International Openness and Social Development as Endogenous Determinants of Growth and Convergence of the Countries in the MENA Region

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INTERNATIONAL OPENNESS AND SOCIAL

DEVELOPMENT AS ENDOGENOUS DETERMINANTS OF GROWTH AND CONVERGENCE OF THE COUNTRIES

IN THE MENA REGION

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Executive Summary

The main goal of the report is to evaluate the direct and indirect influence of various social indicators (human capital measures, education, inequality etc.) and aspects of openness (FDI and trade in goods and services) on growth and convergence in the MENA region, and offer policy recommendations in these areas. The report is motivated by the fact, that social development is an important factor affecting the quality of life and social cohesion. However, it is less obvious whether or not the level of social development exerts an impact on economic performance.

The report begins with the analysis of relationship between social development and international trade, then we move to the relationship between social development and foreign direct investment, and finally we discuss the relationship between social development and economic growth. We find that while social indicators strongly affect trade flows, they affect FDI inflows in a limited way and they have no direct impact on economic growth. However, we have identified a number of indirect effects. In particular, the higher level of openness to international trade leads to increased FDI inflows. Furthermore, a higher level of openness to both international trade and FDI is positively related to a higher rate of economic growth. Therefore, social development affects growth at least through the channel of external openness.

We first analyze the results obtained for general measures of social development such as the Human Development Index (HDI) – the most general and widely available measure of social development, the Gini index – the most widely used index of income inequality, the Gender-related Discrimination Index (GDI) - the composite index measuring inequalities between men and women; the Gender Empowerment Measure (GEM) – another measure of gender inequality, and the Human Poverty Index (HPI) that measures deprivations of population in access to resources. Then, we analyze the results obtained for specific measures such as the level of education and infant mortality rate.

Due to data constraints, we are able to use only two of the aggregate measures of social development (HDI and Gini) in the panel regressions for the period 1980-2004. Our panel results were complemented with cross-section results for 2006 for both the whole sample and the sample of Mediterranean countries only. The cross-section approach allows for a much broader analysis of various aspects of social development captured by both aggregate and specific indices that became available only in the recent years. In our project, we analyze the trade data of exporting countries (all EU, OECD, and MENA countries) and of partner countries (all countries of the world above 200 thousand inhabitants). For convenience, we use the terms of "exporters" in the case of exporting countries and "importers" in the case of partner countries.

Social development and international trade

Our empirical results for the relationship between social development and international trade show that in the case of the HD index there exists a positive and statistically significant relationship between social development and the level of trade. This relationship exists both for the whole sample and in the case of cross-section regressions for 2006. There the HD index is positively related to exports and imports, while in the case of panel regressions we found the positive relationship to

exist only in the case of exports. However, in the case of the limited sample of Mediterranean countries only we were unable to confirm this relationship which may be due to a low variability of the HD index among these countries.

The empirical results for the Gini index show that in the case of cross-section regressions for 2006 for the whole sample there is a negative relationship between the level of the Gini index and the level of trade. This result suggests that a more equal distribution of income stimulates both exports and imports. However, this result has not been confirmed by the panel data analysis where the Gini coefficient was not statistically significant either in the case of exports nor in the case of imports. In the case of the sample consisting of only Mediterranean countries we were also unable to verify this relationship due to the small number of observations.

The empirical results for the GDI are statistically significant for both exporting and importing countries in the cross-section. These results confirm the positive relationship between the GDI and the level of trade. In other words, the higher value of the GDI index is associated with lower gender inequality. However, for a limited sample including only Mediterranean countries the GDI index appeared to be statistically significant only for the exporting country. This means that the lower level of gender inequality in the Mediterranean countries is positively related to their exports. The empirical results for the GEM reveal that it is positive and statistically significant only for the exporting country in the case of the cross-section. The lower gender inequality in economic participation and decision-making power is associated with a higher level of exports. The same result holds for the limited sample of Mediterranean countries. Finally, the empirical results for the HPI display a negative and statistically significant relationship for both exporting and importing. This means that the lower level of poverty is associated with the higher level of trade flows. This result is partially confirmed for the sample of Mediterranean countries in the case of reporters (exporters). This implies that the lower level of poverty in Mediterranean countries at least is positively related to their exports.

The disaggregation of the HDI into its components reveals that only some of them might affect international trade flows. In particular, we find that the lower infant mortality rate, which reflects the better quality of the healthcare system, is positively associated with exports both in the case of the cross-section regression for 2006 and in the case of the panel regression for the whole sample. The same result is obtained for the sample of the Mediterranean countries. At the same time, we did not find such a relationship for imports.

The results obtained for the level of education show that the literacy rate is positive and statistically significant for the importing country in the cross section for 2006 while the average level of schooling in the case of the panel regression is positive and statistically significant for the exporters. We do not confirm this result for the Mediterranean countries only.

The disaggregation of the GEM into its components in the cross-section regression for 2006 leads to mixed results. For example, the variable that measures political participation of women (i.e. the percentage of seats held by women in national parliaments) displays a positive sign. It means that the higher participation of women in parliament is positively related to the level of trade.

Finally, we studied the relationship between civil liberties and the level of trade. It turned out that in the case of the cross-country regression for 2006 the civil rights were statistically significant only for

the exporting countries while in the case of the panel data for both the exporting and importing countries. This means that the higher level of civil liberties is positively associated with the level of trade. The latter results were confirmed for the sample of Mediterranean countries.

Social development and foreign direct investment

Our empirical results for the relationship between social development and FDI inflows show that in the case of the HDI there exists a positive and statistically significant relationship between social development and the level of FDI. However, this relationship exists only for the whole sample in the panel regression and it is not confirmed in the case of cross-section regressions for 2006. The HDI has been found to shape foreign investors' decisions over a long time horizon, but not in any given year. Therefore, our empirical results only to some extent support the notion that higher level of human development attracts foreign investors.

The empirical analysis of specific components of the HDI based on the aggregate FDI inflows in the panel specification revealed that there is a positive relationship between life expectancy, the level of education and FDI inflows, while the relationship between the infant mortality rate and FDI inflows is negative. Therefore, a long and healthy life and the educational attainment have been found to be important FDI boosters. The role of education is more pronounced when coupled with positive income growth. On the other hand, decent standards of living are not critical to investors contemplating to locate their capital abroad unless income distribution is uneven.

However, not all of the aforementioned results were confirmed by the cross-section regressions. In particular, life expectancy in the importing countries hosting FDI turned out not to be statistically significant. In addition, the cross-section approach allowed us to identify the negative relationship between the HPI and FDI inflows, which means that a low level of poverty stimulates FDI inflows.

Moreover, the study of inward FDI determinants has revealed that there are crucial determinants of FDI inflows, which are robust to the selection of the estimation method and control variables, namely the degrees of openness to international trade and of civil liberties, which were statistically significant in all regressions. This can be interpreted as follows. First, the share of imports and exports in GDP plays pivotal role in attracting foreign investors, pointing to the fact that trade and FDI are complementary. Openness to trade should be a central part of development strategies because a more intense FDI inflow is its byproduct. Second, the prospect of social stability is conducive to FDI inflows. The fear of social and political turmoil is one of the most important barriers to foreign investment. In addition, a higher level of civil liberties, that is associated with the higher level of contract enforcement, promotes FDI and seems to be more important than gender equality policies.

It stems from our analysis that the greater commitment to gender equality is not an important facet of an FDI enhancing policy. Investment in education and health improvements are best suited to create an environment that encourages foreign investment. The greatest effort should however be made to maintain and to widen the degrees openness and of civil liberties. It should be noted that all these steps may turn out to be insufficient because the sample including Mediterranean countries attracts about 50 percent FDI flows less than countries sharing similar characteristics, but located in different parts of world.

Social development and economic growth

Our empirical results for the relationship between social development and economic growth demonstrate that there exists a positive and statistically significant relationship between the HD index and economic growth. However, this relationship should be treated with caution as the impact of this variable on growth was not theoretically obvious. Given the fact that none of the HDI social components were significantly related to GDP growth we hypothesize that that the significance of the HDI variable is driven mainly by the initial level of per capita GDP.

The component measuring life expectancy turned out not to be statistically significant as well as the impact of infant mortality rate on the rate of growth. Therefore, our empirical results suggest that proponents of efforts to improve health in developing countries, which have not already lowered infant mortality rates nor increased life expectancy, should rely on humanitarian rather than economic arguments. The third component of the HDI – education – was also not statistically significant. However, it should be remembered that there is a long lag between the actual investment in schooling and its ultimate impact on economic productivity. Nevertheless, improvements in educational activity do not translate into an upgrade in workforce quality for some 10–15 years, at least until the people who are now being educated finally enter the labour force. Therefore, our empirical analysis suggests that specific measures taken in favour of social development are not directly related to economic growth which would therefore continue to be explained by the set of standard explanatory variables used by economists: the initial level of GDP per capita, the investment rate, the inflation rate, the government's size, exchange rate variability, and openness to international trade and investment flows.

From the perspective of this report, we are particularly interested in the relationship between external openness and economic growth. The empirical results reveal that external openness to both international trade and FDI are positively related to the rate of economic growth. Even so, our empirical results demonstrated that the social development measures are important in determining both trade and FDI flows. Moreover, the positive relationship between social development and trade is stronger than the relationship between social development and FDI. At the same time FDI inflows are positively related to the level of trade openness. Although we were unable to confirm the existence of a direct relationship between social development and economic growth we found that social development affects growth in an indirect way through external openness.

Policy recommendations

Our empirical results demonstrated that the social development measures are important in determining the level of trade, foreign direct investment. According to these results, social development indicators directly affect trade and FDI patterns, while they have no direct impact on the rate of economic growth. However, they exert an indirect impact on growth as openness to trade and FDI are significant growth determinants. Thus, in our view, openness to trade should be a central part of development strategies as more openness to trade induces more intense FDI inflow and stimulates economic growth.

The majority of social development variables are positively related to both trade and FDI. However, the estimated impact of specific variables is highly differentiated. Among the aggregate variables, the most important role is played by the HDI and HPI.

The significance of the HDI variable is especially important for inducing exports and encouraging FDI inflows as it stems from our panel analysis of both trade and FDI flows. However, in the case of cross-sections our results are less clear-cut. The positive correlations between the HDI variable and trade and FDI flows are driven mainly by the quality of the healthcare system measured in our analysis by the infant mortality rate and various measures of the level of education.

This suggests that the investments in the healthcare and educational systems would result in the increased stock of human capital and consequently in a higher level of exports of Mediterranean countries. Moreover, investments in education and health improvements are best suited to create an environment that encourages foreign capital inflows. Although, we were unable to confirm these results for Mediterranean countries, due to the small number of observations, we believe that these general conclusions are valid also in the case of these countries.

The significance of the GEM and GDI variables is demonstrated only when relying on trade regressions. In that vein, the policy oriented towards more equal gender treatment in Mediterranean countries could be conductive to more trade. At the same time, our empirical analysis shows that greater commitment to gender equality is not directly affecting FDI inflows. However, the impact of the higher participation of women in political and economic life may also indirectly affect both FDI inflows and growth through increased trade openness.

Moreover, we identified a negative relationship between the HPI, trade flows and FDI inflows. This means that the lower level of poverty stimulates both trade and FDI inflows. Thus, the measures of combating poverty are important not only from the social point of view - the better the prospects of social stability - but can have a positive impact on the level of trade and FDI inflows.

Finally, the higher civil liberties are positively related to trade and FDI. Higher standards in keeping the rule of law are encouraging international trade and the enforcement of contracts may encourage the inflow of foreign direct investment. In spite of the fact that the conclusions and policy guidance based on regressions should be treated with some caution, the obtained results provide an additional rationale for intensifying reform efforts to address the problem of relatively low levels of external openness of Mediterranean countries. These results suggest that the investment in the social development would result in more FDI and trade, and only then higher income growth. This is similar to arguing, that the indirect effect of social development on growth via FDI and trade is the more important transmission channel of social development on growth, than the direct effect of social development. The estimated effects were robust and insensitive to the specification tests. Social development enhances growth only through its impact on FDI and trade; it could be that it encourages entrepreneurship and productive activity. However, through its impact on trade and FDI, it could still increase the productive capacity of an economy, drive job creation, bring innovation and new technologies, and boost income growth. In sum, we can be quite sure that although more openness brings greater efficiency, it does not automatically lead to higher growth rates. We must therefore presume that while some permanent effect probably exists, freer trade and FDI are only two of many factors accounting for improved growth performance.

Although the conclusions and policy guidance based on regressions should be treated with caution, the obtained results provide an additional rationale for intensifying the reform efforts to address the problem of low openness of the Mediterranean countries. It could be argued that an economy tends to grow better and is less prone to shocks, if it follows policies that foster economic efficiency. Sound

macroeconomic environment, liberalizing trade, and FDI to build an economy based on a nation's true comparative advantage - work in these areas is important, pursuing such policies is not likely to generate a growth miracle, but it is possible to improve Mediterranean countries' growth prospects over time.

Sommaire exécutif

L'objectif principal de ce rapport consiste à évaluer l'influence tant directe qu'indirecte d'indicateurs sociaux variés (tels que mesures du capital humain, éducation, inégalité, etc.), ainsi que l'impact de l'ouverture extérieure (en termes d'Investissements Directs Étrangers, et de commerce des biens et services) sur la croissance et la convergence économiques dans la région MENA. Dans tous ces domaines, des recommandations politiques seront également formulées. La motivation derrière ce rapport réside dans le fait que le développement social exerce un impact non négligeable sur la qualité de vie et la cohésion sociale. Il est cependant plus difficile de déterminer l'impact du développement social sur les performances économiques.

Dans un premier temps, le rapport examine le lien entre développement social et commerce international, puis entre développement social et investissements directs étrangers. Enfin la relation entre développement social et croissance économique sera abordée. L'analyse révèle que les indicateurs sociaux influencent fortement les flux commerciaux, qu'ils n'ont qu'un effet limité sur les flux d'investissements directs étrangers et aucun impact direct sur la croissance économique. Cependant, nous pouvons relever plusieurs effets indirects. Nous avons observé, en particulier, qu'un niveau élevé d'ouverture au commerce international conduisait à une augmentation des flux d'investissements directs étrangers. De plus, une large ouverture à la fois, au commerce international et aux IDE est lié positivement à un taux plus élevé de croissance économique. Ainsi, le développement social exercerait une influence sur la croissance, du moins par le biais de l'ouverture extérieure.

Tout d'abord, nous présenterons un bilan des résultats obtenus en matière de mesures générales de développement social, telles que l'indice de développement humain (IDH) –qui correspond à la mesure la plus générale et accessible du développement humain , le coefficient de Gini – l'indice le plus utilisé pour mesurer l'inégalité des revenus, l'indice de discrimination de genre (GDI) mesurant les inégalités entre hommes et femmes; le Gender Empowerment Measure (GEM) – une autre mesure d'inégalité basée sur le genre, et enfin l'indice de pauvreté humaine (IPH) qui mesure le degré de privation des populations défavorisées. Par la suite, nous évaluerons les résultats obtenus à partir de mesures spécifiques, telles que le niveau d'éducation et le taux de mortalité infantile.

À cause de données limitées, nous n'avons pu utiliser que deux mesures globales relatives au développement social (IDH et Gini) dans les régressions sur données de panel pour la période 1980-2004. Nous avons complété nos résultats en panel par les résultats en coupe pour 2006 sur l'ensemble de l'échantillon, ainsi que pour l'échantillon des pays méditerranéens. L'approche en coupe a permis une analyse plus complète des divers aspects du développement social, mesuré à la fois par les indices globaux et spécifiques devenus accessibles seulement ces dernières années. Dans le cadre de ce projet, nous analysons les données commerciales des pays exportateurs (tous les pays de l'UE, de l'OECD, et MENA), ainsi que ceux des pays partenaires (tous les pays du monde ayant plus

de 200 000 habitants). Pour des raisons pratiques, nous avons utilisé les termes « exportateurs » dans le cas des pays exportateurs, et « importateurs » pour désigner les pays partenaires.

Développement social et commerce international

Les résultats empiriques concernant la relation entre développement social et commerce international ont révélé dans le cas de l'indice de développement humain, l'existence d'un lien positif et statistiquement significatif entre ces deux variables. Ce lien est valable pour l'ensemble de l'échantillon ainsi que pour les régressions en coupe de 2006. Dans ce dernier cas, l'indice de développement humain est lié positivement aux exportations et aux importations, alors que dans le cas des régressions sur données en panel, ce même lien positif n'existe que concernant les exportations. Cependant, il est important de souligner que dans le cas de l'échantillon limité aux pays méditerranéens, il a été impossible de confirmer ce lien, probablement à cause de la faible variation de l'indice de développement humain dans ces pays.

Les résultats empiriques liés à l'indice Gini montrent que dans le cas des régressions en coupe de 2006, il existe une relation négative entre le niveau de l'indice Gini et le niveau de commerce pour l'ensemble de l'échantillon. Ce résultat laisse supposer qu'une distribution équitable des revenus stimulerait exportations et importations. Néanmoins, ce résultat n'a pas été confirmé lors de l'analyse sur données en panel car le coefficient Gini n'a pas été statistiquement significatif ni dans le cas des exportations ni dans celui des importations. En ce qui concerne l'échantillon uniquement constitué par les pays méditerranéens, le faible nombre d'obervations n'a pas permis de vérifier cette relation.

Les résultats empiriques pour l'indice GDI sont statistiquement significatifs dans le cas des pays exportateurs et importateurs lors de l'analyse en coupe. Ces résultats confirment la relation positive entre le GDI et le niveau de commerce. En d'autres termes, plus la valeur de l'indice GDI est élevée, plus l'inégalité des sexes diminue. Cependant, concernant l'échantillon des pays méditerranéens, l'indice GDI apparaît statistiquement significatif pour les pays exportateurs seulement. Cela implique que le faible niveau d'inégalité des sexes dans les pays méditerranéens est positivement lié à leurs exportations. Les résultats empiriques pour le GEM indiquent que ce lien est positif et statistiquement significatif seulement pour le pays exportateur dans le cas de l'analyse en coupe. Plus d'égalité dans la participation économique et la prise de décision entraîne un plus haut niveau d'exportation. Le résultat est le même pour l'échantillon des pays méditerranéens. Enfin, les résultats empiriques pour le HPI indiquent un lien négatif et statistiquement significatif dans le cas des pays exportateurs et importateurs. Cela implique qu'un faible niveau de pauvreté va de pair avec un niveau plus élevé de flux commerciaux. Ce résultat est partiellement confirmé pour l'échantillon des pays méditerranéens dans le cas des pays rapporteurs (pays exportateurs). Cela voudrait dire que le faible niveau de pauvreté dans les pays méditerranéens est pour le moins positivement lié à leurs exportations.

La désagrégation de l'indice de développement humain (IDH) en ses diverses composantes montre qu'une partie d'entre elles seulement est susceptible d'influencer les flux de commerce international. En particulier, nous avons constaté, que le faible taux de mortalité infantile, mesure reflétant une bonne qualité du système de santé, est associé positivement aux exportations dans le cas de la régression en coupe pour 2006 et dans celui de la régression pour l'ensemble de l'échantillon. Le même résultat a été obtenu pour l'échantillon des pays méditerranéens. Cependant, nous n'avons pas trouvé la même relation concernant les importations.

Les résultats obtenus relatifs au niveau d'éducation montrent que le taux d'analphabétisation est positif et statistiquement significatif pour les pays importateurs dans l'analyse en coupe pour 2006, alors que le niveau moyen de scolarisation dans le cas de la régression sur données en panel, est positif et statistiquement significatif pour les pays exportateurs. Ce résultat n'est pas confirmé pour les pays méditerranéens.

La désagrégation du GEM en ses composantes dans la régression en coupe pour 2006 a produit des résultats mitigés. Par exemple, la variable mesurant la participation politique des femmes (c.a.d. le pourcentage de sièges parlementaires tenus par des femmes) indique un signe positif. Cela voudrait dire que la forte participation des femmes dans les parlements nationaux est positivement liée au niveau de commerce.

Enfin, nous avons examiné la relation entre libertés individuelles et niveau de commerce. Dans le cas de la régression en coupe pour 2006, les droits civils sont statistiquement significatifs seulement pour les pays exportateurs, alors que dans le cas des données sur panel, ils l'ont été pour les pays exportateurs et importeurs. Autrement dit, le niveau élevé garantissant les libertés individuelles est positivement associé au niveau de commerce. Ces derniers résultats ont également été confirmés pour l'échantillon des pays méditerranéens.

Développement social et Investissements Directs Étrangers

Nos résultats empiriques concernant la relation entre développement social et flux d'IDE montrent que dans le cas de l'IDH, il existe une relation positive et statistiquement significative entre ces deux variables. Cependant, cette relation est valable seulement pour l'ensemble de l'échantillon de la régression sur données en panel et n'est pas confirmée dans le cas de la régression en coupe pour 2006. Notre analyse a montré que l'IDH influence les décisions des investisseurs étrangers sur le long terme, et non sur une année déterminée. Ainsi, nos résultats empiriques corroborent seulement de manière limitée, l'idée qu'un niveau élevé de développement humain attire les investisseurs étrangers.

L'analyse empirique des composantes spécifiques de l'IDH, basée sur les flux agreges d'IDE dans la specification en panel révèle l'existence d'une relation positive entre l'éspérance de vie, le niveau d'éducation et le flux des IDE. En revanche, la relation entre le taux de mortalité infantile et les flux d'IDE est négative. Par conséquent, il semblerait qu'une vie longue et saine, ainsi qu'un niveau élevé d'éducation, soient les facteurs-clés pour stimuler les IDE. Le rôle de l'éducation est plus prononcé lorsqu'il est couplé à une croissance positive des revenus. D'autre part, il semblerait que l'existence de conditions de vie décentes ne soit pas un critère important pour les investisseurs, qui envisagent de placer leur capital à l'étranger, à moins que la distribution des revenus soit irrégulière.

Néanmoins, il est important de souligner que les résultats mentionnés jusque-là, n'ont pas tous été confirmés par les régressions en coupe. En particulier, l'éspérance de vie dans les pays importateurs recevant des IDE, n'est pas statistiquement significative. De plus, l'approche en coupe nous a permis d'identifier la relation négative entre le HPI et le flux d'IDE, indiquant qu'un faible niveau de pauvreté stimulerait les flux d'IDE.

Par ailleurs, l'étude des déterminants d'IDE a montré qu'il existait des déterminants cruciaux affectant le flux d'IDE, qui sont robustes aux differentes méthodes d'estimation, en tenant compte de variables de contrôle. Il s'agit en particulier du degré d'ouverture au commerce international et des libertés individuelles, déterminants statistiquement significatifs dans toutes les régressions. Nous en proposons l'interprétation suivante. Tout d'abord, la part des importations et des exportations dans le PIB joue un rôle majeur dans l'attraction des investisseurs étrangers, indiquant ainsi que le commerce et les IDE seraient complémentaires. L'ouverture au commerce international devrait donc constituer un point central dans les stratégies de développement, puisque l'un de ses effets secondaires est l'intensification des flux d'IDE. Deuxièmement, la perspective d'une plus grande stabilité sociale attire les flux d'IDE. Inversement, la crainte du désordre social et politique constitue l'un des obstacles les plus importants aux investissements étrangers. De plus, un niveau plus élevé de libertés individuelles associé à une mise en application rigoureuse des contrats, promeut les investissements directs étrangers et, semble même plus efficace que les politiques d'égalité des sexes.

Notre analyse indique qu'un engagement accru dans la promotion de l'égalité des sexes n'est pas une facette importante des politiques visant à renforcer les investissements directs étrangers. Les investissements favorisant l'amélioration de l'éducation et de la santé sont adaptés à la création d'un environnement attirant les investisseurs étrangers. Les gros efforts devraient cependant etre portés sur le maintien et l'élargissement du degré d'ouverture au commerce, et aux libertés individuelles. Il est essentiel de souligner que toutes ces étapes risquent d'être insuffisantes, étant donné que l'échantillon des pays méditerranéens attire environ 50 pourcent de moins des flux d'IDE que les autres pays, ayant des caractéristiques similaires, mais situés dans d'autres parties du monde.

Développement social et croissance économique

Nos résultats empiriques concernant la relation entre développement social et croissance économique démontrent qu'il existe une relation positive et statistiquement significative entre l'indice de développement humain et la croissance économique. Cependant, ce lien doit être considéré avec prudence puisque l'impact de cette variable sur la croissance n'est pas évident d'un point de vue théorique. Étant donné qu'aucune des composantes sociales de l'IDH n'est significativement liée à la croissance du PIB, nous émettons l'hypothèse que la signification de la variable IDH est essentiellement déterminée par le niveau initial du PIB par habitant.

L'analyse a révélé, que les composantes mesurant l'espérance de vie et le taux de mortalité infantile, n'ont pas un impact statistiquement significatif sur le taux de croissance. Ainsi, au vu de ces résultats empiriques, nous recommandons aux partisans de l'amélioration de la santé dans les pays en développement qui ne connaissent pas encore une baisse du taux de mortalité infantile ni l'augmentation de l'espérance de vie, de s'appuyer sur des arguments humanitaires plutôt qu'économiques. La troisième composante de l'IDH – l'éducation – n'est statistiquement pas significative. Cependant, il est nécessaire de rappeler qu'il existe un long temps de latence entre l'investissement réel dans la scolarisation et l'impact final sur la productivité économique. Les progrès réalisés dans les activités éducatives ne se traduisent pas par l'amélioration de la qualité de la main d'œuvre avant une période de 10 à 15 ans au moins, le temps que les personnes bénéficiant de cette éducation, deviennent actives à leur tour sur le marché du travail. Ainsi, notre analyse empirique suggère que ces mesures spécifiques prises en faveur du développement social, ne sont pas directement liées à la croissance économique. Celle-ci continuera donc à être expliquée par le biais des variables explicatives standards utilisées par les économistes : le niveau initial du PIB par habitant, le taux d'investissement, le taux d'inflation, la taille du gouvernement, la variabilité du taux de change, et l'ouverture au commerce international et aux flux d'investissements.

Dans la perspective de ce rapport, nous sommes particulièrement intéressés par la relation entre l'ouverture extérieure et la croissance économique. Les résultats empiriques indiquent que l'ouverture extérieure au commerce international, ainsi qu'aux IDE est positivement liée au taux de croissance économique. De même, nos résultats empiriques ont prouvé que les mesures de développement social jouent un rôle important dans la détermination des schémas de commerce et des flux d'IDE. De plus, la relation positive entre développement social et commerce est plus forte que la relation entre développement social et IDE. Parallèlement, les afflux d'IDE sont positivement liés au niveau de l'ouverture au commerce. Bien qu'il nous soit difficile de confirmer l'existence d'un lien direct entre développement social et croissance économique, nous avons constaté que le développement social influait sur la croissance de manière indirecte via l'ouverture extérieure.

Recommandations générales

Nos résultats empiriques ont montré que les mesures de développement social étaient importantes pour déterminer le niveau de commerce et d'investissements directs étrangers. Selon ces résultats, les indicateurs de développement social influent directement sur le commerce et les investissements directs étrangers, mais ils n'ont pas d'influence directe sur le taux de croissance économique. Cependant, ils exercent un effet indirect sur la croissance dans la mesure où l'ouverture au commerce international et aux IDE constituent des déterminants significatifs de la croissance. Ainsi, nous pensons que l'ouverture au commerce devrait figurer au centre des stratégies de développement, étant donné que plus d'ouverture au commerce entraîne l'intensification des flux d'IDE, et, stimule ainsi la croissance économique.

La majorité des variables du développement social est liée positivement au commerce et aux investissements directs étrangers. Cependant, l'impact estimé des variables spécifiques est très différencié. Parmi les variables agregées, l'IDH et l'IPH sont celles qui jouent le rôle le plus significatif.

La signification de la variable IDH est particulièrement importante pour stimuler les exportations et encourager les afflux d'IDE, comme l'a montré notre analyse sur données en panel à propos du commerce et des flux d'IDE. Néanmoins, dans le cas des régressions en coupe, nos résultats sont moins précis. Les corrélations positives entre la variable IDH, le commerce, et les flux d'IDE sont déterminées principalement par la qualité des systèmes de santé, mesurée dans notre analyse par le taux de mortalité infantile et d'autres mesures relatives au niveau d'éducation.

Cela laisse penser que les investissements dans les systèmes de santé et d'éducation, contribueraient à accroître le capital humain et par conséquent, le niveau d'exportations des pays méditerranéens se verrait lui aussi augmenté. De plus, les investissements visant à améliorer l'état de l'éducation et de la santé sont les plus adaptés à la création d'un environnement favorable aux afflux de capitaux étrangers. Même si, faute d'observations, nous n'avons pas pu confirmer ces résultats pour les pays méditerranéens, nous pensons que ces conclusions générales sont valables également dans le cas de ces pays.

La signification des variables GEM et GDI a été verifiee uniquement dans le cas des régressions sur les variables d'echanges. Il en decoule qu'une politique axée vers un traitement des sexes plus égalitaire dans les pays méditerranéens pourrait conduire à une augmentation du commerce. Parallèlement, notre analyse empirique a montré qu'un engagement plus prononcé en faveur de l'égalité des sexes n'affectait pas directement les flux d'IDE. Cependant, la participation plus active des femmes dans la vie politique et économique est susceptible d'influencer indirectement les flux d'IDE ainsi que la croissance, par le biais de l'ouverture au commerce extérieur.

De plus, nous avons identifié une relation négative entre l'IPH, les flux commerciaux et les flux d'IDE. Autrement dit, un faible niveau de pauvreté stimulerait le commerce ainsi que les flux d'IDE. Par conséquent, les mesures visant à combattre la pauvreté sont importantes non seulement d'un point de vue social (c.a.d., meilleures perspectives de stabilité sociale), mais également économique, puisqu'elles peuvent avoir un impact positif sur le niveau de commerce et de flux d'IDE.

Enfin, l'existence de libertés individuelles est positivement liée au commerce et aux IDE. De hauts standards dans le respect de la loi encouragent le commerce international, et la mise en application rigoureuse des contrats stimulera sûrement les flux d'investissements directs étrangers. Malgré le fait que les conclusions et recommandations basées sur régressions doivent être traitées avec précaution, les résultats obtenus fournissent une raison supplémentaire d'intensifier les efforts de réforme afin de faire face au problème des niveaux relativement faibles d'ouverture extérieure des pays méditerranéens. Ces résultats suggèrent que les investissements dans le développement social conduiraient dans un premier temps à une augmentation des flux d'IDE et de commerce, et seulement dans un deuxieme temps, à une croissance des revenus. Cela revient à affirmer que l'effet indirect du développement social sur la croissance via les IDE et le commerce, est la voie de transmission la plus importante du développement social sur la croissance – davantage que l'effet direct du développement social. Les effects estimés sesont montrés robustes aux differentes spécifications. Le développement social renforce la croissance seulement via son impact sur les IDE et le commerce; il est possible qu'il encourage aussi la prise d'initiative des entreprises et des activités productives. Cependant, par le biais de son impact sur le commerce et les IDE, il pourrait renforcer la capacité productive de l'économie, contribuer à créer davantage d'emplois, apporter de l'innovation et des nouvelles technologies, et enfin, stimuler la croissance des revenus. En résumé, bien que davantage d'ouverture extérieure conduise à une plus grande efficacité, cela n'entraîne pas pour autant automatiquement des taux de croissance plus élevés. Nous devons donc suppposer que malgrè l'existence probable d'un effet permanent, le libre-échange et les IDE sont deux facteurs parmi beaucoup d'autres, qui expliqueraient une meilleure performance de la croissance.

Malgré le fait que les conclusions et recommandations basées sur les régressions doivent être traitées avec précaution, les résultats obtenus donnent une raison supplémentaire d'intensifier les efforts de réforme pour faire face au problème des niveaux relativement faibles d'ouverture extérieure des pays méditerranéens. On peut affirmer que l'économie s'épanouiera davantage et sera moins vulnérable aux chocs, si elle poursuit des politiques encourageant une plus grande éfficacité économique.

Un environnement macroéconomique stable, la libéralisation du commerce et des IDE, sont indispensables pour la construction d'une économie basée sur le véritable avantage comparatif d'une nation. Travailler dans ces domaines est essentiel, tout en restant conscient que la poursuite

de ces politiques ne pourra pas générer une croissance miraculeuse, mais il est tout de même possible d'améliorer les perpectives de croissance

INTERNATIONAL OPENNESS AND SOCIAL DEVELOPMENT AS ENDOGENOUS DETERMINANTS OF GROWTH AND CONVERGENCE OF THE COUNTRIES IN THE MENA REGION

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Introduction

The level of social development among the MENA countries has been relatively low as documented by the first *Arab Human Development Report (ADHR) 2002* and discussed by Rauch and Kostyshak (2009). The first AHDR identified gaps in knowledge, freedom, and women's empowerment as the three critical deficits. Despite the fact that in the past decade the MENA region has made a significant progress in social and economic development, as documented by the most recent *Arab Human Development Report (ADHR) 2009*, it is still lagging behind the developed parts of the world economy.[1] This is visible not only in terms of social development outcomes such as life expectancy, income inequality, the level of education, the quality of the healthcare system, but also has bearing on economic development outcomes such as economic growth, openness to international trade, and foreign direct investment (FDI).

Nowadays the governments of developing countries across the world compete to attract FDI and advance trade on the grounds that these instruments will enhance growth and convergence, reduce poverty, and various social inequalities. However, attracting foreign capital or advancing trade liberalization is an instrument rather than a goal in itself. Many governments and international organizations monitor social progress regarded as an ultimate objective and outcome of economic growth. The unexplored question is whether the level of social development can stimulate international trade, attract FDI and influence the rate of economic growth.

Previous attempts at providing empirical evidence for the idea that social development promotes economic growth have met with mixed success. In the quite extensive empirical literature on economic growth, variables reflecting social development only occasionally prove significant and robust determinants of growth, as reflected in the literature reviews of Sala-i-Martin (1997), Durlauf and Quah (1999), and Florax et al (2001).

A great number of studies have analyzed the social impact of liberalization policies in the MENA countries, particularly in the context of the Euro-Mediterranean Partnership, launched in 1995. They all have emphasized the effects of the opening up of economies on

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[1] According to the AHDR (2009, p. v) "… since the publication of the first volume in the series, the region's human development fault lines have grown more complex, and in some cases deepened. While there has been some improvement in quality of life in some countries, there are still too many people in the Arab region living insecure lives, too many people living under persistent pressures that inhibit them from realizing their potential as human beings, and too many traumatic events cutting lives short."

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income disparities, employment, public finances and loss of fiscal revenues (Diwan and Walton 1998, Zaafrane and Mahjoub 2000, Khader 2001, Martin 2004).

Yet the opposite causal link between social development and economic growth has been less thoroughly explored although it is of significant importance. Indeed, it is worthwhile noticing that since the 1960s a constant improvement in MENA's human capital has taken place, whereas economic growth has slowed down in the 1980s and 1990s (MENA development report, 2008). These developments have led researchers to re-examine the link between international openness, economic growth and development. However, the empirical evidence on the relationship between social development, international trade, FDI inflows and the rate of economic growth still remains scarce.

Concerning the impact of social indicators on growth, we can point to the studies by Ranis, Stewart and Ramirez (2000) and by Ranis and Stewart (2005), who analyzed in depth the connections between economic growth and human development across various developing countries. They emphasize that a higher level of human development affects the economy through enhancing people's capabilities and consequently their creativity and productivity. For them, the health and education of a population are among the main determinants of growth of output and the pattern of exports, and constitute an important ingredient in a country's capacity to adopt foreign technology effectively. Empirical evidence at both micro and macro levels tends to support the importance of these relationships. However, there is no automatic connection between an improved level of human development (in terms of income distribution and HDI) and increase in GDP per capita. Savings, investment rates, technology choice and the overall policy setting account for the variations in economic growth across societies. Therefore, the findings of their research indicate that focus on human development must be the cornerstone of any economic reform program because economic growth itself will not be sustained unless preceded or accompanied by improvements in human development.

Among the specialists that have conducted research to determine whether or not social development influences economic growth in MENA countries, special attention has already been directed in the past to the role of education, income distribution and gender equality in several studies. Richards and Waterbury (1996) provide compelling reasons to believe that education increases productivity and insist on the need for improved quantity and quality of education in Middle Eastern countries if economic growth is to be stimulated. The problem is that empirical evidence demonstrating the education-economic growth relationship shows mixed results. Indeed, the MENA development Report of the World Bank (2008) emphasizes that despite progress in education and considerable resources invested in this sector, the

relationship between education and economic growth has remained weak. In particular, the divide between education and employment has not been bridged, the quality of education continues to be disappointing and female literacy still remains low.

One of the earliest studies by Pritchett (2001) tests the impact of investment in human capital on economic growth in a panel of 86 countries. The results show that there is no significant effect of education on economic growth. Makdisi, Fattah and Liman (2003) conducted a more comprehensive study of the determinants of economic growth in the MENA region and they came to the same conclusion. Thus, the MENA experience suggests that sole investment in human capital is not sufficient to generate faster economic growth. However, Nabli and Verganzones-Varoudakis (2004) found that improvements in the stock of human capital (in terms of lesser infant mortality and additional years of primary schooling of the population) have constituted a clear engine of growth for MENA countries. According to their estimates improvements in human capital have contributed to an average annual increase of 0.9 to 1.1 points of the GDP per capita growth rate since the beginning of the 1980s. In a similar vein, Page and Underwood (1997) point to the significant contribution of human capital accumulation to the economic growth of Morocco and Tunisia, after trade liberalization with the EU. Therefore, while there is broad consensus on the need to invest in human capital, the relationship between education and economic growth is still inconclusive. The MENA development report of the World Bank (2008) advances a few explanations for the existing discrepancy between expectations and empirical findings. In particular, despite heavy investment in education the local labour markets were not able to absorb the skilled workers.

Regarding the social indicator of income inequality, Daymon and Guimet (2007) argue that the economic growth in MENA countries has not yet reached the necessary level that reduces inequalities automatically. Applying the theoretical literature on the link between growth, inequality and equity, they recommend the application of the pro-poor development strategy that focuses on the poorest layers of the population. Dealing with the same subject, Adams and Page (2003) used cross-country evidence to show that the reason for MENA's continued success at maintaining relatively low rates of poverty in the face of stagnant economic growth can be attributed to international remittances and public sector employment.

Another social development indicator that might influence economic growth deals with gender equality. It may be fair to characterize the thrust of the literature on the subject as indicating that gender inequalities in education impede economic growth (World Bank, 2001). Gender inequality in other dimensions besides education is associated with lower rates of

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growth but there is limited macroeconomic evidence to show that gender inequality in employment adversely affects economic growth (Klasen, 1999).

Yet, another important aspect of economic growth in MENA countries is related to the possible influence of social development on FDI inflows to MENA countries. Generally, developing countries have recently increased their share in the total of world FDI flows, raising an interest in the study of FDI determinants. It has been largely recognized that FDI flows supply additional resources to the developing countries that can improve their economic performance, through technological progress, improvement in factors' productivity and incentives to national investment. Thus, a better knowledge of the determinants of FDI is crucial for developing strategies to promote long-term economic development.

In regard to the MENA region, previous literature has emphasized the relative scarcity of FDI flows, compared to the European Union and to other developing and emerging countries (Hisarciklilar et al., 2006). However, according to the last report of the FEMISE (2009), the flow of foreign investment into Mediterranean Partners in recent years has reached significantly higher levels. Henry and De Saint-Laurent (2007) assess the evolution of FDI in MENA countries in recent years, as well. They underline among the factors lying behind the increase of FDI, a strong energy-driven economic surge that has had a significant effect in terms of the development of oil and gas projects, the reinvestment of substantial sums of petrodollars in the Mediterranean, and the announcement of major Algerian-style infrastructure programs, which attracted investors, capital and projects. Empirical research on FDI in MENA countries is relatively scarce and comparisons among studies are difficult because they differ in terms of variables, methodologies and characteristics of FDI.

One of the first studies was performed by Kamaly (2002), who used a dynamic panel model covering the period 1990-1999. In his study, economic growth and the lagged value of FDI/GDP were identified as the only significant determinants of FDI flows to the MENA region. However, this approach, as in most other studies on FDI in developing countries, did not cover the most recent periods and used a small sample, thus raising questions about the consistency and efficiency of the coefficients of the dynamic model. In a more recent study, Caetano and Galego (2009) observe that the fundamental economic variables (GDP and openness) display positive and significant effects on FDI performance in MENA countries, confirming Kamaly's results. They also underline the importance of institutional quality to FDI performance. There is a substantial recent literature that highlights the relative contribution of institutional factors to FDI inflows to MENA countries (Chan and Gamayel 2004, Méon and Sekkat 2004, Daniele and Marani 2006).

Regarding other social determinants of FDI, such as labour standards and human development, relatively little research has been done so far. Kucera (2002) conducts an extensive study using a sample of up to 127 countries between 1993 and 1997, with FDI as a share of global FDI as his dependent variable. He finds that a higher degree of female representation in administrative and managerial positions appears to attract FDI, whereas female representation in other occupations has no effect. Interestingly, the results also indicate that a higher literacy rate or degree of educational attainment in women relative to men increases the share of FDI received by a country.

Focusing specifically on the MENA region, Allessandrini and Resmini (1999) investigated the determinants of FDI inflows in Central and Eastern Europe and in the Mediterranean region over the period 1990-97, and got different results for these two groups of countries. For Central and Eastern Europe, the results indicated a significant positive effect of market size and openness on FDI decisions, while human capital and the degree of industrialization seemed to be negatively related to FDI flows. For the Mediterranean region, the degree of industrialization and human capital positively affected FDI flows, whereas openness and risk factors had a negative effect, and market size seemed to play an insignificant role. These results challenged Kolstad and Tøndel (2002) who argued that social development issues play a relatively minor role in influencing levels of FDI in developing countries, as compared to the major traditional determinants relating to market size, openness to economy, and level of previous FDI. Another important aspect of the FDI analysis is the link between direct investments and economic growth in MENA countries that remains relatively unexplored. The notable exception is the study by Jallab, Gbakou and Sandretto (2008), who analyze the possible influence of FDI on economic growth in MENA countries over the period 1970-2005 but find no independent impact of FDI on economic growth. In their view the positive impact of FDI on economic growth depends on macroeconomic stability. Therefore, this issue requires further studies.

Finally, regarding studies on the link between social development and international trade in MENA countries, it seems that no specific research on the subject has been conducted yet. The latest report of the Femise (2009) points to a greater opening of MENA countries to world trade of goods since the 2000s but still with serious vulnerabilities. In this light it seems that there are sufficient motives to further investigate these issues. Particular attention should be given to the role of social indicators, such as health indicators, income distribution, equity considerations and gender relations - that has not been tested yet. The study of this subject

deserves particular attention since it may provide useful practical insights for the long-term economic and social development in these countries.

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The main goal of the report is to evaluate the direct and indirect influence of various social indicators (human capital measures, education, inequality etc.) and aspects of openness (FDI and trade in goods and services) on growth and convergence in the MENA region. First, we are going to provide a comprehensive analysis of the determinants of trade and FDI with an emphasis put on the level of social development and different forms of inequality in the MENA countries taking into account the endogenous and co-dependent nature of growth and social indicators, having controlled for economic variables. Therefore, we are going to investigate these issues holistically taking into account the interdependencies between openness measures and social variables in their impact on growth. We believe that these mechanisms are crucial for reaching convergence of the MENA region to the more advanced economies.

The report aims at providing a thorough analysis of these issues in the context of catching-up process of MENA region with developed countries. In order to investigate the role of the above factors, the report focuses on the following three issues:

1. The first goal of our report is to provide a comprehensive analysis of determinants of international trade and FDI including social indicators such as the level of education and inequality. The analysis is based on generalized gravity models derived from the recent theories of international trade and of multinational enterprise and employs standard econometric methods such as panel regressions, which are commonly used tools in the international economics literature. For instance, we investigate whether increases in education and lower income inequality affect in a positive way international trade and FDI flows.

2. Next, we analyze the impact of social indicators, inequality measures and education on the rate of economic growth in the open economy setting. We extend the standard approach to modelling growth in open economies by hypothesizing that inequality and human capital simultaneously affect both growth and aspects of openness, the latter being regarded as endogenous

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variables. Thus, we investigate the influence of social factors on growth, both directly and indirectly via the external openness to trade and FDI.

The value added of current research resides in the selection of likely determinants of economic convergence. External openness and, more recently, human capital are acknowledged to be among prominent boosters of the development process while relatively little attention has been devoted to the role of social capital. Moreover, according to many theoretical models of international trade and multinational enterprise human capital (and knowledge capital) is an important factor in determining the pattern of trade and FDI flows.

Human capital usually refers to the stock of skills and knowledge embodied in the ability to perform labour so as to produce economic value. It includes the skills and knowledge gained by a worker through education and experience. According to Gary Becker (1964) human capital is similar to "physical means of production", such as factories and machines. One can invest in human capital (via education, training, medical treatment) and one's output depends partly on the rate of return on the human capital one owns. The human capital literature often distinguishes between "specific" and "general" human capital.

Specific human capital refers to skills or knowledge that are useful only to a single employer or industry, whereas general human capital (such as literacy) is useful to all employers. The firm specific human capital is risky, since firm closure or industry decline lead to a waste of skills that cannot be transferred (the evidence on the quantitative importance of firm specific capital is unresolved). Our study is related to the analysis of general human capital, being important for all companies, although in a broader context of social development.[2] In the case of an open economy, on the one hand the human capital can be transferred from abroad by international trade and FDI, and on the other domestic human capital accumulation can encourage trade and FDI.

Social development is about creating an environment in which people can develop their full potential and lead productive, creative lives in accord with their needs and interests, and thus improving the usage of human capital. This definition of social development is accepted by both liberal and socio-democratic economists and politicians, because it is akin to postulating the "equality of chances for everybody". According to the Arab Human Development Report (AHDR 2009, p.V) people are the real wealth of nations, and investing in their human development is the surest way to achieve sustainable, stable economic growth.

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[2] According to Markusen (2002) another notion of human capital is related to the knowledge capital used by multinational firms. It consists of patents, blueprints, procedures, and other proprietary knowledge, and finally marketing assets such as trademarks, reputations, and brand names.

The AHDR (2009) argues that "… ensuring human security leads not only to more opportunities for human development, but also enables states to benefit sustainably from the environment, to earn legitimacy in the eyes of the governed, to benefit from diversity, to fortify economies against global vicissitudes, to reach a higher level of food security, to imbue societies with health, and, last but not least, to be able to address sources of conflicts, and possibly avert them. Approaching human security in this way, the present report was able to use the concept as a lens through which to view a broad range of dimensions affecting people's lives: environmental security, the state's performance in guaranteeing human security, the human security of vulnerable groups, economic security, nutrition and food security, health and human security, and the human security impact of conflict and occupation".

Even small increases in a country's growth rate can result in dramatic changes in living standards over just one generation. Therefore, our project is motivated by the need of a comprehensive analysis of the social and international framework conducive to prosperity and convergence of the Mediterranean countries. In this context, it is necessary to focus on analysis of the relationship between social development and economic performance. This would allow identifying viable policy instruments. In our opinion, it seems that the European Union will not be able to significantly finance education and fight poverty in the MENA countries, or act as a recipient of migrants from the latter or improve the institutional framework by providing significant development aid given its limited resources. However, it is possible that the EU may serve as a major actor in terms of being a major foreign investor or the biggest trading partner both in goods and services.

The uniqueness of our study comes from a comprehensive approach in contrast to previous studies[3]. We study the role of social development in stimulating international trade, FDI and economic growth. Moreover, we regard the growth process as an outcome of mutually dependent mechanisms of social development and external openness. In particular, we take in account the endogenous nature of FDI and trade flows, considering them as independent growth determinants. We attempt to fill the gap existing in the literature by postulating that social indicators may have both direct and indirect impact on growth working through two channels of external openness: international trade and FDI.

The structure of this report is as follows. In Chapter 1 we describe different indicators measuring the aggregate level of social (human) development, income and gender

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[3] See, among others, Sekkat (2004), Cecchini and Lai Tong (2004), Cheris and Sabri (2007), and Silber (2000).

inequalities, and civil liberties. We start with description of aggregate measures of human and social development. These include the Human Development Index (HDI) and the Quality of Life Index (QLI). Next we present selected measures showing income and gender inequalities within particular societies. These include the Gini index as well as the Gender-related Development Index (GDI), the Gender Empowerment Measure (GEM) and the Human Poverty Index (HPI). Note here that by focusing on inequalities, this report assumes implicitly that social development is hampered by inequalities of outcomes and not only by inequality of chances. It is a more progressive definition of social development than the one usually accepted by neoliberal economists. Finally, we describe some disaggregated measures of social development. These include GDP per capita, the life expectancy, the infant mortality rate, and the various measures of the level of education. In addition to this we devote some attention to civil liberties that allow for social cohesion.

In Chapter 2 we show how the MENA countries perform, over time and in comparison with other groups of countries, in terms of various social indices that have been discussed in Chapter 1. For a broader perspective we show how these countries perform compared to the "old" members of the European Union (EU-15), all EU-27, the new member states of the EU (EU-NMS-12), OECD and other non-OECD countries (that proxy for developing countries). The descriptive analysis shows that MENA achieved immense progress in many aspects of social development gradually approaching the levels observed in the new member states of the EU in the last decade, however, compared to the old EU members (EU-15) the gap is still substantial.

In Chapter 3 we study the empirical relationship between social development and international trade flows using the extended gravity model and standard econometric techniques. We conduct our analysis in three dimensions: the panel analysis covering all countries and years 1980-2006, the cross section analysis for all countries in the last year of the sample - 2006 and the cross section analysis for Mediterranean countries only. We study the impact of the aggregate measures of social development as well as particular components of these measures discussed in Chapter 1. The empirical results generally show that in the majority of cases there is a positive and statistically significant relationship between international trade flows and the level of social development. In the case of cross country analysis we find that some measures of income and gender inequality are negatively related to trade flows, which means that reduced inequality stimulates international trade.

In Chapter 4 we study the empirical relationship between social development and foreign direct investment flows. We start with identifying the factors influencing the total

inward FDI flows in a wider context based on the sample of over 150 countries and over an extended period of 25 years. Then we investigate the determinants of bilateral FDI flows in the MENA countries. We devote special attention to the relationship between social development indicators and FDI inflows. The empirical results generally show that in the majority of cases there is a positive and statistically significant relationship between FDI inflows, the level of trade openness and the level of social development.

In Chapter 5, given the results of our analysis in Chapters 3 and 4, we study the impact of social indicators on growth and convergence in the context of open economy. We hypothesize, that there may be both direct and indirect positive effects of social development on the rate of economic growth. Our empirical results only partly support this hypothesis as we were unable to confirm a direct relationship between social development and growth. However, we were able to identify an indirect relationship between social development and economic growth. The indirect effects work through the positive relationships between social development, FDI and trade flows that then positively affect the rate of growth.

Finally, in the concluding chapter we present summary of our main results and policy recommendations.

Chapter 1

Social development: key concepts and measures used in international studies

In this chapter we present various measures of social development that might have impact on flows of international trade, amounts of FDI flows, and economic growth. We start with a description of aggregate measures of human and social development. These include the Human Development Index (HDI) and the Quality of Life Index (QLI). Next, we present selected measures showing income and gender inequalities within particular societies. These include the Gini index as well as the Gender Development Index (GDI), the Gender Empowerment Measure (GEM) and the Human Poverty Index (HPI). Finally, we describe some disaggregated measures of social development. These include life expectancy, infant mortality rate, and the various measures of the level of education. In addition to this we devote some attention to civil liberties that allow for social cohesion.

1.1 Indices measuring overall level of social development

As shown in the previous section, there are several definitions of social and human development. In this chapter, we will focus only on quantifiable measures assessing the level of social development. The best known indices were elaborated and reported in a regular way by United Nations Development Programme (UNDP). Therefore, the next section of the report draws heavily on the last edition of Human Development Indices (2008).

1.1.1 Human Development Index: The most popular measure of social development

Human development is a process in which people can develop their full potential and lead productive, creative lives in accord with their needs and interests. It is a broad concept that has many dimensions. The Human Development Index (HDI) is the original and best-known composite index. Among the most important dimensions are: healthy life, access to knowledge, and a decent standard of living. The first Human Development Report (HDR), presented in 1990, introduced the HDI by combining indicators of income, education, and health into a single index. By ranking countries according to their HDI value, the HDR has helped to shift the debate away from GDP per capita as the only measure of development. The construction of the HD index is shown in Graph 1.1.

Graph 1.1 Construction of Human Development Index

| DIMENSION | A long and healthy life | Knowledge | | A decent standard of living |
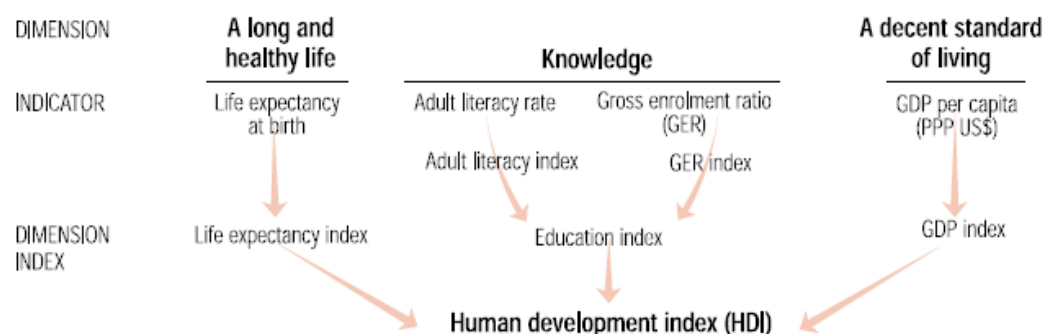
Source: Human Development Indices (2008), technical note, p. 51.

The HD index measures country's average achievement in attaining:

A long and healthy life (as measured by life expectancy at birth).

Access to knowledge (the adult literacy rate and the combined gross enrolment ratio (GER) in primary, secondary, and tertiary education).

A decent standard of living (as measured by the GDP per capita expressed in purchasing power parity [PPP] US dollars).

These three dimensions are standardized to values between 0 and 1, and the arithmetic mean is taken to calculate HDI value in the range 0 to 1. The equal weights are not crucial for the level of indices. The application of other weights (e.g. 0.25; 0.25 and 0.5) does not change significantly the ranking of countries, according to HDI indices[4].

Thresholds are used to classify HDI values as high, medium or low (at or above 0.800; between 0.500 and 0.800; and below 0.500, respectively). The ranking of MENA countries based on HDI indices, in comparison to EU-15, OECD and other groups of countries, will be discussed in the second chapter of our report. The differences among countries with high and low levels of HDI are very important not only in terms of GDP per capita. For example, the life expectancy in the top 20 countries is close to 80 years, but in one of the bottom 20 countries, life expectancy is only 49 years on average.

Since its inception the HDI has been generally regarded a useful measure of human development. In particular, in the context of the Arab countries Rauch and Kostyshak (2009) have recently used this index. We will also use the HDI indices as a first and most general proxy measuring the level of social, or human, development in all chapters of our report. The

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[4] Human Development Indices (2008), p. 4.

HD index will be used as one of crucial variables explaining the level of international trade, foreign direct investment (FDI) and economic growth. The HD index has some shortcomings as well, nevertheless it is used more often than any of the alternative measures of social development. Before going into details of the weaknesses of HDI, we discuss briefly another aggregate index – the Quality of Life Index (QLI), which is aimed at measuring the level of social development.

1.1.2 Quality of Life Index (QLI)[5]

Some of the shortcomings of HDI are associated with limited number of variables being analyzed, arbitrary selection of weights assigned to those variables and lack of measures reflecting real, social life of the analyzed society. The QLI proposed by the Economist Intelligence Unit (EIU) is aimed at overcoming some of these shortcomings. It is based on a unique methodology that tries to link the results of subjective life-satisfaction surveys to the objective determinants of quality of life across countries.

The authors of the QLI methodology started with subjective life-satisfaction surveys. These surveys, as opposed to surveys of the related concept of happiness, are preferred for a number of reasons. Authors of these surveys ask people how satisfied they are with their lives in general[6]. The results of surveys are treated as a starting point for deriving weights for various determinants of quality of life across countries, in order to calculate a summary index. The average scores from life-satisfaction surveys[7] are then related in a multivariate regression to various factors that have been shown to be associated with life satisfaction. Only nine factors appeared to be statistically significant and can explain more than 80 per cent of the inter-country variation in life-satisfaction scores. The coefficients in the estimated equation weight automatically the importance of the various factors. The authors argue that their methodology allows to create a more objective index than HDI in which variables and their weights are set in an analysis (regression) of determinants of life-satisfaction surveys.

The statistically significant variables reflect health, material well-being, political stability and security. Family relations and community life followed these. Next in order of importance were variables describing climate, job security, political freedom and gender equality.

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[5] The QLI was elaborated by the Economist Intelligence Unit in 2005 (http://www.eiu.com/).
[6] A typical question on the four-point scale used in the EU's Eurobarometer studies is, "On the whole are you very satisfied, fairly satisfied, not very satisfied, or not at all satisfied with the life you lead?"
[7] The results of surveys (on a scale of one to ten) were assembled for 1999 or 2000 for 74 countries.

Based on the above-described methodology the following nine factors, reflecting different aspects of social development, entered into the QLI index:

Health: Life expectancy at birth (in years). Source: US Census Bureau

Family life: Divorce rate (per 1,000 population), converted into index of 1 (lowest divorce rates) to 5 (highest). Sources: UN; Euromonitor

Community life: Dummy variable taking value 1 if country has either high rate of church attendance or trade-union membership; zero otherwise. Source: World Values Survey

Material well-being: GDP per person, at PPP in US dollars. Source: Economist Intelligence Unit

Political stability and security: Political stability and security ratings. Source: Economist Intelligence Unit

Climate and geography: Latitude, to distinguish between warmer and colder climates. Source: CIA World Factbook

Job security: Unemployment rate (%.) Source: Economist Intelligence Unit

Political freedom: Average of indexes of political and civil liberties. Scale of 1 (completely free) to 7 (unfree). Source: Freedom House

Gender equality: measured using ratio of average male and female earnings. Source: UNDP Human Development Report

The QLI was calculated in 2005 for 111 countries. The ranking of countries according to QLI is correlated to the GDP per capita ranking, but in some cases, the discrepancies are very large[8]. They result from other (than financial) aspects of social or political life of the societies.

Despite some incontestable merits of the QLI, we will not use this index in our econometric analysis. Our decision is based on the following arguments.

Firstly, the main goal of the report is to analyze the impact of social development and human capital on trade, FDI and growth. So, the quality of human capital - according to Gary Becker and other authors - depending mainly on the level and quality of education, is probably much more relevant than the quality of life. Therefore the QLI can be an important index measuring the "happiness of the society", but not necessarily the level of social development affecting trade, FDI and growth.

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[8] The largest discrepancies in ranking between GDP per capita and value of QLI are in the case of the Russian Federation (-50) and Sri Lanka (+48). Russia is 105-th in QLI ranking, while Sri Lanka is 43-rd.

Secondly, some factors (variables) analyzed by the authors of QLI appear to be somewhat arbitrary from an economic perspective. Especially measures reflecting (i) family life (divorce rate), (ii) community life (rate of church attendance or trade-union membership) and (iii) political stability and security seem to be a bit controversial. Moreover, the construction of the community life variable would make the interpretation of the econometric results difficult since trade-union membership and church attendance are quite distinct concepts in economics.

Finally, there are important data problems as the QLI is available only since 2005 and for a smaller number of countries than HDI. Therefore, it is impossible to use this measure in panel regressions, in which we analyze long run processes. The limited availability of this measure in terms of the time span covered would be especially troublesome for the empirical growth analysis. In addition, the QLI is available for 111 countries only, while the HDI is available for a broader sample of 179 countries. Thus, the limited availability of QLI indices discouraged us to use them in the econometric studies.

On the other hand, however, we will study the impact of some variables that are components of the QLI index, for which data are available for a longer period. For example, we will analyze the impact of life expectancy, GDP per capita, and gender discrimination subsequently on international trade, FDI and growth.

In our study we will use the general HD index, which has some merits and some clear shortcomings as well. The HDI relies only on national averages; it does not reflect differences in human development within countries, the effects of inequality on human development, nor insights into the status of the poorest and most deprived members of society. Therefore, new more disaggregated measures were introduced to address some of these drawbacks. These measures will be discussed in the following section.

1.2. Indices measuring selected aspects of social life

In the last two decades, many developing countries, such as China and India as well as post-communist countries from Central and Eastern Europe (CEE), have recorded impressive rates of economic growth and have increased significantly their levels of GDP per capita. Nonetheless, the gap between the rich and poor is widening within many countries and so are the human development achievements among different socio-economic groups. Graph 1.2 illustrates some of these discrepancies.

Graph 1.2 The Human Development Index by different income groups
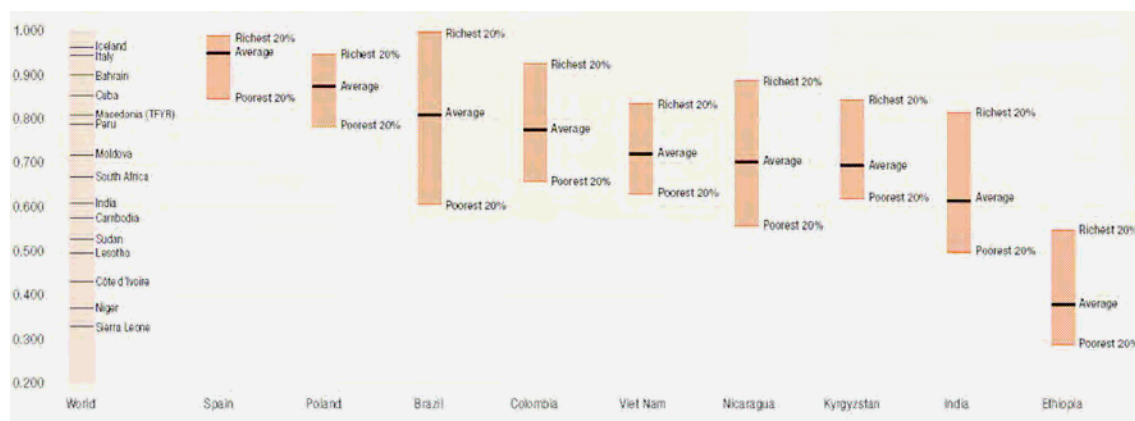
Source: Human Development Indices (2008), p. 14.

For example, Graph 1.2 shows that 20 percent of population in Poland, which ranks 39th according to HDI in 2006, lived worse off than the average citizen in Brazil, ranked at 70th place. On the other hand, 20 percent of the richest in Brazil lived better off than 20 percent of the richest citizens in Poland.

Quite naturally, the HDI, as an aggregate measure, masks these disparities between the rich and the poor, and women and men, in terms of access to education, health and a decent standard of living. A country may perform well in the aggregate HDI even if its people experience large disparities in opportunities. This is why the analysis of performance in HDI terms is frequently complemented by other partial indices measuring different aspects of social inequalities.

1.2.1 Gini index

Income or consumption differences within given population are, according to a majority of economists, affecting the wellbeing and economic performance of the whole society. At a given rate of economic growth, the discontent with the unequal distribution of benefits from growth might reflect feelings of deprivation despite higher mean income and living standards. Thus, inequality is a different and a broader concept than poverty in that it is defined over the whole distribution, and is independent of the mean of the distribution.

The Gini index is the most widely used measure of inequality. Inequality focuses on the second moment of the distribution, i.e. – on measuring variability. In addition to being a quantification of the theory of relative deprivation, the Gini index is a statistical measure of variability. It provides a unique coefficient that can be used for comparisons across countries,

populations and time periods. Whereas the variance is based on the square difference between the two observations, thus putting extra emphasis on the extreme values, Gini relies on the absolute difference. The Gini index can be viewed as representing the expected difference in incomes of two individuals or households randomly selected from the population as a whole.

The Gini index of inequality is based on the covariance between the income of the individual (or household) and its rank in the whole distribution[9]. It usually varies between zero and one, and the higher the Gini index, the higher the inequality between individuals / households.

For calculating Gini, one has to define the variable over which the calculation will be made (income/consumption etc.), population it represents, statistical unit (households/individuals) and the weighting scheme. The data on Gini indices for the present research was derived from the latest update of the UNU/WIDER World Income Inequality Database (WIID2), initially compiled over 1997-1999.

Unfortunately, there is no agreed basis of definition for the construction of distribution data, since sources and methods vary across and even within countries. Therefore, it is not easy to compare the Gini indices, both across countries and time periods. It is important to define the conceptual base for the definitions used.

1. **Income / consumption / expenditure**: although consumption is not tied closely to the short-term fluctuations in income, it is difficult to gather accurate income data for developing countries, where the agriculture sector is large. On the other hand, using consumption raises a problem of the treatment of durables and imputing values of their services. In the most developed countries and in Latin America, inequality and poverty are assessed with reference to income data. By contrast, most Asian and African countries collect detailed consumption data.

2. **Defining income and consumption**: the definitions of total and disposable income are recommended by the Canberra Group for international comparisons of income distribution, but are mainly based on the OECD experience. The guidelines for defining consumption, are worked out by Deaton & Zaidi (2002), who underlined the difference between consumption and expenditure, which is based on what is actually purchased.

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[9] The Gini index of inequality can be represented graphically by the area between the Lorenz curve (mapping the cumulative income share on the vertical axis against the distribution of the population on the horizontal axis) and the line of equal distribution.

a. Total income includes employee income, income from self employment, income less expenses from rentals, except rent of land, property income and current transfers received. Disposable income is total income less current transfers paid.

b. Consumption includes food and non-food consumption, durable goods and houses and excludes taxes, purchase of assets, repayments of loans and lumpy expenditures.

c. Expenditure is consumption where the durables are included with their purchase value or/and taxes paid, purchase of assets, repayments of loans and lumpy expenditures.

3. **Other conceptual issues:**

a. Household should be used as a major statistical unit.

b. Income or consumption should be adjusted to take account of household size, using per capita incomes or consumption.

c. Person weights are preferred as the users of income statistics most often are concerned with the economic well-being of individuals and not with the well-being of households.

In practice the data published by the World Institute for Development Economics Research of the United Nations University (UNU/WIDER), gathers data on Gini indices from different sources and refers to a variety of income and population concepts, sample sizes and statistical methods. Thus, the database contains the mix of Gini indices across countries and across time periods. The differences in methodology include:

1. Geographical areas: whole country / metropolitan areas / capital only / number of largest cities / agricultural areas etc.

2. Population: all / employed / households of particular size / households in lower parts of income distribution etc.

3. Age coverage: all / above 10 / above 15/ 20-64.

4. Statistical (income sharing) unit: household / family / person.

5. Equivalence scale: household per capita / square root / OECD scale / national scale etc.

6. Income definitions: disposable income / total income / monetary income / consumption / expenditure etc.

7. Sources: World Bank World Development Indicators / World Bank Poverty Monitoring Database / Socio-Economic Database for Latin America etc.

Keeping in mind that indices that adapt different concepts cannot be combined or compared, in our choosing the comparable Gini indices, we attempted two selection schemes. The narrow scheme aimed to chose indices based on the most accurate approach, as defined by the WIID2 guidelines listed above and restricted to the concepts comparable across countries and periods.

Thus, we tried to use the indices calculated over the whole population wherever possible, referring to equivalised disposable income for household unit, wherever possible. For some cases, these restrictions were relaxed, if the alternative definitions were close enough to those initially defined (for example, replacing disposable income with monetary income, mixing OECD equivalence scale and national scales). However, some concepts were not combined: we did not mix Gini indices calculated using different definitions for different years for the same country and always aimed to use the widest population coverage possible. We tried referring to the same data source for the specific country over different time periods. However, since some countries lacked comparable data, this narrow definition reduced the data available to nearly 994 observations out of 5314 available in the original UNU-WIDER database. This limited number of observations significantly impaired the quality of the estimators, thus a broader approach was called for.

The broad approach aimed to cover as many years for the specific country as possible. We relaxed the requirements for the income definitions (replacing income with consumption for developing countries), for equivalence scales and allowed different data sources for the same country over different time periods. This resulted in increasing the sample to almost 1887 observations.

The broader definition only slightly changed the unweighted average Gini coefficient calculated over all countries included in our sample (raising it from 37.23 to 37.34). The effect on the individual countries was also small (less than 10% for most of the countries), with few exceptions for developing countries, where the Gini index changed by more than 20% due to the change in approach: 32% reduction in the mean Gini coefficient for Sri Lanka, 28% for Kyrgyzstan, 27% for Jamaica, 22% for Thailand and 21% reduction for Guinea. In addition, there was a 28% increase for Sierra Leone and a 20% increase for Malawi. Given all these methodological difficulties, the estimations of impact of Gini coefficients on trade should be treated with caution.

1.2.2 Gender-related Development Index (GDI)

The Gender-related Development Index (GDI) is another index measuring social inequalities. It complements the basic HDI with a distribution-sensitive measure by 'discounting' the HDI for gender inequalities in its component indicators.

Thus, in the presence of any gender inequalities in the component indicators, the GDI for a given country will be less than its HDI. In practice, this is the case for all countries[10]. For the GDI, the inequality aversion parameter is set at two, placing a moderate penalty on gender inequalities in average achievement of each of the dimensions. The parameter choice is within the range discussed in the inequality literature.

The Gender-related Development Index (GDI) is a composite index measuring average achievement in the three basic dimensions captured in the human development index—a long and healthy life, access to knowledge and a decent standard of living—adjusted to account for inequalities between men and women. The higher value of this measure is associated with lower gender inequality.

The construction of the GDI is normalized to one and measures existing gender inequalities. In statistical terms the values of GDI are very close to those of HDI. The correlation between these two indices exceeds 0.99[11]. Thus, it is impossible to use both indices as explanatory variables in the same regression. Furthermore, the estimates calculated with GDI would have very similar values to those calculated with HDI, which reduces the possibilities of different economic interpretation.

There are also some general shortcomings of the GDI, which are recognized by the authors of the index as well[12]. Let us note some of them.

The earned income component disaggregated by sex does not measure gender gaps in nutrition, shelter and clothing (Klasen 2006). There is extensive evidence of intra household inequality not captured by the GD index.

Relying on earned income as a measure can also give the misleading impression that unpaid work, which is mainly undertaken by women, does not contribute to human development. Care of children and family members in the household contribute to human development. Likewise, subsistence farming is often done by women but does not, by definition, generate cash earnings.

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[10] Initially, the impact of gender inequality was measured by inequality aversion parameter (Atkinson, 1970). The larger the value of this parameter, the more heavily the index was discounted.
[11] Own calculations for the year 2006.
[12] Human Development Indices (2008), p. 16.

Furthermore, there are practical data problems in analyzing income distribution. Some of them have already been discussed in the context of the Gini coefficients. The difficulty in accessing direct measures of income disaggregated by sex means that the index has to rely on the estimated female-to-male ratio of non-agricultural wages. However, earnings are not well measured in poorer countries and this ratio is unlikely to hold in all sectors.

Two other problems have been raised with regard to life expectancy at birth. First, whether women's biological advantage in terms of longevity should be considered as a gender gap or normal. Second, whether or not the measure should consider the 'potentially alive' as a relevant population for determining the inequality aversion parameter, as this would take into account missing girls due to sex-selective abortion or post-birth neglect.

All these arguments reduce the practical value of the Gender Development Index. Its strong correlation with HDI reduces the likelihood of having different economic interpretation. Therefore, we will rather use the next Gender Empowerment Measure (GEM) in order to asses the possible impact of gender discrimination on trade, FDI and growth.

Graph 2.2 Construction of Gender Development Index (GDI)
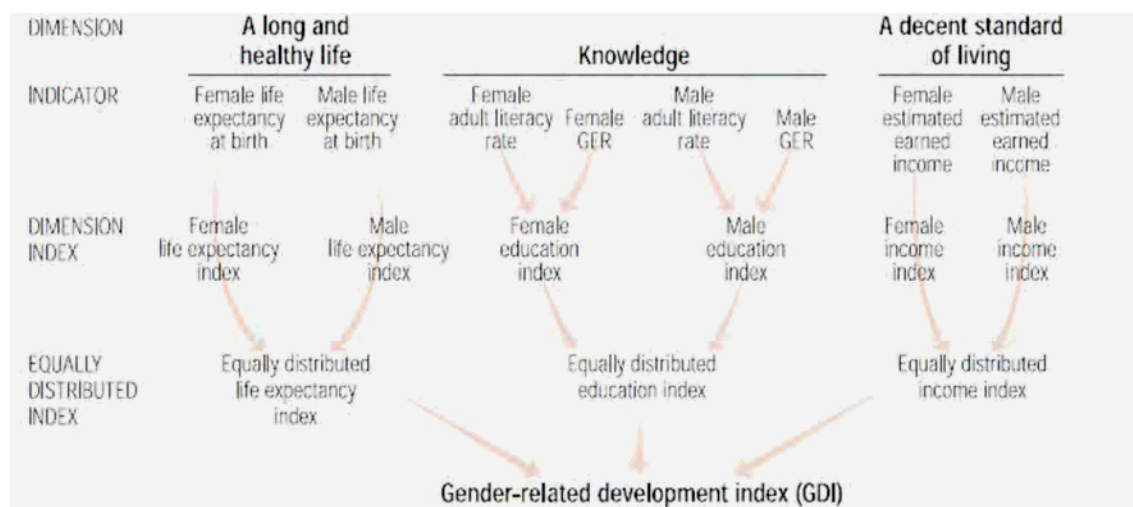
Source: Human Development Indices (2008), p. 45.

Graph 1.3 Construction of the Gender Empowerment Index (GEM)

DIMENSION	Political participation and decision-making	Economic participation and decision-making		Power over economic resources
INDICATOR	Female and male shares of parliamentary seats	Female and male shares of positions as legislators, senior officials and managers	Female and male shares of professional and technical positions	Female and male estimated earned income
EQUALLY DISTRIBUTED EQUIVALENT PERCENTAGE (EDEP)	EDEP for parliamentary representation	EDEP for economic participation		EDEP for income

Gender empowerment measure (GEM)

Source: Human Development Indices (2008), p. 45.

1.2.3 Gender Empowerment Measure (GEM)

The Gender Empowerment Measure (GEM) seeks to reflect the extent to which women and men are able to participate actively in economic and political life and take part in decision-making. Its construction is shown in Graph 1.3.

The Gender Empowerment Measure (GEM) is, as shown, a composite index measuring gender inequality in three basic dimensions of empowerment—economic participation and decision-making, political participation, and decision-making and power over economic resources. The higher value of this measure is associated with lower gender inequality.

While the GDI focuses on expansion of capabilities, the GEM is concerned rather with their use. It captures gender inequality in three key areas:

1. Political participation, as measured by the percentage of seats held by women in national parliaments.
2. Economic participation and decision-making power, as measured by the percentage shares of women and men among legislators, senior officials and managers as well as in professional and technical fields.
3. Power over economic resources as measured by the estimated earned income of females and males (in PPP US dollars).

Like in the case of other indices, the GEM is normalized to one. The higher value of the GEM indicates a higher participation of women in the economic and political life of the society, or, in other words less discrimination of women.

The values of the GEM are much more differentiated among countries, ranging from 0.136 in Yemen in 2006 to 0.925 in Sweden, which ranks first according to the GEM. The values of the GEM are less correlated to the HDI, in comparison to the GDI. Therefore, we can use the GEM as more reliable explanatory variable of international trade, FDI and growth in our analysis.

Unfortunately, there are practical data problems in analyzing the GEM. The measures are unavailable for a large number of countries, and we have only 108 countries in the UNDP ranking for 2006. Thus, applying this aggregate measure as an explanatory variable reduces significantly the sample of analyzed countries and usually reduces the statistical significance of all estimators.

The same problem exists with the last aggregate index, measuring the level of poverty, which is analyzed by the UNDP as well.

1.2.4 Human Poverty Indices (HPI-1 and HPI-2)

The Human Poverty Indices were introduced later than the HDI in order to measure the position of disadvantaged people within society, and complement concepts of poverty that were largely monetary. They look – above all – directly at deprivations in access to resources. There are two separate indices for developing and developed countries measuring different aspects of poverty or social exclusion.

The HPI-1 (calculated for developing countries) measures these deprivations in the HDI's three basic dimensions as follows[13]:

1. Vulnerability to early death (as opposed to a long and healthy life), as measured by the probability at birth of not surviving the age 40 years.
2. Exclusion from the world of knowledge and communication, as measured by the adult illiteracy rate.
3. Lack of access to adequate economic provisioning, as measured by the unweighted average of two indicators: the percentage of the population not using an improved water source and the percentage of children under weight for their age.

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[13] Human Development Indices (2008), p. 5.

Graph 1.4 Construction of Human Poverty Index (HP-1) for developing countries
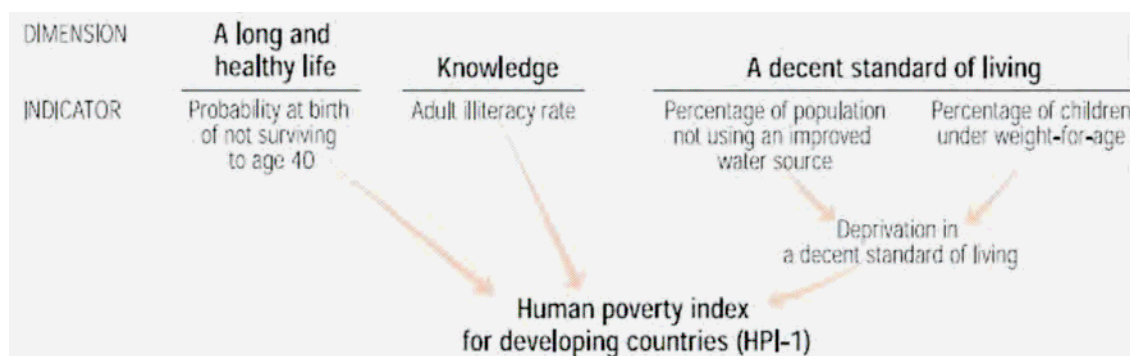
Source: Human Development Indices (2008), p. 45.

The HPI-2 defined for industrialized countries is defined in a different way[14]. The targets are set higher and one additional area of deprivation - social exclusion - is added:

1. Vulnerability to early death is measured by the probability at birth of not surviving the age of 60 years.

2. Exclusion from the world of knowledge and communication is measured by the percentage of the population aged 16–65 years lacking adequate functional literacy skills.

3. Lack of access to adequate economic provisioning is measured by the percentage of the population living below the income poverty line (i.e., less than 50 percent of the median-adjusted household disposable income).

4. Social exclusion is measured by the long-term unemployment rate (i.e., the percentage of the labor force that has been unemployed for at least 12 months).

These different definitions of the HPI pose some methodological problems:

The adoption of different targets for industrialized and developing countries is a serious shortcoming[15]. The use of two age limits for the definition of deprivation of a long and healthy life implies that dying between the ages of 41 and 60 years is acceptable in developing countries but not in industrialized ones. This is an unintended value judgment.

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[14] Human Development Indices (2008), p. 5.
[15] Human Development Indices (2008), p. 5

Similarly, different goals for access to knowledge create the impression that adults in industrialized countries should be functionally literate, yet functionally illiterate adults in a developing country are not considered deprived if they can read or write a simple sentence about their everyday life.

There are also some statistical problems with the Human Poverty Indices. A serious drawback of the HPI-2 is that measures of functional illiteracy and the poverty rate rely on surveys that are carried out in industrialized countries very infrequently; hence there is little movement in successive years in the index itself. Furthermore, the other two indicators - long-term unemployment and longevity - tend to vary relatively little among countries and from one year to the next.

There are attempts to address these shortcomings by measuring so-called 'multidimensional poverty' and human development. These issues will be analyzed further by the UNDP in the forthcoming editions of Human Development Reports.

The existing shortcomings will affect the scope of our analysis in two major ways:

First, we can analyze the significance of poverty indices, as explanatory variables, only separately for a sample of industrialized and developing countries. This split of cross-country analysis for year 2006 undermines the possibility of making general conclusions.

Second, there are potential merits in analyzing some specific indicators – such as literacy rate or life expectancy – in order to run cross-country regressions and be able to formulate general policy recommendations. Some of these specific indicators will be discussed in the next section of the report.

1.3 Specific indices used in the analysis of social development

There is a whole spectrum of different specific indices that can be used in assessing some aspect of social development. Unfortunately, the availability of many indices is limited for the 1980s and 1990s. Therefore, only some of them can be used for the analysis of long-run processes.

The most popular proxy measuring the level of social (human) development is the level of GDP per capita. For international comparison, the value of GDP per capita is usually measured in terms of constant dollars, which means that domestic currencies were converted

using purchasing power parity, in order to take into account differences in domestic price levels. A majority of economists assume that this is the best measure reflecting wellbeing of the society and a crucial element in assessing the quality of (social) life. The major advantage is that this measure is probably the most easily available for the majority of the countries in the world. This is also why GDP per capita constitutes one of the key elements included in the Human Development Index (HDI). On the other hand, it is obvious that it is not the unique element of social happiness. It has been already shown that quality of life, according to life-satisfaction surveys, depends on many other factors; some of which are quite difficult to measure. It happens that societies of some rich countries are in social terms poorly developed. Nevertheless, GDP per capita or the standardized GDP index constitute key elements of the HDI.

Life expectancy at birth in years is probably one of the most popular indices measuring quality of life. The differences between industrialized and developing countries are very significant. The index is frequently treated as the simplest proxy for measuring quality of life. In reality, life expectancy measures several factors at the same time: wealth of the society, quality of the health care system, style of living, nutrition habits and other factors. The differences between male and female life expectancy are sometimes treated as a proxy for gender discrimination[16]. It can be argued that the former reflects rather the past of a given country than its future. In addition, there are visible differences in life expectancy data provided by the World Bank (WDI) and the UNDP. Therefore, the impact of life expectancy on trade or FDI should be treated with reasonable caution. On the other hand, its meaning is not questionable. The life expectancy at birth constitutes, after all, the second element of the HD index.

Another frequently used specific indicator is the mortality rate, which can be measured at birth (per 1000 live births) or for children under five years old (per 1000). Presumably, it measures the quality of health care system in a given country. On the other hand, the mortality rate can reflect also the of level well-being (degree of poverty) or the access of population to an improved water source or social habits. There are also some other measures reflecting – at least partially – the quality of the health care system and the quality of life. These indicators are measuring for example the incidence of tuberculosis (per 100,000 people) or probability of not surviving age of 40 years. All aforementioned specific measures will be used in our

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[16] As it was already discussed it is not clear whether women's biological advantage in terms of longevity should be considered as a gender gap or normal. In addition, there are no data regarding female and male life expectancies in 1980s and 1990s.

analysis as possible explanatory variables having an impact on the level of international trade flows and the inflow of FDI.

The next large group of specific indicators is measuring the access and level of education in a given society[17]. The level education is a key element explaining the stock of human capital used in modern models of growth, FDI, and international trade. The authors of the HDI apply the so-called education index that consists of the adult literacy rate and the combined gross enrolment ratio (GER) in primary, secondary and tertiary education. Both specific measures, provided by the UNDP, can be applied in our analysis. We will try to examine the impact of literacy rate (or illiteracy rate) on trade and FDI. We will also try to use - in the cross section analysis for 2006 – the gross enrolment ratio in primary, secondary and tertiary education as explanatory variables for trade and FDI.

Unfortunately, the above-mentioned education data used by the UNDP are not available for the 1980s and 1990s. Therefore, in our long-run panel analysis we used other sources of information. On the one hand, we used a well-known data base elaborated by Barro and Lee (2000). It provides data on average years of schooling, and highest level of education attained for population over 25 years (both sexes). We will also try to use – as explanatory variables – other detailed data regarding mean years of schooling for population aged over 15 and 25 years, differentiated by sexes. Lutz et al. (2007) have recently elaborated this data. Unfortunately, data provided by the World Bank (WDI) on labour force with primary, secondary and tertiary education, are far from being complete and cannot be used in our regression analyzing long-run process.

We will also try to use specific data reflecting gender empowerment measure (GEM). For instance, we will try to study whether political participation of women (measured by the percentage of seats held by women in national parliaments) and economic participation (measured by the percentage of women and men among legislators, senior officials, managers and professionals) can affect the level of trade, FDI and economic growth.

Finally, we will try to analyze some elements of political and community life, as postulated by the authors of the quality of life index (QLI). In particular, we will use indices measuring political rights and civil liberties in a given society. These data, elaborated by Freedom House, are available since 1972 and will be used for both cross country and panel regressions analysis.

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[17] In order to assess the stock of human capital the level of education should be analyzed in connection with the level of unemployment. Unfortunately, data on unemployment are not available for many developing countries.

The survey conducted by Freedom House provides an annual evaluation of the state of global freedom as experienced by individuals. Political rights enable people to participate freely in the political process, including the right to vote freely for distinct alternatives in legitimate elections, compete for public office, join political parties and organizations, and elect representatives who have a decisive impact on public policies and are accountable to the electorate. Civil liberties allow for the freedoms of expression and belief, associational and organizational rights, rule of law, and personal autonomy without interference from the state.

The ratings process is based on a checklist of 10 political rights questions and 15 civil liberties questions. The political rights questions are grouped into three subcategories: Electoral Process (3 questions), Political Pluralism and Participation (4), and Functioning of Government (3). The civil liberties questions are grouped into four subcategories: Freedom of Expression and Belief (4 questions), Associational and Organizational Rights (3), Rule of Law (4), and Personal Autonomy and Individual Rights (4). Each country and territory is assigned a numerical rating—on a scale of 1 to 7—for political rights and an analogous rating for civil liberties; a rating of 1 indicating the highest degree of freedom and 7 the lowest level of freedom. The analysts use a broad range of sources of information—including foreign and domestic news reports, academic analyses, nongovernmental organizations, think tanks, individual professional contacts, and visits to the region—in preparing the reports.

To complete the picture we will use some specific indicators, which should reflect the level of economic (and social) infrastructure, and that may affect international trade and inflow of FDIs. In particular, we will use data on roads (total number of kilometres and percentage of paved ones), rail lines (total route measured in kilometres) and telephone users (combining mobile and telephone subscribers). Those elements should facilitate communication within a given society and with external customers. Thus, we will treat them as explanatory variables, as well.

Chapter 2

Socio-economic situation of MENA[18] countries

In Chapter 1 we presented various measures of social development that might have impact on flows of international trade, amounts of FDI flows and economic growth. Before discussing the results of regressions, in this chapter of the report we will show how MENA countries perform in terms of various social indices that have been discussed earlier. For broader perspective and better understanding we will show how MENA countries perform in comparison to selected groups of countries, among others the "old" members of the European Union (EU-15), all EU-27, the new member states of the EU (EU-NMS-12), OECD[19] and other non-OECD countries (proxy for developing countries). As already shown, the most concise and meaningful measure is the Human Development Index calculated by the UNDP.

2.1 Human Development Index (HDI)

Table 2.1 and Graph 2.1 present the values of the HDI for MENA countries. The HDI data were available only for some specific periods of time, including years: 1980, 1985, 1990, 1995, 2000 and yearly observations for 2003-2006. The availability of the HD indices also varies for individual MENA countries. For example, the HDI data for Israel is calculated only for 1980, 1985 and for years 2004-2006. In the case of Lebanon and the Palestinian Authority there are only two the HDI values (for 2005 and 2006).

Graph 2.1 shows that human development improved yearly in almost every MENA country since 1980. Only in the case of the Syrian Arab Republic the HDI was stable between years 2003-2004. Given the level of GDP per capita and life expectancy, it is not surprising that Israel performs best in the region, as the HDI for this country results are highest and range above 0.8 within the analysed period. There is only one other MENA country, namely Libya, for which the HDI is above 0.8 since the year 2000.

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[18] MENA group includes the following countries: Algeria, Egypt, Israel, Jordan, Lebanon, Libyan Arab Jamahiriya, Morocco, Palestinian Authority, Syrian Arab Republic, Tunisia and Turkey.
[19] Turkey is a member of OECD and MENA.

Graph 2.1 HDI (Human Development Index) in MENA countries, 1980-2006
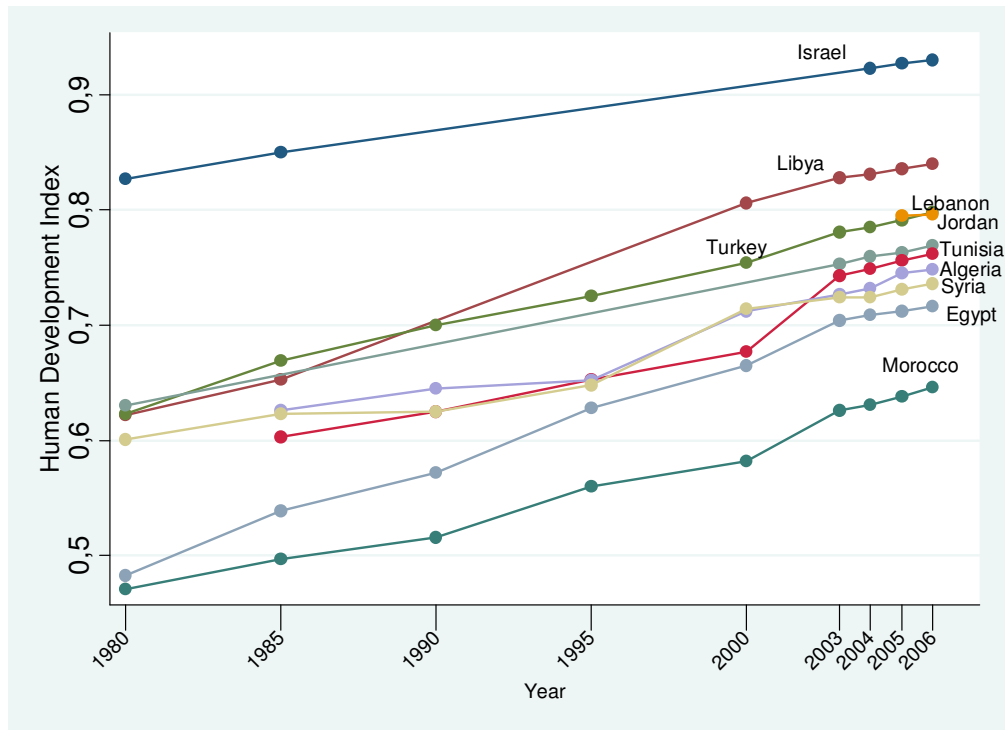
Source: Human Development Indices (2008). Data for Palestinian Authority is not presented.

On the other hand, the lowest values of the HDI (ranging from 0.471 to 0.646) are observed in Morocco. The second least socially developed MENA country is Egypt. However in this case we may notice the largest improvement in the group, where the difference in the HDI from 2006 to 1980 equals 0.233 (see Table 2.1). Since 1995 Egypt has also approached the rest of the MENA countries with moderate the HDI levels. The analyzed countries, including Lebanon, Turkey, Jordan, Tunisia, Algeria and Syria present human development indices ranging from 0.6 to 0.8 within the analysed period of time. The best short-term progress is observed in the case of Tunisia, where the HDI improved by 0.085 between 2000 and 2006.

It is worth to mention, that all MENA countries are at least at the medium level of social development according to the UNDP classification (HDI ranking between 0.5 and 0.8). One may also analyse average HDI levels of the MENA group and compare them with other groups of countries (see Graph 2.2).

Firstly, it is not surprising that regions like the European Union (EU-15, as well as all 27 member states) perform better in terms of levels the HDI within the 1980-2006 period. The same is true for all OECD countries.

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Table 2.1 Values and ranking of Human Development Index for selected countries, 1980 – 2006 (selected years)

HDI rank (2006)	Country/region	1980	1985	1990	1995	2000	2003	2004	2005	2006	Progress		
											Long-term (1980-2006)	Medium-term (1990-2006)	Short-term (2000-2006)
	MENA countries												
24	Israel	0.827	0.850	„	„	„	„	0.923	0.927	0.930	0.103	„	„
52	Libyan Arab Jamahiriya	0.622	0.653	„	„	0.806	0.828	0.831	0.836	0.840	0.218	„	0.034
76	Turkey	0.623	0.669	0.700	0.725	0.754	0.781	0.785	0.791	0.798	0.175	0.098	0.044
78	Lebanon	„	„	„	„	„	„	„	0.795	0.796	„	„	„
90	Jordan	0.630	„	„	„	„	0.753	0.760	0.763	0.769	0.139	„	„
95	Tunisia	„	0.603	0.625	0.653	0.677	0.743	0.749	0.756	0.762	0.159	0.137	0.085
100	Algeria	„	0.626	0.645	0.652	0.712	0.727	0.732	0.745	0.748	0.122	0.103	0.036
105	Syrian Arab Republic	0.601	0.623	0.625	0.648	0.714	0.724	0.724	0.731	0.736	0.135	0.111	0.023
106	Occupied Palestinian Territories	„	„	„	„	„	„	„	0.728	0.731	„	„	„
116	Egypt	0.483	0.539	0.572	0.628	0.665	0.704	0.709	0.712	0.716	0.233	0.144	0.051
127	Morocco	0.471	0.497	0.516	0.560	0.582	0.626	0.631	0.638	0.646	0.175	0.130	0.064
	Regions												
„	Average MENA	0.608	0.633	0.614	0.644	0.701	0.736	0.760	0.766	0.770	0.162	0.156	0.069
„	Average MENA,without Israel	0.572	0.601	0.614	0.644	0.701	0.736	0.740	0.750	0.754	0.183	0.140	0.053
„	Average EU-15	0.858	0.870	0.891	0.913	0.931	0.939	0.942	0.945	0.948	0.090	0.057	0.017
„	Average EU-27	0.854	0.863	0.863	0.873	0.891	0.903	0.906	0.912	0.916	0.062	0.053	0.025
„	Average EU-NMS-12	0.801	0.810	0.823	0.821	0.844	0.862	0.865	0.871	0.876	0.075	0.053	0.032
„	Average OECD	0.862	0.876	0.894	0.906	0.915	0.924	0.927	0.930	0.933	0.071	0.039	0.019
„	Average NON-OECD	0.582	0.599	0.639	0.643	0.649	0.664	0.674	0.686	0.691	0.109	0.052	0.042
„	Average High HD countries (rank 1-75)	0.816	0.830	0.841	0.850	0.871	0.879	0.881	0.882	0.886	0.070	0.045	0.015
„	Average Medium HD countries (rank 76-153)	0.542	0.568	0.606	0.621	0.644	0.661	0.666	0.675	0.680	0.139	0.074	0.036
„	Average Low HD countries (rank 154-179)	0.304	0.321	0.361	0.351	0.388	0.397	0.402	0.416	0.421	0.118	0.060	0.033

Source: Human Development Indices (2008).

Graph 2.2 Human Development Index (HDI) – averages in MENA and other regions, 1980-2006.
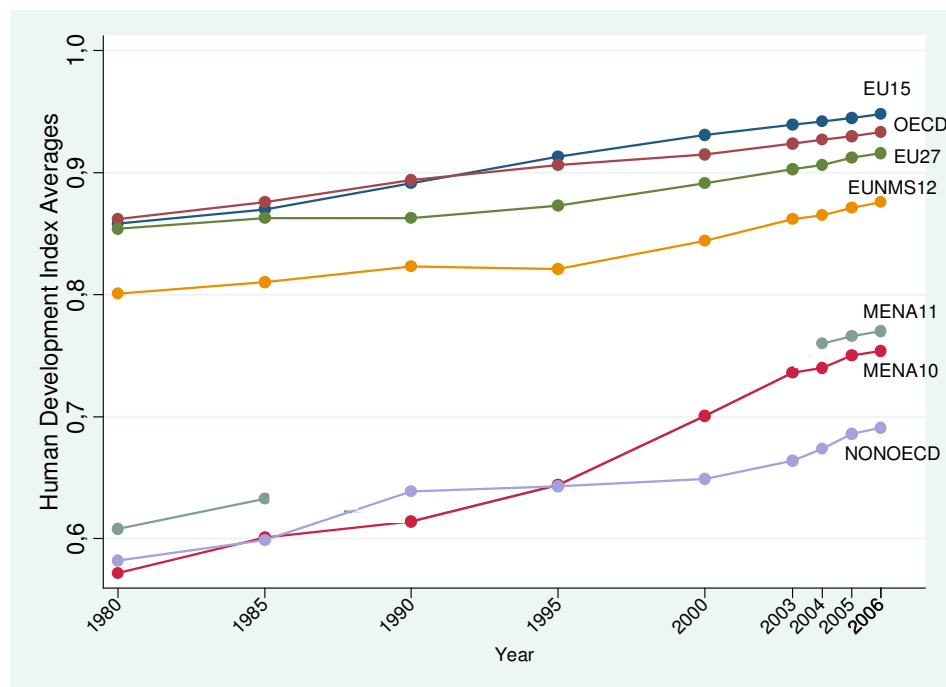
Source: Human Development Indices (2008).

Secondly, the average HDI in the case of the region of twelve EU new member states reach levels above 0.8; however between the years 1990 and 1995 the HDI decreased from 0.823 to 0.821, what might be explained by difficulties that occurred during economic, political and social transition in Poland and other Central European countries.

The average values for MENA are presented in two dimensions: MENA-11 (including Israel) and MENA-10 (excluding Israel) on Graph 2.2. Since there were no data for Israel corresponding to the period 1990-2003, the results for average HDI are more representative for MENA-10 countries. Comparing the Graph 2.2 for MENA-10 and non-OECD countries (usually treated as developing countries) one may notice that in 1980 and 1990 MENA countries were "socially" less developed. However, since 1990 average HDI for MENA improves rapidly and by now there is quite a significant divergence between non-OECD and MENA countries in favour of the latter.

As we explained in Chapter 1, the HDI, constructed from aggregated measures of development, masks disparities between the rich and the poor, and women and men, in terms of access to education, health and a decent standard of living within a given nation. Therefore

Table 2.2 Quality of Life Index, 2005

Country, region	Quality of Life	Rank
MENA countries		
Israel	6.488	38
Jordan	**5.675**	**75**
Libyan Arab Jamahiriya	5.849	70
Syrian Arab Republic	**5.052**	**97**
Tunisia	5.472	83
Algeria	**5.571**	**81**
Egypt	5.605	80
Morocco	**6.018**	**65**
Turkey	6.286	50
Lebanon	–	–
Palestinian Authority	..	..
Regions		
Average MENA	5.780	71
Average MENA, without Israel	**5.691**	**75**
Average EU-15	7.503	15
Average EU-27	**7.023**	**29**
Average EU-NMS-12	6.424	46
Average OECD	**7.344**	**19**
Average NON-OECD	5.787	70

Source: The Economist Intelligence Unit, 2005. Notes: value of 1 to 10, where 1 means "the lowest quality of life" and 10 means "the highest quality of life"; ranking of 111 countries.

in the next sections we will present other indices that offer broader perspective for measuring the social inequalities.

2.2 Quality of Life

As it was described in the first chapter of the research, the HDI is lacking measures reflecting real social life of an analyzed society. To tackle this problem, the Economist Intelligence Unit applies subjective life-satisfaction scores to a multivariate regression on social factors. Then the predicted values of life-satisfaction scores are used along with the estimated coefficients as weights to form the Quality of Life Index (QLI). The QLI is calculated for 111 countries in 2005 and its value ranges from 1 (lowest quality) to 10 (highest quality). The results for MENA countries and other regions are presented in Table 2.2. Among the MENA countries Syria, Tunisia, Algeria, Jordan and Egypt have the lowest levels of QLI and are ranked above 50th place in the ranking of 111 countries. The highest values of QLI are observed in Israel, Turkey and Morocco.

Table 2.3 Values and ranking of gender-related development index (GDI), 2006

Country, region	Rank	Value	As a % of HDI value
MENA countries			
Morocco	112	0.620	96.0
Palestinian Authority	107	0.678	92.8
Syrian Arab Republic	91	0.723	98.2
Algeria	89	0.735	98.3
Tunisia	84	0.747	98.0
Jordan	80	0.755	98.2
Turkey	72	0.780	97.8
Lebanon	71	0.783	98.4
Israel	..	..	..
Libyan Arab Jamahiriya	..	..	..
Egypt	..	..	..
Regions			
Average MENA	88	0.728	97.2
Average EU-15	14	0.940	99.2
Average EU-27	25	0.911	99.5
Average EU-NMS-12	38	0.874	99.7
Average OECD	19	0.925	99.2
Average NON-OECD	93	0.671	98.5
Average High HD countries (rank 1-75)	34	0.885	99.2
Average Medium HD countries (rank 76-153)	100	0.669	98.7
Average Low HD countries (rank 154-179)	146	0.404	97.1

Source: Human Development Indices (2008).

The average QLI in MENA as a single region is comparable to the average QLI in non-OECD countries (5.780 compared to 5.787). However, when Israel is excluded from the average the score for MENA falls below that result to 5.691. The QLIs in the EU or OECD countries range from 6.4 to 7.5 and represent significantly higher levels of life satisfaction than in most of MENA countries.

2.3 Gender-related Development Index (GDI)

The Gender-related Development Index is another composite measure that applies gender issues to assess the level of development in a country. As stated in Chapter 1, the GDI in the presence of any gender inequalities in the component indicators will be smaller than the corresponding the HDI. In Table 2.3 we present the results for MENA countries and a few other regions in 2006.

Unfortunately, as explained earlier, the data for earlier periods are unavailable and cannot be used for a long-run analysis (panel regression). The same is true for other selected indices analyzed in this chapter.

The relation between the GDI and the HDI is shown in the last column. We may notice that the difference among these indices ranges from 1.6 to 7.2 percentage points for the MENA countries. The most significant discrepancies are observed in the case of the Palestinian Authority (GDI equal to 0.678, that is 92.8% of HDI) and Morocco (0.620 and 96.0%, respectively).

The social inequalities related to gender in the MENA region are important and in consequence the average GDI equals to 0.728 that is 97.2% of the corresponding HDI value. The difference between the GDI and the HDI is more significant in the case of the MENA region than for other analyzed regions. The average GDI index for the EU-15 equals to 0.940 (99.2% of HDI value) and for OECD countries it equals 0.925 (99.2%). The GDI value for the relatively least developed countries within the EU, i.e. group of twelve new member states (EU-NMS-12) is 0.874. In addition, this result is the closest to the corresponding the HDI (99.7%) as compared to other regions.

On the other hand despite the low performance of the MENA countries in terms of average GDI, they may be situated between Medium Human Development countries (0.669) and EU-NMS-12 (0.874) or High Human Development countries (0.885). However, when compared to the HDI, the MENA countries on average resemble the group of Low Human Development countries (97.1% of HDI). This result suggests that gender inequalities are quite important in determining (lowering) the overall level of human development in the MENA countries.

2.4 Gender Empowerment Measure (GEM) and women participation in political and economic life

Gender empowerment measure describes the level of real engagement of women and men in social, political and economic life of a society. It pays more attention to application of capabilities of these two groups and therefore differs from GDI measure that relies directly on capabilities. The higher value of GEM indicates a higher participation of women in economic and political life of the society, or, in other words less discrimination of women. In Table 2.4 we present GEM indices for the MENA countries and selected groups of other countries.

Table 2.4 Values and ranking of gender empowerment measure (GEM), 2006

Country, region	Rank	Value
MENA countries		
Egypt	107	0.283
Algeria	105	0.312
Morocco	104	0.316
Turkey	101	0.371
Syrian Arab Republic	92	0.415
Israel	29	0.662
Libyan Arab Jamahiriya	..	..
Lebanon	..	..
Jordan	..	..
Tunisia	..	..
Palestinian Authority	..	..
Regions		
Average MENA	90	0.393
Average MENA,without Israel	102	0.339
Average EU-15	13	0.807
Average EU-27	28	0.715
Average EU-NMS-12	45	0.607
Average OECD	23	0.752
Average NON-OECD	66	0.526
Average High HD countries (rank 1-75)	38	0.666
Average Medium HD countries (rank 76-153)	79	0.467
Average Low HD countries (rank 154-179)	70	0.520

Source: Human Development Indices (2008).

The GEM results are available only for six MENA countries, i.e. Israel, Turkey, Algeria, Syrian Arab Republic, Egypt and Morocco. Apart from Israel, for which the GEM value is quite high (0.662), the other MENA countries are ranked almost at the end of the list (ranks 92-107). This suggests that the participation of women in the economic and political life of the society in the MENA countries is still very limited in comparison to other countries of the world.

As compared to other regions, the MENA average in GEM equals to 0.393 and is very distant from results attained by the EU-15 (0.807), OECD (0.752) or even NON-OECD countries (0.526). What might be surprising is that average GEM for Medium HD countries is lower than for Low HDI countries (0.467 and 0.520, respectively). However, the average

calculated for the least developed group of countries might not be representative as only four countries (out of twenty six countries belonging to this group) report the GEM values.[20]

The detailed data about gender empowerment consists of political and economic participation rates of women. The percentage of seats in parliament held by women is diverse among MENA countries and ranges from 4% in Egypt to 20% in Tunisia. On average in the MENA region (measured with - or - without Israel) only 9 percent of total seats in parliament are held by women, even lower than in non-OECD countries or in EU new member states on average, namely 16%.

Similar differences occur in the case of female participation in management and legislation occupations (second column in Table 2.5). In Algeria and Turkey only 5-8 % of total managerial positions are held by women. The results for Syria, Morocco, Egypt and Palestinian Authority are closest to the average 11-13% for the MENA region, while in Israel the rate is the highest of the region and equals 30% of total managerial posts.

The female participation in high-level jobs in the MENA region is two or even three times (when Israel is excluded from the average) lower than in other regions. The average for OECD and non-OECD countries is almost equal: 30% and 29% respectively, while the highest participation of women in managerial posts (32%) is observed in EU-15 "old member states".

The discrepancies between MENA and other regions are slightly smaller in the case of the second occupational group of posts: professional and technical workers (third column in the Table).[21] While above half of the these jobs are held by women in Israel, 40% in Syria and about 33% in other MENA countries, the average participation of female professionals in OECD and EU-15 equals 50% or even 58% in the case of the "new" member states of the EU.

Moreover the average participation of women in professional positions in non-OECD countries is 10 percentage points higher than in the MENA region. These results confirm general observations that can be found also in other analyses of the MENA countries, whereby the participation of women in political, social and economical life is significantly lower in the MENA countries than in other regions[22]. Rauch and Kostyshak (2009) point out that the gender gap in labour force participation is still persistent, despite the growing level of education and the lower fertility rates of women in Arab countries.

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[20]In case of LOW HDI group GEM values are reported by Uganda (place in rank 51, GEM equals 0.59), Lesotho (53; 0.589), Ethiopia (84;0.474) and Zambia (91;0.425).

[21] The second group of ISCO-88 standard of occupations includes jobs requiring masters degree i.a. jobs like scientists, associate science professionals or technicians.

[22] More detailed analysis of gender biases and discrimination of the vulnerable class of people in Arab countries is available in the Arab Human Development Report 2009.

Table 2.5 Political and economic participation of women, % of total

Country, region	Seats in parliament held by women[a]	Female legislators, senior officials and managers[b]	Female professional and technical workers[b]
MENA countries			
Tunisia	20	..	..
Israel	14	30	52
Syrian Arab Republic	12	15[c]	40[c]
Turkey	9	8	33
Jordan	9	..	..
Libyan Arab Jamahiriya	8	–	–
Algeria	7	5	35
Morocco	6	12	35
Lebanon	5	..	..
Egypt	4	11	32
Palestinian Authority	..	12	34
Regions			
Average MENA	9	13	37
Average MENA without Israel	9	11	35
Average EU-15	29	32	50
Average EU-27	23	31	54
Average EU-NMS-12	16	31	58
Average OECD	25	30	50
Average NON-OECD	16	29	47

Source: Human Development Indices (2008). Notes: [a] Data are as of 31 October 2008, unless otherwise specified. Where there are lower and upper houses, data refer to the weighted average of women's shares of seats in both houses. [b] Data refer to the most recent year available between 1997 and 2006. Estimates for countries that have implemented the International Standard Classification of Occupations (ISCO-88) are not strictly comparable with those for countries using the previous classification (ISCO-68). [c] Data for Syrian Arab Republic include clerical supervisors and follow the ISCO-68 classification.

2.5 Human Poverty Index (HPI-1)

Human Poverty Indices assess national deprivation in access to resources. As explained in Chapter 1, this is represented by the social and economic position of disadvantaged people within society. There are two different HPI indices: HPI-1 that relates to developing countries and HPI-2 measuring the level of poverty among developed countries. The higher the value of HPI the more likely poor people are excluded from the social development of a country.

In Table 2.6, we present HPI-1 indices for ten MENA countries (without Israel that is the only one developed country in the region, thus excluded from HPI-1) and other regions of selected countries.

Table 2.6 Values and ranking of the human poverty index (HPI-1), 2006

Country, region	Rank	Value (%)
MENA countries		
Jordan	22	6.1
Palestinian Authority	26	6.7
Lebanon	38	8.5
Turkey	40	8.7
Syrian Arab Republic	57	13.0
Libyan Arab Jamahiriya	60	13.6
Tunisia	66	16.1
Algeria	71	18.1
Egypt	73	20.0
Morocco	93	31.8
Israel	..	..
Regions		
Average MENA	55	14.3
Average EU-15	..	..
Average EU-27 (Czech Republic, Hungary, Romania)	8	3.3
Average EU-NMS-12 (Czech Republic, Hungary, Romania)	8	3.3
Average OECD (Czech Republic, Hungary, Mexico, Turkey)	17	4.9
Average NON-OECD	69	21.5
Average High HD countries (rank 1-75)	23	6.1
Average Medium HD countries (rank 76-153)	69	20.1
Average Low HD countries (rank 154-179)	119	43.1

Source: Human Development Indices (2008).

In the case of Egypt and Morocco we observe a moderate deprivation in access to resources (HPI equal and higher than 20.0%). This result is close to average HPI-1 constructed for the group of Medium HD countries (20.0%) as well as to the average for non-OECD countries (21.5%). However, in most MENA countries the value of the HPI-1 varies from 6.1% (Jordan) to 18.1% (Algeria). Therefore the overall average the HPI-1 for this region equals 14.3%.

On the other hand this result compared to the HPI-1 averages constructed for a few new member states of the EU (i.e. Czech Republic, Hungary, Romania with the average HPI-1 equal to 3.3%) or four developing OECD countries (Czech Republic, Hungary, Mexico and Turkey, where the average equals 4.9%) should be regarded as being quite high. Nevertheless the social deprivation of the poor in all Low HD countries is still more significant (43.1%) than in the MENA group. The HP-1 indices are available only for a limited group of

countries. Therefore, the HPI-1 indices applied as explanatory variables in a cross country regressions presented in the next chapters of this research limit drastically number of observations and quality of estimations[23].

2.6 Gini index

In addition to the above analysis of human poverty rates in the MENA countries one can investigate inequality in welfare distribution as measured by the Gini index. The various definitions of the Gini index were discussed in detail in Chapter 1. As stated before, the Gini index varies between zero and one (or zero and 100 percent), and the higher the Gini index, the higher the income and consumption inequality between individuals / households within one country. The data on Gini indices for the present research was derived from the latest update of the UNU/WIDER World Income Inequality Database (WIID2). As discussed before, comparable data to measure the index were lacking, something which was especially the case for the MENA countries. Graph 2.3 presents average GINI values for various years between 1980 and 2006, and various group of countries.

Because of the lack of information the results calculated for MENA are volatile[24]. However, one may notice that reported GINI averages in the table are larger than 35 percent, reaching even 52 percent in 1983.

Similar average values of coefficients were only obtained for non-OECD countries, ranging from 33% to 43%. On the other hand, average Gini index for European Union countries or OECD developed countries equalled to less than 35% within the analyzed period of time.

The significant inequality of welfare distribution in MENA or non-OECD countries compared to developed countries follows the same pattern observed for HDI indices. But it seems worth noting here that developed countries are actually becoming more unequal societies compared to the situation in the 1980s. and the early 1990s., as since 1994 the GINI indices increased to ca. 30%.

In addition to the composite indices described above, in the next part of this chapter we present detailed raw indices that constitute composite measures and were included in further econometric analyses.

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[23] HPI-1 indices are unavailable for developed countries, constituting a large share of "reporters" in our trade analysis (see next chapter).

[24] The problem of lack of data for MENA countries is well reflected by the fact, that for the years 1984, 1989,1993 and 1998 we did not have any data to calculate GINI indices.

Graph 2.3 Gini index in MENA and other regions, 1980-2006
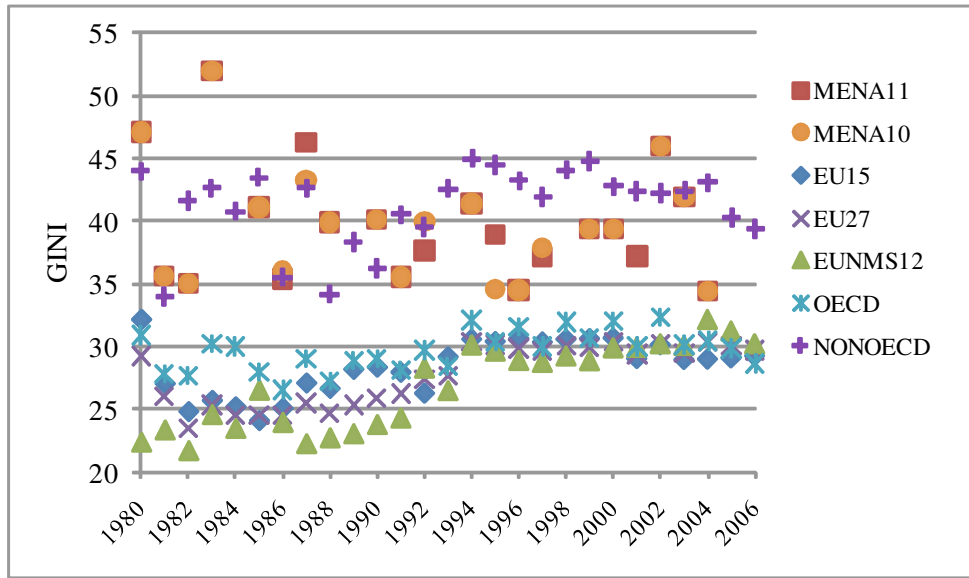
Source: UNU/WIDER (WIID2)

2.7 Average life expectancy

First of all, among other relevant countries, Egypt and Libya experienced the biggest growth in life expectancy (lex) between 1980 and 2006 (see Graph 2.4 and Table 2.7).

The expected average age of people in Egypt increased from 55 to 70 years, a 15 years increase in expected age reached at death. Apart from Turkey and Israel, all MENA countries converged to an average level of 70-74 years in life expectancy. It was not the case for two outliers: Israel reached 80 years and Turkey increased lex to only 69.4 years. Interestingly, saw a convergence in life expectancies among MENA countries: in 1980 life expectancy in MENA countries was more diverse than in 2006.

One may also notice that MENA as a group achieved immense progress in expected life length when compared to other regions. Graph 2.5 shows the results of average life expectancy in various groups of countries. Still, MENA countries are far away from the levels achieved by the EU-15 or OECD countries, but since the mid 1990s they significantly approached levels achieved by new member states of the EU. On the other hand, when compared to non-OECD less developed countries, the MENA region made a huge progress. For both regions the value of life expectancy was equal to 60 years in 1980 but by 2006 the distance between them reached almost 10 years in favour of the MENA region.

Graph 2.4 Life expectancy (years), MENA countries, 1980, 2006 and progress in 1980-2006
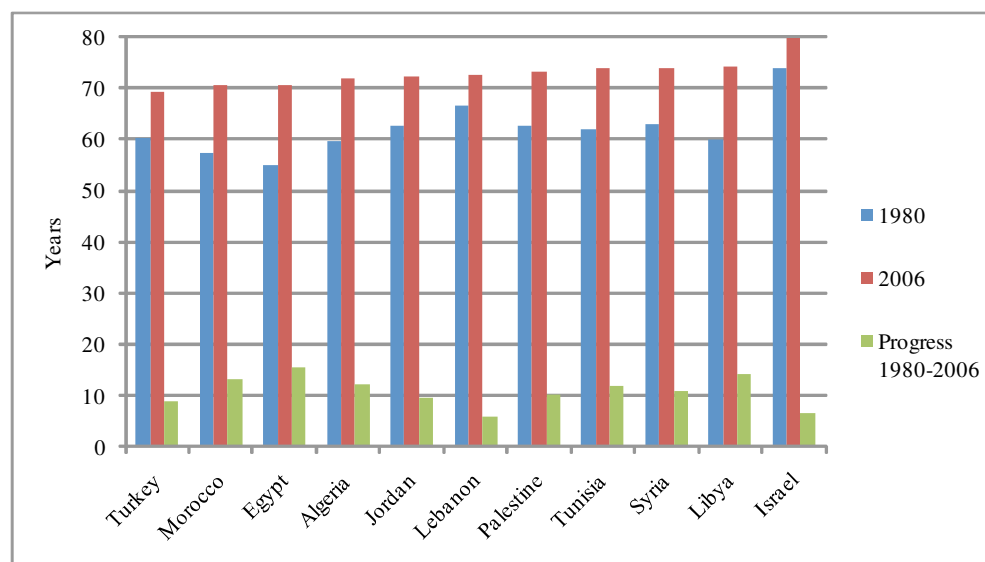
Source: Human Development Indices (2008).

Table 2.7 Life expectancy averages in MENA and other regions, 1980 and 2006

Country, region	1980	2006	Progress 1980-2006
MENA countries			
Turkey	60.3	69.4	9.1
Morocco	57.5	70.6	13.1
Egypt	55.1	70.8	15.7
Algeria	59.6	72.0	12.4
Jordan	62.6	72.1	9.5
Lebanon	66.7	72.7	6.0
Palestinian Authority	62.7	73.1	10.4
Tunisia	62.0	73.9	11.8
Syrian Arab Republic	63.1	74.0	11.0
Libyan Arab Jamahiriya	59.8	74.2	14.4
Israel	73.8	80.3	6.6
Regions			
Average MENA	62.1	73.0	10.9
Average MENA,without Israel	61.0	72.3	11.3
Average EU-15	73.7	79.1	5.4
Average EU-27	72.4	77.1	4.7
Average EU-NMS-12	70.8	74.7	3.9
Average OECD	72.7	78.4	5.8
Average NON-OECD	59.4	64.3	4.9

Source: Human Development Indices (2008).

Graph 2.5 Life expectancy averages – MENA and other regions, 1980-2006
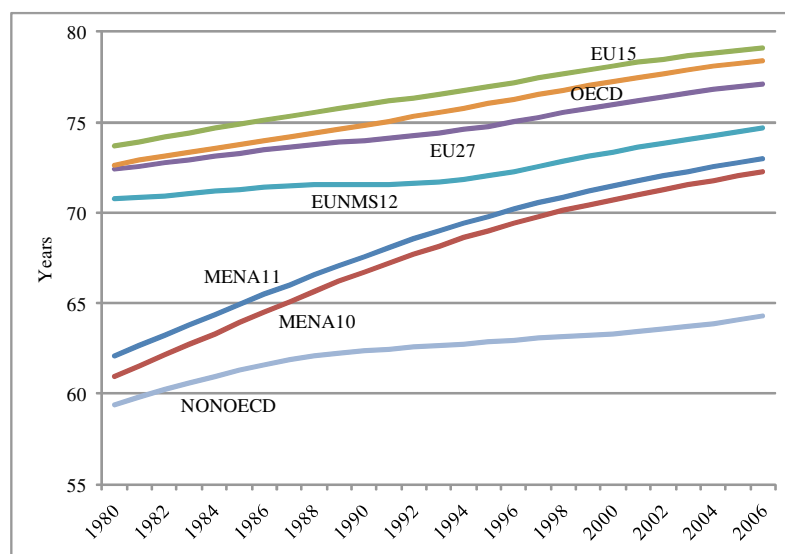
2.8 Infant mortality

One of the most persuasive indicators describing the quality of the health care system is the rate of infant mortality of children under 5 years per 1000 live births. The rates included in the Table 2.8 suggest that the mortality of the youngest children was still a significant problem for most MENA countries in 1980, when the rate ranged from 38 births per 1000 (Lebanon) to 119 (Egypt), reaching only about 15 in Israel and in OECD countries. Although the rates for MENA countries decreased by 60-80% in-between 1980 and 2006, they remain considerably higher than the average for European Union or OECD countries.

The pace of changes is similar to the changes in life expectancy, as the rates converged faster at the beginning of the analyzed period of time, subsequently stagnating after 2000. On the other hand, the average infant mortality for non-OECD countries decreased in the period less than for MENA countries (Graph 2.6). Starting from almost equal levels in 1980 MENA and non-OECD countries, the average for MENA countries had decreased in 2006 to 22 live births per 1000, whereas the average for non-OECD countries had decreased only to 44.

Table 2.8 Infant mortality rate per 1000 live births, 1980 and 2006

Country, region	1980	2006	Change 1980-2006
MENA countries			
Israel	16.1	4.2	-0.7
Syrian Arab Republic	55.9	12.1	-0.8
Libyan Arab Jamahiriya	55.0	17.0	-0.7
Tunisia	72.0	19.0	-0.7
Palestinian Authority	55.0	20.4	-0.6
Jordan	52.0	21.4	-0.6
Turkey	103.0	23.7	-0.8
Lebanon	38.0	26.2	-0.3
Egypt	119.3	28.9	-0.8
Algeria	94.0	33.4	-0.6
Morocco	99.0	34.2	-0.7
Regions			
Average MENA	69.0	21.9	-0.7
Average MENA,without Israel	74.3	23.6	-0.7
Average EU-15	12.5	3.7	-0.7
Average EU-27	15.8	5.0	-0.7
Average EU-NMS-12	19.9	6.7	-0.7
Average OECD	17.5	5.6	-0.7
Average NON-OECD	76.3	43.9	-0.4

Source: World Development Indicators 2007.

Graph 2.6 Infant mortality rate per 1000 live births, (1980, 1985, 1990, 1995, 2000, 2005 and 2006)
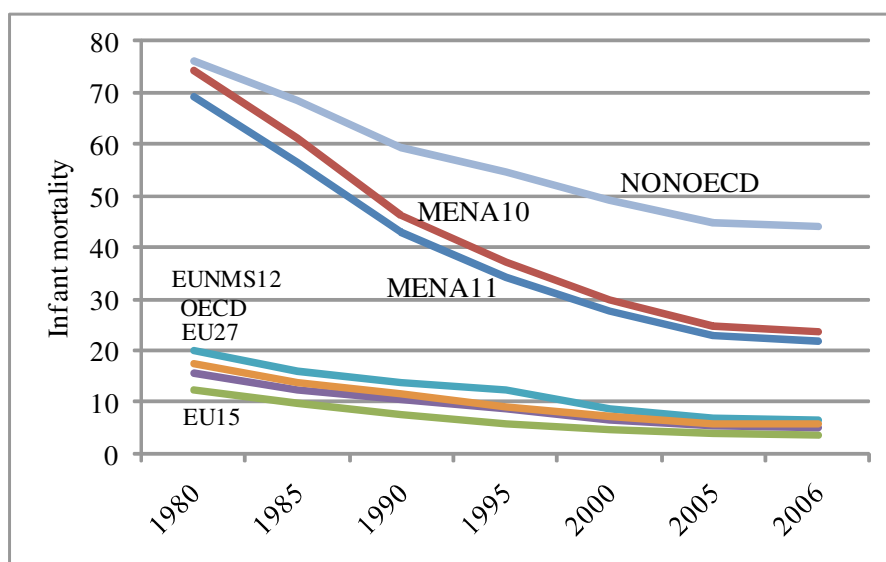
Source: World Development Indicators 2007.

2.9 Gross Domestic Product per capita

Gross domestic product per capita represents the simplest and most common measure of social welfare of individuals in various countries. When calculated in Purchasing Power Parity constant US dollars (US$) 2005 prices, GDP in MENA countries ranges from 3500 in the Palestinian Authority to 23400 in Israel (see Table 2.9 and Graph 2.7). Apart from Palestine, where the GDP pc decreased by 20% from 1980 to 2006, each MENA country increased its GDP pc by a rate varying from 13% (Jordan) up to 95% (Egypt). Although the growth in MENA 10 (MENA excluding Israel) equalled 52% and was significantly higher than in the case of non-OECD countries, that grew by only 16%, the MENA region remained in the last position among regions with GDP pc of only 6.2 thousands PPP US$ or more. When Israel is included in the comparisons, MENA presents higher values of GDP pc exceeding the average obtained for the non-OECD group. Even so, the gap between the 12 new member states of the EU and MENA countries remains significant and does not diminish over time (see Graph 2.8).

Table 2.9 GDP per capita, constant 2005 international US$, MENA and other regions, 1980 and 2006

Country, region	1980	2006	Growth rate 1980-2006
MENA countries			
Israel	14 807	23 353	0.58
Libyan Arab Jamahiriya	7 469	11 263	0.51
Lebanon	7 355	9 441	0.28
Turkey	4 322	8 157	0.89
Tunisia	3 573	6 648	0.86
Algeria	5 361	6 151	0.15
Egypt	2 456	4 800	0.95
Jordan	3 986	4 485	0.13
Syrian Arab Republic	3 364	4 095	0.22
Morocco	2 357	3 794	0.61
Palestinian Authority	4 348	3 493	-0.20
Regions			
Average MENA	5 299	7 789	0.47
Average MENA,without Israel	4 111	6 233	0.52
Average EU-15	19 277	34 385	0.78
Average EU-27	15 970	26 844	0.68
Average EU-NMS-12	8 883	17 418	0.96
Average OECD	18 563	30 580	0.65
Average NON-OECD	6 098	7 047	0.16

Source: World Development Indicators, various years. Notes: [a] data for 1994,[b] data for 1988. Missing data for Poland: 1980-89, Czech Republic: 1980-89, Slovak Republic: 1980-83, Lithuania: 1980-89, Slovenia: 1980-89, Libya: 1988-98, Palestine: 1980-93 and non-OECD countries in various years.

Graph 2.7 GDP per capita, constant 2005 international US$ – MENA countries, 1980 and 2006
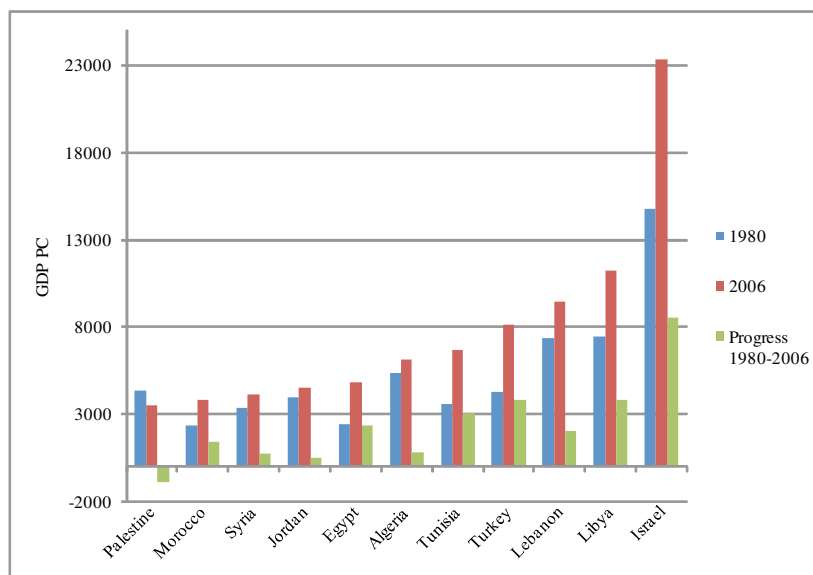
Source: World Development Indicators, various years. Notes: [a] data for 1994, [b] data for 1988. Missing data for Poland: 1980-89, Czech Republic: 1980-89, Slovak Republic: 1980-83, Lithuania: 1980-89, Slovenia: 1980-89, Libya: 1988-98, Palestine: 1980-93 and non-OECD countries in various years.

Graph 2.8 GDP per capita, constant 2005 international US$ – MENA and other regions, 1980-2006
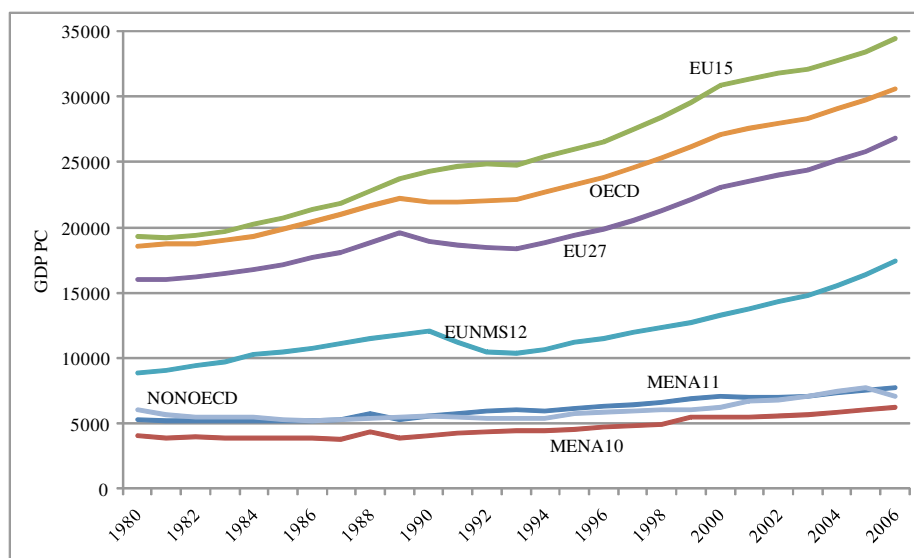
Source: World Development Indicators, various years. Notes: MENA-11 – including Israel, MENA-10 – excluding Israel.

2.10 Literacy and schooling

The rates of literate people are presented in Table 2.10. In the case of Algeria the literacy rate of the adult population almost doubled between 1980 and 2006. A similar increase was observed for Morocco, even if in this country the literacy rate stays at the lowest level among MENA countries[25]: 54% in 2006. The average level of literacy in the MENA region amounted to 55% in 1980 and increased to 79% in 2006. These countries experienced a very significant increase in literacy when compared with other regions: about 44-50 percentage points between 1980 and 2006. Still the levels of literacy are much below the ones in EU or OECD countries, with the exception of Israel and Jordan, whose rates reached respectively 96% and 93% in 2006.

Compared to non-OECD countries, in 1980 average literacy in the MENA region was at the level of 55% and about 10 percentage points below levels reached in non-OECD countries. In 2006 this gap had almost disappeared, as the literacy level increased to 79% in MENA and 80% in non-OECD.

Another measure of the level of education is presented in Table 2.11 reflecting average years of school in the population aged over 25 years observed for years 1980 and 2000 and drawn from Barro and Lee (2000). Similarly as with literacy levels, Israel is an outlier in education among MENA countries and the average time spent by adult Israelis in school amounts to over 9 years. In Jordan it equals 7.4 years in 2000, while it was still only 2.9 years in 1980. There was also a significant progress in the average time dedicated to education in several MENA countries such as Syria, Egypt and Algeria reaching an increase of 3 years, contributing to an average increase of 2.9 years for the MENA region as a whole. Within the same years, other regions like the European Union, OECD or non-OECD increased educational practice by not more than 1.5 years. Despite the substantial positive change in the level of education of MENA countries, they still present the lowest levels of time spent on learning when compared to other regions. These results may confirm that MENA countries are still in the process of convergence in education to other countries, and not only to the most developed ones.

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[25] Literacy rates for Palestinian Authority were not included in this comparison as they were not available.

Table 2.10 Literacy rates of adult people in MENA and other regions, percentage points, 1980 and 2006

Country, region	1980	2006	Progress 1980-2006
MENA countries			
Israel	86	96	10
Jordan	69	93	24
Lebanon	72	89	16
Libyan Arab Jamahiriya	53	85	32
Syrian Arab Republic	53	79	26
Tunisia	45	77	32
Algeria	37	73	36
Egypt	39	60	21
Morocco	29	54	26
Turkey	68	88	20
Palestinian Authority	..	..	..
Regions			
Average MENA	55	79	24
Average MENA,without Israel	52	77	26
Average EU-15	91	97	6
Average EU-27	94	98	4
Average EU-NMS-12	96	98	3
Average OECD	89	96	7
Average NON-OECD	64	80	17

Source: Human Development Indices (2008).

Table 2.11 Average years of school in population aged 25+, 1980 and 2000

Country, region	1980	2000	Progress 1980-2000
MENA countries			
Israel	9.1	9.2	0.1
Jordan	2.9	7.4	4.4
Syrian Arab Republic	2.9	5.7	2.9
Egypt	2.2	5.1	2.8
Turkey	2.8	4.8	2.0
Algeria	1.6	4.7	3.2
Tunisia	1.9	4.2	2.3
Lebanon	..	..	..
Libyan Arab Jamahiriya	..	..	..
Morocco	..	..	..
Palestinian Authority	..	..	..
Regions			0.0
Average MENA	3.3	5.9	2.5
Average MENA,without Israel	2.4	5.3	2.9
Average EU-15	7.3	8.8	1.4
Average EU-27	7.3	8.8	1.5
Average EU-NMS-12	7.4	8.9	1.5
Average OECD	7.8	9.3	1.4
Average NON-OECD	3.5	5.1	1.6

Source: Barro and Lee (2000).

2.11 Civil Liberties

Civil liberties allow for the freedoms of expression and belief, associational and organizational rights, rule of law, equality of opportunities and personal autonomy without interference from the state. The measurement of civil liberties is based on results of a survey of specific questions, and each country and territory is assigned a numerical rating—on a scale of 1 to 7, where 1 indicates the highest degree of freedom and 7 the lowest level of freedom. A country is assigned to a particular category based on responses to the checklist and the judgments of the Freedom House. According to the Freedom House interpretation, regions with numbers that average 1-2 are considered "free," 3-5 "partly free," and 6-7 "not free." In Table 2.12 we present the results for selected years: 1980 and 2006. In the MENA region only Israel is rated as a free country regarding civil liberties. The rest of MENA countries are ranked at most as partly free, however two of them: Syria and Libya are considered not free. Still, between years 1980 and 2006, every MENA country either increased civil liberties or maintained them.

From those judged as not free in 1980, three of them (Jordan, Algeria, Syria) increased civil liberties, so as to advance by one place in the rating. Two MENA countries increased the place in the ranking by two points: on the other hand there was no progress in the case of the least free country Libya, as regards civil liberties.

Comparing the average results of civil liberties for the MENA region to other groups of countries (Table 2.12 and Graph 2.9), we may notice that MENA was placed quite far from the place the EU-27 or OECD occupied in the list. The results obtained for non-OECD countries are the closest to the average MENA record; however in terms of civil liberties MENA countries reached usually higher levels by up to one point than non-OECD countries, indicating a quite poor situation in the MENA region in terms of holding civil rights. Moreover, what is significant for MENA and visible in Graph 2.9, is that there were periods of a distinct worsening in the respect of civil freedoms, for instance between the years 1989-1993 and 1998-2000[26]. Such detrimental reversals in an otherwise slowly improving trend were not observed for other regions, that continued to improve civil liberties, moving even by 3.5 points (i.e. lowering the number of points) in the case of new member states of the EU[27].

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[26] Turkey and Tunisia increased the place in ranking by one point in 1989 (from 3 to 4), Algeria changed the position from 4 in 1990 to 7 in 1993, Israel and Morocco moved by one point and Egypt by two points to worse position within years 1988-2000.
[27] In case of new member states of the EU the most significant improvement was caused by political transformation in Central and Eastern Europe in last decade of 20th century.

Table 2.12 Civil liberties, place in ranking, 1980 and 2006

Country, region	1980	2006	Progress 1980-2006
MENA countries			
Israel	2	2	0
Turkey	5	3	-2
Morocco	4	4	0
Lebanon	4	4	0
Jordan	6	4	-2
Egypt	5	5	0
Algeria	6	5	-1
Tunisia	5	5	0
Syrian Arab Republic	7	6	-1
Libyan Arab Jamahiriya	7	7	0
Palestinian Authority	..	..	..
Regions			
Average MENA	5.1	4.5	-0.6
Average MENA,without Israel	5.4	4.8	-0.7
Average EU-15	1.5	1.1	-0.5
Average EU-27	2.4	1.1	-1.3
Average EU-NMS-12	4.7	1.2	-3.5
Average OECD	2.0	1.2	-0.7
Average NON-OECD	4.8	3.5	-1.2

Source: Freedom House Political Rights 2009. Notes: ranking of 1 to 7 places. 1 means "the most free", 7 means "the least free".

Graph 2.9 Civil liberties in MENA and other regions, 1980-2006
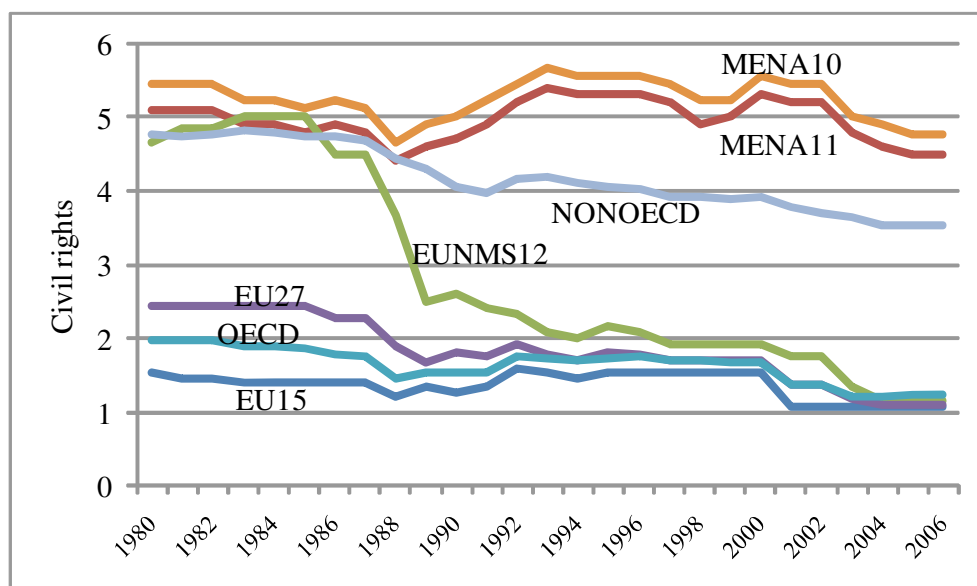
Source: Source: Freedom House Political Rights 2009. Notes: ranking of 1 to 7 places. 1 means "the most free", 7 means "the least free".

2.12 Summary

The picture of the socio-economic situation in MENA countries presented in this chapter has been drawn based on various measures. Starting with the Human Development Index we compared the situation in MENA countries and other regions including the EU-15, consisting of the 15 "old" member states of the European Union, the current EU with the 27 current member states the 12 "new" member states and OECD countries as well as the non-OECD group of less developed countries. Comparing MENA 10 (without Israel) and non-OECD countries, it appears that initially less developed MENA countries had improved rapidly their situation by 2006, presenting a considerable divergence from the behavior of non-OECD countries.

As the HDI is constructed from aggregated measures of development, further indices of disparities between the rich and the poor or women and men, in terms of access to education, health and a decent standard of living within a given nation, were presented to get a broader perspective by measuring the social inequalities. For instance, to include social inequalities related to gender, a gender development index (GDI) was presented. In the MENA region the average GDI equals 97% of the HDI value. This difference between the GDI and the HDI is more significant in the case of this region than for other analyzed regions and explains that gender inequalities hinder human development in MENA countries.

In addition, when the real engagement of women in political and economic life is measured (as GEM – gender empowerment measure) most of MENA countries, for which specific data was available, present low levels of female participation in social life. The average value of GEM in the MENA region equals 0.393 and is significantly lower than the averages in the EU-15 (0.8), the OECD (0.75) or even non-OECD countries (0.5). Similar disparities between MENA-10 and other regions occur in the case of percentage of seats held by women in parliament (9% in MENA countries compared to 16% in non-OECD countries) or economic participation in job positions requiring high skills. Only 11% of total managerial posts are held by women in MENA countries, whereas 29% in non-OECD countries. Second rank professional and technical positions are occupied in only 35% by women in MENA and that level is 10 percentage points lower than in non-OECD countries.

Similar significant differences between MENA and other regions are observed in the case of the social deprivation of the poor, measured by the Human Poverty Index (HPI-1). However, the differences between MENA and other groups of countries are reduced when the

GINI index, that measures inequality of welfare distribution, is analyzed. Still, the index of civil liberties suggests that the record of civil freedom is quite poor in MENA region.

Regarding the other, raw indices one may notice that MENA achieved immense progress in expected life length when compared to other regions, approaching the level observed in new member states of the EU in the last decade. The rates of infant mortality also significantly decreased in MENA countries more than in the case of other groups of countries; even so they remain considerably higher than the average figures for the European Union or OECD countries. MENA countries experienced a very significant increase of literacy in the society when compared to other regions: about 44-50% between 1980 and 2006. Still, when compared to other regions, including non-OECD average figures, the levels of literacy and education in MENA countries were the lowest.

Finally, almost every MENA country increased its GDP per capita, from a low 13% to a high 95%, that contributed to an average growth of 52% between 1980 and 2006. The GDP pc growth was significantly higher in MENA than in non-OECD countries. However the level of GDP per capita in MENA-10 region remained the last in a comparison with other regions (6.2 thousands PPP US dollars per capita). When Israel is included in comparisons, MENA presents higher values of GDP pc exceeding the average for other non-OECD countries. Nevertheless, the gap between the EU-12 new member states and MENA countries is significant and does not diminish over time.

In the following chapters we present the results of our empirical investigation concerning the relationship between various measures of social development, trade, foreign direct investment and growth for the MENA and other countries. In particular, we try to verify a number of research hypotheses:

higher level of *Human Development Index (HDI)* is positively associated with larger trade and foreign direct investment flows and higher rates of economic growth;

higher level of women participation in social and economic development, as proxied by the two gender inequality measures: Gender Development Index (GDI) and Gender Empowerment Measure (GEM), as well as their components, that assess the level of political and economic participation of women, is positively associated with intensified trade, foreign investment and higher growth;

the impact of higher inequality within societies, represented by higher value of *Gini coefficient*, might be twofold. First, large differences in income levels may

result in smaller trade, lower FDI and lower economic growth (Sen 1976)[28]. On the other hand, the opposite impact might be expected, as argued by Stark (2006), when larger inequality of incomes prompts a search for higher status, additional work, and therefore promotes additional effort, more production, trade, investment and growth;

lower level of social deprivation of the poor, measured by the Human Poverty Index (HPI-1), should be positively associated with higher level of social development and therefore larger international trade, FDI and higher economic growth;

more civil freedom within a society, as measured by lower values of the index of civil liberties, should be positively associated with the development of trade, FDI and growth;

the higher value of life expectancy, and the lower rates of infant mortality (a proxy for the quality of the healthcare system and a reflection of the level of social development) should be associated with larger international trade, FDI flows, and higher rates of economic growth;

higher literacy rates and average rates of schooling among adults, reflecting better access to education and skills, are positively associated with higher levels of international trade and foreign direct investment, as well as a higher rate of economic growth.

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[28] In Sen's framework, the social welfare is the mean income of the group multiplied by one minus Gini coefficient. This formulation gives two rationales for income redistribution: the pursuit of social justice, and securing of efficiency.

Chapter 3

Relationship between social development and international trade

In this chapter we investigate the relationship between social development and international trade flows. The role of human capital has been stressed by both traditional and the new trade theory. The traditional trade theory predicts that differences in relative factor endowments create the basis for international comparative advantage and affect trade flows. According to the empirical studies based on the Heckscher-Ohlin-Vanek model with many goods and factors of production the human capital is treated as an important factor of production that affects both the volume and the structure of international trade. In particular, the stock of human capital is proxied by the average years of schooling or the relative number of workers with different skill levels. The latest strand of the new trade theory initiated by Melitz (2003), focuses on firm heterogeneity and shows that export decisions are based on labor productivity at the firm level. Furthermore, labor productivity may depend on stock of human and social capital. Therefore, we can expect that higher level of social development may be positively associated with the efficiency of human capital and thus may positively affect firm productivity and their decisions to export.

We conduct our analysis using three data samples: the panel covering all countries and years 1980-2004, the cross section for all countries in the last year of the sample - 2006 and the cross section for Mediterranean countries only. We study the impact of the aggregate measures of social development as well as particular components of these measures discussed in previous chapters.

3.1 Analytical Framework

The gravity equation is one of the most popular empirical equations that has been successfully used to study the whole range of spatial interactions in economics for about fifty years. In particular, it has been most often applied to study the determinants of bilateral trade flows and to assess the impact of various forms of regional economic integration, such as the creation of a customs union or the adoption of a common currency, on the volume of bilateral trade between integrating countries.

In the context of international trade, the gravity equation in its most basic form postulates that the amount of trade between two countries increases in their sizes, as measured

by their national incomes, and decreases in the cost of transport between them, as measured by the distance between their economic centres. This relationship closely resembles Newton's (1687) law of universal gravitation which states that every particle in the universe attracts every other particle with a force that is proportional to the product of their masses and inversely proportional to the square of the distance between the particles.

Although the gravity equation in its basic form does a pretty good job at explaining bilateral trade with just the size of trading partners and distances between them, however, there is still a huge variation in trade it is unable to explain. Therefore, in order to improve the performance of the gravity equation in empirical studies of bilateral trade flows it has been also common to specify it in a more general form that takes into account also the impact of other factors that may affect trade. One of the most frequently used variables to augment the baseline gravity equation is per capita income. The general idea behind the inclusion of this variable is that higher-income countries trade more in general (Head, 2000).

The first formal justification for the inclusion of the per capita income variables was provided by Bergstrand (1989) who concentrated on the demand-side. He assumed complete specialization in production and in order to provide the theoretical justification for the use of per capita incomes in his estimating equations he had to depart from the standard assumption of homothetic and identical preferences across countries. Instead, he assumed non-homothetic preferences in the manner of Markusen (1986), however his approach was not very successful empirically.

More recently, Cieślik (2009) demonstrated how the augmented gravity equation can be derived from a variety of models based on both neoclassical and monopolistic competition approaches that assume incomplete specialization in production and provided a supply-side justification for the inclusion of per capita income variables. According to him, income per capita variables proxy for the differences in relative factor endowments between trading partners.

In our specification in addition to the standard gravity variables we will therefore use measures of relative factor endowments and technology differences (Bergstrand 1990). Moreover, we will also control for changes in trade policy that occurred during the period covered by our sample that reflect multilateral as well as regional trade liberalization. Our estimating equation used to study the determinants of bilateral trade flows, specified in logarithmic form, is as follows:

$$\ln T_{ijt} = \alpha_0 + \alpha_1 \ln Y_{it} + \alpha_2 \ln Y_{jt} + \alpha_3 \ln y_{it} + \alpha_4 \ln y_{jt} + \alpha_5 \ln land_{it} + \alpha_6 \ln land_{jt}$$
$$+ \alpha_7 \ln Dist_{ij} + \alpha_8 Contiguity_{ijt} + \alpha_9 EU_{ijt} + \alpha_{10} Colony45_{ijt} + \alpha_{11} GATT\_WTO + \alpha_{12} OECD_{ijt}$$
$$+ \alpha_{13} \ln Exchange\_sd_{ijt} + \xi' Z_{ijt} + c_{ij} + \theta_t + \varepsilon_{ijt}$$

where:

T_{ijt}: bilateral exports or the volume of exports plus imports between country i and j in period t depending on model specification;

Y_{it}: GDP in country i in period t;

y_{it}: GDP per capita in country i in period t;

$land_{it}$: arable land *per capita* in country i in period t;

Y_{jt}: GDP in country j in period t;

y_{jt}: GDP per capita in country j in period t;

$land_{jt}$: arable land *per capita* in country j in period t;

$Dist_{ij}$: distance between country i and j;

$Contiguity_{ijt}$: dummy variable that takes value 1 if there is a common border between countries i and j in period t and 0 otherwise;

EU_{ijt}: dummy variable that takes value 1 if both countries are members of the European Union in period t and 0 otherwise;

$Colony45_{ijt}$: dummy variable that takes value 1 if there is a colonial link after 1945 between the reporting and partner countries in period t and 0 otherwise;

OECD: dummy variable indicating whether both trading countries are the OECD members or otherwise;

GATT_WTO: dummy variable indicating whether both countries are the GATT/WTO members or otherwise.

$Exchange\_sd_{ijt}$: exchange rate volatility between country i and country j in period t measured using the standard deviation of first differences of logs. These differences are equal to zero when the exchange rate does not change.

Z_{ijt}: vector of other explanatory variables that may affect bilateral trade between country i and country j in period t (such as preferential trading agreements and customs unions, common language, historical ties, geographic location: landlocked, etc.). The complete list of variables is presented in the next section.

c_{ij}: individual country-pair specific effect that may be fixed or random depending on model specification;

θ_t: random, not observable time specific effect in the period t, affecting all observations in the same way.

ε_{ijt}: error term.

The generalized gravity equation is estimated using both standard panel data techniques, including fixed and random effects for the whole sample period, and simple OLS for the last year of our sample. Our empirical specification includes an unobserved effect c_i that can be often correlated with explanatory variables. In this case the joint error term can be defined as:

$$v_{ijt} = c_{ij} + \varepsilon_{ijt}.$$

Some of the variables in the panel (namely the ones from Barro and Lee (2000) dataset) are available only in 5-year intervals. We decided to average all the other variables in the same intervals and run the panel regressions on these averages.[29]

3.2 Data Sources

In our study, we used bilateral trade flows of the OECD and CEE countries that were treated as *reporters*, among themselves as well as with all other countries, that were treated as *partners*, excluding the smallest countries.[30] The detailed list of reporter countries included in our study is shown in Appendix 1. The sample covers the period 1980-2006 which yields around 85 thousand observations for the full sample. The complete description of the dataset and data sources used in our study is provided in Appendix 2.

3.3 Estimation results

We present three sets of estimation results. We start with presenting the general results for all countries and all years of our sample obtained using panel data and fixed effects estimators.[31] Then we present cross section results for all countries and for the last year of our sample –

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[29] In effect, for all the variables included in our panel, we have at most 5 observations for each country for years 2000-2004.

[30] The smallest economies with a population less than 200 thousand inhabitants were excluded from our sample.

[31] The Hausman test and the Sargan test identified the fixed effects estimator as the preferred estimation method over the random effects and Hausman-Taylor estimators.

2006. Finally, we present cross section results for Mediterranean countries and for the last year of our sample – 2006.

3.3.1 Panel Data Results

We start with estimating the benchmark gravity model via a fixed effects estimator and later we test the robustness of our results with the random effects estimator. Our specification of the estimating equation includes the extended set of gravity variables: GDP, distance, the variables reflecting relative factor abundance and productivity differences, measured by arable land per capita and GDP per capita, respectively as well as exchange rate volatility (to measure the impact of the negative impact of volatility of trade flows). Moreover, we include trade policy variables such as membership in the OECD, EU, GATT-WTO and more specifically MENA preferential agreements (i.e. the agreements concluded between the European Union and particular Mediterranean countries). The prefixes *R_* and *P_* represent the variables for reporter and partner countries, respectively. Prefix *ln* indicates, that variable in logarithm was used. The benchmark estimation results are presented in Table 3.1.

In our results, the estimated parameters for *reporters* should be interpreted as accompanying characteristics of exporting countries while the parameters for *partners* should be interpreted as accompanying characteristics of importing countries.

The gravity variables in most cases display expected signs and are statistically significant. For example, the positive values of the estimated parameters on the GDP variables of both exporting and importing countries show that trade flows are bigger between larger countries. The negative value of the estimated parameter on the exchange rate volatility means that reduction in volatility stimulates trade flows. The positive values of the parameters on trade policy variables suggest that the membership in the EU, OECD, and GATT-WTO promotes trade. Moreover, the agreements between the EU and MENA countries stimulate exports of EU members to the latter but discourage the exports from the latter to the EU.

In Table 3.2 we present the estimation results obtained from the gravity model which was supplemented by various measures of social development. To save on space we present only the parameter estimates of the social development variables omitting the gravity variables discussed in the benchmark model.[32]

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[32] The full set of estimates is presented in the Appendix 3.

Table 3.1 Gravity model benchmark results - Panel

Fixed effects (within) regression		No of observations		27758
		No of groups		7970

lnExport	Coef.	Std. Err.	t	P>|t|
R_lnGDP	2.288045	.1479528	15.46	0.000
R_lnGDP_pc	-1.626474	.1359253	-11.97	0.000
R_lnLand	-.0073318	.0777824	-0.09	0.925
P_lnGDP	.2194995	.0957774	2.29	0.022
P_lnGDP_pc	.3250395	.0886815	3.67	0.000
P_lnLand	-.1217054	.0513982	-2.37	0.018
ExchangeRate_StdDev	-.7430016	.1081472	-6.87	0.000
R_MENA-P_EU	-.3206172	.1354116	-2.37	0.018
R_EU-P_MENA	.2197534	.1325465	1.66	0.097
OECD	.2461077	.0610283	4.03	0.000
EU	.2661243	.094611	2.81	0.005
GATT-WTO	.172231	.0351065	4.91	0.000
_Inum5_2	-.0954715	.0294342	-3.24	0.001
_Inum5_3	-.1872387	.0456002	-4.11	0.000
_Inum5_4	-.1287381	.0594999	-2.16	0.031
_Inum5_5	-.1724849	.0717405	-2.40	0.016
_cons	-42.76262	2.974055	-14.38	0.000
sigma_u	3.1945603			
sigma_e	.95199697			
rho	.91843611	(fraction of variance due to u_i)		

F test that all u_i=0:　　　F(7969,19772)=8.01　　　Prob>F=0.0000

In column (1) of Table 3.2 we present estimation results obtained from the specification in which we included our most general measure of social development - the HDI(t). Our estimation results reveal that both in the case of partner and reporter the HD variable is statistically significant. However, the estimated parameter displays a positive sign in the case of the reporter (exporting country) and a negative one in the case of the partner (importing country) which is not in line with our initial expectations.[33]

The major drawback of the HD index is that it is a very aggregate measure that does not capture several important aspects of social development such as income inequality. Therefore, in column (2) we present the estimates of the gravity model including the Gini index as our measure of income inequality. The higher value of this index is associated with higher income disparities.

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[33] In the case of cross section results the estimated parameters on the HDI variables are positive both for exporting and importing countries.

Table 3.2 Social variables and trade flows – panel results

(standard errors in parentheses)

	1	2	3	4	5	6
R_HDI	6.078***	6.009***				
	(0.655)	(0.708)				
P_HDI	-2.007***	-1.331***				
	(0.399)	(0.479)				
R_Gini		-0.008**	-0.004	-0.005	-0.005	-0.007***
		(0.003)	(0.003)	(0.003)	(0.004)	(0.003)
P_Gini		0.002	-0.006***	-0.006***	-0.006**	0.002
		(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
R_InfantMortality			-0.008***	-0.007***	-0.007***	-0.014***
			(0.002)	(0.002)	(0.002)	(0.001)
P_InfantMortality			0.002	0.003**	0.002	-0.003***
			(0.001)	(0.001)	(0.001)	(0.001)
R_AverageSchooling			0.054***	0.037*	0.039**	0.102***
			(0.019)	(0.019)	(0.020)	(0.011)
P_AverageSchooling			0.013	0.003	-0.008	0.019*
			(0.018)	(0.018)	(0.019)	(0.011)
R_CivilLiberties				-0.079***	-0.080***	-0.089***
				(0.015)	(0.015)	(0.014)
P_CivilLiberties				-0.057***	-0.061***	-0.047***
				(0.012)	(0.013)	(0.011)
R_Telephone_pc					0.001	0.195***
					(0.046)	(0.037)
P_Telephone_pc					0.067*	0.160***
					(0.038)	(0.031)
No of observations	17701	11893	10616	10616	10545	10545
No of groups	6905	5045	3485	3485	3484	3484

*** denotes statistical significance at the 1% level,- ** denotes statistical significance at the 5% level, - * denotes statistical significance at the 10% level.

We can notice that the HDI variable remains statistically significant. The Gini variable is statistically significant only in the case of the reporting (exporter) country. This result may be explained by data quality on the income inequality. In the case of developing countries (most partners) the inequality coefficients are based on consumption, rather than on incomes, as in the case of developed countries (most reporters). The negative sign means that lower income inequality is associated with higher level of exports. However, in other specifications presented in colums (3)-(5), the Gini variable is statistically significant for partner countries and displays the negative sign.

To address the potential criticism that the HD index is a very aggregate measure and it is very hard to identify what really drives the significance of our results we decided to

disaggregate the HD index into its constituent components. These components in addition to GDP per capita include measures of education and the life length and health. Unfortunately, the disaggregated data used to calculate the HDI were not available. Therefore, we decided to proxy education with the average years of schooling using the Barro and Lee (2000) dataset. The life length and health were proxied by the infant mortality rate per 1000 live births. This latter variable is often used in empirical studies as a measure of the quality of the healthcare system.

The estimation results using the separate measures of social development are presented in column (3) of Table 3.2. Our estimation results reveal that education and infant mortality variables are statistically significant for reporters (exporters) and not significant for partner (importing) countries. In line with our initial expectations the positive sign associated with the education variable means that the higher level of education increases exports while the negative sign accompanying the infant mortality variable means that the lower quality of the healthcare system decreases exports. Surprisingly, none of these variables is statistically significant in the case of partner countries.[34]

Moreover, we can notice that the inclusion of separate variables for education and infant mortality instead of the HDI affects the statistical significance of the Gini indices for partner and reporting countries. In particular, we can notice that the Gini index for the reporter country loses its previous statistical significance while the Gini index for the partner country that was previously not statistically significant now becomes statistically significant at the 1 per cent level. Thus, in this case the lower level of income inequality within the partner country is positively related to the level of its imports.

The next step in our analysis is to include the measures of civil liberties in the reporting and partner countries. The civil liberties allow for the freedoms of expression and belief, associational and organizational rights, rule of law, and personal autonomy without interference from the state. The higher value of the civil liberties index is associated with lower freedom. The estimation results on the impact of civil liberties and other variables on trade flows are presented in column (4) of Table 3.2.

The estimated parameters for the civil rights index are statistically strongly significant in the case of both partner and reporting countries and display the expected negative signs. Thus, the higher level of civil liberties is positively related to the level of trade. The inclusion of the civil rights indices did not have much impact on the estimates of the parameters for the

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[34] However, in the case of cross section regressions the level of education and infant mortality are statistically significant and display the expected signs.

other explanatory variables. In particular, the education variable for the reporting country remains statistically significant although at a lower level of significance. The infant mortality variable for the reporting country remains statistically significant at the 1 per cent level. However, the infant mortality variable for the partner country becomes statistically significant at the 5 per cent level but with a counterintuitive (negative) sign. We will return to this result in the cross section analysis for 2006.

The final step in our analysis is to include the measure of the density of telecommunication infrastructure. This measure combines the total number of mobile and telephone subscribers divided by the population. The higher telephone density should facilitate communication within and between societies and stimulate trade.

The estimation results are presented in column (5) of Table 3.2. They reveal that the estimated parameter on the telecommunication variable is statistically significant only in the case of the partner country and only at the 10 per cent level of statistical significance. Thus, better telephone infrastructure is positively related imports. We will return to the relationship between telecommunication infrastructure and trade when we discuss the estimation results obtained from the cross section.

In order to assess the robustness of our results we reestimate our model using the random effects estimator.[35] The estimation results via random effects are presented in column (6) of Table 3.2. The change of the estimation method changes the statistical significance of the estimated parameters on some of our social development variables. In particular, now both infant mortality variables are statistically significant and display negative signs. The same applies to our educational variables that display positive signs and are both statistically significant although at different levels of significance. In addition to the robustness of the estimation tests we also studied the direction of causality between social development and international trade, using dynamic panel model. It turned out that most measures of social development exert an impact on the level of international trade. In particular, better quality of the healthcare system proxied by the rate of infant mortality, more equal distribution of income and higher level of civil rights positively contribute to the development of international trade in the majority of the estimated specifications. However, the HD index –

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[35] Although the Hausman test favours the fixed effects over random effects, the main advantage of this approach is that we can now directly observe the impact of country characteristics that are time invariant. The estimation results reveal that the estimated parameters on time invariant variables such as distance, contiguity, landlocked, colonial heritage, Mediterranean location, communist past, and common language are generally in line with our initial expectations. In particular, bigger distance discourages trade, contiguity encourages trade, common colonial heritage increases trade as well as a common ethnic language. A communist past is associated with a lower level of trade. The only counter-intuitive result is the positive sign associated with the landlocked variable for the reporting country. The Mediterranean location variable is not statistically significant.

our most aggregate measure of social development contributes to the development of exports only in few specifications. Finally, the higher level of education does not seem to be an important cause of trade flows.[36]

3.3.2 Cross Section Results for 2006

In addition to the panel data results, we present also cross section results obtained for 2006. Moreover, the number of observations used to generate these results is much lower compared to the number of observations used in panel data estimations[37]. Therefore, these results should be treated with caution.

The main advantage of the cross section results is that they include a wider range of social development variables that were not available for the earlier years of our sample and more recent data on other characteristics are more reliable. These include the Gender Discrimination Index (GDI), the Gender Empowerment Measure (GEM), the measures of political and economic participation of women and the Human Poverty Index (HPI). In this estimation, we replace Barro-Lee data on education, which is not available for 2006 with the literacy rate. Another advantage of this approach is that it allows us to run regressions only for the Mediterranean countries.

The main drawback of this approach is the application of the simple OLS method and the potential lack of control for some unobservable individual country characteristics that were modelled as fixed effects in the panel regressions. However, we can directly control for a number of country characteristics that were constant over time in panel regressions, such as distance, common language, contiguity, and were treated as a part of the fixed effects.

Similar to the case of panel regressions we start with estimating the benchmark gravity model this time via OLS. The benchmark results are displayed in Table 3.3.

The estimation results reveal that the estimated parameters on time invariant variables such as distance, contiguity, landlocked, colonial heritage, common language are generally in line with our initial expectations. In particular, bigger distance discourages trade, common colonial heritage increases trade as well as common ethnic language. The landlocked variable for the reporting country displays an unexpected positive sign; however this variable is statistically significant only at the 10 per cent level. Moreover, the communist past dummy variables are statistically significant for both partner and reporting countries although display

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[36] The results of specific Granger causality tests are available on request.
[37] The benchmark model in the panel regression base was based on over 27 000 observations while the cross section model only on slightly over 7500.

Table 3.3 Gravity model benchmark results - Cross section for 2006

No of observations   7575   F(21,7553)=1105.72
                                  Prob>F=0.0000
                                  R-squared=0.7546

lnExport	Coef.	Std. Err.	t	P>|t|
R_lnGDP	1.203527	.0149917	80.28	0.000
R_lnGDP_pc	-.1359191	.0304567	-4.46	0.000
R_lnLand	-.0450548	.0237392	-1.90	0.058
R_LandLocked	.1229186	.0673395	1.83	0.068
P_lnGDP	.9387218	.0133804	70.16	0.000
P_lnGDP_pc	-.063148	.0192089	-3.29	0.001
P_lnLand	-.1225946	.0199215	-6.15	0.000
P_LandLocked	-.7613892	.0573376	-13.28	0.000
R_Mediterranean	-.5493098	.0957471	-5.74	0.000
P_Mediterranean	-.1222332	.108782	-1.12	0.261
R_PostCommunist	-.2853985	.0781897	-3.65	0.000
P_PostCommunist	.276576	.0681751	4.06	0.000
lnDistance	-1.314569	.0341331	-38.51	0.000
CommonBoarder	.5246976	.1492366	3.52	0.000
Colony_1945	.9018062	.1851874	4.87	0.000
R_MENA-P_EU	-.4582113	.1609393	-2.85	0.004
R_EU-P_MENA	.0941911	.1659746	0.57	0.570
OECD	.1683336	.0864416	1.95	0.052
EU	.1888573	.0992016	1.90	0.057
GATT-WTO	.262601	.0542999	4.84	0.000
CommonLanguage	.8413731	.0742522	11.33	0.000
_cons	-31.95569	.6568217	-48.65	0.000

opposite signs. The dummy variable for Mediterranean countries is statistically significant only for the reporting country and displays a negative sign. Thus, the gravity variables display expected signs and are statistically significant.

All trade policy variables display positive signs and are statistically significant, although at different levels of significance. The dummy variables for the membership in the EU and the OECD are statistically significant at the 10 percent level, while the GATT-WTO variable is significant at the 1 percent level. According to these estimates, the agreements between the EU and MENA countries discourage the exports of the latter to the EU.

In Table 3.4 we present the estimation results obtained by OLS from the gravity model which was supplemented by various measures of social development. The columns with estimation results in the cross section approach are to some extent the counterpart of tables in the panel approach.

In column (1) of Table 3.4 we present the estimation results obtained from the gravity model which was supplemented by the HDI(t). Our estimation results reveal that, in contrast with the panel results, both in the case of partner and reporter country the HDI variable is statistically significant and the estimated parameter displays a positive sign in the case of both reporter (exporting country) and partner (importing country). This result is in line with our initial expectations and shows that the higher general level of social development positively affects both exports and imports.

The next step of our approach is to present the estimates of the gravity model that includes the Gini index as our measure of income inequality. The higher value of this index is associated with higher income disparities. The estimation results obtained from the specification that includes Gini indices for both partner and reporting countries are presented in column (2).

Our estimation results reveal that the Gini variable is statistically significant at the 1 per cent level both in the case of the reporting (exporter) and the partner (importer) country. The negative sign means that lower income inequality is associated with higher level of trade flows. We can notice that this result is different from the result obtained via the panel data approach and is in line with our initial expectations. However, the above results should be treated with caution as they are based on a limited sample including only 1300 observations in contrast to the 7500 in the benchmark case. This results from the fact that Gini indices are not available for many countries in 2006. Therefore, in our next regressions we will not be using the Gini variable and instead concentrate on other social development indicators.

As in the case of panel data results we disaggregate the HDI into its components. However, unlike in the case of panel regressions, we decided to proxy education with the literacy rate instead of the average years of schooling because Barro-Lee data are not available for 2006. As before life length and health were proxied by the infant mortality rate per 1000 live births. The cross section estimation results using the separate measures of social development are presented in column (3) of Table 3.4.

Our estimation results reveal that the education variable is statistically significant only for partner (importing) countries while the infant mortality variable is statistically significant only for reporters. In line with our initial expectations the positive sign associated with the literacy variable means that the higher level of education increases exports. The negative sign accompanying the infant mortality variable means that the lower quality of the healthcare system decreases exports. This is in line with the previous panel data results.

Table 3.4 Social variables and trade flows – Cross section

(standard errors in parentheses)

	1	2	3	4	5	6	7	8	9
R_HDI	5.080*** (1.092)								
P_HDI	2.484*** (0.341)								
R_Gini		-0.044*** (0.009)							
P_Gini		-0.028*** (0.009)							
R_Literacy			0.009 (0.005)	0.009 (0.005)		0.031*** (0.007)	0.015* (0.007)	0.012 (0.008)	
R_InfantMortality			-0.059*** (0.006)	-0.058*** (0.006)		-0.032*** (0.007)	-0.025*** (0.007)	-0.023** (0.008)	
P_Literacy			0.006*** (0.002)	0.007*** (0.002)		-0.001 (0.004)	-0.001 (0.004)	-0.004 (0.005)	
P_InfantMortality			-0.002 (0.001)	-0.000 (0.001)		-0.011*** (0.002)	-0.012*** (0.002)	-0.006* (0.002)	
R_CivilLiberties				-0.145*** (0.028)	-0.146*** (0.028)	-0.245*** (0.038)	-0.387*** (0.041)	-0.589*** (0.067)	-0.182*** (0.046)
P_CivilLiberties				-0.129*** (0.019)	-0.122*** (0.020)	-0.026 (0.029)	-0.007 (0.030)	-0.027 (0.034)	-0.092** (0.040)
R_GEM						0.948*** (0.353)			
P_GEM						-0.376 (0.252)			
R_FemaleOffice							-0.041*** (0.005)	-0.061*** (0.006)	
R_FemaleSeats							0.020*** (0.004)	0.021*** (0.004)	
R_FemaleProf							0.059*** (0.008)	0.068*** (0.009)	
R_FemaleIncome							0.942*** (0.356)	1.146** (0.414)	
P_FemaleOffice							0.008** (0.004)	0.005 (0.004)	
P_FemaleSeats							-0.009*** (0.003)	-0.011** (0.003)	
P_FemaleProf							-0.006 (0.005)	0.005 (0.006)	
P_FemaleIncome							0.204 (0.244)	-0.065 (0.274)	
R_Telephone_pc								-0.068 (0.121)	
P_Telephone_pc								0.024 (0.100)	
R_HPI									-0.089*** (0.012)
P_HPI									-0.016*** (0.006)
R_GDI					2.103* (1.151)				
P_GDI					2.098*** (0.354)				
R-squared	0.757	0.828	0.758	0.760	0.772	0.786	0.794	0.798	0.652
No of observations	7575	1300	6838	6838	6560	4202	4161	3161	1884

*** denotes statistical significance at the 1% level,- ** denotes statistical significance at the 5% level, - * denotes statistical significance at the 10% level.

In the next step we include the measures of civil rights in the reporting and partner countries. The higher value of the civil rights index is associated with lower freedom. The estimation results on the impact of civil right and other variables on trade flows are presented in column (4) of Table 3.4.

The estimated parameters for the civil rights index are strongly statistically significant in the case of both partner and reporting countries and display the expected negative signs. This is in line with the previous panel data results. Thus, the higher level of civil liberties is positively related to the level of trade. The inclusion of the civil rights indices did not have much impact on the estimates of the parameters for the social development variables. In particular, the literacy variables for the partner country remains statistically significant. The infant mortality variable for the reporting country remains statistically significant at the 1 per cent level.

The main advantage of the cross section results is that they include a wider range of social development variables that were not available for the earlier years of our sample and did not appear in the panel data analysis. Therefore, in column (5) of Table 3.4, we present estimation results that include the Gender Discrimination Index (GDI). It is a composite index measuring average achievement in the three basic dimensions captured in the human development index—a long and healthy life, access to knowledge and a decent standard of living—adjusted to account for inequalities between men and women. A higher value of this index is associated with lower gender inequality.

We can notice that the GDI variable displays a positive sign and is statistically significant for both the partner country and the reporting country. This means that a lower level of gender inequality is associated with a higher level of trade flows. This result is in line with our initial expectations as the GDI variable is highly correlated with the HD index that was statistically significant in previous regressions. Its strong correlation with the HDI reduces the possibilities of a different economic interpretation. Therefore, in order to asses the possible impact of gender discrimination on trade we will use also another measure of gender inequality that is less correlated with the HDI .

This measure is the GEM (Gender Empowerment Measure), a composite index to evaluate gender inequality based on three basic dimensions of empowerment—economic participation and decision-making, political participation, and decision-making and power over economic resources. The GEM variable seeks to reflect the extent to which women and men are able to participate actively in economic and political life and take part in decision-making. A higher value of this measure is associated with lower gender inequality.

Unfortunately, the GEM variable is not available for many countries which limits out sample to only 4202 observations in comparison with 6560 in the case of the GDI index. We present estimation results that include the Gender Empowerment Measure (GEM) in column (6) of Table 3.4.

We can notice that the GEM variable is statistically significant only for the reporting country. This means that a lower level of gender inequality for the reporting country is associated with a higher level of exports. The use of the GEM variable in the case of the partner country makes the civil rights variable for this country statistically not significant. These results should be treated with caution due to the limited sample.

In column (7) of Table 3.4 we disaggregate the Gender Empowerment Measure (GEM) into its constituent components. The gender inequality in political participation is measured here by the percentage of seats held by women in national parliaments. The inequality in economic participation and decision-making power is to be captured by two explanatory variables: the percentage share of women and men among legislators, senior officials and managers as well as the percentage share of women and men in professional and technical fields. Finally, the power over economic resources is to be measured by the estimated earned income of females and males (in PPP US dollars).

All gender inequality variables are statistically significant for the reporting country, although display opposite signs. The variable that measures political participation of women (i.e. the percentage of seats held by women in national parliaments) displays a positive sign. One of the variables measuring the inequality in economic participation and decision-making power (the percentage shares of women and men in professional and technical fields) displays a positive sign. However, the second variable that measures their economic participation (i.e. the percentage shares of women and men among legislators, senior officials and managers) displays a negative sign. Finally, the variables measuring the power over economic resources displays a positive sign. For the partner country only two gender inequality variables are statistically significant: the political participation variable which displays a negative sign and one of the variables measuring the inequality in economic participation and decision-making power (the percentage shares of women and men in professional and technical fields) that displays a positive sign.

The next step in our analysis is to include a measure capturing the level of the telecommunication infrastructure. The measure used combined the total number of mobile and telephone subscribers per 1000s inhabitants. The higher telephone density should

facilitate communication within and between societies and stimulate trade. The estimation results are presented in column (8) of Table 3.4.

The estimation results reveal that the telecommunication variable is not statistically significant. This result is different from the panel data estimates where a better developed telecommunication infrastructure stimulated imports.

The final step in our cross section analysis, for all countries, is to include the measure of social poverty in our regressions. The Human Poverty Index (HPI) measures deprivation of the population in access to resources. In this sense it complements the inequality differences, measured by Gini coefficients. However, the HPI is differently defined for developing and developed countries, which makes the comparison between these two groups difficult. Therefore, we concentrate only on the group of developing countries. Unfortunately, the HPI variable is available only for a relatively small number of developing countries, which limits drastically the sample to only 1884 observations in comparison with the 4202 available to calculate the case of the GEM index.

The HPI calculated for developing countries measures deprivation in terms of vulnerability to early death, as measured by the probability at birth of not surviving age 40; exclusion from the world of knowledge, as measured by the adult illiteracy rate; and lack of access to adequate economic means of surviving, measured by two indicators: the percentage of the population not using improved water resources and the percentage of children under weight for their age. A lower value of this index is associated with lower deprivation in access to resources and a higher level of social development. The estimation results are presented in column (9) of Table 3.4.

The HPI variable displays a negative sign and is statistically significant for both the partner country and the reporting country. Clearly, a lower level of poverty is associated with a higher level of trade flows. This result is in line with our initial expectations and indicates that the higher level of social development stimulates trade of developing countries.

Table 3.5 Gravity model benchmark results - Cross section for 2006, Mediterranean countries only.

No of observations	1019	F(16,1002)=100.75		
		Prob>F=0.0000		
		R-squared=0.6106		

lnExport	Coef.	Std. Err.	t	P>|t|
R_lnGDP	.862574	.0772063	11.17	0.000
R_lnGDP_pc	.4647697	.0908254	5.12	0.000
R_lnLand	.3678037	.0774201	4.75	0.000
P_lnGDP	.9629788	.0404734	23.79	0.000
P_lnGDP_pc	-.2946956	.0584686	-5.04	0.000
P_lnLand	-.051151	.0585448	-0.87	0.382
P_LandLocked	-1.025359	.175909	-5.83	0.000
P_Mediterranean	.1344453	.3169233	0.42	0.671
P_PostCommunist	-.7599113	.2102719	-3.61	0.000
lnDistance	-1.519659	.114807	-13.24	0.000
CommonBoarder	-.3242147	.4460495	-0.73	0.467
Colony_1945	1.227617	.7819694	1.57	0.117
R_MENA-P_EU	-.126739	.2370833	-0.53	0.593
OECD	.5890848	.4177638	1.41	0.159
GATT-WTO	.6306158	.1501946	4.20	0.000
CommonLanguage	.5468441	.1734188	3.15	0.002
_cons	-24.92166	2.143323	-11.63	0.000

3.4 The estimation results for the Mediterranean countries only.

In the final stage of our research on the impact of social characteristics on trade flows, we focus only on the group of Mediterranean countries. In this case the group of reporters is limited to MENA countries only and the group of partner countries remains the same as before. This limits our sample from 7575 to 1019 in the benchmark case. Unfortunately, due to the lack of sufficient data we are unable to study the impact of income inequality on trade flows. We start with a discussion of the estimation results obtained on the basis of the benchmark gravity model (Table 3.5).

The gravity variables display expected signs and are statistically significant. The estimation results reveal that the estimated parameters on time invariant variables such as distance, contiguity, landlocked, colonial heritage, common language are generally in line with our initial expectations. In particular, bigger distance discourages trade, common colonial heritage increases trade as well as the common ethnic language. Moreover, the communist past dummy variable is statistically significant for the partner country and displays

a negative sign. The dummy variable for the Mediterranean partner country is not statistically significant. This means that, in contrast to former communist countries, Mediterranean countries do not trade less than other countries having controlled for their characteristics. Of all trade policy variables, only the GATT-WTO variable is significant at the 1 percent level.

In Table 3.6 we present the cross section estimation results for the group of MENA countries only obtained by OLS from the gravity model which was supplemented by various measures of social development. In column (1) of Table 3.6, we present estimation results obtained from the gravity model which was augmented with the HDI variable, however neither in the case of the partner nor the reporting country the HDI variable turned out to be statistically significant. This result can be explained by the low variability of the HDI among Mediterranean countries.

The next step is to disaggregate the HDI into its components. However, unlike in the case of previous cross section results we decided to proxy education with the literacy rate instead of the average years of schooling because the Barro-Lee data are not available for 2006. As before, the life length and health were proxied by the infant mortality rate per 1000 live births. The cross section estimation results using the separate measures of social development for the group of MENA countries are presented in column (2) of Table 3.6.

Our estimation results reveal that the literacy variable is not statistically significant neither for partner nor for reporting countries. The infant mortality variable is statistically significant only for the reporting country. The negative sign accompanying the infant mortality variable means that a lower quality of the healthcare system decreases exports. This result is in line with the previous panel data results and some of the cross section results for the whole sample (all countries).

Next, we include measures for the state of civil rights in the reporting and partner countries. The higher value of the civil rights index is then associated with lower freedom. The estimation results on the impact of civil rights and other variables on trade flows are presented in column (3) of Table 3.6.

The estimated parameters for the civil rights index are statistically strongly significant in the case of both partner and reporting countries and display the expected negative sign. This is in line with the previous panel data results. Thus, a higher level of civil liberties is positively associated with the level of trade. The inclusion of the civil rights variable does not affect the significant of the literacy and infant mortality variables. As before, our estimation results reveal that the literacy variable is not statistically significant neither for partner nor for

Table 3.6 Social variables and trade flows – Cross section for Mediterranean countries only. (standard errors in parentheses)

	1	2	3	4	5	6
R_HDI	0.399 (2.383)					
P_HDI	0.112 (1.104)					
R_Gini						
P_Gini						
R_Literacy		-0.003 (0.009)	-0.006 (0.009)			
R_InfantMortality		-0.041*** (0.012)	-0.081*** (0.013)			
P_Literacy		-0.002 (0.007)	-0.002 (0.006)			
P_InfantMortality		0.002 (0.003)	0.004 (0.003)			
R_CivilLiberties			-1.150*** (0.152)	-2.026*** (0.261)	-0.731*** (0.269)	-1.495*** (0.167)
P_CivilLiberties			-0.167*** (0.055)	-0.226*** (0.071)	-0.258** (0.101)	-0.078 (0.063)
R_GEM					11.261*** (2.765)	
P_GEM					-2.015** (0.836)	
R_HPI						-0.109*** (0.016)
P_HPI						0.023** (0.009)
R_GDI				18.213*** (3.375)		
P_GDI				-0.685 (1.277)		
R-squared	0.617	0.632	0.654	0.674	0.655	0.630
No of observations	1019	960	960	675	509	639

Notes - *** denotes statistical significance at the 1% level,- ** denotes statistical significance at the 5% level, - * denotes statistical significance at the 10% level.

the reporting countries. The infant mortality variable is statistically significant only for the reporting country.

In column (4) of Table 3.6 we present estimation results that include the Gender Discrimination Index (GDI). We can notice that the GDI variable is statistically significant

only for the reporting country and displays a positive sign, namely a lower level of gender inequality is associated with a higher level of trade flows. This fits our initial expectations as the GDI variable shows a greater variation than the HD index in the case of Mediterranean countries. Consequently, the GDI variable for those countries is less correlated with the HDI that, as will be recalled, was not statistically significant in previous regressions.

In column (5) of Table 3.6 we present estimation results that include the Gender Empowerment Measure (GEM). We can notice that the GEM variables are statistically significant for both the reporting and the partner countries, but they display opposite signs. The estimated parameter sign for the reporting country is positive while for the partner country it is negative. Thus a lower level of gender inequality for the reporting country is associated with a higher level of exports, but for the partners from the rest of the world the opposite relationship holds.

The final step in our cross section analysis for Mediterranean countries, is to include a measure of social poverty in our regressions - the Human Poverty Index (HPI) that measures deprivation of the population in access to resources. A lower value of this index is to be associated with lower deprivation in access to resources and higher levels of social development. The estimation results are presented in column (6) of Table 3.6.

We can notice that the HPI variable is statistically significant for both the partner country and the reporting country. However, in contrast to cross section regressions in general, the estimated parameter for the HPI variable in the reporting country displays a negative sign and in the partner country a positive sign. Thus, on the one hand, the lower level of poverty is associated with a higher level of exports from Mediterranean countries. On the other hand, the former is associated with reduced imports of the latter from the rest of the world.

3.5 Summary of empirical results

We start by summarizing the results obtained for the aggregate measures of social development such as the HDI, Gini, GDI, GEM and HPI indices and then we describe the results obtained for disaggregated measures including the level of education and infant mortality rates. Moreover, we analyze the role of possible facilitators of trade such as the level of the telecommunication infrastructure.

Looking at our empirical results, we can note that in the case of the most general measure of social development (HDI) we found a positive relationship between social development and level of trade for the whole sample. This relationship exists in the case of

cross-section regressions for 2006 where the HDI is positively related to exports and imports while in the case of panel regressions we found a positive relationship only in the case of exports. Alas, using a limited sample including only Mediterranean countries as reporters leads to results that show no correlation between the level of social development and trade. This puzzling outcome can be traced to a low variability of the HDI among these countries.

The empirical results for the Gini index - the most widely used measure of inequality – are not clear-cut. In the case of cross-section regressions for 2006 and the whole sample there is a negative relationship between the level of the Gini index and the level of trade. This result suggests that a more equal distribution of income stimulates both exports and imports. However, this result has not been confirmed by the panel data analysis where the Gini coefficient was not statistically significant neither in the case of exports nor in the case of imports.

The estimation results for the Gender Discrimination Index (GDI) - the composite index measuring inequalities between men and women – are statistically significant for both the reporting and the partner countries in the cross-section regression for 2006. These results confirm the positive relationship between the GDI and the level of trade. In other words, the higher value of the GDI index is associated with a lower gender inequality. However, using a limited sample including only Mediterranean countries the GDI index is statistically significant only for the reporting country: a lower level of gender inequality in the Mediterranean countries is positively related to their exports, but not to their imports.[38]

The results for the Gender Empowerment Measure (GEM) – another measure of gender inequality - reveal that the GEM is positive and statistically significant only for the reporting country in the case of the cross-section for 2006. A lower gender inequality in economic participation and decision-making power is associated with a higher level of exports. Here, the same result holds for the sample of Mediterranean countries.

Finally, the empirical results for the Human Poverty Index (HPI) that measures deprivation of populations in access to resources display a negative and statistically significant relationship for both the partner country and the reporting country in the case of the cross-section for 2006. This means that a lower level of poverty is associated with a higher level of trade flows. A similar result is obtained for Mediterranean countries , but only for reporting countries (exporters). This implies that a lower level of poverty in the Mediterranean countries stimulates exports, but not imports.

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[38] We do not have a good explanation for this phenomenon. We hypothesize that a lower level of gender discrimination is related to higher level of economic activity and thus stimulates production and exports.

Looking at the disaggregated components of the HDI, we find that infant mortality displays a negative sign and is statistically significant for the reporting country both in the case of the cross-section regression for 2006 and in the case of the panel regression for the whole sample. The same result is obtained for the sample of Mediterranean countries. This means that lower infant mortality reflecting a better quality of the healthcare system is positively related to exports of goods. At the same time, we did not find such a relationship for imports.

Results obtained for another disaggregate measure of the HDI – the level of education – show that the literacy rate is positive and statistically significant for the partner country in the cross section for 2006 while the average level of schooling in the case of the panel regression is positive and statistically significant for the reporting country. In the case of the cross section regression for Mediterranean countries only, we do not find any relationship between the level of education and the level of trade.

We also disaggregated the GEM measure into its components. The more detailed results for the GEM in the cross-section regression for 2006 led to mixed results. For example, the variable that measures political participation of women (i.e. the percentage of seats held by women in national parliaments) displays a positive sign. Thus, a higher participation of women in parliament is positively related to the level of trade.

Finally, we studied the relationship between civil liberties and the level of trade. It turned out that in the case of the cross-country regression for 2006 civil rights were statistically significant only for reporting countries while in the case of the panel data for all of them. The latter results were confirmed for the sample of Mediterranean countries. *Ergo*, a higher level of civil liberties is positively associated with higher trade.

In addition to measures of social development in our study, we analyzed the role of measures reflecting the development of communication infrastructure and other trade facilitators. In the case of the cross-country regression for 2006 we found that the telecommunication infrastructure was not statistically significant neither for reporting nor partner countries while in the case of the panel regression it was weakly significant but only for partner countries. In the case of the sample of the Mediterranean countries the telecommunication infrastructure was not statistically significant neither for reporting nor partner countries.

Moreover, in our estimations we found an important role for the common ethnic language that facilitated international trade transactions as did shorter geographic distances.

3.6 Policy recommendations

Our empirical results demonstrated that social development variables are important in determining the level of trade. The majority of them is positively related to exports and total trade. However, the estimated impact of various variables is differentiated. Among the aggregate variables the most important role is played by the HDI, the GEM and the HPI.

The significance of the variable standing for Human Development is explained mainly by the quality of the healthcare system measured in our analysis by the infant mortality rate. This suggests that investments in the healthcare system result in increased human capital and consequently in a higher level of exports of Mediterranean countries. Surprisingly, the role of education *per se* is limited in the whole sample and not important in the case of Mediterranean countries. However, this result may be due to data imperfections and should be treated with caution.

The significance of the variable standing for the level of Gender equality is explained mainly by a higher or lower participation of women in political and economic life. Thus, a policy oriented towards more equal gender treatment in Mediterranean countries encourages their trade. Moreover, measures combating poverty are important not only from a social point of view but can have also a positive impact on the level of trade.

Finally, higher civil liberties are positively related to trade. A higher adhesion to the rule of law encourages international trade and enforcement of contracts encourages the inflow of foreign direct investment {see next chapter}. Somewhat surprisingly, we do not find that measures reflecting the development of communication infrastructure and other means usually considered as trade facilitators have actually an important impact on trade. This paradoxical result is admittedly one of the most controversial in this report and deserves further investigation in the future.

Chapter 4

Social development and the FDI inflow

4.1 Literature review

Multinational firms with their rapidly increasing shares in world output, investment and trade flows have become the main actors in the ongoing globalization of the world economy. FDI has grown at rates well above the rate of global economic growth or global trade. Consequently, the literature on trade has attempted to incorporate this mode of accessing foreign markets into the theory (Helpman, 2004). Early theoretical analyses put MNE into the neoclassical framework of perfect competition with constant returns to scale, product homogeneity, firm boundaries and indeterminate number of products. Therefore, firms were not identified as distinct from industries. FDI was initially viewed as a part of Portfolio Investment Theory and was not differentiated from portfolio investment. FDI, seen here as cross-country capital flows, was motivated by cross-country differences in returns of capital and MNEs here played the role of an intermediary in the international capital transfer from the capital abundant country to the capital scarce country.

The separation of FDI from portfolio flows of homogeneous capital was initially made by Caves (1971). Caves posits that direct flows are attributable to firm specific capital such as equity capital, entrepreneurship and technological or other productive knowledge in an industry specific package. Thus, national endowments of equity capital need not dominate or influence its actions and cross-country investment flows may appear between the same industries. However, this model was still based on neoclassical assumption and it did not motivate FDI between identical countries.

The next step in explaining world's trends in FDI was a move towards an analysis of MNE based upon the industrial organization approach to trade theory. The advances of industrial organization of the early 1980s have incorporated the multinational firm into the microeconomic general equilibrium theory of international trade giving rise to new theories of the multinational enterprise. According to these theories multinational firms arise endogenously in response to country characteristics such as differences in relative factor endowments, relative economic size, as well as various trade and investment costs. These theories have been traditionally assigned to two main groups.

The first group concentrates on horizontally-integrated multinational firms that follow the market seeking strategy and produce the same goods and services in multiple locations to avoid trade costs. The second group focuses on vertically-integrated multinational firms that follow the efficiency seeking strategy and fragment geographically their production processes by stages differing in terms of their factor intensity and place labor-intensive stages of production in locations with relatively abundant labor. More recently, an integrated approach that combines these two approaches called the knowledge-capital model has emerged. This hybrid model allows both horizontally and vertically integrated firms to coexist in equilibrium. All these approaches have very different empirical implications.

The largest share of multinational activity occurs between developed countries that are similar both in terms of their relative factor endowments and economic size. To explain this phenomenon many models of a horizontally integrated multinational firm have been developed. Typically, these models employed the tools used previously in the New Trade Theory that allowed addressing explicitly the issues of increasing returns and market structure. Initially, these models were based on partial equilibrium frameworks and assumed identical factor endowments across countries.

An early example of this approach is the model developed by Markusen (1984) that assumes the existence of firm-level scale economies as the driving force for foreign direct investment. The multinational firm's headquarter produces a service of a firm-specific asset that can be simultaneously used in multiple plants in a non-rival manner. Therefore, two-plant firms have lower fixed costs than those of two single plants and this motivates multinational production.

The original Markusen model was extended by Horstmann and Markusen (1987) and Brainard (1993) and allowed for endogenous market structure and different forms of competition between firms within the partial equilibrium frameworks. In these frameworks firms have different potential channels of entering a foreign market and each of these channels incurs different costs. A firm faces a choice between concentrating production in the home country and serving foreign markets exporting to achieve scale economies and producing abroad to benefit from proximity to consumers.

Theoretical modelling of horizontal FDI typically involves a tradeoff between the saving in variable costs such as transport costs and tariffs, and the additional fixed costs of setting up a new plant in the host country. The theory predicts that this sort of FDI will replace exports in markets where the costs associated with exporting are high or where the costs of setting up a local plant are low. Multinational firms in this framework become

horizontally integrated as they produce the same products in their plants/subsidiaries in different countries and serve local markets by local production.

The theory predicts also that FDI is more likely to replace exports the larger is the host country market. Two main reasons for this are frequently mentioned. The first is related to the plant-level scale economies as the plant specific fixed cost can be spread over a larger number of units in the larger market. The second is related to the intensity of competition in the host country market. Larger markets can support more local firms and this will lead to a lower price. Therefore, if the marginal cost of supply through exporting is relatively high firms may favor local production to exporting (Shatz and Venables 2000).

General-equilibrium extensions of the horizontal model of multinational enterprise that allow relating the extent of multinational activity to country characteristics were proposed by Markusen and Venables (1998). Their models predict that given moderate to high trade costs, multinational firms will prevail in equilibrium when countries are similar in size and in relative factor endowments[39]. If countries were of different sizes but similar in relative factor endowments horizontal multinationals would be at a disadvantage relative to national firms producing in the large country and serving the small country market through exporting as they would have to install costly capacity in the small market. If countries were of similar size but differed in terms of their relative factor endowments multinational firms would be at a disadvantage relative to national firms as they would have to incur a substantial part of their costs in a high-cost location, assuming that human capital was intensively used in both fixed and variable costs in the multinational sector.

With the falling transportation and communication costs between countries an increasing part of multinational activity is explained by the reducing production cost motive. Multinational firms split up a vertically integrated production process into separate fragments that can be located in different countries. The theoretical models of the vertically-integrated multinational firms hinge on the idea that different segments of the production process have different input requirements so it may be profitable to locate each segment where the factors used intensively in that stage are relatively cheap. For example, labour-intensive segments, such as assembly activities, will be located in labour abundant countries. In these models multinational firms arise in the absence of trade and investment costs and the driving force is the uneven-distribution of factors of production across countries.

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[39] These models rule out the vertically-integrated firms and assume for some reason that production and headquarter activities cannot be geographically separated.

The first models of a vertically-integrated multinational enterprise were developed by Helpman (1984, 1085) and Helpman and Krugman (1985). These models can be regarded as extended versions of the Chamberlin-Heckscher-Ohlin new trade theory models in which differences in relative factor endowments between trading partners were so large that trade alone was not sufficient for achieving factor price equalization and reproducing the integrated equilibrium result. For example, if one country had a much higher endowment of human capital per worker than the other then it would be profitable for the firm to fragment/split up the production process by retaining the human capital intensive parts of the process in the human capital abundant country and shifting the labour intensive segments to low cost locations. In this framework parent firms from the human capital abundant country export human-capital intensive products such as headquarter services and intermediate inputs to its subsidiaries located in the labour abundant country while subsidiaries export a high proportion of their output to the home country.

While these early models have been regarded as an elegant way of introducing multinational firms into the general equilibrium framework of new trade theories their applicability to real life has been criticized because of their unrealistic assumptions of zero trade and investment costs (Shatz and Venables 2000). Adding these costs brings two new forces into the model. If trade costs are introduced factor price equalization does not take place, unless relative factor endowments are the same in both countries, and the resulting factor price differentials increase incentives to fragment production. However, if there are also additional costs of fragmenting production internalization of production becomes less attractive. In this case the decision to go multinational will depend on the interaction between these two forces.

The vertical FDI models generate clear testable implications that differ significantly from the predictions of horizontal models. In vertical models multinational activity takes place only between countries that are very different in terms of their relative factor endowments. In particular, these models predict that the larger the difference in relative factor endowments between the home and host countries the larger the involvement of multinational firms from the home country in production activities in the host country, given the relative economic size of trade and investment partners. If there are no differences in relative factor endowments there is also no incentive for internationalization of production and multinational production. This prediction is the consequence of the zero trade cost assumption.

Throughout the 1980s and 1990s horizontal and vertical models of multinational enterprise were treated as two separate strands in the literature. The next step in the

development of the theory of multinational enterprise aimed at combining the horizontal and vertical approaches into a hybrid framework in which firms can choose between national, horizontal and vertical strategies. This has been recently done by Markusen (2002) who called this integrated framework the knowledge-capital model. His model is based on three main assumptions that allow different types of firms to arise endogenously.

First, he assumes that, like in the pure vertical model, creation and services of knowledge-based assets, such as R&D, can be geographically separated from production and supplied to foreign subsidiaries by the headquarter at a fairly low cost. Second, he assumes that headquarter services are more human-capital intensive than production. Third, he assumes that these knowledge-based services have a joint-input characteristic. In other words, they can be simultaneously used by multiple production facilities, giving rise to firm-level scale economies, like in the pure horizontal model. The first two assumptions provide incentives for the international fragmentation of production and locating various segments of production process where the factors used intensively in each segment are relatively cheap. The third assumption motivates horizontal investment that replicates the same goods or services in different countries.

Theoretical models that combine both horizontal and vertical motives for internationalization of production cannot be, however, solved analytically. These analytical difficulties imply that most results are derived from numerical simulations. These simulations generate predictions on the relationship between foreign direct investment and country characteristics. For example, national firms exporting to each other's market will be the dominant type when countries are similar in economic size and relative factor endowments and trade costs are low. Horizontal multinationals will dominate when countries are similar in economic size and relative factor endowments and trade costs are high. However, if countries are dissimilar in either size or in relative factor endowments one country will be favoured as a location of both headquarters and production activities or one of these two activities.

In particular, if countries are dissimilar in size but similar in relative factor endowments then national firms located in the large country will be favoured as they can avoid installing costly capacity in the smaller market. On the other hand, if countries are similar in size but dissimilar in relative factor endowments vertical multinationals will be the dominant type as there is an incentive to split the production process and concentrate/locate headquarters in the human-capital abundant country and production in the labour-abundant country, unless trade costs are high. The extent of multinational activity in the hybrid model is the largest when the parent country is moderately small and highly abundant in human capital.

This literature review identified human capital as the sole aspect of social development put at the forefront of theoretical studies. Empirical research, recently synthesized by Miyamoto (2003), provides evidence in favour of the idea that human capital formation is among the important pre-requisites for developing countries to start benefiting from FDI. Literature dealing with the linkages between FDI and other aspects of social development is far less abundant. Only one dimension of social development, namely socio-political stability and institutional quality have been extensively explored and its positive impact on FDI inflows has been established[40]. To the best of our knowledge a more detailed view of the relationship between HD index or gender equality and FDI has not yet been offered and we try to fill this gap in the next section.

4.2 Empirical results

4.2.1 Panel data approach to aggregate FDI inflows

Before investigating the determinants of bilateral FDI flows in the Mediterranean countries we begin by studying the factors influencing the total inward FDI flows in a wider context. Our analysis based on a sample of over 150 countries and over an extended period of 25 years will allow to identify universal drivers of investment. The attractiveness of MENA countries as places to host FDI will be then examined in greater detail and their specific experiences will be contrasted with the universal determinants of investment flows.

We seek to explain the net FDI inflow using the push-pull framework. The developed countries have been the leading source of FDI outflows. It is therefore sensible to assume that push factors, i.e. factors that spur outward investment, have a similar impact on all recipient economies. We will therefore focus on the pull factors, i.e. country characteristics conducive to investment inflows.

Our empirical investigation is aimed at assessing the role of human and social development in creating an environment that entices foreign investors. The dependent variable is the net FDI inflows expressed as a percentage of GDP. We have experimented with population as an alternative scale variable but GDP yields more statistically significant results. To get reliable estimates of the importance of human development, we include a set of standard control variables which proved to be significant determinants of FDI inflows.

The growth of the domestic market is among the main determinants of FDI inflows. It is measured by real GDP (in constant 2005 US dollars) growth. Since the FDI to GDP ratio is

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[40] See Kolstad and Villanger (2004) and references therein.

our independent variable, the level of GDP is the scale variable and it is not inserted among regressors[41]. Given the size of the economy, its rate of growth is indicative of profits prospects and should be positively linked to FDI inflow.

Market openness encourages foreign investors especially if exports are the main destination of output of foreign affiliates. We will measure the degree of openness by the ratio of exports and imports to GDP. The issue of causality should however be raised when discussing the significance of the openness to trade variable. A large FDI inflow, may result in higher import demand, e.g. intermediate goods imports and thus the causality may be reversed.

Besides the export orientation of foreign affiliates, there is another argument in favor of trade openness triggering effects on FDI. Participation in regional trade agreements gives access to larger markets and allows the exploitation of economies of scale. Thus, our control variables set encompasses the cumulative number of years of participation in the European Union. Other regional dummies and the dummy for participation in the OECD has proved to be insignificant which supports the idea that a mere participation in any regional trade agreement or economic organization does not encourage foreign investors unless integration has attained as advanced stage as the Single Market in the EU.

Financial sector development may facilitate foreign capital inflows and the share of domestic credit to private sector in GDP has been selected as a proxy for the depth of financial market. Although there is a widely held view that offshore activities are mainly financed by domestic saving, a high level of financial development of the recipient country may influence the FDI inflow. On the one hand it eases the exchange of goods and services by reducing the transaction costs and information asymmetries. By addressing this kind of market imperfection, more experienced financial intermediaries are an advantage of host countries. On the other hand, a well developed domestic financial system mobilizes domestic savings and relieves investment funds shortage and need for FDI in the recipient country. Thus, the sign of the relationship between the recipient country financial sector advancement and FDI inflow is ambiguous from a theoretical perspective.

Political turmoil can act as a deterrent to foreign investors. We decided to control for the degree of political and civil rights of society since we claim that an oppressive regime is

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[41] We have experimented with the use of population as a scale variable but it yielded poor results in terms of the goodness of fit. The use of the FDI to GDP ratio as the independent variable is equivalent to imposing the unit value of the coefficient accompanying the GDP variable if it were included in the set of regressors. To verify the validity of this assumption we run the panel regressions with the level of GDP as additional independent variable but it turned out to be statistically insignificant. The use of FDI to GDP ratio as the dependent variable is therefore reasonable.

more likely to lead to a civil unrest. We use the value of the civil liberties index from the Freedom House database. Higher degrees of freedom are associated with lower values of the index and the sign of this variable in a regression of FDI inflows is expected to be negative.

We also include inflation as a measure of macroeconomic stability. High rates of inflation in most cases are a sign of excessively loose monetary or fiscal policy stance; thereby undermining the credibility of the policy makers. We expect the coefficient on inflation to be negative.

Sufficiently developed infrastructure is a precondition for FDI. To reflect the rising importance of communication technologies we selected the number of per capita telephone and mobile subscribers as a proxy for infrastructure. The coefficient accompanying that variable should be positive.

The panel data format allows to choose between fixed and random effects estimates. We used the Hausman test as a selection criterion which in all cases was favorable to the fixed effects specification. In our baseline regression the independent variables set is confined to control variables listed above. The results of estimates are presented in column (1) of Table 4.1. The complete description of the dataset and data sources used in our study is provided in Appendix 2. The prefixes *R_* and *P_* represent the variables for reporter and partner countries, respectively. Prefix *ln* indicates, that variable in logarithm was used.

It stems from column (1) of Table 4.1 that GDP growth, openness to trade, the degree of civil liberties, the credibility imparted by the prolonged EU participation, and the telecommunication infrastructure encourage FDI inflows. All these variables appear with the expected sign. The inflation rate and the degree of financial development do not seem to affect FDI inflows. In the latter case the theoretical considerations justify the insertion of the domestic credit to GDP ratio squared to account for the likely non-linearity. The results of the baseline regression which allow for non-linear impact of financial development are presented in column (2) of Table 4.1.

In column (2) the development of the financial market, both the linear and the square term, is statistically significant. It can be easily calculated that the threshold value of domestic credit to GDP ratio is equal to about 198[42]. In other words the value of domestic credit has to be almost twice as large as the value of GDP to incite foreign capital inflows. Below this threshold the saving mobilizing role of financial markets overwhelms its functions of removing market frictions.

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[42] The threshold value can be calculated as the ratio of the coefficient on domestic credit to the value of the coefficient on squared domestic credit multiplied by 2.

Table 4.1 Basic determinants of FDI inflows and the role of the Human Development Index. Panel results.

(standard errors in parentheses)

	lnFDI_GDP					
	1	2	3	4	5	6
GDPGrowth	0.0502***	0.0510***	0.0505***	0.0298*	0.0327**	0.0765***
	(0.0104)	(0.0103)	(0.0152)	(0.0162)	(0.0161)	(0.0287)
lnOpenness	1.410***	1.439***	1.771***	1.620***	1.599***	1.683***
	(0.253)	(0.251)	(0.335)	(0.267)	(0.268)	(0.312)
DC_GDP	-0.00283	-0.0182***	-0.0212***	-0.0123*	-0.0123*	-0.0129
	(0.0031)	(0.0068)	(0.0074)	(0.0074)	(0.0074)	(0.0079)
DC_GDP_Sq		9.20e-05**	0.000102***	5.59e-05	5.69e-05	6.13e-05*
		(3.60e-05)	(3.78e-05)	(3.55e-05)	(3.56e-05)	(3.66e-05)
CivilLiberties	-0.126*	-0.127*	-0.106	-0.228***	-0.229***	-0.226***
	(0.0679)	(0.0675)	(0.0839)	(0.0702)	(0.0704)	(0.0757)
lnTelephone_pc	0.372***	0.365***	0.149	0.139*	0.0926	0.0685
	(0.0500)	(0.0498)	(0.0949)	(0.0818)	(0.0830)	(0.0872)
EUCumulated	0.0629***	0.0623***	0.0607***	0.0631***	0.0678***	0.0645***
	(0.0208)	(0.0207)	(0.0194)	(0.0187)	(0.0190)	(0.0188)
Infl	-8.97e-05	-9.24e-05	-0.000152	-0.000348*	-0.000335*	-0.000263
	(0.000129)	(0.000128)	(0.000267)	(0.000191)	(0.000192)	(0.000262)
lnRGDP_pc				0.413	0.549	0.447
				(0.390)	(0.384)	(0.420)
lnLifeExpectancy				2.194**		3.178**
				(1.076)		(1.335)
lnMeanSchooling				0.542	0.323	0.929*
				(0.450)	(0.496)	(0.496)
HDI			5.515**			
			(2.569)			
InfantMortality					-0.0135**	
					(0.0065)	
_cons	-4.463***	-4.262***	-10.01***	-18.61***	-9.483***	-24.33***
	(1.142)	(1.138)	(2.278)	(4.770)	(3.486)	(5.558)
R-squared	0.363	0.372	0.388	0.437	0.438	0.456
No of observations	650	650	470	485	483	439
Hausmann test	91.10	55.58	37.02	34.23	37.22	34.64
No of countries	155	155	144	114	114	114

*** denotes statistical significance at the 1% level, ** denotes statistical significance at the 5% level, * denotes statistical significance at the 10% level.

The sign and the statistical significance of the remaining variables in column (2) of Table 4.1 are not affected and we can consider them from a theoretical standpoint. It is impossible to formally test the validity of horizontal or vertical FDI models when using multicountry net investment flows. This analysis has to be postponed until the use of bilateral FDI flows has been made. At this stage we can conclude that the costs of investment in the

partner country is a predominant determinant of FDI inflows. These costs include difficulties in acquiring local bank credit, disturbances due to social tensions, underdeveloped infrastructure, autarky and isolation from economic integration processes. The positive impact of GDP growth on FDI is supportive of the horizontal investment motive.

We are now in a position to focus on the human development as a determinant of FDI. The results of the baseline regression with the set of explanatory variables extended to include the HD index are reported in column (3). Generally, they suggest that neither macroeconomic stability measured by the rate of inflation nor the social peace implied by the high degree of civil liberties are among significant determinants of FDI. The HD index has an expected positive sign and is statistically significant. By contrast, the degree of civil liberties seems to have lesser influence on investors than the HDI since it becomes insignificant. It seems that a high level of human development is a major bait to foreign investors.

Some caution is however required when interpreting this results because the level of GDP per capita is one of the components of the HDI. The level of income has been found to be a major determinant of investment inflows because it is a measure of the market size which is only loosely related to human development. The next step has to be a decomposition of the HD index to verify whether the statistical significance of the index in column (3) of Table 4.1 is driven by only one component, namely the per capita GDP level.

The HD index covers two dimensions of human development apart from the decent standard of living measured by the per capita GDP level. A long and healthy life is the first dimension and we will use life expectancy at birth and, alternatively, infant mortality to gauge that aspect of human development. Knowledge is the second dimension of HDI and it will be quantified by the average years of schooling of population aged 15 and above. The results of the first regression which takes into account three components of HDI are reported in column (4) of Table 4.1.

Column (4) reveals that life expectancy is a predominant aspect of human development in eyes of foreign investors. The level of GDP per capita and education are statistically insignificant. It is noteworthy that the decomposition of the HD index restores the statistical significance of both measures of stability – macroeconomic and social. The decline of statistical significance of *DC_GDP* variable can be attributed to the correlation with the GDP per capita because economic growth has been found to be stimulated by a well developed financial market.

The alternative proxy for a long and healthy life, i.e. infant mortality yields similar results. It is statistically significant and enters the regression with the expected sign, as the

results in column (5) of Table 4.1 show. Moreover, the proxy for infrastructure loses its significance. The latter result is characteristic of all regressions with the HD index or its components pointing to the fact that a dense infrastructure may stand idle if it cannot be combined with a healthy population.

There is a widely held view that expansion of school attainment is far less important in promoting economic growth than the role of educational quality. Unfortunately data on the effectiveness of education systems is not available for the large number of countries in our sample. We claim however that an improved quality of education is reflected in high GDP growth which raises FDI attractiveness of a host country. Conversely the mere educational attainment can be only loosely linked to productivity and thus to FDI. To verify this hypothesis we run the regression of FDI inflows on the HDI components after having eliminated from our sample all observations of negative GDP growth. The results are reported in column (6) of Table 4.1.

The results in column (6) speak in favour of our claim that high educational attainment if accompanied by a negative GDP growth is not sufficient to generate large FDI inflows. By contrast, in countries with positive GDP growth foreign investors seem to pay attention to the number of years in school. The regression results for the group of growing economies establish a significant relationship between education and FDI growth and preserve the significance of life expectancy at birth. This result is however not robust to the selection of long and healthy life measure. When infant mortality is used instead of life expectancy, the level of education is not significant.

It is important to recognize the high degree of correlation of the three proxies for the HDI components which may help to explain the joint insignificance of the relevant variables. We therefore tested for the significance of the HDI components separately included in the set of regressors. The regression is run again on the full sample. The results are reported in Table 4.2.

The experiment with individual treatment of the HDI components corroborates previous results. It stems from columns (1) – (4) of Table 4.2 where life expectancy, infant mortality and, marginally, the level of educational attainment are statistically significant. Irrelevance to foreign investors of a decent standard of living is a conclusion drawn from the analysis conducted thus far.

Table 4.2 The Human Development Index components and income distribution as the determinants of FDI inflows. Panel results.

(standard errors in parentheses)

	lnFDI_GDP						
	1	2	3	4	5	6	7
GDPGrowth	0.0535***	0.0488***	0.0405***	0.0337**	0.0263	0.0247	0.0490***
	(0.0104)	(0.0103)	(0.0118)	(0.0162)	(0.0180)	(0.0181)	(0.0165)
lnOpenness	1.508***	1.369***	1.506***	1.724***	1.310***	1.313***	1.240***
	(0.255)	(0.251)	(0.255)	(0.264)	(0.318)	(0.319)	(0.316)
DC_GDP	-0.0179***	-0.0196***	-0.0188***	-0.00755	-0.0121	-0.0116	-0.0186***
	(0.00681)	(0.00673)	(0.00675)	(0.00710)	(0.00737)	(0.00737)	(0.00707)
DC_GDP_Sq	9.50e-05***	9.71e-05***	9.56e-05***	4.26e-05	5.58e-05	5.25e-05	8.61e-05**
	(3.59e-05)	(3.57e-05)	(3.59e-05)	(3.53e-05)	(3.57e-05)	(3.57e-05)	(3.53e-05)
CivilLiberties	-0.124*	-0.124*	-0.119*	-0.229***	-0.263***	-0.261***	-0.184**
	(0.0673)	(0.0670)	(0.0674)	(0.0707)	(0.0806)	(0.0811)	(0.0779)
lnTelephone_pc	0.383***	0.326***	0.273***	0.181**	0.129	0.127	0.337***
	(0.0529)	(0.0511)	(0.0599)	(0.0735)	(0.0915)	(0.0933)	(0.0669)
EUCumulated	0.0649***	0.0607***	0.0666***	0.0658***	0.0616***	0.0605***	0.0663***
	(0.0206)	(0.0205)	(0.0206)	(0.0187)	(0.0178)	(0.0181)	(0.0184)
Infl	-8.48e-05	-9.33e-05	-0.000116	-0.000346*	-0.000182	-0.000207	-0.000187
	(0.000128)	(0.000127)	(0.000128)	(0.000192)	(0.000232)	(0.000234)	(0.000236)
lnRGDP_pc	-0.312				0.298	0.419	0.00204
	(0.263)				(0.415)	(0.402)	(0.375)
lnLifeExpectancy		2.748***			1.112		
		(0.940)			(1.604)		
InfantMortality			-0.0131**			0.00129	
			(0.00513)			(0.00809)	
lnMeanSchooling				0.678	1.262**	1.498**	
				(0.416)	(0.598)	(0.675)	
Gini					0.0185	0.0184	0.0222*
					(0.0135)	(0.0136)	(0.0133)
_cont	-2.217	-15.44***	-4.075***	-7.066***	-14.14**	-10.91***	-4.250
	(2.094)	(3.987)	(1.167)	(1.568)	(6.423)	(3.854)	(3.132)
R-squared	0.378	0.382	0.375	0.427	0.479	0.479	0.451
No of observations	649	650	644	485	377	375	440
Hausmann test	22.77	40.82	60.26	40.86	39.55	37.14	16.86
No of countries	155	155	155	114	103	103	131

*** denotes statistical significance at the 1% level, ** denotes statistical significance at the 5% level, * denotes statistical significance at the 10% level.

However, the use of per capita GDP as a measure of a decent standard of living may be misleading in case of an uneven income distribution. A high level of per capita GDP can obscure the poverty of disadvantaged social groups. This reasoning calls for the inclusion of a measure of income distribution into the set of explanatory variables to accompany the level of income itself. The results of a regression with the Gini coefficient and all three components of the HD index incorporated are displayed in column (5) of Table 4.2.

It should be stressed that a direct comparison of previous results with those presented in column (5) of Table 4.2 is problematic because of a reduction of the sample size due to data availability. It should be noted that GDP growth remains insignificant, while the level of per capita GDP looses statistical significance. The same is true of life expectancy that is now replaced with the level of education as the sole statistically significant component of the HD index. The significance of the educational attainment may result from the resemblance of the sample reduced by the availability of the Gini coefficient to the sample obtained after elimination of negative GDP growth observations. The newly-introduced variable, i.e. the Gini coefficient is not statistically significant. This finding is robust to the selection of proxies for a long and healthy life. When infant mortality is employed instead of life expectancy, the statistical significance of the estimated parameters is not affected, as shown in column (6).

The insertion of the Gini coefficient variable has been rationalized by the inadequacy of the average GDP per capita as a measure of decent standards of living in countries marked by unequal income distribution. To put the link between income level and its distribution at the forefront of our analysis we have run a regression with life expectancy and educational attainment excluded. Column (7) of Table 4.2 displays the results. The focus on income and its distribution yields some novel conclusions. It seems that the income level is not affecting the inflow of FDI unless it is unequally distributed. In low income countries income equality may translate into evenly spread poverty and low demand for foreign affiliates production.

The panel data estimates lead to some tentative conclusions regarding the role of social development. The overall social development measured by the HD index and the degree of civil liberties are the leading factors attracting foreign investors. The detailed analysis of the components of the HD index showed that a long and healthy life, irrespective of whether measured by life expectancy or by infant mortality, is a crucial aspect of human development. The educational attainment is far less important because its significance is conditional on an unequal income distribution.

4.2.2 Cross section results for bilateral FDI flows

The fixed effects estimates of panel data preclude from testing the influence of time-invariant variables on FDI flows. There are several candidates for significant determinants of FDI, such as distance, colonial links or cultural compatibility that have been omitted from our analysis thus far. It is therefore sensible to conduct a complementary analysis of FDI flows in a cross-section setting. The cross-section dimension of data will also enable us to include additional

measures of social development which have not been collected until recently. Moreover for short data span we can use bilateral FDI data which are scarce and available mostly for recent years.

We stick to the original strategy which consists in scrutinizing the indicators of social development against the background of more standard determinants of FDI inflows. Three novel variables enrich the set of regressors. The variable *lnDistance* measures the (log) distance between the principal cities of the investing country (denoted as a reporter) and the host country (i.e. a partner country). Cultural compatibility is measured by means of a dummy *CommonLanguage* equal to 1 if at least 9 percent of population in both countries shares a common language. Finally, *Colony_1945* is another dummy which is equal to 1 if there was a colonial link between both countries after 1945.

In countries which failed to achieve a reputation as an attractive place to locate FDI, the flow of foreign capital is erratic and one investment project can magnify the yearly inflow by a factor of several hundred percent. Assessing the importance of competing determinants of capital inflow from yearly frequency data can thus be misleading. To avoid this kind of misjudgment we use 3 year averages (2005-2007) of all variables.

A large number of negative observations is another property of bilateral FDI flows which calls for caution when choosing between the linear and logarithmic form of the estimated equation. We decided to keep in the dataset only non-zero and positive values of FDI inflows, i.e. we refrain from modeling FDI outflows. We seek to find out the long-run determinants of FDI inflows and we claim that the selection of an option to withdraw capital is guided by a different set of factors than the option to invest. In other words, we do not regard foreign direct investment and disinvestment as two alternative outcomes of the same decision process. A substantial increase in the goodness of fit is an additional advantage of the logarithmic model.

As a result of these considerations, we use the logarithm of the positive values of bilateral FDI flows as the dependent variable. The set of explanatory variables includes the above-mentioned common characteristics of a pair of source and host countries, as well as the likely baseline determinants of FDI flows used in the panel-data estimations. The latter have been separately collected for the source (*reporting*) and the recipient (*partner*) countries. The results are presented in Table 4.3.

It seems from column (1) of Table 4.3 that common characteristics of a pair of countries involved in a bilateral FDI flow are among significant determinants of investment. Distance between countries acts as a deterrent to FDI which suggests that foreign affiliates are

Table 4.3 The Human Development Index components and income distribution as the determinants of bilateral FDI inflows. Cross-section results (*continued on the next page*)
(robust standard errors in parentheses)

	lnFDI					
	1	2	3	4	5	6
lnDistance	-0.859***	-0.886***	-0.910***	-0.926***	-0.932***	-1.408***
	(0.0596)	(0.0601)	(0.0604)	(0.0653)	(0.0646)	(0.168)
CommonLanguage	1.330***	1.345***	1.301***	1.345***	1.146***	1.254**
	(0.184)	(0.184)	(0.185)	(0.197)	(0.205)	(0.601)
Colony_1945	0.973***	0.977***	1.031***	1.202***	1.198***	4.990***
	(0.228)	(0.225)	(0.235)	(0.264)	(0.251)	(0.828)
R_Openness	0.00355**	0.00355**	0.00418***	0.00111	-1.53e-05	-0.000815
	(0.00143)	(0.00143)	(0.00139)	(0.00147)	(0.00138)	(0.00261)
R_GDPGrowth	-0.309***	-0.312***	-0.341***	-0.0655	-0.174**	0.212
	(0.0854)	(0.0854)	(0.0802)	(0.0936)	(0.0883)	(0.158)
R_lnDC_GDP	2.046***	2.057***	1.699***	0.445*	0.745***	0.985**
	(0.144)	(0.145)	(0.193)	(0.228)	(0.217)	(0.406)
R_CivilLiberties	-0.371**	-0.362**	-0.261	-1.467***	-1.304***	-2.380***
	(0.175)	(0.174)	(0.184)	(0.259)	(0.235)	(0.589)
R_lnTelephone_pc	-4.586***	-4.575***	-4.910***	-6.085***	-3.542***	0.369
	(0.530)	(0.531)	(0.527)	(0.549)	(0.510)	(1.132)
R_EUCummulated	0.0193***	0.0191***	0.0153***	0.0155***	0.0151***	0.0435***
	(0.00449)	(0.00447)	(0.00424)	(0.00421)	(0.00416)	(0.00935)
R_Infl	-0.0994**	-0.0986**	-0.0522	-0.271***	-0.351***	-0.332***
	(0.0396)	(0.0396)	(0.0406)	(0.0592)	(0.0569)	(0.122)
R_lnRGDP_pc				2.104***	1.851***	-1.189**
				(0.251)	(0.203)	(0.599)
R_Literacy				-0.317***	0.0840	0.128
				(0.0764)	(0.0844)	(0.166)
R_lnLifeExpectancy				-3.701		31.86***
				(3.973)		(7.603)
P_GDPGrowth	-0.00824	-0.0135	-0.0182	-0.0180	-0.0173	-0.0756
	(0.0253)	(0.0254)	(0.0264)	(0.0254)	(0.0235)	(0.0557)
P_Openness	0.00876***	0.00839***	0.00853***	0.00891***	0.00902***	0.0145***
	(0.00114)	(0.00115)	(0.00118)	(0.00117)	(0.00110)	(0.00319)
P_lnGDP	0.862***	0.855***	0.855***	0.896***	0.912***	1.014***
	(0.0374)	(0.0376)	(0.0380)	(0.0418)	(0.0388)	(0.112)
P_lnDC_GDP	-0.0721	-0.0510	-0.00641	-0.0203	-0.0101	-0.109
	(0.0896)	(0.0905)	(0.0985)	(0.0936)	(0.0965)	(0.238)
P_CivilLiberties	-0.266***	-0.232***	-0.251***	-0.279***	-0.307***	-0.395***
	(0.0467)	(0.0490)	(0.0510)	(0.0505)	(0.0485)	(0.115)
P_lnTelephone_pc	-0.0868	-0.0632	-0.148	-0.180	-0.159	-0.353
	(0.0905)	(0.0909)	(0.143)	(0.155)	(0.152)	(0.423)
P_EUCummulated	-0.00842	-0.00965*	-0.0102*	-0.00858	-0.00949*	-0.0144
	(0.00519)	(0.00523)	(0.00522)	(0.00530)	(0.00518)	(0.00921)
P_Meriterranean		-0.533**	-0.488**	-0.321	-0.236	
		(0.241)	(0.243)	(0.257)	(0.253)	

Table 4.3 *Continued*

	lnFDI					
	1	2	3	4	5	6
P_Infl	0.00514	0.00396	0.0200*	0.00210	0.00235	0.0375
	(0.00341)	(0.00337)	(0.0114)	(0.00336)	(0.00283)	(0.0294)
P_lnRGDP_pc				-0.123	-0.107	-0.00585
				(0.0801)	(0.0760)	(0.243)
P_Literacy				0.0171**	0.0185**	0.0142
				(0.00707)	(0.00743)	(0.0201)
P_lnLifeExpectancy				0.0258		1.767
				(0.569)		(3.963)
R_HDI			8.946**			
			(3.639)			
P_HDI			0.358			
			(0.938)			
R_InfantMortality					0.344***	
					(0.0405)	
P_InfantMortality					0.00257	
					(0.00382)	
R_Gini						-0.0735
						(0.0447)
P_Gini						0.0711***
						(0.0154)
_cons	-16.13***	-15.84***	-22.63***	19.54	-39.04***	-163.8***
	(1.292)	(1.290)	(3.160)	(16.76)	(8.508)	(40.95)
R-squared	0.534	0.535	0.537	0.570	0.596	0.620
No of observations	1655	1655	1650	1503	1508	574

*** denotes statistical significance at the 1% level, ** denotes statistical significance at the 5% level, * denotes statistical significance at the 10% level.

not confined to meet local demand. A common language and a common colonial past intensify the flow of foreign capital.

All characteristics of the source country are statistically significant. Openness to trade, the development of financial markets, the degree of civil liberties, and EU membership encourage domestic firms to expand production abroad. By contrast inflation, GDP growth and the per capita number of telephones hinder the outflow of FDI. It therefore seems that macroeconomic instability which translates into inflationary pressures is favourable to a decision to invest abroad and a well developed domestic infrastructure which boosts domestic productivity does the opposite. A negative impact of GDP growth can be interpreted as reflecting the role of profit prospects in the parent country market.

The attractiveness of the recipient countries in mainly driven by the openness to trade, size of the domestic market, measured by the level of GDP and the social stability proxied by the degree of civil liberties. The macroeconomic stability, the well developed financial market

and infrastructure do not seem to attract foreign investors[43]. Surprisingly, membership in the EU does not warrant a greater capital inflow.

To test the relative attractiveness of Mediterranean countries, we insert a dummy variable equal to one if the recipient country is a member of this group. Column (2) of Table 4.3 displays the results of baseline regression with Mediterranean dummy.

Membership in the group of Mediterranean countries discourages foreign investors. The value of the estimated coefficient can be interpreted as semi elasticity leading to the conclusion that the impact of membership in the Mediterranean countries group is sizeable. More precisely, the Mediterranean countries attract almost 53 percent less investment than their counterparts from other regions.

Identification of the main determinants of bilateral FDI flows removes the problem of omitted variables in the analysis of the role of social development. To get the general picture of the link between FDI flows and social variables we insert the HD index into the set of independent variables, both for the source and the host country. The results are presented in column (3) of Table 4.3 with the Mediterranean dummy variable. They suggest that the HD index is solely important as a "push factor" which triggers expansion into foreign markets. Higher levels of human development seem to be irrelevant features of host countries. It should be noticed that the introduction of the HD index leaves the Mediterranean dummy significant and the value of the coefficient unaltered. The Mediterranean countries on average attract almost 50 percent of FDI less than other countries. It could be argued that the negative impact of Mediterranean group membership cannot be attributed to the low level of human development.

Although the overall measure of human development in the recipient countries is insignificant, we study the importance of the components of the HD index in greater detail since they may have opposite effects on FDI flows thus explaining the lack of significance of the overall human development measure. In column (4) of Table 4.3 we use life expectancy at birth to measure the first aspect of human development. The level GDP per capita is a proxy for decent standards of living and the literacy rate is a proxy for the educational attainment. We report results for the Mediterranean countries dummy.

The stems from column (4) of Table 4.3 that the components of the HD index have indeed an opposite impact on FDI flows. The decent standard of living stimulates outward investment whereas well educated workers, likely to be more productive, seem to maintain

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[43] We have tested whether the financial market development in the host economy exerts a non-linear influence on FDI but the evidence was not supportive of this hypothesis.

the capital in the domestic economy. By a similar token the level of education in the host country is among significant factors attracting foreign investors. By contrast, a decent standard of living discourages them but this result is not statistically significant. Life expectancy does not exert significant influence in both the source and the host country. By contrast, the alternative measure of long and healthy life, namely infant mortality, is negatively linked to FDI outflows, as column (5) demonstrates. We can again make recourse to the high productivity level in the parent country to understand the positive link between infant mortality and outward FDI.

We have hypothesized that the average level of per capita GDP is a rough measure of a decent standard of living which neglects the distribution of income. To tackle this problem we insert the value of the Gini coefficient into the set of regressors. Unfortunately this procedure reduces the size of the sample and precludes the use the Mediterranean membership dummy since data on the Gini coefficients for these countries is not available. Hence the results in column (6) of Table 4.3 should be read with caution.

It seems that unequal income distribution in the host country makes it an attractive location for foreign investment. Column (6) shows that higher levels of per capita GDP can be conducive to FDI inflows only if its distribution is unequal. Income distribution in the source country is marginally significant and the coefficient with this variable is negative. We can conjecture that an unevenly spread income in host economies generates the demand that the multinational companies seek to meet. Hence more pronounced inequality intensifies inward investment flows and puts a break on outward investment.

To deepen our understanding of the role of the level of income and its distribution we used the Human Poverty Index to gauge another aspect of social development. The HP index is to a large extent an inverse of the HD index since it measures the degree of deprivation in decent standard of living combined with a probability at birth of not surviving to age 40 and the illiteracy rate. The results presented in column (1) of Table 4.4 where the coefficient with the HPI variable is smaller than zero and significant speak in favour of the hypothesis that human development is one of the leading factors attracting FDI.

Table 4.4 The Human Poverty Index and gender equality as the determinants of bilateral FDI inflows. Cross-section results (*continued on the next page*).

(robust standard errors in parentheses)

	lnFDI			
	1	2	3	4
lnDistance	-0.939***	-0.907***	-1.040***	-1.056***
	(0.0971)	(0.0631)	(0.0683)	(0.0697)
CommonLanguage	1.434***	1.297***	1.382***	0.889***
	(0.244)	(0.188)	(0.216)	(0.225)
Colony_1945	1.295***	1.040***	0.813**	0.535
	(0.263)	(0.250)	(0.386)	(0.363)
R_Openness	0.00398**	0.00425***	-0.00981***	-0.00592**
	(0.00189)	(0.00143)	(0.00198)	(0.00242)
R_GDPGrowth	-0.350***	-0.355***	-0.242***	-0.0969
	(0.113)	(0.0814)	(0.0860)	(0.0864)
R_lnDC_GDP	2.040***	1.882***	1.583***	1.607***
	(0.201)	(0.190)	(0.167)	(0.220)
R_CivilLiberties	-0.323	-0.284	-0.335	-1.308***
	(0.222)	(0.198)	(0.256)	(0.455)
R_lnTelephone_pc	-5.084***	-4.745***	-7.405***	-8.677***
	(0.656)	(0.546)	(0.675)	(0.684)
R_EUCummulated	0.0135**	0.0157***	0.0186***	0.00205
	(0.00579)	(0.00443)	(0.00451)	(0.00470)
R_Infl	-0.0977*	-0.0739*	-0.268***	-0.342***
	(0.0505)	(0.0425)	(0.0463)	(0.0477)
R_FemaleOffice				0.0915***
				(0.0186)
R_FemaleProf				-0.218***
				(0.0186)
R_FemaleSeats				0.0217**
				(0.0100)
R_FemaleIncome				6.20e-05***
				(2.37e-05)
P_GDPGrowth	-0.0113	-0.0171	-0.00579	0.00345
	(0.0295)	(0.0286)	(0.0363)	(0.0349)
P_Openness	0.00645***	0.00859***	0.00745***	0.00781***
	(0.00135)	(0.00121)	(0.00137)	(0.00132)
P_lnGDP	0.863***	0.867***	0.937***	0.965***
	(0.0490)	(0.0422)	(0.0517)	(0.0522)
P_lnDC_GDP	-0.0261	-0.0280	0.0240	0.142
	(0.107)	(0.101)	(0.119)	(0.120)
P_CivilLiberties	-0.314***	-0.259***	-0.279***	-0.302***
	(0.0595)	(0.0538)	(0.0689)	(0.0717)
P_lnTelephone_pc	-0.180	-0.132	-0.222	-0.254*
	(0.145)	(0.151)	(0.142)	(0.140)
P_EUCummulated	-0.151	-0.0112**	-0.0160***	-0.0166***
	(0.134)	(0.00532)	(0.00573)	(0.00572)

Table 4.4 *Continued*

	lnFDI			
	1	2	3	4
P_Meriterranean	-0.485*	-0.490*	-0.707**	-0.436
	(0.272)	(0.281)	(0.303)	(0.281)
P_Infl	0.00492	0.0191	0.0319**	0.0349**
	(0.00331)	(0.0117)	(0.0145)	(0.0136)
P_FemaleOffice				0.00480
				(0.00845)
P_FemaleProf				0.00399
				(0.00907)
P_FemaleSeats				-0.00172
				(0.00762)
P_FemaleIncome				-1.89e-05
				(1.44e-05)
R_GDI		5.338		
		(3.754)		
P_GDI		0.493		
		(0.941)		
P_HPI	-0.0222**			
	(0.00963)			
R_GEM			4.693***	
			(0.894)	
R_GEM			-0.745	
			(0.693)	
_cons	-14.09***	-20.45***	-14.10***	-3.969
	(1.584)	(3.342)	(1.663)	(2.764)
R-squared	0.487	0.543	0.551	0.607
No of observations	1040	1527	1259	1255

*** denotes statistical significance at the 1% level, ** denotes statistical significance at the 5% level, * denotes statistical significance at the 10% level.

The limited time dimension of our dataset enables us to widen the scope of our analysis of human development. We argue that gender discrimination is an important aspect of social development which is likely to have repercussion on FDI inflows. We use the Gender Development Index and the Gender Empowerment Measure to quantify the differences between male and female levels of human development and the degree of political and economic participation and decision-making. The results for the GD index and the Mediterranean countries dummy are presented in column (2) of Table 4.4.

Gender discrimination does not affect FDI flows, the value of the GD index being insignificant for both the source and the host country. The overall human development, whether comparable between sexes or not, is irrelevant for foreign investors. We tested

whether this is also true of the involvement in political and economic processes. The results are displayed in column (3) of Table 4.4.

The GEM index is statistically significant for the source countries and foreign outward investment increases with the rising role of women in the society. To verify the relative importance of various components of the GEM index we run the regression on more detailed measures of power over economic resources and political and economic participation and decision making of women. We report the results in column (4) of Table 4.4.

All components of the GEM index in the host country are uniformly insignificant. For the GEM index components in the source countries, column (4) of Table 4.4 provides mixed results. The share of female legislators and senior officials and the female share of seats in parliament fuel FDI outflows. The level of female estimated earned income has a similar impact which supports our finding for the overall measure of decent standards of living. On the other hand, higher percentage of female professional and technical workers dampens the eagerness to invest abroad.

The results of the cross-section regressions are not fully satisfactory. We have identified many significant "push" factors but only few important "pull" characteristics of the host countries. The degree of civil liberties is the sole universally significant social indicator. In some specifications the level of educational attainment proxied by the literacy rate was found to be a significant component of human development attracting FDI. A dummy for the Mediterranean countries was significant and accompanied by a negative sign which suggests that a low level of social development and poor performance in terms of other control variables employed in this study do not exhaust the list of obstacles to FDI present in this region.

4.3 Conclusions and policy recommendations

The study of inward FDI determinants revealed that there are crucial determinants of FDI inflows which are robust to the selection of estimation method and control variables, namely the degrees of openness and of civil liberties. First, the share of imports and exports in GDP plays a pivotal role in attracting foreign investors, pointing to the fact that trade and financial openness are complementary processes. Openness to trade should be a central part of development strategies because a more intense FDI inflow is its by product.

Second, prospects of social stability are conducive to FDI inflows. The fear of social and political turmoil is one of the most important barriers to foreign investors. A high degree of civil liberty promotes FDI and seems to be more important than gender equality policies.

The results support the notion that higher levels of human development lure foreign investors. The HD index has been found to shape foreign investors decisions in long time horizon. The analysis aimed at identifying FDI determinants in most recent years revealed that economic and social deprivation, measured by the inverse of the HD index, namely the HP index, is among the few significant FDI deterrents. A long and healthy life and the educational attainment have been found in some specifications to be important FDI boosters. The role of education is more pronounced when coupled with positive income growth. On the other hand, decent standards of living are not critical to investors contemplating to locate their capital abroad unless income distribution is uneven.

It stems from our analysis that greater commitment to gender equality is not an important facet of an FDI enhancing policy. Investment in education and health improvements are best suited to create an environment that encourages foreign investors. The greatest effort should however be made to maintain and to widen the degrees openness and of civil liberties. It should be noted that all these steps may turn out to be insufficient because the group of Mediterranean countries attracts about 50 percent less in terms of FDI flows than countries sharing similar characteristics but located in a different part of the world.

Chapter 5

Social development, growth, and investment

Economic growth has indisputable influence on the living conditions of people. Even a small increase in a country's growth rate can result in dramatic changes in living standards over just one generation. Thus, one might think that economic growth and development would have occupied a prominent position in the research agenda of international economists. In reality, until the late 1980s growth theory was a relatively small field that for the most part was seemingly disinterested in broad empirical trends in the relative well-being of countries. Since the pioneering empirical work of Barro (1991) and Mankiw, Romer, and Weil (1992) growth theory has become a popular field in economics, but even today, the renewed field of growth theory is not often preoccupied with empirical questions relating to social development. Only recently, do economists show an increased interest in the role of social development in relation to economic development. This interest has resulted in a limited number of empirical studies, in which traditional inputs, i.e. capital and labour, are complemented with human capital and social indicators that are assumed to explain differences between countries. However, as argued by Temple (1999) , despite this stream of research there is only limited progression in this field. He concludes that there a dominant role for research on the broad relation between social indicators and economic growth.

The fact that in the past few decades the MENA region has been lagging behind most other regions of the world is noticeable even to a casual observer of the global economy. This is visible not only in terms of development outcomes such as growth, inequality, and quality of life, but also in terms of international integration such as trade and FDI. Therefore, this part of the report is motivated by the need of a thorough analysis of the social and international framework conducive to growth in the MENA countries. In this context, it is necessary to focus on outcomes and seek viable policy instruments to promote growth.

Given the results of the two previous stages of our analysis, we study the impact of social indicators on growth and convergence in the context of FDI and trade. In this report, we argue that the positive growth effects of FDI and trade arise from factors such as knowledge spillovers or technological upgrading. The presence of foreign competition can result in positive external effects in the host market, where local companies benefit from the transfer of knowledge or even independently develop new products and technologies. Therefore, the

effect of FDI and trade on long run growth and convergence depends on the structural and sectoral investment composition, which depends in turn on social indicators such as income inequality, human development, education, and health.

First, we review the literature on the impact of variables employed in the analysis on growth. Second, we carry out an empirical investigation in the tradition of the "determinants of growth" research. The approach consists in regressing the growth rate of output on a broad set of explanatory variables relating to variables of interest and a set of control variables. Using this methodology it is possible to test whether countries with lower levels of social development as portrayed by our social indicators, do exhibit a lower rate of growth and have a lower investment ratio. In order to aid policy-makers, we calculate marginal effects of various policy actions, providing a synthesis of conclusions, together with policy implications for addressing the problem of slow GDP growth in the MENA countries. Then we proceed to conclusions, which include specific policy recommendations for enhancement of growth in line with the results from the empirical study.

5.1 Review of literature and discussion of variables

There are numerous theoretical and empirical studies on the determinants of growth. Theoretical studies are classified into exogenous growth models and endogenous growth models. Empirical studies use either cross-section or time series techniques to estimate the validity of these theoretical models. The main assumption of the neoclassical model is the law of diminishing returns to labour and reproducible capital. These hypotheses have two implications. First, factor accumulation should explain only short-term fluctuations of economic growth around its steady-state rate. Second, for a given saving rate, poor countries are likely to grow faster than richer ones, fostering convergence of per capita incomes among countries in the long run. In this setting, the differences in long-term growth of wealth per capita across countries cannot be explained by the growth rate of savings, but rather by exogenous technological advancement. Nevertheless, the results of the empirical literature devoted to testing whether the data validate the theories have been at best mixed. In particular, the neoclassical growth variables, such as rates of growth of physical capital and labour force explain only a small share of the variations in per capita growth.

Over the past decade, there has been an explosion of empirical research on economic growth and its determinants. Despite this large volume of work, many of the central issues of interest remain unresolved. A problem inherent in empirical growth research is model and

parameter uncertainty. The literature on economic growth has identified a big number of variables that are believed to be partially correlated with growth. However, the question of the robustness of these correlations is an important one. Different researchers have employed different combinations of right-hand-side variables, obtaining often-contradictory results, therefore growth regressions have come under considerable fire. With this caveat in mind, let us now turn to review of literature on the impact of FDI, trade, and various social indicators on growth.

5.1.1 FDI

The theoretical literature proposes a number of arguments for FDI having a positive impact on growth. The starting point is commonly an endogenous growth model in which FDI receives a special role in raising technology levels. First, FDI is considered to act as a channel for international technology transfers that increase the productivity of the host country. Multinational companies operate with superior technologies and managerial practices, which increase productivity in the industry of the host country. Second, foreign firms increase competition and, thus, induce local firms to become more productive. Third, foreign firms invest in training of the work force thereby improving qualifications in the country's labour market (Aitken et al. 1997, Blomstrom and Kokko 1997, Borensztein et al. 1998). Note that the aggregate productivity effect on the macro level is the sum of several effects, namely productivity increases within the firm, horizontal productivity effects through increased competition and labour mobility to competing firms and, finally, productivity spillovers through forward and backward linkages (Rodriguez Clare 1996, Markusen and Venables 1999).

Empirical studies testing the growth impact of the level of FDI stocks per se largely remain inconclusive. International trade and FDI have frequently been seen as catalysts facilitating economic growth and integration of developing countries with the world economy. This view is supported by numerous growth regressions where most specifications find that some indicator of external openness is strongly correlated with per capita income growth such as Borensztein et al. (1998), Coe and Helpman (1995), Keller (2000, 2002). The formal verification of the proposition that FDI involves the transfer of productive knowledge from one country to another can be found, for example, in Xu (2000) who finds a positive correlation between productivity growth and the ratio of foreign subsidiary value added to host country's GDP. This effect is shown to be stronger and more robust in the more

developed countries than in the LDCs. A similar conclusion is reached by de Mello (1999) who finds a positive impact of FDI on output growth for countries that are technological leaders as well as for follower economies. Although empirical research is generally supportive of the idea that openness promotes growth, the magnitude of this positive impact differs across countries.

Kneller and Stevens (2006) attribute differences in absorptive capacity and hence in the level of productivity to differences in human capital and, to a lesser extent, in R&D. Aghion et al. (2005) indicate the degree of openness as a precondition of catching-up process in their study of convergence in a group of 71 countries. In addition, they find that other variables representing schooling, geography, health, policy, politics, and institutions do not affect the significance of the interaction between financial intermediation and initial per capita GDP in the cross-country growth regressions. However, some literature suggests that the growth effect is subject to certain conditions in the country of destination. Borensztein et al. (1998) show that FDI only has a positive impact on growth if a country possesses a sufficient level of human capital. Carkovic and Levine (2002) test whether human capital and the income level of an economy determine the growth impact of FDI while Fillat-Castejon and Wörz (2006) look at the openness of an economy as a condition for the growth effect of FDI. We consider that there are many more factors that may be critical in explaining the growth impact of FDI. Therefore, in contrast to earlier studies looking at rough general indicators as conditional factors for FDI, we shall investigate the impact of FDI conditioned on a variety of social indicators, which will be discussed below. In the context of the MENA countries, estimation results presented in Péridy et. al. (2009) suggests, that FDI is a necessary, but not sufficient condition for the income convergence process. They find, however, that FDI concentration process has a negative impact on convergence, because of the low technology of the products involved

5.1.2 Trade

The relationship between openness to trade and economic growth in developed and developing countries has been of continuing interest in both the theoretical and empirical literature. Openness has been used extensively in the literature as a major determinant of growth performance and the functional chains and transmission channels are diverse. In general, it affects growth positively, since it magnifies the benefits of international knowledge spillovers and technological diffusion. It also enforces cost discipline through import

competition and thus increases productivity. Therefore, trade can indeed boost economic growth through technology transfer and institutional improvements. Technology transfer occurs via the importing of high-tech capital goods, production facilities, patents and licenses, as well as knowledge-intensive services. Furthermore, the importing of new technologies also stimulates the development of domestic technology via the imitation and enhancement of imported products. Therefore, trade accelerates technological progress, which in turn is the key source of long-term economic expansion according to growth theory. On the one hand, the export led growth hypothesis states that exports are the main determinants of overall growth. At the heart of this model is the belief that the export sector generates positive externalities on non-export sectors in the economy through more efficient management and production techniques or that export expansion increases productivity by exploiting scale economies. Moreover, exports help to alleviate foreign exchange constraints and thus facilitate greater access to international markets. Endogenous growth theory extends this analysis by emphasizing the role of exports on technological innovation and dynamic learning. On the other hand, trade has been argued to impede investment in industrialization of a country (infant-industry arguments). The immediate impact of rapid trade liberalization could thus be unemployment, deindustrialization and growing external deficits.

In the absence of a demonstrably better indicator of trade policy, some of the growth effects derived from underlying trade liberalizing policies that countries have undertaken can be captured by relying on trade as a fraction of GDP as a measure of openness in the dynamic regressions. Although empirical research is generally supportive of the idea that more trade promotes growth, the magnitude of this positive impact differs across countries. For instance, Irwin and Tervio (2002) find that the main result of Frankel and Romer (1999) is confirmed throughout the whole century: countries that trade more as a proportion of their GDP have higher incomes even after controlling for the endogeneity of trade. Salinas and Aksoy (2006) employ multivariate fixed effects estimations to calculate that annual per capita GDP growth rates increased by up to 2.6 percentage points after trade liberalization. Moreover, this policy reforms have been followed by an acceleration of growth in investment, exports of goods and services, and manufacturing exports, and as opposed to common belief, outward orientation did not lead to significant deindustrialization and actually seems to have increased export diversification. Also openness to trade has been the subject of FEMISE research. Nathanson et. al (2009) investigate the effects of trade liberalization in the MENA Countries, including the impact of openness on growth. The authors find a significant positive relation between these two variables.

5.1.3 Health

There exists a consensus that improving the health of people in poor countries will lead to significant economic gains. In fact, the hope for such economic benefits is often given as an important justification for health initiatives. This is our working hypotheses too. However, there is significant scepticism concerning the short-run effects of policy interventions on health, fertility, and population growth, and no certainty whatsoever regarding the plausibility of longer-run growth effects. This runs against a body of microeconomic evidence showing that an individual's health is an important determinant of his or her economic performance. Various measures of poor health have all been shown to have a negative effect on a person's wages and productivity. The positive relationship between health status and income per adult could run both ways. This may happen because increased income leads people to demand better health as a consumer good. At the macroeconomic level, there is a positive correlation between income per capita and infant mortality, life expectancy or other measures of health. Thus, there are sufficient reasons for believing that health improvements will make a country richer. More importantly, microeconomic studies are unable to control for general equilibrium effects of changes in population health. For example, an increase in life expectancy may lead to a larger population, in turn reducing available resources per capita and possibly undoing the economic benefits of better health. There may be also reverse causation. Acemoglu and Johnson (2007) conclude that, when the issues of health's endogeneity and omitted variables are taken into account, health improvements in the period after World War II actually had a negative effect on income per capita. The increases in life expectancy predicted by their instruments do not account for the level or growth in per capita income in this period. The authors cast "doubt on claims that unfavourable health conditions are the root cause of poverty".

5.1.4 Inequality

Two distinct branches in the growth literature focus on how growth relates with inequality on the one hand, and with FDI and trade, on the other. Regarding the first, there is no consensus on how growth and inequality are linked. While international organizations, such as the World Bank and the IMF, now presume the effect of inequality on economic growth to be negative, careful reading of the existing studies suggests that they show starkly different implications. Empirically, the issue has been investigated by regressions of growth rates on measures of inequality. The empirical findings are mixed. There are many theoretical

explanations for these results. One strand of theoretical research on growth consequences of inequality rests on the Kuznets hypothesis (Kuznets 1955), the other on the endogenous theory of growth. The Kuznets hypothesis states that at an early stage of development investment in physical capital is the main driver of growth. Inequality encourages this growth by allocating resources towards those who save and invest the most. In contrast, in mature economies, human capital accumulation is the main source of growth, and inequality slows growth by lowering education standards because poor people lack finance for their education in imperfect credit markets. The endogenous growth models argue that inequality has an impact on growth through many transmission channels. One is the imperfection of capital markets (e.g. Aghion and Bolton 1997), other explanations underscore the fact that higher inequality implies a strong investment impeding redistribution through voting (Alesina and Rodrik 1994; Persson and Tabellini 1994). Some researchers focus on political and social instability associated with high inequality (e.g. Alesina et al. 1996). Overall, while there is an emerging consensus that equality enhances growth, disagreement exists on the underlying mechanisms and the specific channels linking equality and growth. Despite renewed attention on the part of policymakers, the lack of clear explanations of the causes and consequences of inequality has implied that many countries' relative degree of inequality has proved to be remarkably persistent. Hence, the investigation of the issue in this chapter will provide significant policy guidance.

5.1.5 HDI

It is known, that a better economic performance could bring about improvements in human development. However, much less attention has been given to the opposite relationship. It is frequently hypothesized, especially by the international aid organizations, that social development brings about economic growth among other economic improvements. The only known paper, which investigates the issue empirically is by Ranis and Stewart (2005). They argue that the traditional policy advice, which argues that human l development improvements must wait until economic performance expansion makes it affordable, is likely to be in error and back their argument with regressions two-way cross-section regressions.

Moreover, they make a case that the economic growth, which is an important input into HDI improvement, is itself not sustainable without improvement in HDI. Their input however has a very limited sample of countries and the estimation method (cross section) may be not enough to provide backing to such arguments.

5.1.6 Education and infrastructure

Education has numerous consequences for individuals and countries as a whole. Based on microeconomic evidence of a strong relationship between education and earnings, several growth accounting studies include educational attainment as a variable. However, an important distinction is the one between private and social returns to education. Private returns relate to benefits acquired by the individual who receives the additional education. These include many benefits such as higher lifetime earnings, lower levels of unemployment, and greater job satisfaction. In contrast, a number of recent studies have been unable to find a correlation between economic growth and increased educational attainment at the macroeconomic level. This result has been used as a basis for rejecting the microeconomic evidence and for arguing that the concentration of governments on raising levels of literacy and average educational attainment has been pointless (Easterly, 2001).

Increases in education could have an impact on economic growth through two different channels. First, more education may improve the productivity or quality of workers. An alternative formulation, adopted by Mankiw et al. (1992) and Klenow and Rodrigruez-Clare (1997), specifies human capital (measured by education) as an independent factor in the growth process that can augment labour, physical capital, and Total Factor P. The relationship with TFP reflects the view that an educated workforce is better able to implement new technologies and to generate ideas for improving efficiency. Designing an empirical test to distinguish between these two channels is very difficult. Thus, both suggest potential justifications for expecting a positive correlation between gains in educational attainment and growth.

A number of studies, including both those of Mankiw et al. (1992), Barro and Sala-i-Martin (2004), found a significant positive association between cross-national differences in the initial endowment level of education and subsequent rates of growth. However, later studies that examined the relationship between changes in years of schooling and changes in average incomes failed to find a significant association. Why this is so is generally not known to economists. There are three potential explanations for the failure to replicate the microeconomic results at the aggregate level. First, the social return to education in the aggregate data may be much less than the private return in the microanalysis. Second, there may be measurement errors in the data. Third, cross-national variations in educational attainment may not account for variations in the quality of education. Therefore, the expected relation is not clear at the outset.

Some researchers suggest that the benefits of education are not fully realized because of a failure to integrate improvements in education with other important elements of the growth process. That is, the creation of skills offers no benefits if the technology and infrastructure do not exist to make use of them. Although this explanation sounds plausible, it is not consistent with the fact that the correlation between growth and changes in educational attainment is also weak in samples limited to OECD economies. A measure of the number of computers and telephone mainlines is used as proxies for technological development and a positive association is expected in the empirical investigation.

5.1.7 Control variables

The empirical investigation carried out in this section is in the tradition of the "determinants of growth" research. The approach consists in regressing the growth rate of output on a broad set of explanatory variables related to variables of interest controlled upon the set of control variables. Although growth theory is used as a guide for the choice of possible regressors, the specification is quite general, and cannot be interpreted as the reduced form of a single model. However, there should be concerns about the likely multicollinearity among explanatory variables, which limits the number of tested hypotheses. Due to these concerns, not all variables that have been found to be significantly related to growth are included in the investigation, since this would lead to multicollinearity and biased standard errors of parameter estimates.

The standard set of control hypotheses states that the *investment rates are correlated with growth, the rate of time preference (as proxied by life expectancy) affects growth negatively, and there exists conditional convergence. Moreover, population growth rates, common rate of technical change, and a common depreciation rate are positively correlated with growth.* These hypotheses are derived straight from models of endogenous growth. In neoclassical growth models, as opposed to endogenous growth models, the long-run rate of growth is exogenously determined (Caselli et. al 1996). A common prediction of these models is that an economy will always converge towards a steady state rate of growth, which depends only on the rate of technological progress, depreciation, and the labour force growth rate. Empirical applications of the Solow model use the saving rate proxied by the logarithm of the investment rate and the logarithm of the population growth rate plus 0.05, where 0.05 represents the sum of a common exogenous rate of technical change and a common

depreciation rate.[44] As a robustness check — the alternative measure 0.07 is sometimes used with no noticeable difference in results.

5.2 Model specification and estimation methods

A growth regression panel model can be written in a general form as follows:

$$y_{i,t} = \sum_{t=1}^{p} \alpha_1 y_{i,t-1} + \beta_0 + \beta_1 x_{i,t-1} + \beta_2 z_{i,t-1} + u_{it,} \ \ \text{for } t = 1 + p, T \tag{1}$$

where y_{it} is GDP per capita of country i at time $t = 1..T$, x_{it} is a vector of pre-determined control variables, z_{it} is a vector of exogenous control variables, and β_j, for $j = 0$, 1, 2 and α_j for $j = 1,..., p$, are the regression coefficients with:

$$\left| \sum_{t=1}^{p} \alpha_1 \right| \le 1. \tag{2}$$

The error term:

$$u_{it} = \eta_t + v_{it,} \tag{3}$$

has the following structure. η_{it} is an i.i.d. country-specific random effect, v_{it} is the i.i.d. error term.

The standard estimated growth equation has the following form:

$$\Delta y_{it} = \gamma_t + (\alpha - 1) y_{i,t-1} + x'_{it} \beta + \eta_{it} + v_{it} \ \ \text{for } i = 1,..., N \text{ and } t = 3,..., T. \tag{4}$$

where Δy_{it} is the log difference in per capita GDP over a five year period, $y_{i,t-1}$ is the logarithm of per capita GDP at the start of that period, and x_{it} is a vector of characteristics measured during or at the start of the period. Among other things, the unobserved country-specific effects η_{it} reflect differences in the initial level of efficiency, whilst the period-specific intercepts, γ_t, capture productivity changes that are common to all countries. Country effects and time effects may also reflect country-specific and period-specific components of measurement errors.

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[44] This origins back to Mankiw, et al (1992).

Unfortunately, there are well known problems with estimating growth regressions. The worries about the data-generating process, which guides GDP growth and its potential regressors, can be summarized by the following, not exhaustive, list:

The process is dynamic, with current realizations of the dependent variable influenced by past ones.

There may be arbitrarily distributed fixed individual effects in the dynamic, so that the dependent variable consistently changes faster for some observational units than others.[45]

Some regressors may be endogenous.

The idiosyncratic disturbances (those apart from the fixed effects) may have individual-specific patterns of heteroskedasticity and serial correlation. [46]

One prominent way to address these problems has been through first-differenced generalized method of moments estimators applied to dynamic panel data models. However, the use of GMM dynamic panel methods was not possible in this investigation. Both the basic Sargan test of over-identifying restrictions and the Incremental Sargan test, which tests the additional instruments used by the System GMM estimator, detected problems with instrument validity. The additional instruments that this estimator exploits for equations in levels prove not to be valid in the empirical application, possible due to short *T*.

The consequence of using instruments with little explanatory power in predicting the endogenous variable are larger biases in the estimated IV and GMM coefficients (Hahn and Hausman, 2002), thus potentially rendering the use of instrumented models less beneficial versus non-instrumented OLS estimators. Therefore, standard Pooled OLS and Fixed-Effects panel approaches have been used in the following sections. Cross-sectional and panel estimations each have their virtues and downsides. The OLS estimates are likely to be seriously biased owing to the problem of endogeneity; however, they have good finite sample properties, something that is not the case with Random-Effects models. The FE method cannot estimate the effect of time invariant characteristics. The available literature has recognized these problems and these considerations are thoroughly tested. Ultimately, they do not seem to affect the key finding that there is a positive impact of FDI and trade on growth.

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[45] Specifically, one variable that should be included in a conditional convergence regression, the initial level of efficiency, is not observed. This will imply that least squares parameter estimates are biased, since the omitted variable is correlated with the initial level of income.
[46] Some of these issues are discussed in Roodman (2006).

5.3 Methodology and discussion of the empirical results

5.3.1 Benchmark model

The time dimension of panel growth regressions is typically chosen to be 5 or 10 years to avoid short-term business cycles to influence the convergence rate (Bond et al. 2001). The sample covers the period 1980-2005. This implies that the maximum time dimension of the unbalanced panel is 25 years; therefore due to data limitations the data averaging has been carried over five year periods. The sample covers more then 150 countries – only countries with population below 200 thousand were excluded from the dataset. The complete description of the dataset and data sources used in our study is provided in Appendix 2. Graph 5.1 presents the empirical procedure for the growth model.

Two sets of estimation results are presented in this section - the general results of the neoclassical model and our benchmark open-economy model estimated using panel data. In the first-stage of the estimation, a standard classical growth model is estimated.

Graph 5.1. Growth model – empirical procedure
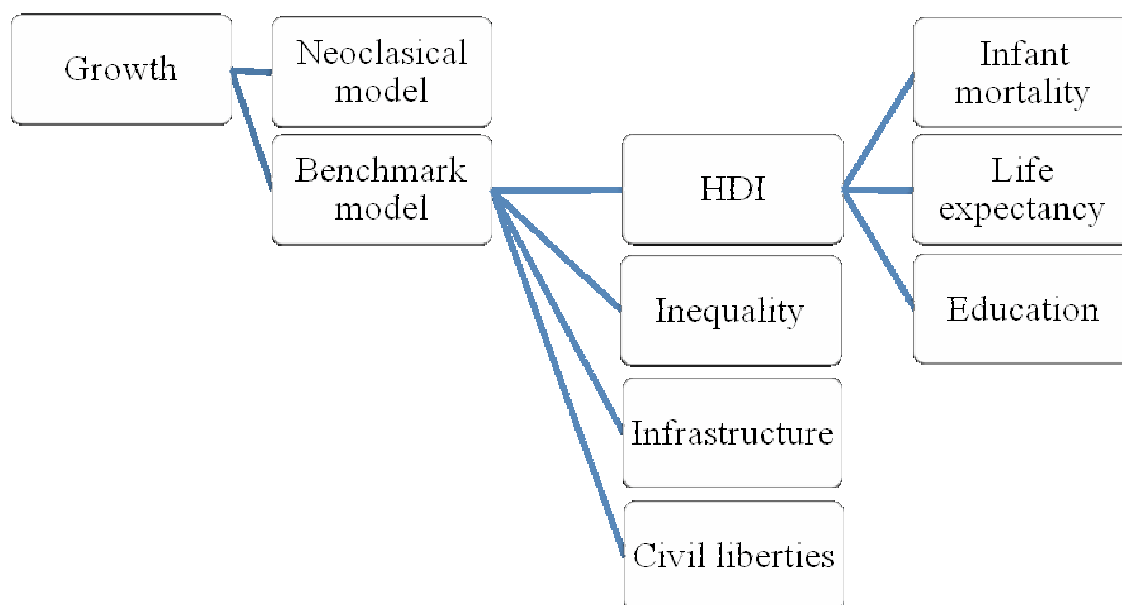
First, log difference of GDP per capita is regressed on 5-year lag of logarithm of GDP per capita[47], 5-year lagged values of the investment rate, population growth, technical progress, and depreciation. Second, a benchmark model is estimated. Log difference of GDP per capita is regressed on 5-year lag of logarithm of GDP per capita, 5-year lagged values of the investment rate, population growth, technical progress, depreciation, inflation, life expectancy, exchange rate volatility, government consumption as a share of GDP, and the average degree of openness. All models include a constant and all variables are in logarithms except for rates, which are not in logarithms due to interpretation problems. A full set of time dummies was jointly tested for significance with Wald test at 5% level of confidence: in all reported regressions, the time dummies were significant at 5% level. Table 5.1 reports the results of the classical and the benchmark model. The standard errors are calculated using an autocorrelation and heteroskedasticity consistent covariance matrix estimate of Arellano (1987).

The obtained results are qualitatively similar to other examples in the literature. In particular, the estimate of the coefficient of the initial income using different estimators is very similar to that reported by other authors. The differences between the corresponding coefficient estimates are small relative to their standard errors. The Fixed Effect estimate (-0.33) of the autoregressive variable, which is likely to be seriously biased downwards in a short panel like this one, implies conditional convergence. Caselli et al. (1996) suggest that the high rate of convergence implied by such result favours open economy versions of the neoclassical growth models. In addition, the fixed effects results are close to those obtained by Caselli et al. (1996) and Bond et al (2001), even though the sample coverage is quite different.

The estimated coefficients of control variables have generally the expected signs, though they are sometimes not robust. Some control variables are not or only weakly significant. The positive sign and large magnitude of the investment rate favours the endogenous version of the theoretical growth model and was expected in the estimation.

The lagged investment/GDP ratio (*InvestmentGDP*) had a positive coefficient that was always statistically significant. Economic growth was affected by decisions to invest in physical capital and in skilled labour that are essential for innovations, management, public infrastructure, etc. The coefficient of population growth appear to be large. This variable was

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[47] This is equivalent to estimating the growth rate of per capita income on its initial level. One just needs to subtract one from the coefficient on the initial income level, while all standard errors remain unaffected

statistically significant in the classical version of the model and insignificant in the benchmark model.

Table 5.1 The growth model – classical vs. benchmark model

	GDP_pcGrowth	
	1	2
LaggedGDP	-0.365***	-0.379***
	(0.04)	(0.04)
InvestmentGDP	0.007***	0.007***
	(0.00)	(0.00)
PopulationGrowth	-0.066	0.030
	(0.17)	(0.15)
lnInflation		-0.053***
		(0.02)
ExchangeRate_StdDev		0.224
		(0.08)
Openness		0.105***
		(0.03)
FDI_GDP		0.003**
		(0.00)
GovConsumptionGDP		-0.003*
		(0.00)
_Inum5_3	0.012	0.017
	(0.01)	(0.01)
_Inum5_4	0.040***	0.025*
	(0.01)	(0.01)
_Inum5_5	0.121***	0.085
	(0.02)	(0.02)
_Inum5_6	0.153***	0.114
	(0.02)	(0.02)
_cons	2.922***	3.248***
	(0.00)	(0.31)
No of observations	788	644
R-squared	0.412	0.526
No of countries	173	154

*** denotes statistical significance at the 1% level,- ** denotes statistical significance at the 5% level, - * denotes statistical significance at the 10% level.

Government consumption is significantly and negatively related to per capita growth. The inflation and exchange rate volatility variables, which were used as proxies for macroeconomic stability, were significant. This is in line with the fact, that in recent years due to increasing recognition of its importance most governments have taken measures against instability in the macroeconomic environment. For instance, hyperinflation has almost

disappeared and multiple exchange rates have become rare., moreover, most governments recognize that their expenditures must be controlled.

Turning to the first variables of interest, the FDI share and openness measured by trade are both significant. The estimated coefficients have the expected positive signs and are large in economic magnitude. This provides backing to the first two parts of the investigation, which focused on trade and FDI in the presence of social indicators, thereby investigating the indirect effects of these variables on growth. Now, the direct effect of social indicators will be investigated.

5.3.2 Social indicators and growth

In this section, further investigation of the direct effects of social indicators is performed. It should be pointed out, that direct comparisons of different models with the presented benchmark is not always possible. This is caused by varying sample size owing to data availability. First, the impact of HDI is estimated. The main result is shown in the second column of Table 5.2. In all specifications, the HDI variable was significant and of the positive, hypothesized sign, therefore it has generally passed the tests. The inclusion of HDI has rendered some of the control variables – government consumption and exchange rate volatility - insignificant.

Several critics have noted that the HDI does not indicate how resources are allocated throughout a country and does not take into account income inequality, thus the uneven distribution of resources across the population in a given country. To answer these criticisms, a proxy for income inequality was tested alongside HDI. The variable measured by Gini coefficient was insignificant in all tested specifications. Exclusion of HDI or other variables did not change the main result, namely that the Gini coefficient was not significant. In fact, this effect was observable in all estimations and this finding was robust to the inclusion of all other measures. The weak role of inequality is particularly noteworthy in view of the emphasis frequently placed on it in policy discussions. It should be noted however, that the data quality on income inequality varies across countries. Especially in the case of developing countries, the surveys used to gather data on inequality are based on consumption, unlike in the case of developed countries where the surveys are based on income data. This could potentially have an impact on the robustness of the results shown in the third column of Table 5.2.

An important note concerns the use of GDP – the first component of the HDI. The growth specification requires the use of lagged GDP, which is largely correlated with contemporaneous GDP. The expected negative sign is an indication of already mentioned convergence and does not reflect any criticism towards the HDI or its components. However, since our explanatory variable is the difference of contemporaneous and lagged logarithms of GDP, inclusion of lagged GDP in the estimations alongside a variable, of which one of the components is contemporaneous GDP, poses a significant multicolinearity problem and likely overestimates convergence.

Moreover it could be argued, that the HD index is an aggregate measure with arbitrary chosen weights; therefore it is very hard to draw any policy implications from the above results. In response to this likely criticism, the HDI was disaggregated into its four components, which were then tested separately. These components in addition to GDP include measures of education, life expectancy, and health. Unfortunately, the disaggregated data used to calculate the HDI were not available for all countries. Therefore, there was a need for proxies, which were tested both jointly and one by one. The first variable was a proxy for existence of basic health services – measured by infant mortality rate per 1000 live births. The results are shown in Table 5.2 in the fourth column. The Infant mortality variable was not statistically significant and of the correct sign. This result was robust to the inclusion of other variables. This result makes it not viable to look at health improvements as growth-promoting factors. However, a potential problem of endogeneity of this result should be also taken into account.

The second component - education - was proxied with the average years of schooling using the Barro and Lee (2000) dataset. The results are presented in the next column. The education variable was insignificant, although with the correct sign. This confirms that although education was important for FDI and trade, its direct importance for growth was not that clear. Therefore, we treat this outcome with caution, especially given the fact that other measures of education, including one of the HDI components – eduindex that considers adult illiteracy – also proved to be insignificant in the empirical estimation.

The third component of the HDI is life expectancy. The results are shown in sixth column of Table 5.2. The variable came out in the empirical investigation as insignificant and small in magnitude. Consequently, there is no evidence that even a large increase in life expectancy would lead to a significant increase in per capita economic growth.

Table 5.2 Social indicators and growth

	GDP_pcGrowth								
	1	2	3	4	5	6	7	8	9
LaggedGDP	-0.379***	-0.365***	-0.622***	-0.370** *	-0.248** *	-0.370***	-0.248***	-0.371***	-0.378***
	(0.04)	(0.05)	(0.08)	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)
InvestmentGDP	0.007***	0.008***	0.009***	0.007***	0.006***	0.008***	0.006***	0.007***	0.007***
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
PopulationGrowth	0.030	-0.212	0.908***	0.121	0.095	0.018	-0.038	0.127	0.027
	(0.15)	(0.15)	(0.35)	(0.15)	(0.17)	(0.17)	(0.23)	(0.15)	(0.15)
lnInflation	-0.053***	-0.033**	-0.050***	-0.054***	-0.040***	-0.053***	-0.038***	-0.055***	-0.053***
	(0.02)	(0.02)	(0.02)	(0.02)	(0.01)	(0.01)	(0.01)	(0.02)	(0.02)
ExchangeRate_StdDev	0.224***	0.132	1.008**	0.224***	0.080	0.226	0.054	0.226***	0.224***
	(0.08)	(0.02)	(0.48)	(0.09)	(0.11)	(0.22)	(0.11)	(0.09)	(0.08)
Openness	0.105***	0.081*	0.215***	0.093***	0.074*	0.093***	0.069*	0.110***	0.107***
	(0.03)	(0.04)	(0.04)	(0.04)	(0.08)	(0.04)	(0.04)	(0.04)	(0.04)
FDI_GDP	0.003**	0.003***	0.001***	0.003**	0.002	0.004***	0.002	0.004**	0.003**
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
GovConsumptionGDP	-0.003*	-0.005**	-0.006**	-0.003*	-0.004*	-0.003*	-0.004*	-0.004*	-0.003
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
HDI		0.613***	1.971***						
		(0.00)	(0.39)						
Gini			0.049						
			(0.06)						
InfantMortality				0.000			0.000		
				(0.00)			(0.00)		
AverageSchooling					0.005		0.003		
					(0.04)		(0.05)		
LifeExpectancy						0.028	0.195		
						(0.07)	(0.14)		
lnTelephone_pc								0.007	
								(0.01)	
CivilLiberties									-0.002
									(0.02)
_Inum5_2			-0.053		-0.064***		-0.060***		-0.113***
			(0.04)		(0.02)		(0.02)		(0.02)
_Inum5_3	0.017	0.089	-0.053	0.019	-0.051***	0.016	-0.049***	0.011	-0.096
	(0.01)	(0.01)	(0.03)	(0.11)	(0.02)	(0.01)	(0.02)	(0.01)	(0.02)
_Inum5_4	0.025**	0.012	-0.042*	0.030**	-0.019**	0.024*	-0.018*	0.014	-0.089***
	(0.01)	(0.02)	(0.03)	(0.01)	(0.01)	(0.01)	(0.01)	(0.02)	(0.02)
_Inum5_5	0.085***	0.045**	-0.029	0.092***		0.085***		0.065	-0.028**
	(0.02)	(0.02)	(0.02)	(0.02)		(0.02)		(0.03)	(0.01)
_Inum5_6	0.114***	0.062**		0.122***		0.114***		0.089*	
	(0.02)	(0.02)		(0.02)		(0.11)		(0.03)	
_cons	3.248***	2.796***	3.81789***	3.157***	2.246***	3.049***	1.419**	3.100***	3.357***
	(0.31)	(0.00)	(0.68)	(0.32)	(0.35)	(0.44)	(0.68)	(0.34)	(0.33)
No of observations	644	498	225	353	636	638	350	638	641
R-squared	0.5265	0.488	0.660	0.482	0.526	0.535	0.488	0.520	0.526
No of countries	154	145	114	97	153	154	96	154	153

*** denotes statistical significance at the 1% level,- ** denotes statistical significance at the 5% level, - * denotes statistical significance at the 10% level.

Now let us turn to a combined HDI components estimation, the results of which are shown in the seventh column in Table 5.2. The results from this joint-estimation model replicate the results from HDI components estimated separately. None of the social variables is significant. Moreover, when the social variables are included, the FDI and openness variables become insignificant. This allows us to argue, that the interplay between FDI, openness, and these variables may be the transmission channel of social development on growth. It should be stressed, that this is the only specification in which the FDI and openness variables were insignificant. In all other estimations, their impact on growth was strong, significant, and positive.

When it comes to other variables, like infrastructure for example, the variable measuring the number of telephones was not significant. This measure combined the total number of mobile and telephone subscribers divided by population. The results can be found in ninth column of the Table 5.2. The usage of railroads or paved roads as a proxy for infrastructure also proved to be unsuccessful. Both were insignificant and positive; however, various measures of infrastructure development were insignificant also when the number of telephone mainlines and mobile phones was used in regressions. The result cannot be accepted without a caveat: any inverse causality between the level of GDP and infrastructure may invalidate this pattern.

Finally, higher civil liberties were not positively related to growth, since the measure of civil liberties from Freedomhouse came out insignificant in the empirical investigation. The insignificance could derive from opposing effects of democracy. Highly democratic countries often encounter the pressure to redistribute income from the rich to the poor. That could encourage welfare recipients to stay on the receiving end of redistribution and discourage workers from staying at the taxed end of the program. Nevertheless, a possible offsetting effect can be imagined: a reduction in social unrest and thus economic uncertainty. On the other hand autocratic regimes have the power - and hence the possibility - to steal from the country's wealth. More specifically, an autocrat may find it difficult to convince investors that their property will not be confiscated once investments have been made. However, compensating factors may exist to lessen this effect of autocracy. For example, the dictator may acquire a personal reputation for not intervening in the economy and one would anticipate that its effect would encourage economic growth. Overall, these opposing effects may explain the obtained result.

When it comes to robustness of the results - usage of different control variables also did not change the results concerning social development. The country's exchange rate variation or debt did not play a role in growth determination. However, the results should be treated with caution. Endogeneity and serially uncorrelated measurement error of the social development variable should be tested. Endogeneity problems are of course nothing new in growth regressions. What is special here is that social development endogeneity is not just an econometric nuisance, but also typically an integral part of the null hypothesis that is being tested. The supposition that governments are trying to achieve some economic or political objective is at the core of the theoretical framework that is subjected to empirical tests. In such a setting, treating policy in favour of social development as if it were exogenous or random is problematic not just from an econometric standpoint, but also conceptually. Higher income growth may induce more luxury good consumption such as a well working health care, which in turn could decrease mortality rates.

The last concern is unobserved heterogeneity. Allowing for it in a short panel based upon a series as persistent as output, is intrinsically challenging. Some techniques are likely to work poorly in this context, and even our preferred estimates are quite imprecise. They may also be biased. The importance of controlling for unobserved heterogeneity in the intercepts of the empirical growth model is obvious (country-specific effects) but there may also be heterogeneity in the slope parameters (Lee, et al., 1997). Heterogeneous slope coefficients would invalidate the use of lagged values of serially correlated regressors as instruments. In principle, such misspecification would be detected by tests of over-identifying restrictions, but Bond et al. (2001) point out that these tests might not be very powerful in the context of highly persistent series, such as output. Unfortunately, it is not possible to allow for unrestricted heterogeneity in both the intercepts and the slope coefficients, without the availability of a much longer time series, since more than 200 years of data would be necessary for a satisfactory estimation.

Although a very parsimonious specification was considered given the few theoretical models of growth and social development and more importantly few correctly estimated empirical models, all the tests for specification and instruments validity suggest that the selected model is well specified. The estimated coefficients can be seen to be very similar, which again suggests no serious problem resulting from transient measurement errors in the time series. The social development variable was always highly significant, but some other control variables became insignificant occasionally; but the signs of the control variables were consistent.

Graph 5.2. Investment exclusion procedure
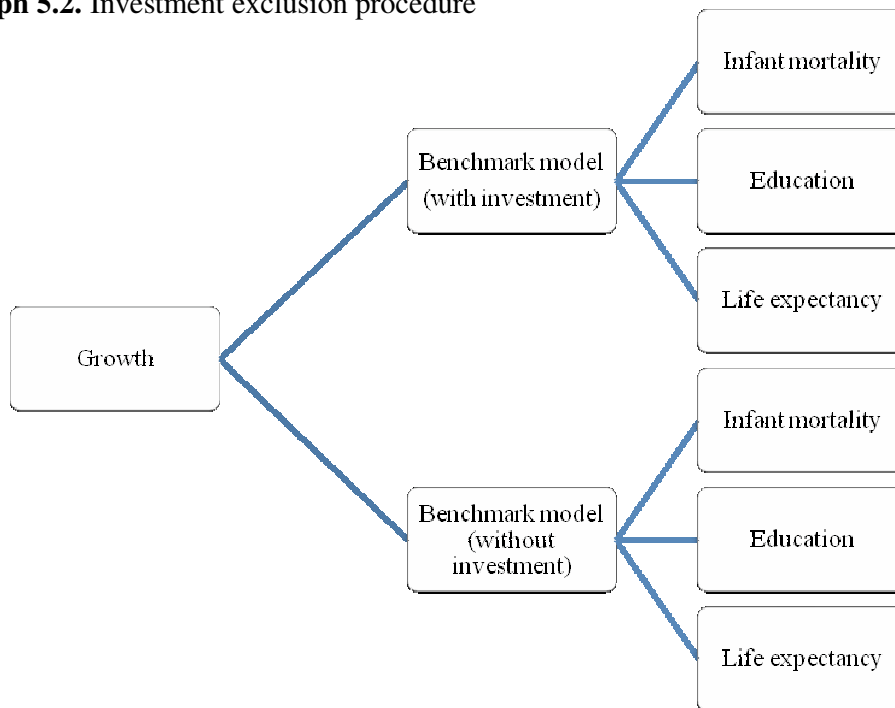
5.3.3 Social indicators and investment

This part of the empirical estimation contains the procedure of exclusion of the investment variable from the growth model, to control for the possibility that part of the social development effect is embedded in a higher investment ratio, biasing the estimates. If the effect of social development is larger when investment is excluded from the regression, this means that high social development reduces the investment rate. If the effect is smaller, this means that the main channel through which social development affects economic growth is productivity.

Table 5.3 presents the differences in social development indicators when investment is included and excluded from in the regression. The coefficients are significantly different and the exclusion of investment rate increases slightly the growth elasticity of social development, but the variables remain insignificant. These findings support the hypothesis that high social development does not lower significantly the investment level, nor does it reduce the quality and the efficiency of investment and overall productivity, but rather the effect of social development works through FDI and openness as argued earlier.

Table 5.3 The growth model – investment exclusion

	GDP_pcGrowth	
	1	2
LaggedGDP	-0.248***	-0.379***
	(0.040)	(0.042)
InvestmentGDP	0.007***	
	(0.00)	
PopulationGrowth	0.030	0.052
	(0.84)	(0.232)
lnInflation	-0.039***	-0.039*
	(0.001)	(0.014)
ExchangeRate_StdDev	0.053***	0.076
	(0.112)	(0.138)
Openness	0.069*	0.101**
	(0.430)	(0.044)
FDI_GDP	0.003**	0.003*
	(0.02)	(0.002)
GovConsumptionGDP	-0.004*	-0.005**
	(0.002)	(0.003)
InfantMortality	0.000	0.000
	(0.001)	(0.001)
AverageSchooling	-0.003	0.022
	(0.047)	(0.051)
LifeExpectancy	-0.003*	0.148
	(0.141)	(0.154)
_Inum5_2	-0.060***	-0.052*
	(0.02)	(0.02)
_Inum5_3	0.049***	-0.041***
	(0.010)	(0.017)
_Inum5_4	-0.017*	-0.013
	(0.05)	(0.010)
_cons	1.419**	1.995***
	(0.689)	(0. 747)
No of observations	350	350
R-squared	0.483	0.436
No of countries	96	96

*** denotes statistical significance at the 1% level,- ** denotes statistical significance at the 5% level, - * denotes statistical significance at the 10% level.

5.4 Summary and conclusions

The key benefits from improving social infrastructure are saved lives, avoidance of human suffering, and improved quality of life itself. Still, the issue at hand is different. It is frequently hypothesized, that these improvements bring about a better economic performance. In order to investigate this issue we employ cross-country panel data estimation. There is an inherent difficulty with deriving policy guidance based on such growth research. Underlying the social development and growth controversy is the complexity of the growth process itself. Pooling data across countries can lead to spurious results, especially if the investigators fail to address stochastic properties of the dependent variable in econometric modelling. These problems are exacerbated in models explaining aggregate variables such as the GDP.[48]

These qualifications notwithstanding, the findings of the analysis have important policy implications for Mediterranean countries. The investigation carried out in the study confirmed previous parts' results that all point to a positive relation between social development levels and growth through FDI and trade. The finding that these measures of openness have positive and large in magnitude influence on economic growth is consistent with most of the policy-analysis literature and confirms our theoretical approach to social development.

Our empirical results demonstrated earlier that the social development measures are important in determining FDI and trade patterns. These are in turn significant as growth determinants. The majority of social variables were not significantly related to GDP growth, but HDI. However, the impact of the latter variable was not theoretically obvious. From our disaggregation experiment, it could be hypothesized that the significance of the HDI variable is driven mainly by the GDP. The variable measuring life expectancy was insignificant in the statistical investigation. It may be that the initial improvement in health as measured by the infant mortality rate is more productive than healthcare focused on ageing population. The results suggest that proponents of efforts to improve health in more developed countries, which have not already lowered infant mortality rates or increased life expectancy, should rely on humanitarian rather than economic arguments.

The third component in the HDI – education – was shown to be insignificant. Overall, it seems that government policy does not directly affect forces of growth in the educational field. However, it should be remembered that there is a long lag between the actual

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[48] Therefore, in this estimation, the exact marginal effects of lowering social development are not given, since drawing ironclad conclusions in the sense of Mankiw et al. (1992) or Sala-i-Martin (2004) seems too preliminary at this stage of growth research.

investment in schooling and its ultimate impact on economic productivity. New education policies drive growth by raising the skills and capacities of a country's workforce. Nevertheless, improvements in educational activity does not start bringing a workforce quality upgrade for some 10–15 years, at least until the people who are now being educated finally enter the labour force. Therefore, instantaneous correlation was impossible to find. Moreover, there could be a significant error in the choice of the proxies used for schooling. Bad education policies can end up producing only small increments of productivity, despite growth in secondary schooling attendance.

Other tested variables provided mixed results. The variables proxying for infrastructure investment was insignificant. In this area, neither the communication infrastructure seems to be important like availability of telephones and mobiles nor the one of roads and railways. In addition, civil liberties did not play a significant role.

Summary

The main goal of the report is to evaluate the direct and indirect influence of various social indicators (human capital measures, education, inequality etc.) and aspects of openness (FDI and trade in goods and services) on growth and convergence in the MENA region, and offer policy recommendations. Social development is an important factor affecting the quality of life and social cohesion. However, it is less obvious whether or not the level of social development exerts an impact on economic performance.

In this summary we start with areas in which the role of social indicators is the most visible and important. This parallels the structure of our report. In other words, we start with the relationship between social development and international trade; then we move to the relationship between social development and foreign direct investment and finally we discuss the relationship between social development and economic growth. We find that social indicators strongly affect trade flows, but only in a limited way FDI inflows and they have no direct impact on economic growth. Moreover, we have identified a number of indirect effects. In particular, the higher level of openness to international trade leads to increased FDI inflows. Furthermore, a higher level of openness to both international trade and FDI is positively related to a higher rate of economic growth. Therefore, social development affects growth at least through the channel of external openness.

We first summarize the results obtained for general measures of social development such as the Human Development Index (HDI) – the most general and widely available measure of social development; the Gini index – the most widely used index of income inequality, the Gender-related Discrimination Index (GDI) - the composite index measuring inequalities between men and women; the Gender Empowerment Measure (GEM) – another measure of gender inequality; and the Human Poverty Index (HPI) that measures deprivations of population in access to resources. Then, we summarize the results obtained for specific measures such as the level of education and infant mortality rate.

Due to data constraints we are able to use only two of the aggregate measures of social development (HDI and Gini) in the panel regressions for the period 1980-2004. Our panel results were complemented with cross-section results for 2006 both for the whole sample and the sample of Mediterranean countries only. The cross-section approach allows for a much broader analysis of various aspects of social development captured by both aggregate and

specific indices that became available only in the recent years. In our project we analyse the trade data of exporting countries (all EU, OECD and MENA countries) and of partner countries (all countries of the world above 200 ths. inhabitants). For convenience we use the terms of "exporters" in the case of exporting countries and "importers" in the case of partner countries.

Social development and international trade

Our empirical results for the relationship between social development and international trade show that in the case of the HD index there exists a positive and statistically significant relationship between social development and the level of trade. This relationship exists both for the whole sample and in the case of cross-section regressions for 2006 where the HD index is positively related to exports and imports, while in the case of panel regressions we found the positive relationship to exist only in the case of exports. However, in the case of the limited sample of Mediterranean countries only we were unable to confirm this relationship which may be due to a low variability of the HD index among these countries.

The empirical results for the Gini index show that in the case of cross-section regressions for 2006 for the whole sample there is a negative relationship between the level of the Gini index and the level of trade. This result suggests that a more equal distribution of income stimulates both exports and imports. However, this result has not been confirmed by the panel data analysis where the Gini coefficient was not statistically significant neither in the case of exports nor in the case of imports. However, in the case of the sample consisting of only Mediterranean countries we were unable to verify this relationship due to the small number of observations.

The empirical results for the GDI are statistically significant for both exporting and importing countries in the cross-section regression for 2006. These results confirm the positive relationship between the GDI and the level of trade. In other words, the higher value of the GDI index is associated with lower gender inequality. However, for a limited sample including only Mediterranean countries the GDI index appeared to be statistically significant only for the exporting country. This means that the lower level of gender inequality in the Mediterranean countries is positively related to their exports.

The empirical results for the GEM reveal that the latter is positive and statistically significant only for the exporting country in the case of the cross-section for 2006. The lower

gender inequality in economic participation and decision-making power is associated with a higher level of exports. The same result holds for the limited sample of Mediterranean countries.

Finally, the empirical results for the HPI display a negative and statistically significant relationship for both exporting and importing countries in the case of the cross-section for 2006. This means that the lower level of poverty is associated with the higher level of trade flows. This result is partially confirmed for the sample of Mediterranean countries in the case of reporters (exporters). This implies that the lower level of poverty in Mediterranean countries at least is positively related to their exports.

The disaggregation of the HDI into its components reveals that only some of them might affect international trade flows. In particular, we find that the lower infant mortality rate - that reflects the better quality of the healthcare system - is positively associated with exports both in the case of the cross-section regression for 2006 and in the case of the panel regression for the whole sample. The same result is obtained for the sample of the Mediterranean countries. At the same time, we did not find such a relationship for imports.

The results obtained for the level of education show that the literacy rate is positive and statistically significant for the importing country in the cross section for 2006 while the average level of schooling in the case of the panel regression is positive and statistically significant for the exporters. We do not confirm this result for the Mediterranean countries only.

The disaggregation of the GEM into its components in the cross-section regression for 2006 lead to mixed results. For example, the variable that measures political participation of women (i.e. the percentage of seats held by women in national parliaments) displays a positive sign. It means that the higher participation of women in parliament is positively related to the level of trade.

Finally, we studied the relationship between the civil liberties and the level of trade. It turned out that in the case of the cross-country regression for 2006 the civil rights were statistically significant only for the exporting countries while in the case of the panel data for both the exporting and importing countries. This means that the higher level of civil liberties is positively associated with the level of trade. The latter results were confirmed for the sample of Mediterranean countries.

Social development and foreign direct investment

Our empirical results for the relationship between social development and FDI inflows show that in the case of the HDI there exists a positive and statistically significant relationship between social development and the level of FDI. However, this relationship exists only for the whole sample in the panel regression and it is not confirmed in the case of cross-section regressions for 2006. The HDI has been found to shape foreign investors' decisions over a long time horizon but not in a particular year. Therefore, our empirical results only to some extent support the notion that a higher level of human development attracts foreign investors.

The empirical analysis of specific components of the HDI based on the aggregate FDI inflows in the panel specification revealed that there is a positive relationship between life expectancy, the level of education and FDI inflows, while the relationship between the infant mortality rate and FDI inflows is negative. Therefore, a long and healthy life and the educational attainment have been found to be important FDI boosters. The role of education is more pronounced when coupled with positive income growth. On the other hand, decent standards of living are not critical to investors contemplating to locate their capital abroad unless income distribution is uneven.

However, not all of the aforementioned results were confirmed by the cross-section regressions. In particular, life expectancy in the importing countries hosting FDI turned out not to be statistically significant. In addition, the cross-section approach allowed us to identify the negative relationship between the HPI and FDI inflows, which means that a low level of poverty stimulates FDI inflows.

Moreover, the study of inward FDI determinants has revealed that there are crucial determinants of FDI inflows which are robust to the selection of the estimation method and control variables, namely the degrees of openness to international trade and of civil liberties which were statistically significant in all regressions. This can be interpreted as follows. First, the share of imports and exports in GDP plays pivotal role in attracting foreign investors, pointing to the fact that trade and FDI are complementary. Openness to trade should be a central part of development strategies because a more intense FDI inflow is its byproduct. Second, the prospect of social stability is conducive to FDI inflows. The fear of social and political turmoil is one of the most important barriers to foreign investment. In addition, a higher level of civil liberties, that is associated with the higher level of contract enforcement, promotes FDI and seems to be more important than gender equality policies.

It stems from our analysis that the greater commitment to gender equality is not an important facet of an FDI enhancing policy. Investment in education and health improvements are best suited to create an environment that encourages foreign investment. The greatest effort should however be made to maintain and to widen the degrees openness and of civil liberties. It should be noted that all these steps may turn out to be insufficient because the sample including Mediterranean countries attracts about 50 percent FDI flows less than countries sharing similar characteristics but located in different parts of world.

Social development and economic growth

Our empirical results for the relationship between social development and economic growth demonstrate that there exists a positive and statistically significant relationship between the HD index and economic growth. However, this relationship should be treated with caution as the impact of this variable on growth was not theoretically obvious. Given the fact that none of the HDI social components were significantly related to GDP growth we hypothesize that that the significance of the HDI variable is driven mainly by the initial level of per capita GDP.

The component measuring life expectancy turned out not to be statistically significant. Similarly, the impact of the infant mortality rate on the rate of growth was not statistically significant. Therefore, our empirical results suggest that proponents of efforts to improve health in developing countries, which have not already lowered infant mortality rates nor increased life expectancy, should rely on humanitarian rather than economic arguments. The third component of the HDI – education – was also not statistically significant. However, it should be remembered that there is a long lag between the actual investment in schooling and its ultimate impact on economic productivity. Nevertheless, improvements in educational activity do not translate into an upgrade in workforce quality for some 10–15 years, at least until the people who are now being educated finally enter the labour force.

Therefore, our empirical analysis suggests that specific measures taken in favour of social development are not directly related to economic growth which would therefore continue to be explained by the set of standard explanatory variables used by economists: the initial level of GDP per capita, the investment rate, the inflation rate, the government's size, exchange rate variability, and openness to international trade and investment flows.

From the perspective of this report we are particularly interested in the relationship between external openness and economic growth. The empirical results reveal that external

openness to both international trade and FDI are positively related to the rate of economic growth.[49] Even so, our empirical results demonstrated that the social development measures are important in determining both trade and FDI flows. Moreover, the positive relationship between social development and trade is stronger than the relationship between social development and FDI. At the same time FDI inflows are positively related to the level of trade openness. Although we were unable to confirm the existence of a direct relationship between social development and economic growth we found that social development affects growth in an indirect way through external openness.

Policy recommendations

Our empirical results demonstrated that the social development measures are important in determining the level of trade, foreign direct investment and the rate of economic growth. According to these results social development indicators directly affect trade and FDI patterns while they have no direct impact on the rate of economic growth. However, they exert an indirect impact on growth as openness to trade and FDI are significant growth determinants. Bearing this in mind, in our view, openness to trade should be a central part of development strategies as more openness to trade induces more intense FDI inflow and stimulates economic growth.

The majority of social development variables are positively related to both trade and FDI. However, the estimated impact of specific variables is highly differentiated. Among the aggregate variables the most important role is played by the HDI and HPI.

The significance of the HDI variable is especially important for inducing exports and encouraging FDI inflows as it stems from our panel analysis of both trade and FDI flows. However, in the case of cross-sections our results are less clear-cut. The positive correlations between the HDI variable and trade and FDI flows are driven mainly by the quality of the healthcare system measured in our analysis by the infant mortality rate and various measures of the level of education.

This suggests that the investments in the healthcare and educational systems would result in the increased stock of human capital and consequently in a higher level of exports of

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[49] Moreover, the magnitude of the estimated parameter for the trade openness variable is much higher than for the FDI openness variable.

Mediterranean countries.[50] Moreover, investments in education and health improvements are best suited to create an environment that encourages foreign capital inflows. Although, we were unable to confirm these results for Mediterranean countries, due to the small number of observations, we believe that these general conclusions are valid also in the case of these countries.

The significance of the GEM and GDI variables is demonstrated only when relying on trade regressions. In that vein, the policy oriented towards more equal gender treatment in Mediterranean countries could be conductive to more trade. At the same time, our empirical analysis shows that greater commitment to gender equality is not directly affecting FDI inflows. However, the impact of the higher participation of women in political and economic life may also indirectly affect both FDI inflows and growth through increased trade openness.

Moreover, we identified a negative relationship between the HPI, trade flows and FDI inflows. This means that the lower level of poverty stimulates both trade and FDI inflows. Thus, the measures of combating poverty are important not only from the social point of view - the better the prospects of social stability - but can have a positive impact on the level of trade and FDI inflows.

Graph 6.1. Structure of the research**.**

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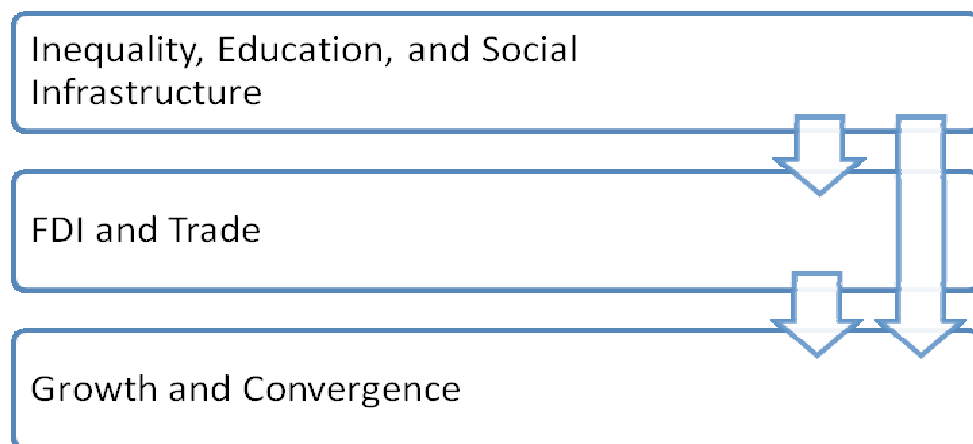
[50] For example, more educated people in Mediterranean countries have the better knowledge of foreign languages that allows them to communicate with foreign entrepreneurs and thus encourage trade and FDI.

Finally, the higher civil liberties are positively related to trade and FDI. Higher standards in keeping the rule of law are encouraging international trade and the enforcement of contracts may encourage the inflow of foreign direct investment. In spite of the fact that the conclusions and policy guidance based on regressions should be treated with some caution, the obtained results provide an additional rationale for intensifying reform efforts to address the problem of relatively low levels of external openness of Mediterranean countries. A sound macroeconomic environment, trade and FDI liberalization to build an economy based on a nation's true comparative advantage alone, cannot cause growth by itself. The government policy targeted at social goals should complement economic policies.

These results suggest that the investment in the social development would result in more FDI and trade, and only then higher income growth. This is similar to arguing, that the indirect effect of social development on growth via FDI and trade is the more important transmission channel of social development on growth as portrayed by the two arrows on Graph 6.1, than the direct effect of social development portrayed by the long arrow. The estimated effects were robust and insensitive to the specification tests. Taken together and investigated empirically, the obtained results suggest that low social development directly hinders economic growth by lowering productivity and not by hampering investment indirectly. Social development enhances growth only through its impact on FDI and trade; accordingly, it could be that it encourages entrepreneurship and productive activity. However, through its impact on trade and FDI, it could still increase the productive capacity of an economy, drive job creation, bring innovation and new technologies, and boost income growth. In sum, we can be quite sure that although more openness brings greater efficiency, it does not automatically lead to higher growth rates. We must therefore presume that while some permanent effect probably exists, freer trade and FDI are only two of many factors accounting for improved growth performance.

Although the conclusions and policy guidance based on regressions should be treated with caution, the obtained results provide an additional rationale for intensifying the reform efforts to address the problem of low openness of the Mediterranean countries. It could be argued that an economy tends to grow better and is less prone to shocks, if it follows policies that foster economic efficiency. Sound macroeconomic environment, liberalizing trade, and FDI to build an economy based on a nation's true comparative advantage - work in these areas is important, pursuing such policies is not likely to generate a growth miracle, but it is possible to improve Mediterranean countries' growth prospects over time.

Appendix 1

Sample of countries

In our analyses we used sample of over 150 countries (depending on the data availability). The smallest economies with a population less than 200 thousand inhabitants were excluded from the sample.

In Chapter 3 we used bilateral trade flows of *reporter* and *partner* countries. As reporters we treated OECD, MENA, and CEE countries, whereas as *partners* we treated all other countries, that were in our sample. The detailed list of reporter countries is shown below.

Table A.1.1 Group of reporter countries.

Reporter countries
Albania, Algeria, Australia, Austria, Belgium, Bosnia and Herzegovina, Bulgaria, Belarus, Canada, Chile, China, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Israel, Italy, Japan, Jordan, Republic of Korea, Lebanon, Latvia, Libyan Arab Jamahiriya, Lithuania, Luxembourg, Malta, Mexico, Republic of Moldova, Morocco, Netherlands, New Zealand, Norway, Poland, Portugal, Romania, Russian Federation, Slovakia, Slovenia, Spain, Sweden, Switzerland, Syrian Arab Republic, Tunisia, Turkey, Ukraine, The Former Yugoslav Republic of Macedonia, Egypt, United Kingdom, United States of America

Appendix 2

Data sources and data description

Macroeconomic data were obtained from the World Development Indicators (WDI) 2009 database published on CD-ROM by the World Bank in Washington. Exchange rate data were collected from the International Financial Statistics (IFS) 2009 database published on CD-ROM by the International Monetary Fund (IMF). Trade data comes from the WITS (*World Integrated Trade Solution*) database, complied jointly by the World Bank, WTO and UNCTAD. Bilateral FDI flows were obtained from OECD Statistics On-line. Data on distance comes from the CEPII (*Centre d'Etudes Prospectives et d'Informations Internationales*) database.

Data on social and human development were obtained from the last edition of Human Development Indices (2008), prepared by United Nations Development Programme. Data on civil rights were collected from the Freedom House database (www.freedomhouse.org). The data on the Gini indices were derived from the latest update of the UNU/WIDER World Income Inequality Database. Data on quality of education were obtained from Barro and Lee (2000) and from Lutz et.al (2007).

AverageSchooling – average years in school, population aged 25 and above, both sexes, data obtained from Barro and Lee (2000);

CivilLiberties – degree of civil rights, measured by the civil liberties index (Freedom House);

Colony_1945 - dummy variable that takes value 1 if both countries were linked by colonial ties after 1945 and 0 otherwise;

CommonBoarder - dummy variable that takes value 1 if both countries share a common border and 0 otherwise;

CommonLanguage – measure of cultural compatibility; dummy variable that takes value 1 if at least 9 percent of population in both countries shares a common language;

DC_GDP - domestic credit to private sector (% of GDP), measure of financial sector development (WDI);

Distance - geographic distance between principle cities measured using the *great circle formula*[51]*;* proxy for trade costs (CEPII);

EUCumulated – number of years in the EU;

EU-MENA - dummy variable indicating whether an EU country had a preferential trade agreement¸ facilitating market access, with Mediterranean country in a given year;

ExchangeRate_StdDev - variable measuring volatility of bilateral exchange rates in the importing and the exporting country. Bilateral exchange rates and their volatility were calculated using data from the IFS database, where the exchange rates were expressed in relation to the SDRs of particular countries at the end of the month;

Export - data expressed in current US dollars for exports and volume of trade (*gross exports, gross trade*) (WITS);

FDI – bilateral FDI flows in mln US dollars, current prices. As variable in logarithm is used, only positive values of variable were used. The reporter countries are all OECD countries (OECD);

FDI_GDP – foreign direct investment, net FDI inflows as a percentage of GDP (WDI);

FemaleIncome – estimated earned income (female; HDI);

FemaleOffice - female legislators, senior officials and managers as a percentage of total (HDI);

FemaleProf - female professional and technical workers as a percentage of total (HDI);

FemaleSeats - seats in parliament held by women as a percentage of total (HDI);

GATT-WTO - dummy variable that takes value 1 if both countries are members of the WTO in period t and 0 otherwise;

GDI – Gender-related Development Index (HDI)

GDP - measure of the economic size of countries; measured in current US dollars (WDI);

GDP_pc – GDP per capita measured in current US dollars (WDI).[52]

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[51] The great circle formula which uses longitudes and latitudes of the most important cities. See Head and Mayer (2002) for more details.

[52] GDP per capita can be treated as a proxy for capital to labour ratio whose importance is stressed by the Heckscher-Ohlin model or a proxy for labour productivity as postulated by the Ricardian model. See Hummels and Levinsohn (1995) for more details.

GDP_pcGrowth – first order difference of logs of GDP per capita; GDP per capita measured in current US dollars (WDI);

GDPGrowth – growth of domestic market, measured by growth of real GDP in constant 2005 US dollars (WDI);

GEM – gender empowerment measure (HDI);

Gini – the Gini coeffcients based on consumption for developing countries and on income for OECD countries (UNU/WIDER)

GovConsumptionGDP – government consumption as a percentage of GDP (WDI);

HDI - Human Development Index, elaborated by UNDP (HDI);

HPI - Human Povert Index (for developing countries, HPI-1), measuring vulnerability to early death (before 40), exclusion from the world of knowledge, lack of access to adequate economic provisioning (HDI);

IncomeFMRatio – ratio of estimated earned female income to estimated earned male income (HDI);

InfantMortality – mortality rate for infants per 1.000 live births (WDI);

Infl – inflation, GDP deflator (annual %) (WDI);

InflIndex –inflation index calculated as (100+x), where x is inflation rate measured with GDP deflator (WDI);

InvestmentGDP – investment to GDP ratio (WDI), 5-year lagged;

LaggedGDP - 5-year time lag of GDP per capita (WDI);

Land - arable land per capita, measure of differences in factor proportions between trading partners (WDI);

LandLocked – dummy variable that takes value 1 for landlocked countries and 0 otherwise (CEPII);

LifeExpectancy – life expectancy at birth in years (WDI);

Literacy – adult literacy rate, percentage of population aged 15 and above (HDI);

MeanSchooling - mean years of schooling, population aged 15 and above, both sexes, (Lutz et al. 2007);

Mediterranean - dummy variable indicating whether a country is in the Mediterranean region or not;

MENA-EU - dummy variable indicating whether a Mediterranean country had a preferential trade agreement, facilitating market access, with the European Union in a given year;

OECD - dummy variable that takes value 1 if both countries are members of the OECD in period t and 0 otherwise;

Openness – market openness measured by the ratio of exports and imports to GDP (WDI);

PopulationGrowth – population growth (WDI);

PostCommunist - dummy variable indicating whether a country was a member of the East Bloc or not;

RGDP_pc – real GDP per capita in constant 2000 US dollars (WDI);

Telephone_pc – number of mobile and telephone subscribers per capita (WDI).

Appendix 3

Gravity model results (panel and cross section)

Table A.3.1 Gravity model results - Panel (*continued on the next page*)

	m_0 b/se	m_1 b/se	m_2 b/se	m_3 b/se	m_4 b/se	m_5 b/se	m_6 b/se	m_7 b/se	m_8 b/se
R_lnGDP	2.288***	1.220***	0.285***	0.144	1.509***	1.071***	1.323***	1.339***	1.097***
	(0.148)	(0.213)	(0.053)	(0.235)	(0.180)	(0.217)	(0.222)	(0.258)	(0.016)
R_lnGDP_pc	-1.626***	-0.841***		0.259	-0.917***	-0.411**	-0.694***	-0.709***	-0.391***
	(0.136)	(0.186)		(0.209)	(0.170)	(0.208)	(0.214)	(0.245)	(0.032)
R_lnLand	-0.007	-0.027	-0.234***	-0.183*	-0.120	0.019	0.168*	0.178*	-0.082***
	(0.078)	(0.094)	(0.082)	(0.094)	(0.087)	(0.096)	(0.100)	(0.102)	(0.021)
R_LandLocked									0.235***
									(0.069)
P_lnGDP	0.219**	0.501***	0.736***	0.039	-0.176	0.559***	0.696***	0.885***	0.886***
	(0.096)	(0.126)	(0.035)	(0.169)	(0.139)	(0.169)	(0.171)	(0.190)	(0.014)
P_lnGDP_pc	0.325***	0.212*		0.674***	0.710***	0.141	0.019	-0.160	-0.113***
	(0.089)	(0.112)		(0.151)	(0.126)	(0.155)	(0.156)	(0.175)	(0.026)
P_lnLand	-0.122**	-0.130**	-0.111**	-0.266***	-0.159**	-0.026	-0.013	0.016	-0.137***
	(0.051)	(0.057)	(0.057)	(0.077)	(0.068)	(0.068)	(0.068)	(0.069)	(0.019)
P_LandLocked									-0.529***
									(0.058)
ExchangeRate_StdDev	-0.743***	-1.257***	-1.264***	-1.175***	-1.095***	-0.743***	-0.708***	-0.763***	-1.081***
	(0.108)	(0.151)	(0.151)	(0.205)	(0.179)	(0.205)	(0.205)	(0.209)	(0.200)
lnDistance									-1.061***
									(0.029)
Colony_1945									1.039***
									(0.192)
CommonBoarder									0.320**
									(0.141)
R_MENA-P_EU	-0.321**	-0.359***	-0.239**	-0.149	-0.243*	-0.158	-0.108	-0.125	-0.178
	(0.135)	(0.124)	(0.122)	(0.139)	(0.140)	(0.120)	(0.120)	(0.123)	(0.119)
R_EU-P_MENA	0.220*	0.341***	0.289**	0.203	0.113	0.124	0.172	0.159	0.065
	(0.133)	(0.121)	(0.121)	(0.134)	(0.136)	(0.116)	(0.116)	(0.119)	(0.115)
Mediterranean									0.089
									(0.243)
OECD	0.246***	0.276***	0.286***	0.229***	0.198***	0.266***	0.222***	0.206***	0.111***
	(0.061)	(0.061)	(0.060)	(0.055)	(0.054)	(0.047)	(0.048)	(0.049)	(0.042)
EU	0.266***	0.212**	0.194**	0.098	0.142*	0.170**	0.208***	0.194***	0.091
	(0.095)	(0.082)	(0.080)	(0.071)	(0.079)	(0.068)	(0.068)	(0.069)	(0.061)
GATT-WTO	0.172***	0.251***	0.229***	0.203***	0.174***	0.001	-0.023	-0.016	0.039
	(0.035)	(0.046)	(0.046)	(0.049)	(0.040)	(0.048)	(0.048)	(0.048)	(0.039)
P_PostCommunist									-0.476***
									(0.085)
R_PostCommunist									-0.565***
									(0.081)
CommonLanguage									0.646***
									(0.067)
_Inum5_2	-0.095***	-0.103***	-0.084***	-0.055	-0.015	-0.153***	-0.176***	-0.196***	-0.358***
	(0.029)	(0.034)	(0.032)	(0.038)	(0.036)	(0.037)	(0.037)	(0.041)	(0.028)
_Inum5_3	-0.187***	-0.184***	-0.143***	-0.135**	-0.021	-0.254***	-0.254***	-0.287***	-0.663***
	(0.046)	(0.056)	(0.051)	(0.063)	(0.056)	(0.061)	(0.061)	(0.068)	(0.031)
_Inum5_4	-0.129**	-0.184***	-0.143**	-0.080	0.122	-0.275***	-0.272***	-0.329***	-0.916***
	(0.059)	(0.072)	(0.065)	(0.082)	(0.074)	(0.083)	(0.084)	(0.101)	(0.040)

Table A.3.1 *Continued*

	m_0 b/se	m_1 b/se	m_2 b/se	m_3 b/se	m_4 b/se	m_5 b/se	m_6 b/se	m_7 b/se	m_8 b/se
_Inum5_5	-0.172**	-0.324***	-0.303***	-0.147	0.156*	-0.307***	-0.338***	-0.448***	-1.381***
	(0.072)	(0.089)	(0.082)	(0.100)	(0.089)	(0.099)	(0.100)	(0.152)	(0.068)
R_HDI		6.078***	7.472***	6.009***					
		(0.655)	(0.581)	(0.708)					
P_HDI		-2.007***	-2.242***	-1.331***					
		(0.399)	(0.376)	(0.479)					
R_Gini				-0.008**	-0.002	-0.004	-0.005	-0.005	-0.007***
				(0.003)	(0.003)	(0.003)	(0.003)	(0.004)	(0.003)
P_Gini				0.002	-0.002	-0.006***	-0.006***	-0.006***	0.002
				(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
R_InfantMortality						-0.008***	-0.007***	-0.007***	-0.014***
						(0.002)	(0.002)	(0.002)	(0.001)
P_InfantMortality						0.002	0.003**	0.002*	-0.003***
						(0.001)	(0.001)	(0.001)	(0.001)
R_AverageSchooling						0.054***	0.037*	0.039**	0.102***
						(0.019)	(0.019)	(0.020)	(0.011)
P_AverageSchooling						0.013	0.003	-0.008	0.016
						(0.018)	(0.018)	(0.019)	(0.011)
R_CivilLiberties							-0.079***	-0.080***	-0.089***
							(0.015)	(0.015)	(0.014)
P_CivilLiberties							-0.057***	-0.061***	-0.047***
							(0.012)	(0.013)	(0.011)
R_Telephone_pc								0.001	0.195***
								(0.046)	(0.037)
P_Telephone_pc								0.067*	0.160***
								(0.038)	(0.031)
_cons	-42.763***	-31.798***	-20.650***	-6.781	-22.328***	-28.226***	-33.784***	-37.096***	-25.991***
	(2.974)	(4.077)	(1.475)	(4.819)	(3.876)	(4.856)	(4.910)	(5.517)	(0.588)
N	27758	17701	17701	11893	16281	10616	10616	10545	10545
N_g	7970	6905	6905	5045	5857	3485	3485	3484	3484

*** denotes statistical significance at the 1% level, ** denotes statistical significance at the 5% level, * denotes statistical significance at the 10% level.

Table A.3.2 Social variables and trade flows – Cross section for 2006 (*continued on the next page*)

	m_0 b/se	m_9 b/se	m_10 b/se	m_11 b/se	m_12 b/se	m_13 b/se	m_14 b/se	m_15 b/se	m_16 b/se	m_17 b/se	m_18 b/se	m_19 b/se	m_20 b/se	m_21 b/se	m_22 b/se	m_23 b/se
R_lnGDP	0.863***	1.202***	1.138***	1.237***	1.257***	1.215***	1.240***	1.319***	1.369***	1.506***	0.865***	1.041***	0.967***	0.269	1.656***	0.668***
	(0.077)	(0.015)	(0.029)	(0.016)	(0.017)	(0.016)	(0.020)	(0.021)	(0.024)	(0.047)	(0.078)	(0.090)	(0.088)	(0.242)	(0.285)	(0.089)
P_lnGDP_pc	-0.295***	-0.304***	-0.206***	-0.144***	-0.198***	-0.352***	-0.043	-0.042	-0.029	-0.326***	-0.306**	-0.245***	-0.300***	-0.384***	-0.157	-0.132
	(0.058)	(0.038)	(0.073)	(0.027)	(0.028)	(0.040)	(0.040)	(0.040)	(0.063)	(0.067)	(0.120)	(0.080)	(0.081)	(0.140)	(0.124)	(0.103)
R_lnLand	0.368***	-0.019	0.020	0.021	0.013	-0.085***	-0.073**	-0.112***	-0.092**	0.763***	0.377***	0.376***	0.571***	1.717***	0.651***	1.390***
	(0.077)	(0.024)	(0.063)	(0.025)	(0.025)	(0.025)	(0.031)	(0.033)	(0.039)	(0.093)	(0.095)	(0.088)	(0.090)	(0.261)	(0.132)	(0.152)
R_LandLocked		0.180***	-0.151	0.234***	0.255***	0.172**	0.165*	0.404***	0.566***	0.810***						
		(0.068)	(0.114)	(0.080)	(0.080)	(0.071)	(0.095)	(0.100)	(0.110)	(0.177)						
P_lnGDP	0.963***	0.925***	0.862***	0.935***	0.955***	0.940***	0.917***	0.907***	0.931***	0.942***	0.962***	0.987***	1.026***	0.985***	1.040***	0.882***
	(0.040)	(0.013)	(0.032)	(0.014)	(0.015)	(0.014)	(0.018)	(0.018)	(0.020)	(0.032)	(0.041)	(0.042)	(0.042)	(0.048)	(0.062)	(0.049)
R_lnGDP_pc	0.465***	-0.471***	-0.054	-0.512***	-0.649***	-0.504***	-0.756***	-0.814***	-0.951***	-1.451***	0.429*	0.132	-1.447***	-3.746***	-1.771***	-3.595***
	(0.091)	(0.076)	(0.080)	(0.046)	(0.055)	(0.076)	(0.074)	(0.070)	(0.092)	(0.122)	(0.230)	(0.145)	(0.253)	(0.709)	(0.574)	(0.476)
P_lnLand	-0.051	-0.103***	-0.021	-0.100***	-0.128***	-0.145***	-0.110***	-0.115***	-0.123***	-0.101**	-0.050	-0.047	-0.088	-0.073	-0.154*	-0.030
	(0.059)	(0.020)	(0.060)	(0.022)	(0.022)	(0.021)	(0.024)	(0.025)	(0.028)	(0.047)	(0.060)	(0.064)	(0.063)	(0.068)	(0.082)	(0.070)
P_LandLocked	-1.025***	-0.715***	-0.442***	-0.735***	-0.720***	-0.738***	-0.423***	-0.447***	-0.472***	-0.850***	-1.024***	-1.070***	-1.079***	-1.206***	-0.739***	-1.409***
	(0.176)	(0.057)	(0.105)	(0.062)	(0.062)	(0.059)	(0.084)	(0.082)	(0.099)	(0.140)	(0.178)	(0.186)	(0.181)	(0.206)	(0.266)	(0.217)
R_Mediterranean		-0.421***		-0.226**	-0.134	-0.448***	-0.016	0.253*	0.294*	0.300						
		(0.101)		(0.111)	(0.112)	(0.133)	(0.141)	(0.139)	(0.162)	(0.220)						
P_Mediterranean	0.134	-0.267**		-0.125	0.090	0.072	-0.085	-0.106	-0.188	0.094	0.125	0.209	0.250	0.597	-0.031	0.706*
	(0.317)	(0.110)		(0.116)	(0.121)	(0.134)	(0.145)	(0.145)	(0.158)	(0.215)	(0.332)	(0.343)	(0.340)	(0.405)	(0.481)	(0.370)
R_PostCommunist		-0.392***	0.775***	-0.639***	-0.759***	-0.529***	-0.622***	-0.899***	-1.091***	-0.905***						
		(0.080)	(0.158)	(0.091)	(0.094)	(0.088)	(0.110)	(0.133)	(0.155)	(0.226)						
P_PostCommunist	-0.760***	-0.007	0.216	0.008	0.003	0.063	0.052	0.045	-0.110	0.008	-0.770***	-0.641**	-0.779***	-1.195***	-0.683**	-0.775**
	(0.210)	(0.077)	(0.156)	(0.085)	(0.084)	(0.080)	(0.094)	(0.102)	(0.124)	(0.227)	(0.243)	(0.258)	(0.252)	(0.279)	(0.282)	(0.374)
lnDistance	-1.520***	-1.376***	-1.162***	-1.348***	-1.354***	-1.351***	-1.250***	-1.266***	-1.417***	-1.692***	-1.521***	-1.477***	-1.510***	-1.685***	-1.481***	-1.701***
	(0.115)	(0.035)	(0.076)	(0.037)	(0.036)	(0.036)	(0.040)	(0.040)	(0.047)	(0.098)	(0.120)	(0.123)	(0.120)	(0.140)	(0.158)	(0.168)
CommonBoarder	-0.324	0.449***	0.530***	0.558***	0.592***	0.497***	0.632***	0.578***	0.420**	0.338	-0.328	0.181	0.215	-0.225	-0.164	0.363
	(0.446)	(0.149)	(0.167)	(0.157)	(0.156)	(0.152)	(0.163)	(0.161)	(0.189)	(0.309)	(0.449)	(0.457)	(0.443)	(0.538)	(0.661)	(0.473)
Colony_1945	-610684	0.972***	1.209***	0.938***	0.975***	0.924***	0.709***	0.871***	0.432	1.707**	-613971	-648670	0.873	-616162	0.654	
	(0.782)	(0.185)	(0.320)	(0.191)	(0.190)	(0.187)	(0.228)	(0.227)	(0.283)	(0.671)	(0.784)	(0.775)	(0.753)	(0.805)	(0.917)	
R_MENA-P_EU	-0.127	-0.443***		-0.214	-0.346**	-0.732***	0.142	0.065	-0.135	-1.495**	-0.123	-0.004	-0.040	-0.322	0.053	-0.175
	(0.237)	(0.160)		(0.167)	(0.167)	(0.186)	(0.188)	(0.185)	(0.195)	(0.677)	(0.239)	(0.247)	(0.248)	(0.285)	(0.309)	(0.672)
R_EU-P_MENA		0.100		-0.030	-0.147	-0.165	-0.263	-0.220	-0.248	0.367						
		(0.165)		(0.181)	(0.181)	(0.192)	(0.206)	(0.203)	(0.213)	(0.608)						

Table A.3.2 *Continued*

	m_0	m_9	m_10	m_11	m_12	m_13	m_14	m_15	m_16	m_17	m_18	m_19	m_20	m_21	m_22	m_23
	b/se	b/se	b/se	b/se	b/se	b/se	b/se	b/se	b/se	b/se	b/se	b/se	b/se	b/se	b/se	b/se
OECD	0.589	0.170**	0.137	0.180**	0.090	0.176**	-0.080	-0.045	-0.155	0.286	0.578	0.394	-0.100	0.288	-0.550	42736
	(0.418)	(0.086)	(0.129)	(0.091)	(0.092)	(0.087)	(0.093)	(0.092)	(0.104)	(0.696)	(0.423)	(0.442)	(0.434)	(0.427)	(0.475)	(1.140)
EU		0.164*	0.198*	0.095	-0.015	0.083	-0.056	-0.045	-0.009	-604474						
		(0.099)	(0.107)	(0.105)	(0.106)	(0.099)	(0.105)	(0.104)	(0.113)	(1.654)						
GATT-WTO	0.631***	0.276***	0.042	0.242***	0.051	0.013	0.085	-0.011	0.084	0.476***	0.639***	0.655***	-0.146	-0.507*	-0.035	0.100
	(0.150)	(0.054)	(0.120)	(0.057)	(0.062)	(0.062)	(0.080)	(0.080)	(0.095)	(0.122)	(0.157)	(0.157)	(0.184)	(0.276)	(0.381)	(0.196)
CommonLanguage	0.547***	0.831***	0.735***	0.857***		0.840***	0.696***	0.780***	0.801***	1.397***	0.556***	0.598***	0.671***	0.695***	0.697***	0.490**
	(0.173)	(0.074)	(0.230)	(0.078)		(0.081)	(0.093)	(0.094)	(0.110)	(0.192)	(0.181)	(0.186)	(0.181)	(0.246)	(0.267)	(0.222)
R_HDI		5.080***									0.399					
		(1.092)									(2.383)					
P_HDI		2.484***									0.112					
		(0.341)									(1.104)					
R_Gini			-0.044***													
			(0.009)													
P_Gini			-0.028***													
			(0.009)													
R_Literacy				0.009	0.009		0.031***	0.015**	0.012			-0.003	-0.006			
				(0.005)	(0.005)		(0.007)	(0.007)	(0.008)			(0.009)	(0.009)			
R_InfantMortality				-0.059***	-0.058***		-0.032***	-0.025***	-0.023***			-0.041***	-0.081***			
				(0.006)	(0.006)		(0.007)	(0.007)	(0.008)			(0.012)	(0.013)			
P_Literacy				0.006***	0.007***		-0.001	-0.001	-0.004			-0.002	-0.002			
				(0.002)	(0.002)		(0.004)	(0.004)	(0.005)			(0.007)	(0.006)			
P_InfantMortality				-0.002	-0.000		-0.011***	-0.012***	-0.006**			0.002	0.004			
				(0.001)	(0.001)		(0.002)	(0.002)	(0.002)			(0.003)	(0.003)			
R_CivilLiberties						-0.145***	-0.146***	-0.245***	-0.387***	-0.589***	-0.182***		-1.150***	-2.026***	-0.731***	-1.495***
						(0.028)	(0.029)	(0.038)	(0.041)	(0.067)	(0.046)		(0.152)	(0.261)	(0.269)	(0.167)
P_CivilLiberties						-0.129***	-0.122***	-0.026	-0.007	-0.027	-0.092**		-0.167***	-0.226***	-0.258**	-0.078
						(0.019)	(0.020)	(0.029)	(0.030)	(0.034)	(0.040)		(0.055)	(0.071)	(0.101)	(0.063)
R_GDI						2.103*								18.213***		
						(1.151)								(3.375)		
P_GDI						2.098***								-0.685		
						(0.354)								(1.277)		
R_GEM							0.948***								11.261***	
							(0.353)								(2.765)	
P_GEM							-0.376								-2.015**	
							(0.252)								(0.836)	

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Table A.3.2 *Continued*

	m_0	m_9	m_10	m_11	m_12	m_13	m_14	m_15	m_16	m_17	m_18	m_19	m_20	m_21	m_22	m_23
	b/se	b/se	b/se	b/se	b/se	b/se	b/se	b/se	b/se	b/se	b/se	b/se	b/se	b/se	b/se	b/se
R_FemaleOffice								-0.041***	-0.061***							
								(0.005)	(0.006)							
R_FemaleSeats								0.020***	0.021***							
								(0.004)	(0.004)							
R_FemaleProf								0.059***	0.068***							
								(0.008)	(0.009)							
R_IncomeFMRatio								0.942***	1.146***							
								(0.356)	(0.414)							
P_FemaleOffice								0.008**	0.005							
								(0.004)	(0.004)							
P_FemaleSeats								-0.009***	-0.011***							
								(0.003)	(0.003)							
P_FemaleProf								-0.006	0.005							
								(0.005)	(0.006)							
P_IncomeFMRatio								0.204	-0.065							
								(0.244)	(0.274)							
R_Telephone_pc									-0.068							
									(0.121)							
P_Telephone_pc									0.024							
									(0.100)							
R_HPI										-0.089***						-0.109***
										(0.012)						(0.016)
P_HPI										-0.016***						0.023**
										(0.006)						(0.009)
_cons	-24.922***	-32.093***	-26.462***	-28.699***	-27.233***	-28.572***	-29.073***	-30.666***	-29.584***	-20.663***	-24.938***	-26.879***	-5.088	24.773***	-28.996***	24.692***
	(2.143)	(0.715)	(1.713)	(0.921)	(0.950)	(0.880)	(1.143)	(1.172)	(1.369)	(1.805)	(2.252)	(2.450)	(3.705)	(7.002)	(7.276)	(5.402)
r2	0.617	0.757	0.828	0.758	0.760	0.773	0.786	0.794	0.798	0.652	0.617	0.632	0.654	0.674	0.655	0.630
N	1019	7575	1300	6838	6838	6560	4202	4161	3161	1884	1019	960	960	675	509	639

*** denotes statistical significance at the 1% level, ** denotes statistical significance at the 5% level, * denotes statistical significance at the 10% level.

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