable representing the different age cohorts and \(\epsilon_{jt}\) is an assumed white noise error term. The parameters \(\beta_j\) capture the different cohort specific Okun coefficients.
The OLS residuals have been checked for heteroscedasticity and serial correlation and I found both in all country panels (see test results in Table 2 and Table 3). As heteroscedasticity and autocorrelation could eventuate in inefficient estimates with biased standard errors and therefore misleading results, I fitted the model with MA(1) errors. The results are shown in Table 4.

The Okun coefficients are negative across all countries as well as all age cohorts. Thus, the expected negative relationship between changes in the unemployment rate and real GDP growth can be confirmed. The strength of the effect differs between all countries which is expected due to differences in labor markets. The countries and the aggregate EU-15 show their highest Okun coefficients in absolute terms among the age cohort of 15-to-24 years old. This indicates that youth is more sensitive to business cycle conditions than adults, especially in comparison to the 55-to-64-year old age cohort.

There are some important differences between countries. In Poland, Okun coefficients in absolute values are larger than in Germany, so Polish youth suffers disproportionately more than does the German youth. This supports the result regarding the relationship between youth and adult unemployment rates presented in section 4.1.

In Poland, the strongest increase in the Okun coefficient is observed from the 15–24 year old cohort to the 25–34 year old cohort, while in Germany the differences are not that distinct. In Germany, the strongest increase is observed between the 25–34 year old cohort and the 35–44 year old cohort. This might be the case because the younger age cohort includes those finishing tertiary education and searching for their first job, while the older cohort (as well as the 45–54 year old cohort) are mostly well established on the labor market due to their work experience as well as their accumulated skills. Bell and Blanchflower [2011] argue that adults may be more efficient in job search activities than young people and therefore young people are likely to have less contacts as well as less experience finding work, which is disadvantageous for the youth.

Typically, the 25–34 year old cohort has completed their education and entered the labor market [Pastore, 2015]. In Table 8 the unemployment, as well as the labor market participation, rates of the 25–34 and 15–24 year old cohorts are presented, showing that unemployment rates are lower among the former, even when their labor market participation rates are higher. Thus, the youngest age cohort should be the focus of the analysis.

In all countries (as well as in the EU-15 countries, aggregated), the smallest Okun coefficients in absolute terms are for the 55-to-64 year old cohort. This could be a result of better protection under employment laws. Therefore, this age cohort is less exposed to business cycles because they are the last to lose their job during a recession [Hutengs and Stadtmann, 2014b].

In addition, the equality of coefficients for each country between age cohorts has been tested with a Wald-Test and the results are shown in Tables 5 to 7. Only for the EU-15 does the test confirm that the coefficients for the youngest cohort differ significantly from all older age cohorts, while in Poland there is only a significance for the differences to the
two oldest age cohorts. In Germany the differences between age cohorts are not statistically significant.

As for the overall difference of the two countries, especially during the Great Recession, it is argued that in Germany employment adjustments were mainly done at the intensive margin, i.e. reductions in hours per worker (see e.g. Cahuc et al. [2013], Rinne and Zimmermann [2012], Rinne and Zimmermann [2013], Burda and Hunt [2011], etc.). In Poland, according to OECD [2014c], schemes like short-time work, e.g. with state assistance for employee compensation while reducing work-time, were rarely used and could explain the adjustment at the extensive margin, i.e. at the employment level.

Business cycle effects do not explain all differences between countries in youth unemployment levels. The youth-to-adult unemployment ratio, which has been calculated in section 3 and can be seen as an indicator of possible structural problems [Cahuc et al., 2013], points to differences between the two countries. Therefore, in the next section I examine the labor markets of Poland and Germany in detail to answer the question regarding the underlying causes for differences between youth and adults in those countries.

## Labor Markets in Detail

Different labor market characteristics affecting youth employment may explain differences between the age cohorts, as discussed in section 4. In addition to institutional variables such as labor taxes, unemployment benefits, unionization and collective bargaining, some specific factors of relevance to youth unemployment include e.g. Employment Protection Legislation (EPL) according to Berlingieri et al. [2014] or the minimum wage and the share of temporary contracts [Brada et al., 2014]. Hence, I focus here on those issues as they appear to constitute the main differences between the two countries, especially in terms of youth unemployment. These are discussed in the following subsections:

- Economic conditions, such as segregation of the market by sectors (industry, agriculture, service), mobility of the labor force and migration vs. immigration, labor market participation plus NEETs and the duality of the labor market;
- Institutional frameworks such as minimum wages, Employment Protection Legislation (EPL) and the education system.

### Sectoral Labor Market Segregation

Sectoral labor market segregation can influence the sensitivity of unemployment to economic conditions [Brada et al., 2014, Hutengs and Stadtmann, 2014a]. In both Germany and Poland, employment has been rising in the service sector, while in other sectors such as manufacturing and agriculture employment levels have decreased, as shown in Table 9. In the service sector growth usually means that additional workforce
is needed and this would decrease the unemployment rate [Przybysz et al., 2000]. Based on a larger share of service workers in Germany than Poland, as indicated in Table 9, one would expect a higher unemployment rate in Poland.

**Mobility of the Labor Force and Migration vs. Immigration**

Regarding labor force mobility, regional unemployment data from Eurostat [Eurostat, 2015] shows that immobility is still prevalent in both countries. Between the provinces in Poland (so-called voivodships), as well as between the states in Germany, differences in unemployment rates persist, for youth as well as for adults. Figures 4 and 5 show regional unemployment in Germany and Poland, in 2014. In Germany, there is still an East-West divide. Former East Germany has higher unemployment rates than former West Germany. In Poland there is neither an East-West nor a North-South divide, but the voivodship Mazowieckie in the centre of the country (which includes Warsaw) has the lowest rates of both youth and adult unemployment. According to OECD [2014c], there are important obstacles to internal labor mobility, such as the quality of the transportation infrastructure or expensive urban housing due to a shortage of private rental supply.

Mobility of labor forces does not only include mobility within the country, but also international migration. According to OECD [2014d], the number of Polish people who are living abroad for more than three months increased in 2012. Kaczmarczyk et al. [2014] shows an increase in 2011 of the number of officially registered international emigrants. It was recorded that in 2011 42.5% of men and 49.2% of women who were permanent emigrants were persons aged between 20 and 39 years. According to Kaczmarczyk et al. [2014], most Polish emigrants leave the country to work abroad. The most important sources of migrants are voivodships Śląskie, Małopolskie, Dolnoślaskie and Podkarpackie in absolute terms and in relative terms Podlaskie and Podkarpackie [Kaczmarczyk et al., 2014]. With regard to unemployment rates, these are voivodships with unemployment rates in the middle of the ranges, except for the voivodship Podkarpackie which has the highest unemployment rates for youth as well as for adults (see Figure 5). Germany is one of the main destinations of Polish emigrants, which is shown in OECD [2014a]. Poland is the top country of origin for total inflows of foreigners in 2012 as well as the annual average between 2002 and 2011. Germany has a positive net immigration and, according to OECD [2014a], this contributed to employment growth. In 2011, the number of young foreign employees with tertiary education rose. The same is true for the employment rate of foreign workers with an age between 20 and 64 years and a vocational education. As the integration of foreign workers into the labor market has ameliorated, the policy now concentrates on increasing the employment rates of certain groups, such as women with a migration background [OECD, 2014a]. But at the same time, highly educated Germans are leaving the country to work abroad [OECD, 2015c].
Labor Market Participation plus NEETs

As difficulties in finding work force some young people to stay in school, to re-enter school and/or university, to start an apprenticeship etc., the labor participation rate of young workers should decrease. According to Dietrich [2012], changes in the unemployment rate may be interpreted as an exchange between unemployed and employed (i.e. within labor force), but there can also be an exchange with an inactive group (outside the labor force). People in education are not counted among the unemployed and as a part of labor force, so youth unemployment rates should decline. As can be seen in Figure 6, the labor market participation rate of youth (age cohort 15–24 years) in Poland and Germany is slightly decreasing, but there is no strong effect. According to Dietrich [2012], the decrease in youth labor market participation shows that a change in the youth unemployment rate captures only part of the dynamic caused by the business cycle and should be investigated further.

But labor participation rates do not include those young people that are outside of the labor force. This group is called the „youth left behind" and can be defined by the number of people who are neither employed, nor in education or training, the so-called NEETs [Scarpetta et al., 2010]. Figure 7 shows the proportion of this group in Poland and Germany. The data is an indicator provided from the International Labour Organization [ILO, 2014], but only for the time period 2003 (Germany) or 2004 (Poland) until 2013. For Germany, the share is decreasing, while in Poland it has been increasing since 2008.

Duality of the Labor Market

According to Scarpetta et al. [2010], the dominant factor for the higher business-cycle sensitivity of youth is their high presence among those holding temporary jobs. With data from the Organisation for Economic Co-operation and Development [OECD, 2015b], the incidence of temporary employment for youth and adults for Germany is shown in Figure 8 and for Poland in Figure 9. Even though the incidence of temporary employment is increasing for adults (age cohort 25–54), there are large differences between youth and adults regarding temporary jobs. Young people in both countries have a larger proportion of temporary contracts. However, in Germany, temporary contracts are mainly apprenticeship contracts [Scarpetta et al., 2010]. Furthermore, it can be noted that temporary contracts can be so-called „stepping stones" to permanent contracts, i.e. the likelihood of young people getting a permanent contract after having a temporary contract is higher than after being unemployed [Scarpetta et al., 2010]. As pointed out by OECD [2009], the high share of youth holding temporary contracts in Poland can also indicate that there are structural rigidities in the labor market which disproportionately affect youth, putting them at greater risk of job loss during a recession. They are the first to be laid off because their contracts are not extended or they are subject to the LIFO (last-in-first-out) rule. And strict employment protection applied to regular jobs could contribute to the high level of temporary contracts, because it restrains employer's willingness to risk taking on workers without experience, i.e. new entrants in the labor market [OECD, 2009]. Temporary
contracts can also be seen as a dead-end jobs and a discussion can be found in Pastore [2015]. But according to Baranowska et al. [2011], temporary contracts in Poland are rather used as a screening device for employers.

In Poland there is another labor market duality factor, as so-called Civil Code contracts exist [Polakowski, 2012]. Those contracts are not subject to regulations regarding minimum wage, working time, holidays and overtime remuneration and include reduced social protection rights (e.g. sickness, maternity or unemployment are not compulsorily covered). About 7% of total employment and over 50% of workers between ages 18 and 32 are employed under a civil-law contract [OECD, 2014c].

Job creation can be constrained if costs associated with the dismissal of permanent workers are too high, firms increase the use of temporary contracts, or may be reluctant to hire new employees altogether. This could contribute to the duality of labor markets, and makes it difficult for youths to obtain regular positions in the labor market [Berlingieri et al., 2014].

**Minimum Wages**

As mentioned before, minimum wages are one labor market institution especially relevant to youth unemployment [Brada et al., 2014]. Germany introduced a national minimum wage in 2015, but has had minimum wages in some sectors determined by collective agreements before and Poland already had a national minimum wage in place covering all employees [ILO, 2015]. But as mentioned in OECD [2009], enterprises are allowed to pay new entrants a reduced minimum wage during the first year of employment. Still e.g. Laporšek [2013] shows that the minimum wage tends to reduce youth employment among countries in the European Union with statutory minimum wages and the disemployment effect is stronger among teenage workers. In Poland this might explain part of the unemployment rate for new entrants in the market, also shown by OECD [2009].

**Employment Protection Legislation (EPL)**

Because employment protection legislation and lay-off regulations affect the fluctuation and the duration of unemployment more than the unemployment level itself, they are more important for youth than for adults [Brada et al., 2014]. The OECD indicators on employment protection legislation in 2013 for Germany, Poland and the OECD unweighted average for comparative purpose are shown in Table 10 and include the protection of permanent workers against individual and collective dismissals (EPRC), protection of permanent workers against (individual) dismissal (EPR), specific requirements for collective dismissal (EPC) and regulation on types of temporary employment (EPT) [OECD, 2015a]. The scale is from 0 (least restrictions) to 6 (most restrictions). As can be seen in Table 10, Germany has stricter protection for permanent workers and less strict regulation on types of temporary employment than Poland (and the OECD unweighted average). If the EPL is high on „permanent contracts“, than adults are advantaged and this
can further raise the level and duration of unemployment for youth. The labor hoarding
that took place in Germany with the so-called „Kurzarbeit” (short-term work scheme)
can be seen as such a practice [Choudhry et al., 2012].

**Education System**

According to Scarpetta et al. [2010], low-regulated labor markets provide a smoother
school-to-work transition, but in highly regulated labor markets such as Germany, reg-
ulations can be compensated for by a strong vocational education and training system.
Besides traditional curricula, Germany has established a professional system which offers
a combination of work experience, on-the-job training and classroom teaching [Cahuc
et al., 2013]. According to Biavaschi et al. [2012], after general schooling participation
in upper secondary vocational education is the usual pathway into the labor market
in Germany. Through one of the following options, young people can acquire vocational
qualifications: (a) a dual vocational training system with alternating school- and firm-
based training, (b) full-time vocational schooling with a mainly application-oriented
syllabus or (c) tertiary education at vocational academies or universities. The dual appren-
ticeship system is generally interpreted as the main reason for the constantly low youth
unemployment rate in Germany, because it plays a central role with two thirds of young
people who are completing general schooling each year and entering this system, while
about 20% participate in full-time vocational schooling [Biavaschi et al., 2012]. But this
system, albeit successful, is not easily implemented in other countries because it requires
a major effort by all the partners involved, including social partners, public employment
service (PES), and educational institutions [Pastore, 2015, Biavaschi et al., 2012]. And
Scarpetta et al. [2010] found that in economic downturns employers are less willing to offer
apprenticeships, especially to young people without educational qualifications and with
an immigrant background.

In Poland, there are three secondary schooling tracks which include general upper-sec-
ondary schools (so-called lyceum), technical upper-secondary schools (so-called techni-
kum) and basic vocational schools. Graduates of general upper-secondary schools
can continue their education in a postsecondary school and can receive a vocational
diploma confirming vocational qualifications in a given occupation [EURYDICE, 2014].
According to Baranowska et al. [2011], basic vocational schools prepare students mainly
for manual occupations relatively quickly, while ‘technikums’ have a longer duration
but offer a mix of general and vocational education as preparation for skilled service
and technical occupations, as well as the possibility to transfer into tertiary education.
General secondary schools offer no occupational qualifications but a preparation of the
students for higher education. While in the curriculum of basic vocational schools (as
compared to the technikum), firm-based training is a main part, employer participation
in defining and organizing training declined while the Polish economy was restructured
[Baranowska et al., 2011]. Higher education, i.e. tertiary education, includes degree
programs, offered by public and non-public university-type and non-university higher education institutions, and further college programs, offered by colleges of social work, teacher training colleges and foreign-language teacher training colleges, where the latter two types are phased out now [EURYDICE, 2014]. OECD [2009] explains as well that large segments of firm-based vocational education already collapsed with the state-owned firms in the economic restructuring, so today’s education is now more school-based. And Polakowski [2012] confirms that the cooperation of schools and companies is limited. But Baranowska et al. [2011] show that young people with a final secondary vocational school certificate transition more quickly to employment than do general secondary school graduates, especially with vocational education and firm-based training, although that does not increase their chances to transfer to open-ended contracts.

**Conclusions and Recommendations**

In this paper I examined the development of the youth unemployment rate in Germany and Poland, using estimates of age-cohort specific Okun coefficients. The main empirical results can be summarized as follows:

1. **Germany:** The Okun coefficient for young people is larger than for other age cohorts in absolute terms, so youth are more sensitive to the business cycle than adults, but the differences between the age cohorts are small and not statistically significant.

2. **Poland:** The Okun coefficient for young people is larger than for other age cohorts in absolute terms, so youth are more exposed to fluctuations than other age cohorts. The differences between the age cohorts, especially between 15–24 year olds and the subsequent age cohort of the 25–34 year olds, are large, but not statistically significant.

3. The Okun coefficient for young people differs between the two countries, showing that the sensitivity of unemployment rates in Poland to changes in GDP is much larger than in Germany, i.e. young Polish people are hit harder by macroeconomic shocks in comparison to young German people. This result not only holds for youth, but for all age cohorts.

4. The cohort differences are not statistically significant in Germany, while in Poland they are only significant with regard to the two oldest age cohorts.

Any policy recommendation here should consider GDP growth, because youth unemployment is more sensitive to business fluctuations and it is a relevant factor for adult unemployment as well. And without economic growth no youth policy can ever be effective [Pastore, 2015]. However, according to Polakowski [2012], the Polish economy has grown relatively fast but did not create new jobs. Employment decreased in agriculture and increased in the service sector, but labor demand declined as labor productivity increased. Still, further promotion of the service sector in Poland, as well as in Germany, is recommended as this could lead to higher job growth [Przybysz et al., 2000, OECD, 2014b].
The obstacles to internal mobility in Poland should be reduced e.g. by continuing to develop transportation infrastructure, particularly quality of the rail system, and improving housing policies [OECD, 2014c].

The number of NEETs in Poland are rising, which is a cause for concern. Scarpetta et al. [2010] proposes better cooperation between public employment services and the education system to diminish the risk of disengagement among young people as well as early job-search guidance to school-leavers and a „learn/train-first” approach to keep youth connected to the labor market.

If temporary contracts in Poland are used as screening device, as described by Baranowska et al. [2011], then qualifications such as certificates do not signal the quality of certificate holders to companies. Therefore, as suggested by OECD [2009], a universal Vocational Education and Training (VET) classification system should be implemented in Poland. Further proposals are made by OECD [2014c], such as enhancing work-based learning in VET programs by boosting social partners’ involvement and raising the quality of teaching, as well as strengthening the link with businesses.

Scarpetta et al. [2010] proposes to rebalance employment protection, so that youth can gradually move from entry jobs to career employment, i.e. a smooth transition from temporary to more stable and rewarding jobs which could reduce labor-market duality and the sensitivity of youth to business cycles. OECD [2009], too, suggests a reduction in the gap in employment protection between open-ended, fixed-term contracts and the „commission contracts” in Poland and OECD [2014b] also recommends reducing the discrepancy in employment protection between permanent and temporary contracts in Germany.

The major challenge for Germany is the labor market integration of young people who are not able to enter regular vocational training [Biavaschi et al., 2012]. It should include apprenticeships for young people without qualifications, as well as support to help apprentices whose contracts have ended, to complete their training [Scarpetta et al., 2010].

All in all, my proposals are:

- in the short-term: job-search assistance and guidance for young people by public employment services [Scarpetta et al., 2010, Berlingieri et al., 2014];
- in the long-term: for Poland structural reforms regarding the education system, employment protection and mobility as described above; for Germany strategies to avoid school drop-outs and offer a second chance of qualification for every young person [Scarpetta et al., 2010].

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Notes

1 Author’s e-mail address: dunsch@europa-uni.de
2 The statistics are weighted averages of the individual EU-15 countries.
3 The GDP growth rate has been calculated as a percentage change in GDP moving from $GDP_{t-1}$ to $GDP_t$: $GDP_{growth_t} = \left( \frac{GDP_t - GDP_{t-1}}{GDP_{t-1}} \right) \cdot 100$
4 Estimation results can be requested from the author.
5 Each table show empirical F-Values and the corresponding significance level for one country.

References


Appendix

Regression Analysis, Tables and Graphics

TABLE 1. Youth vs. adult unemployment [O’Higgins, 2012]

<table>
<thead>
<tr>
<th>Country</th>
<th>coefficient</th>
<th>$R^2$</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Germany</td>
<td>1.0070***</td>
<td>0.5436</td>
<td>25</td>
</tr>
<tr>
<td></td>
<td>(0.1924)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Poland</td>
<td>2.1856***</td>
<td>0.9472</td>
<td>23</td>
</tr>
<tr>
<td></td>
<td>(0.1126)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>EU-15</td>
<td>2.1756***</td>
<td>0.8974</td>
<td>25</td>
</tr>
<tr>
<td></td>
<td>(0.1535)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: own elaboration with data from OECD [2015b]. Notes: N – number of observations; standard errors in parentheses; significance at *** 1% level, ** 5% level, * 10% level.

TABLE 2. Results Breusch-Pagan-Test for heteroscedasticity

<table>
<thead>
<tr>
<th>Country</th>
<th>BP</th>
<th>p-Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Germany</td>
<td>17.2055</td>
<td>0.0456</td>
</tr>
<tr>
<td>Poland</td>
<td>26.1837</td>
<td>0.0019</td>
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<td>EU-15</td>
<td>19.1254</td>
<td>0.0242</td>
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</tbody>
</table>


TABLE 3. Results Durbin-Watson-Test for serial correlation

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<th>DW</th>
<th>p-Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Germany</td>
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<td>0.0000</td>
</tr>
<tr>
<td>Poland</td>
<td>1.0428</td>
<td>0.0000</td>
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<tr>
<td>EU-15</td>
<td>1.4533</td>
<td>0.0002</td>
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</table>

### Table 4. Panel Regression Results with fitted MA (1) residuals

<table>
<thead>
<tr>
<th>Country</th>
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<th>25–34</th>
<th>35–44</th>
<th>45–54</th>
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<th>$R^2$</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Germany</td>
<td>–0.3258***</td>
<td>–0.2875**</td>
<td>–0.1789*</td>
<td>–0.1728</td>
<td>–0.1411</td>
<td>0.3548</td>
<td>115</td>
</tr>
<tr>
<td></td>
<td>(0.0895)</td>
<td>(0.0893)</td>
<td>(0.0891)</td>
<td>(0.0891)</td>
<td>(0.0898)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Poland</td>
<td>–1.1360***</td>
<td>–0.6093*</td>
<td>–0.4972*</td>
<td>–0.4144</td>
<td>–0.2601</td>
<td>0.4481</td>
<td>110</td>
</tr>
<tr>
<td></td>
<td>(0.2378)</td>
<td>(0.2362)</td>
<td>(0.2359)</td>
<td>(0.2361)</td>
<td>(0.2359)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>EU-15</td>
<td>–0.7252***</td>
<td>–0.4600***</td>
<td>–0.3077***</td>
<td>–0.2572***</td>
<td>–0.2393***</td>
<td>0.7067</td>
<td>115</td>
</tr>
<tr>
<td></td>
<td>(0.0624)</td>
<td>(0.0621)</td>
<td>(0.0620)</td>
<td>(0.0620)</td>
<td>(0.0625)</td>
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<td></td>
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</tbody>
</table>

Source: own elaboration with data from OECD [2015b]. Notes: N – number of observations; standard errors in parentheses; significance at *** 1% level, ** 5% level, * 10% level.

### Table 5. Wald test for equality of coefficients – Germany

<table>
<thead>
<tr>
<th></th>
<th>$\beta_{25-34}$</th>
<th>$\beta_{35-44}$</th>
<th>$\beta_{45-44}$</th>
<th>$\beta_{55-64}$</th>
</tr>
</thead>
<tbody>
<tr>
<td>$\beta_{15-24}$</td>
<td>0.0922</td>
<td>1.3545</td>
<td>1.4693</td>
<td>2.1415</td>
</tr>
<tr>
<td>$\beta_{25-34}$</td>
<td>0.7423</td>
<td>0.8279</td>
<td>1.3477</td>
<td></td>
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<tr>
<td>$\beta_{35-44}$</td>
<td>0.0023</td>
<td>0.0895</td>
<td></td>
<td></td>
</tr>
<tr>
<td>$\beta_{45-54}$</td>
<td>0.063</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: own calculations. Notes: significance at *** 1% level, ** 5% level, * 10% level.

### Table 6. Wald test for equality of coefficients – Poland

<table>
<thead>
<tr>
<th></th>
<th>$\beta_{25-34}$</th>
<th>$\beta_{35-44}$</th>
<th>$\beta_{45-44}$</th>
<th>$\beta_{55-64}$</th>
</tr>
</thead>
<tbody>
<tr>
<td>$\beta_{15-24}$</td>
<td>2.386</td>
<td>3.6506</td>
<td>4.6633*</td>
<td>6.6801*</td>
</tr>
<tr>
<td>$\beta_{25-34}$</td>
<td>0.113</td>
<td>0.3416</td>
<td>1.096</td>
<td></td>
</tr>
<tr>
<td>$\beta_{35-44}$</td>
<td>0.0616</td>
<td>0.5055</td>
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<td></td>
</tr>
<tr>
<td>$\beta_{45-54}$</td>
<td>0.2141</td>
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<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: own calculations. Notes: significance at *** 1% level, ** 5% level, * 10% level.

### Table 7. Wald test for equality of coefficients – EU-15

<table>
<thead>
<tr>
<th></th>
<th>$\beta_{25-34}$</th>
<th>$\beta_{35-44}$</th>
<th>$\beta_{45-44}$</th>
<th>$\beta_{55-64}$</th>
</tr>
</thead>
<tbody>
<tr>
<td>$\beta_{15-24}$</td>
<td>9.1537**</td>
<td>22.563***</td>
<td>28.482***</td>
<td>30.737***</td>
</tr>
<tr>
<td>$\beta_{25-34}$</td>
<td>3.023</td>
<td>5.3589*</td>
<td>6.3322*</td>
<td></td>
</tr>
<tr>
<td>$\beta_{35-44}$</td>
<td>0.3318</td>
<td>0.6063</td>
<td></td>
<td></td>
</tr>
<tr>
<td>$\beta_{45-54}$</td>
<td>0.0416</td>
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<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: own calculations. Notes: significance at *** 1% level, ** 5% level, * 10% level.
**TABLE 8. Unemployment rates and labor market participation rates in % in 2014**

<table>
<thead>
<tr>
<th>Country</th>
<th>Age cohort 15–24</th>
<th></th>
<th>Age cohort 25–34</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Unemployment rate</td>
<td>Labor market participation rate</td>
<td>Unemployment rate</td>
<td>Labor market participation rate</td>
</tr>
<tr>
<td>Germany</td>
<td>7.76</td>
<td>49.95</td>
<td>5.79</td>
<td>84.95</td>
</tr>
<tr>
<td>Poland</td>
<td>23.87</td>
<td>33.86</td>
<td>9.79</td>
<td>85.64</td>
</tr>
<tr>
<td>EU-15</td>
<td>21.64</td>
<td>45.70</td>
<td>12.49</td>
<td>84.68</td>
</tr>
</tbody>
</table>

Source: own elaboration with data from OECD [2015b].

**TABLE 9. Employment changes between 2007 and 2014 and share of workers in sectors in % in 2014**

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Germany</td>
<td>−33.63</td>
<td>1.19</td>
<td>−4.62</td>
<td>−6.92</td>
<td>9.11</td>
</tr>
<tr>
<td>Poland</td>
<td>−18.74</td>
<td>9.63</td>
<td>0.61</td>
<td>−3.98</td>
<td>10.65</td>
</tr>
</tbody>
</table>

Source: own elaboration with data from OECD [2015b]. Industry is excluding Construction.

**TABLE 10. OECD indicators on EPL in 2013**

<table>
<thead>
<tr>
<th>Country</th>
<th>EPRC</th>
<th>EPR</th>
<th>EPC</th>
<th>EPT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Germany</td>
<td>2.98</td>
<td>2.72</td>
<td>3.63</td>
<td>1.75</td>
</tr>
<tr>
<td>Poland</td>
<td>2.39</td>
<td>2.20</td>
<td>2.88</td>
<td>2.33</td>
</tr>
<tr>
<td>OECD unweighted average</td>
<td>2.29</td>
<td>2.04</td>
<td>2.91</td>
<td>2.08</td>
</tr>
</tbody>
</table>

Source: own elaboration with data from OECD [2015a].
FIGURE 1. GDP growth

![GDP growth chart](image)

Source: own elaboration with data from EC [2015].

FIGURE 2. Youth unemployment rate (age cohort 15–24)

![Youth unemployment chart](image)

Source: own elaboration with data from OECD [2015b].
FIGURE 3. Youth-adult unemployment rate ratio

Source: own elaboration with data from OECD [2015b].

FIGURE 4. Incidence of regional unemployment in Germany in 2014

Source: own elaboration with data from Eurostat [2015].
Okun’s Law and Youth Unemployment in Germany and Poland

FIGURE 5. Incidence of regional unemployment in Poland in 2014

Source: own elaboration with data from Eurostat [2015].

FIGURE 6. Labor market participation rate youth (age cohort 15–24)

Source: own elaboration with data from OECD [2015b].
FIGURE 7. Youth (age cohort 15–24) not in employment and not in education or training (NEET)

Source: own elaboration with data from ILO [2014].

FIGURE 8. Incidence of temporary employment in Germany

Source: own elaboration with data from OECD [2015b].
FIGURE 9. Incidence of temporary employment in Poland

Source: own elaboration with data from OECD [2015b].
The Elasticity-Based Approach to Enterprise Innovation

Abstract

The goal of this paper is to present a formal model of firm innovation that simultaneously analyzes innovation factors characteristic to the Schumpeterian strand of industrial organization literature and the know-how strand. Corporate R&D intensity serves here as an input measure of firm innovation. R&D intensity can be defined as a ratio of firm’s R&D spending to the firm’s sales (total revenues). On the basis of formal analysis it is found that R&D intensity is fully determined by three complementary factors, i.e. a firm’s technological competence (supply-side factor), consumer preference for quality and price of a product (demand-side factor), as well as a moderator factor associated with the knowledge spillovers, which occur between competing firms in the industry. Since the above factors are expressed in terms of elasticities, the presented model is called an elasticity-based model of firm innovation. Further, within the model framework, it is shown how horizontal R&D cooperation alleviates the free-rider problem that can discourage a firm’s innovation activities. It is next postulated that horizontal R&D cooperation can be effectively treated as a complementary tool (to such traditional solutions as patent protection and public research subsidies) for solving the problem of negative externalities in an industry with pervasive knowledge spillovers.

Keywords: research and development, firm innovation, inter-firm cooperation

JEL: L1, L2, O32
Introduction

The modern industrial organization literature on enterprise innovation can be roughly divided into two, loosely related, strands in research [see e.g. Belleflamme, Peitz, 2010]. These strands focus on different enterprise innovation factors. These factors are: (1) the size of the firm and its market power, (2) the productivity of the firm’s spending on research and development (R&D), (3) consumer preferences towards the quality and price of the goods produced by the firm, (4) knowledge spillovers in the industry, (5) the firm’s absorptive capacity, (6) the nature of the research conducted by the firm (fundamental or applied research), (7) the firm’s strategy in R&D (cooperation or competition).

The first, historically older, group of enterprise innovation theories focuses on factors: (1), (2) and (3) [e.g. Schumpeter, 1942; Arrow, 1962; Fisher, Temin, 1973; Nelson, Winter, 1982; Lee, Sung, 2005]. In this strand of literature, questions are posed about the relationship between the size and the market power of the company and its ability to innovate. Because this strand was initiated by Josef Schumpeter [1934; 1942], later in this paper it will be called the Schumpeterian strand.

The second group of theories includes factors: (4), (5), (6) and (7) [e.g. Brander, Spencer, 1983; Spence, 1984; Katz, 1986; d’Aspremont, Jacquemin, 1988; Kamien et al., 1992; Salant, Shaffer, 1998; 1999; Amir et al., 2000; Kamien, Zang, 2000]. Chronologically, this is newer literature that has been developing since the early 1980s. A key concept of this strand in the literature is know-how. Researchers pose questions here about the sources of technical knowledge in the company, the processes of its creation, absorption and accumulation, and finally the impact of technical knowledge on enterprise innovation. In the following part of the paper this strand will be labelled as the know-how strand.

Surprisingly, none of the industrial organization theories of enterprise innovation previously proposed in the literature consider the factors from both above-mentioned strands together. The goal of this study to formally describe factors (1)–(7) and the relationships between them as part of a coherent model of firm innovation. The theoretical framework presented will then show how cooperation between companies in R&D helps solve the serious free-rider problem, which appears in the innovative activity of enterprises.

Factors of Firm Innovation. The Schumpeterian Strand of Literature

The Size of the Company and its Market Power

Investigations on the sources of innovation in the economy lead to the work of Josef Schumpeter [1934; 1942]. Schumpeter’s views on the subject evolved over time. These
changes are so clear and substantial that Acs and Audretsch [1988] write about “two Schumpeters”. “Early Schumpeter” saw the source of innovation in the economy in the person of the entrepreneur who played a central role in the evolution of the capitalist system. A social system based on repetitive, routinized patterns of behaviour would lose the ability to develop. Therefore, according to Schumpeter, the social function of entrepreneurs was to make changes to the system, i.e. destroying the old economic order and replacing it with a new one. Over the years, Schumpeter’s ideas evolved and his attention turned to large monopolistic companies. In 1942, in “Capitalism, Socialism and Democracy” [1942, p. 101], Schumpeter wrote:

_The monopolistic company will produce more innovation due to its advantages, which, although they are not impossible to achieve for a competitive firm, are far better secured at the level of monopoly._

In this work Schumpeter is steadily moving away from his earlier concept of the central role of the entrepreneur. Entrepreneurial talent, according to “late Schumpeter,” is internalized and constitutes an integral component of large monopolistic enterprises. It is these companies that were supposed to be the source of innovation in the economic system. In his argument [1942], however, Schumpeter left space for speculation. On the one hand, he appealed to the size of the company (its ’bigness’), and on the other to its market power. As a result, significant controversy accumulated around Schumpeter’s hypothesis because researchers used different wordings of that hypothesis [Mukhopadhyay, 1985]. Kamien and Schwartz [1982] believe that two independent hypotheses must therefore be linked with the name of Schumpeter.

**Schumpeterian Hypothesis 1**: There is a positive relationship between the number of innovations and monopoly power of an enterprise, accompanied by extraordinary profits.

**Schumpeterian Hypothesis 2**: Large (big) companies are proportionally more innovative than small companies.

Economic theorists, referring to Schumpeter’s idea, emphasized its various components. John Kenneth Galbraith [1952] exposed the importance of the bigness of the company for its innovative activities. According to Galbraith, large companies have more resources than small companies, find it cheaper to raise capital, and eventually can spread the risk associated with the implementation of research and development projects to a greater number. Therefore, according to Galbraith, large enterprises should be more than proportionally innovative than small enterprises.

Fisher and Temin [1973] decomposed Schumpeter’s hypothesis into a demand side (relating to the market power of the company) and a supply side (relating to the benefits related to the size of the company). The demand side of Schumpeter’s hypothesis was formalized by Kenneth Arrow [1962]. Arrow’s analysis concerned only process innovations, i.e. those that lead to lower production costs. Arrow’s analysis is comparative in nature. Arrow determined, respectively, the value of innovation (as an increase in the discounted value of extraordinary profits after the implementation of process innovation) for (1)
a monopoly, and (2) a competing firm (competition in Bertrand fashion). Arrow discovered that the value of innovation for a monopoly is in fact smaller than for a competing company. Thus, Arrow rejected the demand version of Schumpeter’s hypothesis.

The supply-side arguments, however, appeal to economies of scale. Large companies should produce more innovations if these companies attain economies of scale (1) in research and development, or (2) in financial markets. Economies of scale of the first type occur when a larger staff in the R&D department works more efficiently than a smaller team, or when an R&D team with a given number of people works more efficiently in a bigger enterprise than in a smaller one. Economies of scale of the second type occur when large companies can borrow money more cheaply on financial markets than small companies, and can borrow more money before the cost of each subsequent currency unit borrowed is higher than the cost of the previous one. The supply interpretation of the Schumpeterian hypothesis was formalized by Fisher and Temin [1973]. As the measure of the size of a company these researchers selected the number of employees. According to the supply side interpretation of the Schumpeterian hypothesis, the average product of a worker employed by the R&D department should increase with the total number of employees. Therefore the total product of workers employed in R&D should grow more than proportionally with increases in the total number of employees.

Fisher and Temin [1973] indicate that the Schumpeterian hypothesis formulated in this way had not been properly tested in the empirical literature. The evidence that “the average product of a worker employed in the R&D department increases with the total number of employees” does not lead to the conclusion that the number of workers employed in R&D is growing faster than the total number of employees. At the same time, it is this latter tendency that represented the empirical basis for verification of Schumpeter’s hypothesis in the literature. Fisher and Temin’s critique [1973] referred, in particular, to research by Villard [1958], Schmookler [1959], Worley [1961], Mansfield [1964], Scherer [1965] and Comanor [1967].

**Productivity of Enterprise Spending on R&D**

Many researchers who contributed to the Schumpeterian strand of the literature directed their attention to the issue of productivity in enterprise spending on R&D. In empirical studies [cf. Bound et al., 1984; Acs, Audretsch, 1991; Cohen, Klepper, 1996] the number of patents granted per unit of currency in which the company spending on R&D was recorded were taken as a measure of the productivity of the enterprise’s spending on R&D. In most studies, it was observed that the productivity of enterprise spending on R&D decreases with the size of the company [Bound et al., 1984; Hausman et al., 1984; Pavitt et al., 1987; Acs, Audretsch, 1988; 1990; 1991].

In subsequent years, however, there were studies that indicated exceptions to the empirical trend outlined above. Erickson and Bayus [2001], although they agree that usually the marginal returns from the company’s R&D spending decrease, this does not happen
in the case of small enterprises in the initial stages of the life cycle of the market. Erickson and Bayus’ research [2001] shows that in the initial stages of the life cycle of the market small companies are characterized by higher productivity of expenditure on R&D than large enterprises. At the stage of maturity of the market, however, this trend is reversed, and then large enterprises are characterized by higher productivity of expenditure on R&D than small enterprises. According to Erickson and Bayus, this can be explained by the fact that in the phase of market maturity large enterprises are able to spread the cost of innovation activities on longer product lines than small enterprises.

Tsai and Wang [2005] showed, however, that the productivity of enterprise spending on R&D decreases with company size, but only up to a certain critical value. Among the largest enterprises, productivity of spending on R&D rises again. Thus, in accordance with the work of Tsai and Wang [2005] a U-shaped relationship between the productivity of company spending on R&D and the size of the firm itself cannot be ruled out.

**Consumer Preferences Towards Price and Quality of Manufactured Goods**

In the last twenty years, in the context of the Schumpeterian strand of literature a keen interest has arisen in researchers in the issues of the impact of consumer preferences on enterprise R&D decisions. In this context, the works of Sutton [1996; 1998], Lee and Sung [2005], and Saha [2007] should be mentioned.

The formal approach to the problem was presented by Saha [2007]. Saha considered a dynamic model of a monopoly under vertical product differentiation. During discrete periods of time consumers took decisions to buy goods offered by a monopolist, i.e. every potential buyer bought 0 or 1 unit of the good in each period. The good was non-durable. The non-negative parameter $\theta \in [\theta_1, \theta_2]$ served to model consumer preferences. The consumer gained a utility equal to $\theta q - P$ on the acquisition of a unit of the good of quality $q$ and price $P$. Consumers differed in terms of the value $\theta$. In each successive period, the monopolist could increase the value $q$ for the manufactured good (the case of product innovation) or reduce the value of $c$, i.e. reduce the marginal cost of production of a given good (the case of process innovation).

Saha determined that the value of process innovation for the enterprise depends only on the number of units of the good sold, while the value of product innovation depends both on the number of units of the good sold and the willingness to pay for product innovation by the marginal buyer. Thus, the value of product innovation also depends on who acquires the good in question. Consumers differ in the Saha model in their propensity to pay for improving the quality of the good. Further, the willingness to pay for the product itself and the willingness to pay for improved quality were positively correlated, i.e. consumers with a higher propensity to pay for the product itself also tend to prefer action to improve it. As the distribution of consumer preferences (distribution $\theta$) was unchanged in time, willingness to pay for improving the quality of goods for end buyers declined steadily. Thus, the monopolist increased the effort directed towards process
innovations at the expense of product innovations. This trend is reflected in business practice [cf. Klepper, 1996]. Saha's dynamic model finally enabled the claim to be formulated concerning the comparison of the nature of innovation activities of small and large companies. Saha has shown that for some period $t$ a large company spends more money than a small company in the search for innovation in both product and process. However, for both of these activities the large company has a lower productivity of the expenditure borne than a small enterprise.

Lee and Sung [2005] showed, in turn, that large companies spend more than proportionally money on R&D (compared to small companies), if they have a high level of technological competence.

Many survey papers have been devoted to the Schumpeterian strand of literature (for extensive reviews, see e.g. [Cohen, Levin, 1989; Symeonidis, 1996]). In the present paper, the focus was primarily put on the works that made it possible to construct the model of firm innovation presented later in this article.

**Factors of Firm Innovation. The Know-How Strand of Literature**

**Knowledge Spillovers in Industry and Corporate Strategy in R&D**

The issue of knowledge spillovers in industrial organization literature devoted to innovation was introduced by Brander and Spencer [1983], Spence [1984] and Katz [1986]. However, the most important studies for understanding the impact of knowledge spillovers on the degree of company involvement in research and development were those of d'Aspremont and Jacquemin [1988] and Kamien, Muller and Zang [1992], which essentially generalized the Belgian economists' concept.

The researchers from Louvain in the 1988 paper discussed a two-stage game under Cournot duopoly, in which the company first made decisions about the value of spending on research and development, and then competed quantitatively on the product market. The Belgian economists stated that cooperation between companies in R&D is associated with a higher overall level of spending on R&D than competition in R&D. This claim is true when the knowledge spillovers in the industry are significant. The d'Aspremont and Jacquemin model [1988] underwent numerous modifications and extensions over the next few years. The most important extensions related to:

1. the increase in the number of enterprises considered [Kamien et al., 1992],
2. taking into account the possibility of product differentiation [Kamien et al., 1992],
3. the inclusion of price competition on the product market [Kamien et al., 1992; Ziss, 1994; Qiu, 1997],
4. taking product innovations into account [Motta, 1992; Kesteloot, De Bondt, 1993; Cohen, Klepper, 1996; Beath et al., 1997; Kaiser, Licht, 1998; Fishman, Rob, 2000],
(5) allowing the opportunity for vertical cooperation [Inkmann, 2000],
(6) the internationalization of cooperation in R&D [Brod, Shivakumar, 1997],
(7) allowing the possibility of cartelization of the industry [Prokop, Karbowski, 2013].

The generalized d’Aspremont and Jacquemin model was proposed by Kamien and others [1992]. Kamien and others [1992] demonstrated that cooperation between companies in R&D is associated with higher level of welfare in the industry than the competition in R&D. Kamien and others [1992] showed further that the profit value of a single company cooperating in R&D is not smaller than in a competitive case. In the end, researchers found that in industries characterized by sufficiently strong knowledge spillovers, the highest level of welfare in the industry is achieved under (i) cooperation between enterprises at R&D stage and at the same time (ii) competition between firms in the final product market. The findings of Kamien and others [1992] have been confirmed by Salant and Shaffer [1998; 1999] and Amir and others [2000].

The Firm’s Absorptive Capacity and the Nature of the Research Carried out

The empirical papers by Cohen and Levinthal [1989; 1990], Levin [1988], Levin and others [1987] and Levin and Reiss [1988] indicate that companies differ in their ability to absorb knowledge produced by other companies. Thus, market participants have varying degrees in which they can use knowledge spillovers in the industry.

The question of an enterprise’s absorptive capacity was formalized by Kamien and Zang [2000]. The researchers considered a three-stage game in a Cournot duopoly. In the first stage, the companies made decisions about the level of generality of the research. The company’s absorptive capacity was defined as follows: 
\[ (1 - \delta_i)x_i \delta_i \]
where \( \delta_i \) is the degree of generality of firm’s research, and \( x_i \) is the value of the company’s own expenditures on research and development. Higher values of \( \delta \) correspond to a more specialized nature of research. For \( \delta_i = 1 \) the \( i \)-th company conducts such specialized studies that the knowledge produced by rivals is of no useful value to it. Thus, when \( \delta \) value reaches its upper limit, the \( i \)-th company does not absorb knowledge spillovers in the industry. When \( \delta_i = 0 \), the \( i \)-th company conducts general enough research (fundamental research) that the knowledge produced by rivals may be directly and fully utilized by the \( i \)-th company. In the second stage of the game, the companies make decisions about the value of spending on research and development, and in the next stage about the production of goods (quantitative competition in Cournot fashion).

Kamien and Zang [2000] have shown analytically that an increase in the degree of generality of research leads to higher company spending on research and development, provided that the initial degree of generality of research was sufficiently high. In addition, Kamien and Zang’s paper shows that cooperation between companies in R&D is more likely when prospective partners conduct fundamental research.

This last conclusion achieved an empirical basis thanks to a paper by Tsai [2009]. Tsai found that with increase in the absorptive capacity of enterprises, correlations between
the sales results of innovative products and cooperation in the field of R&D become stronger. Thus, when companies increase the degree of generality of research (and thus develop the ability to absorb knowledge), the relationship between R&D cooperation and the results of the sale of innovative products becomes stronger. Therefore, companies with a high absorptive capacity should be more willing to cooperate in R&D, because for these companies the effects of cooperation are clearly reflected in the increase in sales. It should be however noted that the relationship detected by Tsai was not statistically significant for the largest enterprises, which for Tsai were companies employing at least 500 workers.

**The Elasticity-Based Approach to Firm Innovation**

**Introduction to Modelling**

The model presented in this part is an original concept, which combines the factors discussed in the literature both within the Schumpeterian and know-how strand.

From the technical perspective, this model combines the approaches of Lee and Sung [2005] and Saha [2007] from the Schumpeterian strand, as well as Kamien, Muller and Zang [1992] and Kamien and Zang [2000] from the know-how strand.

Lee and Sung’s model [2005] has been enhanced in this paper with the ability to undertake R&D cooperation by companies operating in the relevant product market. In contrast to Lee and Sung’s model [2005], knowledge spillovers in the industry were treated as endogenous variables, i.e. explained within the model. Knowledge spillovers are modelled using a mathematical formula that is based on the work of Kamien, Muller and Zang [1992] and Kamien and Zang [2000]. Goods offered on the market are differentiated vertically, and firms via R&D activities can improve the quality of produced goods [cf. Saha, 2007].

**Assumptions of the Model**

Consider a duopoly market. The set of companies operating in the relevant product market is denoted as \( N = \{i, j\} \). Assume further that each firm belonging to the set \( N \) manufactures only one product. Goods offered on the market are vertically differentiated. The marginal cost of production (\( MC \)) for each company is constant and equal to the average cost of production. The entry of new firms to the industry is unprofitable.

The utility of a good for the consumer is a function of the price and quality of a good. The good’s quality is determined by the technology embodied by the good. Formally, we can write: \( U_i = U(p_i, A_i) \) where \( p_i \) means the price of the good produced by company \( i \), \( A_i \) the size of technology input embodied by the good produced by company \( i \), and \( U_i \) the buyer’s utility drawn from the consumption of the good produced by company \( i \). The utility function decreases with respect to the argument \( p_i \) and increases with respect to the argument \( A_i \).
Assume further that the technology production function is given as: \( A_i = A(X_i) \), where \( X_i \) is the effective\(^7\) value of company \( i \)'s spending on research and development [Kamien et al., 1992]. The technology production function is a power function\(^8\), continuous and differentiable. Suppose further that the first derivative of the technology production function is positive \( \left( \frac{dA_i}{dX_i} > 0 \right) \), while the second derivative is negative \( \left( \frac{d^2A_i}{dX_i^2} < 0 \right) \). Both the choice of power function and the assumption of diminishing marginal returns from effective spending on R&D are grounded in the empirical literature [cf. Scherer, 1980; Kamien and Schwartz, 1982; Baldwin and Scott, 1987; Griliches, 1998; Erickson, Bayus, 2001].

Effective expenditures (of the \( i \)-th company) on research and development are modelled as follows: \( X_i = x_i + (1 - \delta_i) \beta_j x_j \). This specification synthesizes the approaches of Kamien, Muller and Zang [1992] and Kamien and Zang [2000]. As in the paper by Kamien and others [1992], \( x_i \) is the value of the company \( i \)'s own spending on research and development. The parameter \( \beta \in [0,1] \) refers to knowledge spillovers between companies competing in the relevant product market. When company \( i \) cooperates with company \( j \) in R&D, \( \beta_j = 1^{19} \), otherwise \( \beta_j < 1^{20} \). Parameter \( \delta \in [0,1] \) denotes, as in the work of Kamien and Zang [2000], the degree of generality of the research carried out. For larger values of \( \delta_i \) company \( i \) conducts more specialized research. Thus, it will use the knowledge from rivals less. For larger values of \( \delta_i \) knowledge spillovers derived from rivals will therefore be smaller.

The model provides for the opportunity to establish R&D cooperation between companies operating in the relevant product market. Companies cooperating in R&D coordinate decisions on the R&D expenditures incurred. Effective expenditures on R&D for a cooperating company may be modelled as follows: \( X_i^C = x_i^C + (1 - \delta_i) \beta_j x_j^C \). In turn, effective spending on R&D for a non-cooperating company may be given as follows: \( X_i^N = x_i^N + (1 - \delta_i) \beta_j x_j^N \). For simplicity, in further analysis we consider the case of symmetrical\(^{23} \) R&D cooperation whereby the cooperating companies bear equal spendings on R&D \( (x_i^C = x_j^C) \).

Suppose finally that demand for the good produced by company \( i \) is described by the following function: \( Q_i = Q(U_i, U_j) \), where \( U_i \) is the consumer utility drawn from the consumption of the good produced by company \( i \), and \( U_j \) is the utility drawn from the consumption of the good produced by company \( i \)'s rival. The utility function increases with respect to the argument \( U_i \) and decreases with respect to the argument \( U_j \). Because the values of the utility function depend both on the argument \( p \) and \( A_i \), in the model we deal with simultaneous price and quality competition in the market of the final product.

A measure of the size of company in the model is the value of attained sales \( (S_i = p_i Q_i) \). The measure of firm innovation is, in turn, the corporate R&D intensity\(^{25} \). The R&D
intensity is the ratio of the company’s own spending on R&D to the value of company’s sales (total revenues). Only product innovations are considered.

**Model Construction**

Companies seek to maximize profits depending on the price of the product and the value of their own expenditures on R&D. Formally, the profit function of the $i$-th company ($\pi_i$) can be written in the following form:

$$\pi_i = p_i Q_i - MC_i Q_i - x_i. \quad (1)$$

The decision variables in the model are (i) the price of the product and (ii) the value of the company’s own expenditures on R&D.

From the condition of profit maximization with respect to the price of the good we obtain:

$$\frac{\partial \pi_i}{\partial p_i} = 0 \Rightarrow Q_i + (p_i - MC_i) \frac{\partial Q_i}{\partial p_i} = 0. \quad (2)$$

From the condition of profit maximization with respect to the company’s own expenditures on R&D we obtain:

$$\frac{\partial \pi_i}{\partial x_i} = 0 \Rightarrow -1 + (p_i - MC_i) \frac{\partial Q_i}{\partial x_i} = 0. \quad (3)$$

Note further that the elasticity of demand for the good produced by company $i$ with respect to the price of the good ($\epsilon^{Op}$) is equal to

$$\epsilon^{Op} = \frac{-p_i}{Q_i} \frac{\partial Q_i}{\partial p_i}. \quad (4)$$

Then

$$\frac{\partial Q_i}{\partial p_i} = \frac{-\epsilon^{Op} Q_i}{p_i}. \quad (5)$$

After substituting the fifth formula into the second formula we obtain the following:

$$S_i = (p_i - MC_i) \epsilon^{Op} Q_i. \quad (6)$$

Observe further that the elasticity of demand for the good produced by company $i$ with respect to the company’s own spending on R&D ($\epsilon^{Qx}$) is equal to

$$\epsilon^{Qx} = \frac{x_i}{Q_i} \frac{\partial Q_i}{\partial x_i}. \quad (7)$$
Then
\[
\frac{\partial Q_i}{\partial x_i} = \epsilon_{Qx} \frac{Q_i}{x_i}.
\] (8)

After substituting the eighth formula into the third formula we obtain the following:
\[
x_i = (p_i - MC_i) \epsilon_{Qx} Q_i.
\] (9)

Let us now determine the intensity of company i’s spending on R&D as a ratio of its own R&D expenditures to the value of attained sales. The company i’s R&D intensity is denoted as \( \alpha_i = \frac{x_i}{S_i} \). Note, on the basis of formulas (6) and (9), that corporate R&D intensity for the company maximizing its profits is
\[
\alpha_i = \frac{x_i}{S_i} = \frac{\epsilon_{Qx}}{\epsilon_{Qp}}.
\] (10)

Observe further that the elasticity of demand for the good produced by the i-th company with respect to its own spending on R&D is equal to
\[
\epsilon_{Qx} = \frac{x_i}{Q_i} \frac{\partial Q_i}{\partial x_i} = \frac{x_i}{Q_i} \frac{\partial Q_i}{\partial U_i} \frac{\partial U_i}{\partial A_i} \frac{\partial A_i}{\partial x_i} \frac{\partial x_i}{\partial x_i}.
\] (11)

Price elasticity of demand for the good produced by company i is in turn equal to
\[
\epsilon_{Qp} = -\frac{p_i}{Q_i} \frac{\partial Q_i}{\partial p_i} = -\frac{p_i}{Q_i} \frac{\partial Q_i}{\partial U_i} \frac{\partial U_i}{\partial p_i}.
\] (12)

Let us next define the elasticity of demand for the good produced by company i with respect to the utility drawn from the consumption of the good produced by this company:
\[
\epsilon_{QU} = \frac{U_i}{Q_i} \frac{\partial Q_i}{\partial U_i}.
\] (13)

By
\[
\theta_i^q = \frac{A_i}{U_i} \frac{\partial U_i}{\partial A_i}
\] (14)

we further denote elasticity of the utility drawn from the consumption of the good produced by company i with respect to the size of the technology input embodied by the good. The parameter \( \theta_i^q \) indicates the sensitivity of consumer preferences with respect to the quality of the good. The higher the value of the parameter \( \theta_i^q \), the greater importance consumers give to the quality of the good. By
\[ \theta^p_i = -\frac{p_i}{U_i} \frac{\partial U_i}{\partial p_i} \]  

(15)

we further denote elasticity of the utility drawn from the consumption of the good produced by company \( i \) with respect to the price of the good. The parameter \( \theta^p_i \) indicates the sensitivity of consumer preferences with respect to the price of the good. The higher the value of the parameter \( \theta^p_i \), the greater importance consumers give to the price of the good. Furthermore, note that the ratio \( \theta_i = \frac{\theta^q_i}{\theta^p_i} \) simultaneously describes consumer preferences towards the quality and price of the good on the relevant product market.

Let

\[ a_i = \frac{X_i}{A_i} \frac{dA_i}{dX_i} \]  

(16)

be technological competence \(^{27}\) [cf. Lee and Sung, 2005; Knudsen, 2005] of company \( i \). Companies for which \( a_i \) achieves a higher value have more competence in technology creation than companies for which \( a_i \) has a lower value.

By

\[ \phi_i = \frac{x_i}{X_i} \frac{\partial X_i}{\partial x_i} \]  

(17)

we finally denote the elasticity of company \( i \)’s effective spending on R&D with respect to its own expenditures on R&D. When incoming spillovers are equal to zero, \( x_i = X_i \)\(^{28}\). Eventually, using the formulas (11)–(17) and substituting them into equation (10), we obtain the following:

\[ \alpha_i = a_i \theta_i \phi_i. \]  

(18)

Interpreting relationship (18), we can conclude that corporate R&D intensity (as a measure of firm innovation) for a company maximizing its profits is fully determined by three factors:

- the company’s technological competence (\( a_i \), supply-side factor),
- consumer preferences towards quality and price of goods (\( \theta_i \), demand-side factor),
- the moderating factor (\( \phi_i \)), which refers to the knowledge spillovers between companies competing in the industry.

Since these factors are expressed in the form of elasticities, the model will hereafter be referred to as the elasticity-based model of firm innovation. It is worth noting that it is both a technology-push and demand-pull concept. The factors \( a_i \) (supply-side) and \( \theta_i \) (demand-side) should be considered primary, because they constitute the two sides of the market mechanism. The factor \( \phi_i \), associated with knowledge spillovers in the industry, moderates the impact of the primary factors on corporate R&D intensity.
At this point it is also worth emphasizing the complementarity of the factors in expression (18). Note that these factors are mutually reinforcing or weakening. For example, a deficiency in one factor reduces a company’s R&D intensity in a multiplicative manner, and consequently, in the light of the proposed model, negatively impacts on the product innovations developed by the firm.

The importance of the complementarity of factors in modern microeconomic modelling is accurately covered by Garbicz [2005, p. 20]: In many modern fields of production the key to success is the reliability of all factors of production. A symphony orchestra consisting almost wholly of virtuosos will note a dramatic artistic failure if just one of the musicians misplays a note. Standard economics assumes wide possibilities of substitution between factors, while economic realities rather make us think in terms of complementarity, as if the weakest link were decisive. Quality cannot, significantly, be substituted by quantity.

**Horizontal R&D Cooperation in the Framework of the Elasticity-Based Model of Firm Innovation**

In this section the horizontal cooperation between companies in R&D is analyzed. According to the classification of the forms of R&D cooperation proposed by Kamien and others [1992] companies cooperating horizontally in R&D coordinate decisions on the values of the R&D expenditures (cooperation in the research phase), but at the same time compete in the final product market after introducing the invention (competition in the innovation phase).

In this paper, we consider symmetric R&D cooperation, where participants bear equal values of expenditures on R&D. Therefore, in the case of R&D cooperation, we obtain the following: $\frac{\partial X^c_i}{\partial x^c_i} = 1 + (1 - \delta_i)$. When companies do not cooperate, the value of the corresponding derivative is equal to: $\frac{\partial X^N_i}{\partial x^N_i} = 1$.

In this section, attention will be focused on analysing the R&D intensity of an enterprise. In fact, two scenarios are considered, i.e. (i) the case in which company $i$ does not establish R&D cooperation with company $j$ (the R&D rivalry variant); and (ii) the case in which cooperation in R&D has occurred.

**R&D Rivalry**

Note that based on equation (18), the R&D intensity of company (maximizing its profit) that is in R&D competition can be written as follows:

$$\alpha^N_i = a_i \theta_i \frac{x^N_i}{x^N_i + (1 - \delta_i) \beta_j x^N_j}. \quad (19)$$
The Elasticity-Based Approach to Enterprise Innovation

The first two factors of the product on the right hand side of equation (19) are written without superscripts because under the assumptions of the model these elasticities are constant\(^3\). Let us further develop equation (19) in the following form:

\[
\frac{x_i^N}{S_i^N} = a_i \theta_i \frac{x_i^N}{x_i^N + (1 - \delta_i) \beta_j x_j^N}.
\] (20)

After simple algebraic transformations we get the value of the R&D intensity of company (maximizing its profit) that applies R&D rivalry strategy:

\[
\alpha_i^N = a_i \theta_i - \frac{(1 - \delta_i) \beta_j x_j^N}{S_i^N}.
\] (21)

Now let us compare this result with the result in a situation of cooperation in R&D.

R&D Cooperation

Note that based on equation (18), the R&D intensity of a company (maximizing its profit) that is in R&D cooperation can be written as follows:

\[
\alpha_i^C = a_i \theta_i \frac{x_i^C}{x_i^C + (1 - \delta_i) x_j^C}(1 + (1 - \delta_i)).
\] (22)

After simple algebraic transformations we get the value of the R&D intensity of company (maximizing its profit) that applies R&D cooperation strategy:

\[
\alpha_i^C = a_i \theta_i.
\] (23)

If we compare expressions (21) and (23), we see that the discussed intensities differ by the component:

\[
\frac{(1 - \delta_i) \beta_j x_j^N}{S_i^N}.
\] (24)

The proposition. \(\alpha_i^C \geq \alpha_i^N\). A profit-maximizing company cooperating horizontally in R&D attains a higher or equal\(^3\) level of R&D intensity than under R&D competition.

The value of expression (24) can be considered as the size of the free-rider problem, which occurs in the innovative activity of enterprises. Enterprises in the presence of knowledge spillovers in the industry limit the values of their expenditures on research and development. This is because the knowledge produced by the \(i\)-th company penetrates to rivals\(^3\), raising the levels of their profits as a result (therefore, the competitors of the \(i\)-th company become free-riders). The component (24) in the majority of cases is negative\(^3\), leading to private underinvestment in innovation.
It is worth stressing the clear conflict between the public and the private interests in terms of knowledge spillovers. From a public point of view, knowledge spillovers in an industry are a desirable phenomenon as they contribute to the diffusion of knowledge in a society [cf. Wölfli, 1998; Arrow, 1962; Romer, 1986]. From the private standpoint (maximizing profits perspective) however, knowledge spillovers in an industry may be viewed negatively as unintentional transfers that benefit rivals of the company. Drawing on a presented model, we see that R&D competition could lead to lower levels of corporate investments in R&D (especially, in relation to socially desirable levels [Peneder, 2008]). This is the welfare economics argument for cooperation between enterprises in the field of R&D.

As shown in the model, horizontal R&D cooperation can be an effective solution to the free-rider problem occurring in the innovative activity of enterprises. R&D cooperation alleviates the adverse impact of knowledge spillovers in the industry on the degree of innovation in enterprises. Cooperation in the field of R&D contributes to the internalization of the negative externality that arises as a result of imperfect knowledge absorption and control by companies creating know-how. In our simple model of a duopoly, the full internalization of the negative externality is shown since the free-rider problem is here completely eliminated (component 24 disappears).

Equation (23) shows that corporate R&D intensity in case of cooperation is determined only by basic factors (economic fundamentals), there are no “confounding” factors here associated with imperfect knowledge absorption by the company producing it. In business practice we must, however, reckon with the fact that horizontal R&D cooperation will not remove the free-rider problem, but rather will reduce it. But still, horizontal R&D cooperation may be regarded as a complementary method with regard to the traditional (standard) solutions (patent protection and government research subsidies) of alleviating the negative impact of knowledge spillovers in the industry on firms’ innovation activities. It is also worth noting here that the cooperation mechanism being discussed is a purely market phenomenon and does not require such a significant involvement of the government, as is the case with patent protection or a research subsidy scheme.

**Conclusions**

Microeconomic research on firm innovation can be found in the literature of industrial organization (see e.g. [Belleflamme, Peitz, 2010]). Existing models, belonging to the dominant know-how strand of IO literature, take account of the following factors in company innovation: the company’s R&D strategy, knowledge spillovers in industry, the absorptive capacity of a company, and the degree of generality of the research conducted by a company. In this paper, these models have been enhanced by factors specific to the Schumpeterian
strand of research on innovation, i.e. the size of the enterprise, productivity of the corporate spending on R&D, and consumer preferences towards the quality and the price of goods manufactured by the company.

The model presented here is a formal description of the above-mentioned innovation factors and the relationships between these factors. Specifically, it was shown that the corporate R&D intensity (as a measure of firm innovation) for a company maximizing profits is fully determined by: the company’s technological competence (supply-side factor), consumer preferences towards quality and price of goods (demand-side factor), as well as a moderating factor, which refers to knowledge spillovers between competing companies. Supply-side and demand-side factors should be considered primary, because they constitute the two sides of the efficient market mechanism. The factor associated with knowledge spillovers in the industry moderates the impact of the primary factors on the firm’s R&D intensity.

In the theoretical framework presented, it was shown how cooperation between companies in R&D helps solve the free-rider problem, which occurs in the innovative activity of enterprises. It is also postulated that horizontal R&D cooperation may be regarded as a complementary method with regard to the standard solutions (patent protection and government research subsidies) for alleviating the negative impact of knowledge spillovers in the industry on company innovation activities.

Notes

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2. The size of a firm can be measured by the number of employees, the value of sales of goods, and the value of business assets [Morck, Yeung, 2000].
3. We speak of presence of knowledge spillovers in an industry when part of the knowledge generated by company $i$ is shared by company $j$, while only company $i$ incurred the costs of creating that knowledge.
4. Knowledge within the meaning of know-how, which is a specific technical knowledge that enables a particular good to be produced.
5. Improve the quality of the good.
6. These efforts are measured by the value of enterprise spend on a given kind of innovation activity.
7. This ability is operationalized later in the paper.
8. Each company in an industry spends more money on R&D in conditions of R&D cooperation than in a R&D competition.
9. They exceed the critical value equal to 1/2 in the d’Aspremont and Jacquemin model [1988].
10. The ability to absorb knowledge produced by other companies.
11. R&D generality.
12. $\delta \in [0,1]$.
13. Based on a representative sample of the population of Taiwanese industrial companies.
For consumers goods are associated with different values of the utility function. The technology embodiment theory was proposed by Lee and Sung [2005]. According to these researchers, the quality of a good depends on the technological effort that was used in the production of that good. Technologies used in the production process are in some sense "embodied" by the final product. Improving the quality of existing products using technological effort leads to product innovations. The function $U$ is continuous and differentiable. In the presence of knowledge spillovers in an industry a distinction should be made between knowledge derived solely from a company's own R&D work (own research) and the total knowledge acquired by the company (also taking into account the knowledge coming from spillovers in the industry). The first category is called, in brief, own knowledge, and the latter effective knowledge. $X_i$ is then a function of the own level of expenditures on R&D ($x_i$) and the sums from incoming knowledge spillovers ($\sum_{j \neq i} x_j$). The particular case of the Cobb-Douglas function for one production factor. Company $j$ perfectly shares its knowledge (know-how) with company $i$. The value of $\beta$ depends, among others, on the distance between the laboratories of enterprises $i$ and $j$. The superscript C stands for the cooperation. The superscript N stands for the lack of cooperation (non-cooperation), i.e. competition in R&D. Such a treatment is used, among others, in the papers of d'Aspremont and Jacquemin [1988] and Kamien and others [1992]. The function $Q$ is continuous and differentiable. Corporate R&D intensity is one of the relative (referring to the size of the company) measures of firm innovation. Researchers working in the field of industrial organization take the following as measures of firm innovation [Tirole, 1988]: (1) the absolute or relative value of the enterprise's R&D spend (input measure), (2) the number of patents granted to the company (output measure) or (3) the number of innovations introduced by the company to the marketplace (output measure). For Polish literature on firm innovation, see e.g. Janasz and others [2002] or Janasz and Kozioł [2007]. To simplify further analysis, we assume that consumer preferences towards good quality and price are fixed. A similar procedure was applied e.g. in the model developed by Lee and Sung [2005]. The capacity to create technologies [see e.g. Lee and Sung, 2005]. This case excludes knowledge spillovers from further analysis. It is so purely theoretical that it oversimplifies the inquiry on the issues of enterprise innovation. Horizontal R&D cooperation is defined as sharing knowledge (know-how) by enterprises competing with each other on a given product market, and at the same time coordinating decisions about the values of expenditures on research and development [Kamien et al., 1992; Becker, Dietz, 2004; Belderbos et al., 2004a; 2004b]. According to Kamien, Muller and Zang [1992] companies in horizontal R&D cooperation coordinate decisions about the value of R&D expenditures (research stage), but at the same time compete on the final product market after the invention is implemented (innovation stage). Many authors emphasize that horizontal R&D cooperation brings enterprises many benefits [Camagni, 1993; Robertson, Langlois, 1995; Becker, Peters, 1998; Becker, Dietz, 2004]. These include: access to the rival's resources, specialization and economies of scale in research and development, reducing the uncertainties associated with the creation of innovation, as well as shortening the duration of the development period (a chance for faster introduction of the invention on the market). The constant value $a_i$ is due to the mathematical properties of the power function, which is a particular case of the Cobb-Douglas function. The elasticity of the power function with respect to the argument is constant. Component (24) is equal to zero when $\delta = 1$ (the case of extreme research specialization) or $\beta = 0$ (no physical conditions for the formation of knowledge spillovers) or $x_j^N = 0$ (the rival does not conduct R&D activities). These cases are, however, purely theoretical and of little interest from the perspective of business practice and empirical verification of the model. Without financial compensation.
In a very specific case it may be zero. Due to the larger number of companies competing in the market, a greater number of products, or other aspects of the market reality not included in the model.

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Abstract

The purpose of this study is to identify key factors related to network capabilities that enhance the performance of Chinese, Turkish and German firms. Chinese ($n = 107$), Turkish ($n = 129$) and German ($n = 109$) MBA-students completed a questionnaire, based on an earlier version developed by Kenny [2009], which included questions on the respective firm, its performance and network capabilities. The predictors of firm performance varied by country: in China “information sharing” and “trust” were important, in Turkey “network coordination” and in Germany “human capital resources.” In addition, each country had its own specific drivers of firm performance. The findings of this paper should enhance understanding of the cross-cultural differences and assist managers when planning to join foreign corporations.
Keywords: culture, firm performance, Hofstede dimensions, networks, network capabilities, organizational culture

JEL: M2, F2

Introduction

For some time now there has been an increased interest in the link between networks and firm performance. Nohria and Eccles [1992] trace this interest to three important reasons: the first is the occurrence of the concept of “New Competition” [Best, 1990 cited in Kenny, 2009, p. 73], i.e. the competitive emergence of small firms in some regions of the USA, Europe and Japan in the 1970s and 80s. These firms no longer displayed a hierarchical structure instead they used a network based one. A second reason is the advance of technology, which has enabled new and flexible ways of production and new organizational forms. Furthermore, technological developments changed the nature of transactions between firms [Kenny, 2009, p. 73]. The third reason is the research progress on network structures.

Recent research has demonstrated that through networks, firms can acquire resources and enhance their performance [Chen, Chen, 1998; Gao, 2011; Madhavan, Iriyama, 2009; Sharma & Majkgard, 1998; Sharma, Blomstermo, 2003]. Stam et al. [2014] suggest that networks ease the identification of opportunities [cited in Chimucheka, 2013, p. 93]. According to this view, firm behavior depends on a network of organizational and personal relationships [Axelsson, Easton, 1992]. On the organizational level, members of a network can be buyers and suppliers and, on a personal level, they can involve family, friends and acquaintances [Peppard, Rylander, 2006, p. 7]. The rationale for these relationships is to optimize processes [Zajac, Olsen, 1993 cited in Kenny, 2009, p. 141], since networks reduce uncertainties, act in a supportive manner [Ge et al., 2009, p. 224], and offer competitive advantages. In addition, firms may form strategic partnerships with market competitors to gain access to additional resources, share risks and costs, and benefit from new skills [Mu et al., 2007, p. 83]. The relationship established between different actors affects strategic decisions and leads to an exchange of resources between members of a network, provided that a company is capable and willing to utilize relationships [Walter et al., 2006, p. 21].

It has been argued that the profitable international use of resources provides competitive advantages. This is based on the assumption that international firms possess a resource base and a resource combination superior to those of local firms [Oesterle, Richta, 2008, p. 5]. Networks are considered a key element in the internationalization of firms [Balboni et al., 2014, p. 23]. Accordingly, Gray [1994] concluded in his study of New Zealand firms that one of the greatest perceived barriers to internationalization is a lack of business networks [Chetty, Blankenburg, Holm, 2000, p. 334].
In the current study, we examine which factors of inter-organizational and inter-personal network capabilities are associated with the performance of firms in China, Turkey and Germany. To do so we consider variables of both formal and informal networks, since inter-organizational network characteristics are important in order to obtain unique capabilities, and interpersonal network factors are also essential for accessing network resources.

While a number of studies [Bengesi, Le Roux, 2014; Kenny, 2009; Mitrega et al., 2011] have investigated the link between network capabilities and firm performance, this link has been under-researched within a comparative international context. In this study, we compare China’s business environment following the reforms after 1978, which led to the resurgence of private businesses [Tsai, 2006] with the corporate environments of another collectivist society (Turkey) and an individualist society (Germany).

The culture of each nation displays the values and beliefs of people [Hofstede, 1980] who share a common understanding. It also influences the corporate environment [Bloch, Walter, 2012, p. 3] since cultural values are transported into the corporate frame. Lachman et al. [1994] suggest that the organizational structures of firms are shaped by culture. Similarly, Shane [1993] argues that culture has an effect on the activities of entrepreneurs [cited in Reis et al., 2011, p. 7].

Hofstede [1980, p. 11] has compared several countries in four major cultural value dimensions; namely, power distance, individualism, masculinity, and uncertainty avoidance. A high power distance indicates acceptance of inequality in the distribution of power. A high score on individualism shows less interdependence between members of a society. Scoring highly on masculinity indicates increased competition as a driver of society. A high degree of uncertainty avoidance, signals favoring a secure environment [Hofstede, 2011, p. 8].

The findings of the GLOBE study, which collected data from some 17,300 middle managers of 951 organizations in 62 countries, showed that Turkish society is characterized by high levels of in-group collectivism [Kabasakal, Bodur, 2004]. This explains the domination of family members, rather than professionals, in the management of several firms. Turkish people are committed to their networks, which consist of close interdependent relationships. The same holds true for China. Hofstede [2005, p. 75] states the “we” is more important than the “I” in collectivist societies.

In emerging economies social networks can compensate for institutional drawbacks – as is shown by the importance of “guanxi” (personal relationships) in China [Estrin et al., 2006]. Networks of Asian firms are largely based on ethnic and cultural foundations brought by entrepreneurs into the business environment. Redding [1996] describes firms within emerging economies as weak organizations linked by strong networks.

In developed countries the importance of networks is being increasingly recognized, particularly with respect to the internationalization of firms [Johanson, Vahlne, 2006]. However, the focus in developed countries is more on formal business relationships or social connections within a formal structure of business networks [Zhou et al., 2007].
Based on the Hofstede dimensions we expect some differences in factors related to firm performance between the three countries under consideration.

Network Capability: The Key to Increased Firm Performance

Ritter and Gemünden [2003] define network capabilities as the ability of a firm to initiate relationships with other firms and benefit from them [cited in Balboni et al., 2014, p. 26]. The ability to draw the best out of a network depends on “network characteristics”, “network operation” and “network resources”. Each pillar is in turn made of other dimensions. Table 1 provides the definitions of the constructs.

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<th>Constructs’ definitions</th>
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<td>Network capabilities</td>
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<td><em>Tie strength</em></td>
</tr>
<tr>
<td><em>Relational capability</em></td>
</tr>
<tr>
<td><em>Trust</em></td>
</tr>
</tbody>
</table>

Source: own elaboration.
Network Characteristics

According to Kenny [2009] “network characteristics” consist of three dimensions, namely “tie strength,” “relational capability,” and “trust”.

Tie Strength – The Nature of Relationships

Tie strength focuses on the nature of relationships between firms within the network and determines their relationship [Granovetter, 1973, cited in Kenny, 2009, p. 144]. Strong and weak ties can be differentiated with respect to the frequency of interaction, the resources applied and the nature of the relationship [Mu et al., 2007, p. 83]. “Contractor and Loranges [1988] categorize equity alliances, joint ventures, and non-equity cooperative (R and D) ventures as strong ties and define marketing agreements, licensing and patent agreements as weak ties” [cited in Kenny, 2009, p. 147].

While a firm is likely to have a mix of strong and weak ties, when a subsidiary is engaged in a network of relationships with multiple local players, it is likely to develop strong relationships with some and weaker relationships with others [Kenny, 2009, p. 144]. Research suggests that the ties in inter-organizational networks are not only of a cooperative nature. According to the “structural hole theory” some individuals who can be characterized as “network brokers” reside within a network of disconnected contacts so as to improve their own position through access to diverse and timely information, as well as control over others [Ma et al., 2009, p. 1089]. Nonetheless, strong and weak ties are essential for a variety of reasons.

It has been suggested that strong ties are less helpful in collecting new information and insights because firms connected through strong ties have similarities in goals and intentions and are likely to possess the same information [Burt, 2000; Granovetter, 1973]. Cantner et al. [2009, p. 2] argue that cooperation within strong ties leads, on the one hand, to a strengthened mutual understanding and, on the other hand, to a decreased exchange of new knowledge. Besides, strong ties often require reciprocal acts between alliances, which in turn can delay project completions [Walter, 2005, p. 41]. In contrast, weak ties are more likely to provide new information [Granovetter, 1973; Rowley et al., 2000, cited in Walter, 2005, p. 41] and to make network partners aware of existing, valuable knowledge [Mu et al., 2007, p. 83].

Other studies indicate that strong ties ease the transfer of complex knowledge and facilitate trust among partners [Mu et al., 2007, p. 83]. It is believed that strong ties reduce uncertainty in interactions since the parties trust each other and reveal information about goals and intentions [Bstieler, Hemmert, 2008, p. 76]. Trust among parties fosters knowledge exchange [Bstieler, Hemmert 2008, p. 77] and the willingness to provide needed resources [Batjargal, 2003; cited in Stam et al., 2014, p. 154]. Our first set of hypotheses assumes that:

H1a: Strong ties predict firm performance
H1b: Weak ties predict firm performance
H1c: The relationship between strong ties and firm performance is stronger than the relationship between weak ties and firm performance

Relational Capability – Interactions for Common Benefit

The second variable of network characteristics refers to interactions between firms that can affect development of relationships [McGrath, O’Toole, 2013, p. 1143] and be beneficial for the network partners [Dyer, Singh, 1998 cited in Mitrega et al., 2011, p. 7].

Cantner et al. [2009, p. 6] argue that developing and maintaining relationships can be counterproductive because of the required investment in time. Nonetheless, there is evidence that positive relational skills are the basis of long lasting relationships between firms, which in turn increases competitive advantages for the related firms and thus leads to enhanced performance [Teece, 2007]. Rodríguez-Díaz and Espino-Rodríguez [2006] found that interactions with business partners can provide firms with competitive advantages. These results are consistent with those of Smirnova et al. [2011] who suggest that the existence of relational capabilities enhances competitive advantages of firms [cited in Kenny, 2009, p. 151]. Similarly, the findings of Dyer and Singh [1998] indicate that relational capabilities and firm performance are significantly and positively related, i.e. a score increase in relational capability leads to increased firm performance [cited in Zohdi et al., 2013, p. 594].

Additionally, findings show that informal interactions can support information gathering and minimize transaction costs [Gulati et al., 2000, p. 209–210]. The information collected can improve decision-making and decrease risk [Bulkley, Van Alstyne, 2004, p. 152], thus enhancing firm performance. Therefore, the development of both inter-organizational and inter-personal relationships has been taken into account.

China and Germany are characterized by masculinity (66 both) and long-term orientation (87 and 83 respectively). “Masculinity” displays competitiveness on the organizational level and a high value of professional identity. Relational capability could be essential in firm performance and growth in masculine societies. In addition, Germany scores high on individualism (67) and therefore it is plausible that loose and formal interactions are more important [Hofstede, 1980] for firm performance in that country:

H2a: The relational capability of a firm is positively related to firm performance in China and Germany

Chinese and Turkish societies are collectivist (individualism scores: 20 and 37 respectively). “Guanxi,” which is important for China, is based on mutual trust [Gong, Suzuki, 2013, p. 376]. Asian networks act in a cooperative manner and favor informal interactions. Triandis [2001] supports this notion and states that in collectivist societies, people are more concerned with the development of informal relationships. Therefore we assume that:

H2b: The informal relational capability of a firm influences firm performance in China and Turkey positively
Gains through Trust Relationships

The third dimension of networks characteristics considers the trust on which contractual arrangements are based [Lewis, Weigert, 1985]. The “image / reputation” of an organization and the “image of a person” have been identified as essential sources of trust, while their importance can vary within formal and informal networks.

The findings of Aulakh et al. [1996] and Wincent [2005] suggest no correlation between trust and performance [cited in Kenny, 2009, p. 247–248]. Nevertheless, various studies have shown that trust can be viewed as a prerequisite for the accumulation of knowledge, since the transfer of knowledge can only take place within a trustful relationship [Grabher, 1993]. Mutual trust is associated with increased sales as it leads to intensive innovation activities and higher labor productivity. Furthermore, firms with trustful relationships are characterized by larger investments. These findings can be attributed to the fact that trust between partners facilitates reduced transaction costs, enhances learning, and facilitates improvement [Berulava, 2013, p. 16]. Therefore, trust between network partners should positively affect performance within collectivist societies. In addition, and since high individualism correlates with innovation capability which is fostered through trust [Ghemawat, Reiche, 2011, p. 9] we assume that:

H3a: Trust between network partners increases firm performance in China, Turkey and Germany

Trust within informal networks can ease the collection of information. These informal networks seem to be guided by friendships and good relationships with colleagues, customers etc. [Coulthard, Loos, 2007, p. 7] and could be related to the “collectivist” dimension: H3b: Trust between partners of an informal network leads to increased firm performance in China and Turkey

Network Operation

Initiation of Business Relationships

The initiation of business relationships begins with sensing the chances of forming alliances with others [Kenny, 2009, p. 155] and “ends after the first ‘business agreement’ with a customer or supplier” [Mitrega et al., 2012, p. 741]. At this stage, information on potential partners is collected in order to make a promising selection. The selection of the right partners is of great importance because it is anticipated that partners will contribute to the growth of the firm with their own resources and competencies [Mitrega, Pfajfar, 2015].

The initiation of relationships with other parties is particularly important for new firms [Ozcan, Eisenhardt, 2009; Zheng et al., 2009] and draws on the premise that in order to build relationships between firms, investments have to be made [Ritter, Gemünden, 2003]. Such investments include visits to exhibitions, memberships in industrial associations and the use of information for potential cooperation provided by existing partners [Kenny, 2009, p. 154].
Typically, German firms are concerned with results and processes which are based on logic [King, Zhang, 2014, p. 7], which, combined with the high scores on “masculinity” and “long term orientation” in China and Germany leads to our next hypothesis: 

**H4a: Network initiation is a predictor of firm performance in China and Germany**

**Coordination for Maximum Gain**

The existence of networks makes strategic and coordinative planning a necessity. Barney and Arika [2005] suggest that firm resources must be coordinated to achieve maximum benefits [cited in Bengensi, La Roux, 2014]. Only through sufficient resource coordination can the full potential be developed efficiently. According to Barney [1991] such coordination has to be unique so that other firms cannot imitate it. Bell, McNaughton and Young [2001] argue that to coordinate such actions a network that integrates partners is inevitable. This integration enables the development of strategies and transfer of knowledge between business partners.

It seems reasonable that a firm involved in coordination activities across a network will more likely have access to resources viewed as valuable. Bonner et al. [2005] suggest that a firm possessing valuable resources becomes desirable for its business partners, which in turn enhances firm performance [cited in Kenny, 2009, p. 157]. Mohr and Spekman [1994, p. 138] state that increased coordination ensures timely completion of processes, smoother production and the achievement of mutual advantages [cited in Kenny, 2009, p. 156].

We anticipate that the “masculinity” of the Chinese and German societies is linked to network coordination, which enhances firm performance. In addition, Turkey and Germany score high on “uncertainty avoidance” (85 and 65 respectively) which shows that management in the corporate culture of these countries is task-oriented, does not take risky decisions, and relies on regulations. Therefore, the coordination of a network in these countries could be associated with firm performance:

**H5a: Network coordination is positively related to firm performance in China, Turkey and Germany**

**Learning for Success**

Learning has been conceptualized as the ability of companies to acquire knowledge from their network partners. Although some studies [e.g. Bonner et al., 2005] did not find a correlation between learning and firm performance [cited in Kenny, 2009, p. 252], others [e.g. Ellinger et al., 2002] support the notion of a positive relationship. Sinkula, Baker and Noordewier [1997] suggest a direct and indirect influence of organizational learning on firm performance. The indirect effect is based on the generation and dissemination of market information [Sinkula et al., 1997, p. 307, cited in Kocoglu, 2011, p. 78].

Knowledge facilitated through networks can be important in reducing perceived uncertainties [Huggins, 2010, p. 336] as firms which use the opportunity to effectively learn
from their network partners are able to efficiently select and manage network activities. This efficiency leads to desired performance outcomes [Baxter, Woodside, 2011, p. 252]. In Turkey and Germany, which score high on “uncertainty avoidance”, “learning” presents a secure strategy:

\[ H6a: \text{Network learning has a positive effect on firm performance in Turkey and Germany} \]

**Network Resources**

**Network Human Capital Resources – Investing for Gaining Added Value**

According to Sullivan and Sheffrin [2003] human capital is the entirety of competencies, knowledge and attributes of individuals used, to produce economic value [cited in Marimuthu et al., 2009, p. 266]. Firms invest in human capital because they expect increased financial benefits, which result from increased productivity relative to wages [ Texeira, 2002, p. 17]. This implies that employees are educated and trained [Marimuthu et al., 2009, p. 266]. Firms which invest in human capital can be expected to improve their performance.

Countries that display high scores on “power distance” tend to select their employees depending on social class and train them on the basis of conformity and compliance with corporate rules and practices [Ghemawat, Reiche, 2011, p. 9]. By contrast, in countries scoring low on the “power distance” dimension like Germany (35) the corporate environment displays more equality between managers and employees and the education of employees is based on autonomy. These factors could foster the willingness of management to educate and train its employees in order to achieve improved firm performance:

\[ H7a: A \text{firm’s network of human capital resources correlates with increased firm performance in Germany} \]

**Synergy Sensitive Resources – Benefit of Partner’s Resources**

Entrepreneurs form alliances with firms that can complement their own resources. Complementarity is achieved if the resources of business partners are not similar [Kenny, 2009, p. 162]. Being a member of a business network allows a firm to concentrate on competencies for which a specialization is given and to outsource other activities to business partners. A firm with a network orientation can benefit from the complementary resources of its partners and at the same time keep its internal unique resources, which will enable the firm to achieve its internal strategic goals [Overby, Min, 2001 cited in Kenny, 2009, p. 162].

Because of the long-term orientation of China and Germany, these countries may often seek complementary resources as a strategy that will provide future benefits:

\[ H8a: \text{Synergy sensitive resources within a network predict firm performance in China and Germany} \]
**Information Sharing – Overcoming Boundaries**

While some studies suggest that technological and financial resources are essential for information sharing, others consider the nature of relationships, trust etc. as more important. The transfer of knowledge between alliances is not always unhindered [cited in Li and Lin, 2006]. One reason for this was identified by Abrahamson and Rosenkopf [1993] who claim that firms are often unwilling to share information.

Krause et al. [2007] found no evidence for a relationship between information sharing and firm performance [cited in Li, Sheu, 2015, p. 1454]. Similarly, the study of Rashed et al., [2010, p. 74] found that information has no effect on firm performance. This could be attributed to the fact that some firms cannot transform the exchange of information into a competitive advantage.

By contrast, the results of Sheu and Li [2015] indicate that information sharing has an impact on firm performance in China. Zhou and Benton [2007] also found further empirical support for the positive relationship between information sharing and firm performance [cited in Li, Sheu, 2015, p. 1454].

The findings of Li and Lin [2006] show that trust influences information sharing [cited in Li, Sheu, 2015, p. 1441]. These finding are also confirmed by Li and Sheu [2015]. Since it has been previously hypothesized that trust is an important predictor of firm performance in all three cultures, it is also assumed that information sharing will be equally important. Besides, the collectivism of China and Turkey will enhance cooperation and, in this case, information sharing. On the other hand, according to Thompson, [2012, p. 275] in individualistic countries like Germany direct and explicit information exchange, i.e. information sharing, is considered a reliable communication strategy. Therefore, we assume that:

**H9a: Information sharing within a network has a positive effect on firm performance in China, Germany and Turkey**

**Methods**

**Sample**

The data collection took place in China, Turkey and Germany. Chinese (n = 107), Turkish (n = 129) and German (n = 109) MBA-students working in the middle management of corporations of their respective countries participated in the survey. The MBA-students were primarily responsible for reaching the goals set by top management. They were involved in the daily business of the companies and possessed the relevant insights needed to provide information on the performance of their organizations.

The participants were working in the following sectors: production, electricity, the construction industry, logistics, telecommunications, the retail trade, commercial services,
financial services, entertainment, social services, pharmaceuticals, the chemical industry, and others. The Chinese respondents were mainly working in financial services (21.36%), “other sectors” (20.39%) and production (16.50%); 25% of the Turkish participants were working in “other sectors”, 14.06% in the production industry, 11.72% in telecommunications and 11.72% in pharmaceuticals. In Germany 36.06% of the participants were working in the entertainment industry and 14.29% in retail trade. The firms displayed a differing degree of internationalization.

We selected the participants through convenience sampling based on availability. The SD for gender was.502 in China,.531 in Turkey and.484 in Germany. The mean age of the Chinese sample was $M_{age} = 28.29 \ (SD = 3.95)$, of the Turkish sample $M_{age} = 30.94 \ (SD = 5.61)$ and of the German sample $M_{age} = 31.00 \ (SD = 7.64)$.

Measures

Our questionnaire relied on an earlier version developed by Kenny [2009] and included questions about the respective firm, its performance and the network capabilities (see Appendix). Based on the literature, Kenny [2009] selected relevant issues that fit the conceptual model and chose a seven point interval measurement scale to reflect the multidimensionality of the constructs.

We reduced the number of considered dimensions. Items that reflect single measurements without additive indices, and those which concern possible usages of networking cooperation like conferences, online social media etc. have been excluded. However, items that measure the importance of informal and formal aspects of networks have been added.


The dependent variable was reported business performance. Firm performance has been operationalized as performance in the markets (sales), financial performance (return of investment), and customer satisfaction.

The information on internationalization of firms was based on self-reports. The question was: “How international is your firm?” (International sales in % of the total sales – Please rate: 0%, 1–10%, 11–20%, 21–30%, 31–40%, 41–50%, 51–60%, 61–70%, 70+%).

The questionnaire was translated in Chinese, German and Turkish. The data collection was conducted in group-sessions of 5 to 10 students at different universities of the respective countries. Participants filled out the questionnaires without being disturbed.
Statistical Analysis

For the data analysis, SPSS, version 19 was used. We conducted a hierarchical multiple regression analysis to find out which network capability factors impacted firm performance. In addition, we carried out a principal component analysis to determine whether the structure of relevant factors can be found in all three cultural settings, to assure there is no bias.

Results

The data were tested with respect to collinearity and no multicollinearity was evident in the three countries. In addition, the data met the assumption of independent errors in all three cases (Durbin-Watson value China = 2.04; Durbin-Watson value Turkey = 1.67; Durbin-Watson value Germany = 2.27). The histogram indicated that all data contained normally distributed errors. The same was shown by the P-P plot of standardised residuals.

The hierarchical multiple regression for the Chinese data shows that “information sharing” significantly predicts “firm performance” \( \beta = .48, t(70) = 4.55, p < .001 \).

<table>
<thead>
<tr>
<th>Variable</th>
<th>( B )</th>
<th>SE ( B )</th>
<th>( \beta )</th>
<th>( t )</th>
</tr>
</thead>
<tbody>
<tr>
<td>Step 1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Information</td>
<td>4.17</td>
<td>.92</td>
<td>.48</td>
<td>4.55</td>
</tr>
<tr>
<td>Step 2</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Information</td>
<td>3.29</td>
<td>.96</td>
<td>.37</td>
<td>3.42</td>
</tr>
<tr>
<td>Trust</td>
<td>3.18</td>
<td>1.33</td>
<td>.26</td>
<td>2.38</td>
</tr>
</tbody>
</table>

Step 1: \( R^2 = .23 \), adjusted \( R^2 = .22 \); Step 2: \( R^2 = .29 \), adjusted \( R^2 = .26 \)

Our results suggest that “information sharing,” together with “trust,” explain a significant amount of the variance in the value of firm performance \( (F(2, 68) = 13.89, p < .001, R^2 = .29, R^2_{\text{Adjusted}} = .27) \). The addition of the “trust” variable improves the proportion of explained variance \( (R^2 \text{ change} = .06) \). Thus, the hypotheses H3a and H9a could be confirmed in the case of China.

<table>
<thead>
<tr>
<th>Source</th>
<th>( df )</th>
<th>( F )</th>
<th>( p )</th>
</tr>
</thead>
<tbody>
<tr>
<td>Information</td>
<td>1</td>
<td>20.70</td>
<td>( p &lt; .001 )</td>
</tr>
<tr>
<td>Information and trust</td>
<td>2</td>
<td>13.89</td>
<td>( p &lt; .001 )</td>
</tr>
</tbody>
</table>

Source: own elaboration.
For the Turkish data our analysis shows that only the variable “coordination” significantly predicts “firm performance” ($\beta = .49$, $t(102) = 5.67$, $p < .001$).

**TABLE 4. Summary of hierarchical regression analysis for variables predicting firm performance in Turkey**

<table>
<thead>
<tr>
<th>Variable</th>
<th>$B$</th>
<th>SE $B$</th>
<th>$\beta$</th>
<th>$t$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coordination</td>
<td>4.58</td>
<td>.80</td>
<td>.42</td>
<td>5.67</td>
</tr>
</tbody>
</table>

Step 1: $R^2 = .24$, adjusted $R^2 = .23$

Source: own elaboration.

Our findings show that “coordination” explains a significant proportion of the variance in the value of firm performance ($F(1, 101) = 32.22$, $p < .001$, $R^2 = .24$, $R^2_{\text{Adjusted}} = .23$). Thus, the hypothesis H5a could be confirmed in the case of Turkey.

**TABLE 5. Analysis of Variance for Turkey**

<table>
<thead>
<tr>
<th>Source</th>
<th>$df$</th>
<th>$F$</th>
<th>$p$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coordination</td>
<td>1</td>
<td>32.22</td>
<td>$p &lt; .001$</td>
</tr>
</tbody>
</table>

Source: own elaboration.

For the German data the results show that “network human capital resources” significantly predicts “firm performance” ($\beta = .72$, $t(59) = 7.91$, $p < .001$).

**TABLE 6. Summary of hierarchical regression analysis for variables predicting firm performance in Germany**

<table>
<thead>
<tr>
<th>Variable</th>
<th>$B$</th>
<th>SE $B$</th>
<th>$\beta$</th>
<th>$t$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Human Capital Resources</td>
<td>4.36</td>
<td>.55</td>
<td>.72</td>
<td>7.91</td>
</tr>
</tbody>
</table>

Step 1: $R^2 = .51$, adjusted $R^2 = .51$

Source: own elaboration.

The variable “network human capital resources” explains a significant amount of the variance in the value of firm performance ($F(1, 58) = 62.58$, $p < .001$, $R^2 = .52$, $R^2_{\text{Adjusted}} = .51$). Thus, the hypothesis H7a could be confirmed.

The principal component analysis reveals that in China the variables “trust” and “informal trust” match each other well and can form a factor (network characteristics). A second factor can be formed by “coordination” and “learning” (network operation).
“Weak ties” and “strong ties” (network characteristics) match each other well in Turkey. A second factor consists of “trust” and “trust informal” (network characteristics) and a third one of “coordination“, ”learning“ and „synergy resources“ (network operation and network resources).

“Weak ties” and “strong ties” (network characteristics) form the first factor, “relational capability” and “informal relational capability” (network characteristics) the second and "trust"and "coordination“ (network characteristics and network operation) the third factor in Germany.

Regarding internationalization, 12.1% of the Chinese, 20.9% of the Turkish, and 27.5% of the German participants rated their firm as being international, with 61–70+ % of sales derived from foreign markets.

**Discussion**

Four of the total twelve factors were found to be related to firm performance. “Information sharing”, “trust”, “network coordination” and “network human capital resources” were found to be predictors of firm performance, although not in all hypothesized cultural contexts.

The size of relevant firms for this study and their developmental stage could be reasons for the non-significant relationship between *strong and weak ties* and performance. The same could be the case for the variable *relational capability*. It is possible that the examined firms lack relational capability compared to other firms. The same could be true for *initiation*. *Initiation* may be not as relevant for the firms studied here because they could be in a development stage in which new business relationships are not essential. The finding that *learning* does not affect performance could be attributed to the fact that firms use other forms of internal learning not listed in the questionnaire, or that implicit forms of learning are not being noticed by the management boards of partnering firms. With respect to the non-significant role of *synergy resources* it is possible that the complementarity of resources does not generate increased added value.

The Chinese business alliances characterized by collectivism share information, trust each other, and are able to increase firm performance in this way. Currently, China’s corporate culture is changing as managers become more individualistic and independent in their decision-making. Chinese entrepreneurs hold onto their traditional values, while
trying to simultaneously incorporate Western values in their organizational cultures [Allik & Realo, 2004].

What is surprising is that in Turkey, which also scores high on collectivism, the only relevant variable was “coordination”. In Germany, performance is related to the investment of German firms in vocational education and trainings for employees and through “network human capital resources” German firms gain added value.

In each country, another variable impacted firm performance and, in total, only a few variables were significant. Furthermore, the principal component analysis revealed that in China the variables for formal and informal networks could not be clearly separated. This finding is important, as it has been previously suggested by Zhang and Zhang [2006, p. 376] that “guanxi” has effects on both inter-organizational and interpersonal networks and sometimes the lines between the two types of networks become blurred as inter-organizational networks often behave as interpersonal ones [Zhang & Zhang, 2006, p. 385].

In Turkey’s case variables for formal and informal networks and for “network operation” and “network resources” could not be clearly differentiated. Informal networks are of equal importance with formal networks in the corporate world because of the involvement of family members in most businesses. Similarly, the variables for formal and informal networks and the variables for “network characteristics” and “network operations” could not be clearly separated in the German case, perhaps because the majority of survey participants work for firms in the early stage of development. In this stage of entrepreneurship, relationships often consist of social bonds, i.e. informal contacts, and as a firm reaches the next stage of development entrepreneurs have to transform loose informal contacts into business relationships [Mitrega et al., 2011, p. 11].

Regarding the inability to differentiate some variables of network capabilities, the line between the theoretical constructs is blurred since the operationalization of numerous variables of network capabilities overlap. This conceptual problem is common to the majority of studies examining network capabilities. Nevertheless, network capability factors, which predict firm performance in each country, do display a logical consistency. Future cross cultural studies should examine the link between the Hofstede dimensions and network capabilities that have an effect on firm performance.

One limitation of this study is its reliance on self-reported performance, rather than official firm performance data. It is possible that self-reported performance data was biased by overoptimistic factors or the effects of social desirability. Future studies based on official firm performance data should be conducted. In addition, the internationalization of the firms was also based on self-reports. Our findings indicate that the internationalization of German firms is stronger and could be related to “network human capital resources” and thus, to investing in developing employees which, in Germany, is a predictor of firm performance. However, looking at the real business world, whether internationalization does, indeed, impact firm performance should be discussed. For example, the German car manufacturer Porsche reported a very high profit for the year 2006/2007 and had extensive
international activities. However, that extraordinary profit was primarily due to financial market transactions connected to the acquisition of Volkswagen shares [Porsche Automobile Holding SE, 2007, p. 18].

Furthermore, this study did not investigate the link between inter-organizational and personal networks, nor competitive relationships within networks.

Despite these limitations, this study has shown that different network capabilities are relevant for firm performance in each of the examined countries by breaking the networking concept into differentiated factors. A different factor structure was found to be relevant in each cultural setting. The results suggest that network capabilities are multifactorial constructs that are being uniquely defined within cultures.

It is essential that managers base their decisions on the understanding of cultural differences that affect organizational culture and firm capabilities. Managers who wish to join corporations in China, Turkey and Germany should consider that firm performance in these countries is related to specific factors. Nevertheless, managers could try to enhance those network capabilities which are missing in the firms of the respective countries and measure their performance.

Furthermore, the finding that in all three countries variables for formal and informal networks could not be clearly separated shows that both inter-organizational and interpersonal networks are associated with the (competitive) capabilities of companies. Thus, it becomes apparent that managers should consider the role of interpersonal networks in all cultural contexts and try to strengthen these relationships and use them in a beneficial way for the companies.

Notes

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References


## Appendix

### Questionnaire

**Business Performance / Network capabilities**

*Please rate your firm’s business performance relative to your main competitors:*

<table>
<thead>
<tr>
<th></th>
<th>-3</th>
<th>-2</th>
<th>-1</th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Worse</td>
<td>Equal</td>
<td>Better</td>
<td>Not applicable</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. The Domestic Market Share of your Number 1 Product / Service.</td>
<td>☐ ☐ ☐ ☐ ☐ ☐ ☐</td>
<td>☐</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. The International Market Share of your Number 1 Product / Service.</td>
<td>☐ ☐ ☐ ☐ ☐ ☐ ☐</td>
<td>☐</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>3. Your Domestic Sales Growth over the past 3 years.</td>
<td>☐ ☐ ☐ ☐ ☐ ☐ ☐</td>
<td>☐</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>4. Your International Sales Growth over the last 3 years.</td>
<td>☐ ☐ ☐ ☐ ☐ ☐ ☐</td>
<td>☐</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>5. Your Average Return on Investment.</td>
<td>☐ ☐ ☐ ☐ ☐ ☐ ☐</td>
<td>☐</td>
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<tr>
<td>6. Your Total Turnover.</td>
<td>☐ ☐ ☐ ☐ ☐ ☐ ☐</td>
<td>☐</td>
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<tr>
<td>7. Your International Turnover.</td>
<td>☐ ☐ ☐ ☐ ☐ ☐ ☐</td>
<td>☐</td>
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<tr>
<td>8. Your Total Pre-Tax Profitability.</td>
<td>☐ ☐ ☐ ☐ ☐ ☐ ☐</td>
<td>☐</td>
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<tr>
<td>11. Customer Retention in International Markets.</td>
<td>☐ ☐ ☐ ☐ ☐ ☐ ☐</td>
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</table>

*To what extent do you use the following means in order to establish and maintain personal / informal networks?*

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<tbody>
<tr>
<td></td>
<td>Not at all</td>
<td>Very often</td>
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<tr>
<td>1. Social networks [LinkedIn, Xing, Facebook, Video, etc]</td>
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<tr>
<td>2. Conferences</td>
<td>☐ ☐ ☐ ☐ ☐ ☐ ☐</td>
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<td>3. Formal meetings</td>
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<tr>
<td>4. Personal relationships [friends and / or family]</td>
<td>☐ ☐ ☐ ☐ ☐ ☐ ☐</td>
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<tr>
<td>5. The personal use of the former official – but now no longer existing – professional relationships.</td>
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<tr>
<td>6. Memberships in professional organizations, associations, business Clubs, etc.</td>
<td>☐ ☐ ☐ ☐ ☐ ☐ ☐</td>
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<tr>
<td>7. Memberships in non-professional organizations, associations, business Clubs, etc.</td>
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</tbody>
</table>
Nature of networks / Ties
To what extent does your firm use the following forms of inter-firm collaboration?

<table>
<thead>
<tr>
<th>Form of Collaboration</th>
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<th>5</th>
<th>6</th>
<th>7</th>
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</thead>
<tbody>
<tr>
<td>1. Direct Importing</td>
<td>☐</td>
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<td>☐</td>
<td>☐</td>
<td>☐</td>
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<tr>
<td>2. Indirect exporting via agent</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
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<tr>
<td>3. Indirect exporting via distributor</td>
<td>☐</td>
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<td>☐</td>
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<tr>
<td>4. Direct exporting</td>
<td>☐</td>
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<td>☐</td>
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<tr>
<td>5. Exporting via foreign intermediary</td>
<td>☐</td>
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<tr>
<td>6. Marketing agreements</td>
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<td>7. Patenting agreements</td>
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<td>8. Sales joint ventures</td>
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<td>9. Manufacturing joint ventures</td>
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<td>10. Equity alliances</td>
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<tr>
<td>11. Non-equity R&amp;D alliances</td>
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<td>12. Sales or manufacturing subsidiary</td>
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<td>13. Licensing</td>
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<td>14. Franchising</td>
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</table>

Relational capability
In our firm’s network and in my personal network we have the relational capability to:

<table>
<thead>
<tr>
<th>Capability</th>
<th>1</th>
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<th>5</th>
<th>6</th>
<th>7</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
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</tr>
</thead>
<tbody>
<tr>
<td>1. Stay together during adversity/challenge</td>
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<td>☐</td>
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<td>☐</td>
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<tr>
<td>2. Feel indebted to our partners for what they have done for us.</td>
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<tr>
<td>3. Expect that we will be working with our partners far into the future.</td>
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<td>4. Have close, personal interaction between the partners at multiple levels.</td>
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<tr>
<td>5. See the value in mutual respect between the partners at multiple levels.</td>
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<tr>
<td>6. Nurture mutually beneficial relationships.</td>
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<tr>
<td>7. Successfully terminate a partnership once it has exceeded its useful lifespan while maintaining good business relations.</td>
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</tbody>
</table>
8. Have difficulty communicating our needs to others.

9. Confidently handle negotiations with others.


11. Easily understand other people.

12. Have a level of proficiency of the language of the foreign partners.

How important are the following aspects for the creation and maintenance of networks (professional and personal)?

<table>
<thead>
<tr>
<th>Professional network [network of your own company]</th>
<th>Personal / informal network [your own personal network]</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 2 3 4 5 6 7</td>
<td>1 2 3 4 5 6 7</td>
</tr>
<tr>
<td>Not important</td>
<td>Very important</td>
</tr>
<tr>
<td>Not important</td>
<td>Very important</td>
</tr>
</tbody>
</table>

1. To participate in a wide range of business-related events and professional associations.

2. Establishing contacts, which directly lead to the sharing of scarce resources and achievement of sustainable competitive advantages.

Trust

How important are the following aspects for building a trusted network?

<table>
<thead>
<tr>
<th>Professional network [network of your own company]</th>
<th>Personal / informal network [your own personal network]</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 2 3 4 5 6 7</td>
<td>1 2 3 4 5 6 7</td>
</tr>
<tr>
<td>Not at all</td>
<td>Very much</td>
</tr>
<tr>
<td>Not at all</td>
<td>Very much</td>
</tr>
</tbody>
</table>

1. The image / reputation of the company or organization.

2. The reputation of the individual / person.

How would you rate your firm's trust in their network partners?

| 1 2 3 4 5 6 7 |
|----------------|----------------|
| Not at all | Very much |

1. They are very competent in the areas in which we interact.

2. We have confidence in the transparency of their motives.
3. They have the ability to contribute to cooperative projects. ☐ ☐ ☐ ☐ ☐ ☐ ☐
4. We trust they would act in our company’s best interest. ☐ ☐ ☐ ☐ ☐ ☐ ☐
5. They share our overall goals and values. ☐ ☐ ☐ ☐ ☐ ☐ ☐
6. They are generally honest and truthful in the information provided. ☐ ☐ ☐ ☐ ☐ ☐ ☐

How would you rate your trust you can have in the members of your personal / informal network?

1 2 3 4 5 6 7
Not at all Very much

1. They are very competent in the areas in which we interact. ☐ ☐ ☐ ☐ ☐ ☐ ☐
2. I have confidence in the transparency of their motives. ☐ ☐ ☐ ☐ ☐ ☐ ☐
3. They have the ability to contribute to cooperative projects. ☐ ☐ ☐ ☐ ☐ ☐ ☐
4. I trust they would act in our company’s best interest. ☐ ☐ ☐ ☐ ☐ ☐ ☐
5. They share our overall goals and values. ☐ ☐ ☐ ☐ ☐ ☐ ☐
6. They are generally honest and truthful in the information provided. ☐ ☐ ☐ ☐ ☐ ☐ ☐

Initiation
Before we begin working with external partners we:

1 2 3 4 5 6 7
Not at all Very much

1. Inform ourselves of the respective markets ☐ ☐ ☐ ☐ ☐ ☐ ☐
2. Inform ourselves of their products/services ☐ ☐ ☐ ☐ ☐ ☐ ☐
3. Determine their strengths and weaknesses ☐ ☐ ☐ ☐ ☐ ☐ ☐
4. Inform ourselves of their strategies and potentials ☐ ☐ ☐ ☐ ☐ ☐ ☐
5. Judge in advance which possible partners we can pursue projects with ☐ ☐ ☐ ☐ ☐ ☐ ☐
6. Seek opportunities to complement our capabilities and resources ☐ ☐ ☐ ☐ ☐ ☐ ☐
7. Routinely gather information about prospective partners from various forums ☐ ☐ ☐ ☐ ☐ ☐ ☐
8. Use organizations, apart from our existing technical partners to identify potential partners ☐ ☐ ☐ ☐ ☐ ☐ ☐

Coordination
To what extent are the following statements true with respect to the relations of your organization with partners?

1 2 3 4 5 6 7
Not at all Very much

1. We analyze what we would like and desire to achieve with which partner ☐ ☐ ☐ ☐ ☐ ☐ ☐
2. We appoint coordinators who are responsible for the relationships with our partners

3. We regularly discuss how we can support each other in our success

4. We try to formalise our network relationships

5. The partners engage in joint problem solving while resolving conflicts

6. Great emphasis is placed on dealing with cultural obstacles while resolving conflicts

**Learning**

*To what extent are the following statements true with respect to the ability of your organization to learn from its partners?*

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<th>Statement</th>
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</thead>
<tbody>
<tr>
<td>1. We ensure that strategic decisions are informed by our networking activities</td>
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<td>2. We value employee feedback for strengthening networking relations</td>
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<td>3. We conduct periodic reviews to understand what we are doing</td>
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<td>4. We periodically collect and analyse field experiences from our networks</td>
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<td>5. We modify our network related procedures as we learn from experience</td>
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<td>6. Resources such as network manuals are developed</td>
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<td>7. Company managers attend training programmes on network management</td>
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<td>8. The company provides opportunities for on-the-job network training</td>
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</table>

**Network human capital resources**

*To what extent are the following statements true for your organization?*

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<th>Statement</th>
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<th>7</th>
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</thead>
<tbody>
<tr>
<td>1. We have the management expertise to assess foreign market potential</td>
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<tr>
<td>2. We have the expertise to manage our network relationships</td>
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<td>3. We have the industry knowledge to pursue foreign markets</td>
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<td>4. We have technical expertise to assess foreign market potential</td>
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<tr>
<td>5. We have international experience in doing business in new markets</td>
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<td>6. We have international experience in cooperating with other firms</td>
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### Synergy sensitive resources

*To what extent are the following statements true for your organization?*

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<th>Statement</th>
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<th>5</th>
<th>6</th>
<th>7</th>
<th>Not at all</th>
<th>Very much</th>
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</thead>
<tbody>
<tr>
<td>1. Network relationship allow efficient use of our firms resources</td>
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<td>2. Network relationships lead to sound economic use of our firm</td>
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<td>3. Network relationships allow effective use of our firms knowledge base</td>
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<td>4. There is high complementarity between the resources/capabilities</td>
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<tr>
<td>5. There is high similarity/overlap between the core capabilities of each partner</td>
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<td>6. The organizational cultures of our network partners are incompatible with each other</td>
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<td>7. The management and operating styles of our network partners are compatible</td>
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<td>8. We strive to achieve synergy through working together</td>
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### Information sharing

*To what extent are the following statements true for your organization?*

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<th>Statement</th>
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<th>3</th>
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<th>5</th>
<th>6</th>
<th>7</th>
<th>Not at all</th>
<th>Very much</th>
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</thead>
<tbody>
<tr>
<td>1. We share proprietary business information</td>
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Socio-Economic Implications
of Female Inclusion in Organizational Structures
and in Leadership Positions

Abstract

The perception of women's statutory place within organizations has been influenced by
gender bias, which has led to discrimination. Lowering barriers related to gender inequality
and introducing constructive changes takes a surprisingly long time. This procrastination
can, to some extent, be attributed to the fear of potential economic costs, which is a mis-
conception. A deeper understanding of the interplay between socio-economic factors and
gender inequality within organizations can result in designing better, less biased, more
merit-based structures and provide women with better career opportunities. Countries
and organizations promoting gender equality practices prove that women's inclusion in the
labor market can be ‘cost-effective’ and beneficial in socio-economic terms.

This article analyzes selected determinants of female underrepresentation in organiza-
tions, and in leadership positions in particular. The author points out to the rich body of
research and to the multiple implications of gender inequality. Among the change resistant,
deeply rooted factors, those originating in culture have a significant impact on women's
inclusion in organizations. This paper focuses on macro problems, and explains why
some determinants are more persistent than others, and still influence gender equality at
all levels of organizational structures. The determinants are systematized, analyzed using
statistical data, and rooted in a wide body of research. The article also presents potential
future developments and available tools that can be employed to speed up changes lead-
ing to gender equality in organizational structures, particularly in leadership positions.
Keywords: gender gap, women’s leadership, organizations, gender inequality, socio-economic impact
JEL: E.24, J13, J16, J24, J70, M12, M14, O11

Introduction

“Business and human endeavors are systems (…). We tend to focus on snapshots of isolated parts of the system. And wonder why our deepest problems never get solved.”


Women’s exclusion from organizational structures, especially from their highest strata, has strong cultural roots. For the last thirty years, various transformations have finally allowed women to enter organizational structures, and included them in top management. Through gradually emerging opportunities, women have finally been given a chance to put their skills to practice, and work their ways into male-dominated C-Suits. This advantageous, but still rare and relatively new situation in the labor market, triggered ongoing transformations. These in turn introduced new challenges, which require women, especially those in leadership positions, to be vigilant, learn new skills and constantly upgrade their knowledge to function in highly competitive environments [Ely et al., 2011; Gratton, Erickson, 2007; Eagly, Carli, 2007; Smith, Bettio, 2008]. Faced with the need to adapt to their altering statutory situation, women have been developing new roles and different identities. The latter appeared to be a complex process, involving predominately male environments, male role models and mostly male partners.

In this article we refer to the notion of leadership in the managerial, rather than the charismatic, sense. In taxonomic terms leadership hereto is similar to holding top managerial positions. Thus, leadership is defined as a skill requiring all the necessary competencies to perform highly demanding managerial functions pertaining to the broad spectrum of knowledge in HR, finances and legal matters.

Cultural heritage reveals some of the causes behind women’s discrimination. In the past, the managerial structures of organizations were, with very few exceptions, almost entirely male [Eagly, Johannesen-Schmidt, 2001]. Until the XXth century in most parts of the world male bosses or men-only boards of directors found it difficult to allow female into their ranks as their equals and partners, rather than subordinates like secretaries or assistants. This historical legacy inevitably led to a broad spectrum of long-lasting negative determinants that continue to hinder women from attaining leadership positions. In the last decades women have measured up, or outperformed their male counterparts in many spheres of life, meeting requirements that were often created for men only. However, they still face barriers and are the targets of bias-driven negative evaluation.
This study is intended to provide an extensive account of the current state of affairs concerning women’s roles and positions in organizational structures of different types, and facilitate a better understanding of the determinants and dependencies that govern their position. We begin by characterizing the overall state of gender inequality, relying, where possible, on statistical data. In the subsequent section, we focus on the economic consequences of women’s inclusion in governments, global organizations and companies. The third part provides a comprehensive list of key determinants responsible for the current situation. That section offers a taxonomy of determinants in the managerial context, and links them to culture and psychology. In the two following sections, we discuss their complexities in an attempt to identify the crucial causes and manifestations of gender inequality. In the conclusion we focus on positive consequences of including women in top managerial positions and propose policies to address the identified problems.

State of the Art

Before turning to the scientific evidence on gender inequality, we begin with a description of a more casual event recently discussed in the popular media; that is, the case of Stella Creasy, a member of Parliament in the UK, who campaigned for a woman to be placed on the pound sterling banknote. This campaign opened up a Pandora’s box of misogynistic reactions against Creasy, who received multiple hateful and threatening messages through social media. This discriminatory feedback happened in Great Britain – one of the most socially and economically developed European countries. This case could be analyzed from different perspectives, but each points to the depth of a problem, potentially detrimental consequences, and the need for building public awareness about the negative impact of inequality on a country’s socio-economic conditions [Bowcott, 2014].

For the last ten years, the problems related to women’s place in organizational structures have been analyzed in the scientific literature and widely discussed at numerous conferences organized by, among others, the World Economic Forum (WEF), United Nations (UN), the European Commission (EC) and leading universities. There is a broad consensus that insufficient support and change-resistant culture factors preserve traditional views of women’s social roles and, ipso facto, thwart women’s access to leadership positions [Chickering, 1969]. These facts are supported by numbers. In 2015 women accounted for 17% of World Economic Forum members, 11% of positions in C-Suits of top High Performance Companies (HPC), 8% of heads of governments, 6% of heads of states, and a staggeringly low 3.4% of the CEOs listed in Fortune Global 500 [Fortune, 2015].

According to the Gender Equality Index Report of the European Institute of Gender Equality [Humbert et al., 2015], in 2012 38.8% of women in EU countries were employed full time, compared to 55.7% of men (participation rates in employment in full-time equivalence), yielding a gender gap on this indicator of 16.9%. Poland is close to the EU’s
averages, with this indicator valued at 41.4% and 58.1% for women and men respectively, and a gender gap of 16.7%. Sweden, arguably the most progressive country is in this respect, exhibits a 9.2% gap (55.3% for women, 64.5% for men).

When analyzing 2013 global employment risks data, International Labour Organization reported a female employment-to-population ratio of 47.1% [ILO, 2015] and that women often “bear disproportionate responsibilities for unpaid care work,” which is an important economic factor reflecting the level of female job market exploitation. These data are reflected in differences in the duration of working life, which according to Humbert et al. [2015] is 5.4 years lower for women (32.2 years) than for men (37.6 years) in the EU. In Poland, these figures are 29.5 and 34.6 years, respectively, resulting in a slightly smaller gender gap of 5.1 years. In Sweden, that gap is only 2.5 years (39.3 and 41.8 years respectively).

When considering gender-related economic indicators, Humbert et al. [2014] rely on purchasing power standards (PPS), defined as an ‘artificial currency’ keyed to capture the cost of ‘the same amount of goods and services in each country’ [Eurostat, 2014]. The PPS of earnings for women in EU amounts to 1228 for women and 1459 for men (gender gap of 231, i.e., 19%). For Sweden – a leader among EU countries – the analogous figures are 2281 vs. 2737 (gap of 456, 20%).

From the global perspective presented in the ILO report [2015], in most countries women are paid on average 25–40% less than men while contributing to unofficial (and difficult to estimate) unpaid household- and care giving-related chores. In 2013, it was reported that almost 50% of the global population works in low-valued jobs under conditions unprotected by law [ILO, 2015].

The problem of gender inequality extends beyond the statistical data; it is rooted in culture, social norms, and women's self-esteem, which often determine the career choices of young people entering the job market. During the 2015 UN Women UK and Government Equalities Office Conference, Nicky Morgan, the Secretary of State for Education and Minister for Women and Equalities, noted that in the UK, one of the best educated UE-28 countries:

“Even now, female graduates often choose subjects that lead into the lowest paid sectors. In fact, 22% of the gender pay gap can be explained by the industries and occupations women work in” [Morgan, 2015].

This is consistent with the thesis that cultural, social, and psychological determinants can play a greater role than more tangible factors. The female graduates mentioned above may not aspire to better-paid jobs because they assume that they either do not deserve them (low self-esteem), have marginal chances to get them, or, once they get them, will face unfavorable working conditions in a predominantly male environment.

On the positive side, the situation is more favorable for women when it comes to education. According to the Eurostat report cited earlier [2014], women in the EU are more likely than men to attain higher education: 24.1% of women graduate from tertiary
education institutions vs. 22.8% of men. In Poland, the percentage of women that graduate from tertiary education (23.8%) is very close to Europe's median, but the analogous figure for men is much lower (17.3%), so the difference is strongly in favor of the former (by 6 percent points). In Sweden, the difference is even more prominent, amounting to 33.9%–24.6%=9.3 percent points. The only EU countries with more college educated men than women are Austria, Germany, Luxembourg, and the Netherlands.

Unfortunately, the education of women has not translated into their participation in top management. Overall in the EU, women account for only 16% of board members of the largest national companies and in Poland, they fare slightly worse, with only 12% of women occupying such posts. The proportions in Sweden are better (26% women vs. 74% men), but even Finland, which scores best in this respect, is still far from a 50:50 ratio with only 29% women vs. 71% men in such posts.

In the macro-economic context, women's situation in the labor market is strongly correlated with each country’s GDP. Though in all economies culture plays an important role in creating or reinforcing determinants, there is a clear demarcation line between women's economic involvement in developed and developing economies. In developing countries where basic human needs are not being met, it is difficult to provide sufficient opportunities and encourage women to become leaders. Women who struggle with poverty, face insufficient medical care, and limited access to contraceptives and education, often become mothers at a very early age and lag far behind men on statutory ladders.

In the developed countries, even though the number of highly qualified prospective female leaders is much higher, the problem of low number of female leaders still exists but the causes are different. Reduced access or unaffordable child-care, long working hours, lower wages relative to men, and other gender-related challenges can weaken women's ambitions and discourage them from reaching for top positions. The insufficient support and fear of potential cost of full involvement in professional activity are amongst the main causes of women's low participation in the labor market and leadership positions.

It may be worth mentioning that those few women who are already leaders bear the additional responsibility of becoming potential role models for prospective female leaders. Researchers agree that women in both developed and developing countries are in need of more versatile support from both gender groups [Ely 1994; Komives et al. 2005; Ibarra 1990, Ibarra et al. 2014; Eagly, Carli, 2007; Smith, Bettio, 2008].

The Impact of Female Economic Inclusion and Female Leadership on Organizations

Existing research has identified at least three major areas in which global economies can benefit from women's increased involvement in labor markets:
• overall faster economic growth [UNW 2015; OECD, 2012],
• families benefiting from women's financial contribution or control over family budgets [The World Bank, 2012],
• decrease in child mortality, due to women's better education and their engagement in the labour market [World Bank Gender Data Portal, 2015].

The positive consequences of women's inclusion in the labor market are clear. Regarding the more specific aspect of women in higher ranks of organizations, the Catalyst Report of March 2011 [Carter et al., 2011] indicates that women leaders provide highly beneficial input to the companies they lead. In the report, the Catalyst group, a think-tank and NGO created to study social and economic challenges, summarized the relationship between the share of Woman Board Directors (WBD) and several economic performance indicators for the Fortune 500 companies. From 524 companies that appeared in the Fortune 500 index during 2005–2009 period, the top quartile included companies with 19 or more percent of WBDs, and in the bottom quartile exhibited up to 9 percent of WBDs. Companies in the top quartile observed 16 percent greater return of sales (ROS) (t-test p < 0.1), and 26 percent greater return on invested capital (ROIC) than the companies in the bottom quartile; no statistically significant difference in return on equity (ROE) was observed between these groups.

Using the same data, we also investigated the impact of a high continuous commitment to gender diversity. From the above 524 companies, 48 companies that had at least three WBDs in four out of five years in 2005–2009 were selected. The control group included the 24 companies with the lowest numbers of WBDs on board (no WBDs in most cases). The companies with a high commitment to gender diversity almost doubled their ROS compared to the control group (84 percent increase), and experienced a 60 percent increase of ROIC and 46 percent increase of ROE in the relevant time period. All of these differences were statistically significant according to t-test (p < 0.1). See [Carter et al., 2011] for other details.

According to literature, gender inequality has a number of tangible consequences for a country’s economic and social welfare, which are closely interrelated, and there are five important ways in which women can contribute to the economic development that have been analyzed for Europe [Smith and Bettio, 2008] but yield results that are universally valid. The main directions selected by Smith and Bettio include:
• quantitative improvement in female labor market participation,
• qualitative improvements through effective use of investments in human capital,
• women's contribution to growth through economic independence and their participation in the consumers market,
• integration of women into the fiscal system,
• women's role in childbearing.

These findings are consistent with other data inputs; for example, the McKinsey report [McKinsey, 2007] takes into account four main areas measuring organizational
excellence: transformational change (i.e., leadership, culture), organizational design, merger management, and human capital and concludes that organizations with at least three females in top management positions scores higher than those without female managers. In Europe, examples from Sweden indicate that companies with top female managers have higher profits than those with male exclusive boards [Catalyst 2004; Datta Gupta et al., 2008]. Despite these findings, women still face inequality, fewer career advancement opportunities, and lower wages. In other words, women’s work is often undervalued [Schwab, 1986].

The above discussion on women as key managers indicates that a pronounced presence of female leaders on the boards of directors of large enterprises is beneficial to their performance. Sustained commitment to gender diversity would presumably be particularly fruitful in management, and there is no apparent reason why the same should not hold true for all types and sizes of companies. A caveat regarding these observations is that the underlying data and statistical methodology employed does not prove causality between the considered variables (fraction of WBDs and economic indicators), as per the well-known adage that correlation does not imply causation. Therefore, this analysis is conditioned on both the impact of WBD percentages on a company’s welfare as well as a potential reverse phenomenon, i.e., that well-performing large enterprises may attract high numbers of women willing to become board directors. Nevertheless, one may safely assume that after adjusting these results accordingly (given data availability), the overall conclusion of beneficial impact of female presence in governing bodies would still hold.

Another report on living standards, the Inclusive Growth Report published by World Economic Forum (WEF), provides analyzes data on living standards regarding 112 of the world’s economies [Samans et al., 2015]. Ten indicators for the last eight to ten years are applied to countries grouped depending on economic development:

- advanced economies (GDP per capita > $17,000, 30 countries),
- upper-middle income (GDP per capita in range $6,000 to $17,000, 26 countries),
- lower-middle income (GDP per capita in range $1,320 to $6,000, 37 countries),
- low income (GDP per capita below $1,320, 16 countries).

The indicators discussed in the report involve three indices related to gender equity: education, pay, and health. We focus here on the former two, as they directly impact women’s presence and role in organizations and their leadership capabilities.

The WEF Global Gender Gap in Education (GGE) index is based on the ratio of female to male literacy and net enrollments in primary, secondary, and tertiary education using data from the Education Database maintained by UNESCO’s Institute for Statistics. When GGE is equal to 1 overall literacy and enrollments are the same for both genders; values of less than 1 indicate underrepresentation of women in these areas.

In all economic groups delineated above, there are countries with the ‘ideal’ GGE of 1. This score was achieved in 19 out of 30 advanced economies (including the US, Sweden, Australia and Slovenia). GGE is overall relatively high in this group, with the lowest value
of 0.88 attained by South Korea, 0.93 by Italy, 0.96 by Japan, and 0.97 by Czech Republic. All remaining countries in this group have a GGE of 0.99 or more.

In the upper-middle income group, Turkey attained the lowest GGE of 0.8, nine of 26 countries have a GGE of 1, and in 20 countries the GGE is at least 0.99.

In the lower-middle income group, the GGE is the lowest for Pakistan (0.65), followed by Jordan and Iran (0.71), Yemen (0.72), Algeria (0.73), Morocco (0.77), India (0.78), Egypt (0.82), Tunisia and Mauritania (0.83). Ten countries in this group have a GGE < 0.9, nine have a GGE of 1, and for 21 countries the GGE is 0.99.

In the upper-middle group, the best GPG is only 0.71, which exists in Croatia and Romania. The median GPG in this group is 0.61, and in four of the 26 upper-middle group countries (Turkey, Azerbaijan, Mexico and Chile) women earn on average half of men's wages, i.e., have a GPG of 0.5 or less.

In the lower-middle income group, the best GPG values are attained by Vietnam (0.82) and Thailand (0.78). The median GPG in this group is 0.58. The lowest ranking are observed in predominantly Muslim countries, with GPG values of 0.17 for Algeria and Iran, and 0.18 for Jordan and Pakistan.

Surprisingly, the situation is substantially better in the low income group. The worst GPG values in this group (0.4 for Uganda and 0.41 for Mali) are far better than their equivalents in the lower-middle income group. All other countries in this group have a GPG above 0.5, with a median of 0.7, and the best performing countries (Tanzania and Kenya) have GPGs much higher values than many upper-middle and even advanced economies (0.93 and 0.92, respectively).

The data gathered in the WEF report permits several observations. First, both women's access to education (the GGE index) as well as pay equity (the GPG index) are only
partially correlated with the overall condition of each country’s economy (as reflected in per-capita GDP). Many countries in the lower-middle income group attain low gender-related indices values despite being more affluent than the low-income countries. This suggests that other, non-economic factors play a crucial role here. In particular, the conspicuous underperformance of Muslim countries indicates that culture background impacts the values of the indices. Countries in the low-income group (primarily African ones) provide better opportunities for women in terms of education and wages, despite a lower level of development.

Second, gender-related wage inequality is still commonly practiced, and is significant, in practically all countries regardless of how affluent or poor. Wealthy countries, such as Germany (GPG 0.84), France (0.75), the United States (0.65), and both Spain and Japan (0.60) all legally mandate gender equality.

Third, a gender equity in education (GGE) is less problematic then pay inequality. Excepting countries with a strong Islamic background, all countries considered in the report have GGEs of 0.78 or more, i.e., women account for (roughly) at least eighty percent of the literate population and students. This relatively strong educational attainment among women should enhance their future ability to participate in leadership roles in all types of organizations.

The Proposed Taxonomy of Gender Inequality Determinants

Underrepresentation of female leaders in organizational structures is just one of the manifestations of the broader phenomenon of gender inequality. This section focuses on classification of the causes of the latter.

**Determinants** (alternatively referred to as factors) responsible for gender inequality can be broadly divided into two categories: *exogenous* and *endogenous*. The former are contextual, socio-economic, and imposed by history, political situations, culture and beliefs within a society. Endogenous factors are strongly correlated with exogenous ones and can be triggered by them, but are mostly concerned with women’s psychology: personal narratives formulating sets of self-beliefs, self-esteem, personality traits, and numerous identities.

**Exogenous determinants** of gender inequality include:

- historic background,
- legal and political state,
- women’s economic situation (access to paid jobs, unpaid work),
- culture, and in particular:
  - traditions [Miller, Hoffmann, 1995; Weber, 1946; Giddens et al., 2000],
  - religion [Weber, 1946; Marx, McLellan, 2000; Wiesner 2000; Ozorak, 1996; Dollar, Gattin, 1999],
education [Bolzendahl, Myers, 2004],

• social acceptance [Giddens et al., 2000].

**Endogenous determinants** focus more on internal, predominantly psychological aspects, which in the context of this paper are understood as such that can thwart women's economic activity or career progress. Among them, the most impactful are personal characteristics in the exact and broader sense, e.g., intellectual capabilities, emotional intelligence, temperament, competitiveness likability, power of persuasion, and set of personal beliefs. In the context of leadership, personal characteristics have been studied with respect to:

• emotional intelligence and the sense of meaning [Goleman et al., 1994; Senge, 1994; Giddens, 1991],

• degree of willingness to comply with social roles [Mead, 1934; Biddle, 1986; Smith, 2007],

• compliance with role congruity [Eagly, Karau, 2002],


• compatibility of adopted identities with expectations:
  – self identity [Tajfel, 1974; Tajfel, Turner, 1979],
  – social identity [Sherif, 1961; Senge, 1994; Senge, 2002; Giddens et al., 2000],
  – leadership identity [Drucker, 2011; Ely, 1994; Komives et al., 2005].

The division of determinants is by no means a clear-cut. There is significant overlap and interdependence between particular factors within the exogenous and endogenous groups. Also, exogenous factors influence endogenous ones. Both exo- and endogenous factors have been instrumental in women's exclusion or inclusion in organizational structures.

The impact of these determinants on women's participation in labor markets can vary. Regardless of culture, **exogenous factors seem to have a greater impact** than endogenous ones on woman's chances of becoming a leader. Exogenous factors emerge from group behavior, and group's power of influencing the individuals. Group behavior is closely related to culture, the group's historic legacy and contemporary trends. Therefore, among exogenous factors, **culture-related ones dominate** and are universal within all economies. They are responsible for the most potent barriers of prejudice and discrimination, which depend on traditional canon of norms [Wiesner, 2000]. Culture-rooted determinants, especially those of an exogenous nature, such as bringing up girls in traditional, religion-influenced environments, creates misconceptions and imposes false self-beliefs, e.g., about broadly understood male supremacy. Such convictions can cause long-term psychological barriers, contribute to women's low self-esteem, and a lack of sufficient determination to pursue their careers [Dollar, Gatti, 1999]. Morgan's claim, quoted earlier, that some women with higher education degrees choose lower-paid job sectors, may reflect the importance of exogenous, culture-based determinants influencing endogenous ones [Morgan, 2015].
Organizations are steeped in, shaped by, and dependent upon cultural norms represented by an organization’s members. We are all the products of our cultures, and cultures are the products of accumulated beliefs, traditions, established norms, and also newly arising trends (like those resulting from technological transformations). Cultural backgrounds enrich, but also challenge individuals and organizations. Here, we focus on the negative implications for socio-economic states that in the long run influence the overall state of organizations. Among the most obstinate culture constituents that require special attention are traditions, which can be interpreted as a culture’s constituents that are often contradictory to progress. Traditions frequently trigger resistance to evolving views such as those pertaining to women’s more favorable statutory place within organizations. Only after organizations take steps towards transcending their visions beyond traditional views they can allow for changes that impact managerial structures [Ely, Meyerson, 2000].

The dominating character of culture-related determinants is crucial because it directly translates into the state of women’s leadership, and because of the interdependencies between culture and the economy [Giddens et al., 2000; Weber, 1946; Wiesner, 2000; Sapienza, Zingales, 2006; Ely, 1995; Eagly, 1997; Ibarra, 1995; Smith, Bettio, 2008]. One of the interesting works in which the culture/economy relation was analyzed is “Culture and Economy” [DiMaggio, 1994]. DiMaggio described culture in terms of its constitutive and regulative features, which are reflected in the economy. Cultures are constructed and controlled through adopted rules, which are based on certain ethical and economic values. They are also intrinsically linked to traditions and religion, making culture-rooted determinants very complex. A good example of a strong relationship between culture, and the economy and their impact on women are many Muslim countries, where the law depends on the interpretation of Koran, making it difficult to argue with.

DiMaggio concept of culture in the economic context operates like Adam Smith’s ingenious idea of the “invisible hand”, first described in 1759 in The Theory of Moral Sentiments, and further explained in the 1776 publication of The Wealth of Nations [Smith, ed. R.P. Hanley, 2010]. Also for DiMaggio, culture ultimately becomes a means for individuals to seek and fulfill their own self-interest [DiMaggio, 1994; Grampp, 2000]. One can question the timing necessary for a culture to transform the socio-political environment enough to allow the underprivileged to enjoy the potential benefits of such a remodeling, including the fulfillment of self-interests. A similar approach to culture influencing economic behaviors was proposed by [Sapienza et al., 2006], who argued that culture and economics are interrelated, and that the reluctance to associate these two has been caused by, among others, culture’s broad scope and the vagueness with which it is defined. Sapienza et al. [2006] suggested that culture should therefore be understood as: “customary beliefs and values that ethnic, religious, and social groups transmit fairly unchanged from generation to generation” [Sapienza et al., 2006].

In this sense the concept of women as a leader is still weak within certain culture settings and varied economic conditions and requires time to “naturally” establish itself. We can
hope that this time period required to give women-leaders equal chances in organizations as these of men, will be shorter than time required to implement women's rights. Consistent with DiMaggio and Smith, we see an evolutionary context of developing organizations that until the 20th century women, rendered women unable as a lobby group to surmount culture-based obstacles. Lack of male support and fear of violating established rules left women, as a social group, dispersed and fragmented. Men, strongly protective of their supreme social position took advantage of women's vulnerable statutory position, and abused their rights in various ways. For centuries, legally unprotected women added up to male material possessions, with no rights or chances to implement their ambitions. The impact of established traditions and beliefs has been reflected in the rife discriminatory policies and socio-economic abuse of women. Male social supremacy, and men's place in organizations dictated gender-based statutory place for women, or rather a lack of such a place. Reinforced by stereotypes systemic gender bias against women still presents itself as equality gap in pay, employment, access to education and particular jobs, and in the overall women participation in economy.

Manifestations of Determinants of Gender Inequality

Manifestations of gender inequality identified in the literature, which originate in the determinants summarized in the previous section, include:
• bias and prejudice,
• stereotyping,
• discrimination and exclusion,
• unequal pay,
• apparent perks,
• unequal practice opportunities,
• unpaid work.

Some of these manifestations pertain to mental attitudes, physical actions, or both. Those interactions involve group members within organizations and other social entities. We argue that all these manifestations originate in culture, the major exogenous determinant, and more specifically in – the general perception of women's social roles [Ely et al., 2011; Ely, 1994; Ely, 1995; Eagly, 1997; Ibarra, 1995]. Therefore, we present the latter in a separate subsection where we briefly discuss the most common manifestations from the above list. Then, in the next subsection we focus on unpaid work which is often neglected in economic models. The last subsection provides a discussion.
General Perception of Women’s Social Roles

In every culture and economy historical background and social habits determine perceptions concerning women's roles in society. These perceptions contribute to pre-conditioning women (young women in particular) to their expected roles in society, and in organizations they enter.

Women are still perceived as less fit to study math or management, and more inclined to engage in ‘gentler’ subjects considered to better ‘fit’ women, like teaching, office administrative jobs, and nursing [L’Oreal Foundation, 2015; Donald, 2015], although the latter arguably does not fit into the ‘gentle’ jobs category. Also, women in reproductive age (which overlaps with the best years to begin a career), and mothers are at the highest risk of being discriminated against because absenteeism due to child care is among the greatest employers’ fears when hiring women. Rather than creating a better work environment for women, employers are more concerned with potential losses. Instead of developing strong teams, or investing in individuals, some adopt short term approach, while in the long-term vision, it can be highly beneficial to invest in satisfied and loyal employees, as it has been proven by several pioneering companies like the SAS Institute, Microsoft, Coca-Cola, and Starbucks. In developed economies, where the tolerance for diversity is higher than in the poor countries, most misconceptions about women’s participation in the economy are created at home or in school, and reinforced by sub-cultures [Giddens et al., 2000; Garcia-Retamero et al., 2006; Byerly, Ross, 2008]. In the contemporary world, social role stereotyping is, in many different ways, also strengthened by the media. Despite encouraging reports that favor female leadership effectiveness, in many places ambitious women are still being ‘punished’ for their aspirations, as described by Sandberg [2013], Eagly and Carli [2007], Hymowitz and Schellhardt [1986], Ely et al. [2011], Brzezinski [2011], Myers [2002], and others.

Rigid stereotypes that permeate societies and organizations have prevented women from reaching high managerial posts. Some of these are born out of widespread prejudice based on negative connotations commonly associated with ambitious women [Ely, 1994; Ely, 1995; Eagly and Carli 2003; Myers, 2002]. Women aspiring to high posts can be unfairly characterized as ruthless, male-like, and unlikable, traits which can undermine their perception as competent experts. In some cultures or circles, such women would also still be considered as being ‘incompatible’ with the traditional image of a wife and a mother. This view has deep historical roots and still impacts many cultures. Contradictory attitudes not only in developing economies, but also for example, in the USA, contribute to negative perceptions of professionally ambitious women.

As studies show, competitive, ambitious women score low on likability scale. They are perceived as too bossy, dictatorial, power-thirsty, or, at the other end of the spectrum, indecisive, too gentle, or too emotional, a combination of characteristics indicating lack of leadership qualities [Eagly, Carli, 2003; Eagly, Carli, 2007; Blum et al., 1994; Britton, 2000].
Another obstacle for women leaders stems from the perception that they are more communal than men, who are usually considered more agentic, i.e., more task- than people-oriented and more competitive than cooperative [Eagly, Carli, 2003, 2007; Ely et al., 2011]. Women who are perceived as communal and empathetic, instead of being appreciated for those traits, may instead encounter mistrust and hostility. Because these ‘positive’ characteristics are not always accepted as such, women may feel compelled to adapt masculinized traits to survive as leaders, to appear more male like, or as tougher [Britton, 2000; Eagly, Carli, 2007; Ely, Padavic, 2007]. For example, it has been argued that Margaret Thatcher, or more recently Kim Campbell, the former Prime Minister of Canada in order to gain higher authority and higher degree of power as leaders, both compromised their feminine characteristics and adopted associated with masculinity traits. By working on their pitch, so that their voice would sound lower, more masculine, more compliant with the general perception of a leader women hope to gain more trust as leaders [Auer, 1979]. In 1979 Margaret Thatcher famously went through voice training sessions with Shakespearian actor Laurence Olivier, which indeed impacted her oral performances as a political leader. As pointed out by Eagly and Carli [2003], the tension between being communal or more agented is often crucial for performance of organizations, because it directly relates to the question of whether leaders should be more liked or more respected.

Although being communal or empathetic can in the broader perspective be perceived as negative, those traits can also be viewed as a leader's potential assets. Some of such ‘friendly’ traits, previously associated mostly with women, are recognized as beneficial in conflict-solving situations, and can open up new possibilities, helping women advance in an organization’s hierarchy. High empathy in many mature organizations is already perceived as an indispensable trait of leaders, especially in the open system approach to organizations, as advocated by Senge [1999] and Giddens [1991].

**Manifestations of Gender Inequality in Organizations**

The word *prejudice* comes from Latin *preajudicium*, where ‘*prea*’ is translated as ‘in advance’ and ‘*judicium*’ as ‘judgement’ [Oxford, 2015]. The same source defines prejudice as “dislike, hostility, or unjust behavior deriving from preconceived and unfounded opinions”. **Bias**, close in meaning to prejudice, is defined by the same source as “an inclination or prejudice for or against one person or group, especially in a way considered to be unfair” [Oxford, 2015]. In this study, we consider bias as less severe than prejudice, as the latter implies pre-judgement based on false preconceptions that originate in culture, and is often deliberate. Bias can be unintentional and more subtle than prejudice.

**Stereotype** refers to a historic background of a group, within which greatly simplified beliefs are created and passed-down to the next generation. Stereotype can be defined as “a widely held but fixed and oversimplified image or idea of a particular type of person or thing” [Oxford, 2015]. Widely adopted stereotypes of women’s social roles are present
Gender discrimination can be defined as:
“Essentially, a set of widely shared conscious and unconscious mental associations [...]. Study after study has affirmed that people associate women and men with different traits and link men with more of the traits that connote leadership” [Eagly and Carli, 2007].

We can try to understand some mechanics behind discriminatory constructs and/or actions by applying theories such as categorization theory, minimal group paradigm and social identity theory [Tajfel, 1974; Tajfel, Turner, 1979]. These theories provide invaluable insights into the studies of in-group conflicts, which can include discrimination and bias. Tajfel’s concepts of social identity and in-group behavior was tested by Sherif’s studies [1961], further revealing the implications of social-identity theories for understanding group behaviors, which can be extrapolated and applied to the analysis of women’s discrimination as leaders.

Very often at the root of all types of “exclusion” or discrimination (including those pertaining to, female leaders) is the fear of unfamiliarity. It can also be blamed for a low tolerance of things foreign to one’s own perception [Sherif, 1961]. In male-dominated environments, women’s presence can be perceived as infringing on the accepted status quo, and an intrusion that seeks to ‘subdue’ or dominate the ‘familiar’. The presence of women can therefore potentially trigger aggression against, and resistance to, women-leaders, and women aspiring to top managerial positions.

An example of overt discrimination is employers’ preference for childless women and male employees, rather than for mothers or young women [Branch, 1994]. That preference affects not only women applying for jobs, but also those already employed. According to a report published by the Department for Business, Innovation and Skills of the UK Government [Adams et al., 2015], one-third of pregnant women feel unsupported by their organization, nearly 30% were refused flexible work conditions, around 8% said that their employer was unhappy about them taking maternity leave, and 15% reported being given unsuitable work. Moreover, 11% of women reported being pressured to begin their maternity leave earlier, 14% were encouraged to take time off against their will, and 20% reported being mistreated because of their pregnancy.

On the other hand some employers offer attractive maternity-leave perks to pregnant women. However, as pointed out by Eagly, Carli [2007], such benefits can be misleading and contribute to hidden forms of female discrimination by excluding them from working environment. They can slow down or prevent women’s economic advancement [Eagly, Carli, 2007]. Taking longer breaks and being alienated from the work environment can have numerous negative consequences, such as narrowing work-related social networks, staying behind rather than updating work-related know-how, or reinforcing negative endogenous determinants. In this sense, these ‘benefits’ can perniciously work against women’s careers, especially for prospective leaders who need work experience [Adams et al., 2015].
Another example of gender-related discrimination is the metaphorical ‘glass ceiling’ [Hymowitz, Schellhardt, 1986], which refers to invisible barriers that keep women (and other minorities) from advancing up on an organizations’ hierarchy ladders. When introducing that term, Hymowitz and Schellhardt aptly expressed women’s situation stating that: “Even those few women who rose steadily through the ranks eventually crashed into an invisible barrier. The executive suite seemed within their grasp, but they just couldn’t break through the glass ceiling” [Hymowitz and Schellhardt, 1986].

Today some scholars disagree with the concept of ‘glass ceiling’, or consider it a simplification, pointing out that the problem is more one of the complexity, rather than the impenetrability, of barriers. Since some women are in the top hierarchies of organizational structures, one might argue that the ‘impenetrability’ aspect is no longer valid [Eagly, Carli, 2007]. But we cannot forget that in the light of statistics, when it comes to C-suits, we are often looking at outliers and the ‘glass ceiling’ has not completely disappeared. Barriers still prevent women’s career advancement, which is perhaps best demonstrated by countries with the lowest ranks of the Global Gender Gap Index [Samans et al., 2015], such as Yemen, Pakistan, Chad, Syria or Islamic Republic of Iran.

Another study carried in the EU by L’Oreal Foundation [2015] revealed significant bias against women’s scientists. According to this study, 89% of approximately 5,000 respondents stated that women are not good at science, 67% considered women not suited for scientific professions, 45% of women believed that men prevent women from advancing on a career ladder, and 44% pointed to a lack of support from higher management. The subject of women’s performance in math was extensively discussed by Spencer et al. [1999]. Juxtaposition of these figures with an analogous study conducted in China [Donald, 2015] suggests the crucial role of culture-based determinations on bias and prejudice against women: 93% of Chinese respondents considered women unsuitable for scientific work. It is particularly striking that this preconception is shared by women themselves in that culture.

Unpaid work

An important, yet often overlooked, example of a strong negative determinant preventing women’s advancement is unpaid work. The most common forms of unpaid work are typical household activities such as cleaning, cooking, child care and other forms of ‘informal labor’. Other forms include providing free educational services and voluntary work in collegial bodies like school PTAs or churches. While some degree of unpaid work is unquestionably beneficial for givers and takers, problems arise when voluntary work is the only available source of social inclusion. In such cases, unpaid work often leads to exploitation [Goldschmidt-Clermont, 1982].

The socioeconomic impact of unpaid work becomes particularly important when combined with too low or too high fertility rates. Concerning the former, the aging population of the EU-28 is particularly concerned with the fertility problems. While providing effective
social and economic mechanisms encouraging women to bear children is an important policy goal it should not be done, at the expense of women’s career opportunities or make unpaid work the primary form of social inclusion and recognition. The implementation of some necessary changes (providing easy access, affordable child care facilities) still meets with barriers [Smith, Bettio, 2008].

High fertility rates combined with unpaid work contributes to women’s insecurities and vulnerability. In densely populated developing countries like India and China, and in Africa, women’s insecurities act as triggers, stimulating their dependence on men leading to suppression of self-development and economic independence. Women living in poverty are often uneducated and have limited rights to make decisions about their lives. The statutory social place dictates their roles and makes women an easy target for exploitation. Early and/or multiple pregnancies carry with them other serious problems for women’s lives and careers. Unpaid work comes with motherhood, and can leave little time left for other activities, creating insurmountable, culture-rooted problems with serious socio-economic repercussions in a micro-, meso- and macro-scale.

Informal employment and unpaid work clearly originate in gender role stereotyping. Culture-rooted stereotypes impose restrictions on socially acceptable forms of the utilization of women’s skills and reduce women’s access to official labor markets. Indeed, despite often being better educated than men [Eccles, 1994; Fausto-Sterling, 2008], the utilization of women’s skills still lags behind utilization of men’s skills. Gender role rigidity, insufficient child care support, and the general consent for women’s voluntary work create difficult to penetrate barriers, and slows down advancement.

Despite its presence in all cultures, unpaid labor is often neglected by macro- and micro-economic models [Lewis, 1993]. The household-related services provided by women remain in the economic grey zone, even though the economic impact of this phenomenon is substantial. We agree with Goldschmit-Clermont that there are three main economic repercussions of unpaid work that apply mostly to developed countries [Goldschmidt-Clermont, 1982]:

- low return on investment in female higher education,
- low tax return resulting from women’s informal employment, such as performing household-related chores rather than outsourcing them,
- contribution to unemployment and claiming benefits.

There are few, already practiced, effective economic incentives for changing the status quo. Unfortunately, a current lack of understanding and myopic focus obstructs potential economic gains from alternatives to unpaid work. Some relatively easy changes to introduce include:

- improved education,
- better access to birth control,
- allowing women to make reproductive decisions without external pressure, i.e., become mothers willingly rather than face the consequences of uncontrolled pregnancies,
• providing support for paid work,
• better utilization of women's skills,
• well-designed equality policies and fair access to career opportunities.

Effective implementation of well-designed equality laws would contribute to: lowering barriers raising awareness about detrimental consequences of excessive unpaid work, and to the more sustainable socio-economic progress [Rubery et al., 2004].

Discussion

Gender, like race, is a part of natural human diversity. Because of this diversity we face barriers, sometimes leading to serious discriminatory behaviors such as cases of public ostracism. These barriers play a meaningful role in the absence of women leaders in the C-Suits of organizations. Some of the negative factors discussed above are often subtle (e.g. sexual innuendoes implying women's subdued roles, implicit bias), and therefore difficult to investigate. Others are more obvious and therefore easier to address. The visible factors manifest themselves more in the “open-field” battles. One side of the conflict reaches for the above-mentioned ‘weapons’ of creating, sustaining glass-ceiling barriers, wage inequality, discrimination against pregnant women, women-mothers, and aging women, among others [Waldfogel, 1997; Sanberg, 2012; Brzezinski, 2010; O’Neill, Polachek, 1993]. On the other side are tools to defend women, and these are fairness and gender equality approaches to employment realized through, among others, organizational support, well designed and implemented programs and policies.

This interplay of the external and internal factors discussed above has shaped how women approach or exercise leadership today. Female leadership in the context of culture is related to “conscious and unconscious mental associations,” which play a paramount role in establishing norms or prescribing individuals to their various social roles [Eagly, Carli, 2007]. Some of these “mental associations” concern and strengthen negative culture-based bias against women leaders. They have often contributed to polarization between women identities and societal expectations. The lack of environmental support, as well as an insufficient level of social understanding for women's aspirations, additionally undermines women's trust in merit-based organizational structures, moving women further away from achieving their career goals [Ely et al., 2011; Ely, Padavic, 2007].

It is often claimed that, stereotyping, prejudice and bias have played a central role among the culture-rooted manifestations hindering women's progress as leaders [Ely et al., 2011; Ibarra, 1993; Ibarra et al., 2014]. The main problem with such barriers is the potential impact on women's self-esteem, which may lead to internal polarization of women's personal identity and that of a leader. Such situations may be amplified by men succumbing to attribution errors, meant as misinterpretation of the causes of other people's behavior. Men, who for centuries dominated organizational structures, have historically attributed women's underrepresentation in top organizational hierarchy to women's inability to take important decisions, such as these related to managing organizations. Another reason for
men blocking women's advancement may be a misunderstanding of the motives behind women's aspirations, assuming that women are power thirsty rather than competent and well-suited for top managerial positions [Lerner, Miller, 1978; Pettigrew, 1979; Eagly, Carli, 2007].

**Organization as Leaders’ Natural Environment**

The word “organization” is derived from a verb “to organize”, i.e., “to make arrangements for (something) to happen” [Cambridge, 1995]. The Business dictionary provides a broader definition and describes an organization as:

> “a social unit of people that is structured and managed to meet a need or to pursue collective goals. All organizations have a management structure that determines relationship between the different activities and the members, and subdivides and assigns roles, responsibilities and authority to carry out different tasks. Organizations are open systems—they affect and are affected by their environment” [Business dictionary, 2015].

Both descriptions of “organizations” share the notion of “togetherness,” meaning cooperation – and management plays an important role in learning organizations as described by Senge, i.e., organizations where people continually evolve and follow their aspirations [Senge, 1990]. Senge’s approach provides a thorough, multidimensional insight into the organization as a complex system, which creates its own identity and seeks to treat all its members fairly and with respect. In such organizations, gender aspect has no relevance in evaluating leader’s effectiveness, or creating opportunities. However, it matters in terms of providing adequate working and developmental conditions. In a practical application of Senge's theory, a learning organization would identify and act on a problem to meet the needs of its members. In the case of females, organizations should notice their needs, including those strictly gender-related, e.g. provide facilities as prosaic as separate toilets, or parking lots for pregnant women. Practical organizational adaptations were well described by Sheryl Sandberg in her practice-based experience as a woman-leader, the CEO of Facebook [Sandberg, 2013].

Organizations and their leaders are interdependent, relying on mutual trust, influence, and contributions to each another [Ely 1994; Ely 1995; Acker 1990; Ibarra, 1993; Wood, Bandura, 1989; Giddens 1991; Senge, 1990; Hofstede et al., 1997]. An important and interesting consequence of organizations as multi-level hierarchies is that most leaders, except those at the very top, are also themselves subordinates: the leader of a given group has another leader as his/her superior. This dual role can be a challenge, because different traits and personal qualities are essential to perform well in these two contexts. Men with strong leadership traits determined to pursue their careers and ambitions may be charismatic but unable to perform well as subordinates of other leaders, i.e., their superiors. It
might be argued that characteristics traditionally associated with females, in particular being conciliatory, communal, and exhibiting other cooperative traits, can readily meet the requirements posed by these two polarized roles.

There is also an important temporal aspect of organizations. Leaders are often responsible for maintaining existing structures (universities, companies, countries), many of which are a legacy of previous leaders intended to be passed on to the next generations. These leaders are thus responsible to maintain and improve the current state of affairs within an organization. Recently, much attention has been given to innovation and technological advancement, putting pressure on the future of organizations and often disregarding their past. This rather approach may disregard the past, including historical and cultural backgrounds. As argued in the previous section, embracing cultural backgrounds is essential to understanding the factors influencing women’s place within organizations.

In addition to the dynamic nature of organizations and the importance of cultural background, arguably the most challenging aspect of organizations is their complexity. Organizations are classical exemplifications of complex systems, i.e., conglomerates of large numbers of interwoven entities that interact with each other; and the overall outcomes of those interactions are often more than a direct consequence of laws that govern those interactions [Mitchell, 2009]. In other words, organizations may exhibit emerging properties, i.e., properties that are not anticipated given the elementary laws of interactions between the constituents, and synergic properties, i.e., properties that are “greater than the sum” of the properties of the components. Such properties are hard to predict and control and many organizations have experienced examples of the unanticipated consequences of managerial decisions.

Apart from this type of complexity, organizations can be viewed as complex in at least one other sense, i.e. the internal complexity posed by the individuals that form an organization. People in organizations not only interact with each other, create internal cultures within organizations, but also lead their autonomous existence and operate on both levels: as individuals functioning within and outside their working environments. Individuals and groups can elicit rich internal dynamics and personalities, and are interdependent components of a system [Senge, 1994; Giddens, 1986; Corning, 1995]. Such complexity makes it even more difficult to control organizations and predict their future behavior.

**Gender Disparity in Top Managerial Positions in Organizations**

Since organizations can be compared to a living organism Senge [1994], and can be considered an open systems capable of thinking, they are also susceptible to adopting prevailing social perceptions, including biases, prejudices, and stereotypes. Therefore, they need to be aware of such susceptibilities and act fast when change or intervention are
needed. Unfortunately, the characteristics reviewed in the previous section (complexity, strong cultural roots, and temporal inertia) can slow down organizations’ adaptability to changes. According to a recent report published by the Catalyst Research Center for Equity in Business Leadership [Catalyst, 2014], as of October 2014, in only a handful of countries women’s share of board seats exceeds 25%; these are: Norway (35.5%), Finland (29.9%), France (29.7%), and Sweden (28.8%). Overall, Europe seems to be most advanced in this area, and there are four more countries in that ranking (Belgium, UK, Denmark and the Netherlands) for which this indicator is higher than for the North American economies, i.e., 19.2% for the US and 20.8% for Canada. In Asia and the Pacific region, only Australia maintains comparable standards (19.2%); the shares for India and Hong Kong are around 10%, and Japan closes the world-wide ranking with 3.1%.

It is worth noting that these numbers can be biased, because the report reflects only the organizations (in this case companies) included in selected stock indices (e.g., only 24 companies for Norway, the leader in the ranking, 60 companies for Canada, and 29 companies for Japan). As a result, this ranking characterizes only the largest enterprises, which presumably have strong international connections. Such companies are arguably exposed to more ‘universally embraced values’ and can be expected to have relatively high levels of awareness of gender equality. It is thus likely that the analogous numbers for smaller companies not included in the most prestigious stock indices are bleaker. See [Catalyst, 2014] for details.

Gender disparity clearly correlates with status in the management hierarchy. While only 4.6% of CEOs in large US enterprises are women (S&P 500 companies, as of 2015 [Catalyst, 2015], the fraction of board seats occupied by women is 19.2%. Further down the hierarchy, the share of women executive/senior-level official and managers is 25.1%, and even higher (36.8%) for the first/mid-level officials and managers. Compared to these numbers, almost half (45%) of labor force in the S&P 500 companies are female. This ‘pyramid’ indicates the existence of a ‘glass ceiling’ for women (literature hardly discusses glass ceiling for men).

Though these results fall short of gender parity, recent years have brought substantial and qualitative changes. The authors of Fortune's Most Powerful Women in Business ranking for 2014 observed a substantial shift of market sectors with respect to enterprises led by women CEOs [Fortune, 2015]. While the first such ranking published by Fortune in 1998 featured mostly women leading companies from “industries with a premium on creativity”, i.e., advertising, media, and publishing, many women CEOs in the contemporary ranking represent blue-chip firms: the technology, defense, energy, and automotive industries.

When comparing various statistics we often rely on ‘statistical significance’. However, the absence of statistical significance does not necessarily need to imply lack of an impact. Eagly and Carli [2003] illustrated the importance of seemingly insignificant statistical variations, quoting the impact of medical studies on population. The researchers chose the example of aspirin uptake in relation to heart attacks, showing that relatively small
statistical changes can have meaningful implications on people's life. Similarly, even small changes in relation to female leadership can trigger positive transformations, or, to the contrary, be the auguries of regress. In their studies Eagly and Carli also pointed out to earlier research on statistical insignificance having major repercussions [Abelson, 1985; Bushman and Anderson, 2001].

Misinterpretation of statistics can distort the actual perception of reality. As posited by Eagly and Carli [2007], another factor that can falsify the actual status of women's leadership is putting few female CEOs in the media spotlight. In statistical terms, these rare individuals constitute outliers, i.e., isolated observations (data points) located far away from the central tendency. In reality, female leadership is still uncommon in advanced economies and completely absent in many of the less affluent ones, especially in the developing countries.

It is important to point out that when analyzing women's place in organizations, we are not trying to suggest that women require special treatment to compensate for their more up-the-hill path leading to successful career. Like their male counterparts, women need to be given equal opportunities and be fairly evaluated on their leadership effectiveness, rather than be seen through the lenses of bias [Ely, 1995]. There is also a noticeable body of leadership studies that can be applied to leaders of both genders. However, the pool of shared characteristics does not imply that both genders are identical. Certain differences in genders and in their perceptions are scientifically proven and should not be ignored; these include, some biological and psychological differences, which are important, particularly when trying to better understand leadership.

Conclusions

In this paper, we brought much evidence that the current situation of women in higher strata of organizational structures leaves much to be desired. Nevertheless, some progress has been made, in particular in the recent decades, and chances are that it will be taken further. The ongoing and planned legal and economic measures seem to indeed be changing the current state of affair.

The 1995 Beijing Declaration and Platform for Action [UN, 1995], and policies proposed by the European Employment Strategy indicate that progress can be made but requires work. Hopefully, reaching full parity will take less time than the historical path required to implement gender equality rights. Spain's 2007 Equality Law, which encourages large companies to have at least 40% quota of women in their boards, is an example of new measures taken to broaden women's access to top managerial positions [Lombardo, 2008]. The Scandinavian model of state support is another effective example of this practice. We can therefore say that well-developed endorsement for women through governmental
regulations positively transformed the socio-economic spheres in Scandinavia. This change was obtained by providing e.g., child care facilities, lowering the rates of unpaid employment, regulating birth rate statistics and reducing the overall gender gap, which enabled women to more fully contribute to the economy [Plantenga, Remery, 2008; Lewis 1993].

The prevailing reluctance to admit the existence of problems related to women's inequality may seem more of political rather than economical one. It can be a result of a short-term vision and misconceptions that come from misguided fears of high economic costs of equality reforms [Humphries, Rubery, 1995]. Some practices on the corporate level, implemented by companies such as Intel, Coca-Cola, Google and Facebook, provide additional arguments in favor of multiple benefits of women's inclusion in the labor market and leadership positions. Measures exercised by some HPOs or countries like Sweden are also reflected in new HR policies, which, among others, promote work-family balance, reduced unpaid work and satisfying, paid work. These companies also introduce flexible working hours and voluntary quotas for women holding senior positions.

Women are making essential contributions to economy and their presence in leadership has positive impact on organizations, which suggests that a more gender-balanced organizational structure transcends politics and ideologies and it is justified by economic indicators. The main conclusion of this study is that easier access for women to labor market and to C-Suits is a worthwhile investment with long-term positive socioeconomic consequences for all society members, regardless of gender or other characteristics. With a rapidly growing world’s population, the economic repercussions of reducing gender disparity are likely to be of significance to all economic states. Currently, women constitute 49.6% of the world’s population [The World Bank, 2015], which reflects the unquestionable potential of this still underrepresented group.

Women inclusion within societies and organizations is arguably on the rise. As scholars like Steven Pinker [2011] claim, the economic and safety-related conditions of life are better now than ever before. This trend can be extrapolated to women's place in organizational structures which, as we said, is gradually changing in women's favor. If Pinker’s hypothesis is correct, if societies are becoming more humanitarian, more egalitarian, we may hope for an exponential progress towards gender parity in C-suits, and for the unbiased treatment of genders in organizational structures.

Given the pace of changes in the last decade and their impact on organizations, contemporary organizations need to be open to transformations, while leaders, more than ever, are in need of continuous updates of their knowledge. It will be interesting to see how will women-leaders measure up to these changes. With the support from policymakers and organizations, there is a realistic chance that gender gaps will be further reduced or eliminated, allowing women to work in healthy, merit-based organizations.
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Abstract

The e-commerce market has been developing very rapidly and changing traditional distribution systems. The development of online channels is matched by a similar evolution of companies’ logistics systems. As a consequence, logistics processes management now significantly influences e-customer service quality, which has emerged as a competitive advantage. The main goal of this paper is to identify e-commerce business models, modern distribution channels and management tools that would facilitate a continuous improvement in e-customer logistics service. Based on the literature and interviews with e-commerce services providers, we provide a plethora of good and best practices useful for managers in the rapidly developing and highly competitive e-commerce business.

Key words: e-customer logistics service, multi- and omnichannel distribution, cooperation on the e-market
JEL: L21, L81, M15
Introduction

In an era of technological revolution customers make purchase decisions in new and different ways than they had used in the past and have new expectations when working with traditional and native digital retailers. The change in consumption patterns is intrinsically linked to the rapid development of information technology and the internet [Xiao Yan, Yong, Qinli, Stokes, 2012]. Customers have access to detailed information about products and can instantaneously compare competitive offers. With so much information available, they have never been more demanding and challenging. In response, retailers have been developing new strategies and reconfiguring physical distributions systems on the B2C market to change the way goods are sold, stored and moved through supply chains. E-commerce, as a new distribution channel, creates an opportunity, which revolutionized logistics processes [Żurek, 2014]. Moreover, many retail channels have been integrated in complex distribution systems to simultaneously offer products both online and offline in different types of stores, using internet and mobile technologies. As a consequence, logistics service has become a backbone of competitive advantage in e-commerce and requires continuous improvement.

The goal of this paper is to identify e-commerce business models, modern distribution channels and management tools, focusing on means to continuously improve e-customer logistics service. The main research questions are as follows:

- How has e-commerce changed business models and distribution channels?
- What are the key elements and challenges in e-customer logistics processes management?
- What are the main ideas and tools in searching for excellence in e-customer logistics service?
- How can business processes excellence in e-commerce be measured?

This analysis is relevant from both a practical and theoretical point of view. In theory, the influence of e-commerce technologies and practices on business models is expected to be as important as the impact of other key management techniques, including just-in-time or total quality management [Desruelle, Burgelman, 2001]. In practice, the development of online commerce has to be complemented by the management of a physical logistics system, with the exception of digital products distribution. As Jeff Bezos, founder and CEO of Amazon.com, which offers world’s biggest selection of products online, remarked: “Amazon.com is most of all a logistics company” [Stone, 2013].

This paper is based on a theoretical and an empirical investigation. The literature included in this study has been selected to identify different elements of logistics service in e-commerce. Numerous case studies have been written on the basis of the literature reviewed, business reports, websites and interviews with e-commerce services providers. These sources enabled us to discover the main trends in continuous improvement of e-customer logistics service.
The interviews were conducted with e-commerce customer service professionals in August 2015 and all questions dealt with requirements and good practices for improving and measuring e-customer service level from the point of view of business practice.

**Business Models in E-Commerce**

To understand and present the importance of logistics customer service in e-commerce supply chains, we first define electronic commerce. According to the definition of Wigand, electronic commerce is a relatively new concept added to the business vocabulary in the 1970s, and includes any form of economic activity conducted via electronic connections [Wigand, 1997]. It can be defined as conducting the initiation and agreement phase of an economic transaction via electronic networks that allow the automated processing of transaction data [Delfmann, Alberts, Gehring, 2002]. Moreover, it can include online electronic payment systems and techniques as an important condition of smooth e-commerce development [Jing, 2009].

There are external and internal factors that drive companies from different economic sectors to adopt and develop e-commerce. The external drivers in the business environment include for example, globalization, trade liberalization, competitive pressures, technologies or virtual reduction of physical distance – all of which create new challenges and possibilities for companies. Internal drivers motivate companies to reduce costs, increase speed, internally enhance value chain coordination, develop and improve external collaboration, create interdependency, facilitate more added value, better manage relations with customers and, finally, develop competitive advantages [Desruelle, Burgelman, 2001]. In the context of e-commerce, the business process is a set of activities performed and coordinated with information systems to offer products/services to reach defined business goals [Yang, Humphreys, McIvor, 2006].

Generally, the following pure business models have been identified in e-commerce:

- **portals**, which offer information and search services for their customers, e.g. in the pre-transaction stage,
- **market makers**, which enable economic transactions between customers by offering mechanisms for the secure and trustworthy conduct of such transactions,
- **product/service providers**, that present, market, and sell products/services directly via the Internet and ensure the physical or digital delivery of goods and services [Delfmann, Alberts, Gehring, 2002].

Business models determine different strategies, supply chains structures, and challenges for logistics processes management. In this paper we concentrate on the activities of product providers on the B2C e-market, which involve planning, implementation and control of the flow of goods and services and related information between the selling company and the buyer.
Changes in Distribution Channels

The development of e-commerce has created significant changes in retail logistics and physical distribution networks. According to a report published by Jones Lang LaSalle, the evolution of retail logistics has passed through various phases according to the following timeline:

- **In the 1970s**, most retail stores were replenished by direct deliveries from suppliers or wholesalers;
- **In the 1980s**, retailers started to centralize their store deliveries through new distribution centers, which they controlled;
- **In the 1990s**, global sourcing for non-food products began, with many retailers developing import centers to receive and process mostly containerized imports;
- **From around 2000**, e-commerce began to rapidly expand with pure-play, internet-only retailers leading the way in establishing e-fulfilment distribution networks [Jones Lang LaSalle, 2013].

Contemporary companies develop multichannel or omnichannel strategies to achieve potential synergy effects (see Table 1). They combine different approaches to stock-keeping and management, picking and packing orders in warehouses or in stores, and also transporting and delivering products, including home delivery, click and collect at the store, or click and drive at the pick-up point (that is, the so-called “drive-in”).

### TABLE 1. Synergies between online and offline channels

<table>
<thead>
<tr>
<th>Objectives and potential advantages</th>
<th>Main function concerned</th>
<th>Actions to be undertaken</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exploiting the capital of the brand for online sales</td>
<td>Strategy, marketing</td>
<td>The use of the same brand for stores and online sales</td>
</tr>
<tr>
<td>Recruiting new customers</td>
<td>Direct marketing and customer relations</td>
<td>The implementation of an IT system covering all channels</td>
</tr>
<tr>
<td>Developing the frequency of customer purchases, particularly “mixed” customers</td>
<td>Purchasing and assortment policy</td>
<td>Prospecting and communicating online using information from loyalty cards</td>
</tr>
<tr>
<td>Encouraging customer loyalty</td>
<td>Logistics</td>
<td>Coordinating buying with store purchasing centers</td>
</tr>
<tr>
<td>Increasing purchasing power</td>
<td></td>
<td>Exploiting customer databases and relationships with listed suppliers</td>
</tr>
<tr>
<td>Optimizing costs and diversifying logistics models</td>
<td></td>
<td>Using stores for receiving orders, as pick-up points for online orders, as a logistics platform for managing stock and for home deliveries</td>
</tr>
</tbody>
</table>

*Source: Colla and Lapoule [2012], p. 849.*
In the *multichannel model*, different channels – including store, web or mobile devices – are designed and managed as parallel independent distribution network structures. The multichannel approach evolves to *omnichannel strategies* that offer customers a seamless experience, regardless of how they choose to shop [Jones Lang LaSalle, 2013]. The omnichannel strategy requires the design of new logistics processes and management as well as their integration as dedicated offline and online sales channels. Customers can now, e.g. order online and pick up in a store, visit the store and order online via a kiosk, visit the store and shop the retailer’s website via their mobile phones, visit the store and shop on another retailer’s website, or visit the store and compare prices via barcode scanner and find the product at another physical store at a lower price [Jones Lang LaSalle, 2012]. The effects of ROPO – *research online, purchase offline* and reverse ROPO – *research offline, purchase online* should ensure that customers can change sales channels effortlessly and conveniently.

**Logistics Service as a Source of Competitive Advantage**

Customer logistics service is defined as:
- *activities* involved in delivering products/services;
- *performance levels* that meet requirements of customers; and
- *a management philosophy* that distinguishes a company from its competitors [Kempny, 2001].

Companies implement and improve different elements of logistics to fulfil various customer needs, depending on the target market, types of delivered goods, volume, system of deliveries and competitive pressure [Kempny, 2001]. Generally, companies manage three groups of elements collectively, which requires continuous improvement through new and innovative solutions [Kadlubek, Lis, 2013].
- *pre-transaction elements*, like e.g. a written customer service policy, market communication, organization structure, system flexibility, presentations and seminars for customers;
- *transaction elements*, including (among others) the availability of products, time, flexibility, frequency, delivery reliability, order placement possibilities, information flow, and communication;

Logistics has gained a major role in e-commerce development. E-commerce companies have a higher probability of creating a sustainable competitive advantage and improved performance if they have strong logistics capabilities [Cho, Ozment, Sink, 2008]. Logistics service is considered a main business service quality dimension in an
e-commerce environment, along with marketing, operations and collaboration services [Yang, Humphreys, McIvor, 2006]. Logistics service quality is both a critical success factor and a differentiation tool, which influences e-customer satisfaction levels and retention rates [Micu, Aivaz, Capatina, 2013]. Table 2 presents examples of logistics capabilities in the e-commerce market that create service quality.

### Table 2. Logistics capabilities in the e-commerce market

<table>
<thead>
<tr>
<th>Capabilities</th>
<th>Definitions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-sale customer service</td>
<td>The ability to service the customer during the purchase decision process (i.e. before the customer buys the product)</td>
</tr>
<tr>
<td>Post-sale customer service</td>
<td>The ability to service the customer after the sale of the product to ensure continuing customer satisfaction (i.e. return product handling)</td>
</tr>
<tr>
<td>Delivery speed</td>
<td>The ability to reduce the time between order taking and customer delivery</td>
</tr>
<tr>
<td>Delivery reliability</td>
<td>The ability to exactly meet quoted or anticipated delivery dates and quantities (i.e. deliver correct orders on time)</td>
</tr>
<tr>
<td>Responsiveness to target markets</td>
<td>The ability to respond to the needs and wants of the firm’s target markets (i.e. handle small, frequent orders)</td>
</tr>
<tr>
<td>Delivery information communication</td>
<td>The ability to communicate shipping and delivery information to and from customers</td>
</tr>
<tr>
<td>Web-based order handling</td>
<td>The ability to handle and fill orders using a web-based order handling system. This also includes logistics information sharing with other channel members</td>
</tr>
<tr>
<td>Widespread distribution coverage</td>
<td>The ability to effectively provide widespread and/or intensive distribution coverage</td>
</tr>
<tr>
<td>Global distribution coverage</td>
<td>The ability to effectively provide global distribution coverage</td>
</tr>
<tr>
<td>Selective</td>
<td>The ability to effectively target selective or exclusive distribution outlets</td>
</tr>
<tr>
<td>Low total cost distribution</td>
<td>The ability to minimize the total cost of distribution</td>
</tr>
</tbody>
</table>

Source: Cho, Ozment, Sink [2008], p. 343.

All logistics service elements are crucially important to the competitive advantage of e-retailers. First, the internet is a revolutionary pre-transaction tool, which transforms market communication. It is an optimization tool for physical logistics systems, which benefits from speed, interaction and flexibility [Gurău, Ranchhod, Hackney, 2001]. Distribution can be planned, coordinated, monitored and controlled on the internet. Secondly, logistics is responsible for the physical realization of e-orders to achieve a high-quality customer experience. However, some of the new logistics challenges that have emerged include: the need for a more flexible transport system in order to serve fast-changing customers; constantly changing transport relations due to the geographical dispersion of customers; the handling of smaller shipments delivered directly to the customer;
a shift from single-customer towards multi-customer warehousing; different approaches to stock-keeping, picking and packaging; and various models of goods delivery or ensuring carriers’ capacity during peak periods [Delfmann, Albers, Gehring, 2002; Colla, Lapoule, 2012]. Logistics transaction services are supported by online applications, e.g. providing real-time information according to product availability, inventory level or shipment status, and technologies such as smart phones, tablets or SMS alerts, e.g. anticipating deliveries. Finally, in the post-transaction phase, the choice of the best logistics strategy is particularly essential in managing returns.

A cross-section of the following elements identify success factors and the key sources of competitive advantage in electronic commerce:
- offering a website experience with high quality design and ergonomics;
- developing diversified, efficient and service-oriented logistics;
- offering a diversified assortment of products and services creating value for the clients and firms, and
- exploiting the advantages of the multichannel approach [Colla, Lapoule, 2012].

Companies use different approaches to logistics management to develop e-commerce activities depending on their size and geographical coverage. Micro- and small local or regional companies can develop their own logistics. Some online stores develop drop-shipping and deliver products directly from the warehouse of an external partner (such as a producer, distributor or specialized company) [Kawa, 2014]. Others turn their attention to one stop e-commerce and outsource in partnership with logistics services providers. Postal, express and parcel services providers are the main contractors in e-commerce logistics. But more and more logistics operators aim to consistently gain business clients in the fast-rising e-commerce sector. They sometimes design specific services and solutions for a particular product segment. According to a report published by Jones Lang LaSalle, e-commerce is considered one of the key drivers of logistics services market in Poland, likely to result in increasing demand for modern warehouse and distribution space through 2020 [Jones Lang LaSalle, 2015].

**Significance of Logistics Service on the Polish E-Commerce Market**

E-commerce market has been developing very rapidly in Poland. In the last decade, more than 20,000 online stores were established and the value e-market commerce in 2014 was approximately 30 billion PLN in 2014 [Strzelczyk, 2015] or 6% of the value of the Polish retail market [Baluta, 2015]. Polish e-market is developing at the fastest rate in the European Union, where e-commerce is one of the pillars of the economic growth and increasing employment levels [European Commission, 2012]. In 2015, its value is
expected to reach 32 billion PLN as approximately 17 Mio. (78%) of internet users visit e-commerce services [e-Commerce Polska, 2014]. But the loyalty of e-customers is low; only 16.82% of buyers shop more than once in the same web service [Strzelczyk, 2015].

The most important determinants of e-shopping in Poland are: convenience – because of 24/7 availability, no physical distance, no necessity to visit a store, the possibility to compare competitive offers, and lower prices than in traditional stores (see Figure 1).

**FIGURE 1. Sources of motivation for e-shopping in Poland**

<table>
<thead>
<tr>
<th>Source</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>24/7 availability</td>
<td>88%</td>
</tr>
<tr>
<td>no necessity to drive to store</td>
<td>83%</td>
</tr>
<tr>
<td>easy possibility to compare offers</td>
<td>77%</td>
</tr>
<tr>
<td>more competitive prices than in traditional stores</td>
<td>76%</td>
</tr>
<tr>
<td>easy possibility to find rare and specialistic products</td>
<td>64%</td>
</tr>
<tr>
<td>wider range of products than in traditional stores</td>
<td>62%</td>
</tr>
<tr>
<td>a lot of possibilities to deliver/pick up purchases</td>
<td>56%</td>
</tr>
<tr>
<td>availability of different payment systems</td>
<td>54%</td>
</tr>
<tr>
<td>faster shopping than in traditional stores</td>
<td>50%</td>
</tr>
<tr>
<td>more information about products</td>
<td>46%</td>
</tr>
<tr>
<td>14 days possibility to return products without a cause</td>
<td>40%</td>
</tr>
<tr>
<td>possibility to buy second hand/collector’s goods</td>
<td>39%</td>
</tr>
<tr>
<td>discounts for loyal clients</td>
<td>24%</td>
</tr>
<tr>
<td>possibility to collect points for shopping</td>
<td>13%</td>
</tr>
<tr>
<td>others</td>
<td>2%</td>
</tr>
<tr>
<td>none or difficult to recognise</td>
<td>1%</td>
</tr>
</tbody>
</table>

*Source: own elaboration based on E-commerce w Polsce [2015], p. 35.*

Considering the requirement for availability, it is important to ensure best practices in convenient systems of forward logistics. It should be recognized that certain of them encourage Polish e-customers to shop online, like: courier delivery directly to home or workplace, postal delivery directly to home or workplace, and own pick-up with parcel lockers (compare Figure 2).

According to the research results conducted by Gemius and e-Commerce Polska, e-customers frequently choose services offered by the following courier operators: DHL (13%), Siódemka (10%), DPD (10%), UPS (6%), Pocztx (4%), GLS (3%), FedEx (2%) (E-commerce w Polsce, 2015). Lower costs and faster delivery were indicated as among
the most important logistics factors influencing the frequency of e-shopping in Poland. Additionally, customers increasingly expect “delivery for free” offers [European Commission, 2012]. The analysis of reasons for e-shoppers complaints highlights that at the core of them are logistics service elements; namely, high costs and long waits for product delivery [E-commerce w Polsce, 2015]. Moreover, 22% of internet users who do not shop online underline a concern for delivery execution. Research results indicate the necessity of business processes improvement in logistics management.

FIGURE 2. Preferable delivery systems in e-commerce

<table>
<thead>
<tr>
<th>Service</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>courier delivery directly to home/work</td>
<td>87%</td>
</tr>
<tr>
<td>postal delivery directly to home/work</td>
<td>72%</td>
</tr>
<tr>
<td>pick-up with parcel locker</td>
<td>41%</td>
</tr>
<tr>
<td>pick-up at store/gallery (click &amp; collect)</td>
<td>31%</td>
</tr>
<tr>
<td>direct web delivery, e.g. e-books, music</td>
<td>23%</td>
</tr>
<tr>
<td>pick-up at post office</td>
<td>19%</td>
</tr>
<tr>
<td>pick-up at kiosk, e.g. Ruch</td>
<td>15%</td>
</tr>
<tr>
<td>pick-up at stations, e.g. underground</td>
<td>11%</td>
</tr>
<tr>
<td>pick-up at petrol stations</td>
<td>8%</td>
</tr>
<tr>
<td>others</td>
<td>1%</td>
</tr>
<tr>
<td>none or difficult to recognise</td>
<td>1%</td>
</tr>
</tbody>
</table>

Source: own elaboration based on E-commerce w Polsce [2015], p. 40.

FIGURE 3. Services used most frequently in reverse logistics

<table>
<thead>
<tr>
<th>Service</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>possibility to send back by courier (door-to-door)</td>
<td>15%</td>
</tr>
<tr>
<td>possibility to send back by post</td>
<td>14%</td>
</tr>
<tr>
<td>possibility to return in traditional store</td>
<td>6%</td>
</tr>
<tr>
<td>possibility to send back with parcel locker</td>
<td>3%</td>
</tr>
<tr>
<td>others</td>
<td>3%</td>
</tr>
<tr>
<td>none or difficult to recognise</td>
<td>49%</td>
</tr>
</tbody>
</table>

Source: own elaboration based on E-commerce w Polsce [2015], p. 58.

On the other hand, reverse logistics systems have a significant role in building customer satisfaction. Because of the value of returned products, reverse logistics is gradually being
paid increasing attention by producers and retailers. It is a main contributor to success and an element of premium logistics service in e-commerce. Returned products mainly refer to new ones rather than end-of-life products. Moreover, products sent back to e-retailers account for 80%, while the rest is sent to producers [Xiao Yan, Yong, Qinli, Stokes, 2012]. Figure 3 shows the preferred logistics services most frequently used in e-commerce reverse logistics.

**Logistics Challenges in E-Commerce**

Last mile delivery has emerged as the most critical transportation activity and its costs typically represent a high share of total logistics costs [Vanelslander, Deketele, Van Hove, 2013]. There are two main operational models for the storage and preparation of online orders: *store picking*, which means picking orders directly from the store's aisles, and *warehouse picking*, which consists of preparing orders in a dedicated logistics facilities. Last mile logistics in e-commerce may include direct deliveries to customer homes (attended or non-attended) or to pick-up points (at stores, galleries, parcel lockers, petrol stations etc.) and collection by customers. Examples of business practices are presented in Table 3.

<table>
<thead>
<tr>
<th>Company</th>
<th>Practice</th>
<th>Influence on logistics e-customer service</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amazon</td>
<td>Prime Air service. Declaration that by 2018 drones will be used in the USA to deliver products (weighing less than 2.3 kg) within 30 minutes of being ordered and within 10 miles of the warehouse.</td>
<td>Delivery guarantees the fastest availability of products.</td>
</tr>
<tr>
<td>Amazon, eBay, Google, Uber</td>
<td>Same-day delivery service.</td>
<td>E-shoppers order products online and receive them that same day without leaving home.</td>
</tr>
<tr>
<td>Auchan, Carrefour, Intermarché, Leclerc</td>
<td>Click and drive model. Costumers order online and collect products at pick-up points (the drive-in). Goods are delivered only half way to customer destinations and the customer has to pick them up within the pick-up time window defined by the service provider.</td>
<td>A new way of rationalizing purchases and freeing customers from the constraints of delivery times which otherwise require them to be at home at a certain time of the day. It avoids delivery costs and frees up time that can be used for other activities. Customers may combine shopping trips with other daily activities such as travel to the workplace.</td>
</tr>
<tr>
<td>DHL</td>
<td>Delivery at a neighbor's residence in case of the customer's absence from home. The customer receives delivery confirmation by e-mail or SMS.</td>
<td>Higher flexibility and reliability of e-commerce service.</td>
</tr>
</tbody>
</table>
Company | Practice | Influence on logistics e-customer service
--- | --- | ---
Inpost | Network of parcel lockers ensures fast and convenient shipping and collecting parcels around the clock, 7 days a week, with no queues and at a convenient location. | 24/7 availability of the service allows customers to choose time and place of collection during day or night.

Sainsbury | Use of alternative vehicles and optimal routes planning, eco-driving. Changing online grocery delivery fleet to electric vans. Each zero-emission van saves 5 tons of CO2 per year. Drivers use GPS to ensure that they take the most efficient route through busy city centers and residential roads. | Reduction of customers’ carbon footprint.

Walmart | Organization of pick-up points. The pickup-grocery kiosk looks like a gas station and is a new way to get groceries to customers. A customer places an order online and pulls up to the kiosk at the designated time. A Walmart worker delivers the order to the car and prints off a receipt. | Flexibility in the choice of pick-up time adjusted to daily activities.


### TABLE 4. Environmental aspects in e-commerce logistics processes

<table>
<thead>
<tr>
<th>Main areas in e-commerce logistics operations</th>
<th>Negative effects</th>
<th>Positive effects</th>
</tr>
</thead>
</table>
| Transportation planning and management | - Increase in the number of inefficient deliveries (e.g. overnight deliveries by air/truck)  
- Increase in shipping needs in general (e.g. home delivery of chilled products)  
- Growth of van traffic  
- Unintended (failed) deliveries and handling of returns  
- Customers purchasing separate items from different websites, each requiring independent deliveries | - Usage of low-carbon emission vehicles  
- Travel savings by shopping online instead of traditional in-store shopping |
| Warehousing (storage, picking and material handling) | - Both the large number of small deliveries and the handling of customer returns lead to additional warehousing operations and increased complexity of picking and packaging activities | - Tendency towards large warehouses leads to a reduction in total average inventory levels and, therefore, reduced emissions and environmental impacts |
Barbara Ocicka, Marta Raźniewska

<table>
<thead>
<tr>
<th>Main areas in e-commerce logistics operations</th>
<th>Negative effects</th>
<th>Positive effects</th>
</tr>
</thead>
</table>
| Packaging                                     | − Individual packaging needed to ship a few products directly to customers  
− Additional protective packaging needed to deliver products by express courier (a notable exception occurs when physical products are replaced by digital downloads) | − Reduced usage of shopping bags by customers in conventional stores |

Distribution network design

− Orders made up of a very limited number of pieces delivered directly to customers’ homes or work  
− Additional problem of managing missed deliveries if the customer is not at home at the time of delivery

− Large central warehouses preferred over local distribution centers, leading to reduced unit energy consumption and emissions
− New delivery options identified and recommended, e.g. pick-up points and parcel lockers – located at junctions or crossing points, allowing customers to collect products previously ordered online, with no need for express couriers to perform multiple deliveries, thus reducing total travel distances

Source: own elaboration based on Mangiaracina, Marchet, Perotti, Tumino [2015], pp. 575–578.

Besides the economic and social aspects of logistics, there are also crucial environmental issues (see Table 4). Environmental corporate social responsibility is one of the elements of e-customer welfare and positively impacts service level as well as customer loyalty [Rashid, Rahman, Khalid, 2013]. Environmental effects may be derived from different factors, such as intense information technology usage, redesign or use of additional packaging, or physical distribution of products (including transportation planning and management, warehousing and distribution network design) [Mangiaracina, Marchet, Perotti, Tumino, 2015].

**Improvement of Communication Tools in E-Customer Logistics Service**

Support tools in logistics service aim at meeting e-customer requirements, cost-cutting, and increasing efficiency. They refer to the planning and completion phases and
the analysis of communication activities on the e-market. Their implementation results in a variety of benefits and also in certain constraints (see Table 5).

**TABLE 5. Advantages and disadvantages of e-customer communication tools**

<table>
<thead>
<tr>
<th>E-customer communication tool</th>
<th>Advantages</th>
<th>Disadvantages</th>
</tr>
</thead>
<tbody>
<tr>
<td>Marketing automation</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Increases the number and quality of interactions with the customer by processes automation</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Increases service attractiveness and the number of transactions by providing dedicated content and offers to the customer</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>E-mail</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Wide accessibility</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Comfortable service also for non-digitally literate customers</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- This form of communication is culturally rooted</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Contact form on a website</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Enables receiving a message from the customer at any time (impression of non-stop accessibility)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Live chat</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Quick form of contact, joins advantages of synchronized and asynchronized communication</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Engages users</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Wide scope and potential influence thanks to high popularity</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Helpline VoIP, videoconference</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Quick synchronized contact</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Low cost</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Voice transmission (including video) provides opportunity for negotiation</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Integration of communication via social channels</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Possibility of meeting dedicated customer expectations</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Providing customer data</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Source: own elaboration based on interview with the CEO of digital media agency Eura7.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

To improve communication tools in e-customer logistics service it is necessary to consider customer needs and expectations. The CEO and public relations manager of digital media agency Eura7 emphasize the role of real time and current information about the realization of service or order completion and treat them as key competitive elements. E-customers expect that the time of online order completion will be comparable to the time of going to the shop, purchasing and picking up goods. This is the basic condition of the online shopping service quality assessment. The emphasis is placed on on-time order completion. On the other hand, the company digital media agency Eura7 pays attention to the fact that contractors put the greatest pressure on service production costs and time of e-commerce service design, discounting aspects of its effectiveness. It is worth noting that cost and time of improvement through tests and analysis of particular processes are an investment in excellence.

According to our interviews, in business practice in Poland, internet browsers create the basic competitive environment in e-commerce. Consequently, improving both structure and service content should be considered the most important factors for attaining the desired content. Optimization efforts aim at reducing the costs of additional positioning services or purchasing of advertisements in browsers. J. Nielsen pinpointed ten general principles for interaction design:

- visibility of system status by correct and actual information and feedback within a reasonable time;
- match between system and the real world through efficient communication;
- user control and freedom due to functionality, e.g. clearly marked “emergency exit”;
- consistency and standards of platform conventions;
- error prevention and information on potential problems before user actions;
- recognition rather than recall according to platform visibility;
- flexibility and efficiency of use;
- aesthetic and minimalist design focused on easily visible and necessary information;
- assistance for users in recognizing, diagnosing and recovering from errors; and
- maintenance of instantiated documentation [Nielsen, 1995].

Another aspect of improvement involves providing full functionality of www e-commerce service on mobile devices, where interface size is an impediment. Fulfilling this requirement is linked to the necessity of improving programming preparation, design of information architecture and user experience. As mobile devices integrate www service functions with others, such as geolocation and voice calls, it provides additional opportunities of building usability and providing the quality of e-commerce service.

Contractors of e-commerce services often fail to fully exploit the potential of analyzing and optimizing processes on websites. They can employ both analysis of user movements, structure optimization, and data visualization in terms of improving purchases (including purchase decisions) and accelerating uploading and functioning of service. Approximately one quarter of internet users leave websites that take more than 4 seconds to upload, as
In Search of Excellence in E-Customer Logistics Service

Page uploading speed significantly influences the level of conversion [Nielsen, 2011]. Bounce rate also plays an important role in the analysis of user behavior. It encourages purchase decisions, e.g. by offering free goods and cost optimization by repeating customer behavior models and correcting the positioning of additional incentives.

Possible Areas to Improve E-Customer Logistics Service

Continuous improvement of e-customer logistics service concerns the different areas presented in Table 6. Conclusions are based on a literature review and our own experience.

**TABLE 6. Main areas in searching for excellence in e-commerce logistics service**

<table>
<thead>
<tr>
<th>Main logistics operations areas</th>
<th>Possible aspect to improve</th>
<th>Effect of improvement</th>
</tr>
</thead>
</table>
| Transportation planning and management | - Consolidation of different shipments  
- Routing  
- Forecasting customer deliveries and returns  
- Reduction of transport cost  
- Reliability of shipment | - Reduction of inefficient traffic  
- Optimization of inventory management  
- Meeting e-customer expectations |
| Warehousing (storage, picking and material handling) | - Accuracy of distribution model in terms of complexity and costs  
- Picking (automation, costs, efficiency)  
- Inventory optimization | - Minimization of the total costs of returns management as well as variable and fixed operating costs |
| Packaging | - Box and size of package | - Meeting e-customer expectations  
- Reduced costs of transport, warehouse cost e.g. storage space |
| Distribution network design | - Challenge of “shipment to door”  
- Replenishment optimization  
- Challenge of efficient movement of large volume of goods for a single item | - Meeting e-customer expectations  
- Optimization of inventory management |

Source: own elaboration.

The increasing costs and responsibilities related to dealing with return processes, as well as the significance of return policies to customers, became the basis for the study of a closed-loop distribution model that embraces forward and reverse logistics. The distribution network model designed by Salema, Prova and Novais, integrates both strategic (facilities and location) and tactical (production, storage and distribution) factors [Gessner, Snodgrass, 2015]. The “strategic-location-allocation” model has been proposed based on the results of studies conducted in Spain and Portugal in 2009. It optimizes profits across
the network, which is presented in Figure 4. Products manufactured in factories can be sorted and then transported to different fulfilment centers. Packaging is very important; its size can be optimized to reduce logistics costs. The perfect location optimizes a storage cost or a unit production cost. Merchandises are then delivered to customers (delivery zones of parcel services) or re-delivered to sortation centers in the case of returns.

**FIGURE 4. Distribution network model developed by Salema, Prova and Novais**

![Distribution network model](image)

Source: Gessner and Snodgrass [2015], p. 7.

E-fulfilment services centers seek to optimize value, technology and client satisfaction. Shipwire, an Ingram Micro company, is a leader in the e-commerce technology market and provides e-commerce fulfilment services, shipping software and cloud-based logistics from warehouses in North America, Europe, Asia and Australia [Shipwire, 2014]. Shipwire’s industry-leading logistics platform helps to optimize e-costumer logistics service by eliminating the hassles of shipping and storage. Online sellers send their products to one of Shipwire’s warehouses and instantly connect Shipwire to their online store or marketplace. This web-based logistics platform allows seamless connections with Shipwire facilities in local and international distribution systems.

In order to meet e-customer requirements, increase sales and lower costs, Shipwire proposes the following practices:

- automated lot breaks (minimizing handling costs by having automatically break up master cases into individual items),
- freight shipping options (less-than-full and full-truckload options),
- cross-docking (simultaneously shipping products to retailers and customers or shipping out pending backorders as soon as they come in),
- consolidating and staging product (for international orders, holding product and reducing costs in warehouses before freight shipping),
- purchase order management (specifying different packaging and shipping preferences and connectivity for each retailer) [Shipwire, 2015].
According to Shipwire, apart from intelligent routing and professional packaging, areas that could be improved include: shipping confirmation by detailed e-mail sent out automatically, customizing specific labels on each package, personalizing inserts, providing real-time rates to customer, receiving tracking numbers as soon as the warehouse ships orders, and editing and cancelling orders [Shipwire, 2015].

**Measurement of Excellence in E-Commerce Logistics Service**

Excellence in customer service is a difficult strategic decision, due to the costs of providing it. Ensuring an acceptable and satisfactory level of customer service requires continuous, systematic monitoring of specific indicators and metrics. Generally, one may point out various trade indicators that are in line with these used in other business areas as well as traffic indicators for e-commerce used for all websites. Among numerous indicators, the most important are:

- Trade indicators that are in line with these used in other business areas:
  - average order value of individual transactions,
  - average margins on individual transactions,
  - abandoned order values (the percentage of transactions that have not occurred),
  - marketing costs per individual transaction (the comparison of this indicator with average margins informs the profitability of marketing activities),
  - customer life value (purchase values in a unit of time multiplied by the expected loyalty period).

- Traffic indicators for e-commerce used by all websites (and not only business ones):
  - number of visits in website stores in a unit of time,
  - number of individual users who visited website stores in a unit of time,
  - transaction volume in relation to the above-mentioned indicators informs the quality of visits and marketing communication,
  - rejection ratio as a percentage of visits finished immediately after entering the website, which may indicate inefficient marketing activities or service design and errors.

Evaluation might include all three phases: pre-transaction, transaction and post-transaction (see Table 7).

**TABLE 7. E-customer logistics service indicators**

<table>
<thead>
<tr>
<th>Phase</th>
<th>Customer service indicator</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-transaction</td>
<td>• Service level resulting from inventory (according to the number of deliveries, orders, and delivery volume)</td>
</tr>
<tr>
<td></td>
<td>• Availability of product affinity (which products are purchased together)</td>
</tr>
<tr>
<td>Phase</td>
<td>Customer service indicator</td>
</tr>
<tr>
<td>----------------</td>
<td>-------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Transaction</td>
<td>• Time of answer to the special request</td>
</tr>
<tr>
<td></td>
<td>• Time of order confirmation</td>
</tr>
<tr>
<td></td>
<td>• Time of realization</td>
</tr>
<tr>
<td></td>
<td>• Flexibility (readiness to achieve non-standard delivery realization)</td>
</tr>
<tr>
<td></td>
<td>• Quality and quantity delivery accuracy</td>
</tr>
<tr>
<td></td>
<td>• Delivery terms and conditions accuracy</td>
</tr>
<tr>
<td>Post-transaction</td>
<td>• Time for giving information to the customer about extraordinary occurrences</td>
</tr>
<tr>
<td></td>
<td>• Complaint indicator according to the number of deliveries, items of deliveries, delivery volume, quantity and quality test</td>
</tr>
<tr>
<td></td>
<td>• Returns volume</td>
</tr>
<tr>
<td></td>
<td>• Returning visitors versus all visitors</td>
</tr>
</tbody>
</table>

Source: own elaboration.

Conclusions

The article describes the evolution of distribution systems of direct deliveries from suppliers or wholesalers (in the 1970s) to the current e-fulfillment distribution network, multichannel and omnichannel strategy. Moreover, it identifies the most important benefits for Polish e-customers; namely, 24/7 availability, no physical distance, the ability to compare competitive offers, and lower price points than those offered in traditional channels.

E-commerce creates new opportunities, but also challenges, as the development of online channels must be matched by a similar evolution of a company’s logistics system, which should also meet environmental requirements. Numerous good practices in each phase of e-customer logistics service – such as efficient interactions that enhance customer's satisfaction while reducing a company’s communication costs – present advantages and disadvantages. Therefore, their application hinges on manager priorities and the communication model adopted by the company.

The article points out several e-customer service logistics aspects that need careful management, and also proposes e-customer service logistics indicators as a way to continuously monitor (as a means to systematically improve) e-customer service levels. We hope our findings will be useful to managers in the rapidly developing and highly competitive e-commerce business.

At the same time, we recognize certain limitations to the study, such as the small number of case studies discussed, and encourage other authors undertaking further research to include such topics as reverse logistics, the application of breakthrough technologies, and 3D printing.
Notes

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References


