

# Standardization Policy of the EU

## The Impact of Standards and Technical Regulations on Trade and Welfare of New Member States<sup>1</sup>

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The EC Treaty prohibits technical barriers to trade (TBT) in general. However, there are some exceptions allowing for the existence of technical regulations, which can create a barrier to trade, on the grounds of consumer protection, public morality or security. The approach of the EU to the removal of TBT is twofold. It bases either on (i) Mutual Recognition Principle (MRP) or on (ii) harmonization. The latter is based on the legislative unification of standards and regulations among the Member States. Since the mid-eighties, the EU is developing the New Approach (NA), which bases on setting only essential requirements for the most important characteristics of the products. The new Member States (NMS) of the EU had to adapt their technical regulations to the standardization policy of the EU. The questionnaire-based research made among Polish companies after the enlargement shows that the compliance costs were moderate and the adaptation process is already completed. Therefore, one can expect welfare gains for NMS.

In order to assess these gains we performed a computable general equilibrium simulation. The analysis demonstrates that accession to the EU can have important welfare effects. For smaller NMS the simulated GDP increases range from 1.4% to 1.6%, whereas for Poland the simulated change is equal to 1%.

### A. Approaches to the Harmonization Policy in the WTO and EU

According to International Standardization Organization

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standards are documented agreement containing technical specifications or other precise criteria to be used consistently as rules, guidelines and definitions of characteristics to ensure that materials, products, processes are fit for their purpose.<sup>2</sup>

Common standardization policy leads to establishment of common technical regulations and standards.

The Agreement on Technical Barriers to Trade (TBT Agreement)<sup>3</sup> of the World Trade Organization (WTO) clearly distinguishes between standards and technical regulations. The difference lies in compliance. While technical regulations are mandatory, conformity with standards is only voluntary.<sup>4</sup> Therefore, technical regulations and standards, despite many similarities, have different impact on international trade. If an imported product does not fulfill the requirements of a technical regulation, it will not be allowed to be put on sale. In case of standards, non-complying imported products will be allowed on the market, but then volume of sales may be affected if consumers prefer products that meet particular standards.

The European Union defines technical barrier to trade as a situation when a producer from one Member State who wants to sell his/her product in another Member State must meet different technical regulations (or standards). A situation when a product needs additional testing or certification procedure before it is allowed to be marketed in another country is also considered a technical barrier to trade (TBT).<sup>5</sup>

The approach of the European Union to the removal of TBT is twofold. It bases either on (i) Mutual Recognition Principle (MR, MRP) or on (ii) Harmonization. The MRP states that any product legally manufactured and marketed in one country of the EU must be allowed free entry in any other market of the EU. The Harmonization approach applies when the MRP fails to work. It is based on the unification of standards and regulations among the Member States.

Harmonization of standards is needed when the MRP fails to remove technical barriers to trade, i.e. when the Member States do not want to recognize each other standards and regulations. The evolution of harmonized regulations is quite

<sup>2</sup> D. Hanson, CE Marking, Product Standards and World Trade 5 (2005). Definition provided by the International Standards Organization.

<sup>3</sup> Agreement on Technical Barriers to Trade (TBT Agreement), World Trade Organization, Geneva (1995).

<sup>4</sup> The TBT Agreement, Annex 1. A more precise definition of technical regulation was provided the Appellate Body in report on the EC – Asbestos case. It was clarified that "... a *technical regulation* is a *document* which must *lay down* [that is, set forth, stipulate or provide] *product characteristics*." Emphasis added. The word 'characteristic' of a product include, in their view, any objectively definable 'features', 'qualities', 'attributes', or other 'distinguishing mark' of a product. Such 'characteristics' might relate, inter alia, to a product's composition, size, shape, colour, texture, hardness, tensile strength, flammability, conductivity, density, or viscosity. These examples indicate that 'product characteristics' include, not only features and qualities intrinsic to the product itself, but also related 'characteristics', such as the means of identification, the presentation and the appearance of a product.

<sup>5</sup> European Commission, The Single Market Review, Dismantling of Barriers. Technical Barriers to Trade. Sub-series III: Vol. 1, at 17 (1998).

impressive. In 1975 there were 20 EU-wide (i.e. common for all states) regulations. In 1999 – almost 5500. In principle, harmonization relies on the superiority of the EU law over national law. There are two approaches to harmonization in the European Union. The traditional, Old Approach and the more recent, New Approach. Both will be discussed below.

The traditional approach of the EU to harmonization is often called the Old Approach (OA). It gives a very detailed instruction on the characteristics of a product as well as on the process of its production. Most of the Old Approach directives apply only to narrow product groups and to specific health, environmental and safety characteristics.

One problem with the OA is that it is time consuming. It is very difficult for all Members States to reach a compromise on the final shape of the legislation. In order to reach a common set of standards, some (usually all) countries must change their legislations. This can be costly for the firms from those countries. Therefore each country would like to have common standards as similar as possible to their own standards in order to minimize adjustment costs for their domestic firms. At the moment the OA directives are applied mostly in sectors such as chemicals, pharmaceuticals, food processing, labeling and motor vehicles. Health and safety requirements are especially important in these sectors. In other sectors the OA is replaced by the New Approach directives.

Since the mid-eighties of the 20<sup>th</sup> century the EU is shifting slowly towards the so-called New Approach (NA) to harmonization, which was formally initiated by the Council Resolution of 7 May 1985 on a New Approach to Technical Harmonization and Standardization. It is based on setting only essential requirements for the most important characteristics of the products. NA directives apply to groups of products with similar characteristics, when national legislations differ.

The New Approach (compared to the OA) makes it easier for the producers to declare conformity with the EU technical regulations. Therefore it improves the efficiency of the European standardization bodies. For practical purposes, NA requires the appointment of Notified Bodies for testing and certification. There is also an EU conformity-assessment procedure, which enables manufacturers to ensure their products meet all the relevant obligations. The role of these bodies is defined by each NA directive. This leads to greater cooperation between the testing and certifying bodies established in each country. Since these are product standards and not technical regulations, their use is voluntary and manufacturers are free to use other means to meet essential requirements.

The visible effect of the New Approach is the CE-marking of products. Every product that meets all relevant requirements and conforms all relevant directives is affixed the CE-mark by either manufacturer or importer established in the European Union.

The scope of New Approach in the standardization policy is growing. European standardization bodies (CEN, CENELEC and ETSI) have drawn up voluntary standards that lay down possible ways of complying with the requirements. By now there are 22 NA Directives. They fall into different categories of groups. The ‘horizontal directives’ cover broadly applicable aspects of design, manufacturing,

packaging and use for a wide range of products. This group includes *inter alia*: Machinery Safety (Directive 98/37/EC), Low Voltage Equipment (Directive 73/23/EEC) or Packaging and Packaging Waste (Directive 94/62/EC). The other directives cover narrower classes of product attributes. In the case of medical device there are three directives covering different aspects (general, active implantable and in vitro diagnostic) of this particular type of products (Directive 93/42/EC, Directive 90/385/EEC, and Directive 98/79/EC). There are also risk related and construction directives. Finally there is a largest group of 'vertical' directives covering the consumer use items. Among them there is Toy Safety (Directive 88/378/EEC), Recreational Craft (Directive 94/25/EC) or Appliances Burning Gaseous Fuels (Directive 90/396/EEC).

The importance of New Approach in the intra-EU trade is growing. In 2003 more than 50% of intra-EU trade was covered by harmonized regulations and over 30% was covered by some kind of mutual recognition. By contrast, in 1997 harmonisation applied to only 33% of intra-EU trade, while the New Approach directives covered at most 17% of trade. Only 13% of intra-EU trade was not covered by any type of technical regulation in 2003 (18% in 1997). It seems that NA is quite effective in removing technical barriers to intra-EU trade. We will focus on the importance of different approaches for the EU trade with new Members States. Before doing that let us describe briefly standardization policy of one Central and East European (CEE) country before the accession to the EU.

## **B. Standardization Policy of Poland Before the Accession to the EU**

Poland, during the Soviet domination, like many other Central and East European (CEE) countries, had a very rigorous standardization policy, which was adapted to centrally planned, state regulated economy. After 1945 the Polish Committee for Standardization has been established and afterwards it underwent subsequent reorganizations, which increased gradually its regulatory power.

In 1953 the Committee became formally a major standardization body. By 1961 three types of compulsory norms (i.e. technical regulations) have been introduced. There were so called national, industry and factory specific norms. Formally in 1979 - the Polish Committee for Standardization, Measures and Quality Control has been created. This single body was responsible for establishing, testing and controlling technical regulations, which should be implemented by domestic manufacturers. At that time standards were obligatory ones and were constituting part of Polish law. In reality, many manufacturers (state owned enterprises produced most of country's output despite a significant presence of small private enterprises)<sup>6</sup> frequently did not observe compulsory standards since they were able to sell easily all their output to domestic consumers, suffering from permanent shortages of goods.

<sup>6</sup> The state-owned enterprises produced 91% of total manufacturing output and had a 97% share in total employment in manufacturing in 1985. State-owned enterprises were much larger than

The political changes have become possible as a result of the historical turning point of 1981-1991, namely the collapse of Soviet empire. One of the crucial steps in the transition process was the Europe Agreement (1991),<sup>7</sup> which established an associate relationship between the EC and Poland. The Agreement was signed on 16 December 1991 and contained one-side declaration in the preamble stating that “it is ultimate aim for Poland to obtain membership in the Community, and the Association – according to the opinion of the Parties – will facilitate attaining it.” The concept of law approximation was articulated in chapter III of the Agreement. “Poland shall use its best endeavours to ensure that future legislation is compatible with Community legislation.” And in Article 6.9 it was clearly indicated that “the approximation of laws shall extend to the following areas in particular: customs law, company law, banking law, company accounts and taxes, ... *technical rules and standards*.”

The Europe Agreement set out the legal grounds for the pursuit and implementation of economic, political, scientific, and cultural union. The agreements signed with the EC, which at this time was preparing for its transformation into the European Union (EU), initiated Poland's process of European integration. The similar Europe agreements were signed in early nineties by all prospective members of the EU. All of them had similar structure and required gradual law approximation.

As a result of gradual law approximation, on 3 April 1993 the Polish Parliament passed a set of acts concerning standardization, metrology and quality. In the next step the Standardization Law (1993)<sup>8</sup> came into effect on 1 January 1994, and constituted the basis for implementation of the new, voluntary standardization system. In the power of the aforesaid acts the Polish Committee for Standardization, Measures and Quality Control has been dissolved and divided into three independent bodies: Central Office of Measures, Polish Centre for Testing and Certification (PCBC) and Polish Committee for Standardization.

The PCBC is the organization acting within EU conformity assessment system. In late nineties the operation of PCBC has been frequently criticized as creating an additional TBT for foreign exporters.<sup>9</sup> Finally, in 2002 the new Law on Conformity Assessment System<sup>10</sup> entered in force. It determines implementation of NA directives related to CE marking and OA directives into the

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private (there were 4500 of public enterprises and 210.000 of private ones, GUS, Historia Polski w liczbach, Vol. II (2006)).

<sup>7</sup> The Europe Agreement Establishing an Association between the European Communities and their Member States, of the one part, and the Republic of Poland, of the other part (1991) (11 Journal of Laws, item 38 (1994)).

<sup>8</sup> Standardization Law (1993) Ustawa z dnia 3 kwietnia 1993 r. o normalizacji (55 Journal of Law, item 251 (1995)).

<sup>9</sup> For example, no standards existed for many new construction materials. However, prior to being introduced on the Polish market, these products had to be certified that they conform to existing Polish building product standards. Some products used in construction, after receiving technical approval, also required a separate “B” Certificate. After Poland joined the EU, the requirement for “B” certificate disappeared.

<sup>10</sup> Law of 30 August 2002 on conformity assessment system, Ustawa z dnia 30 września 2002 o systemie oceny zgodności (166 Journal of Laws, item 1360 (2002)).

Polish legislation. It defines rules for accreditation, authorization and notification of conformity assessment bodies and allows to establish conformity assessment system in Poland harmonized with EU system.

On the other hand, the Polish Committee for Standardization (PCS) became responsible for establishing Polish Standards (PN). It is also responsible for supervision of publishing and distribution of these standards. As a result Polish standards have been gradually harmonized with European standards (EN and ETS)<sup>11</sup> and international standards (ISO and IEC)<sup>12</sup> over late nineties.

But the process of harmonization of national standards with European ones was quite slow. In 1999 only 895 European standards were implemented as Polish ones. The process has been radically accelerated after year 2000 when Polish Parliament accepted the law (October 2000) enabling the direct application of European standards (written in English) as Polish ones (PN) accepted directly by Committee for Standardization. As a result there were already 6035 in 2002 Polish norms compatible with European standards. In 2003 the new Standardization Law (2002)<sup>13</sup> entered into force and made the PCS standardization system fully compatible with the European one. By the date of accession to the EU (May 2004) all European standards were already accepted by Polish Committee on Standardization.

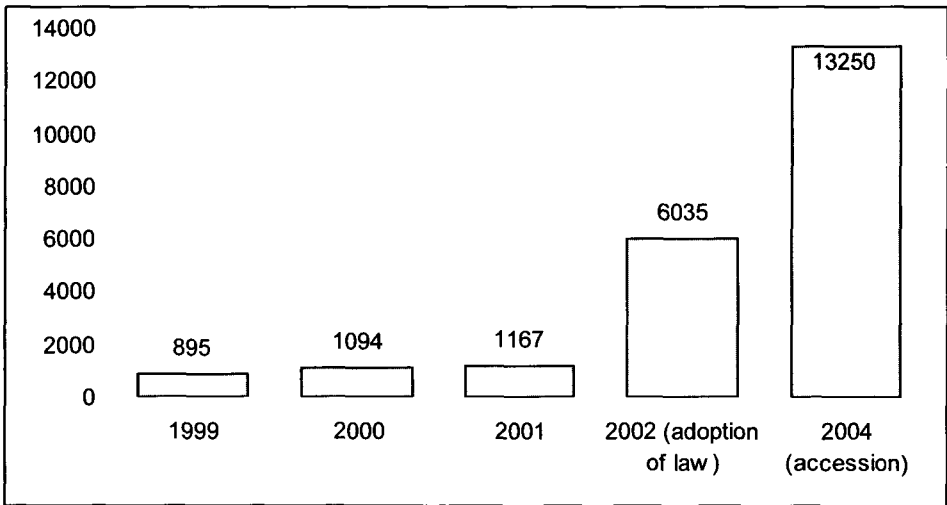


Figure 1 Number of Polish norms compatible with EU law

Source: Polish Committee on Standardization

The similar gradual approximation of standards has been made in all new Member States (NMS) of the European Union.

<sup>11</sup> EN – European Norm; ETS – European Telecommunications Standards.

<sup>12</sup> ISO – International Organization for Standardization; IEC – International Electrotechnical Commission.

<sup>13</sup> Standardization Law (2002), Ustawa z 12 września 2002 r. o normalizacji (169 Journal of Laws, item 1386 (2002)).

The acceptance of European standards by Polish authorities created a great chance for Polish companies to increase their exports to EU countries. These opportunities will be analyzed in subsequent sections of the article.

On the other hand the application of new standards requires frequently additional costs. With the introduction of regulations, firms may need to adapt product design, re-organize production systems, incurring re-labeling costs and the costs of multiple testing and certification. Such costs, are usually described as *compliance costs*. It is important to note that the nature of these compliance costs differs between *de facto* or *de jure* standards. In the context of *de facto* standards, firms can freely choose the level of quality of their products, and the compliance cost could rather be defined as the cost of achieving a certain level of product quality. In the context of *de jure* standards (technical regulations), firms do not choose but are obliged to bear the costs of adjustment to comply with the regulations and assure that its products and production processes meet the technical requirements in the future. In this case, the impact of regulations can act as an entry barrier for firms.

An important feature of such compliance costs is that they are perceived as fixed costs. A typical regulation involves a fixed cost. Once a regulation is introduced, producers learn about it (commencement costs) and bring the product in conformity. The second component of ongoing costs consists of periodic monitoring and testing. The level of the compliance costs also dictates the level of stringency (rigidity) of a regulation. According to Ashford a regulation is stringent either (i) because compliance requires a significant level of conformity, (ii) because it is costly or (iii) because compliance requires a significant change in the production process.<sup>14</sup>

The fact that the compliance costs are perceived as fixed ones means that once they are met, then afterwards they are not perceived as creating an ongoing variable cost. On the other hand the adoption of common standardization policy eliminates barriers to trade, enables larger scale of production (and thus reduction of average costs) and allows for benefits from so called network effects.

## C. Effects of Standardization on Intra and Extra EU Trade

In order to later assess the importance of the technical barriers to trade and the EU policy towards external world we look at the significance of the TBT's in the EU. This was recently analysed by Hagemeyer and Michalek.<sup>15</sup>

The study uses a commonly employed Constant Elasticity of Substitution (CES) preference structure as a basis for the theoretical model. Small country

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<sup>14</sup> N. Ashford, *Technology-Focused Regulatory Approaches for Encouraging Sustainable Industrial Transformations* (2002).

<sup>15</sup> J. Hagemeyer & J. Michalek, *Normy techniczne i sanitarne w handlu międzynarodowym, Ich znaczenie w integracji Polski z Unią Europejską [Technical and Sanitary Standards in International Trade. Their Significance in the Accession of Poland to the European Union]* (2007).

assumption allows for consumer price taking behaviour and estimation of the demand for imports equation alone. They estimate a simple import demand function for each of the detailed CN-8 import category products, using Eurostat extra- and intra- EU import data. The data on technical barriers to trade is taken from European Commission (1998). The publication reports what approach to reducing technical barriers to trade the European Single Market programme has been selected for each industry.

Results show that in 1995, due to EU regulations the ratio of import volumes from EU-15 relative to that from the rest of the world in sectors covered by New Approach was higher than average computed for all sectors by around 12.5%. The same ratio for the products covered by OA was only higher by 3.75% (holding everything else constant). For products covered by mutual recognition (MR), the ratio was lower than the average holding everything else constant, by about 4.8%. This means that in 1995 NA had the highest trade-promoting impact on intra-EU trade relative to extra-EU trade.

In 1999 there has been a visible change in the trade structure of the EU-15. Hagemeyer and Michalek<sup>16</sup> claim that in that year, the Old Approach was the strongest intra-EU trade-promoting factor among all the EU's approaches to removing TBTs. The intra/extra EU import ratio for products covered by harmonization was higher than average by 12.3%. The New Approach is also intra-EU trade promoting, the import ratio is higher than average by 10.7%. The same ratio computed for products covered by MR is lower than average by 11%. A plausible explanation to the results is that the trade barriers within the EU are not very significant due to the standardization policy being in place. However, this policy strongly affects the external EU trade. We may expect that the MR approach is introduced in sectors when the amount of required product characteristics is low and in fact this sectors have low TBTs. The EU-mutual recognition does not impede the extra-EU imports since overall technical barriers to trade tend to be low in sectors covered by MR, and trade facilitation in these products between EU members does not affect external EU trade. That is why we observe low internal/external import ratio for this sectors.

The new and old approaches have a different effect. They do facilitate trade between the EU members but they impede external trade. We can expect, than in these sectors – which are chemicals, pharmaceuticals, motor vehicles etc., the TBTs are really high and common EU standardization policy is actually promoting internal trade. The external partners have to meet both their home and the EU requirements which seems to impede trade a lot. The above hypothesis seems to be confirmed by the changes in the TBT's significance over time. The results suggest that the EU members were still struggling with establishing agreements in the harmonization policy in 1995, while the adjustment process of both the national regulations and the firms have been more or less completed by 1999. That is why we see the increase in the coefficient on OA. High positive impact of NA on intra-EU trade is as expected – this approach clearly facilitates trade since only the essential requirements need to be met.

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<sup>16</sup> Hagemeyer & Michalek, *id.*



The results suggest that there is a protective effect of both the OA and the NA approach.<sup>17</sup> In fact, the authors calculate a tariff equivalent (an external EU tariff imposed on extra-EU imports that has the same effect as introducing harmonization in a sector). The results suggests that in order to be competitive with the EU-products, the imports coming from the rest of the world have to be 15% cheaper.

We can also see the TBT induced change in the structure of trade. The trade between EU members seems to be concentrated within the high-TBT products while the imports from outside are only focused on the low-TBT or no-TBT products. This certainly has implications for the world welfare since EU is one of the largest trade players and specialization facilitates exploitation in economies of scale and greater competitiveness in the world market. The possible implications for Central and East European Countries (CEECs) exports are presented later on.

#### **D. Trade Coverage of CEECs by Different Approaches to Standardization**

A paper by Brenton, Sheehy and Vancauteran<sup>18</sup> evaluates the importance of technical barriers to trade for 10 Central and Eastern European countries, which later became New Member States (NMS). The authors estimated the share of the tradable goods that were affected by the various EU approaches to TBT removal. They analyzed 114 industrial sectors for the intensity of three EU approaches. According to the study the Old Approach was dominating in 22 sectors. The same number of sectors was affected by MR regulation. The New Approach applied to 19 sectors. In the remaining 51 sectors the standards were rare or nonexistent. The authors estimated the importance of standards in the intra-EU in the EU trade with acceding countries. Trade coverage of an approach is defined as the share of value of EU imports from a region subject to a particular standardization approach in the total value of EU imports from that region.

The structure of CEEC exports evolved since the early 1990s as the countries began reorientation of their economies towards integration with the EU. This change led also to the evolution of trade coverage of different approaches. Trade coverage of various approaches in export of selected CEECs to the EU in the most recent years is presented in Table 1.

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<sup>17</sup> And thus, there may be trade creation and trade diversion effects. However, since technical regulations do not usually generate government revenue (although it might if the certification fees are set at a level that exceeds the real costs), trade diversion does not entail loss of domestic welfare, as is the case with trade diversion in the standard customs union problem.

<sup>18</sup> P. Brenton, J. Sheehy & M. Vancauteran, *Technical Barriers to Trade in the European Union: Importance for Accession Countries*, 39/2 Journal of Common Market Studies 265 (2001).

*Table 1: Evolution of trade coverage of Old Approach, New Approach and Mutual Recognition in CEEC export to the EU – 1999-2003*

Year	Approach	Czech Republic	Hungary	Poland	Slovakia	INTRA-EUR
1999	OA	21.0%	30.3%	19.8%	33.4%	27.8%
2000	OA	24.7%	28.2%	27.6%	31.4%	27.7%
2001	OA	23.2%	29.9%	28.7%	31.0%	27.7%
2002	OA	22.2%	28.6%	28.4%	37.5%	28.2%
2003	OA	21.0%	27.9%	30.2%	39.4%	29.1%
1999	MR	18.9%	27.3%	29.9%	24.9%	25.8%
2000	MR	18.3%	26.3%	26.7%	23.3%	27.6%
2001	MR	19.9%	22.1%	26.0%	21.3%	28.0%
2002	MR	21.9%	22.6%	25.8%	19.0%	27.9%
2003	MR	21.7%	20.3%	23.4%	16.0%	27.9%
1999	NA	37.0%	17.0%	26.3%	22.0%	20.7%
2000	NA	35.1%	17.6%	24.7%	24.3%	19.8%
2001	NA	35.0%	17.7%	24.5%	24.5%	19.6%
2002	NA	34.3%	19.1%	25.3%	21.3%	19.3%
2003	NA	34.8%	19.6%	25.7%	19.3%	19.1%
1999	No regulation	17.2%	10.8%	13.9%	12.7%	13.5%
2000	No regulation	15.3%	10.2%	11.7%	12.5%	12.5%
2001	No regulation	14.5%	10.4%	11.6%	13.5%	12.8%
2002	No regulation	13.9%	11.0%	11.6%	12.5%	12.8%
2003	No regulation	13.9%	10.5%	12.1%	17.1%	13.0%

Source: Own calculations using the data from European Commission (1998) and COMEXT 2004.

The trade coverage of different approaches varies considerably across the CEEC. For instance, high share of Slovakian and Polish exports to the EU is covered by the Old Approach. For Poland, the share of exports covered by OA is actually very close to the value calculated for intra-EU<sup>19</sup> trade. Old Approach seems least important for the Baltic States – it covers only 15-16% of the Estonian and Latvian exports to the EU. Baltic States, which are not shown here, benefit considerably from MRP. 47.5% of the Lithuanian export to the EU is covered either by MRP (42.1%) or by other Mutual Recognition Agreements (remaining 5.4%). The numbers for Estonia and Latvia are not that impressive but are still high. The dominates in the exports of the Czech Republic to the EU. As much as 35% of the value of their export are products covered by the New Approach.

The structure of trade (from the point of view of trade coverage) has been evolving since the early 1990s when Central and Eastern European Countries

<sup>19</sup> By intra-EU we mean the trade between the countries that were Member States of the EU before 1 May 2004.

began to integrate with the European Communities. It is especially visible for Poland, for which over half of its exports to the EU in the late 1980s were not covered by any of the approaches. Now the pattern is very similar to the of intra-EU trade.

All these countries have relatively smaller share of products exported to the EU covered by MRP. But in general the TBT trade coverage is getting much more similar over the time. Only in case of Baltic States the structure is somewhat different, in the sense that a high share of their exports is not covered by any type of regulation.

We can therefore make a following observation. The intra industry pattern of CEEC exports to the old members of the EU reveals large factor intensity differences demonstrated in many studies.<sup>20</sup> In general, CEEC's export unskilled labour intensive products and do import goods intensive in human capital and (to a smaller extent) in physical capital. On the other hand the differences in TBT coverage are very small, especially, if we compare them with exports of non-EU third countries.<sup>21</sup> Thus, probably, the requirement to accept EU standards by prospective members from CEEC states gradually eliminated technical barriers facing their exports to the single European market.

The following section verifies if companies in new Member States confirm this opinion, which seems to be correct in view of presented earlier econometric results.

## **E. Survey Based Analysis of TBTs Faced by Polish Companies**

It is frequently argued that only the firms that are active in international markets, can properly assess the importance of TBTs. Therefore, using thorough surveys can reveal links that could otherwise remain hidden. They can also serve as a basis for further research. We conducted this sort of review among Polish firms, just after the accession to the EU, in December 2004.

There were two similar opinion surveys made before accession of Poland to the EU. They considered various obstacles regarding technical regulations in exports to the EU faced by Polish companies. Firstly, Gorzelak and Żółkiewski<sup>22</sup> reported opinion of 96 firms, mainly big companies from food and chemical sector. According to their results, over one third of the sample expressed some difficulties in selling due to specific technical regulations. However, the overall cost-benefits balances were assessed as neutral by 90% of the respondents.

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<sup>20</sup> J. Michalek & K. Sledziewska, *Inter-Industry Trade Between Central-East European Countries and the EU. Do Changes in the Trade Pattern Reflect H-O Approach?*, paper presented at the Annual ETSG conference in Madrid, September 2003.

<sup>21</sup> FEMISE, *supra* note 1, Ch. 6.

<sup>22</sup> M. Gorzelak & Z. Żółkiewski, *The Perception of Technical Barriers to Trade of Manufacturing Enterprises in Poland*, in P. Brenton & S. Manzcchi (Eds.), *Enlargement, Trade and Investment. The Impact of Barriers to Trade in Europe* (2002).

Second survey by UKIE, published in Marczewski,<sup>23</sup> included 272 Polish firms mainly from machinery, furniture and textile industries, where 70% of them were exporters to the EU. In this opinion poll most of the companies expressed their balanced interest in the technical regulations. Only smaller exporters assessed unification of standards as very beneficial. On the other hand these firms were the least prepared to meet the new EU regulations, including compulsory directives.

In case of Poland, our questionnaire was made six months after accession to the European Union (December 2004).<sup>24</sup> The following industries were analyzed: food processing (NACE 15), chemical (NACE 24) and electrical (NACE 31). The main reason behind this choice was the extent of various EU regulations and standards effective in those industries. These industries also constitute relatively large shares of total Polish production (33%) as well as exports (19%). Two methods of data collection were used: personal interviews with 96 firms and email questionnaires, to which 55 firms responded. Altogether, 155 Polish companies answered provided us with their opinion; among them 54 firms belonged to food, 46 to chemical and 55 to electrical industry.

We notice a number of positive effects that arose after joining the EU. The most important were the following:

- (1) more than 80% of the firms did not face any difficulties while selling their products in the EU and 75% of the firms did not have to redesign their products, i.e. they did not have to bear additional adjustment costs since the enlargement;
- (2) most firms (usually in the food and electrical industries) assessed the existence of the MRP positively due to their economic activity;
- (3) the firms are usually interested in ISO-9000 system, improving quality management in a company.
- (4) more than half of the exporters reported that the unification of technical standards within the European Union may positively affect their exports;
- (5) the general opinion on Poland's membership in the EU is rather positive, given both the necessity of adjustment costs and the opportunities to sell in the Common Market. However, 19% of the firms said the membership would be negative for their economic activity.

Apart from the positive effects of the membership we should notice that firms have to bear additional costs of adjustment to the new requirements. The assessment of these costs depends on a firm and on an industry:

- (6) quite significant percentage of firms said that Poland's membership in the EU did not have any influence on their economic situation. Above 10% said that the harmonization of technical standards within the EU had negative impact on their activity;
- (7) a large number of firms in the food industry (54%) said that the cost of certification of their products had increased. Less than half of the surveyed

<sup>23</sup> K. Marczewski, *Kierunki zmian w handlu zagranicznym Polski po przystąpieniu do Unii Europejskiej*, 2 Ekonomista, at 191-216 (2003).

<sup>24</sup> This section of the paper is based on FEMISE report, *supra* note 1, ch. 2, which provides further details of the survey. Chapter two of the report was co-authored by A. Pugacewicz & V. Roshal.

firms answered that the cost of providing detailed information on their products' labels was high. Again, these firms were usually from the food industry (43%), whereas in the chemical and electrical industries the most frequent answer was 'neutral/negligible';

(8) more than half of the firms were not interested in the ISO-18000 and ISO-14000 systems. Only firms from the chemical industry applied ISO-14000 system.

Results of the survey suggest that the effects of joining the EU were quite different for firms from different industries. Probably the highest cost was in the food-industry. Here, 54% of the firms said that the net effect of joining the EU was positive, while still 20% said that the effect was negative. More than 30% of the food-industry firms had to invest to redesign their products to fulfill EU requirements what required major investments.

The costs seem to be less pronounced in the chemical industry: 76% of the firms have not faced any difficulties while selling in the EU since 1 May 2004. More than 70% said they were not forced to redesign their product to fulfill the EU requirements. An important issue is the opinion of firms about regulations on hazardous products, on soaps and fertilizers and on the so-called Good Laboratory Practice. 70% of the firms think that all these regulations have already been implemented or will be implemented soon;

Firms from the electrical industry seemed to be well prepared for the membership in the EU and there has been little change in the industry since 1 May 2004. Only 25% of the firms redesigned their product, what required minor investments. 60% of the firms admitted that unification of technical standards within the EU would be beneficial for their activity;

The first general conclusion we may draw from the opinion of Polish companies facing various technical regulations within the EU common market is that they had to bear some adjustment costs. However the net effect of accession to EU is positive. Most of companies – especially exporters – said they expected benefits from harmonization of the standards and/or existence of the MR agreement. Secondly, it seems that the process of adjustment the EU regulations had already started and often was accomplished before 1 May 2004. It reduced the additional adjustment costs after accession and enabled the firms to perceive net benefits arising from access to the common European market.

## **F. Possible Welfare Gains Resulting from Poland's Accession to the EU**

In this part of the article we try to assess the potential effects of implementing the EU standardization policy by new EU members. In the analysis we will use a computable general equilibrium model GTAP. It is a multi-sector, multi-country general equilibrium model that is often employed in the evaluation of trade

policies. The model and the corresponding GTAP database used here is prepared by the Global Trade Analysis Project at Purdue University, US.<sup>25</sup>

The idea behind computable general equilibrium models is relatively simple (yet their implementation is rather complicated). Such models assume that economies are composed of firms, consumers and governments behaving according to well-specified economic rules (embodied in production function maximization by producers and utility maximization by consumers subject to economic constraints). Once a model (a set of equations) is built, its parameters are chosen in such a way (model is 'calibrated'), so the model resembles the actual economic situation – the benchmark equilibrium. Once the model is calibrated, it is possible to impose shocks on it, resembling a certain policy change and observe how the simplified model economy reacts.

The general structure of the GTAP model is as follows.<sup>26</sup> It assumes the existence of the regional household that takes all the expenditure decisions within the economy. This entity is allocating expenditures to private consumption, government expenditures or savings. Consumption expenditure is further divided into domestically produced goods and imports.

The firms produce using the primary factors purchased from the regional household and intermediates. The sources of primary factors are purely domestic – it is assumed that the factors are strictly immobile internationally and mobile within a region (with exception of land and natural resources). The intermediate goods can be either domestically produced or imported.

The previous empirical work assessing the effects of the creation of the single market and of the EU enlargement assumes that the standardization policy of the European Union leads to the partial or complete removal of the non-tariff barriers, especially the technical barriers to trade that arise due to different and incompatible policies on norm and standards of countries being trade partners. This assumption seems plausible, taking into account that the one of the main objectives of the of the European Union single market-related policies is dismantling the technical barriers to trade.

Following the econometric evidence (see part C), we assume that removal of technical barriers to trade leads to a decrease of prices of imports of countries accessing the EU. In the simulation, it was assumed that due to the decrease in the TBT's in the European Union the prices of imports go down by a maximum of 2.5%. This price change is also differentiated by sector (similarly as in Hoffmann<sup>27</sup> and Maliszewska)<sup>28</sup> to reflect the effectiveness of the standardisation policy in different sectors.<sup>29</sup>

<sup>25</sup> T. Hertel, R. McDougall & K. Itakura, GTAP Model Version 6.0, GTAP Resource #576, [https://www.gtap.agecon.purdue.edu/resources/res\\_display.asp?RecordID=576](https://www.gtap.agecon.purdue.edu/resources/res_display.asp?RecordID=576) (2001).

<sup>26</sup> A very detailed description of the model is provided by T. Hertel & M. Tsigas, *Structure of GTAP*, GTAP Resource #413, [https://www.gtap.agecon.purdue.edu/resources/res\\_display.asp?RecordID=413](https://www.gtap.agecon.purdue.edu/resources/res_display.asp?RecordID=413) (1997).

<sup>27</sup> A. N. Hoffmann, *The Gains from Partial Completion of the Single Market*, 4 *Weltwirtschaftliches Archiv* (2000).

<sup>28</sup> M. Maliszewska, *Eastern EU Expansion: Implications of the Enlarged Single Market for Current and New Member States*, Paper presented at ETSG Annual Conference (2002).

<sup>29</sup> Full description of simulation assumptions can be found in Hagemeyer & Michalek, *supra* note 14.

The decrease of the price of imports is bilateral and focused on the NMS and the 'old members' of EU-15. The price of a given product from a CEEC goes down in every EU country (both EU-15 and NMS) and the same applies to EU-15 products purchased in the CEEC markets.

The immediate effect in of the decrease of the price of imports is the increase of the volume of international trade. Clearly the most significant export changes in all countries under consideration are concentrated in sectors producing raw materials, textiles, apparel and leather products. The changes in exports to Germany in the case of imports amount to 20% and are the highest in Slovenia, Slovakia and Hungary. In Poland, the simulated increase in exports to Germany amounts to 17%. In the case of textiles, apparel or leather products, the simulated changes range close to 15%. There are significant changes in exports of agricultural products, however, we have to keep in mind that this simulation does not take into account changes in agricultural tariffs and subsidies due to EU enlargement and we should probably expect much larger changes if those are included (as 2003 increase of Polish exports have shown), paper and printing industry and transport equipment. Changes in those sectors range between 5% to 10% depending on a region. In the remaining sectors, for most of the new Member States of the EU, the change in exports is less than 5%. As a result of the demand shift towards new Member States, import of Germany from remaining EU member falls down by a small amount. The largest change is found in the case of apparel.<sup>30</sup>

The similar changes can be expected exports to the remaining EU-14 countries. The growth in imports has a similar structure as in the case of exports to Germany. The largest increase in exports (above 5%) is expected in agriculture, food, paper, fuels and the transport equipment. In Poland, the largest simulated increase is expected in the textile industry.

Table 2: Change in total export value of CEEC to EU-15

Country	% change in export value
Czech Republic	1.407
Estonia	1.347
Poland	1.616
Hungary	0.882
Slovakia	1.4
Slovenia	0.993
Latvia	0.919
Lithuania	1.434

Source: own calculations based on GTAP model simulations

Changes in export to the EU cause a large change in the total exports of new Member States. The largest changes in exports are expected for Poland where

<sup>30</sup> Full results can be found in Hagemeyer & Michałek, *supra* note 14.

the change is estimated at 1.6%. In the Czech Republic, Estonia, Lithuania and Slovakia, this value amounts to around 1.4% change. In the remaining countries the change is close to 1%. The results are given in table 2.

The output changes resulting from the policy change are concentrated in the industries where the largest increase in export was simulated. The largest increase in production is expected in textiles and apparel industry. In the case of textiles the largest increase is simulated for Estonia, Lithuania and Latvia and for apparel for Estonia and Lithuania. This changes range from 5% to 12%. Other industries where there are expected significant changes in production are raw materials (especially Lithuania and Estonia), fuels, other materials and transport equipment. There are industries where output is expected to drop – chemicals, minerals, ferrous metals, metal products and electronics. The changes are usually less than 2% of the value of production.

The changes in export lead to, through changes in production, change in the gross domestic product. Not only the export grows but also we impose a policy experiment where the import demand grows as well. The change in GDP is a sum of these two changes. The simulated change of GDP of the countries under consideration is given in table 3.

*Table 3: GDP changes resulting from TBT elimination*

Country	Change in GDP (%)
Germany	0.037
Rest of EU	0.006
Czech Republic	1.512
Estonia	1.599
Poland	1.015
Hungary	1.544
Slovakia	1.565
Slovenia	1.456
Latvia	1.66
Lithuania	1.774
Rest of the World	-0.023

Source: own calculations based on GTAP model simulations

According to the simulation results, the largest increase of GDP as a result of a decrease of the technical barriers to trade will be experienced by Lithuania and Latvia, where the increase amounts to 1.77% and 1.66% respectively. For the Czech Republic, Estonia, Slovakia and Slovenia the simulated GDP increases range from 1.4% to 1.6%. For Poland the simulated change is equal to 1%.



## **G. Concluding Remarks**

The new Member States of the EU had to adapt their technical regulations to the standardization policy of the EU. The gradual law approximation regarding standards started with signing of Europe Agreements and was completed by the date of accession to the EU in 2004.

We argue that in sectors where the EU technical regulations are most complicated and require costly adaptation, the trade within EU is booming. The trade between EU members is more concentrated within the high-TBT products, while the imports from outside are focused on the low-TBT or no-TBT products. Thus, EU technical regulations might in fact be trade diverting if the difference in productivity between intra and extra-EU partners is large.

We demonstrate that the structure of TBT's affecting exports from new EU members is converging with the one that characterizes intra-EU trade. Therefore, we expect that CEEC's countries will benefit from applying common technical regulations of the EU after accession, provided that the initial adjustment costs are not excessively high.

In the last section of our article we report the results of questionnaire-based research made among Polish companies in December of 2005, i.e. after the Eastern enlargement. It seems that the adjustment costs were moderate and the adaptation process to new technical regulations is already completed. Therefore, one can expect welfare gains for new members of the EU. We perform a CGE simulation using a GTAP model to assess these gains. Both the econometric analysis and the GTAP simulation imply that the effects of changes in standardization policy and especially creation of standardization unions have important welfare effects. For the Czech Republic, Estonia, Slovakia and Slovenia the simulated GDP increases range from 1.4% to 1.6%, whereas for Poland the simulated change is equal to 1%.