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Welcome to the *International Journal of Management and Economics*, issue number 42. In it, you will find a variety of articles focused, first of all, on the EU and selected member states. This issue also includes articles concerning relations between the European Union and the outside world, particularly the United States.

The issue begins with an interesting paper by Krzysztof Bledowski, Senior Economist and Council Director at the Manufacturers Alliance for Productivity and Innovation located in Arlington, Virginia. Entitled *The Transatlantic Trade and Investment Partnership – a View from America’s Trenches*, this paper discusses a proposed free trade agreement between the United States and the European Union from a very practical perspective, in which the author identifies the likely sticking points during the negotiations. By focusing on how the U.S. will likely approach specific issues, Dr. Bledowski provides a real world context that enhances the reader's understanding of this important dynamic.

In the next work, *Factors Influencing IPO Decisions. Do Corporate Managers Use Market and Corporate Timing? A Survey*, Adam Szyszka researches the motives for Initial Public Offerings, basing on an original dataset which he developed by surveying 166 managers of firms that recently went public on the Warsaw Stock Exchange in Poland. The author observes that two primary IPO drivers are: firms’ positive business results (corporate timing), and positive stock market momentum (market timing). In evaluating these two drivers, Adam Szyszka notices that both of them mislead investors into overvaluing either firm or stock values. While both corporate and market timing practices support existing shareholder returns (at the expense of new shareholders), they also cause a non-optimal allocation of capital in the economy.

Andrea Szalavetz’s article explores *Innovation in Hungary – The Impact of EU Accession and Integration into Global Value Chains*. According to her research, EU accession caused only minimal changes in the innovation patterns of Hungary because the country was unable to use EU resources effectively. She also argues that globalization (global value chain integration) contributed to Hungary’s knowledge-based upgrading more effectively than Europeanization.

The next article, *An Empirical Analysis of Economic and Socio-Demographic Determinants of Entrepreneurship across German Regions*, by Matthias Mrożewski, focuses on socio-demographic and economic determinants of regional entrepreneurship in Germany. The results of his research suggest that there has recently been a major shift in the determinants
of entrepreneurship in Germany. In particular, household income, unemployment, education and marital status are emerging as predictors of regional entrepreneurship.

The Paper *Innovation and Competitiveness of the Slovak Economy: New Evidence of International Impacts in the Knowledge Accumulation Process*, by Paula Puškárová and Štefan Zajac, seeks to demonstrate the internal forces driving R&D productivity in Slovakia and the internationalization of Slovak R&D investments and R&D patenting since its EU accession as compared to the other Visegrad Four countries. The authors identify and discuss differences between the ways each analyzed country is implementing knowledge into its economy.

Andrzej Karpowicz’s article focuses on answering the question *Why the EU-15 Maintains Higher CIT Rates than the New Member States?* The author points out that the European Union is not a homogenous area as far as taxes are concerned. The article demonstrates CIT rate differences in the EU-15 and New Member States in the context of the characteristics of regional groupings and individual countries.

Trust is broadly regarded as a crucial factor determining relations within organizations and societies at large. The objective of Łukasz Borowiecki’s paper, *Historical Roots of Generalized Trust in Polish Society*, is to explain how historical events shape generalized trust in contemporary Polish society.

The issue ends with a book review by Włodzimierz Januszkiewicz. The publication being reviewed is *OFE. Katastrofa prywatyzacji emerytur w Polsce* by Leokadia Oręziak.

I hope the readers will enjoy reading the papers included in the current issue.
The Transatlantic Trade and Investment Partnership – a View from America’s Trenches

Abstract

Expectations run high about the cornucopia of riches which are supposed to flow from the Transatlantic Trade and Investment Partnership (TTIP). TTIP is a proposed free trade agreement between the United States and the European Union. It aims to build upon the already sweeping scope of the North American Free Trade Agreement concluded two decades earlier and the 2013 Comprehensive Economic and Trade Agreement (CETA), which removes 99% of tariffs between the EU and Canada. The TTIP negotiations were launched in July 2013 with an initial time frame of completion within two years.

It is too early to pass judgment about the benefits of the deal simply because its scope is still being framed as of this writing. However, it’s possible to shed light on the most likely sticking points during the negotiations, particularly those seen from the U.S. negotiating side. Likewise, it’s not too early to draw up interests and concerns of U.S. business. Both are discussed in this paper.

The first section takes stock of the likely scope of negotiations. The second section summarizes the view of business gleaned from a survey of corporate executives. The survey was conducted among members of the Manufacturers Alliance for Productivity and Innovation, an education forum for senior managers of large industrial companies.

Keywords: TTIP, international negotiations, corporate executives survey
JEL: F1, F2, F4, F5
Scope of Negotiations

Background

The EU and the U.S. embarked on the TTIP negotiations following recommendations by the EU-U.S. High Level Working Group on Jobs and Growth issued in February 2013. The report noted that a broad agreement spanning trade, investment, and regulation would be feasible and would offer substantial benefits. The gravitas of trade as an engine of growth propelled both parties to seek an agreement.

The share of U.S. foreign trade in world trade has contracted in recent years (Figure 1). The proportion of American imports in global imports fell from 26% in 1999 to just over 15% in 2011 while the share of U.S. exports in global exports fell from 18% to just 11% during this period. The fall in the respective shares in the EU was not as steep but still pronounced; the share of EU imports fell from around 19% to 16% and the share of EU exports dropped from 19% to just over 15%.

On the other hand, trade has been a growing contributor to American economic growth, income, and jobs over the past decade. U.S. global exports rose almost 50% between 2008 and 2012 – almost four times the rate of the economy as a whole. A third of American GDP growth can be traced to exports.

Expected Gains

As the scope of TTIP is unknown, it is difficult to estimate the returns from the agreement. The tariff cuts cannot be predicted and both sides will strive to exclude certain sectors or planks from the deal. According to a London-based CEPR 2013 study, gains from increased trade would translate into annual GDP increases between $50 billion and $100 billion, depending on how ambitious the agreement’s outcomes are.2

In the Brussels-based ECIPE study, static gains from a zero-tariff agreement come out to 0.01% of EU GDP and 0.15% of U.S. GDP. Dynamic gains (productivity improvements and trade facilitation costs) were estimated at 0.32–0.47% of EU GDP and 0.99–1.33% of U.S. GDP. The actual accord will almost certainly feature carve-outs, partial implementation, and phase-in periods.
FIGURE 1. Share of National Trade in World Trade

Source(s): UNCTAD, Eurostat and MAPI.

Public Sentiment

A 2014 survey commissioned by the Atlantic Council and the Bertelsmann Foundation found higher satisfaction with the transparency of negotiations among Americans (70%) than Europeans (55%). Most Europeans say they lack quantitative arguments in favor of or against the agreement. The three most pressing issues judged by audiences on both sides of the Atlantic were elimination of tariffs, convergence in standards for manufactured goods, and regulatory convergence across multiple sectors.

Market access for genetically modified organisms and related agricultural barriers were deemed relatively unimportant but considered the most difficult to overcome in the negotiations. According to a Pew Global Attitudes Project, only 60% of Americans in 2010 considered trade to be a good thing, compared with 79% of the French, 84% of Britons and Poles, and 90% of Spaniards and Germans. On the other hand, by 58% to 28%, Americans believe that increased trade with Europe would be advantageous for the United States.

A 2014 Pew report stated that by 53% to 20%, Americans think TTIP is beneficial for the country; Germans answered similarly for their nation (55% to 25%). On the other hand, Americans and Germans trust their own regional standards. By a margin of 30 to 1, Germans trust European standards in auto safety, by 28 to 1 in data privacy, 48 to 1 in environmental safety, and 47 to 1 in food safety. By a margin of 5 to 3, Americans trust U.S. standards in auto safety and data privacy, by 11 to 5 in environmental safety, and by 3 to 1 in food safety.
Congress and Political Issues

The gist of the U.S. government’s approach to negotiations can be gleaned from the factsheet published by the Office of the U.S. Trade Representative; it is too soon to claim that Congress shares these positions. The political obstacles around the negotiations are formidable. Any regional agreement – and TTIP is mega-regional – is bound to distract from multilateral talks and alienate some trading partners.

On the EU side, elections to the European Parliament in May 2014 have voted in more representatives of parties skeptical about further integration and possibly TTIP. Domestic politics in several member countries, such as France, the Netherlands, and the UK, have recently cooled toward the European project. The negotiations may become hostage to a single country’s intransigence or a veto over carve-outs, such as trade in audiovisual services sidelined from talks by France or of financial services excluded by the United States. Similarly, vocal minorities in select countries may try to weaken internal cohesion within the EU and thus lower the overall ambition.

On the U.S. side, pressure from some states over local interests may equally soften the national resolve. The 2016 presidential election may diminish the momentum for concluding the agreement, while Republican gains in House and Senate elections in coming years could stymie congressional support for TTIP; according to a Pew report, 60% of Democrats but only 44% of Republicans back the TTIP agreement. Sugar subsidies and quotas shield competition and keep prices elevated and while economics favors change, domestic politics prefers the status quo.

In Europe, aversion to GMO plants and seeds runs deep. Domestic European politics are infused with an emotional refusal to accept GMOs. Facts and science may not overcome public misperceptions about presumed harm.

The United States insists on excluding financial oversight from the agreement, which stems from the experience of the Dodd-Frank bill. Congress has the ultimate authority to regulate commerce with foreign nations, and thus the administration needs congressional consent to negotiate TTIP. Without “fast track” (Trade Promotion Authority) – giving the administration large leeway in negotiations without congressional oversight – talks would not advance much. While fast track is not required to negotiate or conclude a free trade agreement, granting the privilege suggests congressional confidence in the thrust of the administration’s arguments. As of June 2014, Congress had not granted the administration this authority.

Negotiations will focus on three broad areas:

- Market access that captures tariffs and non-tariff barriers to trade affecting goods, services, and investment flows.
- Regulations and standards that refer to non-trade costs of conducting business across borders.
- Common rules that bear upon trade, investment, laws, state-owned enterprises, intellectual property, and other intangibles. All of them facilitate doing business in general, and international business in particular.
The final agreement will almost certainly fall short of expectations and take longer than two years. Compromises will have to be struck on some issues in order to advance and close other chapters.

**Tariffs on Goods**

Tariffs on goods are generally higher when importing into the EU than into the United States. Exceptionally high tariffs cover similar types of goods when imported into the respective areas, namely textiles, apparel, fish, beverages, and confectionery and dairy products. The U.S. government is realistic about the phased-in nature of many tariff reductions. Transition periods will vary in length, with some possibly spanning multiple years.

Tariffs on imports from the EU are among the lowest of U.S. trading partners and have been on a downward trend over the past decade (Figure 2). From just over 1.6% of import value in 2000, they fell to just over 1% by 2009, then inched up 1.3% by 2013. During the same period, trade volumes kept growing, except for a temporary dip in 2009 caused by the global Great Recession.

One problem area is high tariffs on sugar imported to the U.S., a market that enjoys strong protection in Congress. Lowering tariffs on dairy products imported by the EU will face stiff opposition from select European countries with entrenched agricultural lobbies.

It is possible that public opposition to fully liberalize trade will grow as negotiations proceed. For example, only minorities of Americans and Germans back full elimination of duties and tariffs. Support in some states is likely to be lower.

**FIGURE 2. Trade Volumes and Tariff Burden on U.S. Imports with the EU28**

Source(s): U.S. International Trade Commission and MAPI.
Services

Trade in services makes up about 70% of output, and exports constitute a sharply rising share of nationally produced volume of services for both partners. The EU is the top destination for American services, with about a third of the overall volume of service exports. The country’s services balance has been positive for well over a decade and the surplus is steadily on the rise. In 2012, net exports of services to the EU reached $53 billion according to the Bureau of Economic Analysis.

Trade in services is a natural complement to trade in goods. As specialization and global supply chains gain in importance, engineering, design, R&D, testing, transportation, and finance follow the flow of merchandise across borders. Given large stocks of foreign direct investment on both sides of the Atlantic, intra-company trade in goods and services is significant.

Some members of Congress supported including financial services in TTIP while others argued for exclusion. The administration has been bent all along on excluding financial services because their international nature calls for global regulatory standards. The Dodd-Frank Act sets a high bar for consumer protection and bank supervision; both are currently more stringent than those agreed upon by the EU. It appears as of this writing that financial services will be excluded from the agreement.

Europeans place high emphasis on treatment of service providers, specifically for border crossings. Trade in highly sophisticated goods requires maintenance and warranty work performed on-site and personnel often need to be sent on short notice. Without speedy processing of visa and work permits, timely customer service may be compromised. Visa and work permit regulations fall under congressional oversight – a potential complication.

The U.S. is likely to emphasize competition and clear rules on monopolies and state-owned enterprises, both of which have been known to stifle competitive pricing. The American side will likely argue against imposing customs duties on digital products and discrimination of products delivered electronically. Business practices, culture, and diffusion of high-tech products divide the two sides of the Atlantic when it comes to understanding and legislating privacy.

Regulation

Mutual recognition and harmonization are two channels through which to align regulation. The former is best applied to existing technologies and standards and the latter toward future regulation. Mutual recognition agreements stipulate single testing for universal acceptance in both markets; existing agreements cover telecommunications equipment, medical devices, and civil aircraft. Harmonization is most advanced in electrical vehicles and nanotechnology – both nascent markets with universal appeal for standardization.
It is inevitable that sector-by-sector negotiations will slow the overall pace. The greatest concerns registered so far on both sides of the Atlantic come from stakeholders in chemicals, cosmetics, cars, pharmaceuticals, medical devices, foodstuffs, and, to some extent, textiles. The U.S. is likely to insist on WTO rules to anchor its position, giving it more cover for sticking points. Equally important is insistence on scientific evidence to negotiate away sanitary and phytosanitary restrictions, permits, licenses, and quotas.

**Government Procurement**

Both sides are eager to ease access to each other's government contracts. Nonetheless, problems remain. In the EU, procurement of utilities is restricted to EU majority-owned providers. In the U.S., the Berry Amendment restricts access to non-American suppliers of military gear while the Buy American Act discriminates against non-U.S. vendors in government contracts. States have no obligation to follow federal guidelines and commitments in procurement policy, a hindrance to the EU's interest in greater access to state-level procurement.

**Intellectual Property Rights**

While both parties subscribe to the WTO agreement on protection of intellectual property, differences remain. In 2012, the European Parliament rejected the Anti-Counterfeiting Trade Agreement, which had been signed by the U.S., several other countries, and the EU Commission. The European Parliament's debate focused on the part of the agreement governing sharing copyrighted content over the internet. It presages difficult negotiations that might touch upon internet freedom and free speech. Given that IP-intensive industries are a high-growth area of the economy, it's fair to expect the U.S. to insist on robust enforcement of old or new standards.

In the area of geographical indications, disputes center on differing philosophies. The U.S. side prefers that the appellations be treated as trademarks, whereas the EU favors lists of specific products and regions that are then subject to protection. American negotiators might insist on tighter involvement of the entire distribution chain for digital rights protection. On the other hand, the EU could stress consumer rights when discussing content of digital products. Patent disputes are likely to involve linkages of new patents tied to old ones as well as patent terms and extensions.

**Investment**

The core position of the U.S. centers around national treatment, clear rules on compensation and expropriation, ease of conducting financial transactions linked to investment, and avenues for arbitration. The EU largely shares these precepts although so far they have been enshrined only in existing bilateral treaties. Investment protection in the EU as a single counterparty is bound to be contentious.
One likely problem area will be the investor-state dispute settlement (ISDS), which has emerged as an early sticking point on the EU side. An ISDS provision grants a private investor the right to seek redress from a sovereign government for discrimination, unfair treatment, expropriation etc. Such terms are found in bilateral investment treaties and some multilateral trade agreements. Public opinion in many EU member states has turned against the inclusion of ISDS in the treaty on the grounds of abuse of power by large corporations at the expense of sovereign states.

Other Negotiating Issues

The U.S. will insist that state-owned enterprises be treated on commercial terms, subject to relevant antitrust and competition laws, with the key concept being a level playing field. Anticorruption clauses are often found in foreign investment or government procurement contracts. Transparency in publishing relevant laws, regulations, and administrative rulings will be the starting point here. When it comes to dispute settlement, the aim is to establish routines of identification and early consultation between the parties to ensure a fair and open settlement mechanism. It’s not certain how WTO rules come into play where they overlap with those struck under TTIP.

MAPI Survey Results

Key Findings

In this survey, completed in early 2014 by 70 executives representing large U.S. global manufacturing companies, respondents shared their perspectives on how TTIP could affect their businesses (the actual questions along with graphical representations can be found in the appendix). The most represented industries are chemicals and pharmaceuticals, consumer products, and electronic and other electrical equipment and components.

Europe emerges as the top market for U.S. manufacturers, both when measured by the average score as well as by the strength of the top vote. This appears somewhat surprising, given that North America dominates trade and investment flows on a per-capita basis.

Less surprising is the finding that the three most important economies for respondents’ businesses in Europe are Germany, the UK, and France. The five largest economies of Europe match the top five markets of importance to U.S. manufacturers. 94% of respondents named Germany as the most important economy, ahead of the UK. Germany appears to enjoy twice the heft of France and more than five times that of Italy as a favorite market among American manufacturers.
Respondents are very optimistic about the European business environment. Just under half stated that over the past five years their business with Europe has improved and 77% feel that over the next five years they will see increased business with Europe.

Seventy-one percent of respondents report being aware of TTIP negotiations. However, sixty-two percent of companies are unsure how TTIP will influence their operations while 38% think the accord has the potential to be beneficial. The fact that three-fifths can’t put their finger on whether the deal will benefit or harm them speaks volumes about the difficulty of quantifying the costs and benefits. No one expects to become worse off if TTIP is enacted, confirming the industrial sector’s general support for free trade. These answers are in line with the unfinished scope of the accord. Much of the reporting on the negotiations in mass media focused on popular opposition to the accord rather than on substantive analysis of its merits or demerits.

Almost a third believe that TTIP will mostly influence their trade (rather than investment or both trade and investment) with the EU, though 46% don’t know how their operations will be influenced. This implies that regulation and behind-the-border obstacles weigh more heavily than investment-related non-tariff barriers. Perhaps that’s because previous free-trade agreements were much less comprehensive and covered mostly trade flows. This would also explain why trade and investment in goods loom larger than those in services. In a reflection of forward-looking attitudes, respondents reported that their ideal outcome of the accord would be regulatory harmonization and tariff reduction.

The respondents are predominantly manufacturers of goods, although provision of related services has gradually gained in importance for the bottom line. The climbing heft of services is reflected in the 29% of respondents who named both goods and services as being important to their operations in Europe.

Regulatory convergence trumps standards harmonization in importance to those manufacturers who participated in the survey. Just under two-thirds of respondents named tariff reductions as relevant, recalling sensitivity of price changes in a highly competitive marketplace that straddles the Atlantic.

The precautionary principle and risk assessment are two different approaches to public policy that manage risk in environmental protection, health, and product safety.

The precautionary principle refers to activities, goods, or services that could cause harm but whose probabilities of risk and harm are undefined. The originator of risk takes preventive action in the face of this uncertainty and assumes the burden of proof that the activity will ultimately be safe. The precautionary principle rests upon avoidance of potential harm despite lack of scientific certainty as to the probability, scope, or sources of that harm. In the EU, the precautionary principle is enshrined in case law, treaties, Council resolutions, regulations etc.

Risk assessment refers to a process of analyzing risk through information, data, and statistical estimates. It reveals potential risks through stepwise testable hypotheses. If the precautionary principle rests upon the premise of “how little harm is possible?” then the
risk assessment approach rests upon the premise of “how much harm is allowable?” Under a risk assessment regime, regulation is justified only if extensive factual records and proof point to significant risks. It is less concerned with values and more with the scientific process. Risk assessment is the fundamental norm of the U.S. legal culture.

TTIP could potentially force companies with operations in Europe to adopt this principle. Forty percent of companies feel that such an extension would negatively affect their business while 43% of companies are unsure. The precautionary principle is seen as doing more harm than good by a margin of four to one for U.S. companies conducting business with the EU. The large share of those who profess not to know the impact probably reflects the narrow potential scope that predominantly affects pharmaceuticals, chemicals, foodstuffs, and the protection of the environment.

A series of questions delved into respondents’ assessment of ease of doing business in the EU. The respondents’ biggest impediments turned out to be labor laws and labor costs. Economic growth and income levels as well as product regulation are also major concerns. These impediments are most stringent in France, Germany, and Italy. Tariff and tax rates and laws – a cost burden to the bottom line – rank right below labor costs and laws in importance to U.S. manufacturers. Government-related impediments, such as subsidies, law enforcement, and procurement issues score low on the totem pole, underscoring common legal obstacles to doing business in both the United States and the EU.

Four out of the five largest economies that rank as the top economic partners of the United States score as the most difficult places to do business in Europe. Aside from Russia, no Central Europeans are mentioned by name. The UK – a large and important partner – does not figure prominently in the ranking.

A substantial majority (94%) of respondents are not familiar with the Investor-State Dispute Settlement. Of those who answered in the affirmative, the votes are split on whether the ISDS would be beneficial or detrimental to their operations.

A majority of respondents feel that access to EU government contracts and procurement is not important. Of those who do work with EU governments, 90% work with the UK, 70% work with Germany, and 30% work with France. Most respondents report uncertainty as to whether there is a level playing field between private firms and state-owned enterprises in the EU.

Government contracts appear to not play an important role for three-fifths of survey participants. For every tenth respondent, however, government business ranks very high, reinforcing the gravity of government procurement in TTIP negotiations for a select group of stakeholders.

As to competition between private firms and state-owned enterprises, fewer than one in five respondents reported that SOEs distort competition in the EU marketplace while the same number reported the opposite. The large number of undecided companies points toward an EU marketplace that is harder to read than the private sector–dominated American economy.
EU data protection laws don’t apply to 68% of responding respondents while 24% find those laws to be a hindrance to their EU operations. On the other hand, the large number of respondents for whom the data protection laws don’t apply points toward a limited scope for aggregate harm. Those respondents who claim that data protection laws are a hindrance also named countries that hinder them the most. These are Germany, Belgium and France.

Two thirds of respondents believe that the EU properly protects IP in its jurisdiction. Given that almost all other respondents are unaffected by IP rights, it’s fair to claim that EU IP protection already delivers extremely high value to American businesses.

Only 15% of responding companies report having contacted a trade association, legal service, export broker, consultant, or other stakeholder (including peers and colleagues) to discuss TTIP. Very few companies have engaged a lobbyist to support their interests regarding TTIP.

The vast majority of U.S. manufacturers find media coverage of TTIP to be wanting. Considering that the stakes for U.S. business in the success of TTIP are high, there is a definitive need to increase the public debate. These data correlate with other surveys finding similarly low awareness or interest in the negotiations among a wider public.

Conclusions

Compelling trade and economic arguments in favor of the proposed TTIP may have won over business and politicians, but the average American and European remains unconvinced. Complicating matters, Americans and Europeans remain far apart in terms of trust in each other’s national standards. Initial enthusiasm for the agreement, based on geostrategic rhetoric and preliminary cost-benefit analyses, is gradually giving way to public mobilization against negotiating planks.

The European public’s skepticism toward big data and GMOs is largely based on emotion, not facts, science, or technological progress. On the other hand, U.S. business skepticism toward the precautionary principle rests upon greater American mistrust in government regulation and greater entrepreneurial zest for risk than is the case in Europe. Both will be difficult to overcome.

United States is constrained by the constitutional separation of state and federal rights. How states adopt and implement those precepts of the federally-negotiated agreement that pertain to their remit remains to be seen. Solutions have been found in NAFTA which, along with CETA, could present blueprints for a compromise.

The one aspect of negotiations on which the American side will compromise little is freer trade in services. That’s where the greatest potential for gains lies and where trade looms still small relative to goods. As production, distribution, and protection of digital
products bears immensely upon future global trade and rules, the U.S. side is bound to
stick to common sense and business fundamentals.

While the expectations about the accord remain high, one has to consider the two-year
time frame for completion as very ambitious. Public opposition to free trade will only rise
in both the United States and Europe in the next few years. A political backlash is already
visible in the reluctance of Congress to grant the “fast track” authority to the president.
In the EU, rising euro-skepticism marches hand in glove with a certain disdain for free
trade and opposition to all things American.

All in all, carve-outs, partial implementations, and phase-ins are very probable as the
negotiations enter its final stages.

Appendix – Questions and Answers from the Questionnaire

FIGURE 3. Important Markets

What foreign markets are most relevant to your company’s bottom line? Please rank
the following in order of importance from 1 to 5 (1 = least important and 5 = most
important).

Source: own elaboration.
FIGURE 4. **Locations of Business in Europe**

What are the three most important economies for your business in Europe?

![Location chart showing percentages for Germany, UK, France, Italy, Spain, Netherlands, and Others.]

*Source: own elaboration.*

Other responses:
- Belgium
- Norway
- Holland
- Russia
- Serbia
- Switzerland
- Turkey
- Developing Eastern Europe (Czech Republic, Poland)

FIGURE 5. **Trade Agreement Awareness**

Are you aware that a Transatlantic Trade and Investment Partnership (TTIP) – a free trade agreement – is being negotiated between the U.S. and the EU?

![Pie chart showing 71% Yes and 29% No.]

*Source: own elaboration.*
FIGURE 6. **Expectations of the Accord**

From your corporate point of view, if the accord is concluded, will it be beneficial or detrimental to your operations in and/or trade with the EU?

![Bar Chart](chart1)

Source: own elaboration.

FIGURE 7. **TTIP’s Effect on Trade and Investment**

From your corporate point of view, if the accord is concluded, would it affect mostly your EU-related trade or investment?

![Bar Chart](chart2)

Source: own elaboration.
FIGURE 8. Trade/Investment in Goods vs Trade/Investment in Services

Whether your operations in the EU involve trade or investment, are your concerns focused mostly on trade and investment in goods, services, or both?

- Trade/investment in goods: 66%
- Trade/investment in services: 6%
- Both: 29%

Source: own elaboration.

FIGURE 9. Importance of Regulation as Opposed to Tariffs

The accord will focus on tariff reductions, standards harmonization, and regulatory harmonization. Which are most important to your company’s operations? (Please check all that apply).

- Tariff reductions: 63%
- Regulatory harmonization: 69%
- Standards harmonization: 43%
- Other: 6%

Other responses:
- TSCA and REACH
- Taxes on repatriated cash

Source: own elaboration.
Regulations Facing EU Operations

If EU-based regulations and/or standards apply to your operations currently, please specify in what areas.

- Commercial aerospace and defense regulations
- Environmental, labor, safety, trade, banking
- Dual Use Goods, Wassenaar Arrangement, UK Anti-Bribery Act, and the EU/MX Free Trade Agreement
- Contact with food
- REACH
- Duty of 7% for glass fiber raw material imports
- ISO safety standards
- Pesticide regulation, agricultural policy
- Transportation equipment regulation
- Refrigerants and energy efficiency for compressors and HVAC
- Pesticides (use, import, export) and chemical manufacturing
- Ongoing application of the precautionary principle; its application in the EU has limited product options available in the marketplace, hindering innovation
- All – we are a diversified manufacturer in Europe
- CE standards for electrical components
- Genetically modified food ingredients ban
- Product safety (duplicate testing and need to design to conform to strictest standards CE and UL)
- IFRS vs. GAAP and its impact on repatriated cash
- Electrical codes and fire (firefighting) codes
- CE, DIN, E-Mark
- Safety certifications and building standards
- Electrical standards
- UK Bribery Act of 2010

FIGURE 10. The Precautionary Principle and Risk Assessment

Europe applies the precautionary principle to regulation while the U.S. has a precautionary approach through the use of risk assessment. How would extension of the precautionary principle to at least some American industries/technologies affect your business?
Ways in which Application of the Precautionary Principle Affected Business/Could Affect Business

How has the application of the precautionary principle affected your business? Alternatively, how could it affect your business?

- Extra expense on unsubstantiated risks, creating uncompetitive operating environment.
- Yes, although I wouldn’t say dramatically.
- It’s why REACH is so onerous.
- Caused loss of products that had good science showing safe use practice.
- Scientifically unsound evaluation and regulation would lead to limiting the approval and use of pesticide products.
- Application of the precautionary principle continues to punish the companies who invest in documenting the safety of their products compared with companies that choose to make no investment. It is better to have no information since regulation is based on hazard rather than risk.
- My experience is that the European regulatory and legal process is like a wet blanket on business and restrains European GDP, creativity, new product development, the entire business climate, and all the good that comes from free markets and free enterprise. I do not want to see this approach implemented in the U.S.; our current regulatory, tax, and legal environment is bad enough.
- We currently have to ensure compliance with both methods.
- Negative effects could arise in a wide variety of specific ways, but generally by raising costs for the risk of product liability and litigation and the costs of compliance on newly regulated issues. Positive effects could arise from regulation-induced requirements that favor our safety-oriented products.
- It could provide more opportunity for consultative services.
FIGURE 11. Impediments to Doing Business

In your operations in the EU (whether as an exporter or local investor), what are the three biggest impediments to doing business there? Please select up to three options.

- Labor laws: 54%
- Labor costs: 49%
- Economic growth/income level: 46%
- Product regulation: 31%
- Environmental laws: 20%
- Tax rates: 17%
- Tax laws: 14%
- Tariff rates: 14%
- Infrastructure: 9%
- Distribution: 9%
- Government subsidy schemes: 6%
- Competition law: 3%
- Government procurement laws: 3%
- Efficiency of law enforcement: 3%
- Labor supply: 0%
- Intellectual property rights: 0%
- Corruption: 0%
- Investor protection laws: 0%

Source: own elaboration.

FIGURE 12. Countries Most Difficult to Operate in

For the impediments to doing business in the EU, what are the three most difficult countries to operate in?

- France: 74%
- Germany: 39%
- Italy: 30%
- Spain: 17%
- Belgium: 17%
- Sweden: 13%
- Other*: 39%

Source: own elaboration.

Other responses:
- Denmark
- Netherlands
- UK
- Portugal
FIGURE 13. **Investor-State Dispute Settlement**

Are you familiar with the Investor-State Dispute Settlement (ISDS)?

![Pie chart showing 6% familiar and 94% not familiar with ISDS.]

Source: own elaboration.

FIGURE 14. **Government Contracts/Procurement**

How important is access to EU government contracts/procurement?

![Bar chart showing 9% very important, 31% somewhat important, and 60% not important.]

Source: own elaboration.

FIGURE 15. **Leading Countries in Exports to EU Governments**

If you sell to EU governments, what are the three countries you do the most business with?

![Bar chart showing 90% UK, 70% Germany, 30% France, 20% Italy, and 10% Spain.]

Source: own elaboration.
FIGURE 16. Competition Between Private Firms and State-Owned Enterprises

Do you believe there’s a level playing field between private firms and state-owned enterprises in the EU?

![Pie chart showing responses to question about competition between private firms and state-owned enterprises in the EU.]

Source: own elaboration.

FIGURE 17. EU Regulations

Are EU data protection laws a help or hindrance to your operations there?

![Bar chart showing responses to question about EU data protection laws.]

Source: own elaboration.

FIGURE 18. EU Intellectual Property Rights

Are EU intellectual property rights a help or hindrance to your operations there?

![Bar chart showing responses to question about EU intellectual property rights.]

Source: own elaboration.
FIGURE 19. Mandatory Labelling System

Do you think that if a mandatory labeling system (e.g., in food products) is incorporated into TTIP, it would be detrimental or beneficial to your operations?

![Mandatory Labelling System Graph]

Source: own elaboration.

FIGURE 20. TTIP Discussion

Have you contacted a trade association, legal services, export brokers, consultants, or other stakeholders, including peers and colleagues, to share your views on such an agreement?

![TTIP Discussion Graph]

Source: own elaboration.

FIGURE 21. Media Coverage

How do you think media coverage of the prospective agreement and negotiations – public and association-based – has been?

![Media Coverage Graph]

Source: own elaboration.
FIGURE 22. **Engaging Lobbyists**

Have you engaged or are you planning to engage a paid lobbyist to support your interests?

![Pie chart showing 9% for Yes and 91% for No]

*Source: own elaboration.*

**TABLE 1. Represented Industries**

What is your industry? (Please select up to three industries.)

<table>
<thead>
<tr>
<th>Industry</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chemicals and pharmaceuticals</td>
<td>18%</td>
</tr>
<tr>
<td>Consumer products</td>
<td>18%</td>
</tr>
<tr>
<td>Electronic and other electrical equipment and components (except computer equipment)</td>
<td>18%</td>
</tr>
<tr>
<td>Industrial machinery (e.g., machine tools, material handling equipment etc.)</td>
<td>15%</td>
</tr>
<tr>
<td>Aerospace (including parts, components, and systems)</td>
<td>12%</td>
</tr>
<tr>
<td>Construction equipment and materials</td>
<td>12%</td>
</tr>
<tr>
<td>Agriculture and forestry</td>
<td>9%</td>
</tr>
<tr>
<td>Automotive (including parts and components)</td>
<td>9%</td>
</tr>
<tr>
<td>Steel and other metals</td>
<td>9%</td>
</tr>
<tr>
<td>Distribution</td>
<td>6%</td>
</tr>
<tr>
<td>Engineering</td>
<td>6%</td>
</tr>
<tr>
<td>Petroleum exploration (i.e., producing equipment for or engaging in production, refining, and/or distribution)</td>
<td>6%</td>
</tr>
<tr>
<td>Power generation (i.e., producing equipment for or engaging in construction and/or operations)</td>
<td>6%</td>
</tr>
<tr>
<td>Construction (building construction and other heavy construction)</td>
<td>3%</td>
</tr>
<tr>
<td>Measuring, analyzing, controlling instruments, photographic, medical, and other optical goods</td>
<td>3%</td>
</tr>
<tr>
<td>Computers and office equipment</td>
<td>0%</td>
</tr>
<tr>
<td>Other</td>
<td>26%</td>
</tr>
</tbody>
</table>

*Source: own elaboration.*
Notes

1 CETA still requires ratification by the European Parliament and all 28 EU member states.
2 The less ambitious scenario assumes a 10% reduction in trade costs from non-tariff barriers, 25% cuts to non-tariff barriers related to procurement, and removal of 98% of tariffs. The ambitious scenario factors in a 25% reduction to trade costs from non-tariff barriers, 50% cuts to non-tariff barriers related to procurement, and removal of 100% of tariffs.

Abstract

This paper explores the motives for Initial Public Offerings (IPOs); that is, whether market mispricing or the behavioral inclinations of investors and analysts impact corporate decisions about rising equity, with a particular focus on market and corporate timing practices of managers going public. To do so, an anonymous survey was conducted of 166 managers of firms that recently went public at the Warsaw Stock Exchange in Poland (being the second most active IPO market in Europe, after London). The resulting data reveals that managers attempt to time bullish markets and good historical corporate financial results.

Keywords: Behavioral corporate finance, managerial biases, IPO, going public
JEL: G32, G34

Introduction

The behavioral finance literature broadly evidences investor irrationality and market anomalies. It has changed the way we look at investor behavior and asset pricing in capital markets, and must naturally also have implications for the second group of capital market participants, i.e., for corporations. One of the newest research directions – behavioral corporate finance – takes two distinctive approaches. The first one emphasizes the effect of market inefficiency on corporate policies, assuming that executives act as rational professionals. In other words, it focuses on how smart managers adapt corporate policy in order to exploit investor irrationality and market mispricing. The second approach replaces the assumption of managers’ rationality with evidence-driven psychological foundations. It shows how managerial biases may impact managerial practice, and if particular distortions are actually beneficial or detrimental to shareholder wealth.
This paper takes the first approach of corporate behavioral finance in exploring the motives for Initial Public Offerings (IPOs). We assess whether market mispricing or the behavioral inclinations of investors and analysts impact corporate decisions about raising equity, with a particular focus on the market and corporate timing practices of managers going public.

In an efficient equity market, a company’s cost of raising capital by selling shares is evaluated adequately in both bull and bear markets. Thus theoretically, it should not matter when the company decides to raise capital and go public because at any time the company should get the “right price” for its stock. But if we reject the efficient market hypothesis and assume that asset pricing may be inadequate, then it may impact the timing of the IPO. In bullish periods the cost of equity decreases, encouraging issuers to generate new shares supply. As the result of market timing, clustering of IPOs in periods of high market valuations can be observed.

Besides market timing, managers may also be tempted to engage in corporate timing, i.e., taking a company public after it has reported particularly good results. The willingness to capitalize on historically outstanding performance and translate it into a maximization of market valuation is supported by the extrapolation bias. Both individual investors and professional analysts tend to irrationally extrapolate past profitability and growth into the future. The interplay of corporate timing and extrapolation bias may lead to disappointing post-IPO operational figures, as well as negative abnormal long-term post-IPO stock returns.

In this paper we take a direct research approach by anonymously surveying 166 managers of firms that recently went public at the Warsaw Stock Exchange in Poland. Despite its relatively short history, the Warsaw Stock Exchange has been the second most active IPO market in Europe, after London.

The remainder of this paper is organized as follows. The next section presents a review of the literature on IPO clustering and market and corporate timing as related to IPOs. In section 3, we describe our survey sample and methodology. Section 4 sets forth, and discusses, the survey results. Section 5 concludes.

**Literature Review**

The clustering of IPOs has been relatively well-documented in capital markets worldwide. Starting with Ibbotson and Jaffe [1975], a number of studies have demonstrated that IPOs tend to cluster in both time and sectors [Ritter, 1984; Ibbotson, Sindelar, Ritter, 1988, 1994; Derrien, 2010]. A rational explanation to this phenomenon is that IPO clustering is due to the clustering of real investment opportunities, which prompt companies to seek capital with a view to using these opportunities in similar periods of time. However, empirical evidence suggests that the connection to real investment is weak.

Decisions on equity issuance seem to be driven mainly by temporary overvaluation and market timing attempts. Lerner [1994] and Pagano, Panetta and Zingales [1998] argue that private firms decide to go public when listed companies from the same sector are valued favorably in terms of market comparable ratios. Loughran, Ritter and Rydqvist [1994] find
that aggregate IPO volume and stock market valuations are highly correlated in major stock exchanges worldwide. Plotnicki and Szyszka [2014] find that the current market situation may also impact the speed of the IPO process. In hot markets, the average time between the formal decision to go public and the IPO day is significantly shorter than in periods when markets are cooler. Firms tend to hurry to list their stock when the market situation is favorable (possibly fearing that a good valuation may soon vanish) and take more time if they get listed in a relatively worse market valuation period (they might wait for the market to go up a bit before the public offer is made or simply have trouble placing the offer).

The corporate timing hypothesis is supported by evidence of poor post-IPO performance both in terms of operational results [Jain, Kini, 1994; Mikkelsen, Partch, Shah, 1997; Pagano et al., 1998], as well as negative abnormal long-term post-IPO stock returns [Ritter, 1991; Loughran, Ritter, 1995]. However, the reliability of that evidence has been widely debated, with some poor post-IPO performance results questioned due to measurement issues. For example, Brav and Gompers [1997] argue that when the Three Factor Fama and French model is used to account for size and book-to-market effects, most of the abnormal negative post-IPO returns documented earlier actually disappear.

In any case, even if post-event long-term returns should be interpreted with caution as having low power, they should not be considered in isolation. The hypothesis of market overvaluation as one of the key drivers of equity issuance is strongly supported by survey evidence. In anonymous interviews conducted by Graham and Harvey [2001] and Brau and Fawcett [2006], Chief Financial Officers (CFOs) who went public clearly stated that overvaluation and general market conditions were important determinants in their timing of equity offerings. In the survey described in this paper, we explore further the motive of market timing, and also look for other determinants, such as the desire to capitalize the firm’s good historical financial results, shareholder needs to partially or totally divest their stakes, and PR and marketing effects.

Methodology and Sample

The questionnaires were either in hard copy or electronic specially designed webpage format with multiple choice options and rankings. All rankings used in the survey were transformed so that the greatest (lowest) value represents the most (least) important item. Preliminary analysis indicated that responses from different survey forms, that is, hard copy or webpage, were not statistically different. Therefore, we present the combined results.

The research procedure was organized in such a way as to guarantee the anonymity of the participants. Because revealing true corporate practices in publicly listed companies is highly sensitive, respondent anonymity was emphasized to participants to encourage them to provide honest answers.

Survey participants were the chief executive officers (CEOs) and chief financial officers (CFOs) of companies listed on the main market of the Warsaw Stock Exchange (WSE),
and also on the alternative market NewConnect (NC), which is also run by the Warsaw Stock Exchange in Poland. Typically, the firms listed in the alternative market are younger, less mature, and smaller, but usually have a higher growth potential. Still, we present combined results as the preliminary analysis showed that responses from WSE and NC were not statistically different.

Invitation letters were mailed to 749 companies, and followed up with e-mails and phone calls to increase the number of responses. Managers were also motivated to participate in the survey by the promise that a fixed charity donation would be made for each completed questionnaire. The last survey question asked respondents to state their preferred charity purpose, and respondents were informed that the one with the largest number of votes was to receive the whole sum of money depending on the number of active participants. The survey was carried out between December 12, 2012 and January 11, 2013.

The response rate in our survey was 16.2 percent, which compares favorably with other financial executive surveys. For example, Trahan and Gitman [1995] obtained a 12 percent response rate in a survey mailed to 700 CFOs, and Graham and Harvey [2001] obtained a 9 percent response rate for 4,400 faxed surveys. Graham, Harvey and Rajgopal [2005] and Brav, Graham, Harvey and Michaely [2005] obtained 10 and 16 percent response rates, respectively. Eventually, a total of 116 surveys were carried out. Not all 116 questionnaires were completed in the full. Hence, the number of answers differs slightly as to individual questions. Our sample should be considered as a convenience sample of cases available for study rather than as representative of the entire population of corporate managers, although the relatively high response ratio could support treating it as a representative sample of managers from firms listed on the Warsaw Stock Exchange. We investigated for possible non-response bias, and concluded that our sample was representative of the population of managers from firms listed on the Warsaw Stock Exchange, excluding the financial sector. As no non-response bias was identified in terms of distribution of key variables (e.g., company size, industry etc.), we may assume a certain randomness in non-response to the survey invitations.

A two-stage procedure was applied to test statistical significance. The Friedman test was followed by the Wilcoxon pair-by-pair post-hoc test. This procedure was necessary to compare average ranks among items, while basic assumptions for ANOVA (e.g., normal distribution, interval scale) were not held. Applied tests are nonparametric and no additional assumptions about the nature of distribution need to be met.

Results and Discussion

Managers were asked to rank the following motives that potentially had influenced their decision to go public:
• financing needs of the company;
• shareholders’ need to partially or totally divest their stakes;
• favorable stock market situation, offering a possibly higher IPO valuation;
• desire to capitalize the firm’s good historical financial results; and
• intention to strengthen the company’s image (PR and marketing effect).

The results of the survey presented in Tables 1 and 2 indicate that the most important driver for the decision to go public was the need for capital. This factor was ranked number one by nearly 33 percent of responding managers and also enjoyed the highest average rank. This finding is in line with the classical approach to finance, and should not come as a surprise. Generally, companies issue equity and go public when their financing needs exceed their internal financing means and debt-capacity levels. More surprising is that financing need was the least important consideration for more than 21 percent of the firms in the sample.

The second most important factor by average rank was the desire to capitalize the firm’s good historical result. It was the most important reason for 25 percent of firms going public. Managers tend to time a public offer to coincide with the moment when they can demonstrate very good financial results, in the hope that analysts and investors will extrapolate a favorable past into a rosy future, which would raise the IPO valuation. The evidence on extrapolation bias among market participants suggests that this approach does increase IPO valuations because investors are likely to be misled by a firm’s good historical performance [Szyszka, 2013, pp. 61–62].

TABLE 1. Rank distribution among items and rank parameters

<table>
<thead>
<tr>
<th>Items</th>
<th>Percentage of answers indicating rank value</th>
<th>Rank statistics</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>(1) Financing needs of the company</td>
<td>21.1</td>
<td>11.4</td>
</tr>
<tr>
<td>(2) Shareholders’ need to partially or totally divest from their stakes</td>
<td>14.8</td>
<td>21.7</td>
</tr>
<tr>
<td>(3) Favorable stock market situation, offering possibly higher IPO valuation</td>
<td>18.1</td>
<td>15.5</td>
</tr>
<tr>
<td>(4) Desire to capitalize the firm’s good historical financial results</td>
<td>14.7</td>
<td>25.0</td>
</tr>
<tr>
<td>(5) Intention to strengthen the company’s image (PR and marketing effect)</td>
<td>29.6</td>
<td>26.1</td>
</tr>
</tbody>
</table>

Note: Respondents were required to order all the above mentioned items. The highest rank was assigned the value 5 and the lowest was assigned the value 1. No ties were accepted. Cases with missing values were excluded.

Source: own elaboration.
TABLE 2. Results of Friedman and Wilcoxon test

Question: The decision to go public resulted from:

<table>
<thead>
<tr>
<th>Friedman Test statistic value: 3.1449</th>
<th>Item</th>
</tr>
</thead>
<tbody>
<tr>
<td>p-value: 0.01446</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Wilcoxon post-hoc paired test</th>
<th>Item</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>5</td>
</tr>
<tr>
<td>1</td>
<td>×</td>
</tr>
<tr>
<td>2</td>
<td>×</td>
</tr>
<tr>
<td>3</td>
<td>×</td>
</tr>
<tr>
<td>4</td>
<td>×</td>
</tr>
<tr>
<td>5</td>
<td>**</td>
</tr>
</tbody>
</table>

Note: The null hypothesis for the Friedman test stated that the difference between the mean rank profile and the global mean rank (equal to 3) is zero. The null hypothesis for the Wilcoxon post-hoc test stated that the mean difference between a given pair is zero. Item numbers correspond to the numbers in parenthesis in the previous table. Table 2 above presents relationships between all pairs of items in terms of statistical significance in mean rank difference: ***, ** and * indicate significance at the level of 0.01, 0.05 and 0.1, respectively. Empty cells indicate no significant difference.

Source: own elaboration.

Corporate timing and market timing seem to be viewed similarly, as a favorable stock market situation and the desire to capitalize the firm's good historical financial results are not statistically different at 90 percent confidence level. Similar to surveys by Graham and Harvey [2001] and Brau and Fawcett [2006], our managers identified positive general market conditions, portending a higher possible valuation, as an important choice determinant in the timing of their equity offering. In fact, it was the most important reason for over 18 percent of the firms in our sample.

Both firm-specific timing and market-specific timing seek to facilitate possible overvaluation of the company going public. Consequently, post-IPO long-term returns should be low. Otherwise stated, where the firm-specific timing component is in place, the firm might be expected to disappoint in terms of future operational results [Jain, Kini, 1994; Mikkelsen et al., 1997; Pagano et al., 1998], resulting in abnormal negative stock returns; that is, lower returns relative to other companies exhibiting a comparable risk profile and other characteristics [Ritter, 1991, 2003; Loughran, Ritter, 1995]. However, if the market-specific (or industry-specific) timing component was predominant at the IPO date, absolute stock returns are likely to be low in the future. In this scenario, firm-specific negative abnormal returns might not be significant, as the mispricing correction occurs in the whole market or, at least, across a given industry. Obviously, both firm-specific and market-specific timing practices harm long-term investors participating in public offers.
The willingness to divest stock by current shareholders was fourth in the ranking of factors influencing the IPO decision. It was neither the top priority (11 percent of responses), nor the least import one (15 percent). It is worth noting that pre-IPO owners often cannot immediately capitalize on the favorable market valuation due to selling restrictions (lock-up periods declared when going public), or because information about a major shareholder disposing of stock just after the firm went public could harm stock valuation.

Least weighty among managers were public relations and marketing effect as an IPO driver. This factor had the worst average rank, was below all other averages, and significantly below item (1) and (4). Over 29 percent of managers identified it as the least important, and just under 15 percent as most important.

The Friedman test documents p-value of 0.01446 which is significant and allows further multiple comparisons testing. However, the Wilcoxon shows the significant difference only in two cases: between questions (1) and (5) and between questions (4) and (5). Therefore, the results of the survey in the respect to differences in ranks should be treated with some statistical caution. Overall, the survey documents that the most vital reason to go public is financing need. However, firm-specific and market-specific timing in order to capitalize potentially high firm valuations also seems to play an important role. These practices harm new long-term investors to a company while benefitting those who owned the firm before going public. However, this impact is only true if managers actually have the ability to time IPOs in this manner. It is one thing to state in a survey that one wants to capitalize on the good historical results of the firm or to take advantage of a good market situation. It may be another, much more difficult, thing to actually be able to choose the moment for an IPO that would, in fact, maximize firm value and allow the company to raise equity at the minimal cost. Not only do managers lack access to all relevant timing information (for example, they cannot predict how a market will perform even in the short-term), but also they may be subject to behavioral biases themselves.

For example, Hanley [1993], Loughran and Ritter [2002], Ljungqvist and Wilhelm [2005], Baker and Xuan [2011], and Płotnicki and Szyszka [2014] find evidence that managers anchor to historical levels of stock prices and are more likely to issue new equity if they consider their firm temporarily overvalued as compared to their reference level. However, behavioral biases in managerial decisions are beyond the scope of this paper.

Conclusions

Behavioral corporate finance emerged within the behavioral framework only after the aspects of irrational investor behavior and asset mispricing were firmly established in the academic world. It offers a useful complement to other corporate finance theories. Findings in this area may have direct consequences not only for shareholder wealth, but
also for the entire economy. It is one thing to say that investor irrationality impacts capital market prices, which leads to transfer of wealth among investors, and quite another to suggest that mispricing leads to corporate under- or overinvestment, or the general misallocation of capital and heavy losses for the entire economy. It is the case when mis-pricing of assets actually influences the decisions of corporate managers and is a driver of corporate investment and financial policy. In an inefficient market, rational managerial attempts to exploit market inefficiency, as well as irrational biases in managerial behavior, might both be detrimental.

A focus by managers on market and corporate timing practices as an IPO driver does suggest that market mispricing or behavioral inclinations of investors and analysts are factors impacting corporate decisions about raising equity. Over one-fifth of the managers surveyed identified financing needs as the least import factor when deciding to go public, while one quarter were driven by the desire to capitalize the firm’s good historical results. Corporate timing was closely followed by market timing as an IPO motivator. These results indicate that IPOs are occurring under circumstances. Corporate timing likely misleads investors into overvaluing firms based on historically good performance, because of the tendency to extrapolate impressive present results into rosy future projections of growth and profitability. Market timing also tends to misled investors about valuation. While corporate and market timing practices are beneficial for existing shareholders (at the expense of new shareholders), they also cause non-optimal allocation of capital and harm the efficiency of the entire economy.

Notes

1 I am grateful to the team of SW Research Institute www.swresearch.pl for the design of the on-line version of the survey and handling of the responses.

2 The Friedman test is a nonparametric statistical test developed by the US economist and Nobel Prize winner Milton Friedman. Similar to the parametric repeated measures ANOVA, it is used to detect differences in treatments across multiple test attempts. The procedure involves ranking each row together, then considering the values of ranks by columns. For more information, see Friedman [1937].

3 The Wilcoxon signed-rank test is a nonparametric test used when comparing two related samples, matched samples, or repeated measurements on a single sample to assess whether their population mean ranks differ. See Wilcoxon [1945] and also Hollander and Wolfe [1999], p. 295.
References


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Innovation in Hungary – The Impact of EU Accession and Integration into Global Value Chains

Abstract

This paper argues that EU accession has brought about minimal changes in the patterns of innovation in Hungary. The reason why is not that the ‘EU factor’ is of minor importance; rather, it is Hungary’s inability to use EU resources effectively, so as to fully benefit from EU membership. The Hungarian story also demonstrates that the EU cannot block member states from reversing reform or abusing the opportunities EU membership offers to them. We contend that globalization (global value chain integration) has more effectively contributed to Hungary’s knowledge-based upgrading than Europeanization (in the sense of policy transfer; access to EU Structural & Cohesion Funds, and integration in the European Research Area). This argument is substantiated with a case study on innovation strategy design and implementation, which illustrates the ambiguous impact of Europeanization, which is contrasted with our investigation of integration in global value chains, conducted through interviews of foreign-owned manufacturing companies about their R&D-based upgrading experience.

Keywords: Hungary, regional innovation policy, EU accession, global value chains, R&D-based upgrading

JEL: O38, R58, E65

Introduction

In economies undergoing transformation, innovation stakeholders cherished high hopes for EU accession. Economic scholars have emphasized broad-based, soft factors, focusing on:
• adoption of EU best practices, e.g., concerning the governance of innovation;
• policy transfers and regular monitoring and evaluation of national innovation policies by EU experts;
• integration of innovative actors in European (cross-border) research undertakings – as a solution to the fact that the resources of single nations are, in a growing number of research areas, below the critical mass needed to achieve breakthrough results;
• collaboration with foreign centers of excellence and enhanced opportunities for researchers’ mobility; and
• access to resources of, and services offered by, an integrated European research infrastructure etc.

The expectations of local stakeholders are more closely aligned with, and restricted by, what may broadly be characterized as pecuniary considerations. Researchers concentrated upon funding instruments, such as the Research Framework and Competitiveness and Innovation Framework Programs, while innovative actors in the business or higher education spheres (particularly innovation policy-makers) anticipated that a fair share of EU Structural and Cohesion Fund resources would be dedicated to innovation purposes.

Both sets of expectations have been met, and even exceeded. Local innovation undertakings have benefitted from an unprecedented volume of funding from Structural Funds, and the soft opportunities of EU-accession have also lived up to and, at time, gone beyond the expectations of stakeholders.

Methodological Difficulties of Quantifying the Impact

Quantifying the impact of EU accession (i.e., the quantification of both inputs and outputs) presents huge methodological difficulties. In restricting our analysis to the pecuniary aspects, a preliminary question is how much EU funding Hungarian stakeholders could benefit from. According to statistics published at the New Széchenyi Plan’s (Hungary’s development program) website, grants paid from EU Structural Funds that co-financed innovation activities in the 2010 to 2013 period was HUF 203.8 billion (€680 million). This amount is related to the ‘Science and Innovation Program’ of the New Széchenyi Plan.

Nevertheless, innovation and technology development related grants may also have been allocated to stakeholders through other Operational Programs, such as the ‘Development of Business Environment,’ ‘Green Economy Program,’ or Health Industry Programs.

Before 2010, regional innovative stakeholders could access support from Regional OPs. These programs partially co-financed regional stakeholders’ R&D and technology development activities. Changes in OPs’ structure from 2010 onwards (OPs have become organized by policy priorities: they have not followed a territorial logic any more), coupled with a lack of precise data, make it difficult to accurately estimate the volume of innovation-related EU co-financed funding.
Another estimation method is to apply the ‘share of the state budget in business enterprises’ R&D investments’ as a rough proxy. Data for this indicator are compiled by the Central Statistical Office. Given that EU Structural Funds have virtually substituted for national funds in Hungary (in terms of support provided to foster business enterprises’ R&D and technology development activities), this baseline proxy can adequately quantify this specific component of EU co-financed R&D-related investments. Another important component of innovation-specific EU-funds supports higher education institutions’ research and research infrastructure development expenditures. According to Central Statistical Office data, the state budget accounted for ~4% of business enterprises’ total R&D expenses in 2005 (when national funding was still available). In 2010 this indicator was ~14%; in 2012: 15.7%.

Quantifying innovation performance poses even greater methodological problems. Langford et al. [2006] distinguished R&D outputs from the outcomes of R&D undertakings, classifying, e.g., invention disclosures and patents into the first category and universities’ license revenues into the second category. Similarly, publications belong to the first category and new scientific methods that result from those a given publication belong to the second. A third category that analysts have to deal with is the economic impact derived from R&D outputs: improved macroeconomic or environmental, societal etc. indicators. Spin-off creation, for example, may be classified as an outcome of R&D undertakings, while the number of employees and total revenues generated by spin-off companies, as well as the value of university equity holdings in spin-offs, belong to the third category. Similarly, elaboration of a new process technology is an outcome of R&D, while cost savings, improved energy efficiency, and productivity increases that result from the use of the new process technology belong to the economic impact category.

It also bears mention here that an analysis of the impact of EU accession on new member states’ innovation performance may be premature. One could argue that the 2007–2013 period may be of inadequate length, since changes in a country’s innovation potential become manifest only over quite a long period.

Given these significant methodological difficulties in measuring the impact of the EU on national innovation performance, this paper instead analyses how EU membership is manifested in science, technology and innovation (STI) policy formulation and implementation, as well as in the characteristics of the national innovation system. Since the ‘Europeanization of STI policy’ is a complex and diversified issue and encompasses multiple areas of public policy, we selected one specific field of Europeanization: the regionalization of innovation that ‘culminated’ in the drafting of regional research and innovation strategies for smart specialization.

We argue that EU accession has brought about minimal changes in the patterns of innovation in Hungary. Globalization (in the sense of global value chain integration) has more effectively contributed to Hungary’s knowledge-based upgrading than Europeanization (in the sense of integration in the European Research Area; access to EU Structural & Cohesion Funds and adoption of EU-level innovation policy principles).

The reason for the relatively minor impact of EU-membership on Hungary’s knowledge-based upgrading is Hungary’s poor ability and, currently, lack of commitment, to use EU
resources effectively. These deficiencies in utilizing the opportunities of EU membership by using and leveraging EU resources to improve knowledge-based competitiveness is where the one half of the fault lies. The other half of the fault is the EU’s inability to block member states from reversing reform and blatantly abusing the opportunities of EU membership.

The rest of this paper is structured in five sections. The next section (section 2) briefly summarizes the specifics of the Hungarian national innovation system (NIS), and frames our research question, which is whether EU-membership has provoked any changes in the features of the system. We compare the hard indicators used to measure the performance of the system with selected soft features that may reveal more about system efficiency improvements than the hard features.

This comparison is followed by a case study on the regionalization of innovation (section 3), which is performed to illustrate our argument that the incorporation of European procedures and policy mechanisms in the Hungarian NIS (Europeanization) pertains to the realm of ‘dead letters’.

Section 5 substantiates a second finding of this paper, which is that economic actors’ integration into global value chains exerted a strong influence on Hungary’s innovation performance and on Hungarian actors knowledge-based upgrading. We reach this finding through interviews of fifteen local, R&D-intensive subsidiaries of foreign manufacturing multinational companies (MNCs). The interview sample and research method are described in section 4. Our conclusions, and resulting policy suggestions, are presented in section 6.

Characteristics of the Hungarian Innovation System

A popular Hungarian writer, György Moldova wrote a book about the Hungarian health system entitled ‘The spendthrift beggar’. The title refers to the enormous waste of resources that characterizes the Hungarian health system; the convergence of overinvestment in expensive medical instruments, hospital overcapacities, and shortages of basic resources (unpaid medicine suppliers, mediocre facilities, resource constraints for basic hospital maintenance etc.). Moldova’s witty metaphor equally applies to the Hungarian NIS, which is also characterized by a low efficiency of public investment in R&D and system-wide waste of resources.

As a matter of fact, the low efficiency of public R&D investments applies (to a varying extent) to all new EU member states. Pop et al. [2014] surveyed the relationship between private and public R&D (intensity) and Central and Eastern European countries’ (CEE) growth performance, over the 1998 to 2008 period. According to the referred author’s calculations, the impact of public R&D is statistically insignificant in practically all the surveyed CEE economies. By contrast, private R&D (intensity increase) was found to have a significant impact on growth.
Hungary is one of the worst performers with respect to the efficiency of public investments in innovation. Montalvo–Moghayer [2011] computed innovation system efficiency indices; that is, input/output ratios of R&D efforts. According to their calculations, Hungary had one of the least efficient innovation systems, while the Czech Republic enjoyed the best performance among CEE economies.

Izsák et al. [2013] were concerned with the throughput of government support to business innovation. The authors analyzed the relation between the share of (1) government support to business innovation in total BERD and (2) SMEs introducing product or process innovation in 24 EU member countries and Switzerland. They found a broad, positive association between the two factors with a few exceptions. Hungary was one of those exceptions (together with Latvia and, to some extent, Bulgaria). Although a relatively large share of total funding was devoted to support business enterprise research, technology development, and innovation efforts in these countries, the share of innovative SMEs was particularly low, reflecting a thought-provoking mismatch between policy focus and outcome.

As outlined by Havas [2007; 2011], Hungary has successfully created the necessary institutions (government bodies, financing, administrative and management agencies at various spatial levels; bridging organizations, NGOs etc.) that exist in developed economies with high-performing NISs. Hungary also employs a wide range of innovation support measures and policy schemes that target various components of the system at various stages of the innovation cycle. The amount of support allocated to foster research, development and innovation activities, together with the volume of private innovation outlays, have considerably increased over the surveyed period – as quantified by the hard indicators in table 1. Indeed, performance, as reflected by the main input indicators and as shares of public, private and foreign sources of GERD, definitely started to converge to those of established EU economies (table 1).

### TABLE 1. Hungary’s national innovation system: evolution of some performance indicators since EU-accession

<table>
<thead>
<tr>
<th>Source</th>
<th>Indicator</th>
<th>2004</th>
<th>2012</th>
</tr>
</thead>
<tbody>
<tr>
<td>a</td>
<td>GERD/GDP</td>
<td>0.88</td>
<td>1.29</td>
</tr>
<tr>
<td>b</td>
<td>SII</td>
<td>0.266</td>
<td>0.323</td>
</tr>
<tr>
<td>c</td>
<td>Percentage of GERD financed by industry</td>
<td>37.1</td>
<td>46.9</td>
</tr>
<tr>
<td>c</td>
<td>Percentage of GERD financed by government</td>
<td>51.8</td>
<td>36.9</td>
</tr>
<tr>
<td>a</td>
<td>Total employment in R&amp;D units</td>
<td>49,615</td>
<td>56,486</td>
</tr>
<tr>
<td>c</td>
<td>Total researchers FTE</td>
<td>14,904</td>
<td>23,837</td>
</tr>
<tr>
<td>a</td>
<td>Number of corporate R&amp;D units</td>
<td>669</td>
<td>1,583</td>
</tr>
<tr>
<td>a</td>
<td>Employment in corporate R&amp;D units</td>
<td>8,870</td>
<td>23,298</td>
</tr>
</tbody>
</table>

Sources: a) Central Statistical Office, Hungary; b) European Innovation Scoreboard, 2008 and Innovation Union Scoreboard, 2013; c) OECD Science and Technology Indicators.
Nevertheless, the real performance and efficiency improvement of the Hungarian NIS is barely discernible using accepted indicators.\(^1\)

For example, the value of the summary innovation index (SII) has definitely increased over the surveyed period.\(^2\) Composite indicators are, however, biased upwards by Hungary’s FDI-driven specialization in medium and high-technology industries. Consequently, the ‘contribution of medium and high-tech product exports to the trade balance’ (an important component of composite indicators), is higher than average. The value of this indicator is driven by processing exporters with low and sometimes even declining(!) local value added shares.\(^3\)

Statistical illusion with respect to the evolution of innovation performance is also reinforced by the increasing BERD-intensity of economic performance. This indicator is driven by the huge amount of support (co-financed from EU Structural Funds) allocated to R&D-specific investments. Access to R&D-specific support prompted companies to report R&D activities, which amplified the improvement of this indicator, since under-reporting and previously exerted a significant downward bias on the number of companies with R&D activity [Sass, 2013].

The meagre performance of NIS is best reflected by the fact that innovation performance is still driven mainly by foreign companies.\(^4\) Indigenous companies’ technology generation and, particularly, commercialization, is minimal, despite the clear focus of Hungary’s STI policy on downstream, i.e., direct business R&D [Izsák et al., 2013]. In 2010, 74% of small enterprises (including foreign and domestic-owned ones) reported no innovation activity at all.

Public research institutions are still unable to convert their scientific results into commercial success, partly for lack of the necessary intangible capital and partly because of the underdeveloped market for technology.\(^5\) Public-private innovation collaboration is minimal and foreign subsidiaries rarely collaborate with indigenous companies in the field of R&D [Sass–Szalavetz, forthcoming] – as a matter of fact public-private collaboration is more or less restricted to cases where specifically designated support is allocated to promote such collaborations.

An oft-mentioned feature of the Hungarian innovation system is that policy actors are weak and disorganized, and that coordination among them is minimal. Institutional stability is missing from the system; key institutions of innovation policy design and implementation have undergone radical reorganization in practically all political cycles [Gál, 2013]. Consequently, although strategic documents outlining the future orientation of STI policies are regularly prepared, written strategies usually remain dead letters.
When discussing the impact of EU integration on the features of Hungary’s innovation system, it is necessary to distinguish between the ‘opportunity aspects’ of integration and the Europeanization of the system.

The opportunity aspect of EU integration derives from the possibility of emulating European best practices, which is facilitated by EU-funded institution building; institutional capacity building; improvement of the framework conditions; strategy design; and implementation. ‘Opportunity’ is therefore closely related to local policy learning, fostered by technical advice, and supported by experimentation and feedback mechanisms. For example, as a member of the EU community Hungarian STI policy decision-makers benefit from regular surveys of the innovation system carried out by EU experts [cf. European Commission, 2013]. These surveys are intended to identify and mitigate structural impediments in member states’ innovation systems, and improve their efficiency.

‘Opportunity’ is a softer category than Europeanization: the latter implies an institutionalization of rules, norms, policy mechanisms and procedures, and their incorporation into the national legislative and institutional systems – as a compulsory exercise and not as an opportunity for optional emulation, learning, and improvement.

If the potential of certain systemic changes is recognized, EU-level actions can be decided upon that will, in turn, be imposed on member states – for example, as an ex-ante conditionality for access to European Structural and Cohesion Funds.

A relevant example is the reform of the EU Cohesion policy that prescribed the preparation of research and innovation strategies for smart specialization (RIS3) as ex-ante conditionality for supporting R&D investments. This decision reflects the recognition that different regions face different industrial and innovation policy challenges, depending on their endowments, industrial and technological specialization, distance to the technology frontier, institutional development, collaboration intensity among actors, intra- and inter-regional linkages. Hence, this decision reflects the fact that one size does not fit all [Reid, 2011].

As it will be shown, the implementation of RIS3 only appears to be an example of Europeanization: despite impeccable compliance, it actually exemplifies a missed ‘opportunity’ in Hungary. Drawing on the distinction made by Bachtler et al. [2013], rationalist adaptation occurred (i.e. formalistic adaptation, driven by actors’ opportunistic response to incentives) rather than sociological adaptation (driven by norms of appropriate behavior and identification with the EU).

Developments were similar to what happened in the early 2000s, when the Europeanization of territorial governance (regionalization) was on Hungary’s agenda. Over time, several papers have convincingly demonstrated that despite ‘compliance on paper’ and
the creation of relevant territorial governance structures and institutions, the outcome of Hungary’s regionalization was increased centralization [Bruszt, 2008; Pálné Kovács, 2009; 2013; Buzogány-Korkut, 2013]. These referred works detail the specifics of the Hungarian ‘regionalization’, marked by ‘regionalism without regions’, i.e., weak regional structures with little legitimacy and powerless regional actors; vested interests of regional, local and national actors; double-speak; parallelisms (with counties, i.e., NUTS3 regions); and recurring centralization waves driven partly by the recognition of anomalies in the system but also by distrust between the national and the regional-level institutions and changing values, ideologies and norms.

The recent regionalization of the innovation system has followed a similar trajectory. National innovation policies started to take the regional/spatial dimension into account following the 2003 XC Act on the Research and Technological Innovation Fund. The act prescribed that 25% of the Fund’s yearly income be designated to regional innovation purposes. Regional innovation agencies (RIAs) were founded in the mid-2000s and entrusted with designing regional innovation strategies, linkage building, and developing and providing regional innovation related services.

By the end of the 2000s, RIAs underwent substantial capacity development, accumulating region-specific (or rather regional innovation system-specific) knowledge and relational capital. However, their institutional autonomy and capacity to influence regional innovation strategy implementation kept diminishing as a result of policy-makers’ repeated re-centralization moves.

The first milestone in the RIAs’ roll-back was a gradual hollowing out of the regionally decentralized innovation programs. While RIAs could initially influence the content of regionally decentralized innovation support programs and include regional specifics, that function was taken back (and made centrally) by the National Innovation Office (NIO). According to an NIO official’s comment to the author’s interview questions, decentralization in the mid-2000s created a multitude of highly diversified programs that were very difficult to administer and monitor. Therefore, the RIAs’ role was restricted to determining the range of strategic sectors receiving targeted support in the framework of the regionally decentralized programs. Otherwise, the support programs have become practically identical in all regions. “This made the process of regional innovation policy implementation more efficient and easier to manage and administer.” (Interview with an NIO official).

The next milestone in the process of suppressing the regional decentralization of innovation was the government’s effort to channel regional applications away from regionally decentralized programs and towards centrally managed Operational Programs (OPs), by prescribing ever stricter conditions to gain support from the former program type. The national government gradually withdrew from funding regional innovation undertakings using regionally decentralized sources. The final calls for proposals under innovation support programs funded from regionally decentralized sources were in 2009. Subsequently, regionally earmarked grants from EU Structural Funds channeled through Operational
Programs have become the only region-specific source of funding innovation activities. Regional Operational Programs cannot, however, be considered regionally decentralized sources of funding since program design, project selection, financial management, monitoring and evaluation are all under the central/national authority.

Parliamentary elections in 2010 brought about changes in the structure of OPs that further reversed the regionalization of innovation (and of development). Regional OPs were merged into the newly established functional OPs, such as the Science & Innovation, Green Economy, and Health Industry Programs.

As of 2010, RIAs received no more budgetary funding to cover the costs of their public benefit activities (in the 2000s, their activity was funded from national sources). The traditional institutional instability that characterizes the Hungarian innovation and public administration systems was exacerbated following the parliamentary elections in that same year.

Responsibility for the allocation of funding from the Research and Technological Innovation Fund was then transferred from the National Innovation Office to the National Development Agency. The National Innovation Office was hollowed out and the majority of experts fired, in a manner similar to all other institutions of public administration and territorial development. Personnel changes involved not only the top management of the previous political cycle but also desk level officials. The implementation of innovation-related programs was frozen: new calls for proposals were not announced for more than a year. Existing contracts (signed during the period of the previous government) underwent a lengthy review process. Payment of contracted support was frozen or waived.

The National Development Agency became subordinated to a newly established ministry – the Ministry of National Development. Shortly thereafter, it was transferred under the authority of the Prime Minister’s Office (government decree 273/2013) and then six months later, dissolved (government decree 475/2013). Responsibility for the management and implementation of individual, innovation-related OPs was dispersed and transferred to various ministries: to the Prime Minister’s Office; the Ministry for National Economy; the Ministry of National Development; and the Ministry of Human Resources.

This fundamental restructuring of regional development culminated in the creation of the National Development Steering Committee (NDSC) to speed up the absorption of EU Structural Funds. NDSC has four members: Prime Minister (who plays the leading role), ministers for national development and the economy, and the state secretary in charge of the Prime Minister’s Office. Decisions on large-scale developmental projects and all innovation related programs (funded from Research and Technological Innovation Fund, or from OPs) rests with the NDSC (government decree 140/2012).

This lengthy (albeit far from comprehensive) enumeration of institutional and regulatory changes documents the mechanism that has brought about state capture in Hungary, where funding is based on political loyalty, rent-seeking and clientelism [cf. Ágh, 2013].

Key elements of this mechanism are the firing of experts, over-politicization of public
administration, dissolution of existing institutions and creation of new ones; frequent redistribution of authorities and responsibilities leading to institutional chaos; and a parallel centralization of power with respect to decisions that affect private gains. Paradoxical as it may seem, institutional instability and centralization have been going hand in hand, reinforcing each other in a ‘virtuous circle’.

The centralization of territorial development reached a tipping point just at the time of the official reform of EU Cohesion Policy. A key component of the reform is the incorporation of smart specialization in national and regional innovation strategies.

This coincidence is important, since smart specialization is closely related to the concept of partnership, empowerment of local stakeholders, decentralization and bottom-up approaches – given its strong reliance on local competitive strengths, the identification of which requires the involvement of local stakeholders. Smart specialization necessitates mutual learning and experimentation, continuous interactions and evidence-based feedbacks and adjustments.

It is therefore obvious that the concentration of power that characterizes Hungarian territorial development contradicts all elements of the smart specialization concept. The context of a ‘single-actor governance system’ notwithstanding, compliance on paper has been impeccable: all Hungarian RIAs prepared the RIS3 strategies of their regions within a timeframe of four to six weeks: they creatively re-worded the existing innovation strategies along ‘new ideological lines’. The Ministry for National Economy synthesized these regional strategies and drafted a national-level smart specialization strategy designated to become part of the EU – Hungary Partnership Agreement for the programming period of 2014 – 2020.

While programming (strategy drafting) has been accomplished in full compliance with EU prescriptions, the claim that adaptation was formalistic and cynical is best substantiated by the fact that strategy design and implementation (in terms of funding allocation) are worlds apart. Regional planning and programming have no influence on the content of innovation related policy instruments and support programs. These latter are uniform across regions, which contradicts the concept of smart specialization. Even less commonalities can be found between RIS3 strategies and the selection of support beneficiaries.

In the context of a non-existing regional devolution of policy implementation and no regionally decentralized innovation support measures, RIS3 related activities such as planning, programming, social consultancy (involving local stakeholders in the programming process), – however exemplary – can be considered only a kind of façade regionalism, façade smart specialization.

Hence, in addition to the impact of EU integration, it seems necessary to analyze other factors that influence Hungarian innovation performance. The next sections explore the impact of Hungarian actors’ integration in global value chains (GVCs).
Impact of FDI and GVC-Integration: Sample of Interviewed Companies

Hungary’s strong reliance on FDI-driven growth and modernization has made Hungary highly integrated in global value chains. According to De Backer and Miroudot [2012] who quantified countries’ GVC-participation indices, the Czech Republic shows the highest GVC integration out of 33 OECD-economies (with an indicator slightly above 65%). Slovakia and Hungary rank fourth and fifth, respectively, with values slightly below 65% (p. 7).

Although Hungary has already lost its FDI attraction frontrunner status [Csáki, 2001], FDI stock as a percentage of Hungary’s GDP is still among the highest in Europe (81.7% in 2012, as compared to 69.6% and 47.3%, respectively, for the Czech Republic and Poland [UNCTAD World Investment Report, 2013]. Following initial market-seeking investments in the 1990s, efficiency-seeking FDI has become dominant [Sass-Kalotay, 2012]. Relatively large FDI stocks characterize the electronics and transport equipment industries. Foreign-owned enterprises accounted for 66.2% of total manufacturing value added in 2011. Their share in total sales was above 95% in the electronics and transport equipment industries and above 85% in the machinery and electrical equipment industries (source: Central Statistical Office). The prominent role of foreign-owned enterprises is also reflected by their share in gross fixed capital formation; in 2011 it was 76.4% in manufacturing [Central Statistical Office].

FDI-promotion policies gradually shifted their focus from quantity to quality-based considerations [Antalóczy et al., 2011]. Expectations towards foreign investors have turned increasingly sophisticated and variegated. Selective incentives have been applied to encourage existing investors to co-locate high value adding activities to their local production facilities, especially production-related R&D. Support programs also aimed at enhancing foreign investors’ local backward linkages, and local embeddedness has been promoted through policy measures fostering clustering and collaboration with local universities and public research organizations.

The author of this paper interviewed 15 large manufacturing MNCs’ R&D-intensive Hungarian subsidiaries in the automotive and electronics industries; specifically, 9 automotive and 6 electronics companies. The share of foreign investors in total R&D expenditures is above the average in the two surveyed industries [Dachs et al., 2012].

Research was carried out between mid-2011 and 2013. Research questions addressed subsidiaries’ R&D-based upgrading experience and drivers of the upgrading process. Interview questions are presented in the Annex of this paper.

Given the qualitative nature of our research questions, we used a case study based investigation method [Yin, 2003], employing a semi-structured questionnaire containing open-ended questions. We interviewed either the CEOs or various functional managers.
of the selected subsidiaries, including the chief procurement officer (two cases), the chief information officer (one case), the chief communication officer (two cases), the chief technology officer (two cases), and the manufacturing operations manager (one case). The interviews lasted 45 to 90 minutes (depending on the willingness of the interviewee to expound on details). As the interviewed firms required anonymity, neither their names will be disclosed nor their main products specified.

We selected large, 14 100% foreign-owned, 15 export-oriented, 16 R&D-intensive 17 subsidiaries. For each firm, interview information was complemented with such documents as newspaper articles, firm information brochures, and publicly available balance sheets, profit and loss statements, and official ‘notes to the financial statement’.

**Impact of GVC-integration on Hungarian Actors’ Knowledge-Based Upgrading – Interview Findings**

We briefly summarize the key findings of our interviews below. The purpose of doing so is not to provide a detailed account of the surveyed subsidiaries’ R&D-based upgrading. Interview findings are instead compiled here to substantiate our second theme, that GVC-integration is the key factor driving knowledge-based upgrading in Hungary.

The first important finding of our investigation was that, over time, the product mix of virtually every surveyed companies underwent non-negligible changes; or rather, non-negligible development. Besides locating increasingly sophisticated products (that often required substantial tangible investment by the owners in new production equipment, i.e., in technology development), local subsidiaries also co-evolved with their parent companies. This was particularly pronounced when local firms had responsibility for producing their MNC-owners’ newly developed products. Each new product launch 18 involved local process development activities, while gaining a new product mandate (which was subject to inter-subsidiary competition) required local engineers’ production planning (plant layout planning) efforts and their development of technological solutions.

We found that over time, local production related support R&D activities were invariably co-located to the surveyed MNCs’ manufacturing facilities, as production ‘pulled’ development activities. Initially, R&D activities were confined to routine problem-solving and testing tasks. Eventually, however, more skill-intensive, higher value-added process development activities were entrusted to the subsidiaries that managed to convince their owners about their capabilities.

It became evident that among offshored business functions, R&D offers the longest upgrading trajectory for catching-up peripheral subsidiaries. The ‘quality ladder’ of R&D activities is quite long, since R&D functions can be decomposed into a multitude of activities that feature different skill intensities and value adding capabilities [Schmitz-Strambach, 2009].
Upgrading within the R&D function may proceed along the extensive margin, with the take-up of additional tasks, and/or along the intensive margin, which refers to the increasing complexity of the R&D tasks with which local subsidiaries are entrusted. Moreover, R&D activities may evolve in scope if high-performing local subsidiaries are entrusted with R&D tasks that support the subsidiary’s local production function and perform R&D activities that add value to partner subsidiaries and/or headquarters (MNC-level R&D-activities). Upgrading within the R&D function may culminate in world product mandates (when a subsidiary gains responsibility for all development activities related to a specific product in the MNC’s portfolio).

Although there were several companies in our sample (4 out of 15) that were stuck in relatively low-level R&D activities, most of them managed to enhance the complexity of the R&D activities (though a sample selection bias may apply). Subsidiaries gained additional tasks in process, in product, tool, and process- or product-related software development, as well as testing, product adaptation, and design.

In addition to the co-location rationale (according to which problems should be solved ‘at source’, as they arise [Lanz et al., 2011]) investors considered the wage differences between home and host country scientists and engineers an important factor that motivated their R&D internationalization decision.

The interviewed subsidiaries were quite successful in accessing public support (co-financed from EU Structural Funds) that had been earmarked for R&D activities. However, the interviewed managers were unanimous in claiming that public support did not prompt owners to carry out R&D activities at their local subsidiaries (or extend and deepen existing R&D activities); rather, such support was a catalyst that accelerated the owners’ earlier decision to upgrade local subsidiaries and co-locate some R&D activities to the premises of production. This view was at least partially corroborated by the fact that support applications were submitted after a systematic evaluation of costs and promised benefits of investment into local R&D activities, and only in cases when these evaluation exercises yielded positive results.

Lessons and Conclusions

In this paper we argue that EU membership has not provoked cogent transformations in the features and efficiency of the Hungarian national innovation system. Economic actors’ integration into global value chains has more effectively contributed to knowledge-based upgrading, though the allocation of funding from Structural Funds to multinational companies’ local subsidiaries seems to have effectively accelerated this latter process.

It must be acknowledged that our approach has limitations, such as the relatively short survey period (insofar as changes in a country’s innovation system take a long time to
become manifest in improved performance), and the small number of firms interviewed (a 15-firm-sample does not allow for general conclusions).

Another limitation is the subjective character of our assessment, given that the Hungarian experience is analyzed in isolation. It is fair to suppose that other new member states have not shown significantly better NIS-evolution dynamics following EU accession. It is up to future research to compare the efficiency of other new member states’ national innovation systems.

These limitations notwithstanding, important ‘telling’ indicators have not changed, including: (1) the enduring dominance of foreign companies in gross fixed capital formation in manufacturing; (2) the high share of foreign companies in total private R&D outlays (see footnote 4); and (3) the low efficiency of public funds in generating innovation-driven growth, together with the prevalence of local subsidiaries’ co-evolution with their mother companies in terms of functional upgrading and taking up R&D activities. It therefore seems self-evident that the major channel of improving innovation performance is through MNCs’ relevant activities.

Moreover, it has to be borne in mind that R&D activities carried out within MNCs’ organizations will per definitionem forestall commercialization-related problems. The results of subsidiaries’ R&D activities will be used by the MNC-owners, or a market for subsidiaries’ innovation results will be ensured by the MNC-owners.

Although it is relatively easy to pick individual success stories with respect to foreign investment in R&D, and local manufacturing subsidiaries’ R&D-based upgrading, excessive reliance on foreign investors has real drawbacks. Since the volume and the quality of domestic R&D capital stock are highly important determinants of foreign R&D investment [see, e.g., Erken and Kleijn’s econometric exercise, 2010, and a literature survey by Ambos and Ambos, 2011] the poor overall innovation performance of Hungarian indigenous firms cannot be countered by individual success stories of MNC subsidiaries’ R&D-based upgrading. A near-exclusive reliance on foreign investment with respect to BERD greatly reduces the multiplier effect of foreign investments into R&D. Furthermore, sporadic individual success stories of R&D-based upgrading usually remain below the critical mass, failing to push specific industries or regions to a knowledge-based growth trajectory.

Recently, however, the indicator ‘number of indigenous innovative companies’ started to increase and the ‘share of companies with no innovative activities’ diminished. These are clear-cut positive effects of EU membership. But these indicators have not necessarily improved as a result of indigenous companies’ capacity building: their upswing may be simply a statistical illusion, explained by the fact that a large number of companies have received support from EU Structural Funds earmarked for R&D activities. In consequence, recipient companies report that they carry out innovative activities. Note that the boundaries between ‘no innovative activities’ and ‘some kind of innovation’ are quite elusive, and depend on the discretionary assessment of the managers that fill the CIS-questionnaires.
Consequently, the absorption of EU Structural Funds that target innovation does not necessarily lead to improved, innovation-based economic performance: more innovative activities will be performed, but their economic impact remains to be seen.

Notes

1 According to the classification of the Innovation Union Scoreboard [2014], Hungary’s position is of a ‘moderate innovator,’ though three of its seven regions are modest innovators.

2 Hungary’s SII has been steadily growing since the mid-2000s (up to 0.351 in 2013) but it is still far below the EU-average of 0.554 (Source: Innovation Union Scoreboard 2014, p. 92). According to Csuka–Török [2014], Hungary’s innovation performance is broadly in line with its development level. Over the past decade its position within the EU (measured by SII rankings) has not significantly worsened, which is in marked contrast to Hungary’s substantially deteriorating comparative economic performance. See also Török [2008] about rankings and the relation between science, innovation and macroeconomic performance.

3 According to Pitti’s [forthcoming] calculations from data of the National Tax Authority, the ratio of value added to gross output in the Hungarian electrical and optical equipment industry was a mere 12.7% in 2012 (11% in 2007); in the transport equipment industry, 19.9% in 2012 (18.6% in 2007 and 22.7% in 2010).

4 According to Pitti’s [2010] calculations from the data of the National Tax Authority, in the second half of the 2000s, the share of foreign investors in total business enterprises financed R&D outlays was between 85 and 90%. According to CSO-data, in 2012 50.9% of total researchers working in corporate R&D departments worked in foreign-owned companies. There is a marked discrepancy between CSO and Tax Authority data with respect to the share of foreign owned companies within total business enterprise financed R&D outlays; according to Tax Authority data, foreign investors’ share is by ~25–30% higher, amounting to 85 or 90% of the total.

5 Edler [2011], compared the development level of demand conditions for innovation in CEE countries based on the World Economic Forum’s large-scale survey of business leaders’ subjective assessments. He found that buyer sophistication (inclination and ability of buyers to select products based on performance rather than price and, thus, their willingness to purchase innovative products) is the lowest in Hungary. According to business leaders’ perceptions, the impact of public procurement on innovation and technology generation is the smallest, and practically non-existent, in Hungary. Corruption, bribery, and government favoritism in public purchasing decisions is high. Note that Edler analysed the 2008–2009 edition of the World Competitiveness Report; since then the situation has significantly deteriorated in Hungary. One example, by way of illustration, concerns buyer sophistication. From placing 95th out of 134 countries in 2008–2009, Hungary slid to the 125th place by 2013–2014 out of 148 countries (the Czech Republic is 75th, Poland is 93rd).

6 For details see the RIS3 Guide issued by the European Commission (http://s3platform.jrc.ec.europa.eu/s3pguide). See also: Foray et al., 2009; 2011;

7 Up till 2011, the name of the Office was National Office for Research and Technology.

8 Initially, regionally decentralized programs were more popular than EU co-financed, centrally announced operational programs targeting innovation, mainly because the former programs required relatively little co-financing by recipients and advance payments were available. By contrast, the required
level of beneficiary co-financing in the case of operational programs is often above 50%. Moreover, regionally decentralized programs were much simpler to administer, whereas OP-support imposed a substantial administrative burden on beneficiaries.

According to the data of the Regional Innovation Scoreboard [2014], Hungary was found to have the lowest absorption rates (p. 30), which is explained by institutional instability and frozen / waived programs.

Note that in contrast to the distinction applied by Innes (2014), who distinguished between ‘party state capture’ (aiming to monopolize political power) and ‘corporate state capture’ (exercised mainly for private gains), Hungary represents a combination of these two ideal types.

Going beyond the simple import content (or rather foreign value added content) of exports, the GVC Participation Index contains foreign value-added and domestic value-added used in third country exports (as a share of gross exports in percentages). Thereby, it captures the downstream side of integration, i.e., the value of inputs exported to third countries that will, in turn, be used in these countries’ exports.

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The findings presented in this paper are the outcome of two large-scale research undertakings, each of which addressed a number of topics that influenced the surveyed firms’ upgrading experience and performance. The list of interview questions in the Annex contains only the questions that are relevant for this paper’s focus.

In 2012, the average number of employees at the surveyed firms was 1,321 and average sales were EUR 186.6 million. The sample was selected from the authors’ database of case studies and journal articles on the activities of Hungarian subsidiaries in the chosen sectors. This sample selection method poses the risks of selection bias: our sample consists of well-known ‘blue chip’ companies that may show above-average upgrading performance.

The sample included subsidiaries of German, French, Danish, American, Mexican and Japanese MNCs.

The average share of exports in total sales was 87.7% in 2012.

The average number of R&D staff was 23 (2012). Most of the interviewed companies refrained from disclosing the share of R&D outlays in total sales.

According to the terminology used by innovation economics scholars, new product launch refers to products that are new to the local subsidiary, while new a product mandate refers to new to the world (new at MNC-level) products.

When inquiring about the evolution of the ‘depth’ (complexity) of R&D tasks, we applied measurement constructs advanced by Taggart [1998], measuring the quality and the complexity of R&D activities with their average timeframe, i.e., with the time that elapses until the given research undertaking is expected to bear fruit. Routine, problem solving R&D tasks have a timeframe of a several hours or days. The timeframe of engineering support tasks (including applied engineering for the launch of new products, quality management, process optimization, minor product improvements etc.) ranges from several weeks to several months. The more advanced an R&D task is (e.g., software development, design, new product development) the longer time is allocated for the project before the first results can be expected.

Data will be available only within one or two years, since this indicator is quantified by bi-annual CIS-surveys.

Considering the broad conceptualization of innovation it is fair to report innovative activities even in cases when innovation is confined to investment in new machinery, the installation of which requires process development, adaptation etc. Hence, purchases of new production technology (the action that was supported by EU Structural Funds) represent process innovation. As for product innovations, Inzelt and Szerb’s [2006], finding that in lagging regions this kind of innovation usually denotes minor changes in the product parameters that do not improve the given firm’s export potential still applies – a decade later.
References


Pitti, Z. (2010), The domestic and the international business sphere before and after the crisis. [A hazai és nemzetközi vállalati szféra a válság előtt és után.] Mimeo PPT presentation.


Appendix

Interview report

Note: This Appendix contains only some of the questions asked in the framework of two large-scale research undertakings: only the questions relevant for this paper’s focus are listed below.

1. Basic company data
   - Name and address (city only)
   - Main products
   - Ownership
   - Sales
   - Share of exports in total sales
   - Employment
   - Number of R&D-staff
   - (Approximate) share of R&D outlays in total sales

2. Activity and evolution of activity portfolio
   - What is the core activity of the company?
• Has the knowledge-, technology- and skill-intensity of the core activity increased since the establishment of the Hungarian subsidiary?
• Has the product mix changed/evolved over time?
• Did the above-mentioned changes require any tangible investment (purchase or relocation of new machinery) and any specific training from the part of both the blue and white-collar staff? Please explain the specifics of the learning process!
• Is the company engaged in any production specific support activities? Please list them and explain how the (support) activity portfolio of the company evolved!

3. R&D activities
• Please provide some details about the specifics and the evolution of R&D activities!
• Explain how the local management convinced the parent company’s management to locate R&D activities to Hungary! What do you think the owners’ motivations were in this respect?
• Could the local subsidiary benefit from any government support with respect to R&D and/or investments in new technology? Did you apply for support?
• What is your opinion about national/regional business/innovation promotion opportunities in Hungary?

4. R&D-specific linkages, innovation collaboration
• Do you collaborate with any local, regional or national higher education institutions and/or research organizations? Please provide some details about the specifics of this collaboration!
• Are you member of a cluster? What was the main motive of your cluster membership? What are the key benefits of your cluster membership?
• Do you outsource any R&D-specific activity to Hungarian actors?
Matthias Mrożewski  
Chair of Entrepreneurship and Innovation Management, 
Technical University Berlin, Germany

An Empirical Analysis of Economic and Socio-Demographic Determinants of Entrepreneurship across German Regions

Abstract

Entrepreneurship is fundamental for a country’s economic development through its positive effect on innovation, productivity growth, and job creation. In entrepreneurial research, one of the most important problems is to define the factors that actually determine entrepreneurial action. This study analyzes that question in the case of Germany by taking an aggregated approach that focuses on socio-demographic and economic determinants of regional entrepreneurship. Based on a literature review of German and international regional-level research, six hypotheses are developed and empirically tested using the most recent available data on 385 German regions as units of analysis. The results are surprising. In the case of household income, unemployment, education and marital status the relationship is significant but contrary to earlier research. Only regional age structure seems to be a stable predictor of regional entrepreneurship. The results indicate that in recent years there was a major shift in the determinants and characteristics of entrepreneurship in Germany.

Keywords: entrepreneurship, self-employment, determinants of entrepreneurship, regions, Germany  
JEL: J23, L26, M13, O18, R11
Introduction

Entrepreneurship fundamentally impacts a country’s economic development and competitiveness through its positive effect on innovation, productivity growth and job creation. It comes as no surprise that entrepreneurship research is becoming an increasingly important stream in economic literature. Thereby, one of the most important problems in entrepreneurship research is to identify the factors that actually determine entrepreneurial action. Works aiming at answering this question range from studies on psychological factors influencing individual decisions to become an entrepreneur [e.g. Begley, Boyd, 1987; Forbes, 1999; Keh et al., 2002; Krueger, 2000; Shaver, Scott, 1991; Simon et al., 2002] to aggregated macro studies on the cultural and institutional determinants of entrepreneurial activity across countries [e.g., Aidis et al., 2012; Aldrich, 1990; Baumol, 1990; Djankov et al., 2002; Douhan, Henrekson, 2010; Estrin, Mickiewicz, 2011; Freytag, Thurik 2007; Johnson et al., 2002; Tonoyan et al., 2010].

A similar division can be found when considering research on determinants of entrepreneurship that focus on single countries. Thus, in the case of Germany, which is the focus of this study, research on the drivers of entrepreneurship can be divided into two streams as well. The first stream is individual-level literature focusing on individual characteristics such as age, education, marital status, migration background, and their impact on the decision to become self-employed [e.g. Fritsch et al., 2012; Fritsch et al., 2013]. However, due to its individual-level character this research perspective is relatively narrow as it neglects environmental effects on the decision to engage in entrepreneurship.

Regional-level literature, which is the second literature stream, overcomes this drawback by taking into account aggregated individual-level variables as well as environmental aspects, such as regional economic development, unemployment levels, tax policy etc. The usage of socio-demographic and environmental variables in one empirical model allows us to compare the relevance of both categories and to derive relevant implications for the shapers of regional economic and entrepreneurship policy.

Existing regional-level literature, is, however, largely based on obsolete data that takes into account only Western German regions [Audretsch, Fritsch 1994; Audretsch, Fritsch, 2002; Brixy, Grotz, 2007; Fritsch, Falck, 2007] or uses data from the beginning of the new millennium [Audretsch et al., 2010; Bergmann, Sternberg, 2007; Rocha, Sternberg, 2005].

This paper addresses that drawback by using 2011 German Census data and the most recent data from the statistical offices of the German federal states (Regionaldatenbanken) for its empirical analysis. This data refresh is particularly important as in the recent years Germany’s economy underwent a significant transformation following the political reforms of the Agenda 2010, the turbulences of the economic crisis, and also general social and demographic changes. It is highly likely that these developments had a major impact on
the characteristics of entrepreneurial activity in Germany, which again warrants a fresh examination.

This paper takes on that research gap. It is structured as follows. After the introduction in section 1, the theoretical background is provided, and hypotheses developed, in section 2. Section 3 describes the data used and their operationalization. The results of the empirical analysis are presented in section 4. Section 5 discusses the results, policy implications, and limitations of the research.

**Determinants of Entrepreneurship**

Factors influencing individual decisions to exploit business opportunities and engage in entrepreneurship are multifaceted. The magnitude of entrepreneurship determinants and the different levels in which they unfold their influence forces researchers to take on different observation levels and apply various methodological lenses to analyze the reasons why entrepreneurship occurs.

A comprehensive framework for classifying and identifying the most important determinants of entrepreneurship is provided by Shane [2003]. Accordingly, it is possible to group the different factors into two categories: external environment-specific factors and entrepreneur-specific factors, whereas the latter are again divided into psychological and non-psychological factors. The first category consists of the economic environment (including the tax system, economic growth, unemployment etc.), the political environment (including rule of law, regulations, and property rights) and the socio-cultural environment (social habits, values and norms etc.). These characteristics are typically analyzed within aggregated studies on a cross-national or cross-regional level. This study focuses on the economic aspects only because it is assumed that political and cultural aspects do not vary significantly across regions within a country like Germany, in which regions are relatively homogenous regarding the institutional environment (laws, regulations) and cultural environment (language, habits, values or religion).

The second category of factors includes both psychological aspects of entrepreneurship (including the motivation, personality, cognitive abilities, and risk tolerance of the entrepreneur) and non-psychological – or socio-demographic factors – which include the entrepreneur’s educational background, working experience, age, social position, and the opportunity costs of being self-employed [Shane, 2003]. Psychological determinants are typically investigated in individual-level research, while socio-demographic determinants are investigated in individual-level but also aggregated-level research. This study focuses on the economic and socio-demographic determinants of entrepreneurship, taking a regional-level perspective. Illustration 1 is an overview of these entrepreneurship determinants and defines the focus of this study.
Determinants of Entrepreneurship at a Regional Level

Economic Determinants of Entrepreneurship

Opportunity Costs

The theory of income choice postulates that the decision to become an entrepreneur or an employee is dependent on the utility associated with the returns resulting from the two types of activity [Grilo, Irigoyen, 2006]. Thus, a potential entrepreneur implicitly compares the utility of being self-employed with the opportunity costs of engaging in other activities [Johnson, 1986]. As long as the economic return from entrepreneurship will be less than the reward of the best alternative (e.g., paid employment) a rationally acting individual will not engage in entrepreneurship [Hamilton, Harper, 1994]. In short: entrepreneurs must believe they will obtain more than they are giving up when engaging in entrepreneurship [Venkataraman, 1997; Shane, 2003].
Two factors – income and unemployment – are particularly important regarding the opportunity costs of entrepreneurs [Shane, 2003]. Accordingly, individuals who have highly paid employment alternatives are less likely to engage in self-employment [Evans, Leighton, 1989; Johansson, 2000; Shane, 2003]. This link has found strong support in previous empirical studies conducted in Canada [Amit et al., 1995]; Finland [Johansson, 2000], United Kingdom [Taylor, 1996] and the United States [Evans, Leighton, 1989]. It is therefore hypothesized:

H1: Entrepreneurship will occur more often in regional districts with a relatively low household income than in regional districts with a relatively high household income.

At the same time, the theory of income choice implies that individuals who are unemployed face lower opportunity costs of entrepreneurship due to low income levels and, therefore, are more likely to engage in entrepreneurship. The positive impact of unemployment on entrepreneurship is therefore often referred to as the “unemployment push” effect [Thurik et al., 2008, p. 674].

Using data for the years 1986–1989, Audretsch and Fritsch [1994] show that in the case of Western Germany unemployment is at least partially positively related to entrepreneurial activity. Similarly, Fritsch and Falck [2007], who base their analysis on data for Western Germany for the period 1983–1997, find that short-term unemployment has a positive effect on entrepreneurship. It is therefore assumed that this relationship remains valid in the case of reunified Germany. It is hypothesized:

H2: Entrepreneurship will occur more often in regional districts with a relatively high unemployment rate than in regional districts with a relatively low unemployment rate.

Taxes

The relationship between taxes and entrepreneurship is expected to be a negative one. This is because taxes have a direct effect on the profitability of a business opportunity and may therefore negatively influence the decision to found a company. Rößler [2006] provides five further theoretical arguments why taxes are negatively related to entrepreneurship. First, relatively high taxes reduce household savings, which might otherwise be used as start-up capital. Second, high taxes imply higher unemployment benefits, which increases the opportunity costs of entrepreneurship. Third, higher taxes often bring about more complicated tax systems, which then lead to higher costs of entrepreneurship as self-employment requires entrepreneurs to navigate this more complex tax structure. Fourth, high taxes lead to a crowding-out effect, so that services are increasingly provided by tax-funded government agencies rather than by private firms. Fifth, relatively high taxes lead to a situation in which an increasing number of potential voters work for the state apparatus, with the natural consequence that political decisions may tend to favor employees of governmental agencies or state-owned enterprises and penalize private businesses, thus making entrepreneurship less attractive.
Empirical research on the impact of the tax burden on entrepreneurship supports the expected negative relationship [Blau, 1987; Carrol et al., 1998a/1998b; Robson, Wren, 1999]. Similar results in the case of Germany are reported by Fossen and Steiner [2009] who find a negative link between income taxes and the probability of being self-employed. Consequently, it is expected that the negative relationship between taxes and entrepreneurship is valid on a regional level as well. It is hypothesized:

H3: Entrepreneurship will occur more often in regional districts with a relatively low tax burden than in regional districts with a relatively high tax burden.

Socio-Demographic Determinants of Entrepreneurship

Education

Higher education enhances the individual's general analytic ability and understanding of the entrepreneurial process [Casson, 1995]. Business education also provides market information and practical information on how to manage a company. Thus, higher education allows potential entrepreneurs to more accurately assess business opportunities and increase potential gains from self-employment, which again makes it more likely that an individual will engage in entrepreneurship [Shane, 2003]. This theoretical expectation is confirmed in several empirical studies on the country-level, e.g. in Finland [Ritsilä, Tervo, 2002], France [Guesnier, 1994], United Kingdom [Brown et al., 2006] and the United States [Bull, Winter, 1991; Grant, 1996]. Similar results were found in Germany. Examining regional entrepreneurship monitor data from 2001–2002, Tamasy [2006] found similar positive effects in the case of three major German agglomerations. Audretsch and Fritsch [1994] and Brixy and Grotz [2007] analyzed entrepreneurship in Western German regions in 1985 and the period 1984–1997, respectively, and found the qualification level of the work force to be an important determinant of entrepreneurship. Finally, Bergmann and Sternberg [2007] found that higher education is positively related to nascent entrepreneurship. It is therefore expected that the positive relationship between education and entrepreneurship is also valid when considering all German regions. It is hypothesized:

H4: Entrepreneurship will occur more often in regional districts with a relatively high share of people with higher and/or a vocational education than in regions with a relatively low share of people with higher and/or a vocational education.

Age

From a theoretical point of view the relationship between age and self-employment is characterized by two contradictory aspects. On the one hand, age might be expected to positively correlate with self-employment, as it incorporates the positive effect of professional experience that increases with age. On the other hand, age also involves the negative effect of higher opportunity costs (e.g., income), which increase with age and experience as well [Shane, 2003]. Consequently, it is appropriate to expect a curvilinear
rather than a linear relationship between age and self-employment. In short: it is more likely that relatively young and relatively old individuals will engage in entrepreneurship less often, and that there is an optimal time-frame for becoming self-employed. The literature mostly agrees that this optimal time is in middle age, when individuals tend to experience a period of freedom and flexibility with regard to the choice of occupation [Ritsilä, Tervo, 2002].

This theoretical assumption is supported by empirical research. Using US census data Borjas and Bronars [1989] found a negative U-shaped relationship between self-employment and age. Reynolds [1994] found that in 382 US labor markets the percentage of population in the area between 25 and 44 increased firm formation rates. A similar result is found for Finland, where the percentage of population aged 25 to 40 is found to be positively related to entrepreneurial action [Ritsilä, Tervo, 2002]. The inverted U-shape relationship between age and entrepreneurial action has been found in Germany, as well [Bergmann and Sternberg, 2007]. In line with above findings it is hypothesized:

**H5:** Entrepreneurship will occur more often in regional districts with a relatively high share of middle-aged population than in regional districts with a relatively low share of middle-aged population.

**Social Position**

Social position refers to a person's link to other members of the social community in which they work and live [Shane, 2003]. One of the most relevant aspects of an individual's social position is his/her marital status. Not surprisingly, it is expected that marital status also impacts the decision to become self-employed. More broadly, it is theoretically expected that strong social (but also formal) ties, like marriage, and self-employment are positively linked. One economic argument for this positive relationship is that marriage helps entrepreneurs minimize self-employment costs, as family members can serve as a source of cheap labor [Bates, 1995]. Furthermore, for married individuals the negative financial consequences of self-employment failure may be cushioned by a working spouse [Shane, 2003]. Indeed, Fossen and Steiner [2009] find a positive link between spousal income level and the probability of self-employment. Ritsilä and Tervo [2002, p. 37] also suggest that individuals with families face a psychological “extra push” to gain their living through entrepreneurship. This hypothesized relationship is also found in several empirical studies examining the impact of being married on the likelihood of self-employment [Bates, 1995; Bruce, 1999; Johansson, 2000; Robinson & Sexton, 1994]. Based on above discussion it is hypothesized:

**H6:** Entrepreneurship will occur more often in regional districts with a relatively high share of persons with close social ties than in regional districts with a relatively low share of persons with close social ties.
Data and Operationalization

This research is based on regional district data on socio-demographic factors provided by the German Census 2011 and on economic data provided by the regional databases of the federal statistical offices (Regionaldatenbank Deutschland).

Dependent Variable

*Entrepreneurship* is operationalized by using business registration rates (BUSREG2012) in the regional districts in 2012. This measure mirrors the dynamics of entrepreneurial activity in a certain region. Data are taken from the regional database of the federal statistical offices (Regionaldatenbank Deutschland). This database distinguishes four types of business registrations in a given region: (i) New business creation by private persons and small and medium sized companies (SMEs); (ii) new business creation by large companies; (iii) influx of businesses into a certain region; and (iv) acquisitions of existing businesses. Given our focus on entrepreneurial action, this work focuses on the first category only, and uses new business creation by private persons and SMEs as an indicator of entrepreneurship. To reach the final indicator the figure of 2012 is taken and divided through the population of the region.

Independent Variables

*Opportunity costs* are operationalized by taking into account the average regional household income in 2009 (INCOME 2009) as well as the regional unemployment rate at the end of January 2011 (UNEMPL 2011). In accordance with hypotheses 1 and 2, a negative relationship between average household income and entrepreneurship, and a positive relationship between unemployment and entrepreneurship, is expected.

*Tax burden* is operationalized by taking into account the multiplier of the regional business tax (Gewerbesteuerhebesatz) in 2011 (TAX 2011), which differs significantly across German regions. According to hypothesis 3 a negative impact of taxes on entrepreneurship is expected.

*Education:* The level of education in a certain region is proxied by taking into account the proportion of population who either graduated from an apprenticeship (Berufsausbildung) and/or hold a degree from a university (EDUC). A positive link to entrepreneurship is expected in accordance with hypothesis 4.

*Age:* As a proxy for age, the proportion of total population aged 30–64 in a particular region is used (AGE). Taking into account the curvilinear effect of age on entrepreneurship, hypothesis 5 predicts a positive link between a high share of people aged 30–64 and the entrepreneurial activity in a certain region.

*Social position:* One of the most relevant aspects of an individual’s social position is his/her marital status. The variable social position is therefore proxied by the means of
the proportion of married people/people living in a civil partnership in a certain regional district (SOCPOSIT). According to hypothesis 6, a positive influence of above measure on entrepreneurship is expected.

Four control variables are also added to the models. The total population measure controls for size effects (POP). GDP/capita controls for differences in economic development of the regional districts in Germany (GDPCAP2010). The industrial structure of a region is in the proportion of people employed in the services (SECTSERV) and agricultural (SECTAGRIC) sectors. It is expected that the size of both sectors is positively related to entrepreneurship as SMEs are particularly active in each of those sectors. Table 1 provides an overview of the variables used in the empirical analysis.

**TABLE 1. Overview of variables**

<table>
<thead>
<tr>
<th>Variable</th>
<th>Abbrev.</th>
<th>Operationalization</th>
<th>Variable type</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>Entrepreneurship</td>
<td>BUSREG</td>
<td>New business creations by private persons and SMEs in a region in 2012 divided by the population of a region.</td>
<td>dependent</td>
<td>Regionaldatenbank Deutschland</td>
</tr>
<tr>
<td>Household income</td>
<td>INCOME</td>
<td>Disposable household income in EUR in 2009.</td>
<td>independent</td>
<td>Regionaldatenbank Deutschland</td>
</tr>
<tr>
<td>Unemployment</td>
<td>UNEMPL</td>
<td>Unemployment rate in % at the end of January 2011.</td>
<td>independent</td>
<td>Regionaldatenbank Deutschland</td>
</tr>
<tr>
<td>Regional taxes</td>
<td>TAX 2011</td>
<td>Multiplier of the regional business tax (Gewerbesteuerhebesatz) in 2011.</td>
<td>independent</td>
<td>Regionaldatenbank Deutschland</td>
</tr>
<tr>
<td>Education level</td>
<td>EDUC</td>
<td>Proportion (%) of population who either graduated from an apprenticeship (Berufsausbildung) and/or hold a degree from a university (EDUC) in 2011.</td>
<td>independent</td>
<td>German Zensus 2011</td>
</tr>
<tr>
<td>Age structure</td>
<td>AGE</td>
<td>Proportion (%) of total population aged 30–64 in a region in 2011.</td>
<td>independent</td>
<td>German Zensus 2011</td>
</tr>
<tr>
<td>Social structure</td>
<td>SOCPOSIT</td>
<td>Proportion (%) of married people or people living in a civil partnership in a region in 2011.</td>
<td>independent</td>
<td>German Zensus 2011</td>
</tr>
<tr>
<td>Size of region</td>
<td>Log POP</td>
<td>Population of a region in 2011.</td>
<td>control</td>
<td>Regionaldatenbank Deutschland</td>
</tr>
<tr>
<td>Regional economic development</td>
<td>Log GDPCAP 2010</td>
<td>Gross domestic product per capita in a region in 2010.</td>
<td>control</td>
<td>Regionaldatenbank Deutschland</td>
</tr>
</tbody>
</table>
An Empirical Analysis of Economic and Socio-Demographic Determinants...

<table>
<thead>
<tr>
<th>Variable</th>
<th>Abbrev.</th>
<th>Operationalization</th>
<th>Variable type</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>Role of agriculture</td>
<td>SECTAGRIC</td>
<td>Proportion of persons employed in the agricultural sector in 2011.</td>
<td>control</td>
<td>German Zensus 2011</td>
</tr>
<tr>
<td>Role of service sector</td>
<td>SECTSERV</td>
<td>Proportion of persons employed in the service sector in 2011.</td>
<td>control</td>
<td>German Zensus 2011</td>
</tr>
</tbody>
</table>

Source: own elaboration.

Results

Descriptive Statistics

Table 2 reports the descriptive statistics of the analyzed sample. The sample sizes vary as data were not available for all regional districts across different time periods.

The lowest value of the per capita registration rate of new businesses in 2012 is found in the Wartburg Kreis in the federal state of Thuringia (0.003), while the highest rate is in the city of Offenbach am Main (0.027).

The district with the lowest economic wealth is, surprisingly, the Western district Südwestpfalz (Rhineland-Palatinate) with EUR 13,395 per capita in 2010, and the richest district according to GDP/capita is the city of Wolfsburg (EUR 91,332 per capita), in which the multinational car producer “Volkswagen” is headquartered. The smallest district in the sample, according to population, is Zweibrücken in the federal state of Saarland with a population of approx. 34,000, while the largest entity is Berlin with a population of 3.45 m.

The most rural area with a share of nearly 10% of people employed in the agricultural sector is the Demmin district in the federal state of Brandenburg. Several city regions do not have any significant agricultural economy (0%). Dingolfing (Bavaria) has the lowest share of people employed in the service sector (45.2%). The former capital, Bonn, is the city with the largest share of persons employed in the service sector (87.3%).

When it comes to economic measures, the lowest household income figure is found in the city of Weimar (EUR 13,895), and the highest in the city of Heilbronn (EUR 31,020). The city with the lowest unemployment rate in 2011 is Eichstätt in Bavaria (2.1%). The highest unemployment rate is found again in the rural Demmin district (20.1%). The most attractive region – as to tax burden – is Dahme-Spreewald in the federal state of Brandenburg with a multiplier of the regional business tax (Gewerbesteuerhebesatz) of 246. The least attractive regions, with a 490 multiplier, are the cities of Bottrop, Duisburg, Hagen, Munich and Oberhausen.

Finally, when considering the socio-demographic characteristics of the investigated regions, the highest share of highly educated people is found in the district Vogtlandkreis.
in the federal state of Saxony and Weimarer Land in the federal state of Thuringia, in which 87.3% of the population have either an apprenticeship (Berufsausbildung) and/or a degree from a university. The city of Pirmasens (Rhineland-Palatinate), at 59.8%, has the lowest share of highly educated people.

The highest share of people aged 30–64 is found in the Bad Doberan district (54%) in the federal state of Mecklenburg-Vorpommern, and live in the cities of Würzburg, Greifswald and Jena (43%).

The city of Heidelberg has the lowest rate of married households (34.1%), while the Rhein-Pfalz-Kreis (Rhineland-Palatinate) has the highest (52%). Table 2 gives an overview of the variables and their descriptive statistics.

**TABLE 2. Descriptive statistics**

<table>
<thead>
<tr>
<th>Variable</th>
<th>Min</th>
<th>Max</th>
<th>Mean</th>
<th>Std. Dev.</th>
</tr>
</thead>
<tbody>
<tr>
<td>BUSREG2012</td>
<td>0.00352</td>
<td>26.78</td>
<td>6.9771</td>
<td>2.07042</td>
</tr>
<tr>
<td>GDPCAP2010</td>
<td>13395</td>
<td>91332</td>
<td>28310.22</td>
<td>11461.878</td>
</tr>
<tr>
<td>POP</td>
<td>34.0</td>
<td>3447.0</td>
<td>199.622</td>
<td>230.6368</td>
</tr>
<tr>
<td>SECTOR_AGRIC</td>
<td>0</td>
<td>9.8</td>
<td>2.99</td>
<td>1.719</td>
</tr>
<tr>
<td>SECTOR_SERVICE</td>
<td>45.2</td>
<td>87.3</td>
<td>65.990</td>
<td>7.9901</td>
</tr>
<tr>
<td>INCOME2009</td>
<td>13895</td>
<td>31020</td>
<td>18593.77</td>
<td>2392.041</td>
</tr>
<tr>
<td>UNEMPL2011</td>
<td>2.10</td>
<td>20.10</td>
<td>7.8099</td>
<td>3.65352</td>
</tr>
<tr>
<td>TAX2011</td>
<td>246.00</td>
<td>490.00</td>
<td>371.9952</td>
<td>46.51250</td>
</tr>
<tr>
<td>EDUC</td>
<td>59.80</td>
<td>87.30</td>
<td>73.8772</td>
<td>5.75394</td>
</tr>
<tr>
<td>AGE</td>
<td>43</td>
<td>54</td>
<td>.4879</td>
<td>.01705</td>
</tr>
<tr>
<td>SOCPOSIT</td>
<td>34.13</td>
<td>52.01</td>
<td>46.40</td>
<td>3.48</td>
</tr>
</tbody>
</table>

*Source: own elaboration*

**Regression Results**

Multiple regression analysis is applied to investigate hypotheses 1–6. Multicollinearity is not problematic as all variance inflation factor tests (VIF) range under 5 [Snee, 1977]. Table 3 reports the results of the regression models testing hypothesis 1–6. Two models are provided. Model 1 presents the base model with only the control variables included. Model 2 includes the control variables and independent variables, thus testing hypotheses 1–6. The analyzed sample encompasses 385 regions in model 1 and model 2.
### TABLE 3. Economic and socio-demographic determinants of entrepreneurship – Results of OLS regression

| Dependent variable | Model 1 | | | Model 2 | | |
|--------------------|---------|---|---|---------|---|
|                    | Value   | Sig. | Value | Sig. |
| R sq.              | 0.358   |     | 0.462 |     |
| Adj. R sq.         | 0.351   |     | 0.448 |     |
| F-Stat             | 55.589*** |   | 33.052*** |   |
| Constant           | t=-7.460*** | 0.000 | t=-1.804^ | 0.072 |
| Controls           | Std. Beta | Signif | Std. Beta | Signif |
| Log GDPCAP2010     | 0.361*** | 0.000 | 0.169** | 0.005 |
| Log POP            | 0.081^  | 0.057 | 0.041   | 0.342 |
| SECTAGRIC          | 0.002   | 0.969 | -0.024  | 0.649 |
| SECTSERV           | 0.359*** | 0.000 | 0.382*** | 0.000 |
| Economic determinants |        |     |        |     |
| INCOME2009         |         |     | 0.130*  | 0.020 |
| UNEMPL2011         |         |     | -0.130* | 0.027 |
| TAX2011            |         |     | -0.069  | 0.233 |
| Socio-demographic determinants | | | | |
| EDUC               |         |     | -0.238*** | 0.000 |
| AGE                |         |     | 0.201*** | 0.000 |
| SOCPOSIT           |         |     | -0.229** | 0.003 |

^=significant at 10%; *=significant at 5%; **=significant at 1%; ***=significant at 0.1%

Source: own elaboration.

Model 1, including the control variables only, is reasonably defined and highly significant – explaining over 35% of the variations in entrepreneurial activity.

Model 2 introduces the independent variables and accounts for 45% of the variance, thus improving model fit by 10%.

It appears that the opportunity cost dimensions INCOME 2009 and UNEMPL 2011 indeed have a significant effect on entrepreneurship. However, the algebraic signs are in contrast to hypothesis 1 (positive instead of negative) and hypothesis 2 (negative instead of positive). Thus, a high income level is positively related with regional entrepreneurial activity, while unemployment actually leads to less entrepreneurship.

Hypothesis 3 cannot be confirmed as TAX2011 is not significantly related to entrepreneurship and, surprisingly, tax burden does not appear to be an important predictor of entrepreneurial action on a regional level.
When considering the socio-demographic determinants of entrepreneurship, it appears that education (EDUC) is actually negatively related to entrepreneurship, which is in contrast to hypothesis 4. Accordingly, regions with a higher share of educated people experience lower levels of business registrations. This link is quite strong as the negative predictor is highly significant at the 0.1 level.

Hypothesis 5 is confirmed, as regional age structure (AGE: share of 30–64 years old persons) is positively related to regional entrepreneurship. The predictor is significant at the 0.1 level indicating a strong relationship as well.

Finally, the variable SOCPOSIT, defined as a high share of people living in formal relationships, is actually negatively related to entrepreneurship. This implies that regions with informal relationships or a high share of single households experience higher levels of entrepreneurship. Table 4 gives an overview of the hypothesized links and the relationships found.

### Table 4. Overview of hypotheses

<table>
<thead>
<tr>
<th>Hypotheses</th>
<th>Expected link</th>
<th>Link found</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>H1</strong>: Entrepreneurship will occur more often in regional districts with a relatively low household income than in regional districts with a relatively high household income.</td>
<td>-</td>
<td>+</td>
</tr>
<tr>
<td><strong>H2</strong>: Entrepreneurship will occur more often in regional districts with a relatively high unemployment rate than in regional districts with a relatively low unemployment rate.</td>
<td>+</td>
<td>-</td>
</tr>
<tr>
<td><strong>H3</strong>: Entrepreneurship will occur more often in regional districts with a relatively low tax burden than in regional districts with a relatively high tax burden.</td>
<td>-</td>
<td>No link</td>
</tr>
<tr>
<td><strong>H4</strong>: Entrepreneurship will occur more often in regional districts with a relatively high share of people with higher and/or vocational education than in regions with a relatively low share of people with higher and/or vocational education.</td>
<td>+</td>
<td>-</td>
</tr>
<tr>
<td><strong>H5</strong>: Entrepreneurship will occur more often in regional districts with a relatively high share of middle-aged population than in regional districts with a relatively low share of middle-aged population.</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td><strong>H6</strong>: Entrepreneurship will occur more often in regional districts with a relatively high share of persons with close social ties than in regional districts with a relatively low share of persons with close social ties.</td>
<td>+</td>
<td>-</td>
</tr>
</tbody>
</table>

**Source**: own elaboration.
Conclusion and Policy Implications

The major aim of this paper was to test whether the economic and socio-demographic determinants of entrepreneurship, found to be significant in earlier studies are still valid in the German case. What can be said, in general, is that economic and socio-demographic factors do indeed matter for entrepreneurship. However, when considering German regions they matter in different ways and often differently than expected. The entrepreneurship determinants are discussed, in detail, below.

Opportunity Costs

Using income choice theory, it was hypothesized that income is negatively related to entrepreneurship. At the same time unemployment is expected to be positively linked to entrepreneurial action. The gap between expectation and result is surprising.

First of all, as the analysis shows, regions with a relatively high income level experience higher entrepreneurship rates. It seems that the opportunity cost effect is overlapped by a stronger, positive effect of wealth on entrepreneurship. Indeed, it is likely that in wealthy regions some people do not decide on entrepreneurship due to high opportunity costs, but it seems that people are rather attracted by the regional wealth to become entrepreneurs. Thus, a higher regional purchasing power increases the amount of profitable entrepreneurial opportunities as it translates into a higher demand for products and services [Audretsch, 1995]. At the same time, entrepreneurs can find more favorable financing conditions in wealthy regions as relatively high income level leads to better availability of capital needed for set-up investments [Hurst, Lusardi, 2004].

Secondly, when considering unemployment as the measure of opportunity costs, it appears that regions with high unemployment have lower business registration rates. This result is particularly interesting when compared to earlier results for Germany by Audretsch and Fritsch [1994] and Fritsch and Falck [2007], who actually found a positive relationship between unemployment and entrepreneurship. It seems that the structure of unemployment has significantly changed within the last years as Germany's prospering economy, experiencing the lowest unemployment rates in 20 years, has made it easier for motivated individuals to find work than in the years of relatively high unemployment (e.g. 1994–2007). With decreasing unemployment, the share of unemployed individuals who are simply not interested in any kind of economic activity, is growing. This tendency is furthermore strengthened by the largely developed German social welfare system which additionally increases opportunity costs of employment and self-employment. The current unemployment rate may therefore be mirroring voluntary unemployment.

It might be assumed that unemployment is a negative predictor not only of entrepreneurship but most probably also of economic activity in general (including employment and self-employment).
Summing up, despite low opportunity costs poorer regions seem to have a lower entrepreneurial potential than wealthy regions. This should be taken into account by policy makers. It is likely that the actual unemployment rate currently mirrors the share of individuals who are not interested in any economic activity and lack the motivation and ambition to found and successfully run a company. This situation renders the effectiveness of entrepreneurship programs with the stated goal of bringing unemployed persons back to the labor market is highly questionable, suggesting that – in poorer German regions suffering from high unemployment – different policy measures may well be needed to further that policy goal.

**Taxes**

The hypothesized negative link between taxes and entrepreneurial activity is intuitive, but could not be confirmed in this article. Our data for the German regions do not show that taxes are an important predictor of entrepreneurship.

One explanation for this surprising result is that the focus of above empirical study is on the very early stages of entrepreneurship (operationalized by business registrations) in which profits either do not exist or are at a very low level. Due to the fact that the German corporate income tax is based on profits, this factor is least important when profits are low. However, it seems likely that as revenues grow so, too will profits, at which point taxes may become increasingly important for the economic activity of companies.

The existence of two contradictory effects of taxes on entrepreneurship may also partially explain this unexpected result. More specifically, taxes can positively influence regional entrepreneurship, provided the regional government invests the money generated by those taxes in policy measures that support SMEs (e.g., entrepreneurship trainings, business planning contests, low-interest rate loans, infrastructural investments etc.). Increasing taxes, however, also lower profits which makes entrepreneurship less attractive. Future research on this delicate balance may contribute to formulating effective tax policies that facilitate entrepreneurship.

**Education**

Another surprising result concerns the link between the regional education-level and entrepreneurial activity. Contrary to hypothesis 4, this relationship is negative. This result differs from prior regional-level research [Audretsch, Fritsch, 1994; Bergmann, Sternberg, 2007; Bixy, Grotz, 2007], indicating that the characteristics of entrepreneurship in Germany are changing. Simply stated, in Germany today less-educated people are more willing to engage in entrepreneurship than highly educated people.

The current labor market situation might again serve as an explanation for this result. Germany’s prospering economy now provides high skill individuals with a broad range of well-paid employment. Some industries even contend that there is a shortage of skilled workers in the German economy, leading to an increased competition for, and wages paid
to, this labor segment. If correct, this situation makes entrepreneurship a less attractive career option.

These recent developments in the German job market should be taken into account by economic policy makers who seek to enhance regional innovation through technology and knowledge-based entrepreneurship. In order to do so, they have to engage in a ‘war for talent’ that should include the implementation of several measures. First of all, university students should be made aware of entrepreneurship as a career option as part of their studies. Student entrepreneurs should be encouraged to develop their business concepts by making the early and risky stages of entrepreneurship more financially rewarding. This can be done by, for example, providing scholarships for technology entrepreneurs – the national university entrepreneurship program EXIST$^4$ being a possible model. Universities with a high innovative potential (e.g., universities of technology, medical universities) should allow entrepreneurial students to access labs and use professional instruments to develop their prototypes, while academic start-up incubators could be established to provide students with access to free office space. Another important area of support for university start-ups and spin-offs concerns finding financing opportunities. This can be done through, among other things, investments by university-owned seed and investment funds, and networks that bring together students together with university alumni who are themselves successful entrepreneurs that might serve as business angels. The effectiveness of these types of activities could be enhanced through coordination by, for example, university-based entrepreneurship centers that could also serve as a cut surface for students, different university departments, and the regional entrepreneurship eco-system (incubators, innovation centers, venture capital funds).

Age

Not surprisingly, hypothesis 5 is confirmed as the age structure by region is found to be a significant predictor of entrepreneurial action. Regions with a favorable age structure (high share of people aged 30–64) experience higher business registration rates than regions with a relatively low share of that age group. These results are in line with the earlier findings of Bergmann and Sternberg [2007]. However, Germany’s aging society and increasing life expectancy will likely lead to a situation in which there are more older people engaging in entrepreneurship. Indeed, senior entrepreneurship is getting increasing research attention [Kautonen et al., 2011; Kautonen, 2013] and has the potential to become an engine of regional economic growth in the coming decades.

In addition to taking a long-term perspective, policy makers should also consider senior entrepreneurship as a current instrument of regional economic policy. Some regions in the new federal states of Germany with a particularly high share of elderly people, and therefore relatively low entrepreneurship rates, could serve as a testing ground for pilot projects to foster senior entrepreneurship. To do so, it is important that specific measures are taken to address the needs of elderly people who often come with developed networks,
experience, and financial capital but fear complex administrative procedures and lack information or are not simply aware of entrepreneurship as a late career option [Kautonen, 2013]. A first step could be the appointment of senior entrepreneurship agents at regional citizen centers. These representatives would create awareness of entrepreneurship as a late-career option, advise seniors on legal and financial issues, and act as connectors to the regional entrepreneurship eco-system.

Social Position

The expected positive effect of close social ties on entrepreneurship is not confirmed in the case of German regions. Contrary to expectations, regional districts with a particularly high share of married individuals experience relatively low business registration rates. Compared to the results of earlier studies, this finding indicates that the characteristics of entrepreneurship are also changing in Germany.

One such likely change is what may be a greater number of people who do not formalize their relationships. Official data do not characterize (or capture) this segment of the population as people with close social ties, which is defined as living in a formal relationship. This may have skewed the result found in this study.

Intuitively, it would also be consistent that persons who choose to stay independent in their private lives would be more drawn to being independent (as entrepreneurs) in their professional lives, as well.

Finally, employment trends are changing, as increasing numbers of recent graduates not yet in formal relationships work as freelancers or self-employed workers.

Summing up, it seems that entrepreneurship is increasingly attracting more single persons. The financial consequences of entrepreneurial failure are, however, more threatening for this segment of the population, because they lack the support of a working spouse. The higher financial risk to single persons posed by potentially foregone income and monetary loss may discourage them to found companies, representing lost innovative potential. This problem should be addressed by policy makers.

First of all, it is necessary to provide early-stage entrepreneurs with a source of income covering living costs. Again, the EXIST academic entrepreneurship support program could serve as a positive example of how to address this situation, as it partly covers foregone income. Policy makers can expand the use of this instrument beyond systematically supporting academic entrepreneurship by extending it to any number of appropriate fields (e.g., female entrepreneurship, senior entrepreneurship etc.).

Secondly, the financial consequences of failure should be diminished. Thus, it is necessary to make the legal form of limited liability companies more accessible to individuals with little initial capital. A first step in this direction was taken in 2008 by legally establishing the so called 1 EUR GmbH (limited liability company), which allows individuals to establish limited liability companies with an initial capital investment of EUR 1, thus considerably reducing the financial consequences of entrepreneurial failure.
Research Limitations

As with every research endeavor, this study is also constrained by several limitations. First, it focuses on a very narrow understanding of entrepreneurship, namely the formal registration of a company. The very early stages of the entrepreneurial process (e.g., opportunity recognition, idea generation etc.) as well as the later aspects of entrepreneurial activity – including the company’s survival, performance and growth – are outside the scope of this study.

Secondly, the study is based on regional-level data on economic and socio-demographic aspects. However, the determinants of entrepreneurship are multifold and, besides environmental aspects, also include individual-level factors such as cognitive ability, motivation and risk taking attitude, as well as more aggregated factors including culture, national, and supranational politics – none of which are discussed in this study. Future research might combine individual-level perspectives with regional or cross-country perspectives to provide a more holistic view on the determinants of entrepreneurial activity.

Thirdly, this paper uses an overall measure of entrepreneurship and does not distinguish the different types of entrepreneurship, including necessity, opportunity, knowledge and technology based entrepreneurship.

Summing up, the research presented in this paper may be viewed as a first step towards a more comprehensive research program on the rapidly changing characteristics of entrepreneurship in Germany.

Notes

1 Wennekers and Thurik [1999] provide an overview of the different literature streams investigating the link between entrepreneurship and economic growth. The ways that entrepreneurs can influence economic growth are discussed in detail in Carree and Thurik [2003].

2 The major explanation for these differences in sample size is the circumstance that in the analyzed time period two territory reforms were conducted in the federal states Sachsen (in 2008) and Mecklenburg-Vorpommern (in 2011). In consequence some regional districts were merged, others were disestablished.

3 Please note that the following control variables that are typically used in similar research were deleted from the models due to co-linearity problems. Thus, population density correlated strongly positively with total population, the share of migration with marital status.

4 EXIST is Germany’s largest public entrepreneurship support program. EXIST financially supports universities but also start-ups and scientists aiming at founding a company. It provides support for one year for graduates deciding on founding a technology company (graduates receive EUR2,000/month, PhDs EUR2,500/month).

5 A similar trend was detected by Fritsch et al. [2013].
References


Innovation and Competitiveness of the Slovak Economy: New Evidence of International Impacts in the Knowledge Accumulation Process

Abstract

The objectives of this paper are twofold – to demonstrate the internal forces driving R&D productivity in Slovakia and the internationalization of Slovak R&D investments and R&D patenting since EU accession as compared to the other Visegrad Four (V4) countries. After the Introduction, Slovakia’s position in the field of competitiveness and the Slovak innovation policy are described. The Slovak knowledge accumulation paradox being the discrepancy between R&D productivity and TFP is then demonstrated and disentangled through an analysis of innovation activities using Eurostat and OECD Stat data spanning the 1995–2011 period. This analysis is followed by some concluding remarks.

Keywords: Slovak economy, competitiveness, innovation performance; education and labor market; Visegrad Four countries, innovation policy

JEL: F43, O31, O47
Introduction

The competitiveness of a national economy is a complex phenomenon. Generally, a country’s competitiveness is its ability to successfully compete with the economies of other countries, manifested in terms of relative prosperity (e.g. productivity growth and living standards). Here, competitiveness performance is assessed in terms of total factor productivity (TFP), which captures how efficiently labor and capital are employed in production and implicit, are attractive for foreign markets. This productivity-based approach to competitiveness is less concerned with standards of living, although it may be assumed that higher productivity is followed by higher incomes, consumption and general living standards.

After the Slovak accession to the EU, indicators of the competitiveness and innovation performance of the Slovak economy have been of dual character. Some competitiveness indicators converge to the EU average while others are similar to those reported by the less developed countries [Šikula et al., 2010]. According to The Global Competitiveness Report 2012–2013 (and prior years), as compared to neighboring countries and the rest of the European Union, Slovakia has not scored well. More generally, in the 2010–2013 period, Slovakia’s rank in the Global competitiveness index fell from the 60th to 71st position (out of 144 countries). In the basic requirement and efficiency enhancers, as well as business sophistication, Slovakia ranked somewhat better – being 62nd, 51st, and 61st, respectively.

However, Slovakia was ranked last among all the EU countries, and 89th overall. This poor ranking can be explained by low levels of R&D spending (particularly in terms of business expenditures) and such other, more general, factors as corruption, weak rule of law insufficient infrastructure, inefficient labor market, and quality of the educational system. It is a mix of qualitative catch-up and quantitative lagging.

Thus, it is challenging to quantitatively report the influence of innovation performance on a competitive economy, and presumed that other factors have shaped competitive performance in the Slovak economy, which exhibits a trajectory of relatively strong economic growth despite low innovation performance [Puškárová, 2012]. These other factors likely relate to EU membership and increasing openness to international capital flows, labor and trade in the face of strong domestic inertia effects.

A reasonable amount of empirical evidence appears in the current literature that international capital flows (such as foreign direct investments), labor and international trade spur economic growth measured in terms of GDP, and also implicate certain externalities. When labor, capital or goods and services are transferred from innovation intensive countries (e.g., West European EU members), a knowledge base accompanies that transfer [Keller, 2010]. For example, when a German company opens a subsidiary in Slovakia, Slovak workers are trained to work effectively with their German co-workers,
and generally held to German work standards. Similarly, Austrian product imports also convey marketing, taste, packaging, and other information to the domestic market which may help local Slovak entrepreneurs copy, complement, or develop substitutes for, the products being imported. Labor – the first and ultimate producer of knowledge – carries skills and passes knowledge across borders. And, where foreign knowledge leads to greater competitive performance, domestic knowledge loses significance for domestic TFP growth [Krammer, 2014; Keller, 2010; Puškárová, 2012], as dependence on outside knowledge sources increases.

The empirical evidence is that Slovak GDP and competitiveness in terms of productivity has been growing, but innovation performance is lagging. The theoretical grounds of our paper relate to the aggregate Cobb-Douglas production function employed in numerous studies [including, among others, Dujava, 2012; Puškárová, 2012] to study competitiveness (using a productivity-based approach) and foreign impacts through labor and capital, which are the standard two production inputs in the Cobb-Douglas production function. Productivity is then viewed as a residual value between GDP (output) and labor and capital (inputs) with respect to production input shares.

The paper is organized as follows: in the upcoming section, current innovation and R&D policy in Slovakia are described with sufficient detail to better understand the shift in the Slovak government’s approach towards internal and international forces shaping competitiveness and innovation performance. In section 3, the magnitude of the discrepancy between competitiveness and innovation performance in Slovakia is demonstrated, using economic theory as applied to relevant variables. In sections 4 and 5, we analyze various indicators of human and knowledge capital at the domestic and international levels which, in accordance with our theoretical framework, impact the discrepancy phenomenon and reveal the true nature of the internationalization of Slovak R&D performance. Section 6 provides concluding remarks.

**Competitiveness and Innovation Policy of the Slovak Republic**

Innovation policy can be defined as a set of policy actions purposefully designed to raise the quantity and efficiency of innovation activities, where “innovation activities” refer to the creation, adaptation and adoption of new or improved products, processes or services. Such a policy was missing in Slovakia, in the first half of the 2000s, during which the approach to innovation was based on a traditional science and technology policy model (i.e., the science and technology push model).

After the EU accession, several important policy documents on innovation were prepared in the 2007–2011 period by the Ministry of Economy, and approved by the Slovak government. These included:
1. Innovation strategy of the Slovak Republic for 2007–2013 [Ministry of Economy, 2007];
2. Innovation Policy in the Slovak Republic for 2008–2010 [Ministry of Economy, 2008]; and

The strategic objective of Slovakia’s innovation strategy [Ministry of Economy, 2007], as adopted by the Government of the Slovak Republic on 14 March 2007, was to achieve the level of the most advanced economies of the European Union by using innovation as a primary tool of knowledge based economic development. To do so, the innovation strategy prioritized remedying insufficient support of innovative activities (particularly for SMEs) within the context of several key national-level strategic documents. While Slovak firms were innovating, they were in relative terms unduly handicapped and less competitive. Motivating businesses to use multi-source support to financing from public, international and business sources (particularly the latter two sources) became a priority.

Another critically important task was to create a national innovation system in Slovakia that included regional innovation structures (incubators, innovation centers, consulting center, and other elements). These regional structures are intended to bring support activities as close to entrepreneurs as possible, with an emphasis on small and medium-sized enterprises. By 2013, this innovation system was expected to achieve:

- a positive trend in the development of innovative processes reflected in the economy and social area;
- an increased number of successfully implemented projects;
- a 25% contribution to increased gross domestic product growth (presently that contribution is about 8%),
- transform over 50% of industrial and service companies, particularly SMEs, into innovators.

The Innovation Policy of the Slovak Republic for 2008 – to 2010 was primarily based on the Innovation Strategy. The basic goal of the innovation policy was to create support mechanisms for the formation and development of regional innovation structures, innovation enterprises, partnership and cooperation of companies, and universities in the R&D field, so as to gain new markets in a sustainable environment. In particular, this involved the following:

1. improving competitiveness of businesses while adhering to the principles of sustainable development;
2. increasing the expertise and flexibility of labor; and
3. regional development.

To attain these objectives it was considered as necessary to:

- build-out innovation support structures capable of absorbing and efficiently deploying funds allocated in accordance with the Innovation Strategy of the SR;
• prepare and implement support programs, projects, and schemes; and
• establish a network of regional innovation centers – RICs.

It should be mentioned, that Innovation Policy in the Slovak Republic for 2011 – to 2013 reflects the OECD recommendations listed in the November 2010 Economic Survey of the Slovak Republic, which emphasized long-term structural and eco-innovation effects. The objective of this Policy were to: support the creation and development of innovation structures, businesses, and partnerships; foster cooperation among businesses, universities, and research institutes in R&D and innovation; and establish conditions for improving Slovakia's competitiveness. The 2011–2013 Innovation Policy was designed to fit the EU policy framework and serve as a specific program for pursuing the national interests of the Slovak Republic. This objective reflects the greatest challenge currently facing Slovakia (and the rest of the EU), i.e., the inability to fully harness and share research and development results, and reflect them in economic and social values. The gap between research results and their practical application remains wide.

More generally, individual Innovation Policy priorities follow the priorities set out in the Innovation Strategy for 2007–2013. They are as follows:

Priority 1 – High-quality infrastructure and an efficient system for innovation development (to include supporting innovative industrial cluster organizations, promoting innovation and the building of innovation awareness across the society, enhancing competition, introducing an “Innovative Action of the Year”, developing Strategic Innovation Material for the Next Planning Period, and supporting projects applying for funding from Community Programs to support innovation);

Priority 2 – High-quality human resources (to include lifelong learning and counseling system, and secondary vocational education); and

Priority 3 – Efficient tools for innovation (to include a national incentive project to enhance Slovakia's innovation, facilitating operational program competitiveness and economic growth, supporting financial engineering instruments, such as innovation funding increased public spending on innovation and innovation vouchers, and strengthening intellectual property protection).

Generally speaking, these policy documents addressed a number of previously neglected areas and tackled several problems with creation of the Slovak national innovation system. However, the links between innovation policy and existing sectoral policies are weak (e.g., R&D policy, which is managed by the Ministry of Education) and have not yet entered the policy agenda. Slovakia should better co-ordinate innovation policy across government bodies and clearly define competencies in the area of innovation and R&D. All objectives mentioned above would require deep changes, which necessarily take to have real effects, can only be expected in the long-term.
Development of the Slovak R&D Sector

As previously mentioned, this paper is concerned with the disparity in Slovakia between competitiveness and innovation performance. In this section, this disparity is demonstrated. To measure competitiveness, the productivity-based approach is employed, measured using the Total Factor Productivity (TFP) calculated from the Cobb-Douglas production function:

\[ Y_{it} = A_{it} L_{it}^{\alpha} C_{it}^{1-\alpha} E^{\epsilon_{it}} \]  

where \( Y_{it} \) denotes output, \( L_{it} \) labor, \( C_{it} \) physical capital, and \( A_{it} \) is TFP. The exponential error term \( \epsilon_{it} \) is the error term and is assumed to be identically and independently distributed with mean zero and standard deviation \( \sigma^2 \). \( \alpha \) and 1-\( \alpha \) are the output elasticities with respect to labor and physical capital. The Eq. (1) is in a two-dimensional form – \( i \) denotes geographical unit (region, state, company) and \( t \) denotes time unit (year, month etc.).

In order to report innovation performance, two approaches are suggested by the literature. One approach is to measure it as output \( K_{it} \) or productivity \( \delta_{it} \) of the knowledge-generating process where the only factor is human capital \( H_{it} \) [Jones, 1995].

\[ \Delta K_{it} = \delta_{it} H_{it}^{\beta} K_{it}^{1-\beta} \omega_{it} \]  

\( \beta \) is the elasticity parameter of knowledge capital to human capital changes. \( \omega_{it} \) stands for the error term. \( \delta_{it} \) stands for productivity of R&D process – in this case mostly for productivity of human capital in case the impact of omitted variables remains stable.

An alternative approach is through the lens of the investments (capital) in R&D and how productive they are. In its simplest form, we can measure this productivity as the elasticity of the output – knowledge capital – to the inputs – R&D investments.

\[ E_{it} = \log_{s_{it}} K_{it} \]  

where \( E_{it} \) stands for output elasticity, \( S_{it} \) for R&D investments and \( K_{it} \) for knowledge capital measured using patents or patent applications volume. Following this approach, we take the R&D expenditures (referred to as Gross Expenditures on R&D (GERD) in Eurostat databases) per year and country as the measure of \( S_{it} \) and number of patent applications to the European Patent Office (EPO) as a proxy for knowledge capital in a country \( i \) and time \( t \). Both show a strong divergence amongst the V4 countries (Figures 1 and 2).
In terms of R&D expenditures (Figure 1), the V4 countries expended roughly equivalent volumes of their GDP in the pre-transition and transition eras. In 1998, changes in Slovak government (the right wing came to power) negatively affected R&D funding. A restrictive R&D policy at that time redirected budget attention away from the R&D sector, leading to a substantial divergence in Slovakia’s R&D output (Figure 2). However, a comparison of Figures 1–2 indicates that the theorem that the more R&D input, the more R&D output, does not appear to strictly hold. The challenging case is Hungary, which produces as many European Patent Office (EPO) patent applications as the Czech Republic, where more is expended in R&D. This issue is addressed below.

Figures 1–2 might also imply that in R&D, persistence pays off. For example, low R&D spending Poland over time has not prevented the accrual of patent applications filed with the EPO, which is not the case of Slovakia, where patenting follows a more unstable trajectory. As compared to the EU average (65.31 in 1995 and 107.45 in 2011, i.e. a growth rate of 64.5%), V4 countries file far fewer patent applications with the EPO. However, after the V4’s EU accession, the biggest trading partners of the V4 – Germany, France and Netherlands – experienced patent stagnation (which decreased in the Netherlands). Only Austria managed to file 9% more EPO applications during this period.

Calculating the elasticity $E_{it}$ gives us the following results (Figure 1) which we can compare with the trajectory of the Total Factor Productivity (TFP). Hereinafter, this productivity is referred to as R&D productivity.
As expected, Figure 3 shows these R&D productivities at less than 1 (diminishing returns to scale), as Jones’ model [1995] predicts for human capital. This may be imputed to the nature of the knowledge generation process (R&D are risky investments without any guarantee of useful outcome), the effects of an unobservable pool of knowledge (not covered by patentable knowledge), and/or to duplicity of work (multiple projects working on the same issue). Figure 3 reports that though the V4 countries still lag significantly behind the EU15 (R&D productivity accounting there for approx. 0.8), convergence in the V4 of R&D productivity is present.

The one exception is Slovakia, where R&D productivity continues to drop since EU accession. The data presented in the Figures 1 through 3 are unambiguous. Slovakia is doing poorly in terms of R&D, but has been experiencing the highest growth of TFP (Figure 4). This accords with the empirical observation mentioned previously; namely, a disparity between competitiveness and innovation performance. We call this empirical phenomenon the Slovak knowledge accumulation paradox and, as indicated earlier in the text, the upcoming sections will try to analyze this paradox. In particular, we explore why domestic R&D performance is so low (e.g., what internal forces shape their trajectory) and why the competitiveness measured in terms of TFP is so high (e.g., how large part the international parties play here).

**Internal Forces Driving R&D Productivity**

First, we look at sectors where R&D is performed (public, private, and university), since we assume that they differ by productivity. Table 1 shows that Poland and Slovakia research more or less equally in all three sectors. By contrast, Hungary and the Czech Republic rely heavily on research in the business sector, which is claimed to be the most productive and indeed, does translates into higher R&D productivity (Figure 3).
Combining Table 1 with R&D expenditures by sector (Table 2), the business sector in all V4 countries performs R&D only to the extent of its own investment, which indicates R&D is not outsourced to public institutions. The government, on the other hand, is a key investor in university research.

### TABLE 1. R&D performance in sectors

<table>
<thead>
<tr>
<th>Year</th>
<th>CZ bus</th>
<th>CZ gov</th>
<th>CZ uni</th>
<th>HU bus</th>
<th>HU gov</th>
<th>HU uni</th>
<th>PL bus</th>
<th>PL gov</th>
<th>PL uni</th>
<th>SK bus</th>
<th>SK gov</th>
<th>SK uni</th>
</tr>
</thead>
<tbody>
<tr>
<td>1995</td>
<td>65.1</td>
<td>8.5</td>
<td>26.4</td>
<td>43.4</td>
<td>24.8</td>
<td>25.6</td>
<td>38.7</td>
<td>26.3</td>
<td>35.0</td>
<td>53.9</td>
<td>5.9</td>
<td>40.2</td>
</tr>
<tr>
<td>2000</td>
<td>60.0</td>
<td>14.2</td>
<td>25.3</td>
<td>44.3</td>
<td>24.0</td>
<td>26.1</td>
<td>36.1</td>
<td>31.5</td>
<td>32.2</td>
<td>65.8</td>
<td>9.5</td>
<td>24.7</td>
</tr>
<tr>
<td>2005</td>
<td>63.2</td>
<td>16.4</td>
<td>20.0</td>
<td>43.2</td>
<td>25.1</td>
<td>28.0</td>
<td>31.8</td>
<td>31.6</td>
<td>36.4</td>
<td>49.8</td>
<td>20.4</td>
<td>29.7</td>
</tr>
<tr>
<td>2010</td>
<td>62.0</td>
<td>18.0</td>
<td>19.4</td>
<td>59.8</td>
<td>19.9</td>
<td>18.5</td>
<td>26.6</td>
<td>37.2</td>
<td>35.9</td>
<td>42.1</td>
<td>27.6</td>
<td>30.0</td>
</tr>
<tr>
<td>2011</td>
<td>60.3</td>
<td>21.6</td>
<td>17.5</td>
<td>62.4</td>
<td>20.2</td>
<td>15.8</td>
<td>30.1</td>
<td>35.1</td>
<td>34.5</td>
<td>37.2</td>
<td>34.9</td>
<td>27.7</td>
</tr>
</tbody>
</table>

Notes: *bus* refers to business R&D, *gov* to government R&D, and *uni* to university R&D performance; private non-profit R&D expenditures are excluded as their shares are negligible low (on average, the lowest value among V4 – 0.19% in Slovakia, the highest value among V4 – 0.49% in Hungary).


One can observe that the innovation-intensive countries demonstrate a high share of business R&D. This is at least partially because business R&D expenditures are more profitable and produce returns sooner than public ones, as they are driven by the profit motive and therefore constantly pursue competitive market advantages. Table 2 shows that this theorem also holds for the V4, in which countries filing more EPO patent applications demonstrate higher business R&D expenditures (even though Hungary activated its business R&D in 2002). These levels converge at the ends of the spectrum (i.e., the best and worst performing V4 countries), but divergence for those occupying the middle ground. The closing levels in Hungary and the Czech Republic are approximately double the levels in Slovakia and Poland. Correspondingly, public R&D expenditures shrank in the Czech Republic and Hungary and were augmented in Slovakia and Poland.

From Table 2, it appears that in the Czech Republic knowledge is mostly accumulated through domestic business R&D stimulated by a multiplier of public R&D on private R&D [Šikula, 2010] – *conventional multiplier*. In fact, the Czech Republic is uniquely positioned compared to its V4 counterparts – it demonstrates approximately the same public/private ratio of domestic R&D spending as the R&D-intensive countries usually do (75%). The question remains why, despite this long-term, consistently maintained structure, the country exhibits a relatively low volume of R&D output (Figure 2). It may be that in the Czech Republic there still exists a large technology gap with R&D-intensive Western EU countries, and human capital might be more closed to knowledge transfer from abroad than it is in other V4 countries [consistent with the results of Krammer, 2014].
TABLE 2. R&D funding by sectors

<table>
<thead>
<tr>
<th>Year</th>
<th>CZ bus</th>
<th>CZ gov</th>
<th>CZ uni</th>
<th>HU bus</th>
<th>HU gov</th>
<th>HU uni</th>
<th>PL bus</th>
<th>PL gov</th>
<th>PL uni</th>
<th>SK bus</th>
<th>SK gov</th>
<th>SK uni</th>
</tr>
</thead>
<tbody>
<tr>
<td>1995</td>
<td>65.1</td>
<td>26.5</td>
<td>1.0</td>
<td>43.4</td>
<td>25.5</td>
<td>3.7</td>
<td>38.7</td>
<td>35.1</td>
<td>1.7</td>
<td>53.9</td>
<td>40.3</td>
<td>0.0</td>
</tr>
<tr>
<td>2000</td>
<td>60.0</td>
<td>25.3</td>
<td>0.5</td>
<td>44.3</td>
<td>26.1</td>
<td>2.1</td>
<td>36.1</td>
<td>32.3</td>
<td>1.7</td>
<td>65.8</td>
<td>24.7</td>
<td>0.6</td>
</tr>
<tr>
<td>2005</td>
<td>63.2</td>
<td>20.0</td>
<td>1.1</td>
<td>43.2</td>
<td>28.0</td>
<td>0.5</td>
<td>31.8</td>
<td>36.4</td>
<td>2.9</td>
<td>49.8</td>
<td>29.6</td>
<td>0.3</td>
</tr>
<tr>
<td>2010</td>
<td>62.0</td>
<td>19.4</td>
<td>0.8</td>
<td>59.8</td>
<td>18.5</td>
<td>0.9</td>
<td>26.6</td>
<td>35.9</td>
<td>2.5</td>
<td>42.1</td>
<td>29.9</td>
<td>0.4</td>
</tr>
<tr>
<td>2011</td>
<td>60.3</td>
<td>17.6</td>
<td>0.8</td>
<td>62.4</td>
<td>15.7</td>
<td>0.9</td>
<td>30.1</td>
<td>34.6</td>
<td>2.4</td>
<td>37.2</td>
<td>27.6</td>
<td>1.8</td>
</tr>
</tbody>
</table>

mean   | 62.0   | 23.0   | 1.4    | 45.8   | 26.1   | 1.9    | 32.9   | 35.1   | 2.3    | 53.6   | 29.9   | 0.3    |

stdev  | 1.7    | 3.3    | 1.6    | 7.8    | 4.7    | 1.6    | 5.9    | 3.8    | 1.4    | 11.4   | 5.5    | 0.4    |

Notes: stdev denotes standard deviation; bus refers to business R&D, gov to government R&D, and uni to university R&D funding; private non-profit R&D expenditures are excluded as their shares are negligible low.


Considering the Jones [1995] model, human capital may also shed light on the knowledge accumulation paradox. Human capital is a challenging concept, which is difficult to measure. Usually, it gets proxied by years of schooling or tertiary education attainment [Temple, 1999; Barro, 2001]. Table 3 indicates several discrepancies between the V4 and the EU-innovation leading countries in terms of R&D labor supply, both as a percentage of both total population and the economically active population (EAP). All V4 countries have increased their human capital stock, suggesting a potentially promising environment for their own future R&D activities. The tertiary educated population has also risen in the Western EU countries, which may signal a domestic revival of interest, but more likely reflects brain gain.

TABLE 3. Tertiary educated ratio in 2000–2011

<table>
<thead>
<tr>
<th>Country</th>
<th>Tertiary educated, % of EAP</th>
<th>Tertiary educated, % of population</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>MEAN</td>
<td>STDEV</td>
</tr>
<tr>
<td>CZ</td>
<td>34.7</td>
<td>2.4</td>
</tr>
<tr>
<td>GE</td>
<td>43.2</td>
<td>1.3</td>
</tr>
</tbody>
</table>

Source: data Eurostat 2014 – Persons with tertiary education attainment by age and sex (%).
Unemployment rates of human capital, as demonstrated in Figure 5, show that throughout the observed period both the Czech Republic and Hungary (till 2008) were more effective than other V4 countries in employing their human capital. Indeed, they exceeded the EU27 average rate of 6.1%, although not those of the low R&D unemployment leaders – Austria (2.1 in 2012) and Germany (2.4 in 2012). The break-out of the global economic and financial crisis in 2008 decreased R&D demand, which led to rising unemployment rates. The problem of available but unemployed human capital may be one of the key factors underlying low R&D productivity in Slovakia and Poland.

**FIGURE 5. Unemployment rates of tertiary educated workforce**

![Graph showing unemployment rates of tertiary educated workforce in CZ, HU, PL, SK over the years 1998 to 2012.](source: Eurostat 2014 – Unemployment rates by sex, age and highest level of education attained (%).

Figure 6 demonstrates that while the supply of human capital rises, the extent of employed R&D workforce in all V4 countries more or less stagnated (except for massive hiring in the Czech Republic in 2004). The largest workforce employed in R&D, per population unit, is demonstrated by Poland which is the poorest performing V4 country in terms of R&D productivity. The relative stability of R&D labor, however, is accompanied by large reallocation of the R&D work force among sectors (Figure 7).
According to Eurostat, universities and governments employ the largest labor force in Slovakia and Poland (recently, approx. 80% of the total R&D labor force), while the better R&D performing V4 countries converge to the business labor force levels of such R&D-intensive countries such as Germany and Denmark.

R&D labor is committed to producing high added value, relative to other, less innovation focused positions, is presumably rewarded with higher wages. This theorem is challenged by the theorem of FDI hiring policies and the existence of wage spillovers. FDI tends to provide higher wages than local companies in order to attract the best-performing labor force [Hijzen et al., 2013], but as Hanousek et al. [2011] note, it would be misleading to interpret this phenomenon solely as a consequence of higher productivity in FDI jobs. Since our computation of TFP [following Dujava, 2012] employs revenue-based factor shares, we omit the disturbance caused by misleading labor productivity reflected in the TFP.

Wage increase in one company is often followed by other local companies (both suppliers and competitors) [Autor et al., 2008]. As the most recent results show [for EU, see Maczulskij, 2013; for evidence involving EU and non-EU companies, see Lamo, Perez and Schuknecht, 2013], wages in FDI companies even spill over to public institutions, resulting in wage convergence across the whole R&D sector. The heavy reliance of the V4 countries on public R&D can be characterized as a challenge this theorem. Table 4 reports that average annual earnings across the R&D sector decreased after the EU accession in the Czech Republic and Hungary. This may be imputable to the competition effect and a reallocation of production resources [Onaran, Stockhammer, 2008]. Even though public wages in these countries stayed lower than business R&D ones, the positive trajectories of both did not change. That supports the wage spillovers literature.
TABLE 4. Annual wages by R&D sector, 2011 USD exchange rates, 2011 constant prices

<table>
<thead>
<tr>
<th>Sector</th>
<th>MEAN</th>
<th>STDEV</th>
<th>MIN (year)</th>
<th>MAX (year)</th>
</tr>
</thead>
<tbody>
<tr>
<td>HU R&amp;D bus</td>
<td>29 244</td>
<td>8 149</td>
<td>14 852 (1995)</td>
<td>38 587 (2005)</td>
</tr>
</tbody>
</table>

Note: bus refers to business wage, gov to government wage, uni to university wage.

Source: own calculation based on total labor costs in R&D expenditures and R&D employees; data OECD Stat 2014.

The lowest levels of average R&D wages occurred in Slovakia and Poland. More interestingly, wages in the higher education sector of these countries were stagnant until 2008. This rigidity of public wages (irresponsiveness to general wage dynamics), in light of the volume of R&D performed at universities (Table 1), reduces the chances that low labor productivity in university R&D will improve. First of all, lower productivity discourages R&D investors and, second of all, the wage gap discourages human capital to pursue a university career (it becomes a luxury to work at the university). Human capital is instead driven to the business R&D sector – first brain drain. Even though the business sector might be selective in terms of what R&D areas to support (limiting the brain drain is limited through a specialization of R&D labor), this brain drain is generally conducive to R&D productivity of a country as business R&D is driven by profit motive and implicit, more productive.

To sum up, low R&D productivity in Poland and Slovakia is related to university research funding, where most of R&D workforce is employed at low wages. This drives the most promising human capital out of R&D jobs and out of the country.
Internationalization of Slovak R&D Sector

The openness of small economies with low levels of domestic capital accumulation provides an opportunity for foreign capital to take advantage of the capital scarcity. However, investors in R&D are not driven by same niche-seeking that motivates non-R&D outsourcers. R&D investors usually require specific skills and enough previous experience to give inherently risky R&D projects a reasonable prospect of success. The importance of foreign R&D investments for domestic growth, however, cannot be neglected [Thomson, 2013].

Even though all V4 countries have clearly benefited from the foreign R&D funding boom as they entered the EU (Figure 8), they are still considerably less successful in attracting foreign R&D investments than other small R&D-intensive countries. Based on Eurostat data, Austria throughout the 1995–2011 period attracted, on average, 17.3% R&D from abroad, and the Netherlands attracted 10.5%, while the figures for the Czech Republic, Hungary, Poland, and Slovakia are only 5.1%, 9.1%, 4.8%, and 6.2%, respectively.

Combining Table 2 and Figure 8, the activation of business R&D in Hungary in 2002 was accompanied by large R&D inflows from abroad. Thus, we may conclude that Hungary suggests the presence of foreign R&D multiplier on domestic business R&D – transmisional (internationalization) multiplier. On the other hand, Slovakia and Poland reacted to R&D funding from abroad with cuts in domestic public and private R&D funding. This crowding out poses positive and negative effects. The positive effects are a learning process in which foreign investors force the domestic workforce to comply with norms and rules applied for R&D performance abroad. The negative effect is the risk of chronic
dependency on foreign sources such that unless the *transmissional (internationalization) multiplier* kicks in, the country stagnates at the R&D periphery.

Openness to foreign R&D investments is often accompanied by a rising number of EPO patent applications shared with entities abroad. As Thomson [2013] declares, such R&D offshoring occurs in order to access niche skills in the education sector. According to Eurostat data, EPO patent volumes lag behind R&D offshoring levels in R&D-developed countries – e.g., Austria (which peaked in 2007 with 67 applications) or Germany (peaking in 2007 with 47 applications). Following Table 5, the V4 countries with a higher R&D productivity also enjoyed a higher number of EPO patent applications shared with foreign co-inventors. This rising trend was reversed in 2008 after the economic crisis broke out. The significance of EPO patent applications for domestic patenting is most visible in Slovakia, where approximately 82% of all patenting activities involve foreign co-inventors, and least visible in Hungary where only 45% file with a foreign co-author. The instability of development in foreign shared EPO patent applications is represented by standard deviation and, as we may see, Slovakia and Poland demonstrate a larger variability than do the other two V4 countries in terms of percentage share of total EPO patent applications.

### Table 5. EPO patent applications shared with foreign co-inventors

<table>
<thead>
<tr>
<th></th>
<th>CZ</th>
<th>HU</th>
<th>PL</th>
<th>SK</th>
<th>GE</th>
<th>FR</th>
<th>NL</th>
<th>AT</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>MEAN</strong></td>
<td>50%</td>
<td>45%</td>
<td>49%</td>
<td>82%</td>
<td>14%</td>
<td>19%</td>
<td>21%</td>
<td>29%</td>
</tr>
<tr>
<td><strong>STDEV</strong></td>
<td>16%</td>
<td>13%</td>
<td>27%</td>
<td>26%</td>
<td>3%</td>
<td>4%</td>
<td>4%</td>
<td>5%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>MEAN</th>
<th>STDEV</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>CZ</strong></td>
<td>4.94</td>
<td>2.46</td>
</tr>
<tr>
<td><strong>HU</strong></td>
<td>5.50</td>
<td>2.87</td>
</tr>
<tr>
<td><strong>PL</strong></td>
<td>1.19</td>
<td>0.73</td>
</tr>
<tr>
<td><strong>SK</strong></td>
<td>3.50</td>
<td>1.84</td>
</tr>
<tr>
<td><strong>GE</strong></td>
<td>33.56</td>
<td>10.59</td>
</tr>
<tr>
<td><strong>FR</strong></td>
<td>21.25</td>
<td>6.61</td>
</tr>
<tr>
<td><strong>NL</strong></td>
<td>37.63</td>
<td>10.34</td>
</tr>
<tr>
<td><strong>AT</strong></td>
<td>45.94</td>
<td>14.24</td>
</tr>
</tbody>
</table>

Source: Author’s own calculation, data Eurostat 2014 – Patent applications to the EPO with foreign co-inventors, by priority year at the national level.

Our analysis of foreign involvement in R&D expenditures and patents indicates some dependency signals for Slovakia and Poland based on the fact that domestic R&D funding and patenting remain irresponsive, and even declining. However, the question remains why no multiplier is in place, such that university research is associated with lower patenting but higher TFP. We assume that this phenomenon is at least partially imputable to R&D labor flows (reallocation both locally and internationally), i.e., changes in the availability and quality of R&D labor. Considering wages, there is still a substantial opportunity for the V4 to catch-up with the Western EU and discourage R&D labor to seek employment abroad (*third brain drain*). The role of wages in the brain drain was studied by Borjas [1986], Grogger and Hanson [2011], and as Weinberg [2011] and others conclude, transition countries in this context are particularly vulnerable.
Concluding Remarks

Empirical data presented in this paper shows a discrepancy between observed TFP development and R&D productivity in the V4 countries. Hungary is the most effective economy in terms of producing EPO patent applications with the given R&D funds available, outperforming the Czech Republic, Slovakia, and Poland. However, both Slovakia and Poland experience faster growth of TFP. To examine the nature of this empirical phenomenon, we first studied R&D expenditures structure and internationalization effects in the R&D sector and human capital formation.

The composition of R&D expenditures is heterogeneous among the V4. Regarding knowledge accumulation, though, the Czech Republic relies on a conventional multiplier effect of domestic public R&D on private R&D, while Hungary seems to exploit large patent applications from the transmissional (internationalization) multiplier.

In the skilled labor market, that data reveals some crucial deficiencies in knowledge-based economy building in the V4 countries, the most acute one being (in our opinion), the rigidity of public R&D wages in Slovakia and Poland. Due to this rigidity, R&D labor in public institutions do not currently get offered even the reservation wage, i.e., the wage that would keep them employed in the R&D sector, and, with business wage expansion, the comparative advantage of the business sector in attracting the best performing human capital intensifies. Thus, R&D labor loss occurs in favor of not just foreign or domestic business R&D, but even the non-R&D sector where creativity is no longer being actively developed. Given that most of Slovak and Polish R&D is performed in the public sector, low productivity translates into the overall low productivity in R&D.

Notes

1 paula.puskarova@euba.sk. The paper has been supported by the VEGA No. 1/0277/14 (V-14-046-00) – Innovation and competitiveness of the Slovak economy. Usual disclaimers apply.
2 stefan.zajac@euba.sk
3 According to their production input share, economies are considered either capital-intensive or labor-intensive.
References


Šikula, M. et al., (2010), Stratégia rozvoja slovenskej spoločnosti (Strategy of Slovak society development). Bratislava, VEDA.


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Why the EU-15 Maintains Higher CIT Rates than the New Member States?

Abstract

The European Union is not a homogenous area. This lack of homogeneity extends to taxes, which vary across jurisdictions. On average, Western Europe imposes significantly higher taxes on capital than New Member States, which joined the Community in 2004 and 2007. Often this fact is simply taken for granted. However, there are several arguments that can explain this variance. Although several of these arguments are well known and have been researched, they have not been assessed in combination, or used in a comparative analysis of corporate income tax (CIT) rates between EU member states. Because of interest in harmonizing CIT throughout the EU, the roots of divergent CIT is of particular and timely value. Therefore, this article we attempts to demonstrate the differences in CIT rates in the EU-15 and New Member States. In so doing the general characteristics of these country grouping is identified, and then discussed in the context of the taxation theory.

Keywords: macroeconomic policy, fiscal policy, tax, corporate income tax
JEL: E62, H25

Introduction

The theory of taxation posits that a tax should cause as minimal a distortion as possible. Otherwise stated, in an ideal market all projects would be tax neutral to help assure the decisions of economic agents are driven by market forces, not taxes. However, this is not possible, as tax revenues are needed by local governments to pay for public goods, which are accessible to all free of charge. A compromise position between these two positions
suggests low tax rates. The theory of taxation has in recent decades significantly impacted taxation systems of the world economy. This impact is also apparent in the EU with respect to CIT, where Member States have recently reduced their tax rates.

Genschel et al. argue that CIT competition in the EU is driven by several specific institutional mechanisms that are important for the region [Genschel, Kemmerling, Seils, 2011]. One is market integration, in which lower cross-border economic barriers implies a high mobility of capital within the EU. This mechanism drives a tax arbitrage in which Member Countries seek to cut their CIT rates to discourage in country capital from being withdrawn, and to lure new capital investments in domestic markets.

Secondly, an enlarged EU increased the size and heterogeneity of the European market, which also stimulates the tax competition. The more states participate in the common market, the higher the potential that these will seek a competitive advantage through tax competition, which takes the form of new, ever lower, CIT rates within the EU. Moreover, as additional countries join, each Member State economy enjoys a relatively smaller share of the total EU economy, and concomitant decline in importance in the Community. The numerical enlargement of the EU itself has the natural tendency to increase tax competition [Hoyt, 1991]. As do differences in the affluence of members, where peripheral, poorer countries are determined to acquire more capital but cannot offer investors agglomeration benefits. They are instead forced to decrease CIT rates [Franzese, Hays, 2007].

The equal treatment of economic agents on the European single market is supported by the European Court of Justice (ECJ), which is responsible, inter alia, for tax jurisprudence. This is accomplished through the ECJ’s efforts to encourage national tax regulation that is compatible with the general principles of the common market. As applied to CIT rates, these efforts can either enhance tax competition or curb it (if the ECJ prioritizes national public interest). In general, though the case law of the ECJ suggests that this body has an overall positive effect on market integration that indirectly supports tax competition among Member Countries.

In light of the foregoing, tax competition within the EU should be higher than among non-EU countries. Indeed, Genschel et al. point out that since the 1990s CIT rates in the EU have fallen faster than in other parts of the world [Genschel, Kemmerling, Seils, 2011]. Figure 1 presents the average top statutory CIT rates in the EU-27 countries.
FIGURE 1. **Average top CIT rates of the EU-27 Member States**

The process of CIT rate reductions in the EU began in the mid-1980s, when the UK significantly decreased its statutory CIT rates. In the early 1990s, Scandinavian countries introduced a dual-tax system and decreased the CIT rates considerably below prevailing PIT rates. During this same period Eastern European countries became more attractive to foreign capital, in part, due to CIT rates that, on average, were there lower than in Western Europe. Once ignited, tax competition between countries contributed to further declines of statutory rates among EU countries.

Over the last 15 years the process of CIT competition has accelerated. This may have been caused by the increasing mobility of capital coupled with the economic slowdown of 2001, which triggered higher demand for capital and precipitated a more rapid accession of Central European countries to the EU. On the eve of EU enlargement in 2004, CIT rates in the New Member States were, on average, almost 10 percentage points lower than in the EU-15, and effective tax rates were estimated to be around the half of the EU-15-average [Jacobs, Spengel, Finkenzeller, Roche, 2003]. The resulting shift capital to New Member States motivated the EU-15 to again compete with one another to make their CIT systems more attractive to investors.

The impact of this competitive process is striking. Between 1995 and 2013, statutory CIT rates in the current EU-27 countries steadily declined, on average, from 35.3 to 23.2 percent. However, the rate of decline has not been uniform, possibly in reaction to the financial crisis that began in 2008. Increasing public deficits may have discouraged
governments from seeking the medium-term benefits of tax competitiveness for the short-term loss of tax revenues inherent in reduced CIT rates, and encouraged others – namely, France, Portugal, Greece, Luxembourg and Slovakia – to increase CIT rates from 0.6 (Luxembourg) to 6 percentage points (Greece) during the crisis. It bears mention that only euro-area countries chose this course and two of them – Greece and Portugal – were particularly hard hit by the economic crisis, and therefore strongly motivated to immediate budget inflows.

Even with these modest CIT rate increases by selected members, the EU is more prone to tax competition than other countries of the world, and that competition is more or less fierce by country. The key competitive drivers, by region and in terms of CIT rate level, are discussed below.

**CIT Rates as Investment Incentive**

Globalization has dramatically increased the ability of international firms to shift taxable profits between countries, facilitating investment abroad. Unsurprisingly, this has also made tax competition between states more fierce.

Broadly defined, tax competition is noncooperation with respect to taxes between independent states. Wilson and Wildasin define tax competition more narrowly as a “non-cooperative tax setting by independent governments, under which each government’s policy choices influence the allocation of a mobile tax base among ‘regions’ represented by these governments”, in which “regions” are either states, countries, or localities – depending on the context [Wilson, Wildasin, 2004]. This narrow definition is employed in this analysis.

In theory, mobile capital will flow to a country with the lower tax burden, which offers higher after tax returns on the funds invested. Thus, different tax rates imposed on capital trigger capital flows between states. If country A reduces its tax rate to the level below that observed in country B, this produces a negative fiscal externality in country B as capital moves to country A. Faced with a reduced tax base, the government of country B, responds by cutting its tax rates to avoid a further erosion of the tax base. This process is repeated several times until both countries end up with sub-optimal tax rates and an under provision of public goods [Zodrow, Mieszkowski, 1986]. For this reason, most of the literature claims that tax competition leads to inefficiently low taxes [Wilson, 1999].

Logic dictates that the more mobile capital becomes, the lower tax rates will be in countries seeking to attract that capital. In that landscape, capital income taxes are particularly well-suited to serve as competitive instruments. This is due to the fact that other taxation objects, including a country’s labor force (subject to payroll taxes), goods and services (subject to sales or value added tax), and land (subject to real estate tax) are less mobile, immobile, or largely unresponsive to tax rate changes. For example, studies show that workers primarily migrate in search of better jobs and higher wages, and only rarely
do so due to lower taxation. While goods or services can – in theory – be bought by the resident of one country in the other country, depending on which country imposes smaller tax on consumption, the literature shows that this opportunity depends upon the physical distance involved. And land, of course, is immobile.

The use of lower CIT rates to attract foreign investment is more or less intense, by region. As noted above, the EU-15 significantly cut their CIT rates. But the New Member States have decreased their corporate income tax rates even more, forcing the EU-15 to further tax rate reductions. These different on average CIT rate cuts in the EU-15 and New Member States is depicted below.

FIGURE 2. Difference between average top CIT rates in the EU-15 and New Member States

In the period 1995–2005 the disparity between the CIT rates in New Member States and the EU-15 countries widened from 6 to over 10 percentage points. However, this process was reversed in 2006, when this regional disparity shrank by ca. 1.5 percentage points to 2013. Currently, eight EU countries have CIT rates below 20%. Seven of them are New Member States, leaving Ireland (famous for its low corporate taxation) as the
sole representative of the EU-15. Of the six states EU states with CIT rates above 30%, five belong to the EU-15. Malta, which joined the EU in 2004, is the only EU country that has not changed its CIT rate during the examined period but the implicit CIT rate there is much lower than the statutory one.

This comparison suggests that New Member States desired – and even required – foreign investment more than the EU-15, where capital was already installed. During transition, capital in Central (unlike Western) Europe was scarce, and lower taxation rates were used to attract investment. Huizinga and Nicodeme estimate that a one percentage point increase in foreign ownership of companies increases the average CIT rate between a half and one percent [Huizinga, Nicodeme, 2003]. The relative abundance of multinational foreign owned firms in the EU-15 may therefore partially explain lower CIT rates among New Member States.

Tax policy literature also confirms that tax system structures largely depend on the host country’s development [Becker, Elsayyad, 2009]. These studies also suggest that tax competition becomes less fierce with distance. In other words, neighboring countries compete with each more than they compete with distant countries. From this perspective, New Member Countries and the EU-15 can be seen as two geographically separate areas, between whom CIT rate competition was less fierce.

Differences in CIT rates between the old and new EU cannot, however, be explained solely by somewhat different attitudes, by country and region, of member states towards CIT competition.

**Differences in Size of Economies**

Lower CIT rates in the New Member States, and their more rapid percentage decline (in comparison to the EU-15 countries) is also a function of size differences. New Member States are, on average, smaller; if not always in terms of population or territory, then at least as measured by the size of the their economies – i.e., GDP.

One may argue that independent tax jurisdictions share a mobile CIT base by competing for scarce capital. Thus, through tax competition, the CIT rate becomes adversely proportional to the CIT base. Classic economic models claim that, assuming perfect capital mobility, the optimal CIT rate for a small open economy is zero [Diamond, Mirrlees, 1971; Gordon, 1986; Zodrow, Mieszkowski, 1986; Wilson, 1986]. Small countries are more affected by a steady increase in capital mobility than large economies, because capital outflows impact small economies more severely.

Some economists, like Gordon and Varian, conclude that bigger countries may have more market power in the world capital market, which supports taxation of capital [Gordon, Varian, 1989]. Large jurisdictions, which have some monopsony power, are
able to “export” part of their tax burden to non-residents in the form of reduced after-tax returns on capital [Zodrow, Mieszkowski, 1983]. Thus, logic suggests that small countries, like the EU-12, could improve their national welfare by cutting CIT rates more than big countries, because the response from capital owners in small countries would be there higher. It seems that indeed New Member States follow this conclusion.

On the other hand Bucovetsky and Wilson contend that small countries should tax only labor, which supply elasticity, unlike capital, is finite [Bucovetsky, Wilson, 1991]. Large regions on the other hand, which can influence the equilibrium of after-tax returns on capital, can tax capital on a source-basis. Consequently, small countries, which are highly integrated with the world economy and therefore more prone to capital mobility, might in real life impose taxes on capital that are too high and, hence, inefficient.

Theory is also reflected in practice. For example, Winner, who used population as a proxy for country size, estimated that one percentage point increase in the population (measured as population of a country relative to the US population) is associated with a 0.017 percentage point increase in the CIT burden [Winner, 2005].

These works indicate that small countries should levy low CIT burdens. Sizeable economies, conversely, are able to provide investors with increased pre-tax rate of return. Therefore, countries belonging to the EU-15 can impose higher CIT rates as the after-tax return is comparable there to that earned by capital in smaller countries.

**Legal Tax Base**

The second after interest rate feature determined by tax law is the legally determined tax base. Generally speaking, the narrower the legal tax base, the greater need for a higher tax rate to offset the effect of this narrow tax base. This simple mechanism is observable in the EU.

The object of a CIT is income. Legal provisions defining taxable income often vary from accounting concepts. All Member States determine the legal CIT base by adjustments to accounting principles set forth in IFRS or national GAAP. The differences primarily concern depreciation deductions. In addition to these differences, the tax laws also provide specific incentives for certain types of investment, e.g., in new technologies. On the other hand some expenses are treated as non-tax deductible. These relate mostly to expenses not connected directly with revenues.

An important difference to calculation of tax and accounting income are provisions. In most cases they are recognized for accounting purposes only. Nine Member States allow for recognition of provisions for tax purposes, twelve permit their recognition just in exceptional cases, and in the remaining countries recognition of all provisions is disallowed [Spengel, 2008]. In general New Member States have a much stricter approach
in this respect. It can be concluded that excluding recognition of the provisions from the tax base calculation transforms into a broader tax base. Since most EU-15 countries allow recognizing at least some provisions for tax purposes if certain requirements are met, then they should have narrower tax base than the New Member States. This partially explains the need of EU-15 to maintain higher CIT rates in order to compensate for the narrower legal tax base. Depicted below is a breakdown of EU countries with respect to possibilities of recognizing provisions.

**FIGURE 3. Possibility to recognize provisions in various Member States**

<table>
<thead>
<tr>
<th>Permitted with some exceptions</th>
<th>Generally disallowed with some exceptions</th>
<th>Disallowed or not CIT effective</th>
</tr>
</thead>
<tbody>
<tr>
<td>Romania, Luxembourg, Netherlands, France, Germany, Ireland, Austria, Belgium, Estonia</td>
<td>Sweden, UK, Portugal, Slovakia, Spain, Hungary, Italy, Lithuania, Finland, Greece, Denmark, Czech Republic</td>
<td>Poland, Slovenia, Latvia, Malta, Bulgaria, Cyprus</td>
</tr>
</tbody>
</table>

*Source: Based on Spengel (2008).*

The treatment of capital gains on shares and sale of other assets often differs from a tax and accounting perspective. Most Member States exempt capital gains arising from shares from CIT. However, some low tax countries (mostly New Member States) do not grant relief for such income. Half of the EU states do not grant any relief also from all other capital gains and, again, differences follow predictable lines. Recognition of capital gains for tax purposes broaden the legal tax base, which is increased when more capital gains are realized and taxed by the taxpayers. Thus, the tax base in this respect is narrower in EU-15, so these countries need to levy higher CIT rates to balance this effect.

All Member States allow tax losses from one period to be offset against profits from following periods. Roughly half of the EU countries limit the carry forward of losses for a 5 to 15 year period, with 5 years being the most popular. Not surprisingly, strict carry forward rules are most common among the New Member States. Some countries also allow the carry back of the tax losses. However, these are only states from the EU-15. Below is the breakdown of Member States with respect to possibilities of tax loss offsetting.
FIGURE 4. Recognition of tax losses in various Member States

- **Carry forward**
  - Unlimited
  - Limited to 10-15 years
  - Limited to 5-6 years

  - UK, Sweden, Netherlands, Malta, Luxembourg, Ireland, Hungary, Germany, France, Denmark, Cyprus, Belgium, Austria
  - Finland, Spain
  - Portugal, Czech Republic, Bulgaria, Greece, Latvia, Italy, Poland, Lithuania, Slovenia, Slovakia, Romania

- **Carry back**
  - Limited to 1-3 years

  - UK, Ireland, Germany, France, Netherlands

Source: Based on Spengel (2008).

FIGURE 5. Average implicit CIT rates in the EU-15 and among the New Member States

Source: Based on Eurostat; tax rates for Bulgaria, Ireland, Greece, Luxembourg, Malta and Romania are not included in the graph because of lack of data.
Countries in general broaden their legal tax base by, inter alia, limiting tax incentives, reducing accelerated depreciation deductions, restricting interest deductibility, excluding some categories of expenditures from being tax deductible costs, and by limiting the period of tax loss from previous years available for future offset. The tax base broadening process has been taking place for the last 30 years in the EU countries. However, in general the tax bases in the EU-15 countries are still narrower than those in the New Member States [Schratzenstaller, 2007]. This can also be explained by comparing implicit CIT rates in those two country groups. It should be noted that an effective CIT rate assumes not only the statutory rates but also the legal tax base. Figure 5 presents the development of implicit tax rates over the last years.

Based on the above graph, it seems that the falling implicit CIT rates, which include information on the size of the legal tax base, are relevant but do not fully explain the CIT rate difference between EU-15 countries and New Member States. Additional reasons for this difference are discussed below.

**Comparison of Demand Elasticities**

This article began with the observation that an optimal tax should produce no, or minimal, deadweight loss. However, this is seldom realized. Tax revenues are represented on the below macroeconomic figure.

![Figure 6. Tax revenues after introduction of CIT](source: own elaboration)
This graph indicates that if there was no CIT, consumers would buy Q goods. However, that situation would produce no tax revenues. Therefore, all EU countries decided to tax capital. Unfortunately, CIT, like other taxes, makes goods more expensive for consumers. Therefore, as consumers move along the downward sloping compensated demand curve (presented above), they would not buy Q but would instead buy Qt goods, due to expense. The resulting tax revenues are depicted by the gridded field. The deadweight loss produced by CIT is depicted by the dotted field, which results from a partial withdrawal of consumers from spending.

Notably, the less elastic the demand curve, the smaller the deadweight loss. This is presented in Figure 7.

**FIGURE 7. Tax revenues under different demand elasticities**

This graph illustrates that when there is less elastic demand curve, the deadweight loss (striped triangle) is lower than in the case of elastic demand (see striped triangle plus grey triangle). In the extreme scenario of inelastic demand, there would be no deadweight loss. This seems reasonable, as price increases of a good due to taxation, assuming that demand for it is non-elastic, would not influence the quantity of goods consumer wish to buy. The above model can be also presented with greater focus on tax revenues rather than on deadweight loss, which is shown in Figure 8.
FIGURE 8. **Tax revenues under different demand elasticities – focus on deadweight loss**

![Diagram](image)

*Source: own elaboration.*

The model suggests that CIT revenues depend on the elasticity of the demand curve. Assuming no CIT, consumers buy Q goods. If the demand for that good is elastic, when CIT is introduced demand falls to Q2. CIT revenues equal the gridded field and the deadweight loss is equal to the sum of the grey and bricked fields. However, if the demand is less elastic, after introduction of CIT it will only fall to Q1. The CIT revenues are then equal to the gridded field plus grey and dashed field. Consequently, in our simple model the more steep the demand curve is, the higher CIT revenues are.

To maximize CIT revenues, governments may be tempted to impose different CIT rates on different sectors of the economy. However, demand elasticity is usually lower for primary goods. Therefore, a differentiation of CIT rates would affect the worse off most and such taxation would have negative consequences inconsistent with what is widely considered a just tax system. Moreover, this would lead to distortions in the allocation of resources. The differentiation of CIT burden does, however, happen – albeit less on a sectoral level of the economy and more among different countries that maintain different CIT rates. This approach of governments can be explained based on the above macroeconomic model.

Assume that capital is mobile and the investor can decide where to invest. Particular countries offer the investor two immobile factors, i.e., land and work force. Business conditions, and the demand elasticity of investors for land and work force in those countries, differ. In countries where the business environment is better the demand curve of investors is less elastic than in the countries where worse conditions for business exist.
In practice the elasticity differences are supported by the fact that many countries feature lower quality business conditions, and relatively few countries offer good externalities. Consequently, developed countries are able to impose higher CIT rates on investors than developing countries without the risk of high deadweight loss. In other words, assuming the same amount of deadweight loss, CIT revenues in countries with better business conditions would be higher than in the periphery countries. This conclusion corresponds with the current economic reality in the EU, where the core EU-15 countries impose high CIT rates, whereas the periphery countries like New Member States have lower corporate taxation rates.

Interestingly, deadweight loss rises disproportionally fast to increased tax rates. This can be well observed in Figure 9.

**FIGURE 9. Size of deadweight loss under different tax rates**

Source: own elaboration.

Imposing a low CIT1 rate produces a deadweight loss equal to the dark grey triangle. However, two times the higher CIT2 rate produces a deadweight loss equal to the whole triangle, which seems four times larger. Finally, if the tax is raised above CIT2, the deadweight loss would rise further and government tax revenues would start to decline. Therefore, it appears that high tax rates are particularly distortive. This also supports the claim that developed countries (i.e., generally EU-15) are able to tax capital with higher CIT rates than developing countries (mostly New Member States).
To estimate the deadweight loss we calculate the triangle field. The vertical edge of the triangle is the amount of CIT, which we will denote as $t$. The horizontal edge is equal to the change in quantity of acquired goods. That change depends on the demand elasticity for a good. Elasticity is calculated as the increase in quantity divided by the increase in price.

$$n = \frac{\Delta q}{\Delta p}$$

Transforming the above equation, we get:

$$\Delta q = \frac{\Delta p}{p} qn$$

This equation shows that the change in quantity $Q$ is higher (i) the bigger the change in price and (ii) the more elastic the demand curve. Because in the model the change in price is equal to tax $t$, we get:

$$\Delta q = \frac{t}{p} qn$$

Thus, the triangle field is equal to:

$$\frac{1}{2} \Delta qt = \frac{1}{2} \frac{t}{p} qnt = \frac{1}{2} \frac{t^2}{p} qn = \frac{1}{2} \left( \frac{t}{p} \right)^2 pqn$$

However, $\frac{t}{p}$ is the change relation of tax to the price, which is actually the tax rate $Tr$. Hence, we get the following equation:

$$\frac{1}{2} \left( \frac{t}{p} \right)^2 pqn = \frac{1}{2} T^2 pqn$$

Based on the above we see that the deadweight loss rises (i) to the squared tax rate (as presented on the below figure) and (ii) substitution effect, which depends on the elasticity of demand. This is fully in line with the above graph models. The equation shows that the EU-15 countries have the capacity to impose higher CIT rates than do the New Member States, because the elasticity of demand exercised there by investors is lower and, consequently, the deadweight loss is acceptable with higher levels of CIT rates. The relationship between the deadweight loss and the tax rate is presented on Figure 10, below.
**Affluence of Citizens**

The taxation theory asserts that there are five commonly accepted features that a good taxation system should meet. One is justice. That is, a just treatment of various economic agents. How, then, does CIT meet this criterion? There is a concept of horizontal and vertical justice. Horizontal justice assumes that all parties in the same position should be subject to similar taxation. Vertical justice, on the other hand, states that parties capable of paying higher taxes should pay more.

Frank Ramsey proposed that various goods should be taxed according to supply and demand elasticity to minimize the deadweight loss (please compare the figures above). However, goods which have low price elasticity usually also feature low income elasticity – such as, for example, food products. If food products were heavily taxed, the taxation burden would fall primarily on the poor. Consequently, the function of taxes, which is, inter alia, redistribution of wealth among society, will not be met. That tax would therefore be unjust.

Lump-sum taxes may seem desirable as they avoid distortions. However, such taxes are rarely imposed. The main reason for this is that they are regressive\(^2\). Hence, worse
off taxpayers cannot afford it, whereas wealthy taxpayers would pay a fraction of what they could pay. Eventually, the poorer taxpayers could go bankrupt because of taxes, the rich would pay relatively small amounts, and the resulting fiscal revenues would not be enough to cover state budget expenditures. Thus, lump-sum tax is a solution only when all taxpayers are similar. But they are not. The income of taxpayers varies, both within and between countries.

Different CIT rates in old and new EU can be also analyzed from the perspective of vertical justice. Namely, EU-15 countries impose on average higher CIT rates than New Member States because taxpayers in those countries are typically more affluent and therefore capable of paying proportionally more taxes (as per the vertical justice concept).

Not surprisingly, people who earn more also save more [Żyżyński, 2009]. Therefore, without a major decline in their well-being, high earners could bear more CIT (assuming that the economic cost of any tax – including CIT – is eventually born by individuals and not by companies, which was broadly discussed in the literature).

The vertical justice concept, as applied to the EU-15, which are relatively wealthier than the New Member States, explains the capacity of the Western Europe to impose higher average CIT rates than the EU-12 countries.

**Public Goods and Agglomeration Externalities**

A tax in general is an enforced contribution without direct counter service. Naturally, so is a CIT. Therefore, any taxpayer should be interested in paying the least taxes possible. Public goods are accessible to all free of charge. Hence, if taxes weren’t obligatory, a free rider problem would arise. That is, taxpayers would feel no incentive to pay (indirectly) for public goods, which were equally available to those who did and did not pay public contributions. However, particular countries provide for different sets of public goods. Therefore, although investors may be inclined to pay lower taxes, they are also interested in using public goods financed by taxes and accessible only in the territory of particular states.

The Tiebout model assumes that different regions offer certain basket of public goods at various prices, whose availability corresponds to the taxation burden imposed by each tax jurisdiction [Tiebout, 1956]. Since taxpayers (i) have different preferences with respect to the scope of government services they require and (ii) the price they are ready to pay for those services in the form of taxes varies, they move between different tax jurisdictions. Regions seek to minimize the average cost of public services provided. Hence, if a tax jurisdiction finds itself below the optimal level, it tries to attract new residents. As taxpayers choose, and tax jurisdictions respond, these two players determine equilibrium by moving to the most suitable tax jurisdiction. The model proposed by Tiebout was
designed for individuals. Fischel, White, and more recently Wellisch suggested, however, that the theory can also be adopted for international firms, which can change their residence according to their preferences for the mix of public goods and taxes [Fischel, 1975; White, 1975; Wellisch, 2000].

However, as indicated by Samuelson, each individual can enjoy public goods in a way that does not subtract that good from any other individual [Samuelson, 1954]. Moreover, individual preferences as to the consumption of private and public goods are not easily observable. Hence, it is not possible to determine a lump-sum tax for each individual, which would be the price for using public goods. He argues that “no decentralized pricing system can serve to determine optimally these levels of collective consumption” due to the fact that “it is in the selfish interest of each person to give false signals, to pretend to have less interest in a given collective consumption activity than he really has”. From this perspective paying taxes by a particular taxpayer (which could be an individual or a company) seems less connected with the level of services provided by the government.

Researchers focus on capital mobility as a crucial factor that determines the tax base. It is assumed that capital, which creates the tax base for CIT, moves from countries imposing high CIT rates to countries with low CIT rates. Oates, who was a pioneer of tax competition literature, claimed that governments competing for mobile capital are likely to “keep taxes low to attract business investment” [Oates, 1972]. He noted, however, that a lack of necessary funding “may well be a tendency toward less than efficient levels of output of local services”.

By contrast, economic geography literature claims that tax rates do not drive decisions on investment location [Brakman, Garretsen, van Marrewijk, 2001]. More central are transportation costs and increasing returns to scale. Companies focus on the size of the host domestic market and take into consideration its density. Therefore, the key is not taxes, but the market potential offered by a particular location. Hence, the preferred choice for capital is usually agglomerations, where investors save on logistics and benefit from agglomeration externalities [de Mooij, 2005]. Those benefits include, inter alia, a well-educated labor force and access to new technologies, as well as financial, social and political stability. To the extent these factors are financed from taxes, high taxes should not discourage investments but instead attract FDI [Garrett, 1998; Campbell, 2005].

Receiving value for money paid is always important. Therefore, in high tax locations residents demand a high level of public services. Governments can impose CIT in agglomerations, which would not trigger the outflow of capital as the tax is imposed largely on location-specific rents. Baldwin and Krugman claim that this holds for the European area in the triangle between London, Hamburg and Milan [Baldwin, Krugman, 2004]. This means countries located in this area are able to impose a high CIT burden. Interestingly, each of these countries belongs to the EU-15.

Therefore, the EU-15 compensate investors with services for higher CIT rates [Devereux, Griffith, Klemm, 2002; Slemrod, 2004]. A country’s tax burden is certainly not the only
important factor driving location decisions of corporations and savers. As investors perceive CIT as the price for publicly provided infrastructure, they will accept higher CIT rates provided that the infrastructure meets their conditions. Therefore, they expect New Member States to keep CIT rates low.

Differences in Labor Taxation

It is worth noting that companies subject to CIT are never the final income taxpayer. Rather, it is the individual shareholders, who are subject to double taxation both at the company level (with CIT) and as individuals (with PIT).

This fact partially explains Miller’s model, in which the after-tax return from equity income is \((1 - CIT)(1 - PITd)\), where CIT is the corporate income tax rate and \(PITd\) is the tax rate imposed on dividends [Miller, 1977]. If instead of dividends the investor derives income from debt subject to progressive taxation, the net income would be \((1 - PITp)\), where \(PITp\) is the progressive PIT rate. Thus, as long as the following equation is met \((1 - CIT)(1 - PITd) > (1 - PITp)\) the investor should prefer to hold shares in a company rather than gain interest income. From this perspective, the investor who decides to buy shares or gain income from non-corporate sources compares (i) the after-tax returns on corporate investments (subject to CIT and subsequently PIT on dividend distribution) with (ii) after-tax non-corporate returns, which would be subject to progressive PIT tax rates but no CIT at any stage.

From a tax perspective, non-corporate sector investments could be more profitable for the majority of population as most individuals are subject to low PIT rates. However, a relatively small percentage of people with the highest incomes hold a significant number of shares in companies. Since this group is subject to high, progressive PIT rates, they may favor income from corporate sources to avoid progressive taxation. Assuming that there are more affluent people residing in the EU-15 countries this partially explains higher CIT rates in those countries than among New Member States.

CIT rates differences between the New Member States and the EU-15 could also reflect a disparity in the level of PIT rates. Namely, CIT is often seen as a progressive tax that backstops PIT. This results from the fact that some taxpayers could choose whether to pay PIT or CIT, depending on what taxation system they perceive as being more favorable to them. In the absence of CIT taxpayers who pay PIT would be incentivized to incorporate to avoid income taxation. Consequently, PIT revenues would erode. As evidence shows, CIT rates are usually higher in countries that impose high top PIT rates. Slemrod found a strong association between the top statutory CIT rate and the top statutory PIT rates in his cross-country analysis [Slemrod, 2004]. Hence, the role of CIT as a PIT backstop is reflected in practice.
EU-15 countries in general are welfare states with high redistribution objectives. Thus, they maintain progressive PIT systems and impose higher top PIT rates than New Member States, in which PIT rates for particular income brackets are lower or there is only one flat rate for all taxpayers. This is coupled with higher CIT rates, as only high CIT rates can function as a backstop for PIT and, thereby, play a role in a comprehensive progressive income taxation system. Figure 11 presents the development of the average top PIT rates for the EU-15 and New Member Countries, as well as the changes of top statutory CIT rates in those two country groups.

**FIGURE 11. Average statutory top CIT and PIT rates in EU-15 countries and EU-12**

![Graph showing average statutory top CIT and PIT rates](image)

*Source: Based on Taxation Trends in the European Union 2013.*

It is clear that EU-15 countries maintain on average both higher CIT and PIT rates than New Member States. The theory that PIT functions as a CIT backstop is consistent with higher CIT rates in the EU-15 countries.

**Tax Culture and Tax Morale**

Researchers suggest that standard economic models fail to properly grasp the tax compliance of taxpayers, which cannot be explained solely by deterrence, risk aversion, tax burden or complexity of tax regulations. For example, Alm et al. as well as Frey and Feld argue that most economic models assume too much tax evasion [Alm, McClelland,
Why the EU-15 Maintains Higher CIT Rates than the New Member States?  

Schulze, 1992; Frey, Feld, 2002]. In fact, some taxpayers do not seek ways to evade taxes and cannot be characterized as simple utility maximizers, although in certain situations evading taxes could be more favorable to them. Therefore, subjective perceptions, attitudes, expectations and the motivations of taxpayers are also important.

These facts should also have implications for CIT rate differentials in the EU. For example, Frey underlines that tax morality differs across countries [Frey, 1997]. He points, inter alia, to social norms and societal institutions, which are important determinants of tax morality and vary between states. Therefore, different levels of tax morality in the EU-15 and New Member States can partially explain the differences in average CIT rates. Assuming that tax morality is higher in EU-15, Western European countries are able to impose higher CIT rates with lower risk of tax evasion than New Member States.

Similarly, Alm and Torgler argue that tax morality should differ between countries because of cultural differences [Alm, Torgler, 2006]. For example, they found that that Northern Europe features higher tax morality than do Romanic countries. However, generally grasping the varieties and role that tax morality plays in different countries is difficult.

Moreover, Torgler and Schneider found a strong negative correlation between the shadow economy and tax morality [Torgler, Schneider, 2007]. According to their study, the lower tax morality is, the more likely that the shadow economy will be larger. They claim that if taxpayers perceive government as helpful rather than wasteful, they tend to comply with their tax obligations and remain in the official sector. Shadow economies differ in the EU and tend to be more prevalent among New Member States. Assuming that the level of tax morality follows the size of shadow economy, this also explains the need for lower CIT rates in this group of countries.

Alm and Torgler suggest that a strong relationship between trust and tax morality implies a reasonable policy strategy, in which governments should maintain well-functioning public institutions, positive public actions, and a social capital atmosphere [Alm, Torgler, 2006]. Such state behavior will be rewarded with increased tax morality and, consequently, increased tax revenues. They also suggest that democracy supports tax morality. Namely, governments that are “closer” to taxpayers should achieve better results, because taxpayers feel engaged in the political process and believe they can influence public goods. Torgler and Schneider admit that identification with government reduces the so-called free-rider problems (i.e. connected with tax evasion) [Torgler, Schneider, 2007]. Interestingly, Abed and Gupta claim that in former soviet states institutional weaknesses and corruption is a major obstacle to market reform [Abed, Gupta, 2002]. If taxpayers feel that they are being cheated, corruption is widespread, and they are not adequately protected by law, they are more inclined to be active in the informal sector and evade taxes. This cause-and-effect relationship also sheds some light on the different level of tax morality in New Member States and the EU-15 countries, in that the developed democracies of the EU-15 are able to impose higher CIT rates.
Anderson and Tollison claim that religion also supports tax morality, as it acts as a “supernatural police” [Anderson, Tollison, 1992]. Alm and Torgler found that higher church attendance leads to greater tax morality [Alm, Torgler, 2006]. Again, the post-communist New Member States (except for Poland) do not feature high religiosity.

Customs are very difficult to change, which encompasses the attitudes of economic agents to the tax law. Any amendments may incite the resistance of the local population and should therefore be introduced gradually. Usually even small modifications in the tax provisions are introduced with the use of vacatio legis, i.e., taxpayers are given some time to familiarize themselves with the new legal provisions before they become binding. Taxes have a long tradition in EU-15 countries and local citizens appreciate it. In general, state tax administration seems there also to be more responsive. Taxpayers in the EU-15 probably evade taxes less than in Central Europe, and have higher tax morality. All these features, however difficult they are to measure, suggest that on average EU-15 countries have a greater capacity than New Member States to maintain higher CIT rates.

Conclusions

Higher average CIT rates in Western Europe than in New Member States can be explained theoretically. In this article, several such theories have been highlighted and applied, including: (i) attitudes to tax competition and the requirements for new capital; (ii) economy size; (iii) legal tax bases; (iv) the wealth of particular country groups; (v) public goods available to taxpayers, the financing needs of different countries and the agglomeration externalities offered by those countries; (vi) differences in labor taxation; and (vii) tax culture and tax morality.

The primary purpose of this article is to identify and explain why governments of these country groupings impose CIT rates at different levels. A quantitative measurement of the effects of particular characteristics on specific economies is beyond the scope of this research and must await the attention of other researchers.

Notes

1 Corporate income is taxed in several EU countries by CIT and similar surcharges (i.e. in Belgium, Germany, Estonia, Greece, France, Cyprus, Hungary, Ireland, Italy, Lithuania, Luxembourg and Portugal). To render that taxation of income comparable, adjustments were made.
Why the EU-15 Maintains Higher CIT Rates than the New Member States?

A regressive tax is one in which the tax rate decreases as the amount subject to taxation increases. An example of a lump-sum tax is a real estate tax based on square meters of land or building, without distinguishing between a modern building that can bring high office space rentals from a neglected building with low quality tenants.

References


Żyżyński, J. (2009), *Budżet i polityka podatkowa*, Wydawnictwo Naukowe PWN.
Historical Roots of Generalized Trust in Polish Society

Abstract

The article analyses how historical events shape generalized trust in contemporary Polish society. The analysis consists of a set of logistic regression models. The impact of historical variables is controlled for age, sex, education and the size of the municipality. This is the first quantitative study on Poland that links historical events with the current levels of trust among Polish citizens. The common knowledge is that the Partitions of Poland had negative impact on trust. Literature on the topic hints that historical demographics should play a role too. The findings suggest that Partitions had little impact with only Greater Poland and Pomerania having lower levels of generalized trust. Historical literacy rate and the presence of Ukrainian or Belarusian population are negatively associated with generalized trust while the abrupt migrations after the World War I are positively associated. The rapid character of migration is supposed to positively impact generalized trust by forcing individuals to cooperate and rely on people with whom they have no personal ties.

Keywords: Social capital, trust, Poland, economic history
JEL: J11, N34, N44, O17, Z13

Introduction

The aim of this paper is to look for historical roots of low trust in modern Polish society. When thinking about which factors are responsible for the current state of affairs, usually Polish scholars will point at the history of the country. The list of culprits is usually the same and these are the history of partitions, two World Wars, uprisings, communism, legacy of serfdom (abolished only in XIX century) or the tradition of political anarchy in
pre-partition Poland. To pick two examples, Jerzy Regulsiki, who was responsible for the Polish 1999 municipal reform, points specifically at Partitions of Poland and communism as responsible for distrust towards the state and deficits in civic culture [Regulsiki, 2013]. Aleksander Smolar, President of the Board of Stefan Batory Foundation, argues in a very similar fashion. Namely, Partitions of Poland along with the experience of communism and military occupation are all responsible for the distrust among Poles [Smolar, 2014]. Such views are held as well among non-academics. Still, this common knowledge has not been, up to now, a sufficiently researched topic. More importantly, there are no quantitative studies which would link generalized trust or, more broadly, social capital in contemporary Polish society with the history of the country. The goal of this paper is to add to our understanding of how history shaped the current culture of low trust in Poland. The paper focuses solely on the interwar period and makes use of the data from the 1921 and 1931 Polish censuses.

Since the fall of communism Poland has experienced a considerable economic success. It was able to revamp its economy fast and push it from centrally-planned model to a market economy. Since then, it grew on average at around 4 percent, becoming one of leaders of growth in Europe. It was able to fix many of its domestic problems. In the last decade it was able to raise the quality of primary and secondary education to a level that is well above the OECD average [OECD, 2013]. Furthermore, it extended university education to many young Poles achieving a sharp rise in the number of tertiary education graduates [EACEA/Eurydice, 2012, p. 104]. Both are proofs of a large investment in human capital. In recent years, it managed to reduce economic disparities too. This can be easily highlighted by a reduction in Gini coefficient from 35.6 to 31.1 between 2005 and 2011, as reported by the Polish Central Statistical Office [GUS, 2012, p. 158]. In many ways, Poland in the last 25 years can be described as a success story.

Despite these achievements one cannot be fully optimistic about the prospects of the country as problems loom on the horizon. Similarly to other post-communist societies, Poland suffers from a low level of trust [Delhey, Newton, 2005]. People do not trust each other and are unwilling to cooperate. This goes hand in hand with a low appreciation of common good, acceptance for avoiding the law or even ordinary corruption [a good description of these negative phenomena is available in Diagnoza Społeczna, 2013]. This inability of solving collective action problems has both economic and social effects. Economy pays a hefty price of high transaction costs due to the culture of low trust. Once the perspective is shifted to the years to come, low trust may be a major hindrance in the development of a modern knowledge-based economy. Distrust generally does not go in line with innovativeness and risk-taking. On the other hand, societies where trust is abundant are among the most technologically advanced and they are home to many multinational companies as well as various start-ups (e.g. USA or Scandinavian countries).

In social terms, a society of low trust is less likely to be hospitable. Distrust will close an individual in a small group consisting primarily of relatives and close friends.
Citizens who do not trust one another show less propensity to cooperate and, if they do, such cooperation will more likely create conflict and frustration. Rent seeking appears to be an attractive choice under such circumstances. Trust is simply very important for the general well-being of the population. All in all, the importance of social capital and trust cannot be overstated. It is a major issue for both Polish society and the economy of the country.

The primary contribution of this paper is to test the hypothesis that Polish partitions in years 1795–1918 had a detrimental effect on the level of trust. This hypothesis cannot be tested directly as obviously no counterfactual is available. Still, the fact that current Poland consists of three ex-partition lands (historically controlled by Germany, Austria-Hungary and Russia) and ex-German lands joined into Poland in 1945 gives a possibility of shedding some light on the issue. The scale of differences between outcomes for each region should at least point at the scale of the impact that the partitions could potentially have.

The second contribution is the verification of hypotheses that migration, literacy rate, urbanization and ethnic composition of pre-war Poland had impact on the level of trust in contemporary Polish society. Especially, migration, literacy rate and ethnic composition are known to have impact on trust and social capital. For example immigration is known to have an “ancestor” footprint – immigrants take with them the culture of trust characteristics of their home country [Rice, Feldman, 1997; Soroka, Helliwell, 2006]. Historical literacy, are supposed to have positive effect on trust [Tabellini, 2005; Guiso, Sapienza, Zingales, 2010].

The analysis presented in this paper focuses solely on generalized trust which is a sub-component of social capital. It is measured by the standard Rosenberg question (“most people can be trusted” vs. “you can’t be too careful in dealing with people”). Other, more elaborate measures of social capital are not used in the analysis. This approach is both theory and data-driven. The Social Diagnosis [Diagnoza Społeczna] dataset used in the analysis does not offer a sufficient set of variables that allow constructing an indicator which would fit with those used in the literature. The 2013 wave of the panel has an updated set of variables which enables the construction of a more proper indicator. However, this would mean restricting the analysis only to 2013 subsample. In addition, the outcomes from the Social Diagnosis dataset show that generalized trust is only weakly correlated with other measures of social capital such as associational life, acceptance of bribery, number of acquaintances. Generalized trust is often used as a proxy for social capital because it has the most predictive power. For example, in one of his research Putnam uses a complex index of social capital based on several sources of measures. However, it is generalized trust that turns out to be most correlated with the overall index [Putnam, 2000]. For these reasons, in the paper, generalized trust is used as the proxy variable indicating of social capital.
The research on social capital and trust took off in the 1990s. Nonetheless, it has its root in the works of social scientists in previous decades. Already in the 1960s, Almond and Verba [1965] suggested to place more emphasis in political sciences on softer variables such as values and attitudes. They suggested that civic culture of citizens does play a major in tailoring the political life and a researcher should not focus narrowly on formal institutions. Pierre Bourdieu [1986] introduced the term social capital, however, he used it in a different fashion than it is done contemporarily. In essence, for Bourdieu social capital has a negative flavor. It is the cumulative sum of social networks that enables those, who are socially privileged, to preserve the preferable social structure. The notion of social capital was as well put forward by James Coleman. His influential 1988 paper shows how low social capital among parents results in increased drop-out rate among their children [Coleman, 1988].

In the last decade of XX century, social capital as a research program finally entered mainstream science. First came the study by Putnam on social capital in Italy [Putnam, 1993]. Putnam showed how differences in associational life and trust towards others can explain the rift in economic outcome and social life between Northern and Southern Italy. The regions that had less effective governments, mostly southern, could be characterized by a culture of distrust towards others and a focus on family. Putnam's argument is that these contemporary differences were shaped by centuries of different socio-economic institutions. Such view rests on an assumption that the culture of trust (or distrust) is passed from generation to generation. Research by other scholars proved that this is the case [Bjørnskov, 2007; Uslaner, 2002]. Trust is remarkably stable over time. This offers an attractive framework for research. If the current shape of civic life and trust among citizens is shaped by history then analyzing the historical roots of contemporary civic culture appears to be an attractive path for research. Another early proponent of research on trust was Francis Fukuyama [1995] who argued that the role of trust has been downplayed by economists. In his view, Japan and USA are both high-trust countries and it is trust that lies at the root of their economic success. Conversely, the underperformance of Russia or African countries stems from the low trust among their populations.

The rising wave of interest in social capital soon attracted critical views. In 1995, Robert Solow, in his comment to Fukuyama's 1995 book, criticized the over-optimism of proponents of social capital [Solow, 1995]. His argument was simple – if it is indeed a form of capital then it has to be measurable, offer non-negative economic payoff and be clearly different from human capital. It should as well be subject to investment and depreciation. In many ways, this critique is still relevant today.

associations, pinpointed by de Tocqueville in early XIX century, becomes increasingly obscure. Americans become less trusting towards their government and other citizens. Their participation in voluntary organizations is dropping as does the voter turnout. Putnam points at a few factors that are potentially responsible for this phenomenon. These are rise in TV consumption, increase in the female labor participation, rise of urban sprawl and generational change. This thesis was often disputed. Critics argued that the effect of television is overstated because the rise of TV consumption among children is a direct outcome of increased female labor participation [Bianchi, Robinson, 1997]. Others make a case that rise in women participation in the labor force and higher neighborhood heterogeneity are both responsible for the weakening of associational life [Costa, Kahn, 2003]. In a way, reduction in social capital is a by-product of removing discriminatory barriers for women and minorities. Regardless of the cause, it is true that nowadays Americans trust each other less and are less likely to participate in associations than they were half a century ago. The same pattern can be observed not only in USA but as well in many developed countries with the exception of Scandinavia [Halpern, 2005].

There is a clear link between social capital and economic growth. Countries with a higher generalized trust are more affluent. They do as well grow faster and this effect is statistically significant even when controlled for other variables [Hall, Jones, 1999; Zak, Knack, 2001]. The usual explanation is that trust increases the efficiency of social exchange. As Durlauf and Fafchamps [2005] argue, social capital can be compensation in a state where Pareto-efficient solution cannot be achieved. Social capital may reduce problems regarding imperfect information, free-riding, enforcement, negative externalities and others. An influential work by Granovetter [1975] shows how social networks are used to spread information on the job market. Barr [2000] argues that social capital is used to pass information on new technologies among entrepreneurs in Ghana. Johnson, McMillan and Woodruff [2000] show how social networks among entrepreneurs in CEE countries allow for punishing those who break contracts.

There are many proofs that social capital and trust are passed from generation to generation. Uslaner [2002] and Delhey and Newton [2005] show that country scores on generalized trust are very stable over time. Furthermore, trust is positively correlated with historical levels of education and a history of political participation [Guiso, Sapienza, Zingales, 2010]. On the other hand, factors that are negatively correlated are community heterogeneity and immigration [Alesina, La Ferrara, 1999, 2002]. Major historical events have impact too. Nunn and Wantchekon [2009] show how history of slave trade in Africa had negative effects on generalized trust.

One of the important findings is that family values are negatively correlated with generalized trust, civic and political engagement [Alesina, Giuliano, 2009]. Ermisch and Gambetta [2010] use the idea of “outward exposure” as an umbrella term for all the factors that force an individual to cooperate with people outside their family. They argue that even negative experiences, such as divorce, that loosen family ties will lead to increased
generalized trust. Two reasons are responsible for such mechanism. Firstly, an individual cooperating with people who are not members of the family is able to learn how to distinguish the trustworthy from those who can potentially cheat. Secondly, once the family ties become weak, one has no other choice but to rely on others. An interesting finding that supports this concept is presented by Durante [2009]. He shows that historical rainfall and temperature variability for years 1500–1750 is positively associated with generalized trust in contemporary European societies. If the weather is unpredictable then it makes little sense to rely solely on your close family for support. After all, if the crops turn out bad then this will hit the whole family. In such a case one has to depend on others in order to hedge for unpredictable weather.

In Polish literature, research on social capital was popularized by Janusz Czapiński [2007]. His main take away is that Poland lacks social capital and trust among citizens what, in effect, becomes a major obstacle in the development of a modern knowledge-based economy. This point seems, unfortunately, to be true in many respects. Poland, along with other post-soviet economies, shows a very low level of social trust [Kääriäinen, Lehtonen, 2006]. Other Polish scientists come to a similar conclusion [Growiec, Growiec, 2011; Węziak-Białowolska, 2010]. Poles do not trust one another and they do not participate in associations.

Why is it so? The usual suspects are communism and the history of partitions of Poland. While it is hard to test the impact of communism, the impact of partitions can be to some extent verified. The country lost its independence in a series of annexations from 1772 to 1795 and regained it after the World War I. For over one century the country was divided into three different political entities with distinct political and economic institutions. In XIX century, Prussia was a rapidly modernizing country with a booming economy. Austro-Hungary was a melting pot of different nations and a relatively lower level of centralization. Russia was a large empire but relatively backward in economic terms and characteristic for its authoritarian political culture. If trust and social capital are historically-rooted then each partition should be affected in a different way, depending on the institutional and cultural framework prevailing in each of the three partitioning countries. This effect is weakened due to the fact that the borders of Poland shifted in the last 100 years and the population experienced large forced repatriations. Nonetheless, the Social Diagnosis panel with its sizable sample offers a possibility to test this hypothesis.

Other, potentially important historical factors, are ethnic diversity, literacy rate and urbanization. The interwar Poland was a multiethnic country with its citizens speaking different languages and following different religions. Polish Roman Catholics constituted only two-thirds of the population and Jews, Ukrainians, Belarusians and Germans constituted significant minorities each. These communities were partly segregated by language, religion and social stratum and as such their civic culture ought to have distinct features. Historical literacy rate is known to be positively related to generalized trust [Tabellini,
Urbanization may not have direct effect on trust but it can mediate with effects of other demographic variables like ethnicity.

Finally, another factor that should be taken into account is migration. Poland experienced large flows of population after the World War I. Many Germans who found themselves living within Polish borders decided to leave and move to Weimar Republic. On the other hand, many Poles returned to Poland either from immigration in the West or from Soviet Union. Many Jews fled from Soviet Union to Poland too [Gawryszewski, 2005]. These migrations should have impact on the level of trust. Migrants take with them their culture of trust (or distrust) [Dohmen, Falk, Huffman, Sunde, 2007]. These effects tend to be lasting – for example, there exists a strong relation among citizens in USA between their current civic culture and the civic culture of European nations from which their ancestors came [Rice, Feldman, 1997].

Method

The survey data used in the analysis comes from Social Diagnosis [Diagnoza Społeczna] and covers waves 2009, 2011 and 2013. Choosing these particular waves is data-driven. Firstly, since 2009 the panel grew considerably in size what makes waves from 2009 onwards especially valuable. Secondly, the selection of questions in the panel varied over different years and thus it makes sense to keep only a sufficient number of waves, not more.

Both the 1921 and the 1931 Polish Censuses offer data at the powiat level. These were matched with current powiats. The general rule for matching powiats is as follows:
1. If both powiats, the pre-war and the current one, have the same capital, then these are matched together.
2. If a powiat has a different capital but is mostly within the borders of a pre-war powiat then these two are matched together.

These two rules were sufficient to match over 90 percent of powiats. In a few ambiguous cases the matching was constructed arbitrarily (e.g. an average of two powiats). Once the matching was done, 268 out of 380 contemporary powiats had their counterpart for the 1931 Census and 248 had a match for the 1921 Census. The lower number of matches for 1921 Census is caused by the fact that Silesia was not yet a part of Poland at the time of the 1921 census. Those powiats which were not within Polish borders prior to World War II do not have any matches and are used only in the beginning stages of the analysis. There are 112 of them and all were incorporated into Poland after the World War II. Prior to 1945 they constituted a part of Germany.

The data on ethnic minorities, literacy rate and on urbanization in the interwar Poland were taken from the 1931 Polish Census. Data on migration after the World War I were taken from the 1921 Census.
1. Ethnicity. Religion is used as a proxy for ethnic composition. Roman Catholics are classified as Poles, Protestants as Germans, Orthodox Christians as Belarusian, Greek Catholics as Ukrainian and followers of Judaism as Jews. Belarusians and Ukrainians were merged into one category because both were mostly rural population living in Eastern Poland. There is no reason to claim they should have different levels of trust as their socio-economic status was very similar.

2. Literacy rate. Defined as the share of population that can both read and write.


4. Migration. Share of population that was born in the municipality was used as proxy for migration. Those who were not born in the municipality were split into two categories – those who live in there less than 10 years and those who live there longer. Those who live less than 10 years are supposed to be the result of the post-World War I migration and repatriation.

The analytical approach presented in the paper is based on logit regressions. This is due to the fact that the measure of generalized trust used in Social Diagnosis is binary (“most people can be trusted” vs. “you can’t be too careful in dealing with people”). The impact of historical variables is controlled for a set of control variables. The regressions capture the effect of historical variables separately (Table 1) as well as include interactions (Table 2).

Results

The analysis presented in this section consists of a set of logit regressions and table 1 shows models where each historical variable is introduced separately. Each time control variables are used. The basic model covers age, age squared, sex, size of municipality and years of education (column 1). All of these variables are statistically significant. However only two play a major role – these are age and education. More educated Poles are more trusting which is in line with findings in literature on social capital [Alesina, Giuliano, 2009; Guiso, Sapienza, Zingales, 2003]. As well, Poles aged 15–20 are more trusting than all other age groups and this fact lays behind the non-linear character of the age-trust relationship. The phenomenon of higher trust among teenagers was already highlighted by Czapiński [2007]. It is as well frequent among post-soviet societies. This raises important questions about the transmission of trust. Guiso, Sapienza and Zingales [2007] suggested a transmission mechanism where parents transmit a conservative prior to their children. It is only due to interactions with others in the society that children learn to be more trusting. This pattern of conservative priors does not take place in Poland. In the case of Polish society, teenagers aged 15 show a higher level of generalized trust which drops as they age and by the age of 25 reaches the low level of trust characteristic for the overall population. This drop can be both seen on figure 1 and in any of the regression models reported in the paper.
Given this evidence, it may suggest to assume that children receive neutral priors and once they grow up they learn to either trust or distrust depending on the culture prevalent in a society. In high-trusting societies children would learn to trust more in their adolescence. In low-trust societies they would learn to distrust. Such theory would fit both the findings obtained when analyzing Western societies and post-communist ones.

**FIGURE 1. Generalized trust across age groups**

Column 2 shows a model which tests the impact of Polish partitions. None of the outcomes are statistically significant. This gives support to the view that the history of partitions had less, if any, impact on trust. Still, it must be remembered that it is only an indirect way of testing this hypothesis because the true counterfactual is not available. There is simply no possibility to compare the current society to a society were partitions did not happen at all and the XIX-century Poland was self-governed by Poles.

Ethnic composition does play a role and the Eastern regions of Poland which historically had Belarusian of Ukrainian minorities show a lower level of trust (column 3). When ethnic composition is added into the model the size of the municipality becomes statistically insignificant. Regions with German minorities exhibit a lower level trust too but this relationship is weaker. Ethnicity often plays a role in research conducted in other countries. In this case, however, it is not clear why the areas with a higher ratio of Belarusians and Ukrainians should exhibit lower trust.
The pre-war urbanization rate is positively associated with current levels of generalized trust (column 4). On the other hand, literacy rate is negatively associated with trust. This is against findings in the literature. Usually, historically higher literacy rate is associated with higher levels of trust [Guiso, Sapienza, Zingales, 2010]. Even the current education level measured by years of schooling has a strong positive relationship. Maybe this is the effect of war and communism – better educated population had a much higher chance of being targeted by persecution. But this remains only a hypothesis which is not tested here. Finally, migrations, both associated with the World War I and in the period before the War, had no impact on current levels of trust (column 5).

### TABLE 1. Impact of historical factors

<table>
<thead>
<tr>
<th>Dependent variable: Generalized trust</th>
<th>(1)</th>
<th>(2)</th>
<th>(3)</th>
<th>(4)</th>
<th>(5)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intercept</td>
<td>−1.917</td>
<td>−1.905</td>
<td>−2.053</td>
<td>−1.969</td>
<td>−2.054</td>
</tr>
<tr>
<td></td>
<td>(0.094)</td>
<td>(0.095)</td>
<td>(0.113)</td>
<td>(0.128)</td>
<td>(0.128)</td>
</tr>
<tr>
<td>Age</td>
<td>−0.030***</td>
<td>−0.030***</td>
<td>−0.034***</td>
<td>−0.034***</td>
<td>−0.034***</td>
</tr>
<tr>
<td></td>
<td>(0.003)</td>
<td>(0.003)</td>
<td>(0.004)</td>
<td>(0.004)</td>
<td>(0.004)</td>
</tr>
<tr>
<td>Age – squared</td>
<td>0.000***</td>
<td>0.000***</td>
<td>0.000***</td>
<td>0.000***</td>
<td>0.000***</td>
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<tr>
<td></td>
<td>(0.000)</td>
<td>(0.000)</td>
<td>(0.000)</td>
<td>(0.000)</td>
<td>(0.000)</td>
</tr>
<tr>
<td>Gender</td>
<td>−0.100***</td>
<td>−0.100***</td>
<td>−0.084***</td>
<td>−0.084***</td>
<td>−0.084***</td>
</tr>
<tr>
<td></td>
<td>(0.022)</td>
<td>(0.022)</td>
<td>(0.025)</td>
<td>(0.025)</td>
<td>(0.025)</td>
</tr>
<tr>
<td>Municipality size</td>
<td>−0.018**</td>
<td>−0.018**</td>
<td>0.004</td>
<td>0.012</td>
<td>−0.004</td>
</tr>
<tr>
<td></td>
<td>(0.006)</td>
<td>(0.006)</td>
<td>(0.008)</td>
<td>(0.011)</td>
<td>(0.009)</td>
</tr>
<tr>
<td>Years of education</td>
<td>0.082***</td>
<td>0.082***</td>
<td>0.091***</td>
<td>0.091***</td>
<td>0.091***</td>
</tr>
<tr>
<td></td>
<td>(0.004)</td>
<td>(0.004)</td>
<td>(0.004)</td>
<td>(0.004)</td>
<td>(0.004)</td>
</tr>
<tr>
<td>Pre-war Germany</td>
<td>−0.009</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.029)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>German partition</td>
<td>−0.035</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.029)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Austrian partition</td>
<td>−0.008</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.032)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Jews</td>
<td>0.002</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.001)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ukrainians, Belarusians</td>
<td>−0.006**</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.002)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Germans</td>
<td>−0.006*</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.003)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Urbanization</td>
<td>0.001*</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.001)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
To capture interactions, the models in table 2 use a gradually increasing number of variables. Models 1–3 test ethnicity, literacy rate, urbanization and migration together with the Partitions of Poland. Model 4 uses partitions, ethnicity, urbanization and literacy rate and model 5 uses all of the variables.

Ethnicity is still relevant when additional variables are being added. When controlled for partitions, regions with a higher ratio of Ukrainians, Belarusians and Germans still show a lower level of trust (column 1). The same is true for lower levels of trust associated with a higher literacy rate in the interwar period (column 2).

Interestingly, when the effect of migration is controlled for partitions it becomes statistically significant (column 3). It is the migration in years 1911–1921 that has a strong positive effect on current levels of trust. The migration before 1911 does not have any effect. Furthermore, the effect of German partition becomes negative and statistically significant. This should be faced with historical facts. At the end of World War I many Germans lived in Greater Poland and Pomerania. In some areas they constituted the majority of the population. Once these lands where joined into Poland many of them migrated to Weimar Republic and Poles migrated to fill the void [Gawryszewski, 2005, pp. 302–305]. The parameters from model 3 can be interpreted as follows – the overall level of trust in Greater Poland and Pomerania is lower than in other regions but in the areas which experienced large influx of Polish migrants the level of trust is higher. This suggests that a large influx of migrants allowed to weaken the grip of low-trust cultural traits in the community. The outcomes presented in column 3 and 5 suggest that such mechanism is plausible and that it is not immigration per se but its disrupting effect it has on the cultural patterns. The fact that migration prior to 1911 had no impact supports this view. A gradual migration
has no effect because when immigrants arrive gradually then they are much more likely
to adapt to local culture. If the migration is large and abrupt then the impact on overall
culture in the community should be much larger. An alternative explanation is that large
migrations are only an indicator of large share of German population and that it is the
German culture that left the positive effect of higher trust. This explanation, however, does
not fit the data. Protestantism, the proxy for German minority, is not positively associ‑
ated with trust (columns 1, 4, 5). In addition, the fact that the regions of Greater Poland
and Pomerania, which belonged to Prussia, have lower levels of trust does not support
the idea of positive impact of German culture either. It should be noted that this finding
fits the outward exposure hypothesis [Ermisch, Gambetta, 2010]. Large and rapid influx
of newcomers simply forces locals to cooperate with people who they do not personally
know what, in effect, raises generalized trust among the citizens.

A model with all the variables included reiterates previous findings (column 5). It is the
migration in years 1911–1921 and ethnicity that do have impact. Literacy rate and German
partition have impact as well but it is weaker and urbanization has no impact at all.

| TABLE 2. Impact of historical factors (interactions between variables) |
|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
|                          | (1)                      | (2)                      | (3)                      | (4)                      | (5)                      |
| Intercept                | –2.065                   | –1.970                   | –2.242                   | –1.984                   | –2.196                   |
|                          | (0.123)                  | (0.128)                  | (0.135)                  | (0.134)                  | (0.154)                  |
| Age                      | –0.034***                | –0.034***                | –0.034***                | –0.034***                | –0.033***                |
|                          | (0.004)                  | (0.004)                  | (0.004)                  | (0.004)                  | (0.004)                  |
| Age – squared            | 0.000***                 | 0.000***                 | 0.000***                 | 0.000***                 | 0.000***                 |
|                          | (0.000)                  | (0.000)                  | (0.000)                  | (0.000)                  | (0.000)                  |
| Gender                   | –0.084***                | –0.084***                | –0.084***                | –0.084***                | –0.084***                |
|                          | (0.025)                  | (0.025)                  | (0.025)                  | (0.025)                  | (0.025)                  |
| Municipality size        | 0.005                    | 0.014                    | 0.010                    | 0.017                    | 0.025                    |
|                          | (0.010)                  | (0.011)                  | (0.010)                  | (0.012)                  | (0.013)                  |
| Years of education       | 0.091***                 | 0.091***                 | 0.091***                 | 0.091***                 | 0.091***                 |
|                          | (0.004)                  | (0.004)                  | (0.004)                  | (0.004)                  | (0.004)                  |
| German partition         | 0.011                    | 0.020                    | –0.249***                | 0.035                    | –0.153*                  |
| (for col. 3 and 5 Silesia excluded) | (0.046)                  | (0.033)                  | (0.054)                  | (0.048)                  | (0.068)                  |
| Austrian partition       | 0.004                    | 0.027                    | 0.011                    | 0.038                    | 0.057                    |
|                          | (0.033)                  | (0.035)                  | (0.033)                  | (0.036)                  | (0.037)                  |
| Jews                     | 0.002                    |                         | 0.001                    | 0.002                    |
|                          | (0.002)                  |                         | (0.002)                  | (0.002)                  |
### Historical Roots of Generalized Trust in Polish Society

<table>
<thead>
<tr>
<th>Dependent variable: Generalized trust</th>
<th>(1)</th>
<th>(2)</th>
<th>(3)</th>
<th>(4)</th>
<th>(5)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ukrainians, Belarusians</td>
<td>−0.006**</td>
<td>−0.006**</td>
<td>−0.005**</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.002)</td>
<td>(0.002)</td>
<td>(0.002)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Germans</td>
<td>−0.006*</td>
<td>−0.004</td>
<td>−0.006</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.003)</td>
<td>(0.003)</td>
<td>(0.004)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Urbanization</td>
<td>0.001*</td>
<td>0.001</td>
<td>0.000</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.001)</td>
<td>(0.001)</td>
<td>(0.001)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Literacy rate</td>
<td>−0.003**</td>
<td>−0.003**</td>
<td>−0.002*</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.001)</td>
<td>(0.001)</td>
<td>(0.001)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pre-IWW immigrants – over 10 years in municipality</td>
<td></td>
<td>−0.003</td>
<td>−0.002</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>(0.004)</td>
<td>(0.004)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>IWW immigrants – less than 10 years in municipality</td>
<td></td>
<td>0.010***</td>
<td>0.010***</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>(0.002)</td>
<td>(0.002)</td>
<td></td>
<td></td>
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</table>

<table>
<thead>
<tr>
<th>Observations</th>
<th>52715</th>
<th>52715</th>
<th>52715</th>
<th>52715</th>
<th>52715</th>
</tr>
</thead>
<tbody>
<tr>
<td>R² – Cox and Snell</td>
<td>0.012</td>
<td>0.012</td>
<td>0.012</td>
<td>0.012</td>
<td>0.013</td>
</tr>
<tr>
<td>R² – Nagelkerke</td>
<td>0.021</td>
<td>0.021</td>
<td>0.022</td>
<td>0.022</td>
<td>0.022</td>
</tr>
</tbody>
</table>

Logit regressions. *, ** and *** indicates significance at the 0.05, 0.01 and 0.001 level. For analyses with data from 1931 and 1921 censuses the area of pre-war Germany was excluded. There is no data for Silesia in the 1921 census. As such in models 3 and 5 Silesia is used in the analysis but flagged as no response. In effect, the parameter for German partition is only for Pomerania and Greater Poland regions. Dummy variables for panel waves are included.

Source: own elaboration.

### Conclusion

The outcomes presented in this paper suggest that social capital, as measured by generalized trust, in the modern Polish society does have roots in the past. Some of the findings fit into the intuitive understanding of how things played out in the past. Others contradict the outcomes usually founded in the literature.

The first hypothesis stated that partitions had potentially negative impact on social trust. However, the analysis presented in the paper gives little support for this view. There are little differences in generalized trust between three Polish partitions and ex-German lands. Once controlled for migration after the World War I, Greater Poland and Pomerania turn out to have slightly lower levels of trust. This depicts a story of only a lukewarm effect of Polish Partitions. Unfortunately, this is only an indirect proof because we can-
not compare the outcomes with the true counterfactual which in this case would be the outcome for a Poland without the experience of partitions.

Other characteristics of the interwar Polish society do interplay with contemporary levels of trust. Those regions which historically had a higher share of Ukrainians and Belarusians show a lower level of trust. Interestingly, regions with a higher literacy rate during the interwar period exhibit lower level of trust. The latter outcome is surprising as it goes against the findings common in the literature [Guiso, Sapienza, Zingales, 2010]. These two effects are not very strong but statistically significant. There is no obvious mechanism that would explain how literacy and ethnicity would impact trust in such a way.

Finally, migration proves to have impact on trust too. The migrations and repatriations during and post-World War I prove to have positive impact on trust in modern Polish society. This can be explained by the outward exposure hypothesis [Ermisch, Gambetta, 2010]. Large influx of newcomers forced the local population to cooperate with newcomers and, in effect, loosened the grip of the low-trust culture. It is not the effect of migration per se because the migrations prior to World War I did not have that impact. It is the abrupt influx of large numbers of citizens that is able to loosen the grip of low-trust culture. It cannot be explained by the legacy of German minority who lived in the high-migration regions. The proxy for German minority – share of protestants in the powiat – turns out not to be significant. These findings suggest that an abrupt migration post World War I was able to alleviate generalized trust via the effect of outward exposure.

**Further Research**

As the paper shows, the analysis of historical data is a promising venue for the research of determinants of trust and social capital in Polish society. A promising idea is to verify the impact of socio-economic life in rural areas in the early industrial or pre-industrial Poland. The main problem here is, naturally, the availability of data. This paper’s focus on interwar Poland was mainly driven by the availability of data in 1921 and 1931 censuses. So the numbers are in one place and ready to use. Any analysis that goes further into the past will encounter problems with collecting the data. It may require collecting scant information from various sources.

Another promising venue is to analyze the impact of communism. Here there is plenty of data. Such analyses are usually done by country comparison. This approach was taken by many scholars. However, it sets limits to the analysis because the sample of countries which can be included is small. If the goal is to focus solely on Polish society then another problem arises. Namely, there is no counterfactual available because the whole Polish society experienced communism. A way to overcome this limitation is to identify variables which could serve as proxies for the impact of communism. It is not hard to imagine variables
which could to some extent achieve this goal. Profession is a good candidate, as it can be argued that some areas of professional life were more tainted by communism than others (e.g. state agricultural farms or heavy industry versus small private enterprises that were allowed to function even during communism). Age is another candidate. If communism is responsible for distrust among Poles then this should have a cohort effect. Those who lived under communism should exhibit lower levels of trust. Still, the use of such proxy variables would require a comprehensive theoretical background in order to be reliable.

References


Delhey, J., Newto, K. (2005), Predicting cross-national levels of social trust: global pattern or Nordic exceptionalism?, *European Sociological Review*, 21, pp. 311–327.


Growiec, K., Growiec, J. (2011), Trusting only whom you know, knowing only whom you trust: the joint impact of social capital and trust on individuals’ economic performance and happiness in CEE countries, National Bank of Poland, Working Paper 94.


OECD (2013), PISA 2012 Results in Focus, PISA, OECD Publishing.


Regulski, J. (2013), Bolesna samorządowa czkawka (Painful hiccup of local administration), Dziennik Gazeta Prawna, November 11–13, A2.


Smolar, A. (2014), Polacy sobie nie ufają (Poles do not trust one another), Fakt, February 5.


Tabellini, G. (2005), Culture and institutions: economic development in the regions of Europe, CESifo working papers, No. 1492.


W ostatnich miesiącach trwała w Polsce ożywiona dyskusja na temat OFE zarówno wśród ekonomistów, jak i polityków. Miała ona czasami charakter pozaekonomiczny i odwoływała się do przestrzegania zasad konstytucyjnych lub do haseł o charakterze czysto populistycznym. Recenzowana książka ma charakter *par excellence* naukowy i jest bardzo dobrze udokumentowana (w książce jest 378 przypisów odsyłających do źródeł i dodatkowo objaśniających właściwy tekst książki) zarówno jeśli chodzi o dokumenty źródłowe, jak i wypowiedzi różnych autorów (przede wszystkim znanych profesorów ekonomii, ale także wielu polityków), a także liczne kompetentne komentarze własne Autorki książki na tematy związane z OFE.

Autorka książki jest znaną i cenioną specjalistką w dziedzinie, której dotyczy recenzowana pozycja. Opublikowana Ona wiele różnego rodzaju tekstów na ten temat (także w naszych „Zeszytach Naukowych” – patrz Zeszyt nr 38/2013, ss. 102–122) zawsze na wysokim poziomie merytorycznym oraz bez jakiejkolwiek propagandy czy stronniczości.

Recenzowana książka składa się z uwag wstępnych, sześciu logicznie po sobie następujących rozdziałów, syntetycznego podsumowania i bogatej bibliografii (w sumie 205 różnego rodzaju pozycji).
Rozdział I ma charakter wprowadzający w zagadnienia związane z OFE i ukazuje zwłaszcza ogromną rolę międzynarodowych instytucji finansowych w procesie prywatyzacji emerytur w różnych krajach.

W rozdziale II Autorka pokazuje proces odwrotu od prywatyzacji emerytur w krajach Ameryki Południowej i w Europie Środkowo-Wschodniej oraz przyczyny tego zjawiska.

W rozdziale III, dotyczącym OEF w Polsce, znajdujemy cytat jednego z polskich znanych ekonomistów, który stwierdził: „do dziś nie wiem jednak, czym – poza materialnym interesem garstki przewidujących spryciarzy i bezzwłocznością reformatorów – reformę tę można usprawiedliwić?” (s. 207). Po dokładnym przestudiowaniu recenzowanej książki, mogę stwierdzić, że w pełni podzielam powyższy pogląd.

Rozdział IV to bardzo ponury obraz zagrożeń dla finansów publicznych państwa, jakie niesie ze sobą immanentnie prywatyzacja emerytur. A jeszcze bardziej ponury obraz zarysowany został w następnym rozdziale książki, gdzie Autorka pokazuje źródła ryzyka dla przeszłej emerytury w systemie dwufilarowym.

Wreszcie ostatni rozdział książki pod znamiennym i sugestywnym tytułem: „Kiedy Polska uwolni się od OFE?”. Rozdział ten wymaga pewnego uzupełnienia i aktualizacji od recenzenta. Otóż, jak wynika ze sprawozdań przesyłanych do Komisji Nadzoru Finansowego, ok. 40 osób zasiadających w zarządcach Otwartych Funduszy Emerytальных zarobiło w 2012 r. łącznie 24,5 mln PLN. Przeciętnie dostali oni po 6 tys. PLN podwyżki. Średni roczny zarobek tych osób wyniósł 636 tys. PLN (uwzględniając nie tylko pensję, ale też premie roczne i inne świadczenia), co daje średnio 53 tys. PLN miesięcznie, czyli wzrost wyniósł 13%, bo w 2011 r. było to 47 tys. PLN. A w 2012 r. przeciętne zarobki w Polsce zwiększyły się tylko o 3,5% – do kwoty 3.591 PLN; inflacja w tym czasie wyniosła bowiem 3,6%.

A co się działo w przypadku rad nadzorczych OFE? W sumie OFE „przejadły” w ciągu swego istnienia ponad 17 mld PLN, czyli prawie 1,5 mld PLN rocznie. Te kwoty chyba nie wymagają komentarza?!

Z obowiązku wnikliwego recenzenta pragnę zwrócić uwagę na kilka drobnych usterek, głównie o charakterze redakcyjnym. Otóż w całej książce Autorka nadużywa pojęcia „sektor”, pisząc przekładowo o: „sektorze finansowym” (s. 43 i dalsze), który jest przecież częścią sektora usług, a więc sam nie może być sektorem; „sektorach technologicznych” i „sektorze informatycznym” (s. 57); „sektorze ochrony zdrowia” (s. 72) czy o „sektorze bankowym” (s. 152), a nawet o „gigantycznym przemysle(?) finansowym” (s. 61), a – jak powszechnie wiadomo – począwszy od J. Fourastiégo, C. Clarka, A.G.B. Fishera i S. Kuznetsa w gospodarce mamy – póki co – do czynienia jedynie z trzema wyraźnie wyodrębnionymi sektorami, tzn. najogólniej rzecz ujmując: I sektor – rolnictwo, II – przemysł przetwórczy oraz III – usługi (vide: E. Kwiatkowski, Teoria trzech sektorów. Prezentacja i próba oceny, PWN, Warszawa 1980). Co prawda, niektórzy autorzy – zwłaszcza amerykańscy marketingowcy – wszystko, co analizują, nazywają sektorami i sektory te
Włodzimierz Januszkiewicz

dziela na sektory, a te sektory na kolejne sektory – ale należy zwrócić uwagę, że w języku angielskim, a zwłaszcza amerykańskim, słowo „sector” ma wiele znaczeń i może oznaczać nie tylko sektor, ale także dział, branżę, segment czy gałąź gospodarki, natomiast przy tłumaczeniu na język polski należy – w zależności od kontekstu – używać pojęć zgodnych z przyjętą w Polsce terminologią, aby uniknąć nieporozumień.

Autorka czasami niejednolicie używa pojęć geograficznych: „Europa Środkowo-Wschodnia” oraz „kraje Europy Środkowej i Wschodniej”. Przykładowo na s. 162 raz pisze Ona o „Europie Środkowej i Wschodniej”, a innym razem – o „Europie Środkowo-Wschodniej”. Tych niejednolitości jest nieco więcej. Dotyczą one także pisowni nazw walut. Raz Autorka pisze „USD”, innym razem – „dol.” lub „dolarów”, analogicznie „EUR” lub „Euro” i „euro” (np. na s. 57 i dalszych), podczas gdy wiemy, że euro i dolar amerykański – to nazwy walut, a skrótów międzynarodowych walut ISO używamy wtedy, gdy podajemy konkretne kwoty wyrażone w tych walutach. W kilku miejscach Autorka pisze o „handlu towarami i usługami” (np. na s. 56), co mogłoby sugerować, iż uważa Ona, że usługi będące przedmiotem handlu nie są towarami?

W książce jest kilka złośliwych błędów literowych. Przykładowo na s. 13 jest „pod palmami”, zamiast „pod plamami”, a na s. 224 – „postawiły one przez Polską”, zamiast „przed Polską”. O błędach interpunkcyjnych poinformuję Autorkę osobiste przed podjęciem przez Nią prac nad II wydaniem recenzowanej książki, do którego niewątpliwie dojdzie, gdyż cieszy się ona wielkim zainteresowaniem Czytelników (a także publikowane są liczne recenzje książki, w których zawarte są różnego rodzaju uwagi, z których Autorka zapewne skorzysta). Ponadto pojawiają się nowe fakty, o których Autorka z pewnością zechce poinformować.

Reasumując, pragnę przypomnieć, iż obecnie działa 14 OFE (łącznie istniało 21 tego typu podmiotów). Mam jednakże nadzieję, że ich liczba jeszcze spadnie, biorąc pod uwagę fakt, że ostatecznie w OFE pozostało ponad 2 mln Polaków z około 16,7 mln do tego uprawnionych, co może wynikać z następujących przyczyn:

- braku pełnej wiedzy o funkcjonowaniu OFE i ich negatywnego wpływu na stan finansów publicznych naszego kraju,
- chęci rozłożenia ryzyka na dwie instytucje emerytalne,
- zrobienie na przekór rządowi.

Na zakończenie warto dodać, że recenzowana książka zajęła pierwsze miejsce w konkursie Economicus (odbywającego się pod patronatem NBP) na najlepszą książkę ekonomiczną roku.