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DIPLOMOVÁ PRÁCE

Economic Integration in North America:

Theory and Reality of Rules of Origin

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Prohlášení

Prohlašuji, že jsem diplomovou práci vypracovala samostatně a použila pouze uvedené prameny a literaturu.

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ABSTRAKT

Pravidla určování původu zboží jsou často přehlíženou, i když nedílnou součástí zón volného obchodu. Ačkoli primárně chrání před jedním ekonomickým zlem, odklonem obchodu, sekundárně však mohou způsobit jiné – výrazné zvýšení nákladů spojených s tím, aby se zboží kvalifikovalo pro preferenční přístup. Tato práce se zabývá tímto tématem, včetně odhadu nákladů spojených s preferenčním zacházením. V první části práce popisujeme následky restriktivně formulovaných pravidel určování původu zboží. V druhé části zaměříme svou pozornost tyto pravidla v Severoamerické zóně volného obchodu, probereme jak jejich specifika, tak jejich vliv na obchod. V poslední části práce jsme navrhli nový odhad nákladů spojených s kvalifikací zboží pro preferenční zacházení. Tento postup je založen na detailním zpracování Celního sazebníku USA a podrobných datech importu na úrovni HS6. Naše výsledky stanovily, že tyto náklady se pohybují mezi 4,6 a 4,9 procenty dovozní ceny zboží.

ABSTRACT

Rules of origin are a somehow overlooked but crucial feature of the free trade areas. Although they eliminate the threat of trade deflection, they may also cause significant increase of the compliance costs, resulting from changes of producers' behavior. In the first part of this work the impact of restrictive rules of origin formulation will be described. In the later part the attention is focused on the rules of origin in the North American Free Trade Area, their specification as well as their impact on trade. We use a new approach of estimation of the compliance costs of the preferential treatment, based on detailed elaboration of the Harmonized Schedule of the United States and de-aggregated import data on HS6 level. Our result suggests that NAFTA's compliance costs are somewhere between 4.6% and 4.9% percent of the goods import value.

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USED ABBREVIATIONS

AD/CVD	Antidumping / Counter veiling duty
ASEAN	Association of Southeast Asian Nations
AZNCER	Australia – New Zealand Close Economic Realtions
CAN	Canada, Canadian
CARICOM	Carribean Community and Common Market
C.I.F.	Cost insurance freight (incoterm)
COMESA	Common Market for Eastern and Southern Africa
CUSFTA	Canada-United States free trade area
EEA	European Economic Area
EFTA	European Free Trade Area
EMU	European Monetary Union
EU	European Union
FTA	Free Trade Area
F.A.S.	Free alongside ship (incoterm)
F.O.B.	Free on board (incoterm)
GATS	General Agreement on Trade in Services
GATT	General Agreement on Tariffs and Trade
GDP	Gross Domestic Product
HS	Harmonized Comodity Description and Coding System,
HS_{US}	Harmonized Tariff Schedule of the United States
NAFTA	North American Free Trade Area
MERCOSUR	Southern Common Market Agreement (Acuerdo Comercial – Mercado Común del Sur)
MFN	Most-favored Nation (tariff rate); normal trade relations' tariff rate
MEX	Mexico, Mexican
NTB	Non-tariff barrier
PPP	Purchasing Power Parity
PTA	Preferential trade agreement
ROO	Rules of origin
ROW	Rest of the world / countries that are not member of an PTA
RTA	Regional Trade Agreement
SITC	Standard International Trade Classification
WTO	World Trade Organization

LIST of GRAPHS, TABLES and FIGURES

1. Introduction

There's no such thing as a free lunch.

Milton Friedman

….. and there is no such thing as free trade.

The main purpose of all free trade areas is to abolish trade barriers among its members and through the enhanced trade levels promote economic growth and economic cooperation. Unfortunately, free trade agreements always contain a gap between the stated intention of securing the unfettered movement of goods across borders and the reality of negotiations' results. In our thesis we will focus on the North American Free Trade Agreement (NAFTA) uniting the United States, Mexico and Canada is the world's largest preferential trade agreement (PTA) which celebrated its 10th anniversary in the beginning of 2004.

NAFTA deals with a variety of issues (environmental, labor market problems, legal framework differences, etc.) and as a result the opinions about NAFTA are somehow ambiguous. The only fact that both critics and propagators share is that the free trade has had a positive impact on mutual trade and this fact is supported by many empirical studies. We will focus on a rather overlooked feature of all the free trade areas - the rules of origin (ROO), supposedly an administrative measure introduced in order to eliminate the possibility of trade deflection.

There exists evidence that strict rules of origin in free trade areas may function as protectionist device against producers of other member countries and studies have shown that they create additional trade costs. NAFTA's rules of origin are known for their complexity and restrictiveness, this perception is also supported by empirical research.

The aim of this thesis is to show how big problem the rules of origin represent in NAFTA – in terms of low utilization rates and compliance costs of preferential treatment. We will examine the sign of restrictive rules of origin which are the low utilization rates. The utilization rate measures the ratio of imports

from PTAs member countries that use the preference treatment to the total amount of imports from the member countries.

We expect to obtain results that are in line with the previous research – we expect them to be significantly lower than 100%, thus implying the restrictiveness of rules of origin is in place. In the next step we will try to estimate the costs of compliance of NAFTA's preferential treatment, based on the analysis of behavior of the mutual trade among NAFTA members in different preference margin intervals. Detailed information about the preference margins will be obtained directly from the Harmonized Tariff Schedule of the United States, and the import data will be used in the same de-aggregated classification – on the subheading level of the harmonized tariff system. In order to achieve our goal we will use a modified gravity model, based on preferential margin intervals.

Our hypothesis is that the compliance costs are not marginal, thus slightly devaluating the successful image of the free trade area. We expect that this additional point of view will shed light upon the real impact of NAFTA and that we will show that although the membership in NAFTA has had a positive influence on trade, the benefits would have been way higher if the ROO were defined in a less restrictive way.

This thesis has the following structure: in the second chapter we will briefly summarize the basics of economic integration and focus on the free trade areas and the issues that are usually mentioned. In the following chapter we will concentrate on the rules of origin – an instrument that has been originally implemented in order to prevent transshipment of goods in free trade areas. We will show the effects of rules of origin in cases when they are formulated too strictly – beginning with two basic groups of costs, the administrative and costs resulting from changes in producers' behavior. We will describe how the restrictiveness may have an additional effect that influences the functioning of the free trade area as such – restrictive rules of origin may nullify the tariff preferences. Since not insignificant share of trade that comes from free trade area member countries uses the normal trade relations, preferential market access for member countries is weakened.

In the fourth chapter the "reality" part of the thesis begins. We will start by description of the North American Free Trade Area, after a brief introduction we will focus on the definition of NAFTA's rules of origin. We will provide examples of different indexes that measure ROO's restrictiveness which show that NAFTA's rules of origin are among the strictest in the world.

In the last part of the thesis we will examine the effects of ROO in NAFTA. First, the utilization rates for NAFTA's imports to the United States will be computed on subheading and section levels. As noted earlier, utilization rates that are significantly lower than 100% suggest that restrictive rules of origin are implemented. We will focus on the relationship between the utilization rates and preferential margins available for the importers. Secondly, we will estimate the compliance costs using a new approach that we developed. The approach is based on observations of NAFTA membership's impact on trade in different preferential margin intervals, while using the highly de-aggregated import information.

Chapter six concludes, summarizes the results and describes the contributions of this thesis.

2. Free trade agreements in multilateral setting

It is estimated that more than half of world trade is now conducted under RTAs.
Pascal Lamy, WTO Director-General

Before exploring in further detail the preferential rules of origin, one specific feature of all free trade areas, and before focusing on how the mechanism works in North America, we will briefly summarize few basic principles of economic integration. This brief summary is necessary for understanding the further parts of the thesis, mainly how can a seemingly marginal feature of an economic integration stage influence trade flows, costs structure and producer's decisions.

2.1. Basics of the economic integration

Figure 2.1. gives us a clear and simple overview of basic stages of the economic integration that are based on original scheme of B. Balassa that is used in most of the economic integration textbooks (i.e. Pelkmans, 1997). In general, the economic integration can take form of different stages, ranging from free trade area to the full economic union. A more advanced integration stage includes the former one but it does not imply that countries have to start on the most basic level of free trade area.

As we can see in the Figure 2.1.**free trade area** is the most basic and as far as the political level is concerned the most politically viable integration stage. It is not necessary for the members to take part in the positive integration[1], so the economic and political independence is ensured. Unlike the basic definitions state it seems that FTA may include some positive integration characteristics. In reality the FTAs are on different stages of supranational cooperation and they show different degrees of sovereignty cession. The agreement can include

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1 The positive integration means that mambers of the integration stage have to create common institutions, which are responsible for particular activities and have a certain amount of decisive power, on the other hand, negative integration requires abolishing of the existing barriers to trade, including the coordination of economic policies; Pelkmans (1997) defines positive integration as a process that results in transfer of powers to the common institutions or a joint exercise of some powers;

advanced features like the services liberalization, unified investment regulations, government procurement, etc. Unfortunately there are issues connected with this integration stage – trade deflection and trade distortion. The feature that we are most interested in are the rules of origin that eliminate the threat of trade deflection, transshipment among FTA members and the minimal transformation of non-originating products in one member state and following access to the whole FTA's market.
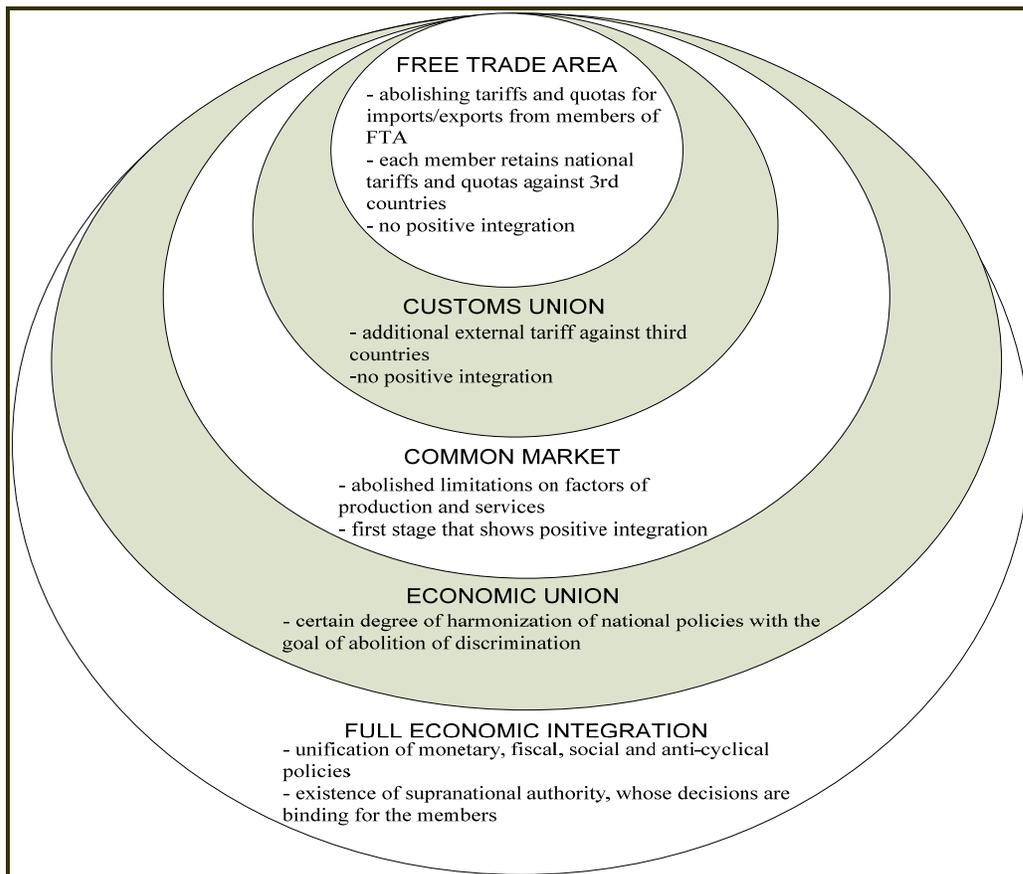
Figure 2.1. Balassa's Stages of Economic Integration[2]

In the **customs union** some amount of positive integration is needed as well. The members need to form a central institution that sets and oversees the common external tariff (CET) and deals with the distribution of the

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[2] The WTO definitions cover only the two basic stages, further stages are notified as customs unions;

tariff income. The CET eliminates the possibility of trade deflection and avoids all the negative consequences of the use of the preferential rules of origin. Notable customs unions include the European Community (EC), or customs union of EC and Turkey or Andorra. The following stage is **common market**; its basic advantage in comparison with the previous stage is that the marginal factor products are equalized, as a result of the factor reallocation. Major common markets currently in existence are MERCOSUR, CARICOM or COMESA. The **economic union** requires harmonization of all the tax, fiscal and monetary domestic economic policies. The example is the European Union.

Out of all the possible integration stages - the most common are the free trade areas. According to WTO today there are 120 FTAs in force, compared to 7 customs unions, 19 simple preferential trade agreements and 33 service agreements.

2.2. Economic integration and Regionalization

Economic integration is not limited to the integration of the market but it also includes the political integration; it implies that all the activities of market participants of different regions are exposed to same conditions of supply and demand of the relevant integration grouping, while political integration is based on different types of economic policies and uses diverse tools. (Pelkmans, 1997) Economic integration is usually connected with the preferential trade agreements between countries, while regionalization[3] is the tendency to form bigger economic and/or political entities or the process of doing so.

The beginning of regionalization can be tracked back to the 1950's, with the emergence of European Community. Since the eighties there has been a trend of enlargement of the existing areas (EFTA, EC) together with the search for deeper integration (EMU), some integration grouping formed greater units with each other (i.e. European Economic Area - 1994). Among the most

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[3] Please note the difference between regionalization and regionalism. The concept of *regionalism* - the normative aspects and values that underlie regionalization – is a vital part of regionalization - like the "European identity" is part of the European integration process;

important regional groupings are the European Union, ASEAN, MERCOSUR and NAFTA.

However, the golden age of regional trade agreements were the 90's. According to the World Trade Organization the number of notified RTAs in December 2003 was 250, out of which 130 were notified after January 1995. From all the WTO members, only one does not take part or is not in a process of RTA negotiation. The development of numbers of preferential trading agreements[4] in time is depicted in the following graph.

RTAs in force by date of entry into force
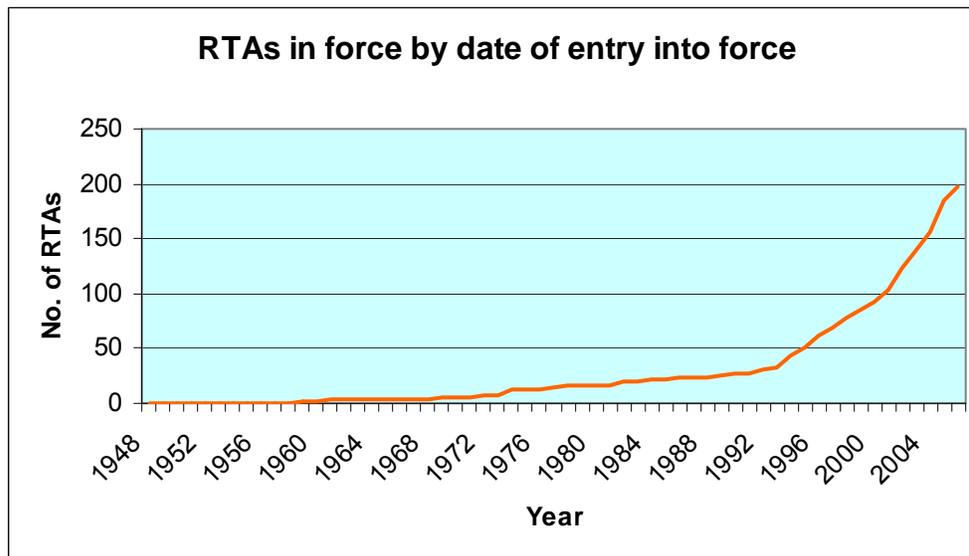
Graph 2.1. Regional trade agreements by date of entry into force 1948-2005; Source: WTO: Regional Trade Agreements Gateway – Facts and Figures Section

The move towards regionalization is a result of many factors. Among the most important are the world's switch from protectionism to trade liberalization in the second half of 20th century, bad experience with the slow trade negotiations on the multilateral basis and the new negotiation areas (i.e. trade in services, intellectual property rights, etc.).

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[4] The critics of regionalization often stress the difference between regional/preferential and free trade agreements. Current free trade agreements are, according to their critics, rather preferential or regional; they do not deserve the denomination of free trade agreement. They are rather stumbling block, not building blocks of the global free trade but a more powerful region. Despite these semantic differences, we will continue to use these three terms as synonyms, taking the free trade agreement definition as a descriptive denomination, not a normative characteristic;

2.2.1. Free trade agreements in the multilateral setting

The regional trade agreements[5] within the WTO are derived on the basis of GATT, Article XXIV, as shown in Figure 2.2. which also covers the main requirements that a FTA should satisfy. Based on the Article XXIV of GATT we can conclude that WTO considers RTAs a step towards multilateral free trade setting. Unfortunately in reality PTAs are not a step towards global free trade, because GATT's rules are sometimes not respected. One of the examples is Germany, whose tariffs have risen more than twice after it joined the European Community (Mansfield and Reinhard, 2003) or Mexico, whose tariffs increased by 15 percentage points in 2 years after signing the NAFTA agreement.

> A free-trade area shall be understood to mean a group of two or more customs territories in which the duties and other restrictive regulations of commerce (…) are eliminated on substantially all the trade between the constituent territories in products originating in such territories.

Figure 2.2. Free trade area definition
Source: General Agreement on Tariffs and Trade, Article XXIV, paragraph 8.ab)

Mansfield and Reinhard (2003) offer an alternative insight about the motives for formation of RTA. They suggest that WTO's structure encourages the states to form or join some kind of preferential trade agreement. The increase in WTO's/GATT's membership rates caused the decrease of the relative bargaining power of each member. This fact together with the experience of some members with the results and the problematic enforcements of the findings of the dispute settlement committee cause that countries seek regional integration in order to raise their bargaining power and to ensure certain level of protectionism.

Krugman (1993) offers an additional factor which is the fact that institutional differences among the major trading super powers complicate the negotiations further. Moreover, the most important goal of GATT/WTO which was the decrease of the tariff levels among the member countries was reached during

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[5] WTO definition of regional trade agreement includes free trade agreements that are not formed between countries of one region as well;

the Tokyo round[6] and the topic of market protection moved in the direction of the non-tariff barriers.

An important fact which supports this evidence and which was stressed out by Stoler (2004) is the malfunctioning mechanism of WTO that should measure the compatibility of the PTAs and the legality of the arrangements in terms of WTO rules. He states that no reports have been elaborated for any Preferential Trade Agreement since the establishment of the organization.

The criticism had a resent answer from the WTO – on 14th December 2006 the organization established a new transparency mechanism for all the free trade agreements. The Committee on Regional Trade Agreements is to review all the RTAs falling under GATT Article XXIV and Article V GATS. The WTO believes that this step will solve the differences in interpretation of the consistency of the agreements with the WTO rules.

2.2.2. Trade protection in NAFTA and WTO

There are several possibilities how a country may protect its market. The traditional way of tariffs and quotas has been slowly exchanged for the non tariff barriers, such as voluntary export restrains or different standards. Trade protection may be divided into several groups: import policies, administrative and other trade barriers, intellectual property (i.e. strict patent, copyright, trademark regimes) and other forms of protection (i.e. bribery, corruption, tolerance to anti-competitive policies, subsidies). In the later chapters we will be interested mainly in the import policies and administrative barriers, namely tariffs and import charges and the rules of origin.

Some of the trade barriers are eliminated within the NAFTA agreement; some of them are directly covered by the WTO requirements. WTO and NAFTA use similar concepts to regulate trade rules, among the basic rules are transparency, reciprocity, national treatment and most-favored nation (MFN) principle. The national treatment principle orders that the imported products

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[6] 1973-1979, the following round's decreases were marginal compared to the results of the previous tariff cuts;

should not be treated less favorably than goods proceeding from the domestic market. MFN complements the rule saying that discrimination between the products of trade partners is prohibited.[7] Table 2.1. summarizes and compares the basic characteristics of NAFTA and WTO:

Agreement	Tariffs	Standards	Valuation	Origin	Procurement	CVD/AD
NAFTA	eliminate	similar	✗[8]	✓	✓	✗
WTO	reduces	similar	✓	✗	✗	✓

Table 2.1. Comparison of Coverage of NAFTA and WTO rules on goods;
Source: Condon (2002)

As far as trade in goods is concerned, there is a considerable overlap between the two agreements; NAFTA tends to be faster in tariff elimination. In general, according to Condon (2002), the WTO provides the parties better environment to settle disputes, for strategic and legal reasons. He argues that WTO decisions have more weight, because of the size of the members' body. In NAFTA Canada and Mexico have less bargaining power than USA, but on the multilateral sphere, there are other powerful WTO members to outweigh the power of the United States. As a result a decision of WTO has a higher likelihood to be implemented. WTO decisions have greater credibility due to the established roster of arbitrators and an appellate body – none of them appear in NAFTA's agreement.

As far as other trade barriers are concerned the antidumping/countervailing duty (AD/CVD) activity is another important issue to consider. The formation of NAFTA/CUSFTA has had an unclear impact on the AD/CVD activity. On one hand the activity should have increased, because elimination of trade barriers caused the level of imports to go up, on the other hand a new mechanism to oversee the US AD/CVD activities which should lower the case fillings. A good summary of the rather overlooked problem is the paper by Blonigen (2005) which suggests that both FTAs have had no effect on the US

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[7] The MFN principle has not been valid during the 15- year transition period in NAFTA, because USA and Canada were members of a FTA of their own – CUSFTA signed in 1989, before signing the NAFTA Treaty;
[8] NAFTA does not have an agreements of its own, it adopts the WTO agreement;

filling activities and questions the effectiveness of dispute settlement panels in reducing unfair trade law activity.

2.3. Trade diversion and trade deflection

The main purpose of all free trade areas is to abolish trade barriers among its members and through the enhanced trade levels to promote economic growth and economic cooperation. Unfortunately, FTA may have negative effects on trade with rest of the world (ROW) – countries outside the free trade zone. We will take a closer look on two traditional issues – trade diversion and trade deflection.

2.3.1. Trade diversion

On a general level, firms try to minimize costs and among them the taxes. Duties and tariffs are forms of taxation, so firms try to minimize duties and tariffs as well. Duties increase manufacturing costs of products that need imported inputs, export duties raise the price of the good on the target market – in general they have an important impact on the price competitiveness. The company has to take into account the geographic location of the production and observe the predictability of the tariff system.[9]

The trade diversion is defined as a welfare change caused by shift of trade from cheaper (more efficient) producers to more expensive ones (Mirus and Rilska, 2003) and occurs after the formation of a free trade area, when the trade flow is diverted away from a more efficient supplier outside the FTA, towards a less efficient supplier within the FTA. First we observe situation prior to the formation of a FTA. In this situation it holds that:

(1) $$p_1(1+t) < p_2(1+t)$$

where p_i denotes price of input in country i. Because we assume that the goods are perfect substitutes and that both tariff rates are the same, the producer is going to choose the cheaper product, the one proceeding from country 1. For

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[9] NAFTA's producers may chose the possibility of advance rulings on customs decisions and follow the results of the dispute-settlement mechanism. Once a ruling is issued it is binding for the government - so the predictability of the system is rather satisfying;

simplicity we assume that the country had same tariffs for all the other countries[10], so we can write that:

(2) $\quad p_1 < p_2$

In this case rational producer chooses the input from country 1, which is the cheaper solution. We assume that (2) holds all the time. Now let's assume that producer's country forms a FTA with country 2, removing the tariffs on imported goods proceeding from the free trade. The tariff remains the same for country 1. The producer faces prices *p₁(1+t)* and *p₂+tcFTA*, where *tcFTA* denote additional transaction costs[11] connected with obtaining preferential treatment. We say that <u>trade diversion</u> in FTA happens in case that following holds:

(3) $\quad p_1(1+t) > p_2 + tc_{FTA}$

The producer chooses input 2 and behaves rationally, because he chooses the good that is cheaper for him. In the broader point of view the input purchased is more expensive because (2) holds and because product 2 is *de facto* subsidized because the member's government let go the tariff revenue. For example the price of US intermediates sold to Mexico are, on average, higher than the prices of the same goods for export to other (non preferential) destination by 12-13%, but these intermediaries may be cheaper in absolute terms, when the out-of-area intermediaries are subject to import tariffs.

2.3.2. Trade deflection

In free trade area, goods could enter through the low-tariff countries and later be shipped into other member countries, as depicted in Graph 2.2. In order to prevent the phenomena of the trade deflection, certificates of origin are implemented in order to prevent this type of free riding.

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[10] If we take into account membership in WTO, this assumption is in fact realistic;
[11] Usual transaction costs are present in both sides of equation and we assume that they are the same for both countries, and therefore we can subtract them and write the simpler version of the equation without the usual transaction costs;
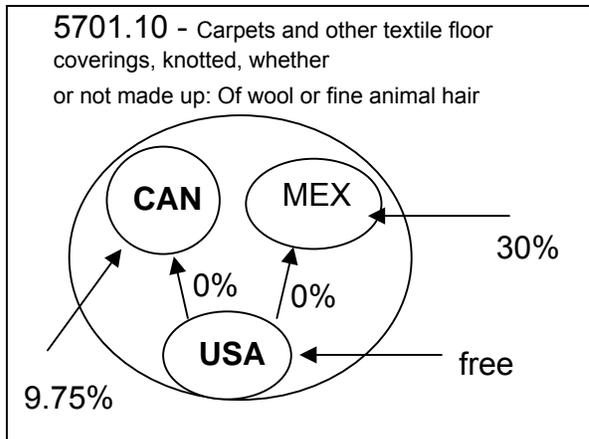
Graph 2.2. Possibility of trade deflection in NAFTA,
Source: tariff rates from United States Harmonized Tariff Schedule (2006), Canadian Customs Tariff, Mexican Tariff Schedule;

The certificates of origin are based on the rules of origin, that ensure that proper tariff is applied and goods not originating in the FTA can not be transhipped freely; in the example used, United States' low MFN rate can not be abused for import tariff elimination for goods that want to enter Canada and Mexico.

Unfortunately, as we will see later, too strict formulation of rules of origin may result in distortion of trade (other than the form of trade distortion showed earlier) and changes in production structure. The use of ROO may lower the efficiency and create additional administrative and bookkeeping costs[12], the complexity and nontransparency of ROO causes additional direct costs and delays - in real-world it is necessary to introduce customs controls among FTA members. Moreover, according to the WTO, the average number of free trade agreements per country is 6, so the situation when one product has to have different versions of certificate of origin is realistic, implying additional costs for the producers who plan to take advantage of the fact that their home country has several free trade agreements.

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[12] For example, NAFTA exporter to US has to keep the records proving the origin for five years. Penalties differ across countries, in US the civil penalty could reach up to 10.000 USD. The rules are not the same for different countries of destination which may complicate the exporters' situation even more (Lederman and Hersh, 1995);

In this introductory chapter we have described the important position of the free trade areas in the multilateral setting, how is the occurrence of such an agreement a way higher than the higher than of the other integrational stages. As a result of their higher relative importance compared to the other forms of the economic cooperation, we have focused on its basic features within the World Trade Organization and continued by mentioning its negative influence on the trade flows and economic efficiency. In the last section we described the reason why the certificates of origin are introduced. In the consequent chapter we will continue with this topic. We will take a closer look on the ROO and show how can their specification, in cases when it is too strict, influence the behavior of producers and even undermine the function of a free trade area.

3. Rules of origin

One cannot understand today's multilateral trading system without understanding its web of Preferential Trade Agreements. And one cannot understand these agreements without understanding their Rules of Origin.
Gene Grossman, Professor of Economics, Princeton University

Determining the origin is easy and simple procedure in cases when the good was wholly produced in one state, however globalization and advanced production techniques allow more and more dispersed production of one good – the "global factory" phenomena results in increasing numbers of products that were made using production factors from more than one country. A product can have only one country of origin, so the process of determining which of the countries involved is considered the originating country had to be set. Rules of origin are introduced among free trade area members in order to prevent trade deflection within the region. Unfortunately their introduction results in the fact that the trade within the zone is no more uninhibited, and they are connected with additional problems.

The basic function of the ROO is to serve as a differentiating mechanism to distinguish the country of origin between various products based on their place and composition of production. However the elimination of transshipment may result in the fact that prices are not fully equalized across the region.

For example, with no rules of origin in force in NAFTA, Canada could be used as the cheapest port of entry for the British Commonwealth states, because it has very low tariff for this group of countries. With the rules of origin in place, the liberal treatment of Commonwealth goods applies only to the Canadian market. Unfortunately, they do not fully solve the problem, nor they are a mere technical formality.

The lowering of traditional barriers to trade and the popularity of free trade agreements in the world have given the former administrative tool a policy instrument characteristics. ROO can increase linkages in the intra-area trade and thus serve as a de facto protectionist measure.

3.1. Definition, characteristics and design rules

> (...) <u>rules of origin</u> shall be defined as those laws, regulations and administrative determinations of general application applied by any Member to determine the country of origin of goods provided such rules of origin are not related to contractual or autonomous trade regimes leading to the granting of tariff preferences going beyond the application of Article I:1 of the GATT 1994.

Figure 3.1. Urugway Round Agreement, Agreement on Rules of Origin

Some definitions believe that ROO serve merely as the gate-keepers of the discriminatory regimes within a free trade area. As such ROO are not intended to impede trade with partner countries or the rest of the world, nor is their primary intention to raise additional trade barriers. Rules of origin are used to differentiate between goods that may be subject to different tariff levels, thanks to different places of origin of their inputs or parts. The reasons why they are used, as summarized by WTO:[13]

- to determine whether imported products shall receive most-favored nation (MFN) treatment or preferential treatment;
- to implement measures and instruments of commercial policy such as antidumping duties and safeguard measures;
- for the purpose of trade statistics;
- for the application of labeling and marking requirements; and
- for government procurement.

Rules of origin are also problematic thanks to different reasons, apart from the issues described in the previous chapter. They usually change for the new members; they influence incentives within the market and could serve as export protection. They are unfavorable for countries with underdeveloped customs structure because the developed countries may not recognize the proof of origin. Sometimes, they are too complicated; forcing producers to choose the MFN/regular tariff rate.

In its report, dealing with the free trade area between New Zealand and Australia, the Productivity Commission (2004) developed a set of design rules,

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[13] WTO, Regional Trade Agreements: Rules - The basic rules for goods;

which ideally the rules of origin should satisfy, when the potential benefits of a RTA are to be realized. ROO should:

- conform with the goals of the PTA;
- be consistent with the country's international obligations;
- avoid product-specific rules;
- avoid undue distortions in the allocation of resources and associated reductions in economic efficiency;
- facilitate organizational and technological innovation and the capacity of producers
- respond to changes in consumer tastes;
- minimize compliance costs for industry;
- minimize administration costs for government;
- be certain and consistent in the determination of origin; and
- operate in a transparent and accountable manner.

Figure 3.2. Rules of Origin Design Principles,
Source: Productivity Commission (2004b)

3.2. Basic characteristics

Rules of origin as such have several defining characteristics. The very basic distinction could be made between *preferential* and *non-preferential* ROO. General characteristics of ROO include the level of the *de minimis* threshold, roll-up principle, cumulation rules, list of exceptions, approach to duty drawback, the level of administrative needed to prove the origin and the possibility of self-certification.

Non-preferential rules[14] are implemented to establish ADCV duties, safeguard measures, quantitative trade restrictions as a reason to distinguish between the domestic and foreign production. This kind of ROO is used for example in the customs unions, either as a transitory measure or in special categories where the CET is impossible or difficult to reach. The *preferential ROO* are the ones that we will be interested in. They provide rules under which the product will be treated as originating in the free trade area and thus qualifying for the preferential treatment.

The *de minimis* rule states the maximum negligible share of non-originating inputs. The roll-up principle defines specific processing requirements that allow the input materials to be considered originating and subsequently are

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[14] Only non-preferential rules of origin are part of the WTO's rules of origin agreement;

not taken into account in the later calculations of value added percentages as non-originating. The *de minimis* and the roll-up principle are frequent features, they are present in more than 95% percent of present PTAs[15]. The *de minimis* principle and the roll-up are ways how non-originating parts may be considered originating, thus they are ways how to ease the strictness of the ROO.

Elaborate lists of exceptions usually indicate the general level of restrictiveness. According to Estevadeordal and Suominen (2005) generally specified ROO allow flexibility, liberal forms of cumulation and drawback facilitate trade flows. On the other hand strict sectoral ROO on final goods level encourage trade in intermediate goods.

3.2.1. Cumulation rules

One of the general features of ROOs are the cumulation rules – that is to which extend can producers import non originating inputs from other member countries without endangering the final good's originating status.We know three types of cumulation. The strictest form is the *bilateral cumulation* - that is cumulation that is limited to a country pair, while the imported inputs have to satisfy their ROO as well. The *diagonal cumulation* allows cumulation between any three or more countries which have signed trading agreements with each other, when the inputs itself are considered originating in the member country. *Total cumulation* which involves more flexibility than *bilateral.*

Augier et al. (2005) show that the cumulation rules have an important effect on the trade development between PTA members. They encourage producers to use inputs proceeding from the preferential area(s). They show that for the intermediate good the switch from bilateral to diagonal or full cumulation could account for up to 50% increase in trade.

3.3. Types of rules of origin

Apart from the general rules, there are several types of possible ROO formulation. The real life rules of origin can be characterized as a system based on multiplicity of criteria, specific because of its selectivity and detailed

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[15] Based on www.wto.org, Preferential trade agreements section information;

elaboration (Garay and Cornejo, 1999). Each country could use different requirements and more types of qualification criteria may be combined together. To illustrate the how complicated are in reality rules of origin, we will adduce the different types of rules of origin requirements.

a) Product is wholly produced or obtained in the area

This applies to products grown and breaded in agriculture, like fruits, vegetables or minerals that are mined in the region.

b) Substantial transformation criterion

This rule was defined by Kyoto convention in the following way: A commodity that combines materials or processes from two or more countries will be considered the product of the country in which it had *last* undergone a *substantial transformation*. A transformation has to be "substantial" – a mere improvement of the product does not count. The new product should result in a good which is "new and different" from the inputs that were used in the transforming process. In other words when the transformation process results in a product with a new name, a new character and that serves to a different purpose. Example may be importing peanuts from ROW and transforming them into a peanut butter. A mere improvement of the product does not constitute a change in use**.** There are two ways how to ensure that the substantial transformation occurred:

b1) Domestic/regional content requirements:

It means that the latest production process within the area has created a certain percentage of value added; it may be defined as a minimum percentage of the value that has been added in the region or the difference between the value of the final good and the value of the imported parts (4). Problem of this test is the fact that it creates the necessity to quantify the production costs – and may cause inefficient behavior of producers, as we will show later. Moreover this type is vulnerable to changes in exchange rates.

The domestic content requirement (*DC)* is specified as:

(4)
$$DC \geq a\,p_a / (a p_a + c\,p_c)$$

where p_i are the unit prices of inputs, while input a is foreign input and c are domestic inputs**.**

b2)   Change/shift in Tariff Heading Test:

Common are either the tariff item level rules, or classification changes. The production activity should result in different product's classification and different heading of the customs tariff classification under the Harmonized Commodity Description System (HS) than its intermediate inputs, usually specified at the product level. Its specification is usually not unique for all classifications, but rather detailed; depending on the character of the product – an explicit change in chapter, heading, subheading or tariff item may be required. This type of requirement is considered the easiest[16] and therefore the most transparent one. Although it is predictable, its flaw lies in the fact that it is based on the system of customs classification which was not designed for this purpose. It also lists the exception in form of specifically forbidden use of non-originating materials in certain tariff specification bundles. According to Appiah (1999) this type of ROO formulation requires a throughout knowledge of the HS on all the parties involved with production and/or transportation of both final goods and intermediaries.

c)   or certain production activities (Technical process / components in manufactured criteria) and states its lists special features, special processes that

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[16] The rule would stand: 22.03-22.07A change to heading 22.03 through 22.07 from any heading outside that group, except from tariff item 2106.90.ee or heading 22.08 through 22.09. (NAFTA, Annex 401) – in words it means change from these headings: „Beer made from malt", „Wine of fresh grapes, including fortified wines (grape must other than that of proceeding from Vinegar and substitutes for vinegar obtained from acetic acid)", „Vermouth and other wine of fresh grapes flavored with plants or aromatic substances", „Other fermented beverages (for example, cider, perry, mead); mixtures of fermented beverages and mixtures of fermented beverages and nonalcoholic beverages, not elsewhere specified or included, Undenatured ethyl alcohol of an alcoholic strength by volume of 80% vol or higher, ethyl alcohol and other spirits, denatured, of any strength" to any of the listed groups excerpt the group of origin and except from the group „Other" from the Section IV.Chapter 21 „Prepared foodstuffs; beverages, spirits and vinegar; tobacco and manufactured tobacco substitutes" or headings „Undenatured ethyl alcohol of an alcoholic strength by volume of less than 80% vol; spirits, liqueurs and other spirituous beverages" and „Vinegar and substitutes for vinegar obtained from acetic acid". The listings of the subheadings of the relevant groups are described on more than seven pages of the Harmonized Commodity Description and Coding System, so the rule can be hardly described as easy;

a good has to pass through or enumerates raw materials that have to be used in production, in order to be granted a preferential treatment. The processes enumerated are commonly tailored to specific cases. They are not generally applicable for all the goods, may be easily exploitable and due to fast technological process needs constant adjustments. Estevadeordal and Suominen (2005) prove highly selective sectoral ROO discourage aggregate trade flows.

3.4. Effects of restrictive rules of origin

ROO may have a variety of effects, determined by the characteristics and exact types of the rules used. Carrére and de Melo (1995) define restrictive ROO as those rules that are stricter than necessary to prevent trade deflection. They give producers an incentive to increase the amount of intermediate and final good manufacturing, processing and assembly done within the preferential area at the expense of facilities in non-member countries that would otherwise have a comparative advantage. In our analysis we will hold to this definition.

There are basically two types of ROO connected costs – administrative and production costs. An exporter who wants to obtain preferential treatment has to bear costs of determining, meeting and proving origin (Kunimoto and Sawchuk, 2004). The costs are relatively higher for small shipments, small companies or less experienced exporters. Additional costs arise also for the customs authorities that are expected to examine the certificates of origin and inspect the proofs of the producers.

According to Weiler and Cho (2004) the primary motive for creating restrictive ROO or tightening the existing ROOs is to provide compensation to local manufacturers that will experience losses connected to the trade liberalization with the member countries. If the ROO are implemented with this goal in mind, they can be perceived as a policy instrument that is against the Article XXIV of GATT – they may be perceived as the *other restrictive regulation of commerce*, which are to be eliminated in a free trade area in order to satisfy the WTO's rules for PTAs. Producers are subject to new profit function which is –

as it will be shown later – dependent on the minimal domestic content requirements.

There are several groups restricitve ROO's of effects, apart from the elimination of transhipment:

Affected firms	Possible solutions	outcomes
Located inside NAFTA but use global inputs and export final good to NAFTA countries	Switch to domestic/NAFTA supplier	**trade diversion**
	Produce previously imported inputs	**vertical integration**
	Profit maximize using the same inputs	**lower utilization rates, trade preference nullified**
	use MFN tariff	
Located outside NAFTA but export into NAFTA region	export to ROW / serve only home market	**changes in firms' strategy**
	Relocate production to NAFTA country, sell localy and export to ROW	**changes in production location**

Figure 3.2. The effect of restrictive rules of origin on producers' behavior

3.4.1. Trade diversion and increased trade barriers for non-member states

In order to satisfy the origin requirements, the attractiveness of local inputs increases. Government may use the path of strict ROO as a compensation to local producers for possible losses caused by increased competition in the enlarged area markets. This basic and most frequent effect results in increased sourcing consumption of regional factors of production through restrictions of the

access of ROW's suppliers beyond the initial levels of protection prior to the agreement.

Restrictive rules of origin are for example the cause of increased intra-NAFTA trade with autoparts and textiles. These are examples of ROOs negotiated on the industry level which provide a great opportunity for the industries to offset the negative effects of a FTA by pushing for a restrictive formulation of the ROOs. Rent seeking and lobbying of interest groups could result in very restrictive outcome – enhanced competition in the textile and apparel sector was offset by the increased demand for intermediary goods needed in order to satisfy the value content requirements.

Ju and Krishna (1998) prove the intuition for intermediate goods – the restrictive ROO in the final good market can restrict producer's choices of intermediate good market and improve access to the final good market. They show that the effect of increase of restrictiveness on the price of the domestically produced input is not monotonic.

3.4.1.1. Secondary trade diversion

Let's assume that the FTA uses certificates of origin in order to avoid trade deflection and that it opts for regional content requirement rules of origin. For purpose of analysis we define <u>secondary trade diversion</u>[17]. In cases that producer is also intra-FTA exporter it may still be rational for the producer to choose inputs from country 2 even under condition (5).

(5)
$$p_1(1+t) < p_2 + tc_{FTA}$$

Let's assume that the producer/exporter he uses two inputs x_a and x_b to produce final good x. Input x_a is the input from the previous discussions and has to be imported either from country 1 (ROW country) – described as x_a^1 or country 2 (partner country within the FTA), described as x_a^2. Input x_b has to be imported from the country 1 because there is no inter-FTA producer. Inputs are used in proportion $a: b$, where $a+b=1$, in other words $b = 1 - a$.

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[17] it is possible that this phenomenon has a different denotation but we have not succeed in finding it in any relevant literature and therefore we have used our own definition;

After multiplying both sides of (5) by $ax_a{}^i$ which is from definition positive and adding the term $p_1(1+t)(1-a)x_b$ to both sides it holds that:

$$(6) \quad p_{1b}(1+t)(1-a)x_b+(p_1(1+t))ax_a^1 < p_{1b}(1+t)(1-a)x_b+(p_2+tc_{FTA})ax_a^2$$

And it seems that the producer should buy input $x_a{}^1$. In presence of rules of origin with regional content requirements choosing to buy input from country 2 may be rational, even if it is absolutely more expensive. Under the <u>secondary trade diversion</u> the good made of left hand side of equation (6) does not qualify for the preferential treatment of the final good and $[p_1(1+t)(1-a)x_b + (p_2+tc_{FTA})x_a{}^2]$ does. This holds for cases where (7) and (8) holds:

$$(7) \quad p_2 ax_a^2/(p_{1b}bx_b+p_2 ax_a^2) \geq DC$$

$$(8) \quad ax_a^1[(p_2+tc_{FTA})-p_1(1+t)] < (1+t)[p_1(1+t)ax_a^2+p_{1b}(1+t)(1-a)x_b$$
$$-[(p_2+tc_{FTA})ax_a^2+p_{1b}(1+t)(1-a)x_b-tc_{FTADC}]$$

where tc_{FTADC} are additional costs connected with proving compliance with domestic content requirements. In words, secondary trade diversion takes place where DC (the domestic content requirement) is satisfied and where the amount saved by using the cheaper input is smaller than the amount saved by using the preferential treatment for final good, taking into account additional costs tc_{FTADC}.

We have to note that the incentive for using the more expensive input rises with the height with the amount of domestic content required and with the height of the tariff for the final good[18], and declines with the height of the additional transaction costs tc_{FTA} and additional costs tc_{FTADC} that are connected with domestic content requirement proofs.

The transaction costs tc_{FTADC} have been estimated on the level of 3-5% f.o.b. price in case of EFTA (Krueger, 1995) and who has also reported that in NAFTA Canadian producers sometimes opt for MFN tariff treatment instead of preferential treatment. It suggests that the $tcFTADC$ may be prohibitively high - for some cases (9) may hold. The change of the sign compared to (8) is caused by a high value of $tcFTADC$:

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[18] There exists some maximal value of domestic content requirement DC_{max} for which the ratio $a{:}b$ can not hold;

$$(9) \quad ax_a^1[(p_2 + tc_{FTA}) - p_1(1+t)] \gg (1+t)[p_1(1+t)ax_a^2 + p_1(1+t)(1-a)x_b] -$$

$$-[(p_2 + tc_{FTA})ax_a^2 + p_1(1+t)(1-a)x_b - tc_{FTADC}]$$

In an extreme case, for a good wholly produced within the area x$_c$, (10) may hold. The costs connected with proving origin *tcFTADC* are too high and the producer will use tariff regime when exporting to partner countries. In this case the producer has an incentive to choose the state with the biggest market, because it is cheaper to use as much as possible of the production domestically. So under certain setting the ROO may discriminate the smaller members in favor of the largest one and motivate the producers that face restrictive or expensive to prove ROO to change the production location.

$$p_c(1+t)x_c < (p_c + tc_{FTADC})x_c$$

(10)

3.4.1.2. Rules of origin and trade diversion's costs

Regardless of the welfare outcome of the FTA, its formation is feasible only thanks to the existence of ROOs. In case of no rules of origin the countries would compete for the lowest tariff – in order to attract the imports and the connected tariff revenue – and loose an important source of revenue. Duttagupta and Panagariya (2003) prove on the analyses using the intermediary inputs, that introduction of rules of origin raises welfare of the FTA. They show that thanks to the existence of ROOs the FTA with any welfare effect is feasible, if the only other option is the MFN tariffs. Nevertheless, there exists a certain threshold after which the further tightening has a negative effect on the welfare. The tariff for member countries is offset by an increase in the price of the final good, caused by the higher price of the inputs.
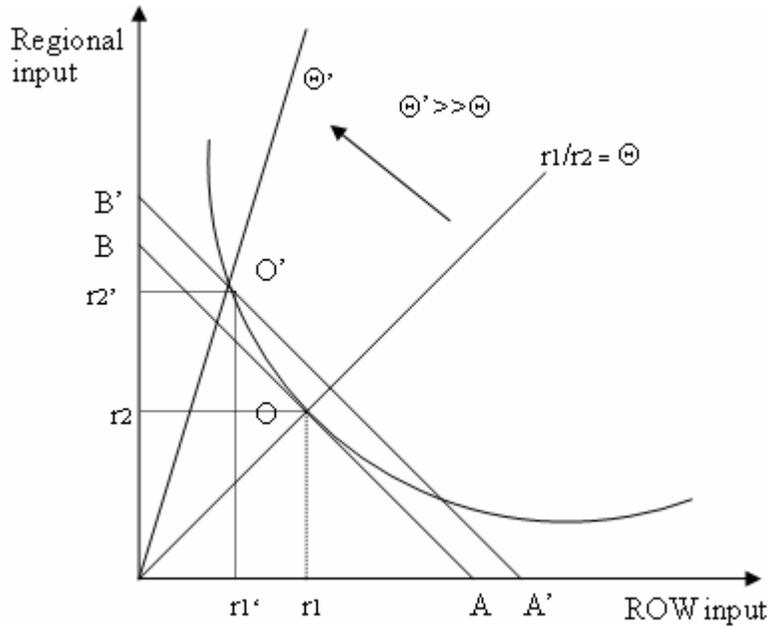
Graph 3.1. Effect of restrictive ROO on input choice, based on Appiah (1999) Krishna (2005) and Cadot et al (2006);

Let's assume that two countries form a FTA and ROO based on domestic content requirements are introduced – a good, in order to satisfy the origin requirements has to have a minimal percentage which is set to Θ'.

We can see this analysis on Graph 3.1., which depicts the impact of binding rules of origin on the choice of inputs. On horizontal axis we measure the amount of input imported from the world, the vertical axis shows the amount of regional input used. Before the introduction of ROO the producer chooses the production bundle (*r1, r2*), but when the domestic content requires to lower the share of *r1* and set the ratio at minimum of Θ', the producer has to shift to the input combination (*r1', r2'*).

Because in the new point O' the isocost is not tangent of the isoquant, the bundle is suboptimal. The distance AA' and BB' represent the additional cost of stricter rules of origin for regional and imported input. The change in allocation may result in the exit of the infra-marginal firms from the market and possible decline in per-firm and aggregate output. Moreover, Appiah (1999) shows that ROO not only raise the production costs, but also reduce the total output relative to the free trade levels.

3.4.2. Increase of direct costs connected to preferential trade

More restrictive ROO imply additional decision making, changes of production patterns and additional paperwork, extra legal costs, bookkeeping, accounting, etc. Moreover, costs of verifying origin are not marginal. There are costs connected with determining and proving origin, or changing the processes in order to meet the requirements. Companies have to purchase special software, hire experts, have to face additional accounting costs, etc. The most impact has the change on small firms or shipments. Appiah (1999) shows on the computable general equilibrium model for NAFTA countries that the costs of restrictive ROO for the US economy to be around 2% GDP.

The costs connected with too restrictive ROO's impact on trade could be divided into several groups – administrative costs, costs connected to changes in efficiency, costs connected to firms' strategy. Some of these costs represent one-time investments or burdens, other are constant[19] – like the administrative costs.

The administrative costs of preference treatment were estimated by different studies. In the 1980's many studies dealt with the EFTA/EC administrative costs: Koskinen (1983) estimated the range of compliance costs for Finish exporters to EC to be between 1.4% and 5.7% of the transaction value of the goods, Herin (1986) estimated the average EFTA ROOs compliance costs to be around 3-5% of the producer's price and states that 25% of trade[20] between EFTA and the EC is on a non-preferential basis because of the high costs of satisfying the change in tariff classification. Holmes and Shephard (1983) quantified the average paperwork connected with ROO for one product to be about on average over 350 pages. Estevadeordal and Suominen (2003) state the example of Brazilian costs of proving origin – the shipment costs range from 6 to 20 $.

The administrative costs are not only on producers' side – for example under the NAFTA setting customs administration of the importer country is

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[19] The term constant was used for simplicity, in reality some learning curve is present and the administrative costs may decline slightly in time. For examples of learning mechanism in NAFTA for years 2000 and 2001 see Carrére and de Melo (2004);
[20] 21.5% of EFTA's imports and 27.6% of EFTA's exports to EU;

entitled to conduct post entry verifications of the certificates of origin – usually by questionnaires and verification visits that may be underpinned by audits, telephone or fax verifications. The post verification procedures have a positive effect on costumes wait times on borders.

3.4.3. Effect of firm's strategy

The changes of strategy may be divided into several groups: vertical integration, changes of production structure, changes of target market and changes in producer's location.

The firms may be forced to change the investment strategy and relocate the production into the preferential market area, restrictive ROO may result in a decision to move wholly or partially the production itself to the territory of the FTA in order to comply with the requirements. As a result, restrictive ROO cause the increased attraction of investment flows into the markets of the area members.

A good example is provided by Jensen-Moran (1995) and deals with television tubes. The specific rule was introduced to attract tube production into the region and while allowing the assembly anywhere, the setting attracted major foreign investment in the industry. In cases when the area consist of partners of unequal size or economic importance, ROO may influence the decision to which of the partner countries to relocate the production in favor of the biggest partner.

Another option that the producer has is to produce previously imported inputs – choose the way of vertical integration. As noted by La Nasa (1995) restrictive ROO may not be designed to protect final good producers, as the traditional trade barriers are, they may serve to increase the levels of investments in production and assembly of intermediate goods and to enhance the position of existing intermediate producers.

In order to avoid dealing with the ROOs, the firm than has an additional option - it may choose to serve the home market and export to the ROW – to change its target market. On the example of NAFTA, the US producer's choice lies between not complying with the ROO and producing in the US from previously used inputs and serving the home market and/or using the MFN rates

to export to the world or other member countries. Some of the outcomes will be important for our analysis, because they imply that rules of origin are one of the non-tariff barriers that is not talked about.

3.4.4. Changes of the profit function

Krueger (1993) developed a simple structure, although her original setting is tailored to the textile/apparel sector we can use it to show how the export protection mechanism works of ROO work in all the industries. We will use a slightly modified Krueger's approach. Although the initial formulation was industry specific – it can be used for any good and its input, and exporter/importer pair. In our case, we assume importer USA and exporter Mexico.

The NAFTA's importing profit maximizing firm is trying to optimize its profit function, given by

(11)
$$\Pi_F^{\text{IM}} = (p_F^{US}) - p_I^{W}(1-\beta)y - p_I^{US}\beta y$$

Where,

I, F	signify the nature of the good, input or final product
$p^{US/MEX}{}_{I/F}$	the price of apparel/textile in US/Mexico
β	the share of value of American input ($\beta \leq 1$)
y	international value of input needed for one unit of output, the cost share of input in output - determined by production technology ($y<1$)
$t_I,\ t_F,\ t_I^{MEX},$	US import tariff rates for input, US import tariff for final good, Mexican import tariff on input

The prices are defined as:

(12)
$$p_I^{US} = (1+t_I)p_I^{W} \quad p_F^{US} = (1+t_F)p_F^{W}$$

Which leads to:

(13)
$$\Pi_F^{\text{IM}} = (1+t_F)p_F^{W} - p_I^{W}(1-\beta)y - (1+t_I)p_I^{W}\beta y$$

The world price of input can be used as numeraire and to simplify the process it can be set equal to one, thus changing the (13) to:

(14) $\Pi_F^{IM} = (1+t_F) p_F^W - (1-\beta) y - (1+t_I) \beta y = (1+t_F) p_F^W - y(1+\beta t_I)$

In this setting the required regional content ratio – β persist in the formula up to the final formulation and thus has a direct influence on the importer's profits. In an extreme cases of $\beta=1$ which may be valid for example of textiles in NAFTA that are subject to the yarn forward rule, the formula is simplified even further (15). Other examples are fruits and vegetables, minerals and processed food: [21]

(15) $\Pi_F^{IM} = (1+t_F) p_F^W - y(1+t_I)$

In cases when the producer that does not choose to use the preferential treatment, his decisions are subject to profit function (16):

(16) $\Pi_F^{IM} = p_F^W - y((1+t_I^{MEX})(1-\beta) + \beta(1+t_I) p_I^W) = p_F^W - y(1+t_I^{MEX})$

The producer will choose the NAFTA's preference rate in cases when (17) holds:

(17) $(1+t_F) p_F^W - y(1+\beta t_I) > p_F^W - y(1+t_I^{MEX})$

Which can later be simplified to:

(18) $t_F > y(1-\beta)(t_I - t_I^{MEX})/ p_F^W$

If we assume that the share of US input β in the non-preferential case is given, as well as technology and the world price of output, the whole fraction could be taken as a constant k, thus showing that the decision is dependent only on the relationship of US import tariff on output and the tariff preference margin of Mexican/Canadian and US import tariff on textile.

(19) $t_F > k(t_I - t_I^{MEX})$

Krueger (1993) later uses the positive levels of profit from equation (16) to define the protection to domestic value added in the US as (20) and using this formula defines the criterion for positive effective protection in the US as (21):

(20) $\quad (1+t_F)\, p_F^W - \beta\, y\,(1+t_I)$

(21) $\quad ((1+t_F)\, p_F^W - \beta\, y\,(1+t_I))/(1-\beta)\, y > 0$

The higher is (21) for specific good the higher will be the cost for Mexican producers, who are willing to comply with the ROO, to purchase intermediaries, even in cases when the ROW price is lower. Apart from the need to satisfy the rules of origin, the difference in levels of protection between domestic and partner country may effect the decision to purchase the higher cost inputs.

3.4.5. Lowering of the utilization rates

The administrative costs resulting from too restrictive rules of origin are one of the main reasons for the low utilization rates. Utilization rates are influenced by three main factors: compliance costs, MFN and preferential tariff rates.

We define preference margin as the difference between the preferential treatment provided by the FTA and the MFN rates[22]. In cases of zero preference margins, the importers do not have to provide proof of origin and the rules of origin do not have any impact on the production decisions. In cases of positive preference margins the incentive to use the preferential treatment increases with the preference margins, thus the utilization rates should be a positive function of preference margins. This may not hold in cases when for higher preferential margins, stricter rules of origin are introduced – Cadot et.el. (2006) state the example of declining NAFTA utilization rates for higher preference margins, as a result for stricter rules of origin.

Since the finalization of the Uruguay round in 1993 the MFN binding tariffs have been at very levels, with a very high proportion of tariffs bound to zero. Moreover, most of the countries eliminated the special rates on imports, as a result the incentive to use preferential treatment decreases with each WTO

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[22] This definition is usual, however we have been surprised that in the previous research no mention of the *merchandise processing fee* was found. This fee was collected on goods entering the US and not qualifying for any preferential treatment – the goods entering with the MFN rate. It was set on 0.21% of the import value (minimum of 25$/maximum 485$ per shipment), thus in research prior 2003 (when the fee was suspended) the preference margin definition, if defined properly, should contain this fee as well, because it further enlarges the preference margin;

round. Other factor – the compliance costs are on the other hand not marginal. Cadot et al (2005) estimated the compliance costs associated with rules of origin to be around 6.8% of good value. The main advantage of FTAs – preference treatment for the imports - has decreased, as it may be cheaper to offset the MFN tariff by savings created by low cost inputs imported from ROW rather than using the more expensive partner's inputs and be subject to the compliance costs. For example, the price of US intermediates sold to Mexico is, on average, 12-13% higher than the prices of the same goods exported by other country.

An example of high administrative costs forcing the producers not to use the preferential treatment is the European General System of Preferences. According to Brenton and Manchin (2002) the utilization rates[23] for eligible developing countries were around 30% while the system covered almost 100% of the EU imports.

In this chapter we have summarized the influence of the introduction of restrictive rules of origin on the producer's behavior, both at a company level and preferential area level. We have shown that they can be hardly considered a negligible administrative banality, as implies the way they are described in the economic integration textbooks. Because in our thesis we focus on the impact of preference rules of origin in NAFTA countries, before proceeding to its evaluation, we have to briefly describe the basic characteristics of the North American Free Trade Area and its rules of origin.

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[23] We define utilization rate as a ratio of imports that receive preferential treatment to total import from the given partner country;

4. NAFTA[24]

NAFTA – Not A Fair Trade Agreement...
The Owner-Operator Independent Drivers Association

The free trade agreement among the three North American countries came into force on January 1, 1994 – making it the first North-South type of preferential trade agreement. Currently the area accounts for a combined population of approximately 435 million and a market that generated 14.5 trillion of USD of GDP in 2005, which makes it the second largest free trade area in terms of GDP after the European Economic Area. The remaining tariffs among members will not be fully phased out until the end of 2008.

The Agreement consists of preamble and twenty-two chapters that deal with the basic issues of the setting of the area, the document allows member to secede after giving six months notice. In theory the new members may join the FTA, regardless their location based on their application, review and approval procedures of the member countries.

4.1. Economic characteristics

The economies of the three countries are disparate in many factors. United States are the most influential member of the grouping; it accounts for approximately 68% of the population and 87% of the GDP. Mexican population represents almost one quarter of the total population, but thanks to a low GDP per capita volume, Mexican GDP constitutes only about 5%. The rest is the Canadian ratio – approximately 7% of the FTA's population and 8% of the NAFTA's GDP[25].

The member countries are different in many aspects. The US are the member most independent on international trade – with export accounting for

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[24] Information in this chapter is based on CIA Fact book, IMF World Economic and Financial Surveys, Trade Information Centre of United States International Trade Commission and NAFTA webpages;
[25] Based on CIA World Fact Book's values for f.o.b. export/ c.i.f. import values and real GDP for 2005;

roughly 7% of the GDP and import equivalent to only 5% of GDP. Canada's economy is the most dependent on international trade – exporting approximately 35% of its total output and importing 31% of GDP. Mexico lies in between, exporting 30.5% and importing 32%.

The non-trade benefit is concerned an "export" of capitalism and free-market policy into Mexico, as well as increase of potential influence on environmental issues in the developing country. Another benefit, especially for the United States are the security considerations and the creation of possible negotiation coalitions and momentum for multilateral trade negotiations (Hufbauer and Goodrich, 2004)

We should not forget a special feature of the Mexican market – maquiladoras. This type of factories does the assembly for US market on the Mexican ground, usually situated near the US-Mexico Northern boarder. Maquiladoras have had a special position within the market even before 1994, using the duty-drawback treatment[26]. After NAFTA additional advantage was included – the tariff exemption included the Mexican value added as well, only the smaller customs duty is refunded[27].

The existence of maquiladoras has an effect on the US import and export data, as noted by Romalis (2005). Under "production sharing" provisions US import tariffs are not paid on the US sourced content of many imports to the US, while the full value of those transactions is recorded in US trade statistics.

4.1.1. Mutual trade flows

The trade flows among the partners reflect their geographic location, the largest trade flows occur between US and Canada. In 2005 the United States imported approximately 287.9 billion of USD in merchandise and exported approximately 211.3 billion of USD in merchandise from Canada. United States' second most important trading partner is Mexico, accounting for approximately

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[26] Under the Duty Drawback the companies are entitled to refund duties paid on imported inputs for goods that are to be exported. The similar effect have the Export processing zones – in this case the inputs enter duty-free under the re-export condition;
[27] Either Mexican import duties or US import duties;

11.3% of total US trade – with 120 billions of USD in goods imported and 170.2 of billions of USD exported to the USA. The trade between Canada and Mexico is of a smaller scale. Mexico is in the top 5 of Canadian trade partners, with imports equivalent to 2.7 billions of USD and exports reaching the value of 12 billions of USD.

NAFTA has had the greatest impact on trade between the US and Mexico, thanks to the fact that US and Canada have had a free trade agreement since 1989. On the contrary, Mexico imposed high import duties, maintained import quotas and licensing requirements (Lederman and Hirsh, 1995)[28]. Although Mexico was eligible to use the Generalized System of Preferences previously to joining NAFTA, example of US – Mexican trade behavior after NAFTA formation suggests possibility of trade diversion. Mexican tariffs for non-NAFTA tariffs have increased 15 percentage points in 2 years after signing the NAFTA agreement, US exports to ROW decreased by 66%.

Other reason for the growth of the US - Mexican trade flows is that Mexican economy, as a developing country, has had the best potential for growth. Due to the new foreign investment regulations, US investments in Mexico were expected to result into increased exports. We can see the development of US imports and exports with other NAFTA members on the following graph.[29]

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[28] On the other hand, according to Holbein and Musch (2005) exporters to Mexico are still concerned about customs administration procedures. Among the most frequent complaints are: insufficient prior notification of procedural changes, inconsistent interpretation of regulatory requirements, uneven enforcement of Mexican standards;

[29] Other year's composition of US trade with NAFTA countries may be found in the CD ROM Attachment;
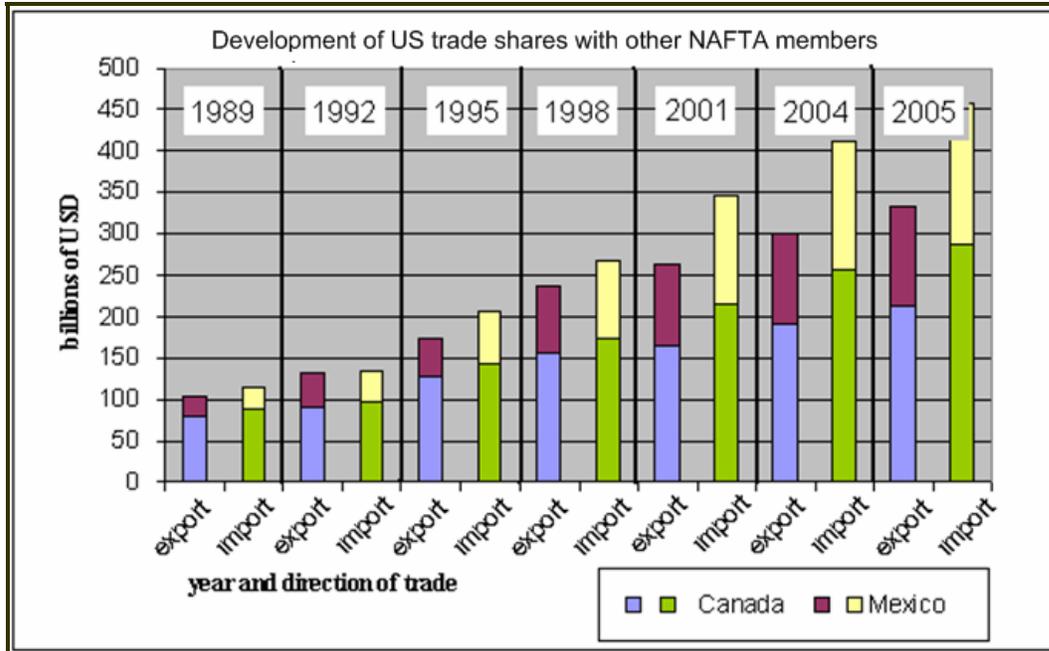
Graph 4.1. Development of US trade flows with NAFTA (1989-2005),
Source: author's calculation based on US Census Bureau data;

4.1.2. Investment flows

As far as the investments are concerned, Mexico has taken a different path than the rest of the NAFTA members. It became member of GATT in 1986 and started with the liberalization of FDI requirements. NAFTA's main effect for Mexico was the decrease of the investment restrictions in Mexico (ie. local content and market share requirements, strengthened patent provisions). As a result, US investment in Mexico rose by 242% in the same period, while the investments to ROW have reached level of 148% increase. Canadian investments in Mexico have tripled since 1994.

4.2. Winners and losers and perception of NAFTA

The most discussed issues of NAFTA are on the other hand environmental impact of the agreement – fears that Mexico will not respect or enforce properly the strict US regulations – and the impact on labor market. The so-called "giant sucking sound" was the fear of consequences for workers displaced by cheap imports from Mexico or the outsourced production from US to low wage foreign plants. However, according to Preeg (1998) the labor

adjustments caused from imports and FDI abroad have been relatively small, and was offset by the creation on new and higher pain jobs.

The industries that have benefited the most were US and Canadian auto and auto part industries, oil equipment and service providers, manufacturers of sophisticated hardware, US banks and insurance companies and trucking companies of all member states. (Lederman and Hirsch, 1995)

Generally polls show both the modest support of the US citizens, as well as their reservations about the impact of the agreement. Modest plurality agrees that trade agreement has been good for the US overall, but majority is concerned about the impact on jobs and wages of workers (Warf and Kull, 2002)[30]. There have been several polls conducted since NAFTA came into force with fairly steady results since 1997, when the support increased and substituted the persisting perception that the net results for USA are rather negative. The persistent reservations are the concerns about jobs, while the persistent plurality believes that NAFTA meant net job losses, although the same amount of respondents believed that it was good for American business. The other strong issue is the environment, in several polls conducted during the 1990's the majority of people expressed their worries about the impact on the environment – especially the fact that US firms move to Mexico partly in search for lower environmental standards (PIPA, 2000)

In the June 2005 PIPA-KN Poll plurality of 46% said that NAFTA has been good for the US while 40% said it has been bad, 14% say it has been neither good nor bad.

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[30] The ambiguity feeling about the trade promoting authority of the president;

US. Perceptions of NAFTA 1993-2005
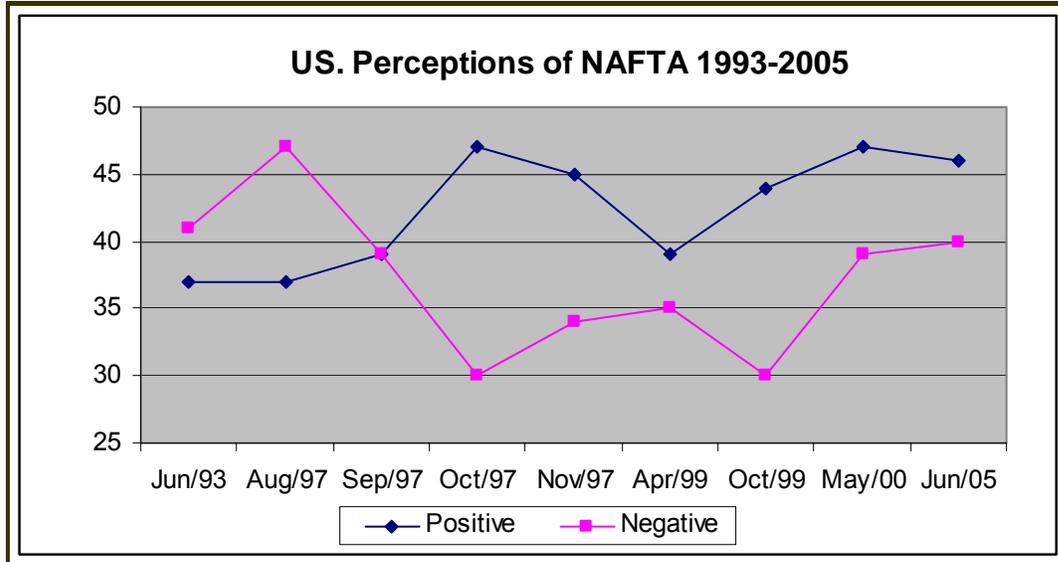
Graph 4.2. US Perceptions of NAFTA in public polls;
Source: author's calculations based on PIPA (2000), PIPA (2005), Warf and Kull, (2002);

4.3. NAFTA and protection

The sectors that are most probable to push for stricter rules are those that are under certain levels of protection, in these sectors the incentives to offset the enhanced competition is the largest. Estevadeordal and Miller (2002) divide these sectors into two groups according to their origin – to producer and government-driven protection. In NAFTA setting, the sign of enhanced protection is that the sectors have a special status, which means that their tariffs will be phased-out after more than 10 years or the phasing out is not planned at all or that the strict rules of origin are introduced, this holds especially in cases producer driven protection is present. For especially sensitive goods the phase-out was planned for 15 years and allows emergency protection regime to be started.

As far as the producer-driven protection is concerned, there are few basic characteristics, which may be observed. One feature may be that production is highly geographically concentrated, the location of the production is politically important, producers are organized politically, the world's level of protection is quite high or producers have a "real" reason to fear protection. The government protection usually comes from situations where the government fears important

negative social impacts, act for long run historical reasons, or the sector may be an important revenue generator or they try to secure "national integrity".

One of the most important non-liberalized sectors is agriculture[31], textile and apparel, logs, wine, beer, distilled spirits, and the goods that are in the tariff group of C+ Category[32], which means goods that are concerned sensitive and whose phase-out should be finished by January 1, 2008. Currently, sugar tariffs, frozen concentrated orange juice, winter vegetables, peanuts, corn and dry beans are still imported from Mexico using non-zero tariffs.

Special category constitutes the list of general exceptions that allow member states to maintain independent policies that may have restrictive effect on trade or permit states to temporarily restrict trade. Among the reasons may be conservation of exhaustible natural resources, protection of human or animal health and life, etc.

Both Canadian and US industries pushed for sector specific rules of origin that would eliminate the possibility of touch-up assemblies that would ensure the preferential access to the whole market. On the other hand, Mexican side pushed for a setting that would not impede the foreign investments. The result is the extensive ROO protocol with specific rules for about five thousand goods.

4.4. NAFTA's rules of origin

The rules of origin are covered in Chapter 4 of the Agreement. When the good satisfies the ROO, the consequently issued certificate of origin[33] is valid for one year and can be used for multiple imports. All the NAFTA countries use the same form for the certificates of origin and allow the self-certification. Now to specific NAFTA rules origin.

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[31] Especially dairy products, poultry and egg products, frozen orange juice, selected fruits and vegetable, fish;

[32] Products traded with Mexico are divided into A, B, C, C+ and D categories. Category A tariff rates were eliminated when NAFTA came into force in the beginning of 1994, group B was eliminated during 5 years, group C during 10 years, D goods were duty free even before NAFTA came into force. In total it influences tariff on over than 20.000 gods. The trade between Canada and United States is regulated by tariff schedule covered by the CUSFTA agreement, which finished the phase-out section in 1998 (Condon, 2002);

[33] Example of NAFTA's certificate of origin can be found in the CD ROM Attachment;

The NAFTA general *de minimis* rule of 7% does not apply for the following product categories: dairy production; edible products of animal origin; citrus fruit and juice; instant coffee; cocoa products, and some machinery and mechanical appliances (i.e. air conditioners, refrigerators). The roll-up principle is applied with the exception of the automotive sector. Cumulation is only bilateral, duty drawback is forbidden.[34] The drawback system has been replaced with a system that refunds the smaller of the two following amounts: either duties paid on imported goods or the amount of duties paid on exports of that good, or another good manufactured from that good, when importing and exporting to another NAFTA party.

NAFTA also provides for leniency in the application of the no-drawback rule by putting in place a refund system, whereby the producer will be refunded the lesser of the amount of duties paid on imported goods and the amount of duties paid on the exports of the good (or another product manufactured from that good) upon its introduction to another NAFTA member.

4.3.1. NAFTA types

NAFTA's rules can be divided into two groups, general and specific. General rules are described in the Article 401 and cover all goods within the region. According to NAFTA rules, the good is granted a preferential treatment in cases when

A)   **it was wholly obtained or produced[35] within one or more NAFTA members** or

B)   **non-NAFTA inputs used changed tariff classification of the final product**; This type of substantial transformation rule is used in most of the cases, the required tariff classification is listed in Annex 401 of NAFTA. The required change may be on a subheading or chapter level, or more specific to another heading in different chapter or specific subheading. According to Estevadeordal and Suominen, (2003) the most frequent type in NAFTA is

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[34] For the first 7 years duty drawback was allowed for Mexico;

[35] The 7% *de minimis* rule of the value of the product is applicable. Goods that do not satisfy the d*e minimis* rule may be granted preference treatment under certain conditions, i.e. unassembled inputs that are assembled within the NAFTA territory;

the change of chapter and the change of heading, both accounting for about 90% of the ROO.

C) it **satisfies the regional value content**[36], calculated either by transaction method or the net cost method[37] - as described previously in equation (4). In cases where the good and its parts are in the same tariff category the domestic content must be at least 60% of the transaction value or 50% of the net value[38]. This does not hold for passenger vehicles, trucks, textile and apparel, semiconductor and computer industries that have special rules of origin.

According to the NAFTA agreement, a good may acquire originating status if it is produced in a NAFTA country from materials considered as originating even if no substantial transformation takes place between the intermediate material and the final product, this applies to products satisfying the specific ROO.

The Specific rules cover specific goods that need special product origin determination that could not be determined under the General rules. Special rules are connected with particular sectors, specifically textile (Chapter 3), cars (Chapter 4) and computers (Annexes 300B and 401).

Textiles' rules of origin are detailed and the basic rule is *yarn forward* which states that all yarn for the textiles must come from NAFTA country. The same applies for the *fiber forward* rule which is applied on cotton and man-made fiber products. According to Carrére and de Melo (2004) in 98% of the tariff lines of section 11. there are present exceptions to general rules, supporting the perception of high restrictiveness in this sector.

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[36] Krueger (1993) notes that until negotiation of the NAFTA agreement, the United States used the percentage of domestic value added as its criterion for duty—exempt eligibility under the U.S.—Canada FTA, but counted only labor costs, and not any imputed capital costs;

[37] With additional rules limiting affiliate transactions, inter-company prices, etc. Transaction value test is defined as the difference between transaction value and the value of non-NAFTA originating material. For more information see Lederman and Hirsh (1995);

[38] With additional rules limiting affiliate transactions, inter company prices, etc. Transaction value test is defined as the difference between transaction value and the value of non-NAFTA originating material. For more information see Lederman and Hirsh (1995);

Cars and automotive parts have rules of their own and are subject to 62.5% domestic content requirement[39] and the only test allowed to check the content requirement is the net costs test. The new domestic content requirement was set higher than in CUFTA and according to some authors (ie. Estevaderdal and Suominen, 2005) the level was high enough to expect that the Japanese and European firms will not be able to meet it. Averyt and Ramagopal (1999) use the example of auto industry in the United States as a case study for strategic disruption[40], namely the specific height of regional content requirement and the rules of origin, while Krueger (1995) cites the example of the Canadian auto producers opted rather for the use of MNF tariff rates rather than using the ROO. For NAFTA's automotive sector the ROO are considered very restrictive.

Additional rules apply for computers and color televisions that must contain a North American picture tube, and motherboards with monitors must contain a domestic-made front panel displays.

4.4. Measuring the restrictiveness of NAFTA's ROO

The exact evaluation of ROO's restrictiveness based on its impact on price and quantity on firm level is very problematic, mostly because of the unavailability of the required data. For this reason several indexes have been developed. We will mention two of them – indexes prepared by Estevedeodral and Suominen (2003a, 2003b) and the Productivity Commission (2004a). Indexes take into account specific provisions of the ROO, for example to which detail is the change of tariff classification required, tariff phase-out schedules, cumulation rules or the approach to duty drawback.

Estevedeodral and Suominen (2003a) developed a an ordinal sectoral index which ranges from 1 (least restrictive) to 7 (most restrictive). The index is based on two assumptions, the first that a required change of tariff classification

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[39] The domestic content requirement has reached its value after gradual 8-year rise from former 50%;

[40] Strategic disruption is defined as intentional manipulation of a competitor's transactions cost structure with a goal to destroy the competitor's alignment of the governance structure (Averyt and Ramagopal, 1999);

at the level of chapter is more restrictive than at the level of heading, a change at the level of heading is more restrictive than a CTC at the level of subheading, etc. The second, additional regional value content and technical requirement criteria increase the level of restrictiveness of the specific ROO. In their rating, NAFTA's average index is 5.1, the nearest lower index value received the PAN Euro rules of origin system with 4.5 points.

The Australian Productivity Commission's (2004a) index is based on a detailed report of 17 selected free trade areas. It assigns each type of rules of origin a numerical value ranging from 0 to 1. It is the most elaborated index available, it sorts the ROO's characteristics into 17 categories and up to 8 subcategories – a basic division is presented in Table 4.1., together with the values for NAFTA. The detailed decomposition of each level and respective NAFTA value can be found in Attachment #3. Among the examined FTAs, NAFTA is by far the most restrictive - the strictness results from the existence of multiple criteria for determining the rules and application of stricter variants of the individual rules.

Number	Restriction category	Weight (%)	NAFTA
Primary level	Total	**0.60**	**0.462**
1.1	Change in tariff classification	0.20	0.20
1.2	Restriction categories for regional value content / percentage criterion	0.20	0.112
1.3	Specified manufacturing process test / sector-specific rules	0.20	0.15
Secondary level	Total	**0.25**	**0.085**
2.1	Type of cummulation	0.05	0.03
2.2.	Cumulation special provisions	0.05	0.05
2.3	Duty drawback	0.05	0
2.4	Territoriality / outward processing	0.05	0.025
2.5	Geographic location of manufacturing process	0.05	0.025
Tercial level	Total	**0.15**	**0.125**
3.1	Degree of certainty	0.05	0.05
3.2	Compliance/administrative costs	0.05	0.025
3.3	Rigidity	0.05	0.05
TOTAL		**100**	**0.672**

Table 4.1. Methodology of Productivity Commission's index of restrictiveness of ROO; Source: Productivity Commission (2004a)

The primary level criteria have a high value of weight within the index because this type of assessment of origin is the most frequent. The change of tariff classification criterion is based on the most common change level needed to grant origin[41]. Restriction categories list different possible formulations to asses the requirement, the most influential is considered the regional value content expressed as a minimal percentage of material originating from the region.

The comparison of the results for the other examined PTAs is depicted in Graph 4.3.. While the methodology is different from the basic Estevadeordal's index, the message of both for our work is clear – NAFTA's definition of the ROO is the strictest[42] among the examined preferential treaties, making it one of most restrictive environment as far as the certificates of origin and the derived preferential treatment is concerned.

The restrictiveness has impact on the utilization rates and the function of the preferential trade agreement as such. The restrictive rules of origin may push the utilization rates below 100%, eliminating partially the positive effect of tariff preference. Kunimoto and Sawchuk (2005) show that reducing the average Estevadeordal's NAFTA ROO restrictiveness index from 5 to 4 would result in a 13% increase in the use of NAFTA preference treatment. As a next step, we will take a closer look at the NAFTA utilization rates.

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[41] I.e. the most restrictive approach in the treaty is the requirement for the good to change the chapter within the HS, that is the change is required on the 2 digit level within the system. Such a rule would obtain 100% of the 0.2 points possible within the index – for detailed description see Attachment #3 ;

[42] This opinion is widely accepted among the examined literature, with one exception, Cadot et al (2005) evaluates the product specific rules of origin and concludes that the PAN EURO rules of origin are stricter and more costly in terms of compliance than NAFTA's ROO;
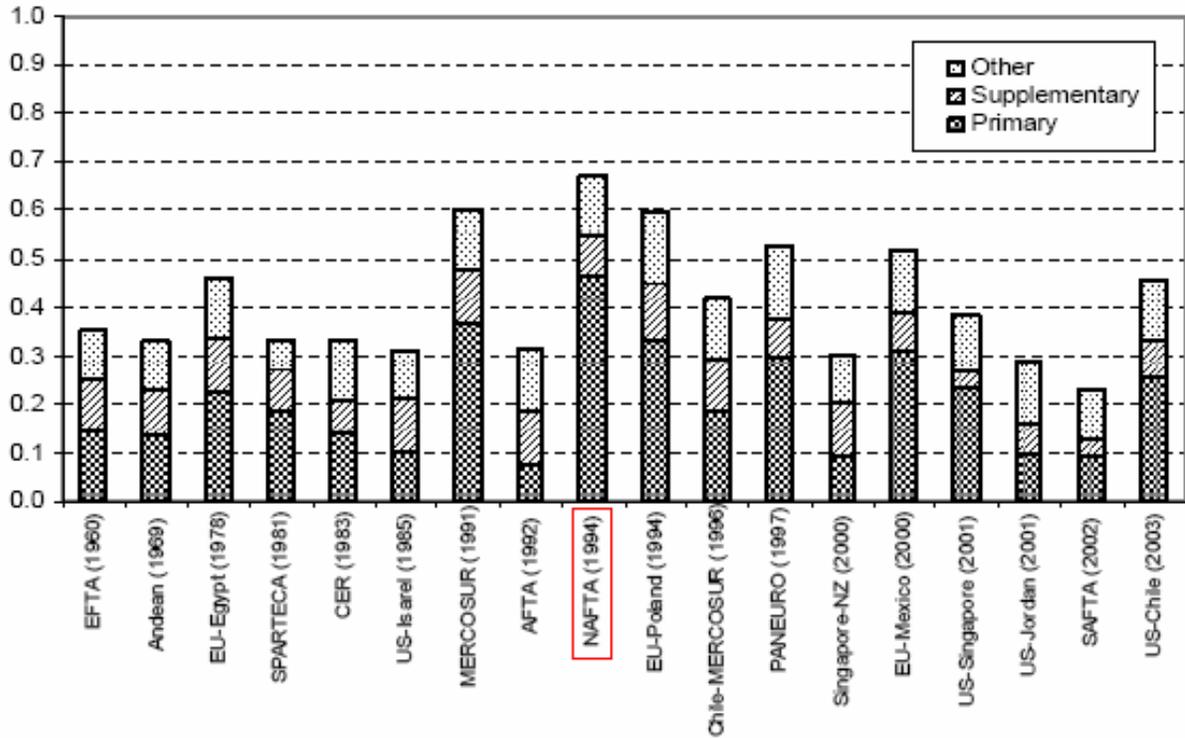
Graph 4.3. Productivity Commission's (2004) Restrictiveness index for preferential ROO; source: Productivity Commission (2004)

In this chapter we have focused our attention to the NAFTA agreement and we have described its history and economic performance. In the latter part we came back to our topic – the rules of origin and examined its exact definitions and types used in the Agreement. Last part of this chapter consisted of the summary of the two approaches how to measure the restrictiveness of such rules. Regardless of the methodology used, both approaches agree that NAFTA has the strictest ROO among the group of free trade agreements evaluated. As we have noted earlier a sign of restrictive rules of origin are low utilization rates – the topic that we will develop in further detail in the next chapter.

5. NAFTA - utilization rates and compliance costs

Finally, in considering the factors impacting upon bilateral trade flows it would be normal to suppose that tariffs would play a role. Interestingly tariffs are rarely included in gravity modeling.   *Augier et. al (2005)*

There have been several approaches how to evaluate NAFTA's performance. In our setting, we will focus on effects of the restrictive rules of origin and the resulting compliance costs of the NAFTA preferential treatment. In the first part of the chapter we will compute the utilization rates[43]. We expect to obtain results that are in line with the previous research – the last published utilization rates were for year 2003 (Kunimoto and Sawchuk, 2005) – that they are significantly lower than 100%, thus implying the restrictive of rules of origin are applied. In the next part of the chapter we will try to estimate the costs of compliance, based on an indirect method measuring the impact of membership in NAFTA agreement on imports in different preference margin intervals. All the steps of the model formulation and data gathering will be described in relevant subchapters.

5.1. Utilization rates

The low and declining utilization rates are frequent topic among the papers that deal with either preferential trade agreements in general or that examine the ROO in North America. The low utilization rates are connected to the strict requirements connected with the issuance of the certificates of origin or other administrative requirements of preferential treatment. We expect that NAFTA utilization rates will be negatively influenced by the compliance costs, which rise with the restrictiveness of the ROO.

Carrére and de Melo (2004) used a revealed preference mechanism for Mexican imports to show that the low utilization rates are a result of strict formulation of the rules of origin. Estevadeordal and Miller (2002) state the

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[43] We define utilization rate as the percentage of imports from member countries that use the preference treatment in the total amount of imports from the member countries

example of lowering utilization rates after tightening the ROO after the transformation of CUSFTA into NAFTA. Cadot et.al. (2002) have estimated the compliance costs using the revealed-preference mechanism using the utilization rates for NAFTA and Estevadeordal index. They assessed the combined effects of tariff preferences and ROO on the Mexican exports, with the result that correlation between tariff phase-out and restrictiveness of ROO has proved to be significant.

Table 5.1. shows the declining NAFTA utilization rates for Canadian and Mexican imports and concludes that in most of the categories the utilization rates decrease; the utilization rates are not same across the sectors, mostly because they are subject to different rules of origin. The case is especially significant in the categories of Canadian Chemicals, Machinery and electrical equipment, Arms and ammunition. The decreasing general trend is depicted in the Attachment #1 and a more detail study of utilization rates on both chapter level (years 1997 to 2005) and detailed HS6 level (year 2005) for Canadian and Mexican exports to the US are on the CD ROM Attachment. Utilization rates are a function of two variables – difference between MFN and preferential rates and compliance costs. While the compliance costs remain constant[44], the explanation of the decrease in the utilization rates lies in the decrease of MFN rates. For many producers the difference between preferential margin and compliance costs may become negative, thus pushing the producers to use the MFN import rates.

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[44]We omit the learning curve for importers dealing with rules of origin that may be present in NAFTA, for more information for years 2000 and 2001 consult Carrére and de Melo (2004);

	Canadian Utilization rates			Mexican Utilization rates			Average NAFTA	Estevadeordal's Restrictiveness index (1 to 7)
	1997	*2005*	*Trend*	*1997*	*2005*	*Trend*		
1. Live animals, animal products	44,0%	37,4%	↓	62,3%	61,0%	↓	49,2%	6
2. Vegetable products	47,3%	52,0%	↑	56,5%	57,4%	↑	54,7%	6
3. Fats and oils	96,6%	97,2%	↑	96,6%	97,2%	↑	97,2%	6
4. Prepared food, beverages, tobacco	70,5%	65,9%	↓	68,4%	62,9%	↓	64,4%	4,7
5. Mineral products	23,2%	26,8%	↑	37,3%	55,3%	↑	41,0%	6
6. Chemicals	60,1%	35,2%	↓	55,8%	51,9%	↓	43,5%	5,3
7. Plastics	86,4%	87,5%	↑	84,4%	84,3%	↓	85,9%	4,8
8. Leather goods	56,4%	52,2%	↓	77,2%	86,4%	↑	69,3%	5,6
9. Wood products	39,9%	39,5%	↓	61,4%	48,0%	↓	43,7%	4
10. Pulp and paper[45]	17,3%	1,1%	↓	33,4%	0,0%	↓	0,6%	4,8
11. Textiles and apparel	87,3%	75,0%	↓	80,9%	75,0%	↓	75,0%	6,9
12. Footwear, headgear, etc.	96,5%	62,9%	↓	89,3%	91,8%	↑	77,3%	4,9
13. Article of stone, plastic, glass,.	73,5%	46,0%	↓	79,2%	68,3%	↓	57,1%	4,9
14. Jewelry	31,2%	32,6%	↑	31,2%	32,6%	↑	32,6%	5,3
15. Base metals	64,7%	57,1%	↓	65,7%	65,3%	↓	61,2%	4,6
16. Machinery, electrical equip.	65,5%	37,6%	↓	70,1%	44,8%	↓	41,2%	3,2
17. Vehicles, transport equip., etc.	81,4%	66,2%	↓	38,6%	58,4%	↑	62,3%	4,8
18. Optical, photographic, etc.	70,8%	57,4%	↓	76,0%	63,1%	↓	60,2%	4
19. Arms and ammunition	85,0%	22,9%	↓	85,0%	22,9%	↓	22,9%	4,7
20. Miscellaneous	80,5%	40,2%	↓	75,9%	41,2%	↓	40,7%	5,1
Average	**63,9%**	**49,6%**	**↓**	**66,3%**	**58,4%**	**↓**	**56,8%**	**5,1**

Table 5.1. Comparison of Canadian and Mexican utilization rates,
Source: utilization rates - author's calculations based on ITC Dataweb data for 1997-2005; restrictiveness index – Estevadeordal and Suominen, (2003a)

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[45] The values for sector 10. – Pulp and paper were double checked, nevertheless the values for 2004 and 2005 are too low – the values from 1997 to 2003 range from 24% to 28%. The values for chapter 47 were not available from the beginning of the period, while chapters 48 and 49 have both dropped by two-digit number to levels close to zero. We consider it a mistake in the official statistics and omit sector 10 from further analysis. For more detailed values of utilization rates on chapter and section level for Canada and Mexico, consult the CD ROM Attachment;

As a next step we focus on the relationship between utilization rates and preference margins, the fact that the relationship of preference margins and the utilization rates is not strictly positive supports our previous suggestion that compliance costs affect the utilization rates. In Graph 5.1. we can see that in year 2005 there were 3 outlier sectors – 12. footwear, 4. prepared food, beverages and tobacco and 11. textiles and apparel. In these three sectors the common sense positive relationship does not hold, although they enjoy relatively high preference margins, the utilization rates are roughly on the similar level as those sections that enjoy 50% to 70% lower preference margins. The results are in line with research on compliance costs and rules of origin – textile and footwear are the sectors considered having the strictest rules of origin requirements.
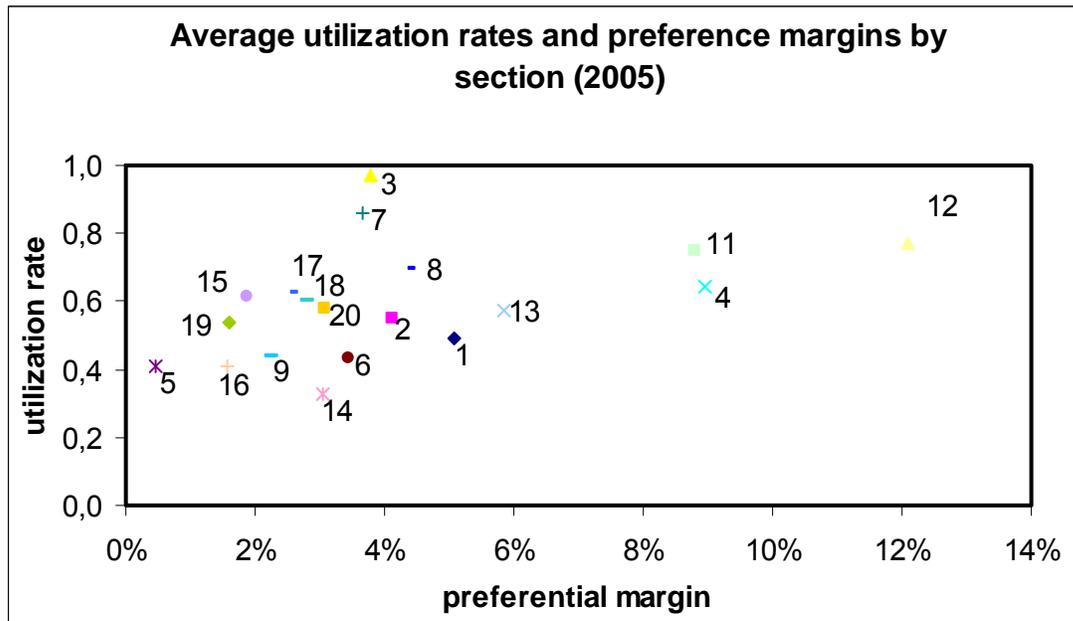
Graph 5.1. Average utilization rates and preference margins by sections in 2005, source: author's calculations based on Interactive Trade Dataweb application of International Trade Commission and Harmonized Tariff Schedule (2005),
Legend: 1.Live animals, animal products, 2. Vegetable products, 3. Fats and oils, 4. Prepared food, beverages, tobacco 5. Mineral products 6. Chemicals 7. Plastics 8. Leather goods, 9. Wood products, 11. Textiles and apparel, 12. Footwear, headgear, etc., 13. Article of stone, plastic, glass,., 14. Jewelry, 15. Base metals, 16. Machinery, electrical equip., 17. Vehicles, transport equip., etc., 18. Optical, photographic, etc.,19. Arms and ammunition, 20. Miscellaneous

The graph was inspired by a study developed by Cadot et al. (2002) who developed such a table for US 2000 data. His results are cited and shown even

in resent papers, to our knowledge no such a table for 2001 – 2005 data is available, so we can only compare the 2000 and 2005 charts. The reason why such a relationship is not updated on a regular basis is that for such a comparison, two types of data are needed that are not usually available. The first are the utilization rates at HS2 level, that later have to be aggregated on the section level, because the International Trade Commission does not publish data on section level. The second variable needed are the preference margins for the section data, this information have to be extracted directly from the Harmonized Tariff Schedule, as it will be described later.

Nevertheless it is worth noting that Cadot's outlier sector – textile and apparel retains the characteristics, but it is accompanied by additional two sectors - 4. prepared food, beverage and tobacco and 12. footwear. The change is caused mainly by the decrease in the preferential margins – Cadot's top preferential margin is 18%, our about 13%. This shift is caused by the usage of different tariff schedules – in January 2002 the last major HS_{US} change occurred, the next will come into force in January 2007. Cadot's original version of the graph can be found in Attachment #4.

5.2. Compliance costs – summary of results

As far as the compliance costs are concerned, several papers were used for results' comparison with our research. On the general level, studies have estimated compliance costs of preferential treatment to range from 1.4% to 6.8% of the import value.

In free trade areas other than NAFTA, i.e. areas that have less restrictive rules of origin, compliance costs' estimates are on the lower part of the scale. Koskinen (1983) estimated the range of compliance costs for Finnish exporters to EC to be between 1.4% and 5.7% of the transaction value of the goods, Herin (1986) estimated the average EFTA ROOs compliance costs to be around 3-5% of the producer's price.

As far as NAFTA's compliance costs are concerned, our first benchmark source is the paper by Cadot et.al. (2002) which used the revealed preferences

mechanism to estimate costs connected with the preferential treatment for Mexican imports to the US. They used the utilization rates and the preference margins and the fact that the cumulated costs (i.e. ROO based and non-ROO based) reach 5.06% of the import value. The study of Kunimoto and Sawchuk (2005) used the same approach only for Canadian exports to the US with comparable results – trade compliance costs reaching 5.37% of the import price, for year 2003.

In a later work, Cadot et al. (2005) uses a specially developed R-index of ROO's restrictiveness to arrive to a higher value of the NAFTA compliance costs for – 6.8% for year 2001.

Anson et al. (2004) estimated the costs of compliance costs for Mexican exports to US for year 2000 to be 5%, with up to 40% caused by administrative costs. They used the approach of revealed preference and application of Estevadeodral's restrictiveness index. Carrére and de Melo (2005) use the very same approach and estimate the height to be 6.16% for the year 2001.

We will use a new way how to measure indirectly the level the compliance costs, via the application of gravity models. The exact description will be provided in the following subchapter.

5.3. Compliance costs estimation

In subsequent steps we will estimate the compliance costs by developing a new approach based on the study of NAFTA's impact on trade based on the preference margins' intervals. We expect the impact to be positively related to preference margins, because the higher the difference between MFN rate and NAFTA preferential treatment, the higher is the benefit for the importer compared to other target countries. We also assume that the impact will change abruptly when the difference between preferential treatment and MFN rates outweighs the compliance costs. And thus we will be able to measure their size. Although we have created this process for NAFTA estimation, generally it can be applied to any integration structure.

The logic behind this approach is depicted in Figure 5.1. Importer's usage of preferential treatment depends on two factors – preferential margin and compliance costs. For low preference margins we expect the compliance costs to attain higher value than the preferential margins and vice versa. We assume the compliance costs to be at some fixed level and when we move to a higher level of preference margins, at some point *x* the compliance costs will be offset by the preference margins. Volume of trade flows among member countries will increase significantly.
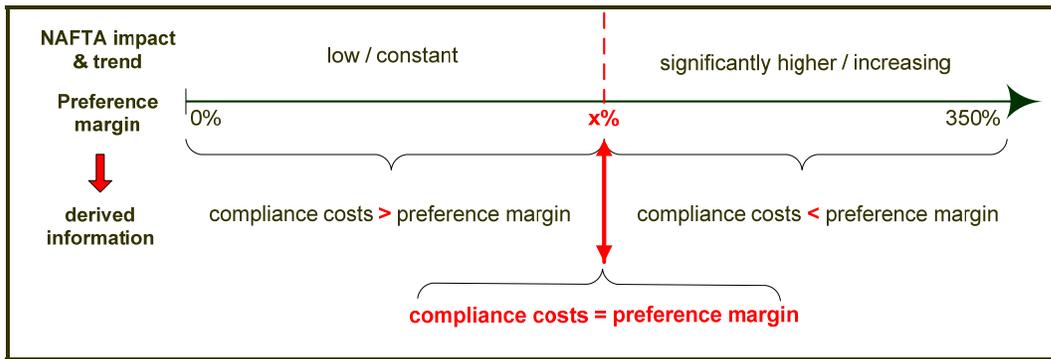
Figure 5.1. Indirect compliance costs estimate[46]

In order to locate point x%, we have to include an additional point of view – the impact of NAFTA membership on trade, *ceteris paribus.* We will break down the interval of possible preference margins (0;350%> into several smaller preference margin intervals and on each of them a separate gravity model analysis will be performed. We will pay close attention to the behavior of the coefficient that captures the impact of NAFTA membership on trade flows. We expect the coefficient to change significantly, once the equality of compliance costs and preference margin is acquired, thus pointing at the preference margin interval which includes the exact value of x%. All the steps needed in order to obtain the relevant interval are described in the following subchapters.

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[46] For the sake of simplicity, we define *low impact* as an impact lower than general NAFTA impact that will be obtained in later steps and *significantly higher* as higher than general NAFTA impact;

5.3.1. Steps needed to obtain preference margins

In order to get the NAFTA's preference margins for Canada and Mexico, we will use the tariff data from the Harmonized Tariff Schedule (2006) (HS$_{US}$), which provides us information about the tariff import values of all the commodities imported into the United States in the Harmonized Commodity Description and Coding System format (HS). HS was developed by the World Customs Organization and is used for products' description in customs processes. It is recognized by 179 countries, which represent 98% of world's trade.

The Harmonized Tariff Schedule of the US is very extensive, it covers almost 3000 pages in the pdf format, the minimal level is 8 digit level customs formulation detail, in some cases even 10 digit detail. In January 2003 there were approximately 8900 export codes and 17600 import codes at the 10 digit level.

The Harmonized Tariff Schedule's complicated format is probably the reason why the inclusion of tariffs in gravity analysis is not common. For a proper analysis, both preferential and MFN tariffs are needed which basically duplicates the work with the HS.

We will use the heading level[47] (HS6) – level that corresponds to a general description of the good. The HS level 6 is the highest reasonable decomposition possible – it is the same for all the countries using the harmonized system. In higher levels of detail the codes may not be comparable and future research for Mexican and Canadian preferential rates would be impossible.

The reason why the Harmonized Schedule format is more suitable than the ISIC format is that all the tariffs are defined based on the HS format. The level of detail that we will use, the HS6 digit level, with microdata character may be able to reflect the tariffs better than more aggregated import measures – simply because for the aggregate values different tariff rates and effects are mixed.

However, the additional reason why the highest level for studies taking into account exports as well as imports is HS digit level 6, is that the US customs

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[47] A chapter level is denoted as HS2, heading level as HS4, subheading level as HS6 and an statistical level means HS8 detail;

rules use different product codes for product that are exported - "Schedule B". The difference in the product code for one good is only visible in the more detailed description than 6 digits for the HS and Schedule B description, at i.e. HS8 and HS10 levels the codes may differ. Thus for the comparative purposes the 6 digit level is the most detailed level possible.

5.3.1.1. Omitted chapters

In order to proceed with the analyses several simplifying steps had to be done with the information from HS_{US}. We have deleted the lines connected to the goods imported under chapters 97 to 99. The exclusion of these three chapters is usual; none of the examined literature provides any results for these two sections. HS section 21 – Chapter 97 consists of works of art, collector's pieces and antiques. Although its specification is simple – it allows the goods to enter the United States free in the MFN regime as well as the NAFTA we will not include it in our research because we expect no impact of preferential treaties on trade with this type of goods. Under the HS section 22 – Chapter 98[48] (Special classification provisions) the subchapters include: low value shipments, imports of returned exports, goods for charity purposes and military apparel. Chapter 99, namely: temporary legislation; temporary modifications proclaimed pursuant to trade agreements legislation; additional import restrictions proclaimed pursuant to section 22 of the Agricultural Adjustment Act. The legislative in this section is constantly changing and the tariff rules under the system are too complicated to be included in the analyses, products entering under this section usually wait for a permanent code under other chapter.

The additional work included averaging the data to the sub-heading level[49]. The finalized table for our analyses consisted of 10377 tariff lines in HS 6 digit detail. The lines were later divided into 4 groups – ad valorem tariffs (5450),

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[48] In more detail the goods under sub-chapters for low value shipments, imports of returned exports, goods for charity purposes and military apparel;

[49] Please note that the averaging does not necessarily mean averaging in all the cases. Some HS 6 level codes have only one HS 8 level sub-codes, in these cases no additional steps were necessary;

specific duties (684), compound duties (397), and free MFN regimes (3846). Figure 5.2. depicts the composition of tariff types.

In order to compute the preference margins for all the comodity codes[50] an additional step had to be taken. From the list of tariff lines 384 had different tariffs for Mexico and Canada, thus these lines were doubled and included twice in the NAFTA preference margin table – once representing the Mexican and once the Canadian preference margins. The goods entering under special treatment (groups 1Bac, 1Bc, 3Bac) were omitted from further analyses for both Mexican and Canadian imports.
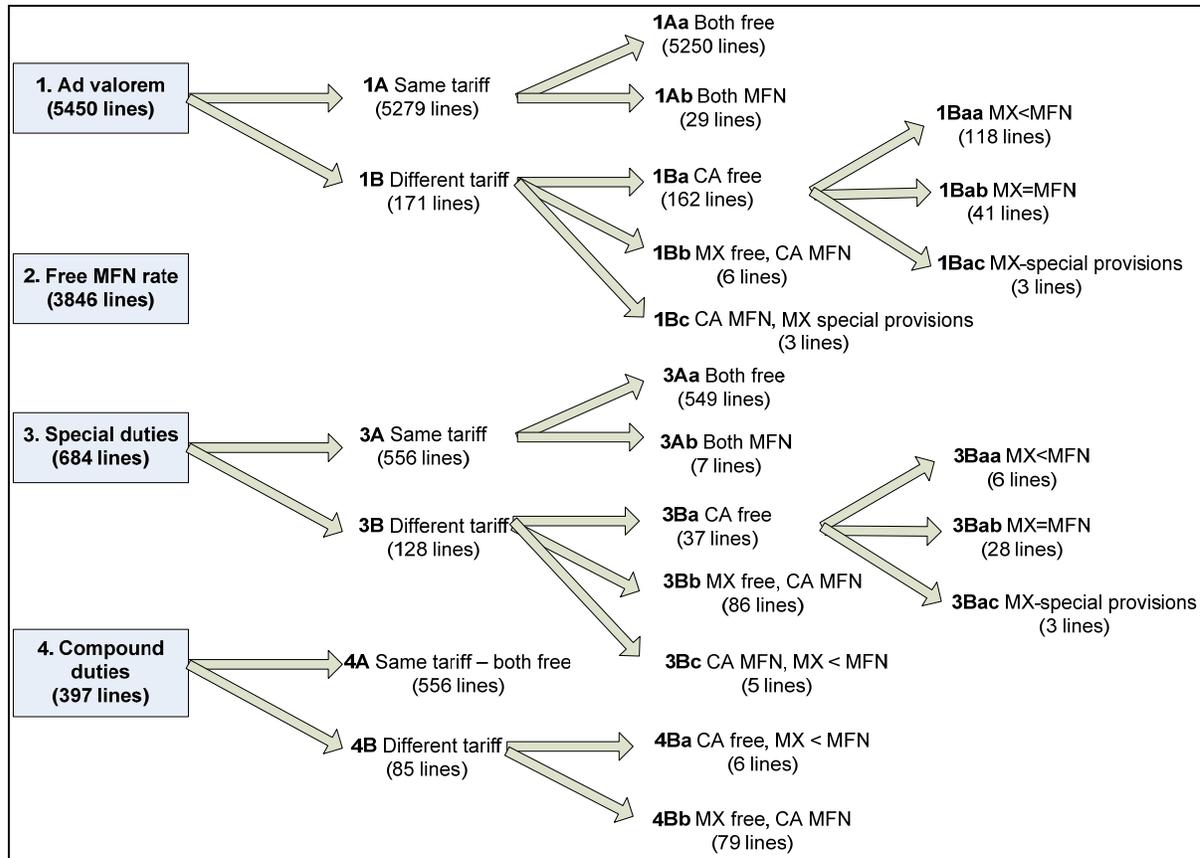
Figure 5.2. Harmonized tariff schedule decomposition,
Source: author's calculations, based on Harmonized Tariff Schedule (2006)

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[50] With the exception of chapters 99, 98 and 97, as explained earlier;

5.3.1.2. Compund and Special duties

For the 1081 lines of compound and specific duties, the values had to be transferred to *applied tariff rates.* The US Census Bureau does not publish the unit import prices for goods entering the United States on the levels needed – 6 HS digit level and 8 HS digit level - so the classic *ad valorem equivalent*s were not possible to obtain. In order to transfer the values into a comparable format we used as a proxy the ratio between calculated duties and dutiable value, both of the goods entering only in the regime of normal trade relations (MFN rate), the data were obtained from the US International Trade Commission's Interactive Trade Dataweb application.

5.3.1.3. Preference margin intervals

Next step was to prepare the preference margins for all the tariff lines. The margins are defined as the difference between the preferential treatment and the MFN rate. We have computed the preference margin for the Mexican and Canadian tariff import lines – in cases where the definition was compound or special duty we have used the *applied tariff rate* for the preference margin computations. The exact tariff thresholds are presented in Table 5.2.

A1 free	**F1** 1.7% - 1.9%	**K1** 4.0% - 4.7%	**P1** 6.1% - 6.9%
B1 0.1% - 0.3%	**G1** 2.0% - 2.45%	**L1** 4.8% - 4.9%	**Q1** 7.0% - 8.9%
C1 0.4% - 0.9%	**H1** 2.5% - 3.0%	**M1** 5.0% - 5.2%	**R1** 9.0% - 14.9%
D1 1.0% - 1.3%	**I1** 3.1% - 3.50%	**N1** 5.3% - 5.6%	**S1** 15.0% - 30.0%
E1 1.4% - 1.6%	**J1** 3.6%- 3.9%	**O1** 5.7% - 6.0%	**T1** 30.4% - 350.0%

Table 5.2. Initial preference margin groups

We chose to make the intervals smaller for the lower preference groups, partly because the low preference margins lines are more frequent, partly because we wanted the intervals to be smaller in the lower margins, in order to reflect better the exact threshold when the net difference between preferential rate and compliance costs becomes positive. We expect the value to lie somewhere between 1.4 and 7, based on the previous results.

In each group a list of relevant 6 digit HS numbers was made and the import data from partner countries for these codes were gathered: in the beginning each group thus consisted of a list of HS 6 digit codes that satisfied the

preference margin intervals criteria for Mexico and/or Canada. The import data complied with these codes was gathered into one data file, together with the already present data from NAFTA members. The zero-import lines were omitted. The import data are in the c.i.f. format and were obtained from the US International Trade Commission's Interactive Trade Dataweb application. The selection of partner countries included in the analysis will be described in subchapter 5.3.4.

For example the 6 digit HS tariff line 440130 "*Sawdust and wood waste and scrap, whether or not agglomerated in logs, briquettes, pellets or similar forms"* belongs to the category of goods that enter freely even under the MFN rate. We have found all the non-zero import values of the partner countries on this HS level and put them in one data file, together with all the non-zero 6 digit HS values that were in the same preferential margin group. This way we constructed 20 groups of data files, each containing the values of the imports from partner countries, sorted according to the preference margins of the NAFTA partners[51].

5.3.2. Gravity models

In order to capture the impact of NAFTA's membership on trade we will use the augmented gravity model. Gravity models are part of the new trade theory, which relaxes the features of the Heckscher-Ohlin model: the constant returns to scale and the perfect competition. The new theory incorporates the increasing returns to scale and imperfect competition – in the equation these are reflected as GDP and/or population as a proxy of market size.

Distance is included and considered important for several reasons; it may proxy for the transportation costs, time requirements of the shipment from one place to another, transaction costs (communication, language differences) or cultural distance.

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[51] Some HS subchapter codes may be found in two preference margins groups, in cases where the Mexican and Canadian (applied) tariffs differed[51], the import partner tariff lines were put into both preference margin groups – one representing the Mexican preferential margin and the other the Canadian;

Gravity models are frequently used to project bilateral trade flows between trade partners, as well as accessing the trade potentials. Basic gravity equation (22), (23) explains trade between two countries as a increasing function of their GDP and a decreasing function of their distance, thus inspiring from the famous Newton's gravity equation only exchanging gravity for trade flows; seeing the trade flows as a form of gravity strength between two entities.

They were first applied on trade flows by Tinbergen[52] in 1962, and more widely used in the international trade since the 1970's, with a history of usage within the social sciences field for estimating migration. Their biggest asset is considered the fact that the data needed are relatively easy to obtain even for multiple countries in an internationally comparable format. Moreover, the explanation value is usually quite high, with R^2 ranging above 70%.

The initial models were empirically robust, although criticized for their weak theoretical foundations. In the 80's authors have shown that the results are consistent with the basic streams of international trade i.e. Heckscher-Ohlin-Vanek, Ricardo-Viner and increasing returns to scale models[53]

The basic gravity equation (22) or (23)[54] is rarely used in its original form; use of its logarithmic form (24) or (25) is more frequent because it suits the classic regression form.

(22) $$M_{ij} = \beta_0 Y_i^{\beta_1} Y_j^{\beta_2} D_{ij}^{\beta_3} \varepsilon_{ij}$$

(23) $$M_{ij} = Y_i^{\beta_1} Y_j^{\beta_2} D_{ij}^{\beta_3} \varepsilon_{ij}$$

(24) $$\ln(M_{ij}) = \beta_0 + \beta_1 Y_i + \beta_2 Y_j + \beta_3 D_{ij} + \varepsilon_{ij}$$

(25) $$\ln(M_{ij}) = \beta_1 Y_i + \beta_2 Y_j + \beta_3 D_{ij} + \varepsilon_{ij}$$

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[52] In his work Shaping the World Economy – Suggestions for an International Trade Policy, Twentieth Century Fund;

[53] The basic works include Anderson (1979), Bergstrand (1985,1989), Helpman and Krugman (1985), Deardorff (1997), (1998) for more detailed description of history of gravity models and approaches, consult Dzurilla (2003);

[54] The use of intercept varies by author and source;

where *Yi* denotes the GDP of country *i,*

D_{ij} is the distance between the economic centers[55]

M is the mutual trade flows[56],

β_i are the relevant coefficients,

ε are the residuals.

The model is often computed in its augmented form and incorporates additional variables – either more types of GDP in one equation, population, FDI flows, etc. Common is inclusion of different dummy variables. *Dummy* – usually reflecting factors that authors think to have impact or influence on the mutual trade. Common dummies include– language similarities, common border effect and island/inland. These have not proved to be significant in our previous research during the Bachelor's thesis and thus were not incorporated in the model from the beginning (26):

(26) $\quad \ln(M_{ij}) = \beta_1 f(Y_i, Y_j) + \beta_2 g(D_{ij}) + \Sigma_{i=3}^{n} \beta_i Dummy_i + \varepsilon$

In our case (27) the additional dummies included will be NAFTA and CHINA dummies.[57]

(27) $\quad \ln(M_{ij}) = \beta_1 Y_i * Y_{us} + \beta_2 D_{ij} + \beta_3 NAFTA + \beta_4 CHINA + \varepsilon$

5.3.2.1. Summary of gravity models in NAFTA research

Gravity and augmented gravity models are frequent tools for accessing NAFTA's effects on trade, trade creation and diversion effects. The empirical studies derive results that correspond with the shifts in the public opinion; some authors prove no trade diversion while others show that trade diversion has

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[55] There is a wide discussion among authors which location is to be considered as the destination. In theory it should be distance between the two economic centers, for which a proxy the air distance between the capitals is used. Authors used distance between industrial centers using the air, railroad, road way without any significant effects on the significance of the estimates. We are going to use great circle distance between capitals. We have tested the use of great circle distances between two nearest ports with unconvincing results;

[56] Most frequently expressed by import, c.i.f. data – mostly because import data are considered more accurate;

[57] The model was tested in initial stages for an additional dummy that reflects the USA – Singapore free trade area. The dummy was found insignificant in most of the initial test regressions, thus was omitted from the model;

occurred. The positive effect on trade itself remains a fact that no one disputes. The research is substantial, but few empirical studies are worth noting.

Tang (2005) proved on the sample of three free trade areas – NAFTA, ASEAN and ANZCER - that the formation of NAFTA had surprisingly low effects on trade with non-member countries; his research thus suggests that the trade diversion is small. Fukao et al (2002) estimated on the of 2- and 4- digit HS level the scale of the trade diversion caused by the NAFTA for ROW with the result that most of the trade diversion occurred in the textile, apparel and footwear products. For other sectors, the diversion was small or negligible.

The possible trade diversion has already occurred before the NAFTA implementation - Canada and the United States have had a free trade agreement since the 1989, while Mexico was entitled to use the Generalized system of preferences since the 1970's and thus import into the US under special tariff rates.

Cadot et al. (2005) estimate the effects of NAFTA on the market access provided to the Mexican producers of textile and apparel. They use a model of imperfect competition with Dixit-Stiglitz preferences and they take into account the specific types of rules of origin. They imply that the preference treatment is high enough just to compensate the compliance costs connected with the rules of origin. Their results question the properness of rules of origin as a helping tool to the developing countries and rather imply that they serve as a way how to provide the domestic producers with new markets.

5.3.4. Input data description

We will use the top 15 import and export trading partners, that account for approximately 76% of both exports and imports of the USA, in total it is 20 countries: Canada, Mexico, China, Japan, Germany, United Kingdom, South Korea, Taiwan, France, Malaysia, Italy, Netherlands, Venezuela, Brazil, Ireland, Saudi Arabia, Singapore, Belgium, Hong Kong, Australia. Inclusion of additional trade partner would raise the trade coverage by only 1.4% additional trade volume.

Imports[58] are reported in the c.i.f.[59] value and HS6 digit level of detail and were obtained from the US International Trade Commission's Interactive Tariff and Trade Dataweb application. Unfortunately 2 out of 3 members of NAFTA report their imports in f.o.b.[60] values – Mexico and Canada, as well as another country from the group of partner countries – Australia. As a result the values of the imports from these selected countries are lower than the respective c.i.f. measurements.

Exports use the incoterm f.o.b., with the exception of the USA who use the f.a.s.[61]. This valuation is slightly lower because it does not include the price of boarding, so the statistics are not fully comparable. Export statistics may be used in cases when import data is not available, as a proxy for imports from given countries, where such a detailed data is not available.

The GDP figures were taken from IMF's World Economic Outlook Database. The data is in billions of US dollars, we take into account GDP in international dollars.

For the distance in the equation we use the great circle distances in kilometers. During the initial stages, we have tested the usage of the great circle distance between the two closest industrial cities in the partner country, giving preference to ports, if applicable. We tested this measure for the following reason: the research is focused only on the US import data – the scheme is not the usual gravity model setting – where all the partner data are available for mutual trade flows for all the countries in the country sample. As a result our

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[58] On the other hand usual exports use the incoterm f.o.b. USA use the f.a.s.[58] valuation which is slightly lower because it does not include the price of boarding, so the statistics are not fully comparable. The reason why we will continue to use the US export statistics is the fact that for most of the countries export statistics can be used as a proxy for imports from given countries, where such a detailed data in not available. However we will try to use this procedure as little as possible, due to differences between reported exports in one country and reported imports in partner country;

[59] Cost, insurance, freight – the seller bears the costs and risks up to the borders of the importing country;

[60] Free on board – the seller bears the costs and risks up to the port of export, including the loading of goods onto the ship. The risks bearer is changed after the good crosses the rail of the boat;

[61] Free alongside ship – the seller bears the costs and risks until the goods are prepared next to the ship in the port of export;

choices are wider, because we generate only 20 distance values, not 190 values as in the regular gravity setting. Because the heterogeneity of the de-aggregated data one distance measure may be more suitable in one case, less in other. Sample regressions were computed using both possibilities. We chose the traditional distance between the capitals, because it yields better statistical results.

5.3.5. Results of aggregate NAFTA impact

We have conducted separate gravity model analysis for each of the groups using the OLS estimate[62]. We expect that the NAFTA dummy variable will have lower values for lower preference margins; there should be a significant increase in the value of the NAFTA dummy variable when the preference margin exceeds the compliance costs. To the traditional gravity model assumptions an additional one was added. We assume that goods with same HS 6 code have the same characteristics, thus are perfectly comparable regardless their country of origin.

Our first model is done on a country-level basis for four consecutive years starting 2002. Due to data issues not all the bilateral flows were included. For whole year 2002 country pair data were available and obtained from the IMF DOTS 2003 CD ROM. For 2003 and 2004 data, all the unilateral import pairs for NAFTA members' trade, imports from the United States were estimated using the export values.[63] For 2005 we have included two types of data:

- for each of the NAFTA's trading partners the top partners unilateral imports information, based on the CIA fact book;
- for NAFTA countries, all the unilateral import pairs.

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[62] Literature is not uniform which estimate technique is the best. In many cases OLS approach is used, together with and additional technique. Many authors conclude that differences among estimates are minimal (Bergkvist and Westin, Augier et al, 2005). Because we are interested in a general trend, the need for precision is not so high, thus OLS was used;

[63] In Dotřelová (2004) we have examined the differences between the export and import statistics with a result suggesting that the use of exports statistics instead of import statistics when the trade info is missing is problematic;

(28)

$$\ln(M_{ij}) = \beta_1 Y_i Y_j + \beta_2 D_{ij} + \beta_3 NAFTA + \beta_4 YEAR02 + \beta_5 YEAR03 + \beta_5 YEAR04 + \beta_6 YEAR05 + \varepsilon_{ij}$$

Regression (28) was estimated only in order to be able to compare the value of the general NAFTA coefficient with the coefficients obtained in preference margin groups. The coefficient obtained from the regression was 1.53457 which translates into $3.50243^{[64]}$ times higher bilateral trade *ceteris paribus.* This coefficient will be seen in the following tables for comparison to the detailed regressions. All the other coefficients behaved as expected. GPD coefficient has positive value as well as all the year specific coefficients; distance has negative impact on mutual trade. R^2 is high.

Variable	Coefficient		Variable	coefficient	
NAFTA	1.253457	*	YEAR02	-3.493057	*
LOG(DISTANCE)	-0.286295	*	YEAR03	4.408915	*
LOG(YEX*YIM)	0.845005	*	YEAR04	4.490907	*
			YEAR05	0.296471	

R-squared	0.745322
Adjusted R-squared	0.742497
F-statistic	263.8747
Prob(F-statistic)	0.000000

Table 5.3. Summary of general NAFTA regression;
Source: author's calculations, *-significance level 1%, **- significance level 5%;

5.4. NAFTA's impact in preference margin intervals and compliance costs result

For the detailed type of setting we are using uni-directional, product-paired information about the US imports from its top trading partners[65] for 2005. Traditional panel gravity setting with all bilateral import information for all country pairs is not feasible for this type of detail – not only because of the computational issues with such a large number of observations, but mainly because of the unavailability of the data on the 6 HS digit level for most of the trading partners.

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[64] The coefficient's impact is computed as $e^{1.253457}$;
[65] Thus, when we later say "NAFTA's impact" we mean impact on Canadian and Mexican imports to the US;

The distribution of the tariff lines by preference margins of the modified Harmonized tariff schedule can be found in the Attachment #2.

A1 28628	**E1** 648	**I1** 2168	**M1** 760	**Q1** 2620
B1 187	**F1** 657	**J1** 2284	**N1** 926	**R1** 3077
C1 604	**G1** 1186	**K1** 2563	**O1** 1211	**S1** 779
D1 685	**H1** 4095	**L1** 542	**P1** 1920	**T1** 28

Table 5.4. Initial preference margin groups – number of non-zero lines

Unfortunately after putting all the import data in the files, we observed a very heterogeneous group sizes. Extreme examples are groups of lowest non-negative margin group and highest margin group that were too small when compared with the other groups – they encompassed only 187 and 28 lines. If we do not take into account the zero preference margin group A1, the average sample size should reach 1400. Some of the groups were too small and not suitable for regression. For this reason we decided to merge some of them, for the new distribution of the intervals see Table 5.5.

A1 free	**G1** 2.0% - 2.45%	**K1** 4.0% - 4.7%	**Q1** 7.0% - 8.9%
BC1 0.1% - 0.9%	**H1** 2.5% - 3.0%	**LM1** 4.8% - 5.2%	**R1** 9.0% - 14.9%
DE1 1.0% - 1.6%	**I1** 3.1% - 3.50%	**NO1** 5.3% - 6.0%	**ST1** 15.0% - 350.0%
FG1 1.7% - 2,45%	**J1** 3.6%- 3.9%	**P1** 6.1% - 6.9%	

**Table 5.5. Secondary preference margin distribution groups**

The group size was unfortunately unpredictable because the initial preference margin intervals were based on the data from the US Harmonized Tariff Schedule and the number of zero import lines was impossible to predict in this step. Further, the final group size in the following step was influenced by the partner import data – each partner country had different set of zero lines, which were omitted for the analyses. Even with this information available note that the groups formed can not have perfectly similar size, because the preference margin groups, even on 0.1% level of detail are not sized similarly. We tried to overcome this issue by grouping further the initial preference margin intervals in order to achieve more homogenous size and used them in the following analysis.

The results of the separate regressions analysis, specifically the NAFTA impact values are summarized in the following graphs. The height of the

coefficients in described in Attachment #5, detailed results of each regression are to be found on the CD ROM Attachment.
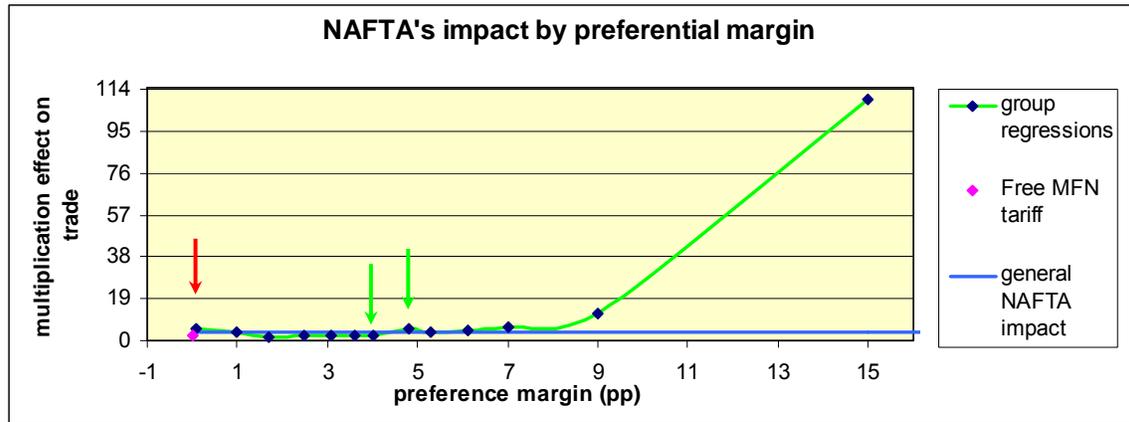
Graph 5.2a. NAFTA's impact by preference margins; Source: author's calculations
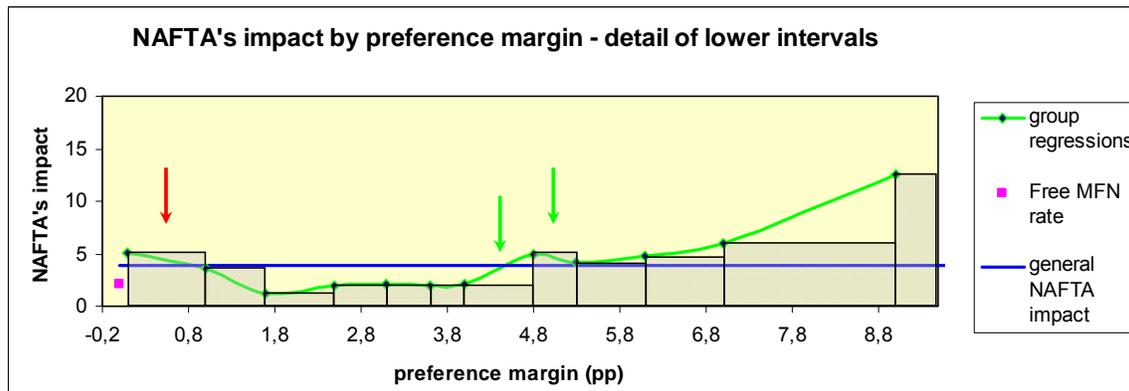
Graph 5.2b. NAFTA's impact by preference margins[66];
Source: author's calculations

After merging the groups and performing the regressions, the coefficients behave as expected - with the exception of the BC1 preference margin group (marked by red arrow) – which represents subchapter groups of goods in which the NAFTA countries enjoy up to 1.6% preference margin. The results indicate that in this group the impact of NAFTA's membership *ceteris paribus* is significantly higher than expected and implies that trade is about 5 times higher *ceteris paribus*, while the following preference margin group DE1 has impact about 30% lower than in BC1.

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[66] Please note that both of the graphs depict the values of interval margins. However, in the first graph the value is present only in the beginning of the interval, inclusion of whole intervals, as depicted in graph 5.2b. would make the whole graph ineligible;

We will try to solve this riddle by exploring further the groups' specifications – we will look closely into the composition of the specific groups and we will try to find the solution on the section level. We will also give closer attention to the gravity specifics of the results. The first hypothesis is that the groups encompass products with specific characteristics; the theme will be developed in consequent subchapter.

The expected jump occurs between the impact of group NAFTA's coefficient K1 and merged group LM1 (both marked by green arrows), NAFTA's impact is two times higher than the coefficient for the previous group. It is also worth noting that for the tariff interval between 1.8% and approximately 4.7% the NAFTA's impact on trade is lower than aggregated NAFTA impact. It suggests, as explained earlier, that in this range the impact of NAFTA is not so high and even that in this range the free trade setting is not so beneficial. The jump itself is the result of our analysis and it suggests that the point where the compliance costs equal the preference margin lies in the interval <4.8;5,2>. Nevertheless, this result needs one more adjustment.

The compliance costs are already present in the price of the good on the market, because we assume that the decision to comply with the requirements has already influenced the production process, use of inputs, etc. On the other hand, when the good enters the area using the MFN rate, the tariff rate is added to the price of the good. Although both variables are in percentage point, the base is different. For the relationship in this interval margin, the relationship following holds:

(29) $\dfrac{compliance\ costs\ in\ \%}{100} = \dfrac{preference\ margin\ in\ \%}{preference\ margin\ in\ \% + 100}$

As a result, the preference margin value when converted into the comparable format is slightly lower than the previous subchapter implies. The resulting compliance costs are an interval <4.58%;4.94%>. The result lies in the lower scale of compliance costs estimated by previous studies and as such

provides additional and a new way which quantifies of the compliance costs of NAFTA agreement.

5.4.1. Problematic group BC1

Our hypothesis explaining the high coefficient for this group is a consequence of its specific composition - the group is influenced by factors not taken into account in the regression. In order to find more ground for our opinion, we will take a look at the composition of group BC1. More than 60% of the group is composed of sections: 2. vegetable products, 11. textile and apparel, 4. prepared food, beverages, tobacco and 1.- live animals and animal products – for more details see Graph 5.2. It is interesting to note as well that three of four of these sectors are among the outlier sectors, as noted earlier. Coming back to Graph 5.1., to the analysis of the utilization rates on the section level, all of these sections are among the top five preferential margin groups.
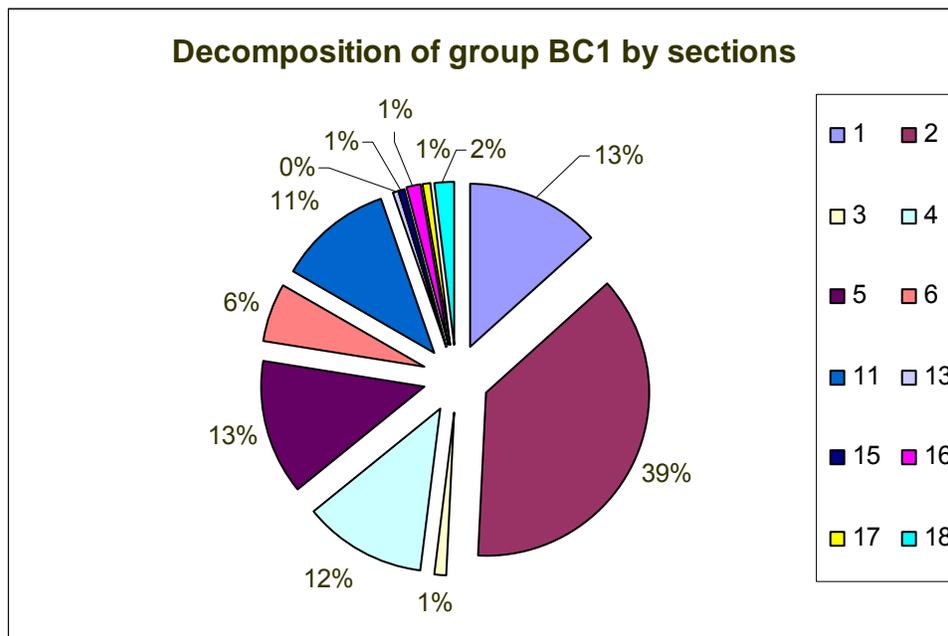
Graph 5.3. Decomposition of group BC1;
Source: author's calculations based on Harmonized Tariff Schedule (2006)
Legend: 1.Live animals, animal products, 2. Vegetable products, 3. Fats and oils, 4. Prepared food, beverages, tobacco, 5. Mineral products, 6. Chemicals, 11. Textiles and apparel, 13. Article of stone, plastic, glass, 15. Base metals, 16. Machinery, electrical equip., 17. Vehicles, transport equip., etc.18. Optical, photographic, etc,;

The top sections presented in this margin group have several specific characteristics that may explain the behavior of the coefficient. High share of vegetable products, live animals and animal products, textile and apparel and mineral products is the most probable reason of the coefficient height. We propose the following explanation:

- administrative burden in all these four sections may be expected to be on very low levels[67] for exporters to NAFTA. Vegetable, food and mineral products satisfy the origin requirements without any complications, products grown within the region confer origin automatically. In cases of textile and apparel products, the similar holds. The yarn-forward rule is clear – the definition does not allow multiple possibilities for producer. In textile and apparel the NAFTA importer's price advantage is estimated to be about 35% over competing importers, in prepared foods and beverage even 100% (US Department of Commerce, 2004) and one certificate can be used for multiple shipments; compared to other sectors the proof is relatively easy;

- the relative height of imports from non member countries is low; this can be explained by several factors. Factor number one is that majority of selected partner countries are industrial countries – they export different types of products – i.e. processed rather than raw mineral products, smaller share of apparel, etc. Mexico, on the other hand is a developing country with high share of textile and apparel exports. At the same time, countries that specialize in export of textile and apparel are not included in the list of countries at all - in 2005 only 47% of the imports in apparel sector[68] are covered by the top 20 partner countries in our sample (Philippines, Bangladesh, etc.). Factor number two is that administrative burden for other countries when they wish to import selected sections into US (especially section 1. live animals) may be expected to reach multiplicative levels. In this section significant trade barriers were abolished for

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[67] Please note that the low administrative burden does not imply that the rules of origin in these sections are not restrictive – the opposite is true. In order to satisfy the origin these groups have to *de facto* satisfy 100% domestic content requirement, which is very strict rule. However the proof is easy;

[68] Based on ITC Trade Dataweb import data;

NAFTA members - harmonization of product testing, labeling and certification was introduced. NAFTA member countries have same sanitary regulations and no additional veterinary exams are needed. This implies that although these specific goods are in the group of lower preference margins, its characteristic provide comparative advantage for NAFTA members, the real preference margin is higher than the one computed by difference of MFN and preferential tariff rates.

-       <u>cost advantage of NAFTA members;</u> according to Romalis (2005) NAFTA has caused an expansion of North American production of commodities for which North American countries are relatively high cost producer. He suggests that in the highly protected sectors NAFTA members' output has increased offsetting imports from non member countries.

We believe that these factors explain the height of the coefficient. The high share of sectors 2, 11, 12 and 1 is also characteristic for the highest preference margin groups, which are also groups with the highest NAFTA coefficient values – accounting for 76% in group ST1, 78% in R1, 66% in Q1. As the NAFTA impact declines, the impact of these groups declines as well – for group P1 the value is only to 17%, in group DE1 the presence of these industries accounts for 28% and later decreases even more to 17%.

5.4.2. Relationship with the previous research

In this subchapter we would like to compare the results of our previous gravity models research, which examined the impact of CEFTA membership, with the coefficients obtained in this thesis, and briefly summarize the behavior of the coefficients in the group regression. The most important for our analysis were the results for preferential area membership impact. These results are comparable, in Dotřelová (2004) the coefficient for CEFTA reached 0.770749 and the coefficient for the Czech and Slovak republics' customs union reached 2.695964. The former is comparable to the NAFTA's coefficient in the preference margin from 2.5% to 4.7%, while the later is comparable to NAFTA impact in the preference margin group R1 (9.0%-14.9%).

The distance impact is in NAFTA case about 60% lower than in the case of Central European region. Generally, in our current case the distance measure did not behave as in the previous research. The coefficient was not significant in five out of 14 regressions; in 3 cases the coefficient reached positive, although relatively low values. This issue is most probably caused by the high de-aggregation of the import data used. In gravity modeling, the distance that enters the regression should be ideally the distance between the centers of the economic activity; the distance that we used was the distance between capitals. Entering the important centers' pair distance on the subheading level is not possible. Possibility for the future research may be the inclusion of chapter dummy variable, however the impact on the behavior of the distance coefficient is unclear.

Another significant difference is the value of R^2 in the group regressions. In general NAFTA regression case the values are comparable with the explanatory power of the CEFTA regressions, in our case R^2 was 75%, in our bachelor thesis the average value was 80%. In the preference margin groups, however, the R^2 is lower than in the traditional gravity model setting. We believe that it is caused by the huge heterogeneity of data on the HS 6 level of detail, thus the low level was expected[69]. The behavior of the import data on the heading level is influenced by so many different industry or product specific factors, like seasonality, market structure, or production specifics, that model can not cover the behavior as well as in the traditional gravity setting that is applied to general import data.

In our new work we used another measure of GDP - in the current work we used formulation (28), but in Dotřelová (2004) form (24), with the inclusion of a list of dummy variables. The comparison of the results is therefore not possible, however, in all our group regressions the GDP variable behaved as expected, the values in all regressions were positive, ranging from 1.09 to 1.7 multiplicative impacts on trade *ceteris paribus.*

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[69] Similar or even lower explanatory power was reached by several papers investigated, all of them were using same or lower de-aggregation level, ie. Fukao et al. (2002);

This chapter examined the effects of the restrictive rules of origin, starting with the utilization rates. We have computed the utilization rates on chapter and section level, both showing a significant decline during the existence of the NAFTA agreement. We have also showed the difference across sections and relevant preference margins. In the following part of this chapter we have used a new approach for compliance costs estimation that is based on the detailed information about preference margins as well as the subheading level import. Our results suggest that these costs lie between 4.58% and 4.94%, which is in line with the findings of other studies.

6. Conclusion

When Béla Balassa wrote the basics of the economic integration theory, the world was different than the world today. As production technologies became more complicated and the globalized world allows production of one good to take place in more than one location, the question of determining the good's origin has become more complicated than in the times of the first formulation of the economic integration theory. The primary purpose of the introduction of certificates of origin - the elimination of transshipment in free trade areas – has become less important. Rules of origin, the requirements that state which good is eligible for the preferential treatment and which is not, have changed from an administrative technicality to a *de facto* public policy instrument. As a result, sometimes the rules of origin are defined more strictly than needed for a mere elimination of transshipment and they are used as an instrument which motivates of the producers to use inputs proceeding from the free trade area region or a tool how to attract foreign investments. They define which transformation processes are substantial enough, what is the minimal percentage of content of the free trade area proceeding input or how must the customs classification of inputs change.

In general, ROO change the conditions of the market through defining the eligibility for preferential treatment. As a result, producers that used the non-FTAs inputs before the free trade area formation have basically two options: to change of the production strategies or to pay MFN rates when exporting to the other FTA member countries. This decision depends on the difference of the preferential margin rates and the height of the compliance costs necessary to be eligible for the preference treatment.

The compliance costs may be a result of several facts: administrative costs, costs of changes in the production strategy – additional costs of new regional inputs, costs of changes in the production location or costs of change of the target market, etc. In our thesis we have asked ourselves the question how

big exactly these costs are. Our initial hypothesis was that they were not marginal. In order to answer this question we proceeded the following way.

On the country level, the sign of the restrictive rules of origin are low utilization rates of the preference treatment. When the utilization rates are low, the basic idea behind free trade is undermined, because some ratio of imports from the member countries still enters the country with non-zero tariff rates.

From the world's free trade areas we have focused on North American Free Trade Area. NAFTA's rules of origin are considered to be very restrictive. In order to understand their nature, we have summarized the basic requirements to confer origin, on both general and specific levels. We found out that apart from the complicated formulation and extensive list of exceptions, there are two facts supporting their character of restrictiveness. Firstly, the utilization rates of NAFTA's preferences; although they differ across sectors, 90% of the sections analyzed have utilization rates below 80%, the lowest value reaching only 30%. Secondly, the scope of changes required in order to be eligible for preferential tariff is large, which is reflected in the height of the so-called indexes of restrictiveness. Compared to other rules of origin used in the world, NAFTA's ROO attain the highest values.

While the utilization rates are relatively easy to obtain if detailed import data are available, the estimate of compliance costs is more complicated. In our thesis, we have developed a new approach to estimation of the compliance costs and we have applied it on NAFTA, specifically on Canadian and Mexican exports to the United States. It is based on the fact that exporters' behavior is influenced by the difference between preferential margin rates and the compliance costs and the belief that once the benefits of preferential treatment outweigh the compliance costs the impact of the NAFTA's membership on mutual trade should increase significantly.

In order to obtain our results, two tasks had to be completed. First step was to process the Harmonized Tariff Schedule of the United States, to compute the preference margins for Mexican and Canadian exporters and divide them into several intervals. Step number two was the application of an augmented gravity

model separately in these intervals, including not only the Canadian and Mexican partner data, but also the import data of US top 20 trading partners.

When the NAFTA's impact on trade obtained from the regressions was sorted based on the preference margin intervals, the expected jump really occurred and pointed to the interval where the compliance costs reach the same level as the preference margin. Using this approach we have arrived to the conclusion that the compliance costs are estimated to be between 4.58% and 4.94% of the import price. This result supports our previous assumption that NAFTA's rules of origin are very restrictive, causing great inefficiencies.

When we take into account that NAFTA serves as a building block of the planned Free Trade of the Americas, our results provide additional argument to those calling for the reform of the rules of origin. If we consider only the North American region, an alternative solution would be a formation of a customs union instead of a free trade area. Unfortunately this solution would be feasible only for the United States and Canada, whose MFN rates are on the similar level, in the case of Mexico, significant decrease of MFN rates would be needed.

To conclude, the main contribution of our thesis is the design of a new method of compliance costs estimation. Although the procedure was primary developed for the free trade areas, it can be applied on any economic integration formation. The necessary step which allowed us to compute the preference margins for the imports in selected detail level was processing of the extensive document of the customs import tariffs of the United States – the Harmonized Tariff Schedule. For authors who would like to use the tariff and utilization data for their own research, we included CD ROM Attachment that, besides other data includes the processed Harmonized Tariff Schedule with the preference margins and detailed utilization rates information.

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<http://usitc.dataweb.gov>

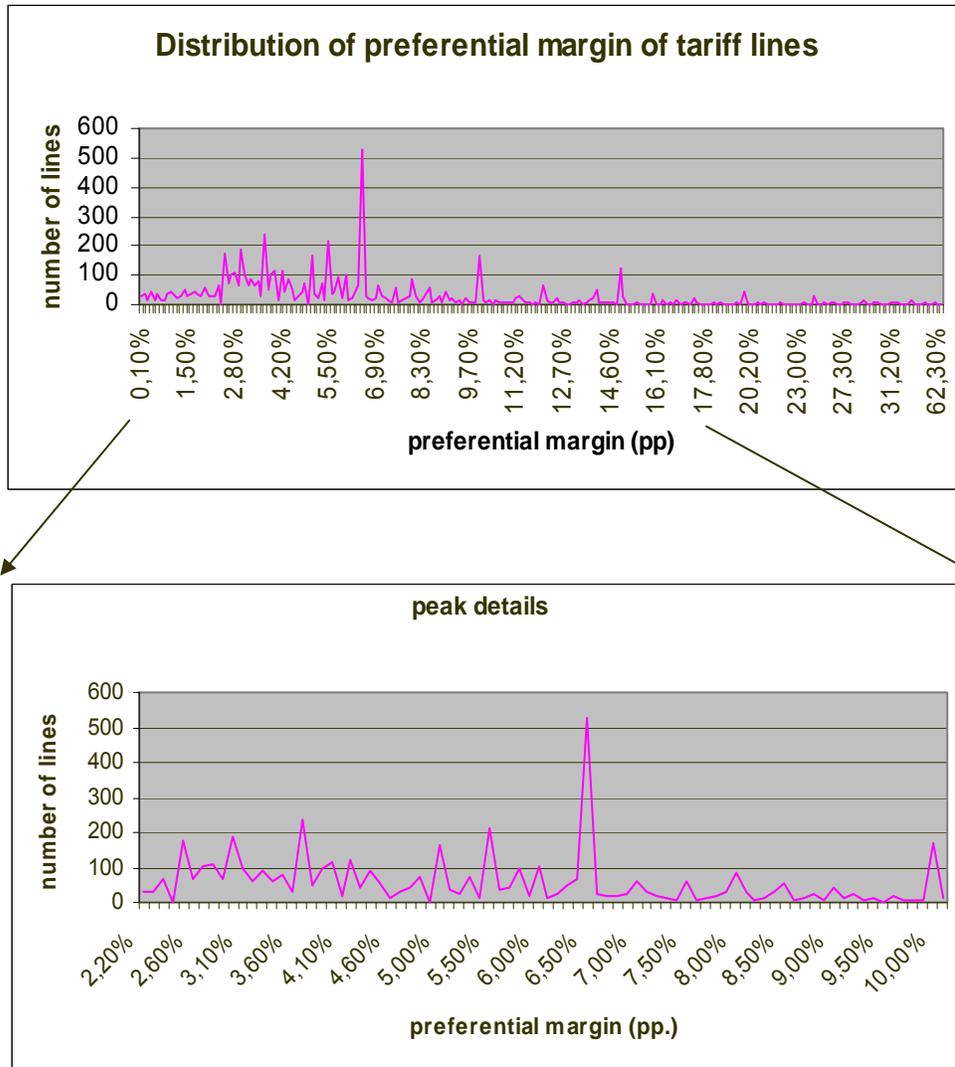WTO – Regional Trade Agreements Gateway
<http://www.wto.org/english/tratop_e/region_e/region_e.htm>

Attachment #1

Graph A1. Development of NAFTA's utilization rates
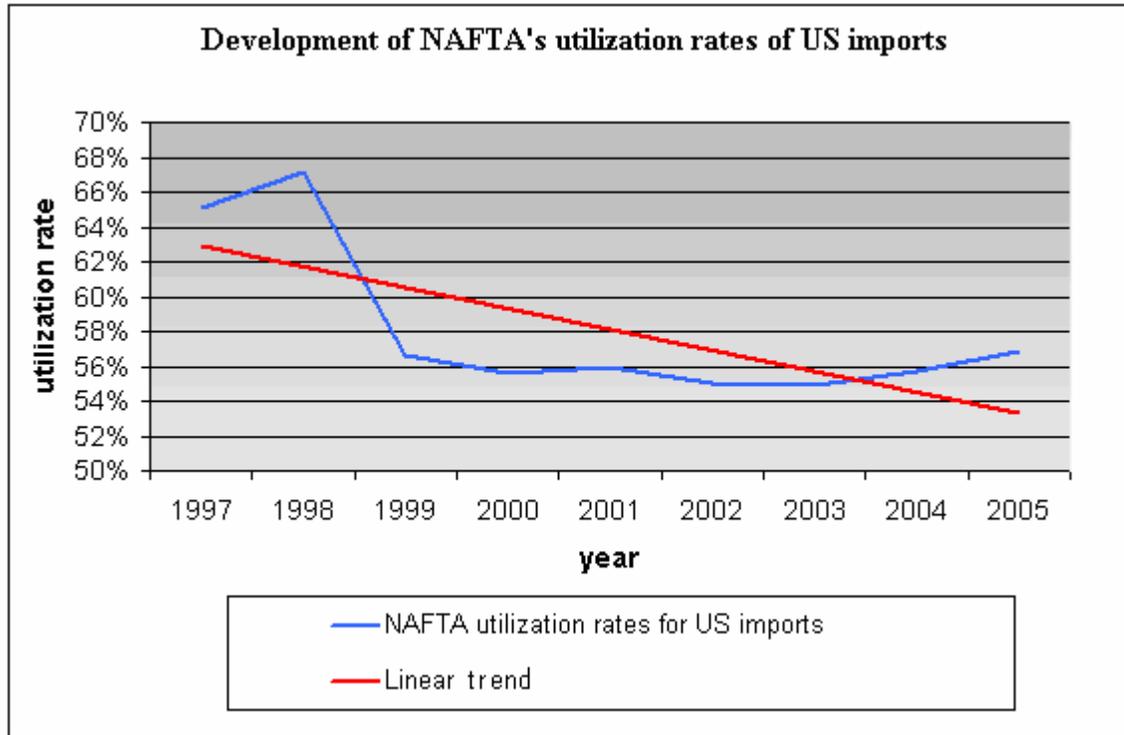
Source: author's calculations based on ITC Dataweb data for 1997-2005;

Attachment #2

Graph A2. Distribution of tariff lines in preferential margins

Distribution of preferential margin of tariff lines

peak details

Source: author's calculations based on Harmonized Tariff Schedule (2006);

Attachment #3

**Table A3**. Detailed specifications of Productivity Commission's ROO Restrictiveness index

Restriction category		Weight	NAFTA
PRIMARY CRITERIA			
1.1	**Change in tariff classification**	**0.20**	0.200
	Tariff item (HS 8-digit)	0%	
	Sub-heading (HS 6-digit)	20%	
	Heading (HS 4-digit)	50%	
	Chapter (HS 2-digit)	100%	
1.2	**Regional value content or percentage criterion**	**0.10**	0.060
1.2.1	*Percentage of originating material*		
	Less than 25%	0%	
	26-35%	20%	
	36-45%	40%	
	46-55%	60%	
	56-65%	80%	
	More than 65%	100%	
1.2.2	*Formulation of regional value content*	**0.02**	0.012
	Any method	0%	
	Import content	30%	
	Domestic content	60%	
	Value of parts	100%	
1.2.3	*Elements of production costs for domestic content*	**0.02**	0.010
	All costs included	0%	
	Taxes and duties paid on materials excluded	10%	
	Indirect labour excluded	20%	
	Other capital costs excluded	30%	
	Inner containers excluded	40%	
	Other packaging expenses excluded	50%	
	Selling, general, administrative expenses excluded	70%	
	Profits also excluded	100%	
1.2.4	*Treatment of determined manufactured raw materials*	**0.02**	0.010
	Imports from all zero tariff line items to member economies are treated as eligible expenditures	0%	
	Imports from selected zero tariff line items to member economies are treated as eligible expenditures	50%	
	No provision for allowing DMRM in calculating domestic content	100%	
1.2.5	*Methods of qualifying production costs*	**0.02**	0.005
	Any method	0%	
	Transaction value method	25%	
	Net cost method	50%	
	Factory cost method	100%	
1.2.6	*Valuation of non-originating materials*	**0.02**	0.015
	Not relevant or unspecified	0%	
	Free into store (fis)	25%	
	Cost, insurance and freight (cif)	50%	
	Free on board (fob)	75%	
	Ex-factory cost	100%	

1.3.1	**Type of specified manufacturing process test applied**		**0.10**	0.050
	No test	0%		
	Positive test for specific process	50%		
	Negative test for specific process	100%		
1.3.2	**Sector-specific rules**		**0.10**	0.10
	All sectors treated uniformly	0%		
	Single manufacturing sector (eg TCF) only	50%		
	Multiple sectors (eg TCF & PMV)	100%		

SECONDARY CRITERIA

2.1	**Type of cumulation**		**0.05**	0.03
	All	0%		
	Diagonal	20%		
	Full	40%		
	Bilateral	60%		
	No cumulation	100%		
2.2	**Cumulation special provisions**		**0.05**	0.005
	Cumulation allowed	0%		
	Tolerance or de minimis allowed	10%		
	Absorption principle	25%		
	Tracing test	50%		
	Absorption principle, tracing and tolerance tests not used	100%		
2.3	**Duty drawback**		**0.05**	0.00
	Drawback allowed	0%		
	Drawback not allowed	100%		
2.4	**Territoriality or outward processing**		**0.05**	0.025
	Territoriality or outward processing included	0%		
	Territoriality or outward processing excluded	100%		
2.5	**Geographic location of manufacturing process**		**0.05**	0.025
	Anywhere or not specified	0%		
	Any partner country	50%		
	Exporting partner country only	100%		

OTHER EFFECTS OF RoO

|				
3.1	**Degree of certainty**		**0.05**	0.05
	Higher certainty (eg CTC alone or technical test)	0%		
	Lower certainty (eg RVC or combination of CTC and RVC or technical test)	100%		
3.2	**Compliance and administration costs**		**0.05**	0.025
	Most PTA members are only a member of one PTA	0%		
	Most PTA members are involved in more than one PTA with similar RoO	50%		
	Most PTA members are involved in more than one PTA with multiple RoO	100%		
3.3	**Rigidity**		**0.05**	0.05
	No rigidity: waiver provision applied to all tariff items	0%		
	Partial rigidity: waivers allowed for a minority of tariff items	25%		
	More than partial rigidity: waivers allowed for a majority of tariff items	50%		
	Global rigidity: no waiver, RoO applies to all tariff items	100%		
1.00	**GRAND TOTAL**		**1.00**	0.625

Source: Productivity Commission (2004a);

Attachment #4

Graph A4. Comparison of average utilization rates and preference margins in 2000 and 2005
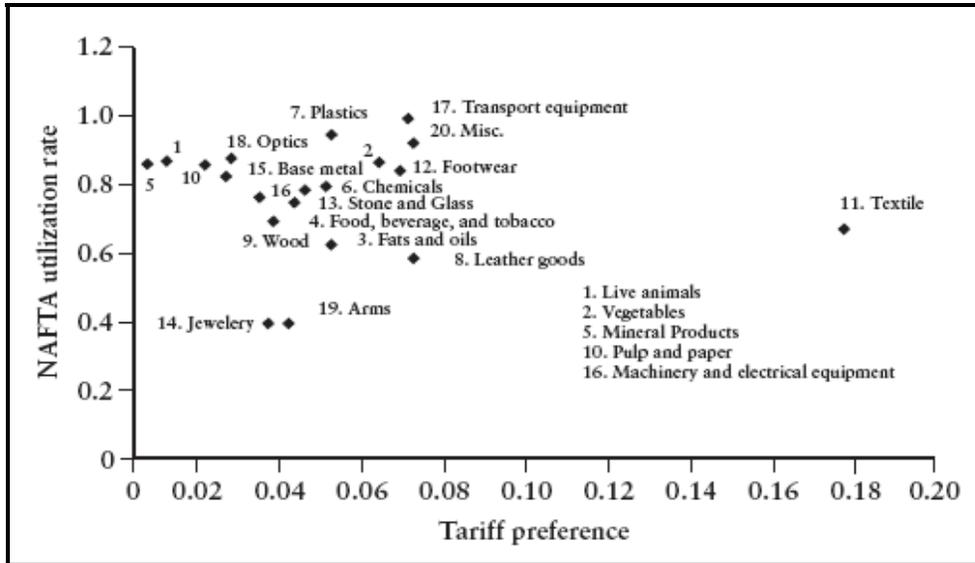
Source: Cadot et al. (2002), based on US ITC data for year 2000;
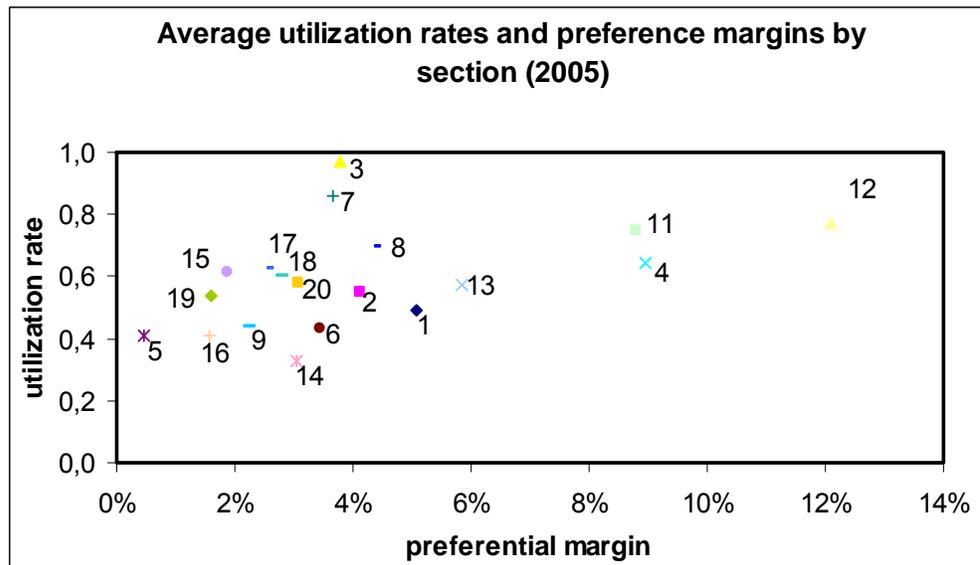
Source: Author's calculation based on Harmonized Tariff Schedule (2006) and ITC Trade Dataweb;

Legend: 1.Live animals, animal products, 2. Vegetable products, 3. Fats and oils, 4. Prepared food, beverages, tobacco 5. Mineral products 6. Chemicals 7. Plastics 8. Leather goods, 9. Wood products, 11. Textiles and apparel, 12. Footwear, headgear, etc., 13. Article of stone, plastic, glass,., 14. Jewelry, 15. Base metals, 16. Machinery, electrical equip., 17. Vehicles, transport equip., etc., 18. Optical, photographic, etc.,19. Arms and ammunition, 20. Miscellaneous

Attachment #5

Table A5. Coefficients in group gravity regressions

	NAFTA			Distance		GDP		China	
	coeff.		impact	lines	Coeff.		Coeff.		Coeff.	
A1	0.719918	*	2.054265	28628	-0.269532	*	0.513655	*	1.39783	*
BC1	1.6328030	*	5.118201	751	0.166371		0.335296	*	1.55697	*
DE1	1.296366	*	3.655987	1289	-0.240451	***	0.481590	*	1.283208	*
FG1	0.846788	*	1.204437	1843	-0.072699	*	0.452555	*	1.169282	*
H1	0.669697	*	1.953645	4095	-0.379319	*	0.536260	*	1.869638	*
I1	0.759108	*	2.13637	2168	-0.284589	*	0.497118	*	0.111233	*
J1	0.657059	*	1.92911	2284	-0.187908	***	0.466875	*	1.636809	*
K1	0.755677	*	2.129052	2563	-0.084675		0.435607	*	2.082356	*
LM1	1.607154	*	4.988593	1302	-0.001274		0.409911	*	2.399080	*
NO1	1.430850	*	4.182253	2137	-0.121364		0.447867	*	1.895658	*
P1	1.565669	*	4.785876	1920	-0.135849		0.442370	*	1.520587	*
Q1	1.796655	*	6.029445	2620	0.531285	*	0.219961	*	-1.404912	*
R1	2.534076	*	12.60478	3077	0.501593	*	0.205521	*	2.340940	*
ST1	4.699663	*	109.9101	807	0.930872	*	0.091063	***	3.937901	*
General impact	1.253457	*	3.502430	610	-0.286295	*	0.845005	*	n/a	

Source: author's calculations;

Legend: * - 1%significance level, ** - 5%significance level, *** - 10% significance level

Preference margin intervals:

A1 free	**G1** 2.0% - 2.45%	**K1** 4.0% - 4.7%	**Q1** 7.0% - 8.9%
BC1 0.1% - 0.9%	**H1** 2.5% - 3.0%	**LM1** 4.8% - 5.2%	**R1** 9.0% - 14.9%
DE11.0% - 1.6%	**I1** 3.1% - 3.50%	**NO1** 5.3% - 6.0%	**ST1**15.0% - 350.0%
FG1 1.7% - 2,45%	**J1** 3.6%- 3.9%	**P1** 6.1% - 6.9%	

CD ROM Attachment: Table of contents

*Readers who are accessing the document's electronic version may access the CR ROM's content on **http://anna.dotrelova.googlepages.com/cdrom***

Master Thesis Proposal

Name: Anna Dotřelová

Consultant: doc. Ing.Vladimir Benáček, CSc.(IES FSV UK, CESES)

Proposed Topic: **Economic Integration in North America:**
                                  Theory and Reality of Rules of Origin

Topic Characteristics: Free trade agreements always contain a gap between the stated intention of securing the unfettered movement of goods across borders and the negotiations' results...This difference between theory and reality is abundantly evident in the North American Free Trade Agreement. The main purpose of all free trade areas is to abolish trade barriers among its members and through the enhanced trade levels promote economic growth and economic cooperation. North American Free Trade Agreement (NAFTA) uniting the United States, Mexico and Canada is the world's largest free-trade zone that celebrated its 10th anniversary in the beginning of 2004. The completion of the first decade of functioning is a great opportunity for evaluating and summing-up its functioning so far.

        NAFTA deals with a lot of issues (environmental, labor market problems, legal framework differences, etc.). As a result the opinions about NAFTA are somehow ambiguous. The only fact that both critics and propagators share is that the free trade has had a positive impact on mutual trade and many empirical studies prove it. On the other hand there exists a relatively limited research on certain features of the agreement – the rules of origin.

        NAFTA's rules of origin are known for their complexity and restrictiveness. There exists evidence that such strict rules of origin in free trade areas may function as protection device against producers of other member countries and studies have shown that rules of origin create additional trade costs. We will examine the most visible sign of restrictive rules of origin – low and/or declining utilization rates. Utilization rate is the ratio of imports from member countries that use the preference treatment to the total amount of imports from the member countries.

        We expect to obtain results that are in line with the previous research – the last published utilization rates are for year 2003 – that they are significantly lower than 100%, thus implying the restrictiveness of rules of origin in place. In the next step we will try to estimate the costs of compliance, based on the analysis of impact of the preference margins on mutual trade among NAFTA members.

        We may expect the results to prove that NAFTA membership has had a large positive impact on mutual trade. This may imply that the free trade area has been a successful project. We expect the compliance costs not to be marginal, thus slightly correcting the successful image of the free trade area. We expect that this additional point of view will shed light upon the real characteristics of NAFTA and that we will show that great benefits do not necessarily imply success.

Methodology: Utilization rates will be computed on the data from US International Trade Commission's Interactive Tariff and Trade Dataweb application, both on the chapter and section levels. Preference margins will be taken from Harmonized Tariff Schedule.

        For the impact side of the analysis and compliance costs estimate based on the *gravity models* will be used. This analytical tool describes mutual trade between two countries as a function of their distance and GDP. Including the NAFTA membership dummy will allow us to quantify the influence of NAFTA membership on foreign trade between the members, based on preference margins.

Outline: 1. Introduction
                2. NAFTA – trade related characteristics
                3. Rules of origin
                4. Measuring the effects of NAFTA's rules of origin
      Gggggg5. Conclusion

Anna Dotřelová   doc. Ing. Vladimír Benáček, CSc.

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