A structural analysis of foreign aid to ten Mediterranean countries

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CREMed Center for Research on the Economies of the Mediterranean

February 2009

A STRUCTURAL ANALYSIS OF ODA TO TEN MEDITERRANEAN COUNTRIES

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June 2009.

Abstract:

Although the literature about aid effectiveness is huge, most of it is based on cross-country studies and not address the Mediterranean countries as an especial group. To fill in this gap, the paper describes the main structural characteristics of ODA. ODA is analysed by country, by donor, and by sector for 1960-2007 in ten Mediterranean countries. Different patterns among recipient countries are found, but a proliferation and concentration of donors is confirmed. A positive correlation between shocks in GDP and ODA is found when the whole sample countries is analyzed, but when the Mediterranean economies are individually considered the pro-cyclicality of the ODA is not confirmed, except in the case of Lebanon. FDI, remittances and ODA flows are compared. The three variables are positively correlated. ODA and remittances are indeed less volatile than FDI flows. But whereas remittances are stable and strategic to Egypt, Lebanon and Turkey, ODA flows to Syria and the Palestinian territories are higher than remittances in volume but more volatile. Egypt and Turkey are the main destinations of FDI to the region. Finally, it is shown that ODA does not offset the shocks of FDI or remittances.

Key Words: aid, FDI, pro-ciclicality, remittances, volatility.

JEL: F35, O57.

1. INTRODUCTION.

Although literature about Official Development Assistance (ODA) at macro level is huge, especially in relation to aid effectiveness, most of the studies are performed under cross-country scenarios and dealing with as big sample data as possible. These approaches are valid for some general aspects but they tend to forget the heterogeneity inside developing countries. In particular, the literature about ODA flows to the Mediterranean countries is quite scarce and, as to my knowledge, no other previous work has made an analysis of the relationship among ODA to the Mediterranean countries and their GDP, Foreign Direct Investment (FDI) and remittances flows. This paper tries to fill this gap focusing on the shocks of these variables.

Maybe the closer study to this paper objective is Teboul & Moustier (2001). They test aid effectiveness on growth for the south Mediterranean countries from 1960 to 1996, and they conclude that aid has been effective on growth but only in an indirect way (via savings and FDI) and that aid should be more regular, because it is often chaotic and caused by geopolitical interests. On the other hand, Abou (2008) find a positive relationship between aid and growth in Jordan but not in Egypt. Both variables, measured in per capita terms, are cointegrated in Jordan for 1965-2005 and the Granger causality test showed an effect from aid to GDP. Finally, Neumayer (2003) supports the importance of being Arab for receiving aid from Arab countries and multilateral agencies.

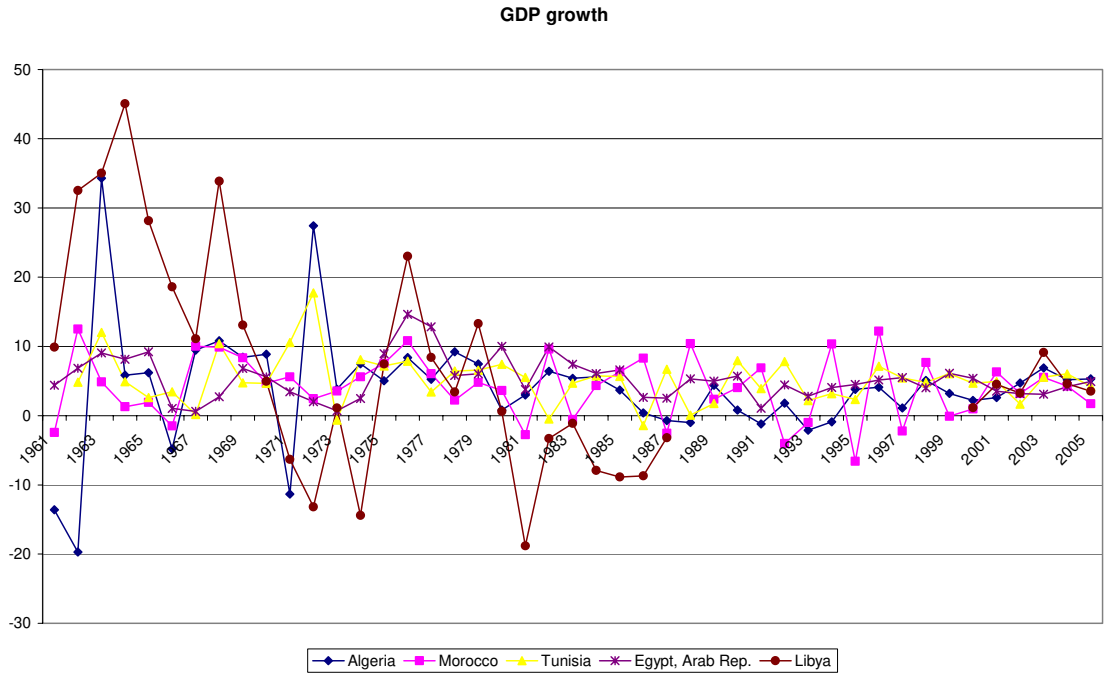
The paper is organized as follows. In section 2, a picture of the growth, poverty and inequality in ten selected Mediterranean countries is drawn. In section 3, we study if ODA is pro-cyclical or counter-cyclical to GDP. Section 4 analyzes the volatility of three external financial sources: Foreign Direct Investment (FDI), remittances and ODA. Section 5 answers the question if aid offset shocks in FDI and remittances. Section 6 summarizes the main conclusions and findings.

2. GROWTH, POVERTY AND INEQUALITY IN THE MEDITERRANEAN COUNTRIES.

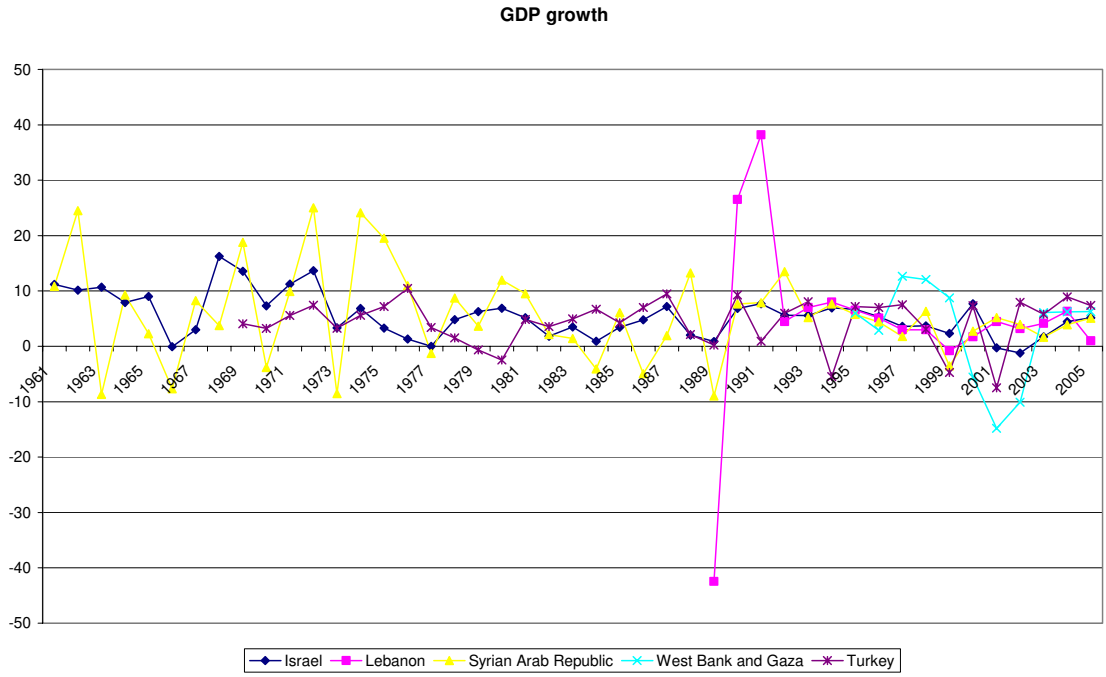
The goal of this section is just to have an introductory picture of the developmental path of the Mediterranean countries that we are to analyse. The study is organized comparing four regions (the whole world, MENA geographic region, and Lower and Upper Middle Income Countries) with ten Mediterranean countries. Five countries belong to North Africa (Morocco, Algeria, Tunisia, Libya and Egypt), and five countries are placed on the Middle East (Israel, the Palestinian Administered Territories, Lebanon, Syria and Turkey).
Economic growth, poverty and inequality are macroeconomic dimensions that have to be jointly analyzed. Recent literature has insisted on this (Bourguignon 2004; Cornia 2004; Goudie & Ladd 1999; Iradian 2005; Kanbur 2004; López & Servén 2006; Ravallion 2001; Larrú 2006), either theoretically or empirically. But none of them have focused on the Mediterranean region.

The Mediterranean countries have followed different growth patterns and intensities, as it can be seen in Figure 1.

Figure 1. Growth rates in the South-Mediterranean countries. 1961-2005.
North Africa region.



Middle East region



Source: Author based on WDI data.

Widely speaking, in the sixties and seventies the North Africa region experienced high but volatile growth rates, whilst both rates were lower among 1980-2005. The Mediterranean Middle East countries have performed a more stable pattern, being Syria an exception.
A detailed analysis can be done bearing in mind the descriptive statistics contained in Table 1.

Table 1. Descriptive Statistics of the growth rates. 1961-2005.

	est dev	mean	median	CV	max	min
Lower middle income	2,21	5,38	5,70	0,41	9,61	-1,63
Middle East & North Africa	3,64	4,59	3,82	0,79	14,90	-1,64
World	1,53	3,65	3,69	0,42	6,68	0,21
Upper middle income*	2,19	2,88	3,13	0,76	6,92	-0,97
West Bank and Gaza**	8,99	2,78	6,11	3,23	12,65	-14,79
Turkey*	4,26	4,34	5,57	0,98	10,46	-7,49
Syrian Arab Republic	8,35	5,71	5,18	1,46	25,03	-8,96
Israel	3,95	5,52	5,17	0,72	16,24	-1,20
Egypt, Arab Rep.	3,02	5,29	4,97	0,57	14,63	0,63
Tunisia	3,53	5,19	4,91	0,68	17,74	-1,45
Libya***	15,23	6,97	4,52	2,18	45,07	-18,80
Lebanon	15,62	4,68	4,48	3,34	38,20	-42,45
Algeria	8,35	3,98	4,40	2,10	34,31	-19,69
Morocco	4,62	4,15	4,34	1,11	12,52	-6,58

Notes: region and countries are ranked by the median growth rate.* stands for 1969-2005 data period; ** 1995-2005; *** 1988-99's data for Libya are missing.
Source: Author based on WDI data.

Excluding the Palestinian territories, all the sample countries have performed a higher growth rate than the world's average. There are dramatic stagnations (Lebanon 1989,

Algeria 1962, Libya 1981) and amazing accelerations (Libya 1964, Lebanon 1991 or Algeria 1963). The exact values can be seen in the last columns of the Table 1.
Libya, Morocco, Algeria and Syria have experienced considerable number of years with negative growth rates (20% or more) (Table 2). In contrast, Egypt has never had negative growth rates.

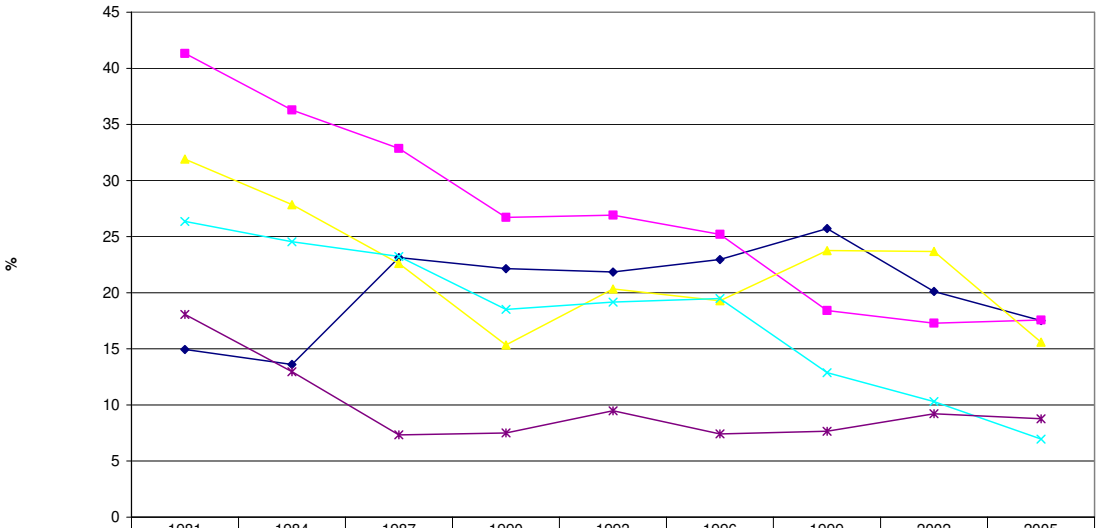
Table 2. Years with negative growth rates. 1961-2005.

	Years with negative growth rate	Years with data	%
Middle East & North Africa	4	40	10,0%
Upper middle income	3	37	8,1%
Lower middle income	1	45	2,2%
World	0	45	0,0%
Libya	10	33	30,3%
West Bank and Gaza	3	11	27,3%
Morocco	10	45	22,2%
Algeria	9	45	20,0%
Syrian Arab Republic	9	45	20,0%
Turkey	5	37	13,5%
Lebanon	2	17	11,8%
Israel	4	45	8,9%
Tunisia	3	44	6,8%
Egypt, Arab Rep.	0	45	0,0%

Note: countries are ranked by percentage of years with negative growth rates.
Source: Author based on WDI data.

Growth rates are associated with poverty measures. Selecting a poverty line of 2 dollars a day, measured in constant USD 2005 and in PPP terms, we build the evolution of the headcount poverty measure for the five countries whose data are available (Figure 2).

Figure 2. Percentage of population with income under 2USD 2005, PPP per day.



	1981	1984	1987	1990	1993	1996	1999	2002	2005
Algeria	14,94	13,61	23,12	22,14	21,84	22,96	25,72	20,12	17,51
Egypt	41,32	36,29	32,86	26,72	26,92	25,21	18,42	17,29	17,56
Morocco	31,91	27,85	22,6	15,34	20,33	19,28	23,76	23,68	15,58
Tunisia	26,35	24,54	23,23	18,52	19,17	19,48	12,87	10,29	6,96
Turkey	18,06	12,96	7,33	7,5	9,48	7,42	7,66	9,22	8,77

Source: Author based on World Bank's *Povcalnet* database.

Egypt, as the country with the best performance in terms of economic growth, shows the best performance in terms of poverty reduction (Table 3). She reduces the headcount poverty measure by 23.76% for 1981-2005, and by 14.6% in the eighties.

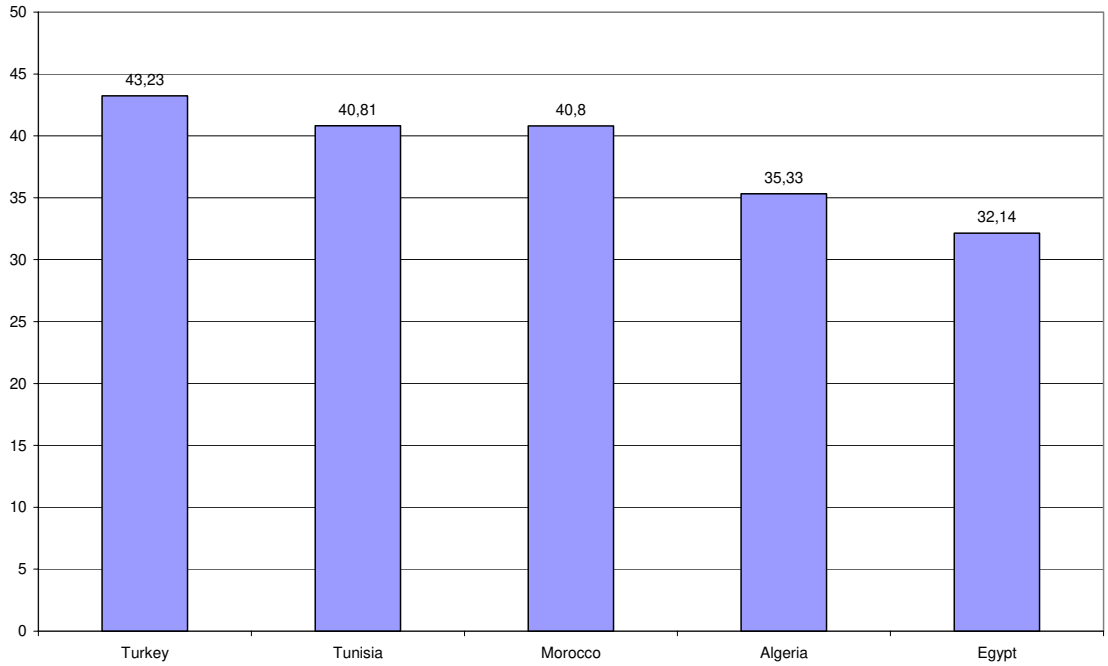
Table 3. Evolution of poverty headcount index.

country	1981-1990	1990-1999	1999-2005	1981-2005
Egypt	14,60	8,30	0,86	23,76
Tunisia	7,83	5,65	5,91	19,39
Morocco	16,57	-8,42	8,18	16,33
Turkey	10,56	-0,16	-1,11	9,29
Algeria	-7,2	-3,58	8,21	-2,57

Note: Countries are ranked by difference for 1981-2005 period.
Source: Author based on World Bank's *Povcalnet* database.

A stable pattern of poverty reduction can be detected in Tunisia, who ranks second, with near 20% of poverty reduction for 1981-2005 period. Tunisia ranked third in 1981 with a headcount rate of 26.35%. In 2005, she had the lowest poverty level (6.96%).
Morocco is the third country in the ranking. She decreased the poverty index by 16.3% although poverty rose during the 90's. Almost all the success in poverty reduction was happened in the '80s.
The same applies to Turkey. She reduced poverty in the '80s, but rise slightly in the '90s (1987-93) and the beginning of XXI century (1996-2002). The country performance for last three years (2002-05) was well, with a decrease of 0.45%.
Algeria is a failed case in terms of poverty reduction. Poverty rose in the '80s (7.2%) and the '90s (3.6%), showing a maximum in 1999, with a quarter of her population under de poverty line. Poverty fall by 8.2% over last years but, in 2005, she still had a 2.57% higher poverty than in 1981.

Figure 3. Gini index in 2005.

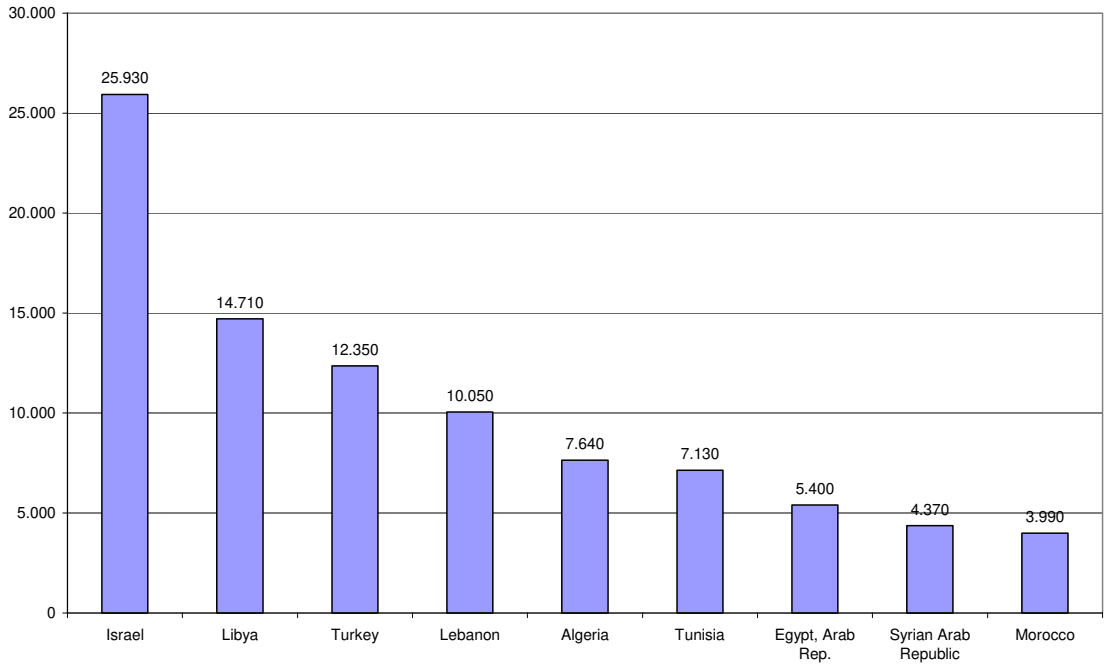


Source: Author based on World Bank's *Povcalnet* database.

We have seen the economic growth and poverty rates. Inequality is the third dimension closely related to these rates. Figure 3 shows Gini index for the five countries in the last year that data are available.
Inequality tends to be stable in the short run. We can check it in the sample's countries. The differences between Gini indexes in 1981 and 2005 are -4,81 in Algeria, -2.62 in Tunisia, -0.34 in Turkey. Inequality rose in Egypt (+0.14) and Morocco (+1.61).

Finally, we compare Gross National Income per capita in 2007.

Figure 4. GNI per capita, PPP (current international $).



Source: Author based on World Bank's World Development Indicators database on line.

Table 4. GNI per capita, PPP (current international $).

Country Name	2007	Index	Country group
Upper middle income	11.867		
World	9.852		
Middle East & North Africa	7.384		
Lower middle income	4.542		
Israel	25.930	100,0	High Income non-OECD
Libya	14.710	56,7	UMIC
Turkey	12.350	47,6	UMIC
Lebanon	10.050	38,8	UMIC
Algeria	7.640	29,5	LMIC
Tunisia	7.130	27,5	LMIC
Egypt, Arab Rep.	5.400	20,8	LMIC
Syrian Arab Republic	4.370	16,9	LMIC
Morocco	3.990	15,4	LMIC
West Bank and Gaza	n.a.		LMIC

Source: Author based on World Bank's World Development Indicators database on line.

The Middle East and North Africa region (MENA) accounts for 19 countries, basically the Mediterranean plus Arab Persian Gulf countries. The Lower Middle Income Countries (LMICs) accounts for 58 countries and they are those in which 2005 GNI per

capita was between $876 and $3,465. Six out of ten selected Mediterranean countries are included in this category. The Upper Middle Income Countries (UMICs) accounts for 40 countries and are those in which 2005 GNI per capita was between $3,466 and $10,725.
GNI per capita of Israel (almost 26.000 international $) doubled the following country (Libya) and is 6.5 times the lowest (Morocco). The first five countries have more GNI per capita than the MENA average (7.384$) and Israel, Libya, Turkey and Lebanon exceed the world average income per capita.

Bearing in mind these figures, groups and differences among the ten countries selected for the analysis, we explore the relationship of their ODA flows to GDP, FDI and remittances in the next sections.

3. IS ODA PRO-CYCLICAL OR COUNTER-CYCLICAL TO GDP?

Most recent literature (Gemmel & McGillivray 1998; Pallage and Robe 2001; Bulir & Hamman 2003; Borensztein et al. 2008; Frot & Santiso 2008) maintains a pro-cyclical relation among aid recipient countries. Aid follows the recipients' business cycles rather than being counter-cyclical. The effect is clearer among more aid dependent countries (Agenor & Aizenman 2007). To check this hypothesis on our Mediterranean sample, we follow the Borensztein's methodology. The authors compute the correlation between aid and income shocks. These consists in calculating the 5 year moving average of the time series, both the GDP and the ODA flows, and regress the transformed variables. The results obtained can be seen in the Table 5.

Table 5. Correlations between ODA and GDP. 5-year moving averages

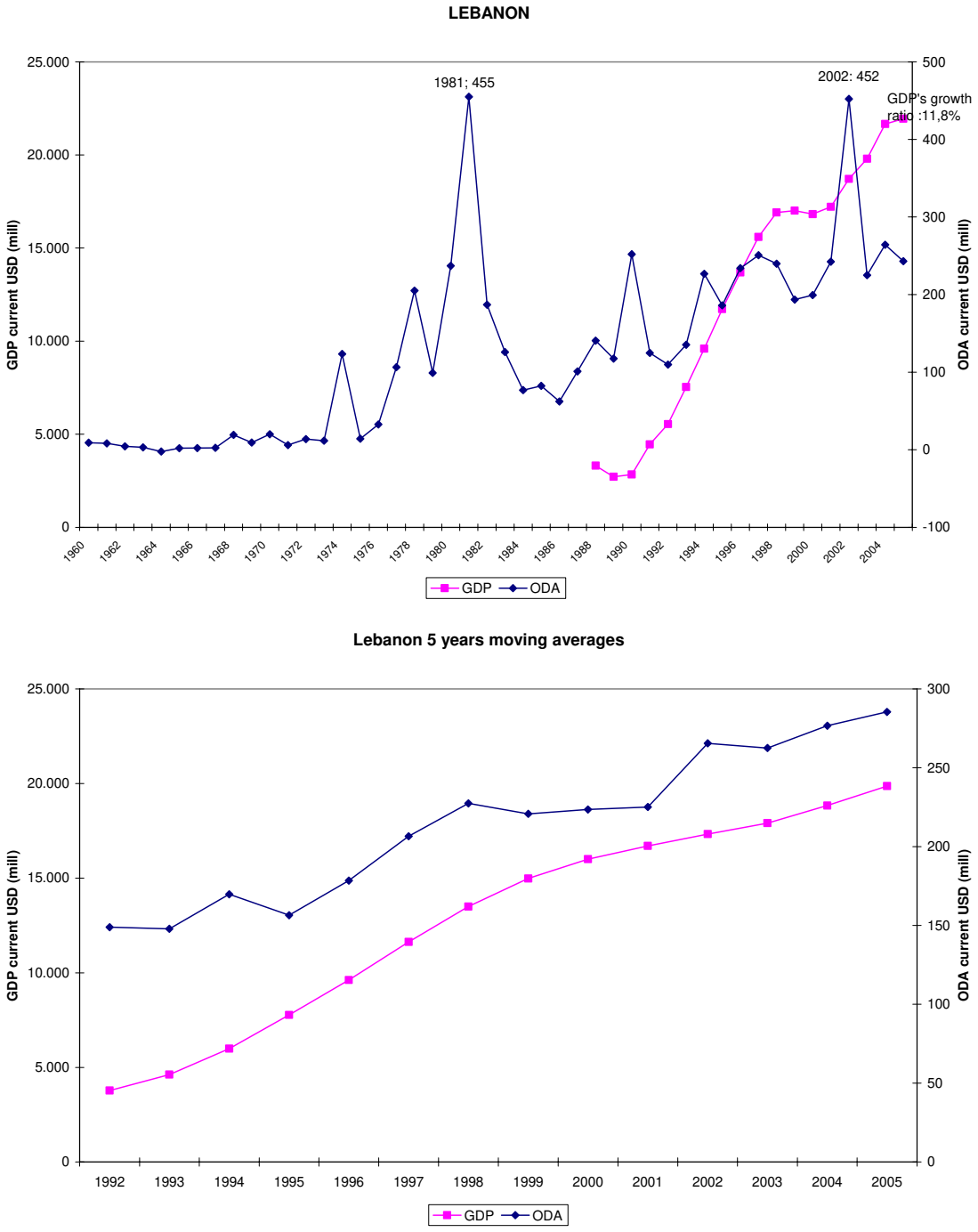
Region/country	correlation coef	R^2	Observations	Period with data available
World	0,98	0,96	42	1960-2005
LMICs	0,94	0,89	42	1960-2005
UMICs	0,91	0,84	42	1968-2005
MENA	0,83	0,68	42	1960-2005
Lebanon	0,96	0,92	42	1988-2005
Morocco	0,73	0,54	42	1960-2005
Tunisia	0,62	0,38	42	1960-2005
Israel	0,50	0,25	41	1960-2004
Egypt, Arab Rep.	0,44	0,19	42	1960-2005
Libya	-0,43	0,18	42	1960-87 & 1990-2005
West Bank and Gaza	0,42	0,17	13	1994-2005
Syrian Arab Republic	0,35	0,12	42	1960-2005
Algeria	0,33	0,11	42	1960-2005
Turkey	0,13	0,02	42	1968-2005

Note: Countries and regions are ranked by the R^2 value.
Source: Author calculation based on WDI data.

The first column differentiates three regions –Low and Upper Middle Income Countries and Mead East and North African countries- including the world data to the sample's Mediterranean countries considered individually. In the second column, the correlation coefficients are offered. The third column contains the R^2 coefficient. The region and country list is ranked under these values.
As expected by the literature, ODA is pro-cyclical when the whole world is considered. The positive and strong correlation is maintained in the middle income countries values, although it is minor when the MENA region is considered.

But, interestingly, **the only country that maintains this pro-cyclicality is Lebanon under the period 1988-2005** (when data for GDP are available). The case of Lebanon is clearer viewed in Figure 5.

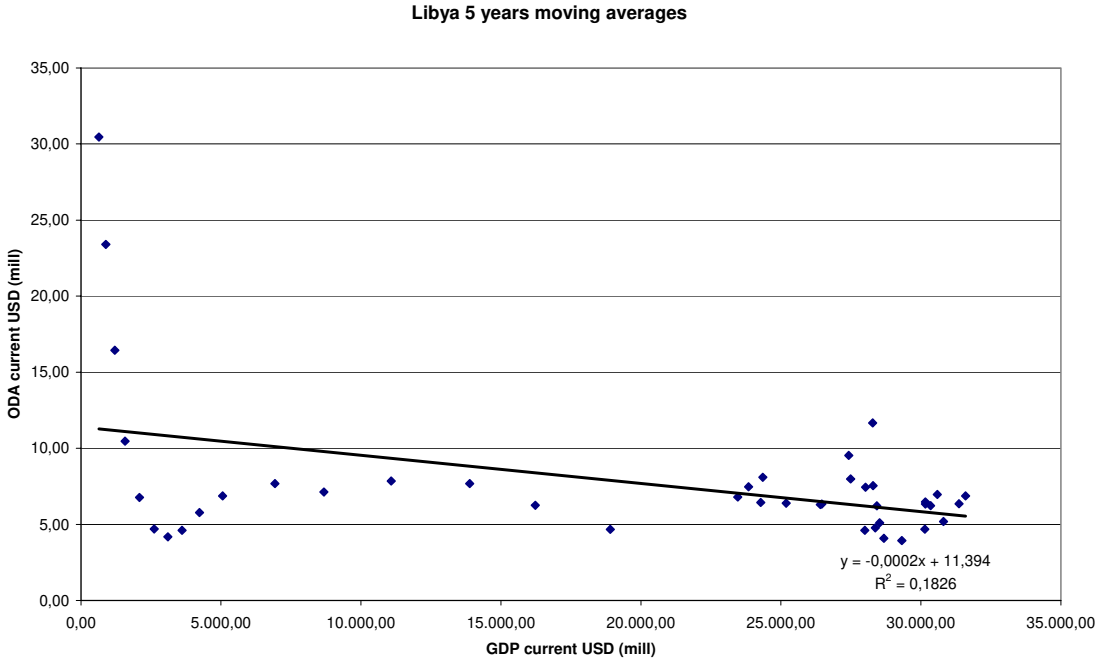
Figure 5. ODA and GDP in Lebanon: annual levels and 5 years moving averages.



Source: Author calculation based on WDI's data.

The relationship between ODA and GDP's moving averages is NOT pro-cyclical for the rest of the countries of the Mediterranean sample. The R^2 ranks from 0.54 in the case of Morocco to 0.02 for Turkey. The signs of the correlation coefficients are always positive except on the Libya's case. Her negative sign shows a potential counter-cyclical effect. Libya could be an outlier but we have to analyze the result quite carefully due to the GDP's missing values for 1988-89.

Figure 6. Correlation between ODA and GDP in Libya.



Source: Author calculation based on WDI data.

All in all, when we consider wide cross-country samples or all the recipient countries, a positive correlation between GDP and ODA is found. But when we consider the Mediterranean economies individually the pro-cyclicality of the ODA is not confirmed, except in the case of Lebanon.

Table 6. Number of windfalls and shortfalls episodes. Current USD.

# 5 years moving average RATIOS	GDP windfalls				GDP shortfalls			
	>5%	>10%	>20%	>30%	<-5%	<-10%	<-20%	<-30%
MENA	29	13	4	1	0	0	0	0
LMICs	30	14	0	0	0	0	0	0
UMICs	19	10	0	0	0	0	0	0
World	32	13	0	0	0	0	0	0
Algeria	25	15	7	1	4	0	0	0
Morocco	27	13	0	0	1	0	0	0
Tunisia	26	12	2	0	0	0	0	0
Turkey	19	13	3	0	1	0	0	0
Egypt	31	13	0	0	0	0	0	0
Libya	22	19	10	5	3	0	0	0
Israel	34	18	1	0	0	0	0	0
Lebanon	10	7	5	0	0	0	0	0
Syria	28	16	3	0	4	1	0	0
West Bank and Gaza	2	0	0	0	0	0	0	0

	ODA windfalls				ODA shortfalls			
	>5%	>10%	>20%	>30%	<-5%	<-10%	<-20%	<-30%
MENA	19	14	8	6	11	6	0	0
LMICs	23	13	5	0	0	0	0	0
UMICs	21	10	6	2	4	1	0	0
World	24	12	1	0	0	0	0	0
Algeria	13	8	0	0	10	6	2	0
Morocco	17	12	7	4	7	5	0	0
Tunisia	24	14	2	0	9	5	2	0
Turkey	13	11	9	6	17	14	5	2
Egypt	15	12	9	6	17	11	2	1
Libya	16	12	5	2	17	11	7	3
Israel	16	11	7	6	14	9	2	2
Lebanon	21	16	9	9	10	7	4	3
Syria	14	14	12	11	21	17	6	5
West Bank and Gaza	11	7	2	2	0	0	0	0
Total GPD 10-countries	**224**	**126**	**31**	**6**	**13**	**1**	**0**	**0**
Total ODA 10-countries	**160**	**117**	**62**	**46**	**122**	**85**	**30**	**16**

Source: Author calculation based on WDI data.

Table 6 offers the number of windfall and shortfall episodes in the 5 year-moving averages series. Windfalls have been more abundant in GDP than in ODA, but ODA windfalls have been more outstanding. There have been 46 windfalls in ODA higher than 30% and 62 higher than 20%, whilst windfalls in GDP have been only 6 and 31 respectively. Shortfalls have been more abundant in ODA flows. Syria is the country with more remarkable shortfalls episodes in ODA, computing 5 out of 16 episodes with -30% values. Turkey, Egypt and Libya have experienced 17 shortfall episodes higher than 5%. Algeria and Syria experienced 4 shortfall episodes in GDP higher than 5%.
In contrast, Libya is the Mediterranean country with more windfalls in GDP. She has had 5 episodes with windfalls higher than 30%.

Sensitivity analysis.

The above results have been obtained using current dollars. This implies that we could mislead the relationship due not to taking into account exchange rate volatilities. To remedying this fact we compute alternative analysis in constant dollars. We take constant 2006 US dollars for ODA figures from OECD-DAC data. We calculate deflactors for each country and year and apply them to current GDP values, getting the cross-country constant GDP figures. We de-trend constant ODA and GDP time series applying four techniques. Firstly we obtained 5-years average time series as we did above. Secondly, following Hudson & Mosley (2008), we normalized the series, dividing each one by their mean and multiplying by 100. This transformation allows us getting the whole series under the same mean (100) and analyzing their variance in a clearer way. Thirdly, we applied natural logs to constant values to mitigate their different scales and compare proportional changes. Fourthly, we apply Hodrick-Prescott filter (with λ=100 as we are working with annual values), following Bulir & Hamann (2003, 2008).
The results are offered in Table 7.

Table 7. Correlations between GDP and ODA. Constant 2006 USD.

5 years-aveg		0,33	0,44	0,5	0,96	-0,43	0,73	0,42	0,35	0,62	0,13
current		0,11	0,19	0,25	0,92	0,18	0,54	0,17	0,12	0,38	0,02
constant		Algeria	Egypt	Israel	Lebanon	Libya	Morocco	Palestinian Adm. Areas	Syria	Tunisia	Turkey
LEVELS	correlac	-0,55	-0,16	0,42	0,48	-0,59	0,26	-0,39	0,47	-0,54	-0,32
	R2	0,3001	*0,0258*	0,1760	0,2351	0,3461	0,0662	*0,1548*	0,2228	0,2878	0,1009
NORMALIZED	correlac	-0,62	-0,28	0,37	0,48	-0,30	0,18	-0,39	0,44	-0,54	-0,32
	R2	0,3001	0,0258	0,1760	0,2351	0,3461	0,0662	0,1548	0,2228	0,2878	0,1009
LOG_levels	correlac	-0,77	-0,01	0,49	0,52	-0,27	0,36	-0,34	0,47	-0,44	-0,50
	R2	*0,6547*	0,0082	0,2580	0,2746	0,4594	*0,1978*	0,1166	0,2438	0,1944	0,2522
5 years-aveg	correlac	-0,62	-0,17	0,52	0,88	-0,58	0,26	0,13	0,62	-0,63	-0,65
	R2	0,3815	0,0294	0,2705	***0,7670***	0,3307	0,0670	0,0161	*0,3829*	0,3999	0,4198
HP filter	correlac	-0,71	-0,11	0,61	0,77	-0,86	0,31	-0,13	0,57	-0,72	-0,80
	R2	0,4987	0,0120	*0,3691*	0,5891	*0,7334*	0,0990	0,0179	0,3238	*0,5246*	*0,6383*

Notes: Highest R2 coefficient for each country in *italics.*
Source: Author calculation based on OECD-DAC and WDI data.

The main differences to results in current dollars (first two raws) are the following. In six out of ten cases the R^2 is higher. Correlation coefficients of Algeria and Egypt change their sign turning negative. In Algeria, her R^2 rose remarkably under Log values whereas in Egypt is still near cero. Israel maintains her signs ad values near to the computation in current dollars. Lebanon maintains her signs and it is still the highest R^2.except under the Hodrick-Prescott's filter. Libya, ranks the highest determination coefficient after de-trended the data with the filter, and her correlation rose outstanding (-0.86). Morocco is the case where the constant dollars results, fell more remarkably compared to current dollars. In constant dollars, no significant correlation appears. Results are even weaker in constant dollars in the Palestinian case. But in the Syrian case, her results are now higher, both in correlation and R^2 coefficients. Tunisia and Turkey also change the sense of the correlation, turning negative, but their R^2 coefficients are around 0.5 and 0.6 respectively.

If we select the Hodrick-Prescott filter as the benchmark results, as they show on average (0.38) the highest determination coefficients, we obtain the following rank (Table 8).

Table 8. Ranking of correlations between GDP and ODA. HP filter method, in constant USD.

	correlations	R2
Libya	-0,86	0,7334
Turkey	-0,80	0,6383
Lebanon	0,77	0,5891
Tunisia	-0,72	0,5246
Algeria	-0,71	0,4987
Israel	0,61	0,3691
Syria	0,57	0,3238
Morocco	0,31	0,0990
Palestinian Adm. Areas	-0,13	0,0179
Egypt	-0,11	0,0120

Source: Author calculation based on OECD-DAC and WDI data.

So, our main result still remains after the sensitivity analysis. Only Lebanon shows a statistically strong pro-cyclical association between ODA and GDP. The negative correlation in the Libyan case still remains. R^2 coefficient has risen a bit (0.18 to 0.33 in constant levels and 0.73 under the HP filter method). In four cases, the sign of the correlation coefficient has turned negative, but they have low values in their R-squared figures.

If we compute the number of shocks in both, ODA and GDP, variables under a variety of levels, we obtain the results showed in Table 9.

Table 9. Shocks in ODA and GDP. Constant 2006 USD.

	positive shocks			negative shocks		
	>105	>110	>120	<95	<90	<80
ODA						
Algeria	10	8	5	18	16	12
Egypt	13	11	9	25	20	13
Israel	14	13	10	16	12	9
Lebanon	21	18	15	20	18	12
Libya	12	9	6	22	19	13
Morocco	18	14	11	19	16	9
Palestinian Adm. Areas	9	9	7	4	1	0
Syria	16	13	13	23	22	18
Tunisia	17	13	5	16	13	7
Turkey	13	13	12	23	21	16
SUM	*143*	*121*	*93*	*186*	*158*	*109*
GDP						
Algeria	30	26	14	10	8	4
Egypt	26	20	7	9	5	1
Israel	24	14	4	6	5	4
Lebanon	12	10	8	2	1	0
Libya	20	16	8	12	11	9
Morocco	29	14	1	3	1	0
Palestinian Adm. Areas	5	4	1	5	3	1
Syria	29	21	11	6	6	5
Tunisia	30	18	4	4	3	0
Turkey	19	18	13	16	12	3
SUM	*224*	*161*	*71*	*73*	*55*	*27*
GDP minus ODA						
Algeria	20	18	9	-8	-8	-8
Egypt	13	9	-2	-16	-15	-12
Israel	10	1	-6	-10	-7	-5
Lebanon	-9	-8	-7	-18	-17	-12
Libya	8	7	2	-10	-8	-4
Morocco	11	0	-10	-16	-15	-9
Palestinian Adm. Areas	-4	-5	-6	1	2	1
Syria	13	8	-2	-17	-16	-13
Tunisia	13	5	-1	-12	-10	-7
Turkey	6	5	1	-7	-9	-13

Note: A negative sign in the last panel means higher shocks in ODA than in GDP.
Source: Author calculation based on OECD-DAC and WDI data.

During last decades, there have been more negative than positive shocks in ODA to the Mediterranean countries. Conversely, there have been more positive than negative shocks in their GDP. On average, there have been more *negative* shocks in ODA than in GDP. Positive shocks in GDP are more abundant in all Mediterranean countries, except in Lebanon and Palestine. Morocco has had smaller positive shocks in ODA. Algeria is unique having low positive shocks in GDP.

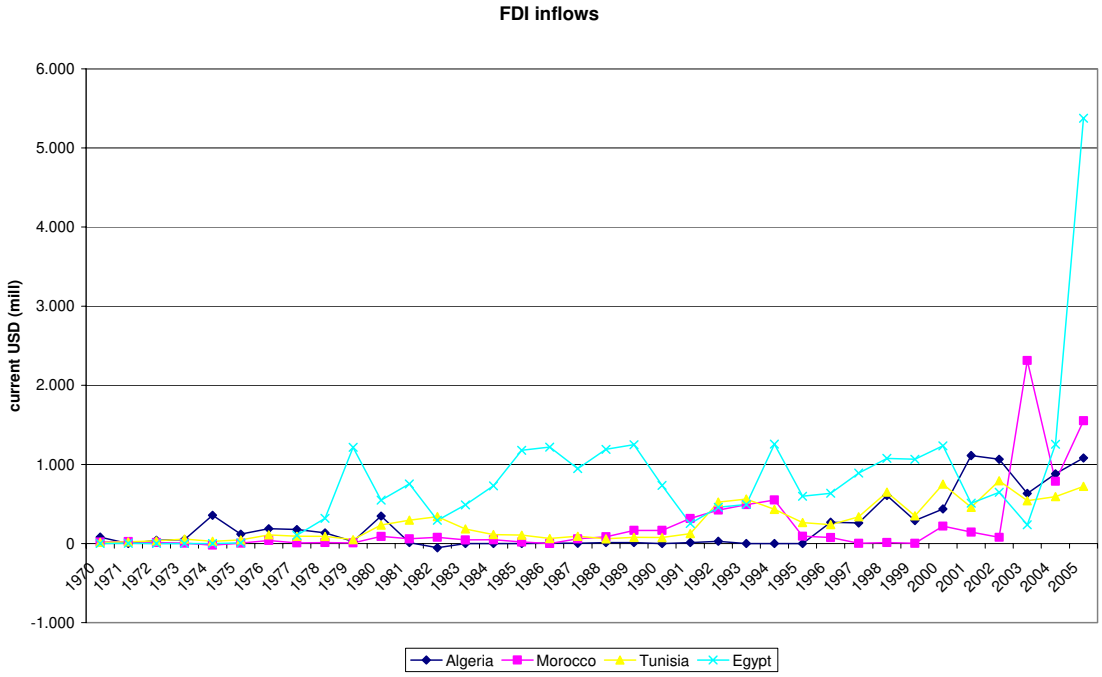
4. THE VOLATILITY OF FDI, REMITTANCES AND ODA.

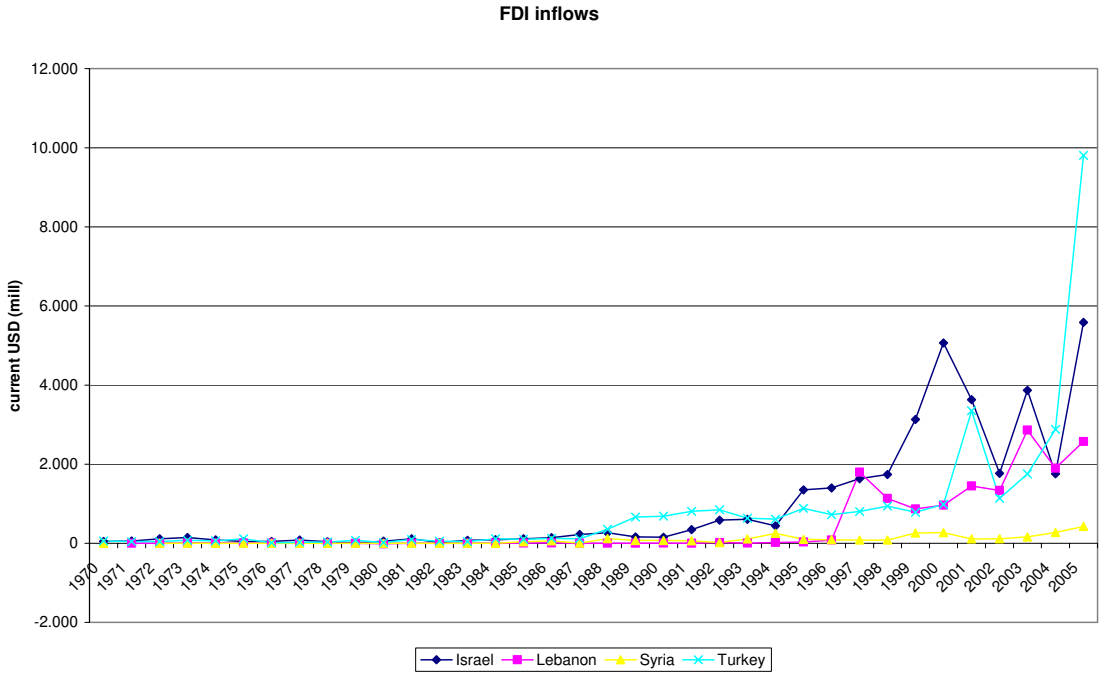
In this section, we compare the time trend of ODA flows to other two external sources to finance the economic growth: FDI and remittances. Firstly, a time trends analysis of the flows are offered and, secondly, a comparison to ODA's volatility is made.

The evolution of FDI flows.

During 1970-2005, eight Mediterranean countries received FDI net inflows (no data for Libya and West Bank and Gaza are available on WDI database). Israel, Turkey, Egypt and Lebanon have been the main recipient countries whilst FDI to Tunisia, Algeria, Morocco and Syria have been less significant. The evolution of the time series can be seen in Figure 7.

Figure 7. FDI flows to North Africa and Middle East Mediterranean countries.





Source: Author based on WDI data.

We calculate a measure of volatility for FDI flows and compare the world, region and country values. We select the coefficient of variation as maybe the simplest measure of volatility (that is, a normalized measure of dispersion of a probability distribution, given by the coefficient of the standard deviation and the mean). This gives us an idea of how each financial flow has moved around its mean. As CV is a dimensionless number we may compare data sets with different units or wildly different means as in our case.
As in Table 10 can be seen, FDI is highly volatile in the Mediterranean economies. Six countries out of eight have higher FDI volatility than the world value and the Lower Income Countries group[1]. All the sample's countries except Tunisia, are also more volatile than the MENA group.

Table 10. FDI volatility. 1970-2005.

	est dev	mean	median	cv
World	369.931,41	290.245,82	143.702,89	1,27
UMICs	30.751,64	24.831,15	6.212,68	1,24
LMICs	42.389,97	35.685,98	9.602,42	1,19
MENA	2.686,93	2.353,25	1.445,58	1,14
Morocco	466,19	222,04	59,08	2,10
Turkey	1.715,26	829,44	239,50	2,07
Lebanon	804,40	431,64	6,45	1,86
Israel	1.490,75	972,08	155,70	1,53
Algeria	338,17	227,89	46,25	1,48
Syria	104,33	79,59	62,32	1,31
Egypt	915,48	770,47	636,00	1,19
Tunisia	239,67	265,03	154,81	0,90

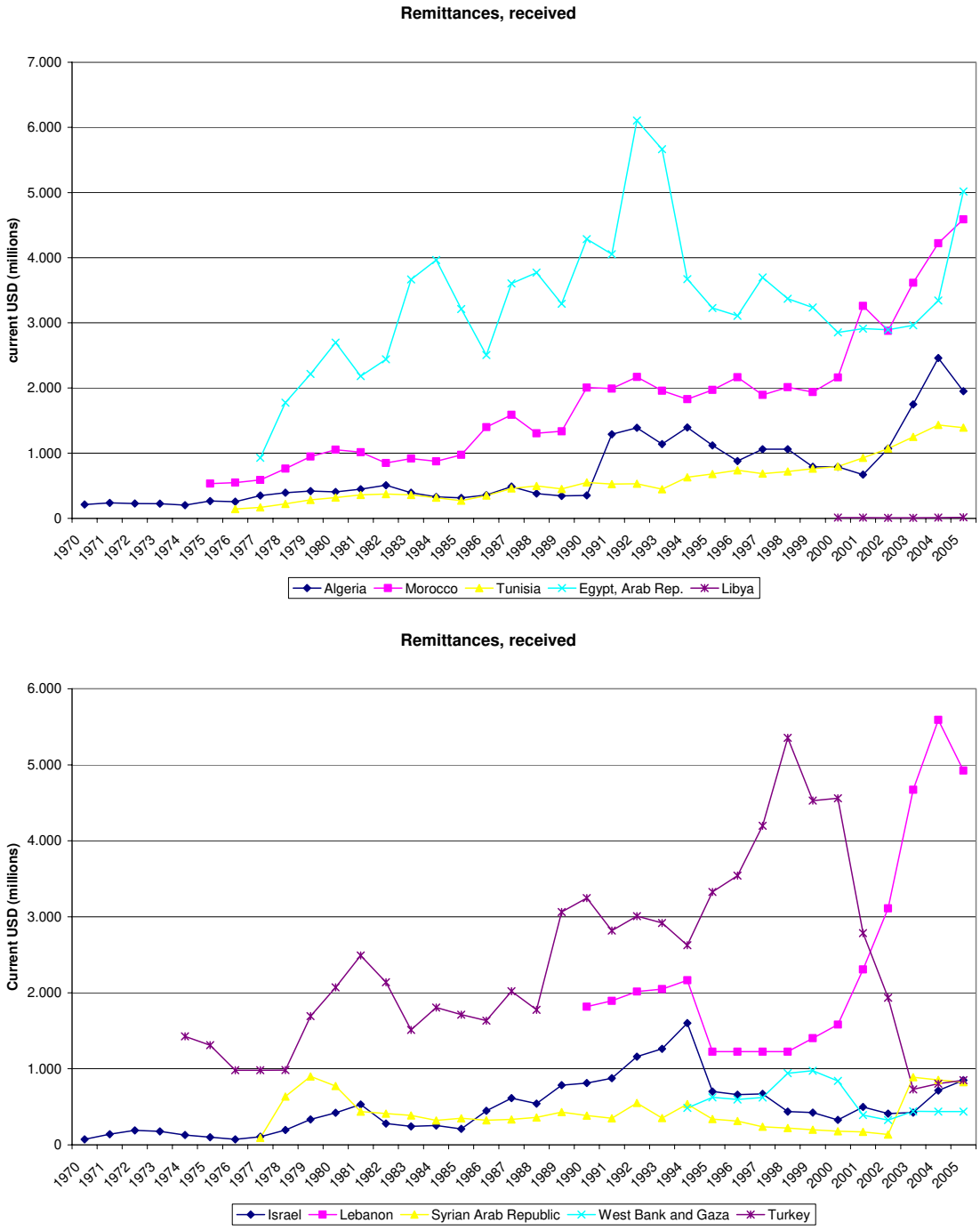
Source: author's calculation based on WDI data.

[1] Following the World Bank criteria, Algeria, Egypt, Morocco, Syria, and Tunisia are included into the LMICs group.

The evolution of remittances.

Considering worker's remittances and compensation of employees received by the Mediterranean countries -data coming from World Bank's WDI-, we can get a mirror image obtained by the FDI flows. The time trends can be seen in Figure 8.

Figure 8. Remittances flows to North Africa and Middle East Mediterranean countries.



Source: Author based on WDI data.

As the figure shows, Egypt and Morocco are the biggest recipient of remittances among North African countries, followed by Algeria and Tunisia. Libya receives quite few

remittances. The amounts increase sharply since 1990's. Egypt's peak point in 1992 is amazing, when 6.000 USD millions were exceeded. The median value of the remittances to Egypt is 3.235 USD millions.
The Middle East region is dominated by the remittances flows to Turkey and Lebanon with a median value of 2.000 USD millions, approximately. In Israel, Syria and West Bank and Gaza remittances are less important, with a median value below 550 USD millions. Two additional facts can be highlighted in the Middle East region. On the one hand, in a breathtaking drop of 13.6%, the remittances received by Turkey fell from over 5.300 USD millions in 1998 to almost 730 USD in 2003. On the other hand, in Lebanon, remittances rose from 1.225 USD millions in 1998 to 5.592 USD millions in 2004.
These stylized facts, show that the volatility of the remittances may be substantial. The volatility values, measured by the coefficient of variation, can be seen in Table 11.

Table 11. Volatilities of remittances.

Region / country	Accumulated	est dev	mean	median	CV	Data period
Lower middle income	815.504,20	24.891,98	22.652,89	11.772,65	1,10	1970-2005
Upper middle income	369.171,00	11.188,28	10.254,75	4.775,50	1,09	1970-2005
World	2.646.782,04	66.883,75	73.521,72	50.964,88	0,91	1970-2005
Middle East & North Africa	325.544,80	6.551,78	9.042,91	7.165,00	0,72	1970-2005
Algeria	25.913,00	555,17	719,81	432,00	0,77	1977-2005
Morocco	55.345,80	1.038,04	1.785,35	1.827,00	0,58	1975-2005
Tunisia	17.698,00	342,85	589,93	511,50	0,58	1970-2005
Egypt, Arab Rep.	96.633,00	1.067,52	3.332,17	3.235,00	0,32	1976-2005
Libya	59,00	2,79	9,83	9,50	0,28	2000-2005
Israel	17.680,00	355,39	491,11	423,50	0,72	1974-2005
Lebanon	38.434,00	1.422,25	2.402,13	1.955,50	0,59	1990-2005
Syrian Arab Republic	12.287,00	231,56	423,69	352,00	0,55	1970-2005
Turkey	74.844,00	1.203,58	2.338,88	2.046,00	0,51	1977-2005
West Bank and Gaza	7.122,00	218,58	593,50	541,50	0,37	1994-2005

Notes: Last column details the period with available data for each country or region. These differences must be considered when the results are interpreted. Regions and countries are ordered by the CVs values. North African countries are considered in the middle rows. Middle East countries are grouped in the last five rows.

Source: Author based on WDI data.

Some remarkable results are worth to be mentioned. Firstly, the two middle income groups have the same volatility, higher than the world and MENA values. Secondly, remittances to the ten Mediterranean countries are less volatile than the remittances to the whole world and the middle income groups. Thirdly, Algeria and Israel are the countries with the highest volatility among their groups (North Africa and Middle East, respectively). Their values are on line of the MENA value. Finally, the lowest values – Libya, Egypt and the Palestinian territories- can be biased by the data period.

Are those volatilities higher or lower than FDI or ODA flows? The question is answered in next section.

Comparing the volatilities of FDI, remittances and ODA flows.

Before comparing the volatilities among these three foreign finance sources, we can compare their relative importance looking at their levels.

Table 12. FDI, remittances and ODA levels. 1970-2005.

Region/country	FDI	Remittances	ODA	SUM	GDPpc PPP
World	10.448.849,39	2.646.782,04	1.586.568,70	14.682.200,13	8.477,15
UMICs	893.921,36	369.171,00	127.124,13	1.390.216,49	9.940,93
LMICs	1.284.695,26	815.504,20	502.562,95	2.602.762,41	5.730,94
MENA	84.717,05	325.544,80	211.658,20	621.920,05	5.449,96
Algeria	8.203,97	25.913,00	7.083,36	41.200,33	6.283,05
Morocco	7.993,28	55.345,80	19.057,87	82.396,95	4.052,36
Tunisia	9.541,20	17.698,00	8.221,29	35.460,49	7.447,44
Egypt, Arab Rep.	26.966,50	96.633,00	64.340,60	187.940,10	3.858,42
Libya		59,00	253,46	312,46	n.a.
Israel	34.994,70	17.680,00	25.265,04	77.939,74	23.010,33
Lebanon	15.107,26	38.434,00	5.797,23	59.338,49	4.968,04
Syrian Arab Republic	2.785,72	12.287,00	17.554,37	32.627,09	3.387,73
Turkey	29.860,00	74.844,00	12.047,75	116.751,75	7.479,66
West Bank and Gaza		7.122,00	9.744,79	16.866,79	n.a.

Notes: highest values in italics. FDI, remittances and ODA flows are measured in current USD (millions). GDPpc PPP in constant USD 2000 (units).
Source: Author, based on WDI data.

FDI is the most important foreign finance source for the world, middle income groups and Israel whereas for Syria and West Bank and Gaza are ODA flows. Remittances are the most important external flow in four out of five North African countries. The same applies to Lebanon and Turkey. The rank of the values is substantial and considerable differences can be detected among the countries.

The three variables are positively correlated. The highest correlation coefficient is between remittances and ODA (0.70), whilst the coefficient between FDI and ODA is 0.44, slightly lower than the correlation between FDI and remittances (0.45).

The correlation between the sum of the three finance sources and the GDP per capita of the countries is negative (-0.5) but the powerful of the statistic relation is quite low (R^2=0.0033). In economic words, although a country receives high volume of foreign finance, this will not imply that their citizens will be richer. It can be seen comparing Egypt to Turkey. Egypt has attracted 187.9 USD billions from abroad but her income per capita is only 3.858 USD, whereas Turkey has received 116.7 USD billions and her income per capita is 7.479 USD, almost double that Egypt's. Reinforcing the argument, Israel has the highest income per capita but it only ranks fourth in the external finance order.

Nevertheless, the constancy and predictability of the flows may be more important than their volume, if we consider that economic development is a long-term process. In order to know how volatile (non stable) these flows are, we can compare their coefficient of variation. The results are offered in Table 13.

Table 13. A comparison of the volatilities of FDI, remittances and ODA.

	CV				Differences			
Region / countries	**FDI**	**Remittances**	**ODA**	**GDP**	**ODA-Remit**	**ODA-FDI**	**Remit-FDI**	**ODA-GDP**
UMICs	1,24	1,09	*0,75*	0,52	-0,34	-0,49	-0,15	0,23
MENA	1,14	0,72	*0,73*	0,54	0,01	-0,41	-0,42	0,19
LMICs	1,19	1,10	*0,60*	0,68	**-0,50**	-0,59	-0,09	-0,08
World	1,27	0,91	*0,56*	0,62	-0,35	-0,71	-0,36	-0,06
Egypt, Arab Rep.	1,19	*0,32*	0,61	0,68	0,29	-0,58	-0,87	-0,07
Libya	n.a.	*0,28*	0,60	0,38	0,32			0,22
Morocco	2,10	0,58	*0,53*	0,57	-0,05	**-1,57**	-1,52	-0,04
Algeria	1,48	0,77	*0,42*	0,50	-0,35	-1,06	-0,71	-0,08
Tunisia	0,90	0,58	*0,38*	0,62	-0,20	-0,52	-0,32	-0,24
Turkey	2,07	*0,51*	1,01	0,68	**0,50**	-1,06	**-1,55**	0,33
Syrian Arab Republic	1,31	*0,55*	0,93	0,47	0,38	-0,38	-0,76	**0,46**
Lebanon	1,86	*0,59*	0,67	0,54	0,08	-1,19	-1,27	0,13
Israel	1,53	0,72	*0,62*	0,77	-0,10	-0,91	-0,81	-0,15
West Bank and Gaza	n.a.	*0,37*	0,50	0,13	0,13			0,37

Notes: lowest values in italics. Highest values in bold.

Source: Author based on WDI data.

Table 13 is divided into three horizontal panels and three vertical groups. As all the text above, the first panel is about regions values, the second panel contains the North African countries information and the third panel is for the Middle East countries. After the first column for the region or country names, there are 4 columns that contain the CV values of each variable. I have added the CVs of the GDP time series for each country-region for comparability purposes. The last four columns offer the volatility differences among the variables. Regions, North African and Middle East countries are ranked following the ODA volatility values.

As the numbers in italics show, ODA is the lowest volatile finance source in all the regions considered (the world included). The same quality applies to Morocco, Algeria, Tunisia and Israel. On the contrary, the volatility of FDI's flows is the highest without exception.

ODA flows are less volatile than GDP in the world and LMICs, whilst higher in the case of MENA and UMICs.

The volatilities of the GDP are higher than the world values in Egypt, Turkey and Israel. In the case of the two former (Egytp and Turkey), their FDI flows are highly volatile but their remittances are the most stable. As for Israel, ODA flows have been the least volatile.

Commenting on CV's differences, as column 6 shows, ODA flows are quite less volatile than remittances in LMICs, UMICs group and the world, but ODA flows are as volatile as remittances in the MENA region. Algeria has the most stable ODA flows compared to remittances, and Turkey is just the opposite case.

Column 7 shows how Morocco and Algeria in the North African region and Lebanon and Turkey in the Middle East are the countries whose differences between their ODA and FDI volatilities are higher.

Column 8 shows how Turkey has the highest difference between FDI and remittances volatilities, and column 9 remarks the case of Syria whose GDP is much less volatile than her ODA flows.

To summarize, ODA flows and remittances are indeed less volatile than FDI flows. But whereas remittances are stable and strategic to some Mediterranean countries (Egypt, Lebanon and Turkey), the ODA flows to some other (Syria and the Palestinian

territories) are higher than remittances in volume but more volatile. Algeria, Morocco and Tunisia share the feature of receiving high levels of remittances but their ODA flows are more stable. Israel is the only case in which FDI is the highest finance source but ODA has been the least volatile. To put it in a nutshell, remittances is the main foreign finance source in the MENA region but the ODA flows has been the least volatile. It is not a main FDI destiny (Egypt and Turkey may be the exceptions) but the ODA flows to the region has been very steady.

5. DOES AID OFFSET SHOCKS IN FDI AND REMITTANCES?

Other relevant question is whether foreign aid has played a role that offsets shocks in FDI and remittances flows in the Mediterranean countries. We define a shock as a hard variation of the flows in the short run. Following some previous literature (Frot and Santiso 2008 and Arellano et al. 2009), we measure this effect computing the 5 year average of the finance variables (FDI, remittances and ODA). Afterwards, we calculate the gap between the annual figure and the 5-year average for FDI and Remittances. Finally, we obtain the correlation coefficient between the gap-FDI flows (and the gap-Remittances flows) and the 5-year averages of ODA. The results are shown in Table 14.

Table 14. Correlation coefficients between shocks in FDI, remittances and ODA.

	FDI-ODA		REMITTANCES-ODA	
	Correlation coef.	R^2	Correlation coef.	R^2
MENA	0,511	0,2613	0,363	0,1317
LMICs	0,649	0,4211	0,680	0,4630
UMICs	0,536	0,2875	0,542	0,2935
World	0,180	0,0324	0,656	0,4305
Algeria	0,493	0,2432	0,083	0,0068
Morocco	0,022	0,0005	-0,031	0,0009
Tunisia	0,297	0,0882	0,356	0,1270
Egypt	-0,179	0,0319	-0,103	0,0106
Israel	-0,051	0,0026	0,380	0,1447
Lebanon	0,438	0,1916	0,507	0,2571
Syria	-0,183	0,0333	-0,321	0,1028
Turkey	-0,093	0,0087	0,136	0,0184

Source: Author based on World Bank's WDI data.

The main conclusion is that ODA does not offset the shocks, either shocks of FDI or remittances. All the R^2 coefficients are quite low, being the highest the association between FDI shocks and ODA for LMICs, and remittances shocks and ODA in LMICs and World. But the correlation coefficient shows a positive sign for all the regions. This means that if the gap in FDI rises, ODA also rises and not fill the gap. There are seven cases with negative correlation coefficients. The economic interpretation of this fact is that when a country receives less FDI for five years, ODA rises for the same period trying to offset the FDI shock. This is the case of Egypt, Israel, Syria and Turkey who have negative signs in the association between FDI and ODA, but the determination indexes (R-Squared) are very close to zero. The same conclusion applies to the cases of Morocco, Egypt and Syria when the shocks in the remittances and ODA are analyzed.
To put it in a nutshell, ODA has not been used as a flow that might offset the shocks of private financial flows such as FDI or remittances, in any of the Mediterranean countries.

6. CONCLUSIONS.

Widely speaking, the five Mediterranean countries located in the North Africa region have experienced high but volatile growth rates in the 60-70's, whilst both rates were lower among 1980-2005. The Mediterranean Middle East countries have performed a more stable pattern, being Syria an exception. Excluding the Palestinian territories, all the sample countries have performed a higher growth rate than the world's average and dramatic stagnations (Lebanon 1989, Algeria 1962, Libya 1981) and amazing accelerations can be detected. Libya, Morocco, Algeria and Syria have experienced considerable number of years with negative growth rates (20% or more for 1960-2005). In contrast, Egypt has never had negative growth rates.

Growth rates are associated with poverty measures. Egypt, as the country with the best performance in terms of economic growth, shows the best performance in terms of poverty reduction: 23.76% for 1981-2005, and by 14.6% in the eighties. Tunisia, Morocco, and Turkey have also reduced their poverty, but in Algeria poverty has risen and in 2005 she had 2.5%.higher poverty than in 1981. Meantime, inequality has reduced a bit in Algeria, Tunisia and Turkey, but has risen in Egypt and Morocco.

In terms of GNI per capita, Israel (almost 26.000 international $) double the following country (Libya) and is 6.5 times the lowest (Morocco). Israel, Libya, Turkey and Lebanon exceed the world average income per capita ($ 9.852) and the MENA average ($ 7.384).

Adding the ODA flows among 1960-2007, Egypt shows as the largest recipient country (more than 123 billion of USD, 34% of the whole stock) followed by Israel (55 billion that stands for 15%). The five countries located in the North of Africa account for almost 61% of the ODA stock. Libya accounts for only 0.5% of the whole sample's stock. Its 1.8 billion dollars are only a 1.5% in comparison to Egypt's stock.

The ten Mediterranean countries account for 10% of the world's ODA, whereas they accumulate 80% of the ODA to the MENA region. The five Mediterranean countries included in the LMICs classification account for one quarter of the ODA, whilst the three UMICs countries explain 15% of the ODA to this income-region. The highest amounts of ODA have been received in 1974-85 and 1990-92, when the figures were well above 10 billion of constant 2006 USD. The main difference between DAC-donors' commitments and disbursements (almost 40 billion for 1960-2007) happened in 1990, when more than 15 billion USD were not disbursed.

When we consider wide cross-country samples (regions or all developing countries), a positive correlation between shocks in GDP and ODA is found. But when we consider the Mediterranean economies individually the pro-cyclicality of the ODA is not confirmed, except in the case of Lebanon.

FDI is the most important foreign finance source for the world, middle income groups and Israel whereas for Syria and West Bank and Gaza are ODA flows. Remittances are the most important external flow in four out of five North African countries. The same applies to Lebanon and Turkey. The rank of the values is substantial and considerable differences can be detected among the countries.

The three variables are positively correlated. The highest correlation coefficient is between remittances and ODA (0.70), whilst the coefficient between FDI and ODA is 0.44, slightly lower than the correlation between FDI and remittances (0.45).

ODA flows and remittances are indeed less volatile than FDI flows. But whereas remittances are stable and strategic to some Mediterranean countries (Egypt, Lebanon and Turkey), the ODA flows to some other (Syria and the Palestinian territories) are higher than remittances in volume but more volatile. Algeria, Morocco and Tunisia

share the feature of receiving high levels of remittances but their ODA flows are more stable. Israel is the only case in which FDI is the highest finance source but ODA has been the least volatile. To put it in a nutshell, remittances are the main foreign finance source in the Mediterranean region but ODA flows has been the least volatile. The Mediterranean region is not a main FDI destiny (Egypt and Turkey may be the exceptions) but ODA flows have been very steady. Finally, we have shown how ODA does not offset the shocks, either shocks on FDI or remittances.

7. REFERENCES.

ABOU al FOUL, B. (2008) "Foreign Aid and Economic Growth in Egypt and Jordan: An Empirical Analysis", *Economic Research Forum Working Paper 418*.

AGENOR, P-R. & AIZENMAN (2007) "Aid Volatility and Poverty Traps", *NBER WP 13400.*

BORENSZTEIN, E.; J. CAGÉ; D. COHEN & C. VALADIER (2008) "Aid Volatility and Macro Risks in Low-Income Countries", *OECD Development Centre Working Paper 273.*

BOURGUIGNON, F. (2004) "The Poverty-Growth-Inequality Triangle", paper presented at the Indian Council for Research on International Economic Relations, New Delhi.

BULIR, A. & HAMANN, J. (2003) "Aid Volatility: an Empirical Assessment", in IMF Staff Papers vol. 50(april), 64-89.

BULIR, A. & HAMANN, J. (2008) "Volatility of Development Aid: From the Frying Pan into the Fire", *World Development 36(10), 2048-2066*

CORNIA, G.A. (ed.) (2004) Inequality, Growth, and Poverty in an Era of Liberalization and Globalization. Oxford University Press. London.

FIELDING, D. & MAVROTAS, G. (2008) "Aid Volatility and Donor-Recipient Characteristics in 'Difficult Partnership Countries'", *Economica 75 (199), 481-494.*

FROT, E. & SANTISO, J. (2008) "Development Aid and Portfolio Funds: Trends, Volatility and Asset Allocation", Stockholm Institute of Transition Economics.

GEMMELL, N & McGILLIVRAY, M. (1998) "Aid and Tax Instability in the Government Budget Constraints in Developing Countries", *CREDIT Research Paper 98/1.* University of Nottingham: Nottingham.

GOUDIE, A. y LADD, P. (1999) "Economic Growth, Poverty and Inequality", *Journal of International Development 11, 177-195.*

IRADIAN, G. (2005) "Inequality, Poverty, and Growth: Cross-Country Evidence", *IMF Working Paper 05/28.*

KANBUR, R. (2004) "Growth, Inequality and Poverty: Some Hard Questions", commentary prepared for the State of the World Conference, Princeton University, 13-14 february.

LARRÚ, J.M. (2006) "La ayuda al desarrollo, ¿reduce la pobreza?", *Colección Escuela Diplomática Nº 10, 75-104.*

LARRÚ, J.M. (2009) "A Structural Analysis of ODA to Ten Mediterranean Countries", *CREMed Working Paper 01.*

LÓPEZ, J.H. & SERVÉN, L. (2006) "A Normal Relationship? Poverty, Growth and Inequality", *World Bank .Policy Research Working Paper 3814.*

NEUMAYER, E. (2003) "What Factors Determine the Allocation of Aid by Arab Countries and Multilateral Agencies?", *Journal of Development Studies 39(4), 134-147.*

PALLAGE, S. & ROBE, M. (2001) “Foreign Aid and the Business Cycle”, *Review of International Economics 9 (4), 641-672*

RAVALLION, M. (2001) “Growth, Inequality and Poverty: Looking Beyond Averages”, *World Development 29 (11), 1803-1815.*

TEBOUL, R. & MOUSTIER (2001) “Foreign Aid and Economic Growth: The Case of the Countries South of the Mediterranean”, *Applied Economics Letters 8, 187-190*