

EFFECTS OF AID FOR TRADE ON TRADE PERFORMANCE

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Abstract: In 2005 the World Trade Organization announced the Aid for Trade initiative aiming developing countries to connect to the multilateral trading system. This financial assistance is to improve the supply-side capacity (economic infrastructure, productive capacity) in the underdeveloped countries so that they could expand their exports. This study analyses the effectiveness of Aid for Trade – using descriptive and multivariate statistics. The findings show that though there was a significant change in the absolute value of the AfT after its official declaration, there is no change in the per capita indicators. The correlation analysis shows some statistically significant relations with the economic sectors and the export performance but it differs by income groups. The study, therefore, indicates the heterogeneity of the developing countries, that is a common solution for them cannot be accepted.

Key words: Aid for Trade, World Trade Organization, openness, correlation analysis

JEL: F-13, O-11, O-19

1. Introduction

Trade not aid – it is a common phrase, and recently international organizations such as the United Nations, International Monetary Fund, or the World Trade Organization (WTO) take similar approach because they assume participation in international trade plays an essential role in economic development and poverty reduction. The current liberalization process would create a suitable environment for this, but several – especially (African) developing – countries are unable to benefit from these opportunities. Many countries are unable to adjust to the new WTO rules and they are allowed to postpone implementing them – but this makes the overall liberalization more difficult. The preferential market access granted for the developing (least developed) countries was not sufficient: the African countries' share from world trade declined significantly between 1970 and 2007.

It was realized that these countries are hindered by their underdeveloped supply-side capacity. To solve this problem, the WTO launched the Aid for Trade initiative in 2005 at the

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Hong Kong Ministerial Conference. The main objective is to develop the supply-side capacity of these countries to be able to take part in international trade more effectively. Although the literature on the relationship between aid and macroeconomic performance is very rich, and almost five years have passed since the launch of this initiative, the analysis of Aid for Trade is still in the background. Consequently, *the main objective of this paper is to give a deeper analysis of the Aid for Trade initiative and analyse its short term effects on the trade and economic performance by showing the heterogeneity of the developing countries.*

The paper is organized as follows. Section I gives details about the dilemma whether the export promotion is good for a country or not. Section II introduces the Aid for Trade initiative shortly and represents recent literature in this field. Section III contains the empirical (multivariable) analysis of the Aid for Trade – using test of variances and correlation analysis. The primary aim of the analysis is to show the heterogeneity of the developing countries. The paper ends with the concluding remarks.

2. Dilemmas about export orientation

Although the neoclassical approach supports trade liberalization and export promotion, and the mainstream says export promotion contributes to the economic growth and development, there are still disputes among economists how much the export orientation could contribute to the country's economic performance (*Hoekman-Özden 2005, Lee 2005, Subasat 2002*). In the past few years several studies, empirical researches were prepared: some proved the positive correlation between the export and economic growth, but some could prove its opposite (*Subasat 2002*). In the following we would emphasize only the dilemmas which we find the most important.

Balassa [1985] says that developing countries taking part actively in international trade are more *resistant to external shocks* than countries with inward-looking strategies. *Sentsho [2003]*, and *Wilbur and Haque [1992]* found the export-led economic growth are beneficial for *both developed and developing countries*. However, several economists (e.g. *Dodaro 1991, Subasat 2002, Yaghmaian 1994*) assume whether the export promotion strategy is successful depends on the development level of the certain country, according to their results the *middle-income countries* could be the winners.

Effects of export promotion on economic growth stand in the centre of the analysis of *Chang et al [2009]*: according to their results the positive effects on economic growth may be much higher with *complementary reforms* (e.g. education, public infrastructure, governance).

Haddad et al [2010] analysed the effects of a *global shock* on the relationship between economic growth and trade openness. According to their findings, the growth volatility can be decreased by *export* (rather product than market) *diversification*. Combes and Saadi-Sedik [2006] went further and analysed the effects of trade openness on *budget deficit* involving 66 developing countries into the analysis. Their findings indicate that the more open countries are more vulnerable to economic shocks, which strengthens the negative impact on budget deficit of terms of trade instability. Agbeyegbe et al [2006] narrowed their research as they analysed the connection between *trade liberalization and aggregated tax revenues* in case of Sub-Saharan African countries – they find there is no strong relationship between these two variables, but if a county implements appropriate monetary policy, tax revenues will be preserved.

Although the literature on export promotion, openness and economic growth is very rich, Subasat [2002] emphasizes analysing the relationship between the export and economic performance is not right, since the *autocorrelation* between these variables may distort the results. Lee et al [2004] tried to handle the *endogeneity of openness and growth* with a heteroskedasticity methodology, and their results show that *trade openness positively affects economic growth*.

Despite there is no consensus in this question, recently the role of international trade is assumed to be so significant that it could be a potential tool for poverty reduction and economic development (*Dollar-Kraay 2003, Hallaert-Munro 2009, UNCTAD 2005*). Consequently, trade openness became important, and empirical researches proved that the *growing openness contributes to the improvement of industrial value added* (*Dodzin-Vamvakidis 2004*).

Although *Moreira* [2010] points out that the long term positive effects of trade liberalization is accepted by the economists, empirical researches show that there is disagreement between them. *Stiglitz and Charlton* [2006] emphasize that for some reasons international trade is *only a necessary but not sufficient* condition for achieving economic development. But we should keep in mind that nowadays the level of the liberalization is much more than it was two or three decades ago, therefore recently a country could not be successful if it has an inward-looking economic strategy. Besides, recently the concept of *competitiveness* plays an essential role in economic analysis (*Lukovics 2009*), and a *competitive* country can effectively take part in the international competition (i.e. the country is integrated in the global economy), as the EU's (broadly accepted) definition of

competitiveness says (EC 1999, p. 75): ‘*the ability of companies, industries, regions, nations and supra-national regions to generate, while being exposed to international competition, relatively high income and employment levels*’.

These researches handled the export promotion as an external factor or as the objective of the government. But *trade preferences* could influence these processes. Earlier most of the developing countries obtained more or less significant trade preferences (favourable market access) by the developed countries (*Deardorff-Stern 2009, Ng-Yeats 1997, Udvari 2010*), but some (especially African) countries’ share from world trade declined (*Ng-Yeats 1997*). Furthermore, the erosion of trade preferences became significant because of the general trade liberalization (*Deardorff-Stern 2009, Hoekman-Özden 2005*). The continuously declining tariffs create stronger competition, on one hand, and decrease the tariff revenues of the developing countries², on the other hand (*Moreira 2010*). Looking at the experiences of trade preferences and favourable market access from the past, we could see (again) mixed results. The European Union granted significant preferences for the African, Caribbean and Pacific (ACP) countries with the Lomé Conventions. This opportunity was, however, not so significant for the contracting developing countries’ economic development as they are less developed than those countries which received less preferences from the EU (*Udvari 2010*). *Abbott et al [2009]* received an opposite result while analysing the relationship between trade and development in connection with Viet Nam. According to their findings, bilateral trade agreements played a crucial role in the country’s development and poverty reduction.

3. The Aid for Trade initiative and recent literature³

The liberalization process is still continuing and the current round is named Doha Development Agenda.⁴ To complement the potentials of the Doha Round and as many countries could not follow the liberalization process and could not benefit from the current process, the Aid for Trade (AfT) initiative was launched by the WTO. The AfT is to be essential for the developing countries, since *Deardorff and Stern [2009]*, and *Abbott et al [2009]* emphasize that the developing countries would be the main losers if the Doha Round fails. Besides, *Hoekman [2010]* points out that the Aid for Trade is the first initiative where

² Revenues from tariffs are essential for some developing countries. As *Moreira [2010]* introduces in some Caribbean countries trade taxes give more than 25% of the government revenue.

³ In this study the history of Aid for Trade is not described, for the background of the Aid for Trade see e.g. *Hoekman [2010]*, for the reasons see e.g. *Udvari [2009]*.

⁴ Although *Deardorff and Stern [2009]* outlines that the world *development* is misleading, as – they think – development means to reduce the trade barriers to development (i.e. the further liberalization).

the *trade* and *development* community may work together. As the Aid for Trade is a new form of development, we should analyse the effectiveness of it – *Doucouliaagos* and *Paldam* [2007] looking through the literature on aid effectiveness say that the development aid over the past 40 years did not have positive effects. Therefore investigating the Aid for Trade is still more important. This section of the study gives some details about the Aid for Trade.

The Aid for Trade initiative was declared at the end of 2005 on the World Trade Organization's (WTO) Hong Kong Ministerial Conference, where the member states agreed that this programme should be completely separated from the Doha development round. The Hong Kong declaration details the objectives of the programme (WTO 2005, p. 11): '*Aid for Trade should aim to help developing countries, (...) to build the supply-side capacity and trade-related infrastructure that they need to assist them to implement and benefit from WTO Agreements and more broadly to expand their trade.*' Beside the unfavourable situation of some developing countries in international trade, *Stiglitz* and *Charlton* [2006] mention three reasons why the Aid for Trade facilitation is needed: firstly, *political reasons* ensures the Doha Round to go forward; secondly, the AfT means *compensation* for the preference-dependent countries because of the experiment of some agreements and the preference-erosion; thirdly, the AfT may embody *fairness*, as the developed (rich) countries may be the main winners of the Doha Round.

In the first half of 2006 a task force set about implementing the initiative laid out in detail what the programme actually covers and what *the ultimate goal* is: AfT supports developing countries to help them *expand* their exports, *participate* in the multilateral system of trade, and *benefit* from liberalisation. Achieving these objectives can contribute to the economic growth of a country and to poverty reduction. In order to fulfil these goals the task force recommended the development of *six areas for the financial assistance* (WTO 2006):

1. *Trade policy and regulation.* This covers the training of officials taking part in trade negotiations, preparing them to participate effectively in resolving disputes; additionally, institutional and technical support to ensure that trade agreements can be incorporated into national legislation and ultimately implemented, and, helping to ensure that less-developed countries comply with international regulations and standards.
2. *Trade development.* Among other things, this area of intervention includes stimulating investment and supporting institutions in the trade of services, business

support services and institutions, e-commerce, market analyses and market development.

3. *Trade-related infrastructure*. Covers the development of physical infrastructure (road network, ports, telecommunication, energy network), which is indispensable if a country intends to join the global trading network.
4. *Building productive capacity*. Creates an opportunity to strengthen economic sectors by developing the business environment, banking services, financial institutions and tourism.
5. *Trade-related adjustment*. Clearly signifies budgetary support, provided to cover costs derived from trade liberalisation (compensating for falling preferences and lower customs duties) and to push through trade reforms.
6. *Other trade-related needs*. This is the ‘odd one out’ since it provides an extremely broad scope for aid. This category essentially means that anything which has a link to trade is eligible for support, as it will definitely fall into this category anyway.

Although some years have passed since the declaration and work-out of this facilitation, the literature dealing with Aid for Trade is very poor and mostly contains only either a general description about the initiative or empirical analysis involving only some countries, but the modelling literature seems to be broader. For instance, *Cali and te Velde* [2009] analysed the potential impacts of AFT on a country from the point of *transport costs*. According to their results, trading costs became lower owing to the AFT, and the research strengthens that the assistance to economic infrastructure and building productive capacity affects on the countries’ exports, but first of all the mining and manufacturing exports increase. *Naito* [2010] has a similar result: owing to the aid for trade the transport costs will decrease, but the global growth – due to the decreasing growth potential of the donor country – is not always proven. *Moreira* [2010] investigated the *Caribbean countries* and according to his results the Aid for Trade – if it is well-targeted – may be beneficial for the countries in the region for long-term growth. He strengthens that the *complementary reforms* should be implemented before the trade reforms, and in consequence the Aid for Trade would be beneficial for the country.

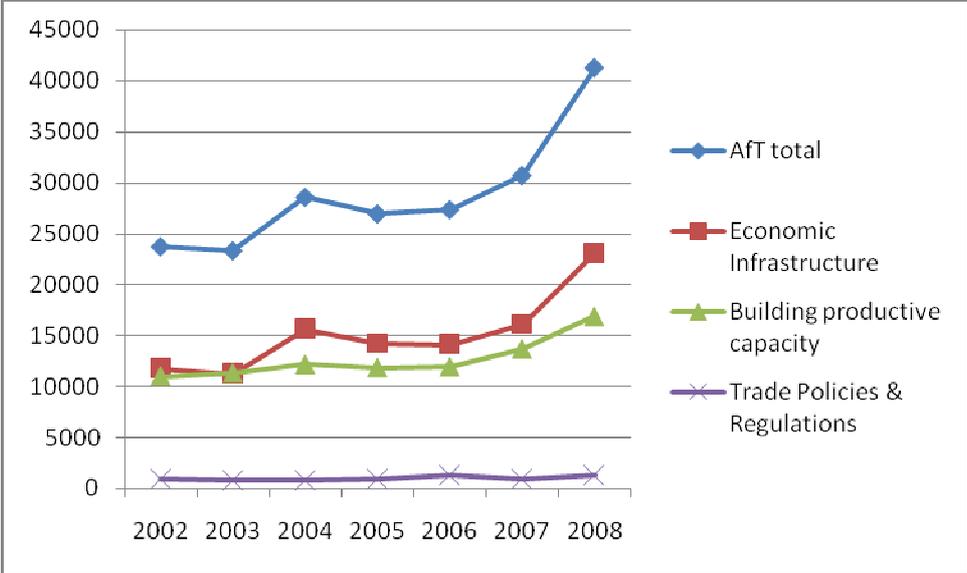
We missed an overall and general research in this field, therefore this paper attempts to give a shorter empirical analysis. Consequently, *this study investigates the developing*

countries in general in order to point out their heterogeneity and their different characteristics on the field of Aid for Trade.

4. Empirical analysis of Aid for Trade

Figure 1 shows the trends of the Aid for Trade assistances. This contains the aggregated results of all the developing countries. Between 2002 and 2008 a growing tendency can be experienced in the total AfT assistance – there was a sharp growth from 2007 to 2008. Most of the assistance is spent on the economic infrastructure – the productive capacity improvement stayed in the second place and the difference between these two sectors seems to be growing. However, the trade policy and regulations sector remains relatively unpopular.

Figure 1 Aid for Trade assistance in developing countries, 2002-2008 (constant 2008 million USD)



Source: OECD-CRS [2010]

The main problem of the aggregated data of international organizations is the following: if there is more country with available data, the aggregated value will be higher, though earlier less country was the base of the aggregation. Consequently, it is not sure that the growing amount of the AfT assistance is due to either the growing support of the donor countries and organizations or only the growing available data. Therefore, it is important to analyse the Aid for Trade initiative more detailed – involving only the countries into the analysis for which data are available for the investigation period.

4.1. Problems and difficulties occurred during the analysis

Turner [2008] analyses how to measure the Aid for Trade. She details different opportunities, out of which we follow the OECD's recommendations. The reasons for it are as follows. Firstly, the OECD is one of the main international institutions, which handles the Aid for Trade initiative and it tries to give overall analysis about it. Secondly, the OECD built up a database for the Aid for Trade – although it does not contain overall and aggregated data (i.e. total amount of the Aid for Trade), but it tries to near the amount of it by sectoral breakdown. Thirdly, the OECD's Creditor Reporting System is often used when analysing the aid activity of countries. Fourthly, the OECD's data for Aid for Trade is often referred – in both official (EU, OECD, WTO) and researchers' documents. Following the OECD's recommendations, *the areas of AfT can be grouped into 3 categories* (OECD-CRS 2010):

- (1) economic infrastructure
- (2) building productive capacity
- (3) trade policy and regulations.

Although the OECD database was extremely detailed, there were missing data. As the relatively high number of countries involved in the analysis was the most important for the present investigation, we decided to decrease the sectors for analysing the AfT *building productive capacity* category (Table 1).

Table 1 Aid for Trade categories for the analysis according to the OECD

AfT areas	OECD categories for AfT	Subsectors in OECD-CRS
trade-related infrastructure	economic infrastructure	transport and storage communications energy generation and supply
building productive capacity and trade development	building productive capacity	banking and financial services* business and other services* agriculture* forestry fishing industry* mining and mineral resources tourism
trade policy and regulations	trade policy and regulations	trade policy and regulations

Note: subsectors marked with * are involved into the analysis

Source: own construction

As the Aid for Trade – as its name suggests – is financial assistance, the period for the investigations should be carefully chosen. In this study the empirical analysis is based on *three periods*. The first part is built on a before-after comparison, where the break-year was 2005 (i.e. when the WTO announced the Aid for Trade initiative). For the comparison we use the periods of 2002-2005⁵ (before) and 2006-2008 (after). For the deeper analysis in the second part, the aid variables are referred to 2005-2007, while the other economic indicators are lagged one year further (2006-2008). In all cases (periods and indicators) averages were calculated to avoid the outlier data.

Another problem was which country to involve into the analysis. The basic objective was to involve as much countries as possible. Out of the 140 developing countries (see *World Bank 2010*), 85 could have been involved. But the availability of data for these countries is overall. For the heterogeneity analysis, the different World Bank-income groups (low income, lower middle income, upper middle income) were compared according to the various variables (*Table 2*).

Table 2 Country groupings in the empirical analysis

Income group	Number of countries in the analysis
Low-income (<\$995)	31
Lower middle income (\$996-\$3,945)	33
Upper middle income (\$3,946-\$12,195)	21
Total	85

Note: the brackets contain the GNI per capita levels of the income groups
Source: World Bank [2010] and own construction

To choose out the appropriate indicators, we considered some literature on aid analysis (e.g. *Doucouliaagos-Paldam 2007*), on trade indicators (e.g. *Meliak 2008*, UNCTAD 2004, *World Bank 2008*) and openness (e.g. *Haddat et al 2010*, *Ng-Yeats 1997*, *Yanikkaya 2003*), on aid for trade (e.g. *Moreira 2010*) and on how to measure competitiveness (e.g. *Lukovics 2009*). Besides, the areas and objectives of the AfT helped us to choose the potential indicators. To eliminate the distorting effects of the countries' size, all the indicators are divided by the country's population and in some cases by the GDP. The computations were made by MS Excel and SPSS 15.0. *Table 3* contains the indicators chosen for the analysis.

⁵ *Hoekman [2010]* uses this period as a baseline, therefore we accept the 2002-2005 years as a reference period.

The data used in this analysis are from the OECD-CRS aid statistics (OECD-CRS 2010), World Development Indicators (*World Bank* 2010), the online statistical database of the United Nations (UN 2010) and the UNCTAD’s Handbook of Statistics (UNCTAD 2009).

Table 3 Indicators in the analysis

	Basic analysis	Correlation analysis
Periods	2002-2005, 2006-2008	aid: 2005-2007, other: 2006-2008
Indicators	Total Aid for Trade (Aft) per capita, USD, constant 2008 Economic infrastructure (EI) per capita, USD, constant 2008 Building productive capacity (BPC) per capita, USD, constant 2008 Trade policy and regulations (TPR) per capita, USD, constant 2008 Aft/GDP, % Aft/ODA, %	Aft per capita, USD Aft/GDP EI per capita, USD BPC per capita, USD TPR per capita, USD Value added per capita, USD Value added/GDP, % Export per capita, % Trade/GDP, % Export change, annual average, % Export concentration index Mobile cellular subscriptions, per 100 people Fixed broadband internet subscribers, per 100 people Internet users, per 100 people Telephone lines, per 100 people

Source: own construction

4.3. Methodology

The methodology of analysing the data is built on two things. Firstly, *basic statistics* (means and standard deviation) of the Aid for Trade assistances were analysed. This analysis contained both the whole sample and the subgroups. In this case we could gain basic information about the sample based on the most important indicators. During this process we analysed the two periods: before the WTO-announcement and after the WTO-proposal.

Then we analysed whether there was a *significant difference between the two periods* – the analysis was prepared for both the whole sample and the subgroups. This may show the potential effects of the official WTO-proposal on the amount of Aid for Trade. As the analysis contains investigation on the total and subgroups, we can note any difference between the income groups, therefore we could gain some information on the heterogeneity of the developing countries. Since the data did not fulfil the strict conditions of variance analysis, the ANOVA was rejected. Consequently, *nonparametric-test*, namely the *Wilcoxon-test* was the empirical base.

Finally, the potential impacts of Aid for Trade on some economic activity were analysed by *correlation analysis*. Although the correlation analysis is not appropriate to determine dependent (*consequence*) and independent (*reason*) variables, it is suitable to investigate whether there is a (positive or negative) relationship between the variables (*Sajtos-Mitev* 2007), i.e. how the different variables ‘move together’ and whether they could be useful contributor for a regression model. As we are speaking out effects, the aid variables and other indicators should not be in the same years. In the aid effectiveness literature you can find one or two-year lag (see e.g. *Doucouliagos-Paldam* 2007), this study uses the *one-year lag*. Consequently, for the correlation analysis data for aid is the average of 2005-2007, while in case of other variables the data are gained as an average of 2006-2008.

4.4. Results of the empirical analysis

4.4.1. Descriptive statistics for both periods

Analysing the general sides of the Aid for Trade, great differences seem to be within the different income groups as the standard deviation is extremely high in all the income groups (*Table 4*). The *first period* (2002-2005, i.e. the period before the official announcement of the AfT) shows that *the greatest beneficiaries are the low-income countries*, while the upper middle income countries receive the less assistance. The low-income countries need the highest assistance for the improvement of the economic infrastructure, while its half is spent on the productive capacity. The lower middle income countries spend almost the same amount on the economic infrastructure and productive capacity.

Table 4 Mean and standard deviation of some variables, in the average of 2002-2005

	Low income	Lower middle	Upper middle	Total
AfT per capita (USD)	39.86 (147.43)	27.91 (52.46)	7.73 (13.91)	27.29 (94.92)
EI per capita (USD)	25.49 (98.89)	12.88 (22.77)	3.29 (6.36)	15.11 (61.44)
BPC per capita (USD)	14.13 (48.63)	14.37 (40.81)	4.11 (7.45)	11.75 (38.88)
TPR per capita (USD)	0.24 (0.30)	0.67 (0.96)	0.34 (0.74)	0.43 (0.74)
AfT/GDP (%)	3.66 (2.57)	1.92 (2.47)	0.33 (0.53)	2.16 (2.54)
AfT/ODA (%)	24.10 (11.32)	24.25 (14.04)	16.67 (10.85)	22.32 (12.63)

Note: EI: economic infrastructure. BPC: building productive capacity. TPR: trade policy and regulations. The brackets contain the standard deviation.

Source: own calculations

The AfT assistance gives one-fourth of the total official development assistance (ODA) in the two less developed groups, while in the third group it is a bit lower. The heterogeneity of the countries is proved by the significant but only weak correlation between the GDP per capita and AfT per capita (*p-value* 0.02, *r* = 0.334). Analysing the variances of these income groups in case of the indicators mentioned above the results show that *there are no significant differences between the income groups* (the *p-value* is higher than 0.05), except in case of the share of AfT and ODA from GDP.

As for the great heterogeneity in the income groups, the *second period* (2006-2008, i.e. the period after the official announcement of the AfT) seems to be similar to the first one (*Table 5*). The *lower middle income countries are the main beneficiaries in this period* – they receive 1.5 times higher AfT per capita than the low income countries. In the two lowest income groups the role of assistance on economic infrastructure is significant, while the upper middle income countries support both the economic infrastructure and productive capacity. Despite the high growth in total AfT within the lower middle countries, the AfT plays an important role in the low income countries as it gives 3.6 percent of the GDP. Assistance to AfT reaches the one-fifth of the total official development assistance within all income groups. The analysis of the variances shows again that *there is no significant difference between the income groups* – except the share of AfT from the GDP.⁶

Table 5 Mean and standard deviation of some variables, in the average of 2006-2008

	Low income	Lower middle	Upper middle	Total
AfT per capita (USD)	29.07 (81.45)	41.06 (92.36)	10.02 (14.01)	29.02 (76.25)
EI per capita (USD)	19.67 (66.46)	25.85 (56.56)	4.64 (8.30)	18.36 (53.39)
BPC per capita (USD)	8.73 (15.28)	12.82 (30.16)	5.00 (6.92)	9.40 (21.24)
TPR per capita (USD)	0.67 (2.02)	2.39 (10.67)	0.38 (0.88)	1.26 (6.77)
AfT/GDP (%)	3.61 (2.38)	2.04 (2.70)	0.32 (0.44)	2.19 (2.54)
AfT/ODA (%)	24.12 (10.21)	27.94 (14.09)	21.23 (13.84)	24.89 (12.87)

Note: EI: economic infrastructure. BPC: building productive capacity. TPR: trade policy and regulations.

The brackets contain the standard deviation.

Source: own calculations

⁶ Because of the high standard deviation we tried to reorganize the countries into clusters according to their AfT-results but the new clusters seemed to be extremely unbalanced. Therefore we decided to preserve the income groups as a grouping variable accepting the differences within these groups.

4.4.2. Comparing the two periods: Wilcoxon-test

The next step in the analysis was to investigate whether there was significant difference between the two periods (2002-2005 and 2006-2008) in the amounts of the AfT assistance. We run *nonparametric test* (namely *Wilcoxon test*) to analyse this question. Firstly, the total sample was compared and then the income groups separately.

The results show that *significant changes can be experienced only in case of the total sample between the two periods (Table 6)*: the total AfT per capita, the economic infrastructure per capita and the share of AfT from the total ODA seems to be significantly different, and the change was positive (i.e. higher assistance were sent to the countries). However, if we divide the sample into smaller income groups the results are not so ambiguous: only in case of the upper middle income group can we experience significant difference in the AfT per capita. Meanwhile, the GDP per capita changed significantly between the periods in every case.

Table 6 Results of the Wilcoxon test (p-values)

Indicator	Total	Low income	Lower middle	Upper middle
AfT per capita	0.006	0.224	0.078	0.050
EI per capita	0.011	0.281	0.067	0.230
BPC per capita	0.077	0.906	0.150	0.092
TPR per capita	0.380	0.210	0.950	0.794
AfT/GDP	0.757	1.000	0.964	0.520
AfT/ODA	0.050	0.600	0.118	0.205
AfT, million USD	0.000	0.06	0.91	0.033
EI, million USD	0.000	0.018	0.046	0.063
BPC, million USD	0.004	0.088	0.081	0.092
TPR, million USD	0.192	0.078	0.979	0.543
GDP per capita	0.000	0.000	0.000	0.000

Note: the marked cells show significant difference. EI: economic infrastructure.

BPC: building productive capacity. TPR: trade policy and regulations.

Source: own calculations

However, analysing the absolute (and not the per capita) amount we can find more significant differences (see Table 6). The total amount spent on AfT significantly differed in the two periods in the total sample and in the low and upper middle income groups, similar results can be seen in case of the assistance on economic infrastructure. The total sample shows also more significant changes than the subgroups. All these mean, on one hand, that *the total amount of the Aid for Trade significantly changed but in its ratios we cannot see any significant difference*. On the other hand, as there are great differences between the total

sample and the subgroups, we should accept that *it is no worth analysing the developing countries as a whole group.*

4.4.3. Potential effects of AfT: correlation analysis

In the second half of the analysis we computed correlations between the Aid for Trade and some other variables. For the calculations we used *Pearson correlation*, and – as we emphasized earlier – for the calculations there is one year lag between the aid data and other variables. It must be underlined again that the correlation analysis is useful only for showing *how the variables move together* and it does not give the dependent and independent variables.

As the final aim of the Aid for Trade initiative to expand the export performance and increase the GDP and the competitiveness of the country, the first step is to analyse whether there is a correlation between the GDP per capita and the different indicators of the Aid for Trade (*Table 7*). Every aid indicator shows *significant positive strong correlation in case of the low and lower middle income countries*. As it is expected there is no significant relationship between the GDP per capita and trade policy and regulations in case of the low income countries, as these countries have the main objective to improve their real infrastructure at first. Looking at the total sample, it is important to note that the total Aid for Trade and economic infrastructure have only middle strong connection with the GDP per capita. Furthermore, analysing the upper middle income countries, no statistically significant correlations were experienced. Comparing the different income groups there is some difference between them. The two lowest income countries seem to be very similar, but *while in the low income countries the economic infrastructure plays the greatest role, then in the lower middle income countries improving the productive capacity is much more important.*

Table 7 Correlations of GDP per capita with the AfT indicators

Indicators	Total	Low-income	Lower middle income	Upper middle income
Total AfT	0.673 (0.000)	0.908 (0.000)	0.882 (0.000)	0.015 (0.947)
EI per capita	0.532 (0.000)	0.910 (0.000)	0.792 (0.000)	0.083 (0.720)
BPC per capita	0.818 (0.000)	0.873 (0.000)	0.927 (0.000)	-0.089 (0.702)
TPR per capita	0.980 (0.000)	-0.044 (0.815)	0.998 (0.000)	0.217 (0.344)

Note: the brackets contain the significance. Bold numbers indicate significant correlation.

Source: own calculations

The Aid for Trade aims at expanding the exports of the beneficiary countries. Analysing the correlation between the Aid for Trade-areas and the export performance we can find interesting results. Although we usually express the export performance in share of the GDP, in this analysis we changed it. Since the AfT and its areas are expressed per capita, it is worth analysing the export performance per capita, as well, so we could avoid the different growth rates of the GDP and population. The results of the correlation analysis show that in case of all the income groups but the upper middle income countries and the total sample, *the export per capita show significant correlations with the AfT areas (Table 8).*⁷ Furthermore, these correlations are strong and positive ones. All these mean that higher AfT could contribute to higher export per capita values – at least in the two lowest income groups.

Table 8 Correlations of export per capita with the AfT areas

	Total	LIC	LMIC	UMIC
<i>AfT per capita</i>	0.650 (0.000)	0.815 (0.000)	0.873 (0.000)	-0.098 (0.673)
<i>EI per capita</i>	0.513 (0.000)	0.818 (0.000)	0.782 (0.000)	-0.039 (0.868)
<i>BPC per capita</i>	0.790 (0.000)	0.784 (0.000)	0.919 (0.000)	-0.162 (0.483)
<i>TPR per capita</i>	0.956 (0.000)	-0.076 (0.684)	0.995 (0.000)	0.035 (0.881)

Note: LIC: low income countries, LMIC: lower middle income countries, UMIC: upper middle income countries. EI: economic infrastructure, BPC: building productive capacity, TPR: trade policy and regulations. The brackets contain the sig. value, the bold numbers show significant correlations.

Source: own calculations

We analysed the export performance deeper, as many developing countries depend on only some export products, that is their export is not diversified. This can be a great disadvantage for them – in the point of view of both economic development and position in international trade.⁸ Although there are several opportunity for measuring the export – product and market – concentration (or diversification) (*Meliak* 2008), the UNCTAD’s *export concentration index* (ECI) is well-known. The value of ECI stands between 0 and 1, the nearer to 1 the ECI is, the more concentrated the export is. According to UNCTAD [2009] data, the ECI in 2008 is 0.14 in the developing countries in average, while in the developed ones it is 0.06 – but there are differences among the developing regions (in the developing Africa it is above 0.4, in the oil-exporter Saudi Arabia it is around 0.8, in Nigeria it reaches 0.9). We could see empirical evidence earlier in this study that to become more effective in

⁷ Although we decided to calculate with the export per capita indicator, we prepared the analysis using the GDP-ratios for all the variables. But in this case there were no significant correlations between the AfT-areas and the export performance.

⁸ Remember *Haddad* et al [2010] who analysed the diversified export contributing to handle the exogenous shocks.

international trade and more resistant to external shocks, the export diversification is essential for the countries.

Table 9 contains the correlations of export concentration index with some indicators which can be improved by the Aid for Trade assistance. The results indicate that there is no relationship between the GDP per capita and the export concentration index – neither looking at the total sample, nor in case of the different income groups. Correlations on the total sample shows that all the mobile cellular subscriptions, the telephone lines and internet users with the internet subscribers have a significant and negative correlation with the ECI: the higher the values of the indicators on these IT-areas are, the lower the ECI is (i.e. the export diversification could be higher). Therefore improving these fields could contribute to a more favourable export situation in the developing countries. It is important to note that it is only a necessary but not sufficient condition for the development, e.g. the different income groups need different improvements as the significant correlations can be found on different areas.

Table 9 Relationship between the export concentration index and some variables

Indicators	Total	Low-income	Lower middle income	Upper middle income
Mobile cellular subscriptions, per 100 people	-0.309 (0.004)	-0.070 (0.713)	-0.382 (0.028)	0.047 (0.838)
Telephone lines, per 100 people	-0.321 (0.003)	-0.267 (0.154)	-0.110 (0.542)	-0.326 (0.149)
Internet users, per 100 people	-0.361 (0.001)	-0.384 (0.036)	-0.058 (0.747)	-0.449 (0.041)
Fixed broadband internet subscribers, per 100 people	-0.344 (0.001)	-0.287 (0.124)	-0.386 (0.027)	-0.279 (0.221)
GDP per capita	-0.147 (0.180)	-0.148 (0.428)	-0.167 (0.352)	-0.369 (0.100)

Note: the brackets contain the significance. Bold numbers indicate significant correlation.

Source: own calculations

The results of Table 9 suggest analysing further these IT-areas with the Aid for Trade assistance separating the different AfT areas (Table 10). Since the economic development is the final (overall) objective of the AfT, the different economic sectors need to be investigated, as well. Besides, the IT-areas significantly correlate with the economic sectors, so analysing the value added is reasonable. As the AfT assistance is calculated per capita, the value added had to be reconsidered. Similarly to the export performance, to avoid the different growth

rates of the GDP and population, the value added is given not in the share of the GDP as in general, but that of the population in this analysis.

Table 10 Correlations of the various AfT areas with several indicators

	Indicators	Income groups	EI per capita	BPC per capita	TPR per capita
Value added	Agriculture, value added, per capita	T	0.685 (0.000)	0.893 (0.000)	0.943 (0.000)
		LI	0.971 (0.000)	0.935 (0.000)	-0.034 (0.855)
		LMC	0.791 (0.000)	0.927 (0.000)	0.998 (0.000)
		UMC	0.333 (0.140)	0.164 (0.477)	0.404 (0.069)
	Industry, value added, per capita	T	0.515 (0.000)	0.802 (0.000)	0.974 (0.000)
		LI	0.871 (0.000)	0.834 (0.000)	-0.071 (0.704)
		LMC	0.785 (0.000)	0.923 (0.000)	0.997 (0.000)
		UMC	-0.172 (0.455)	-0.375 (0.094)	-0.063 (0.787)
	Services, value added, per capita	T	0.501 (0.000)	0.802 (0.000)	0.983 (0.000)
		LI	0.819 (0.000)	0.782 (0.000)	-0.031 (0.870)
		LMC	0.795 (0.000)	0.928 (0.000)	0.998 (0.000)
		UMC	0.126 (0.586)	0.026 (0.910)	0.298 (0.190)
IT-areas	Mobile cellular subscriptions, per 100 people	T	0.108 (0.329)	0.130 (0.240)	0.162 (0.140)
		LI	0.603 (0.000)	0.282 (0.131)	0.111 (0.558)
		LMC	0.175 (0.331)	0.255 (0.152)	0.294 (0.097)
		UMC	0.118 (0.610)	-0.094 (0.686)	-0.031 (0.894)
	Telephone lines, per 100 people	T	0.039 (0.723)	0.041 (0.713)	0.042 (0.705)
		LI	0.235 (0.211)	-0.027 (0.899)	-0.058 (0.762)
		LMC	0.066 (0.716)	0.041 (0.822)	0.016 (0.930)
		UMC	0.362 (0.107)	0.474 (0.030)	0.330 (0.144)
	Internet users, per 100 people	T	-0.019 (0.866)	-0.024 (0.825)	-0.014 (0.903)
		LI	0.248 (0.187)	0.020 (0.916)	-0.091 (0.633)
		LMC	-0.002 (0.992)	-0.009 (0.961)	0.031 (0.862)
		UMC	0.033 (0.888)	0.160 (0.488)	0.159 (0.492)
	Fixed broadband internet subscribers, per 100 people	T	-0.080 (0.465)	-0.080 (0.469)	-0.085 (0.441)
		LI	0.323 (0.081)	0.008 (0.967)	-0.039 (0.838)
		LMC	0.008 (0.965)	-0.054 (0.767)	-0.035 (0.847)
		UMC	-0.156 (0.499)	-0.030 (0.898)	-0.082 (0.723)

Note: T: total sample, LI: low-income, LMC: lower middle income, UMC: upper middle income.

The brackets contain the significance. The bold numbers show significant correlations.

Source: own calculations

In these cases *the upper middle income countries are again exemptions*: the value added does not correlate with any of the AfT areas. However, the other income groups indicate other result: we can find strong correlations, though we can make a smaller difference between them. *In the low-income countries the trade policy and regulations are not significant*, while in the lower middle countries it correlates positively and strongly with the value added. The assistance to *economic infrastructure is more important for the low income countries*, while the productive capacity building plays more important role in the lower middle income

countries. Comparing the correlations of the subgroups to the total sample's correlation we can notice the importance of dividing the developing countries into relatively homogeneous groups.

As for the IT-areas, the results are not so persuasive. Although these indicators would be a good sign for economic development and these areas could be essential for further development, *no connection can be found between the IT- and the AfT-areas*. Only two significant and middle strong positive correlations can be experienced: in case of the low income countries between the mobile cellular subscriptions and economic infrastructure; and in case of the upper middle income countries between the telephone lines and the productive capacity. The reason for this result is that perhaps these areas are not the main fields of the AfT.

The correlation analysis show mixed results – we could notice the differences of the developing countries, on one hand, and we could see strong correlations with some economic indicators. It is unambiguous that the upper middle income countries need the less aid and the results refer to it. The two lowest income groups are very similar but the lower middle income countries seem to be in a more favourable situation.

5. Conclusions

Nowadays the World Trade Organization plays a great role in international trade – it has a growing membership and its tasks seem to be more than control the international trade, some development task belongs to it as the Aid for Trade initiative was launched in 2005. *The objective of this paper was to show the main features of the Aid for Trade on the developing countries and give an attempt to analyse the potential effects of this initiative on the trade and economic performance of the countries*. All these could give the basis to show the heterogeneity of the developing world. According to the analysis, we could see that *the developing countries are in some cases similar but also different*. Besides, *analysing the Aid for Trade data there were some positive signs*.

The empirical analysis can be divided into two parts. Firstly, general investigation presented the aid flows to the sample countries – and two periods were compared (before and after the official announcement of the AfT in 2005). The results show that *the lower middle income – not the least developed (low income) – countries were the main beneficiaries of the AfT*, on the one hand, and the *countries in the various income groups are extremely heterogeneous*, on the other hand. Comparing the two periods we could not see significant

changes in the per capita amounts, though the total (nominal) amounts show significant changes. This indicates that the growth rate of the population was higher than the growth rate of the AfT assistance.

Secondly, correlation analysis was prepared for determining the potential effects of the AfT. The results were not persuasive: *the higher GDP per capita means higher AfT per capita*, i.e. countries with higher GDP-level can be the main beneficiaries of the assistance. Besides, we could see some correlations between the various value added and the AfT-areas, but export performance remained uncorrelated with the AfT, so did the export concentration index.

These findings are primary results. A further research may be to extend the time period or using more time periods for the comparison or analysing time as a variable (time series). The next step could be to set up a regression model for which this analysis is a good start.

References

- ABBOTT, P. – BENTZEN, J. – TARP, F. [2009]: Trade and development: lessons from Vietnam's past trade agreements. *World Development*, 2, pp. 341-353
- AGBEYEGBE, T. D. – STOTSKY, J. – WOLDEMARIAM, A. [2006]: Trade liberalization, exchange rates changes, and tax revenue in Sub-Saharan Africa. *Journal of Asian Economics*, 2, pp. 261-284
- BALASSA, B. [1985]: Exports, policy choices, and economic growth in developing countries after the 1973 oil shock. *Journal of Development Economics*, 1, pp. 23–35
- CALI, M. – TE VELDE, D. W. [2009]: *Does aid for trade really improve trade preferences?* Working Paper, June, Overseas Development Institute, London.
- CHANG, R. – KALTANI, L. – LOAYZA, N. V. [2009]: Openness can be good for growth: the role of policy complementarities. *Journal of Development Economics*, 1, pp. 33-49
- COMBES, J-L., SAADI-SEDIK, T. [2006]: How does trade openness influence budget deficits in developing countries? *Journal of Development Studies*, 8, pp. 1401-1416
- DEARDORFF, A. V. – STERN, R. M. [2009]: Alternatives to the Doha Round. *Journal of Policy Modeling*, 4, pp. 526-539
- DODARO, S. [1991]: Comparative advantage, trade and growth: Export-Led growth revisited. *World Development*, 9, pp. 1153–1165
- DODZIN, S. – VAMVAKIDIS, A. [2004]: Trade and industrialization in developing countries. *Journal of Development Economics*, 1, pp. 319–328
- DOLLAR, D. – KRAAY, A. [2003]: Institutions, trade, and growth. *Journal of Monetary Economics*, 1, pp. 133–162
- DOUCOULIAGOS, H. – PALDAM, M. [2007]: *The aid effectiveness literature: the sad results of 40 years of research*. Economic Working Papers, 2005-15, University of Aarhus.
- EC [1999]: *Sixth periodic report on the social and economic situation and development of regions in the European Union*. European Commission, Brussels.

- HADDAD, M. E. – LIM, J. J. – SABOROWSKY, C. [2010]: *Trade openness reduces growth volatility when countries are well diversified*. Policy Research Working Paper, 5222, The World Bank.
- HALLAERT, J. J. – MUNRO, L. [2009]: Binding constraints to trade expansion: Aid for Trade objectives and diagnostic tools. OECD Trade Policy Working Paper, 94, OECD.
- HOEKMAN, B. [2010]: *Aid for Trade: Why, what and where are we?* Available: http://siteresources.worldbank.org/INTRANETTRADE/Resources/239054-1273092281133/Bernard_Hoekman_Aid_For_Trade.pdf (Downloaded: 6 June 2010)
- HOEKMAN, B. – ÖZDEN, C. [2005]: *Trade preferences and differential treatment of developing countries: a selective survey*. Policy Research Working Paper, 3566., The World Bank.
- LEE, H. Y. – RICCI, L. A. – RIGOBON, R. [2004]: Once again, is openness good for growth? *Journal of Development Economics*, 2, pp. 451-472
- LEE, Y.-S. [2005]: Foreign direct investment and regional trade liberalization: a viable answer for economic development? *Journal of World Trade*, 4, pp. 701–717
- LUKOVICS, M. [2009]: Measuring regional disparities on competitiveness basis. In Bajmócy, Z. – Lengyel, I. (eds.): *Regional competitiveness, innovation and environment*. JATEPress, Szeged, pp. 39-53
- MELIAK, C. [2008]: Measuring export concentration: the implications for small states. *Bank of Valletta Review*, 37, pp. 35-48
- MOREIRA, E. P. [2010]: *Aid for Trade, infrastructure, and the growth effects of trade reform. Issues and implications for Caribbean countries*. Policy Research Working Paper, 5265, The World Bank.
- NAITO, T. [2010]: *Aid for Trade and global growth*. Working Paper. Available: <http://ssrn.com/abstract=1335615> (Downloaded: 17 June 2010)
- NG, F. - YEATS, A. [1997]: Open economies work better! Did Africa's protectionist policies cause its marginalization in world trade? *World Development*, 6, pp. 889-904
- OECD-CRS [2010]: *Aid for Trade Statistical Queries*. Available: http://www.oecd.org/document/21/0,3343,en_2649_34665_43230357_1_1_1_1,00.html (Downloaded: 3 July 2010)
- SAJTOS, L. – MITEV, A. [2007]: SPSS kutatási és adatelemzési kézikönyv. Alinea Kiadó, Budapest.
- SENTSHO, J. [2003]: *Export revenues as determinants of economic growth: evidence from Botswana*. Available: http://www.essa.org.za/download/2003Conference/SentshoJ_Exports%20Revenue%20&%20Economic%20GrowthF.pdf (Downloaded: 18 April 2010)
- STIGLITZ, J. E. – CHARLTON, A. [2006]: Aid for Trade. *International Journal of Development Issues*, 2, pp. 1-41
- SUBASAT, T. [2002]: Does export promotion increase economic growth? Some cross-section evidence. *Development Policy Review*, 3, pp. 333–349
- TURNER, L. [2008]: *Quantifying Aid for Trade: a case study of Tanzania*. Economic Paper Series, 82, Commonwealth Secretariat, London.

- UDVARI, B. [2009]: World Trade Organization as a Development Institution? *Development and Finance*, 4, pp. 72-81
- UDVARI, B. [2010]: Is free market access enough for development? – Lessons of the Lomé Conventions. In Kovács, P. – Szép, K. – Katona, T. (eds.): *Proceedings of the Challenges for analysis of the economy, business, and social progress*. Unidocument Kft., Szeged, pp. 77-96
(Available: http://www.e-doc.hu/books/konfanyagok/paper_udvarib/paper_udvarib.pdf)
- UN [2010]: *Statistical database, on-line version*. Available: <http://unstats.un.org/unsd/snaama/selbasicFast.asp> (Downloaded: 29 June 2010)
- UNCTAD [2004]: *Handbook of Statistics*. United Nations, New York and Geneva.
- UNCTAD [2005]: *Trade and Development Report, 2005*. United Nations Conference on Trade and Development, New York and Geneva.
- UNCTAD [2009]: *Handbook of Statistics on-line*. Available: <http://stats.unctad.org/Handbook/ReportFolders/reportFolders.aspx> (Downloaded: 1 July 2010)
- WILBUR, W. L. – HAQUE, M. Z. [1992]: An investigation of the export expansion hypothesis. *Journal of Development Studies*, 2, pp. 297–313
- WORLD BANK [2008]: *World Trade Indicators*. The World Bank, Washington D. C.
- WORLD BANK [2010]: *Country and lending groups*. Available: http://data.worldbank.org/about/country-classifications/country-and-lending-groups#Low_income (Downloaded: 25 June 2010)
- WTO [2005]: *Doha Work Programme, Ministerial Declaration in Hong Kong*. WT/MIN(05)/W/3/Rev.2., 18 December, Ministerial Conference, Hong Kong.
- WTO [2006]: *Recommendations of the Task Force on Aid for Trade*. WT/AFT/1, World Trade Organization, Geneva.
- YAGHMAIAN, B. [1994]: An empirical investigation of exports, development, and growth in developing countries: Challenging the neoclassical theory of export-led growth. *World Development*, 12, pp. 1977–1995
- YANIKKAYA, H. [2003]: Trade openness and economic growth: a cross-country empirical investigation. *Journal of Development Economics*, 1, pp. 57–89