Aid Effectiveness in OIC Member Countries

Davron Ishnazarov[1]

This paper examines whether Official Development Assistance (ODA) is an effective tool for the socio-economic development of aid recipient OIC member countries. Following the suggestions in the recent academic literature, this paper estimates the impact of aid on social indicators rather than on economic growth. It measures the impact of ODA on the components of human development indicator; standards of living, life expectancy and education indices. It also controls for the presence of armed conflicts, population growth, urbanization and government efforts. It utilizes annual, three-year and five-year moving average data between 2005 and 2013 for 48 OIC countries. Results reveal that ODA substantially improves life expectancy in one year and over the longer periods its impact even increases. The results suggest increasing aid to health sector because each additional unit of aid leads to significant improvements in life expectancy. However, long-run impact of ODA to education is negative. Aid to education sector should target more long-term goals such as to achieve a higher quality of education. So far the aid projects mostly oriented at achieving short-term goals like increasing number of school enrolments.

1. Introduction

Among the most controversial issues in economics stands the question of whether aid is an effective tool for development of aid recipient countries. Mostly cited claim against is that aid creates dependency on it as a source of finance, most widely discussed by well-known authors as Easterly and Mayo (2014). They suggest that dependency on aid does not allow recipient countries to develop independently and use their potential in a full capacity. Aid serves as a source of easy money that promotes corruption and discourages a competitive environment. However, Sachs (2009) and Stiglitz (2002) put forward the idea that aid was historically too low to have a sensible positive economic impact. In

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[1] SESRIC, Kudüs Cad. No:9, Diplomatik Site, 06450 ORAN-Ankara, Turkey. E-mail: dishnazarov@sesric.org

this context, they suggest that increasing aid volumes significantly, can bring aid recipient countries to sustainable development path.

Another strong claim against aid is that each donor country may have political or economic benefits for giving foreign aid. In this context, donors aid allocation strategies are divided into "recipient need" and the "donor interest" models in the academic literature, McKinley and Little (1979); Gounder (1994); McGillicray (2003). It is a prerequisite to mention that since the establishment of the first development aid initiatives, donors' strategies to achieve development goals have evolved tremendously. OECD has grouped all development inflows into different types based on the source and the grant element of aid. Official Development Assistance (ODA) has higher grant element compared to the other types of aid and targets recipient needs rather than donor interest (see, section 2 for the definition and classifications of aid). The largest chunk of papers studying aid-development linkage applied a neoclassical theory where aid flows are a source of additional capital in the growth model. Total aid flows data is most commonly used with the neoclassical approach but the methodology applied in this paper has been to use ODA classified by sectors. This methodology will be discussed further in the following sections.

There is no consensus among macroeconomic researchers concerning the impact of aid on development. However, the implicative microeconomic studies have achieved influential conclusions. These studies have commonly found a positive association of aid with the well-being of people, through analysing the impact of certain aid programs to the consumption or spending patterns of a group of beneficiaries. These studies benefited from the data collected by NGOs, international organization and governments' through surveys following targeted local aid projects. There is a need to adopt another approach to understand the effectiveness of the disbursements allocated by donor countries toward all layers of different sectors in the recipient country which comprise the largest share of development aid. Because it is difficult to gather information regarding received funds in detail and conduct similar macroeconomic research as implicative microeconomic studies.

This study tries to contribute to better understanding aid-development linkage. It tries to answer the following questions: Is aid the proper tool for development in OIC countries? And what forms of aid are the most effective at addressing the socio-economic development in OIC countries? This study is unique because it has the following important components: it studies the impact of aid on social indicators such as health, education and standards of living, for which aid is addressed at the macroeconomic level. Therefore, it can combine them as an economic development indicator, unlike microeconomic level studies. Also, it has a specific focus on OIC member countries which are the largest development aid beneficiaries.

The rest of the paper is structured as follows: The next section briefly analyses the aid structure by OIC regions. While section 3 reviews relevant empirical studies in the field, section 4 presents data and methodology and section 5 sets forth estimation results. Also due to the presence of debates regarding estimation methodology in the field of aid and development studies, we decided to implement several alternative estimations to strengthen our claims in the following section. In the last section, we made final remarks, recommendations for future researches as well as some policy recommendations.

2. Aid Profile of OIC Member States

According to the OECD, development resource flows include measuring the inflow of resources to recipient countries through: bilateral official development assistance (ODA); grants; concessional and non-concessional development lending by multilateral financial institutions; and other official flows (OOF), including refinancing loans that are considered to be for development purposes, but have too low a grant element to qualify as ODA. Private flows are defined as flows at market terms and financed out of private sector resources and private grants. But only ODA qualifies as aid source with development assistance purpose only. In this context, ODA is an aggregate measurement of aid and consists of multiple types of aid including, among others, humanitarian aid and technical cooperation. ODA must be provided by official agencies, including state and local governments or, in the case of an organization, by their executing agencies. Furthermore, the main goal of aid received must be to promote economic development and welfare, and the work must be concessional with a grant element of

at least 25% (see OECD, DAC Glossary of key terms and concepts). Despite the existing plausible criticism, also, the largest source of development aid remains ODA allocated by developed states such as the OECD Development Assistance Cooperation (DAC) member countries.

Some OIC member countries such as Turkey and Kuwait play active and key roles in the development assistance cooperation. OIC donors give priority to humanitarian assistance. In 2013, Turkey and Kuwait were considered as the top 2 most generous countries in the World providing 0.21% and 0.20% of their GNI as a humanitarian aid. Also, Turkey was among the top 3 donors of humanitarian assistance with contributions of 1.638 billion USD after the US and the UK, according to the Global Humanitarian Assistance Report 2014. However, most of the OIC countries are aid recipient countries. Despite the fact that OIC countries are more than two times less in number compared to the other aid recipient countries, they have been receiving almost 50% of total ODA since 2002 to 2013 (Figure 1).

ODA is a significant source of finance and instrument for development in OIC member countries. Meanwhile, ODA allocated with different intensity by country and regions. Sub-Saharan African (SSA) OIC member countries were the largest recipients of ODA between 2005 and 2013 followed by the Middle East and North Africa (MENA) countries (figure 1).

In 2013, MENA region received ODA equal to approximately 19,766.82 billion USD and SSA 19,563.71 billion USD. It comprises 33.4% and 33.1% of total ODA to OIC member countries respectively.

It was followed by South Asia (SA), Europe and Central Asia (ECA) regions. In these regions ODA has rather smoothly increased over the observed period, even during the global economic and financial crisis that started in 2008-2009, while it fluctuated dramatically in MENA and SSA regions. Aid to LAC and EAP also were stably increasing up until 2009 when it picked at 335.35 million USD and 3641.62 million USD respectively. However, donors of these regions had to sharply cut their volumes of aid for the following years in order to combat the negative consequences of the financial crisis on their economies.

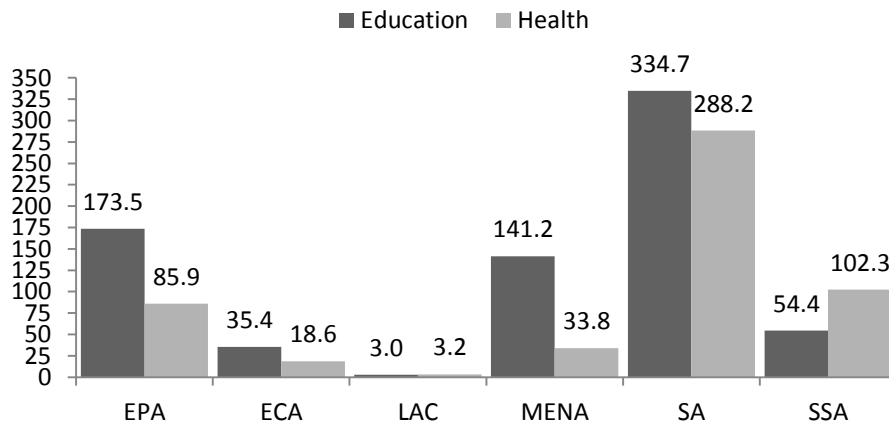**Figure 1:** ODA by Regions of OIC from 2002 to 2013 (USD Billions)
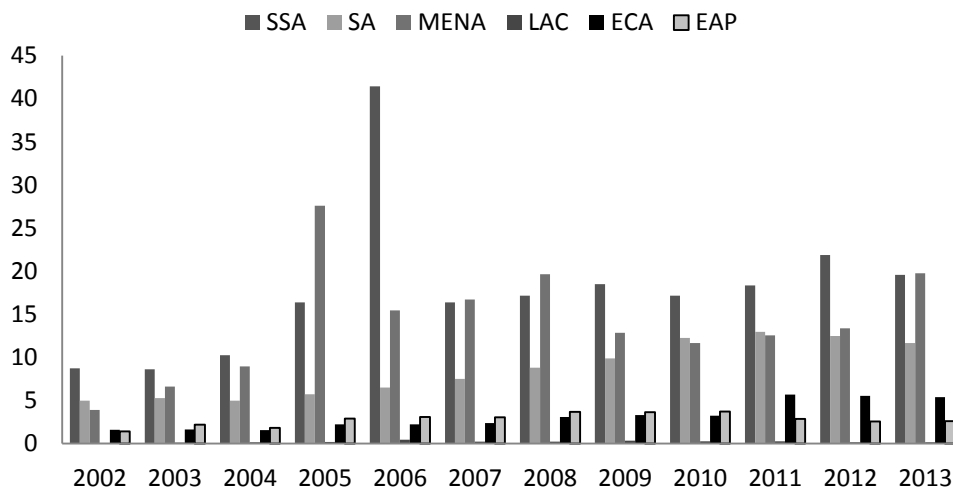
Source: Authors calculations using OECD aid statistics database

However, when ODA to health and education sectors are separated from total aid it demonstrates dramatically different picture (Figure 2.). SSA region is not a favourable destination for education and health aid. Aid recipients are required to have established institutions and a mechanism to ensure proper allocation of aid resources. Their absence in the SSA countries makes them less attractive destinations for the specific aid. Another most important factor affecting donor decisions is elements of good governance, particularly the level of corruption and transparency. For these reasons, SA and EAP countries become the most popular aid destinations among OIC countries.

Also, aid to both education and health sectors have increased substantially over the period observed. Comparatively aid for education has grown in a much higher rate to health. Growth continued even during and after the global financial crisis unlike the other types of aid.

In 2013, SA received around $335 and $288 million of aid disbursement to education and health sectors respectively. This figure was equal to approximately $174 and $86 million in EAP, $141 and $34 million in MENA, $54 and $102 million in SSA, followed by ECA with $35 and $19 million and LAC with $3 and $3.2 million roughly.

Figure 2: ODA to Education and Health Sectors by Region in 2013, (USD Millions)

■ Education   ■ Health

	EPA	ECA	LAC	MENA	SA	SSA
Education	173.5	35.4	3.0	141.2	334.7	54.4
Health	85.9	18.6	3.2	33.8	288.2	102.3

Source: Authors calculations using OECD aid statistics database

3. Empirical Literature Review

Liturature and approaches to study aid-growth linkage are numerous and contradictory. Due to the variance in methodologies, different results were revealed regarding aid impact on some economic indicators and aid-growth relationship in particular. Easterly (2014) and Moyo (2010), the most known contemporary critics of foreign aid, found several negative impacts of aid such as increasing dependency to aid, higher corruption levels and some others.

In early empirical literature aid effectiveness more commonly were measured through analysing the impact of development aid on economic growth. These studies constructed a model where the aid serves as an additional financial capital to the economy following neoclassical growth theories. Particularly, Stiglitz (2002), Sachs et al. (2004, 2005), Sachs (2009), and others prove that it is not that aid is ineffective but it is not enough. In this context, Sachs stresses the importance of achieving the Millennium Development Goals, especially the estimation that the countries in the developed world need to commit 0.7% of their GNP to alleviating poverty through the channel of development aid. In his book, "The End of Poverty", Sachs also argues for the existence of "poverty traps". To break these poverty traps, he prescribes what he calls the big push. Indeed, ODA has been making important contributions toward development; however, it has not yet been substantial to allow the

economy of recipient countries to get on their feet. Another point is, similar to the capital, aid must have diminishing returns to scale, and the more a country is getting richer the less development would bring each additional volume of aid. Thus, a small volume of aid, for example, to Sub-Saharan Africa may save many lives and contribute to economic growth; while, in other less poor regions it might not have such a significant effect. However, an empirical study by Kraay and Raddatz (2007) could not prove that with the help of foreign aid, aid recipient countries can break poverty traps.

It is crucial to consider two drawbacks of aid-growth models:

First, tangible part of the foreign aid come in the form of consumption goods and another significant part is used for consumption rather than invested, Hansen and Trap (2000). Aid mainly allocated for providing food, basic health services, and primary education, providing women's rights etc. A limited part of the total aid works as an investment in the neoclassical growth models. Arndt et al. (2011) proposed to analyse the impact of aid on intermediate variables such as physical capital investment, health service improvements and poverty reduction in a micro level. Assuming that through these channels aid has a secondary effect on growth. However, it is a very difficult issue to relate the microeconomic impacts, which foreign aid directly address, to a macroeconomic indicator such as growth Mosley et al., (1987), Rajan and Subramanain (2008). To put it simply, the impact of aid to the micro or mesa-level data can be reliably measured, but it is very contradictory to combine these effects and reliably attributed them as a growth or development effect.

Second, most growth models have problems such as endogeneity and omitted variable error. Indicators that commonly included in growth models such as foreign direct investment, fixed capital formation, trade volume etc. are correlated. Either correlated variables should not be included in the same regression or there should be strong instruments to control for endogeneity such as geographical variables introduced by Romer and Frankel (1999). Alternatively, one can apply dynamic panel GMM regressors. In the first-differenced GMM estimator, lagged values of endogenous variables are used as instruments Arellano and Bond (1991). Blundell and Bond (1998) propose system-GMM estimator. It includes also first differences of lagged values of endogenous variables

as instruments when just lagged values are not enough strong to eliminate endogeneity. Rajan and Subramanain (2008) applied different time periods, types of aid, sources of aid, and sample size in order to have robust estimations. Also, they introduced unique instruments to deal endogeneity issue and this study could not find any significant robust relationship between economic growth and aid inflow to the country.

Finally, to have a reliable contribution, one has to solve two issues listed. First is measuring the aid because not the total aid can serve fully for development. The second is identifying correct measurement of a development alternative to economic growth so as it should be an indicator of social welfare and it should be able to represent macroeconomic development level of a country. Predominantly aid effectiveness was measured by its impact on economic growth, on investment and other macroeconomic indicators. Much less research has been conducted to measure the impact of aid on Human Development Indicators (HDI) and other social indicators Masud (2005). As an alternative to economic growth and poverty ratio, Masud (2005) tested the impact of aid on education and health following the Boone (1996) as improvements in the conditions of the poor are reflected more operatively in these indicators comparing to growth and poverty indicators. Infant mortality has been used as a proxy for health and literacy rate for education.

Table 1: Recent Literature on HDI and Aid Relationship

Authors	Period & Sample Size	Key Indicators	Methodology	Relationship
Mark McGillivray, Farhad Noorbakhsh, 2003, 2007	HDI level in 2001, Average data in 1975-99 other variables, 93 countries	Aid, conflict, HDI, investment, democratization,& governance	OLS/2SLS	Negative with Conflict and HDI
Karuna Gomanee, Sourafel Girma and Oliver Morrissey 2003	1980-1998, 38 countries	Aid, HDI, infant mortality public expenditures on social sectors	Quintile regression analysis	Positive with HDI Negative with mortality
Nadia Masud and Boriana Yontcheva (2005)	1990-2001, 58 and 76 countries	NGO aid, ODA, literacy and infant mortality rates	Random effects	Positive between NGO aid and infant mortality. No between total aid/NGO aid and adult literacy
Yongfu Huang and M. G Quibria, 2013	1993-2011, 74 countries	Inequality-adjusted HDI, aid, access to water & sanitation, school enrolment, M2	"Double filtered" Limited Information Maximum Likelihood	Positive
Christina R. Tamer (2013)	1980-2011, 52 African countries	HDI, ODA, FDI	Panel regression	Negative with HDI
Kiertisak Toh1 and Prahlad Kasturi, 2014	26 fragile states (OECD DAC list)	HDI, ODA, fragility index, GDP,	Cluster analysis and Robust regression	Positive with HDI and GDP

4. Methodology and Data

The majority of aid-growth models are built on the framework of Solow growth theory. In the Solow growth model, key factors of development are capital and labour. According to this model, aid has a secondary impact on economic growth as an additional unit of capital which

undermines the direct impact of aid on development. However, the direct impact of aid on social issues it addresses should be primary indicators of its effectiveness. This paper will follow the theoretical framework proposed by Caldwell (1979, 1986), Dreze and Sen (1989), Gupta et al (2005), Masud et al (2005) and Rajan and Subramanain (2008) studies. For instance, Masud et al (2005) highlight that, social indicators such as health and education are proper measures to identify improvements in the conditions of the poor. However, we do not agree that these indicators alone can represent the development level of the country and its people. Also, illiteracy rate cannot be a proper indicator of education level for all countries. It can work for some countries and sub-regions where the aid more exclusively allocated for decreasing illiteracy. Indeed, in the countries especially in Sub-Saharan Africa, development aid for the education sector aimed at reducing illiteracy through increasing the number of schools, teachers, school equipment and study material. Meanwhile, in some other OIC countries, e.g. in Europe and Central Asia (ECA), one of the largest recipients of ODA for education, the literacy rate is generally very high even close to the developed countries level. In these countries, aid rather allocated to attain more complex educational goals such as modernizing the educational system.

Most recent studies (table 1) propose to use Human Development Index (HDI) when measuring the level of development of a country. In this context, in figure 3 below, we depict the relationship between HDI and the logarithmic value of GDP per capita in 2013. Correlation is equal to 0.9. It shows a strong relationship between the variables, thus, assumptions that HDI is the good approximation for economic development level holds true for the OIC countries.

However, HDI is expected to provide a complete picture about the development in comparison with the income levels only. According to UNDP – Human Development Reports, "The HDI was created to emphasize that people and their capabilities should be the ultimate criteria for assessing the development of a country, not economic growth alone. The HDI is a summary measure of average achievement in key dimensions of human development: a long and healthy life, being knowledgeable and have a decent standard of living." As indicators of conditions of the poor, HDI components will be used. The prevalence of this approach to other studies using social indicators is that it gives more

robust measurements comparing to Masud (2005) and others discussed above. Furthermore, it allows to aggregate the impacts of aid to separate social indicators into overall development impact.

Figure 4 demonstrates HDI and aid correlation. It shows that there is a negative and weak correlation equal to -0.26. The relationship between aid and HDI cannot be correctly interpreted without applying more complex empirical approach, unlike HDI and income relationship. To put it simply, aid is donated more toward the poorer states that usually have lower levels of HDI as well compared to the wealthier ones. Thus, figure 4 shows a negative correlation not necessarily because HDI is negatively correlated with income.

This study uses only ODA data as an indicator of aid because OOF and private flows even aimed at development at some level they mainly serve for other commercial purposes. For instance, Alesina and Dollar (2000) showed that during the Cold War the donors gave more aid to those recipients with which they had longer colonial ties. One can argue the existence of political goals also behind the ODA, but its key purpose always remains as assistance for development.

Figure 3. HDI and Income Relationship
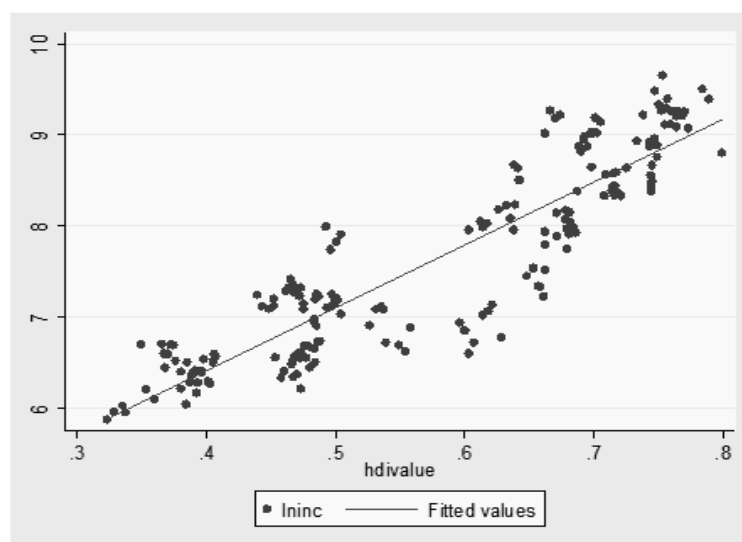
Figure 4. HDI and Aid Relationship
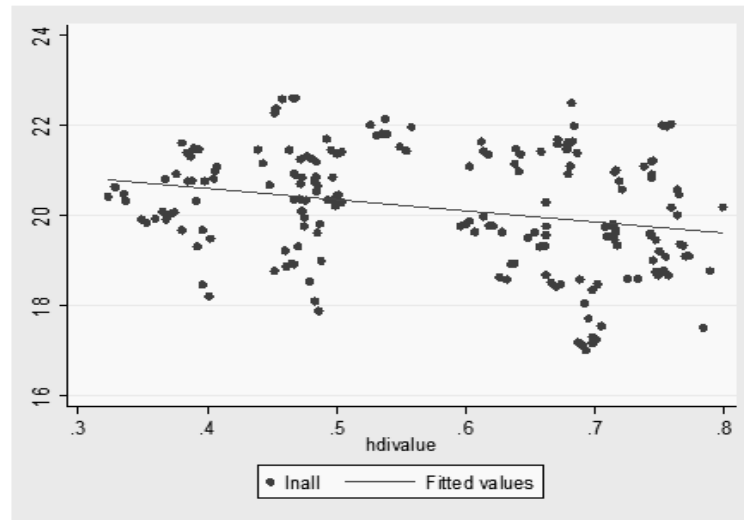
Through implementing different variants of the below regression model, we will try to answer the question whether ODA is an appropriate instrument to boost development.

$$HDIcomp_{it} = \beta 0 + \beta 1 lnODAsect_{it} + \beta 2 gov.efforts_{it} + \beta 3 lninc_{it}$$
$$+ \beta 4 conf_{it} + \beta 5 region_{it} + \beta 6 urban_{it}$$
$$+ \beta 7 population_{it} + e_{it}$$

HDI_{ijt} : Life expectancy index, education index and standards of living index

$lnODAsect_{it}$: Natural logarithmic value of total ODA, ODA to education and ODA to health sectors,

$gov.exp.sect_{it}$: Government expenditures to health sector,

$lninc_{it}$: Natural logarithmic value of GDP per capita,

$conf_{it}$: Presence of intensive armed conflict,

$urban_{it}$: Urbanization, urban population % of total population,

$population_{it}$: Growth rate of population.

The level of economic development is represented by per capita income. Economic development level cannot give full information about human development and well-being as was demonstrated in figure 3 unlike HDI; yet, it plays a key role in that.

Government efforts to promote human development are measured by the health expenditures share in GDP. As development goals in the sectors can be achieved by the governments' independent effort that should be separated from development aid impact. These data gathered from the World Bank, World Development Indicators.

The presence of conflicts, especially armed conflicts in the country, dramatically influences the aid mechanisms, its effectiveness and also donor countries preference to donate. Data gathered from Upset conflict dataset. We assume that only highly intensive armed conflicts have the capacity to influence macro level indicators. Upset identified conflicts that cause 1000 deaths or above as an intensive conflict. Upset relies only on officially announced data while determining conflict intensity but we decided to also include the conflicts with death numbers very close to 1000 according to official data and equal or higher than 1000 according to unofficial data sources.

We observe from the figure 1 and figure 2 that different OIC regions have been receiving aid with different intensity. Also, the OIC regions have comparatively varying economic structures and other factors that can affect the effectiveness of aid spending mechanisms. Particularly, studies by Collier and Dollar (2001, 2002) indicate that aid is effective in countries with proper governance policies and institutions. Thus, we control it through applying regional dummies.

In this paper, annual, three-year and five-year moving average data for the period between 2005 and 2013 for the 48 OIC member countries is used.

4.1. Life Expectancy and Education

The objective is to measure the impact of aid on health and education components of HDI. Data on HDI and its dimensions can be accessed from UNDP Human Development Reports that are available on a yearly basis since 2005. It can also be calculated using the methodology of the UNDP explained below.

HDI index is composed of the three indices; life expectancy index, education index and standards of living index. There are pre-determined minimum and maxim values in order to transform normal values into a standard index form. Indices can take values from a minimum of 0 and maximum of 1. For information about how minimum and maximum values are chosen, please see Human Development Report 2014 Technical notes[2]. It is worth mentioning that in the 2010 Human Development Report, the calculation methodology of HDI has changed from the previous reports. The following changes in the 2010 definition were made: The education index from the 2010 report is determined by the mean years of schooling combined with the expected years of schooling, whereas it was previously determined by the adult literacy rate and the gross enrolment ratio. The income index also changed at the same time, from previously using GDP/capita it went to GNI/capita. In this paper, data based on the new methodology is used.

Each of the three dimensions of HDI was calculated using the general formula below.

$$\text{index} = \frac{actual\ value - minimum\ value}{maximum\ value - minimum\ value} \quad \text{eq. 1}$$

Table 2: Calculation Methodology of HDI

Dimension	Indicator	Minimum	Maximum
Health	Life expectancy	20	85
Education	Expected years of schooling	0	18
	Mean years of schooling	0	15
Standards of living	Gross national income per capita PPP (US 2011)	100	75000

Source: Human Development Report 2014, Sustaining Human Progress Reducing Vulnerabilities and Building Resilience: Technical notes

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[2]UNDP, 'Human Development Report 2014 Sustaining Human Progress Reducing vulnerabilities and Building Resilience: Technical notes,
' http://hdr.undp.org/sites/default/files/hdr14_technical_notes.pdf

5. Results

Table 3 summarizes the results from nine separate fixed effect model estimations that try to reveal relationships between ODA and HDI, HDI health index and HDI education index. Development aid might have a long-term impact on human development. Thus, relationships were tested applying annual, three-year moving average (m3) and five-year moving average (m5) data.

5.1. Life Expectancy

According to the results in table 3, ODA to health sector has statistically a strong relationship at 95 percent significance level with the health component of HDI in the same year. This relationship remains significant even using m3 data. So the impact of aid is not limited to one year but can be harvested over several proceeding years. The economic significance is also substantial, 1 percent increase in aid leads to 0.002 unit improvement in life expectancy index annually. In general, life expectancy index similar to other components of HDI demonstrate the changes within the range of 0.001 and 0.009 units annually. From 2005 to 2013 the sharpest change among OIC countries was observed with Sierra Leone when it increased from 0.341 to 0.352 units.

Masud et al. (2005) and Bone (1996) have found no significant relationship between total bilateral aid and infant mortality. Infant mortality rate, a proxy for health in those studies, is an important component of life expectancy index which is proxy for health in our study. The significant difference in the approaches, corollary, in the findings is that those papers apply total bilateral aid data when measuring aid and health relationship. Contrary, we used only the health sector aid data because only health sector aid addresses health issues.

Meanwhile, 1 percent change in government efforts leads to similar change, 0.002 units, in life expectancy index the same year as ODA to health. The impact increases to 0.004 and 0.005 units with m3 and m5 data respectively. This does not mean that in OIC countries health expenditures are more efficient than donations. In the estimations, government efforts are represented by the shares of government expenditures in GDP and donations are the natural logarithmic value of total ODA received to improve health services. Thus, one percentage of

government efforts might represent the substantially different amount of financial resources then ODA to the sector.

Numerous empirical studies, including Masud et al. (2005) and Bone (1996), come to the point that simple increase in per capita income is a stronger instrument than many other measures to combat poverty and related issues. Similarly, in this study, the strongest relationship between the life expectancy index is observed with the per capita income. It is statistically significant even at 99.9 percent level. 1 percent increase in levels of income leads to 0.02 units change in life expectancy index. Urbanization is also strongly related to human development at 99.9 percent significance level and with similar economic impacts as donations and government efforts.

Population growth is found to have a negative impact on life expectancy of people. It is found true with the annual and m5 data. The OIC countries have high population growth rates. With limited capacities, health institutions may encounter difficulties to supply the same quality of health facilities to a higher number of people.

Also, negative relationship between conflicts and HDI health index was revealed using annual and m3 data. High death rates caused by armed conflicts lead life expectancy to drop. Furthermore, it is difficult to supply health services and medicines to conflict areas.

5.2. Education

According to the findings presented in table 3, higher per capita income positively affects education index. With higher income levels, people tend to spend more on education as well as to health services.

We observe a negative relationship between donations to education and education index. Also, Masud et al. (2005) could not reveal any significant relationship between total bilateral aid and education. But, they determined negative impact of education expenditures on literacy rate. These findings give the right to question the quality of education institutions, the existence of the corruption, or whether there is rent seeking activities emerging due to the aid.

Urbanization demonstrated even stronger positive impact on education compared to health with all annual, m3 and m5 data at 99.9 percent indifference level. Quantitatively 1 percent change in urbanization is leading to 0.007, 0.008 and 0.008 units change in education index annually, using m3 and m5 data respectively. Similarly, population growth has a stronger negative relationship with the education index. It is equal to 0.004, 0.008 and 0.010 with annual, m3 and m5 data at 90 percent, 95 percent and 95 percent indifference levels respectively. Conflicts do not have a statistically strong effect on education.

5.3. Standards of Living

It is impossible to extract the part of aid that directly addresses standards of living from total aid. Thus, a theoretical framework for the estimation is based on the neoclassical growth theories. Particularly, according to Jeffrey Sachs (2005) with required amount of foreign aid that is an additional capital influx to the economy, developing countries can start economic development path. Following many previous types of research total ODA is assumed to have a secondary impact on standards of living through economic growth. However, similar to the Kraay and Raddatz (2007), no statistically strong relationship was revealed in the estimations.

A large part of an inflow of people from rural areas to cities can be explained by their need to have access for better standards of living, healthcare and educations facilities. The standards of living index is strongly and positively related to urbanization. 1 percent change in urbanization leads to 0.006 units' improvement in standards of living index with all data specifications at 99.9 percent indifference level.

The conflict has quantitatively a very strong negative impact on standards of living. The presence of conflict is related with around 0.013 units decrease in standards of living.

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Table 3: Estimation Results using Fixed Effects Model

Independent Variables	Life expectancy			Education			Standards of living		
	annual	m3	m5	annual	m3	m5	annual	m3	m5
Income	0.020+	0.021+	0.023+	0.021+	0.026+	0.027+			
	(7.648)	(6.281)	(5.744)	(6.224)	(6.074)	(5.280)			
lnODA(health/edu/all)	0.002**	0.002*	0.003	-0.002	-0.005*	-0.007*	-0.003	-0.002	-0.001
	(2.252)	(1.777)	(1.602)	(-0.900)	(-1.831)	(-1.875)	(-1.562)	(-0.787)	(-0.311)
Government efforts	0.002**	0.004+	0.005***						
	(2.580)	(3.387)	(3.081)						
Urbanization	0.004+	0.004+	0.004+	0.007+	0.008+	0.008+	0.006+	0.006+	0.006+
	(8.726)	(6.775)	(5.596)	(12.521)	(11.250)	(9.395)	(8.984)	(8.233)	(7.216)
Population	-0.005**	-0.004	-0.006*	-0.004*	-0.008**	-0.010**	-0.001	0.001	-0.003
	(-2.215)	(-1.630)	(-1.742)	(-1.657)	(-2.365)	(-2.228)	(-0.348)	(0.214)	(-0.515)
Conflicts	-0.006*	-0.005*	-0.004	0.002	-0.003	-0.004	-0.013**	-0.015***	-0.013+
	(-1.934)	(-1.603)	(-1.480)	(0.407)	(-0.934)	(-1.376)	(-2.413)	(-3.202)	(-3.368)
_cons	0.272+	0.268+	0.260+	0.012	0.018	0.051	0.347+	0.331+	0.315+
	(12.261)	(9.916)	(8.046)	(0.302)	(0.354)	(0.749)	(7.915)	(6.609)	(5.062)
r2	0.510	0.504	0.558	0.531	0.560	0.583	0.181	0.209	0.240
N	432.000	336.000	240.000	441.000	343.000	245.000	423.000	329.000	235.000

Note: * p<0.10, ** p<0.05, *** p<0.01, + p<0.001

6. Robustness Check

For the robustness check of our conclusions, the results of random effects model will be reported. The Housman specification test does not reject the null hypothesis that allow using random effects model. Furthermore, it allows observing whether aid has a different impact in different OIC regions (Table 4.).

Overall, random effects model estimation results are fully in line with our findings obtained through using fixed effects model. Donations to health have a positive relationship with life expectancy index while donations to education negatively related to education index. However, no significant relationship was found between the standards of living and total aid. Urbanization brings society for improved standards of living, health and education facilities. Furthermore, the results prove that the impact is continuous and positive as it increases with 3 and 5-year moving average data (Table 4.).

Only SSA region differ from EAP and other regions in terms of the efficiency of the measures to address human development. In SSA measures are around 0.15 units smaller comparing to the other regions. The institutional capacity of SSA is less mature comparing to the other regions. Also, the elements of good governance such as corruption, rule of law and transparency dramatically lack behind. This reason result in making aid resources less effective in the region.

Table 4: Estimation Results using Random Effects Model

Independent Variables	Health			Education			Income		
	annual	m3	m5	annual	m3	m5	annual	m3	m5
lnInc	0.023+ (8.732)	0.024+ (7.350)	0.026+ (6.849)	0.025+ (7.478)	0.032+ (7.481)	0.035+ (6.767)			
lnODA(health/edu/all)	0.002*** (2.689)	0.003** (2.210)	0.004** (2.072)	-0.002 (-0.891)	-0.005* (-1.664)	-0.007* (-1.671)	-0.003 (-1.430)	-0.001 (-0.694)	-0.001 (-0.207)
Government Efforts	0.003*** (2.904)	0.004+ (3.492)	0.005*** (3.093)						
Urbanization	0.003+ (7.759)	0.003+ (5.973)	0.003+ (4.880)	0.006+ (11.116)	0.006+ (9.324)	0.005+ (7.328)	0.005+ (10.845)	0.005+ (10.315)	0.005+ (9.522)
Population	-0.004** (-2.107)	-0.004 (-1.513)	-0.005 (-1.574)	-0.004 (-1.445)	-0.007** (-1.993)	-0.008* (-1.758)	-0.001 (-0.340)	0.001 (0.255)	-0.002 (-0.444)
Conflicts	-0.005 (-1.513)	-0.004 (-1.167)	-0.003 (-1.057)	0.004 (0.960)	-0.000 (-0.118)	-0.002 (-0.489)	-0.012** (-2.328)	-0.014*** (-3.075)	-0.013*** (-3.195)
ECA	0.000 (0.006)	-0.008 (-0.148)	-0.013 (-0.238)	0.115 (1.616)	0.110 (1.528)	0.099 (1.371)	-0.019 (-0.308)	-0.017 (-0.287)	-0.016 (-0.268)
LAC	-0.035 (-0.488)	-0.045 (-0.636)	-0.052 (-0.732)	0.022 (0.245)	0.007 (0.073)	-0.008 (-0.092)	-0.005 0.003	0.004 (-0.060)	(0.033) (0.052)
MENA	-0.036 (-0.663)	-0.037 (-0.688)	-0.037 (-0.677)	-0.105 (-1.536)	-0.100 (-1.457)	-0.095 (-1.375)	-0.077 (-1.310)	-0.074 (-1.271)	-0.072 (-1.238)
SA	0.056 (0.893)	0.041 (0.657)	0.033 (0.523)	-0.022 (-0.278)	-0.017 (-0.210)	-0.029 (-0.363)	-0.039 (-0.584)	-0.042 (-0.627)	-0.041 (-0.611)
SSA	-0.158*** (-2.986)	-0.171*** (-3.203)	-0.176*** (-3.274)	-0.107 (-1.592)	-0.099 (-1.458)	-0.106 (-1.554)	-0.177*** (-3.069)	-0.181*** (-3.170)	-0.177*** (-3.092)
_cons	0.369+ (6.639)	0.371+ (6.416)	0.365+ (6.011)	0.112 (1.450)	0.127 (1.500)	0.172* (1.769)	0.456+ (6.495)	0.439+ (5.933)	0.424+ (5.163)
N	432.000	336.000	240.000	441.000	343.000	245.000	423.000	329.000	235.000

Note: * p<0.10, ** p<0.05, *** p<0.01, + p<0.001

7. Conclusion and Final Remarks

Aid remains as a crucial tool to support people in need in developing countries. It is vital because thanks to development aid disbursements and aid projects: many vulnerable people have an access for basic health services, children especially girls can go to school, people can afford some food and many others that their governments alone are incapable of providing. However, it is controversial among academicians whether contemporary aid strategies can lead aid recipient countries to development path. In other words, will aid recipient countries achieve sustainable economic growth with the help of development aid which at some point in the future they will not need? Overall, many microeconomic studies conclude that aid as an effective tool while most recognized macroeconomic level researches could not robustly support claims of neither proponents nor opponents of development aid. However, it is difficult to refer the microeconomic level impacts to macroeconomic level impacts as economic growth and development.

An important contribution of this paper was to identify the indicators directly influenced by ODA inflow so that the sum of these effects robustly can be attributed as a human development effect. At the same time, it allows to make sector-specific policy recommendations as well.

In general, our findings join and clarify the claims of both opponents and proponents of the development aid at some extent. Alike many previous studies possible general development or growth impact of total ODA was not revealed. However, when aid was divided into sectors, estimations found a strong positive relationship between life expectancy index and health sector aid. The positive impact of aid to health remains and even escalates over the long-run (3 and 5 years).

While, measuring the long-run impact of education aid into education index, statistically strong negative relationship was observed. Actually aid projects made significant contributions to the education sector in developing aid recipient countries. Especially achievements can be observed in school enrolment, women education and literacy rate indicators. However, these indicators do not represent education effectiveness. Aid projects are accountable in front of donors and other stakeholders, thus aiming to show the progress through attaining higher points with the above-listed indicators. To put it simply, higher school

enrolment does not mean a higher quality of education and also it does not have a long-term impact. Also, Abby Riddell (2012) analysed aid experiences over several decades and concludes that even though there are tangible achievements such as an increase in school enrolments, contributions are considerably below what potentially could be done especially in terms of education quality. Donors are aware of the issue. However, first it is very complex to improve the quality of education and second it is even trickier to monitor and evaluate the achievements. In brief, the problem with sectoral and project-based education aid is that they are short-term result oriented. Thus, in the OIC countries, we need a long-term and sustainable approach for education aid strategies.

Another aspect is, in the case of education sector aid disbursements, the problem does not lie fully at the aid itself but also on the education sector institutions in aid-receiving countries. In the long run, with three and five-year data, aid to education increases sectors dependency on aid that brings negative impact on development as was stated by critics of aid.

Mostly, we support the claims of Sachs (2009), Stiglitz (2002) and other proponents of aid; indeed to have a substantial positive impact donors should allocate much more aid than its current levels.

Why are the results for education aid and health aid opposite to each other? It is not because health aid does not aim short term goals. It is not also because in OIC countries health institutions are more developed or less corrupt. Actually, it is vice versa. The quality of health services, its availability and accessibility are catastrophically poor in many OIC countries. Namely, in SSA region, simple vaccine, immunization or little improvement in hygiene can save the lives of many people.

Intensive armed conflicts are a significant obstacle for the economic development of many OIC countries. First, people in conflict regions cannot be provided with stable healthcare and education facilities. Second, due to the conflict-related security problems, countries cannot benefit from their economic potentials. Several OIC member countries such as Gulf Cooperation Council (GCC) countries, Kazakhstan, Turkmenistan and some others could achieve impressive levels of economic development due their reserves of mineral resources while minerals of Palestine, Somali and Afghanistan and some other countries

remain untouched only due to the conflicts that do not allow bringing foreign investment to the sector.

Besides armed conflicts, population growth has proven to have a negative impact on the quality of health and education services. It is largely observed that countries with high death rates similar to some OIC countries have also high birth rates. Misleading social attitudes are guiding society due to the unawareness of people about the issue (SESRIC Poverty Report, 2015). Culture and social norms cannot be altered from the outside but proper education e.g. about family planning and contraceptives should bring some results.

Our recommendations for future studies, in order to enrich the findings of research and extend its robustness, are to include some other control variables as good governance indicators and financial openness index. For example, worldwide governance indicators of the World Bank and financial openness index represented by Chinn-Ito index. Another suggestion is to implement alternative estimations with other financial flows and private flows data.

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