

**Causal Analysis of The Relation between Economic
Development and Financial Markets:**

The Case of Arab and Developing Countries

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ABSTRACT

The access to financial markets as it is known in developing countries is influenced by regulations and governmental interventions as well as human development factors (human capital). A recursive causal system is developed to decompose the relation between economic development and financial market in the Arab and developing countries. Before employing the recursive system, factor analysis and factor score were used to arrive at a proxy variable for the financial market. Using a cross-country data of twenty Arab Countries and Seventy Three Developing Countries, the researchers uncover the causal correlation between financial factors and economic development. Next, the authors show that countries with more sophisticated legal and regulatory systems appear to be better integrated with other international economies, are engaged in more access to capital markets and have a better credit ratings. Results of this study suggest that economic development measured by per capita economic growth in Arab Countries is negatively related to financial market risk. That is a high GDP growth, on average, has low ratings (high risk). These findings are not generalized to all developing countries. The Financial Market Risk Measure in Arab Countries is determined by such variables as Per Capita GDP, Legal system, government intervention, and Banking System. Financial Market Risk Measure in Developing Countries (excluding Arab Countries) is determined by Life Expectancy, HDI and Regulation.

Country risk measures are widely available for use in portfolio management (Institutional Investors, Euromoney..etc.). They are external (provided by an accredited third party), ex ante measure of risk (a measure of future risk), and attractive because they influence the accessibility of credit markets by national government and agencies. The understanding of these measures help investment professionals, who currently face plenty of investment opportunities around the world to undertake strategic portfolio decisions.

A country is not very different from a company. It produces goods and services (GDP), has external obligation (External Debt), has resources (Hard Currency and Gold) and it has either good or bad financial management (signified by Rate of Growth and / or Inflation Rate). A number of researchers have examined the relation between macro economic variables and country risk ratings. Feder and Uy (1985) and Lee (1993) examined Institutional Investor's Country Credit Ratings. Cantor and Packer (1996) found that 8 macro economic factors explain more than 90 per cent of the cross-country variation in risk. These variables comprise per capita income, GDP growth, inflation, fiscal balance, external balance, external debt, economic development and default history. Cantor and Packer described their study as the first systematic analysis of the determinants of the sovereign credit rating assigned by the leading ratings agencies. Hague, Mark and Mathieson (1996) discovered that using political variables added little value beyond using economic variables in explaining country risk. Knack and Keefer (1995) found some validity in using political unrest to capture country risk. Gwartney, Lawson, and Block (1996) measured economic freedom for a broad cross-section of countries and found that economic freedom is highly correlated with economic growth. Theory of finance hypothesizes that risk and expected return are related. Empirical tests of conditional convergence have shown a relation between country risk and economic growth. Barro (1996) broke the explanatory variables into State (Resource) Variables and Policy Choice (Environmental) Variables (such as rule of law, freedom.. etc.). Fischer (1993) found that high inflation and large budget deficit reduce growth by reducing investment. Alesina and Summers (1993) found an interaction between how a country conducts its monetary policy and economic factors such as inflation. Harlow (1993) and Diamonte, Liew and Stevens (1996) recommend the use of political risk ratings as instruments for explaining equity return.

Need and Purpose of the Study

Globalization of business, the liberalization of trade and the formation of trade blocks is the name of the game in this new arena of global information age. Arab countries have been trying to practice a liberal financial policy, which conforms to the GAT agreement. As more Arab countries today are looking at being members of the Euro-Mediterranean agreement, and at integrating into the world economy, a more favorable investment climate becomes imperative. Hence the need for a better measure of financial risk in a global financial environment. The wealth gap between some Arab countries and others provides evidence that all Arab countries have not developed as quickly as a bloc as comparable nations bloc in other regions of the world. For the most part, Arab states lack a well-developed financial and monetary market. The researchers in this study tested an existing relation between economic development factors and financial markets in the

Arab countries. In particular, they tested this hypothesis in developing countries without the Arab states and in a broader context.

Empirical studies in Random walk theory, efficiencies in the market place and volatility of stock prices are well suited for the stock markets of established industrial countries, much less so for Arab Financial markets, mainly because of the lack in detailed information. Instead of testing the efficient market hypothesis (EMH) or testing investors' reactions to new information in the marketplace (overreaction or under-reaction), the researchers approached the market differently and studied the relationship between financial markets and economic growth in Arab countries. A recursive causal system is developed to decompose the relation between economic development and financial market in the Arab and developing countries. Before employing the recursive system, factor analysis and factor score were used to arrive at a proxy variable for the financial market. Using a cross-country data of twenty Arab Countries and Seventy Three Developing Countries the researchers uncover the causal correlation between financial factors and economic development.

The major purpose of this study is twofold. First, it is to direct attention to recursive systems as a method for analyzing the proposed causal relationships between variables. And second, it is to causally explain the variation in country risk ratings as a proxy for the financial markets. Our approach in this study is also found in the relevant literature but suggests that the work in this area is still in its beginning stage.

Section 1 discusses Economic Development in Arab Countries. Section 2 provides a brief background on the Arab Financial Markets. Section 3 deals with variables and their measurement. Section 4 presents the findings for the hypothetical causal recursive model, and the last section provides summary, conclusion and recommendation.

1. Economic Development in Arab Countries

According to UNDP, the Arab region is richer than it is currently developed. There have been cautionary indicators over the past twenty years. The per capita income growth in the Arab world was the lowest in the world except in sub-Saharan Africa. The growth rate was 0.5% annually. This implies, according to UNDP experts, that it will take the average Arab citizen 140 years to double his income, while other regions are set to achieve that level in a matter of less than 10 years. Labor productivity has been low and is currently declining. According to UNDP, total factor productivity declined at an annual average of 0.2% during 1960 – 1990, while it rapidly accelerated in other parts of the world. This suggests that Arab countries have not developed as quickly as comparable regions of the world. From a human development viewpoint, the state of human development in the Arab world is a reason for concern. Over the past decade, achievements by the Arab region on the Human Development Index (HDI) were lower than the world's average. Relative to other regions, the Arab world does better on the income indicators than on the development indicators. However, the income poverty is low compared to other parts of the world. The Arab region is afflicted by another kind of

poverty, namely the poverty of capabilities and the poverty of opportunities. Based on UNDP studies, it is found that the poverty in Arab countries has its roots in three forms of deficits: that of freedom, women's empowerment, and of knowledge. It is believed that economic development alone is insufficient to set the region on the road to sustainable development. The GDP of all Arab countries combined stood at \$531.2 billion in 1999 (less than Spain's \$595.5 billion). The successful stabilization in the 1990s led to low inflation and reduced budget deficits. Arab governments provided much growth-supporting physical infrastructure and the growth rates remain stagnant and excessively vulnerable to oil price fluctuations. UNDP reported that by 1998, the real income of the average Arab citizen adjusted for purchasing power parity had fallen to 13.9% of that of the OECD's citizen. Arab countries have the lowest level of dire poverty in the world (measured at less than \$1 a day), together with high levels of inequality. Even though some Arab countries are very rich, one out of every five Arabs lives on less than \$2 per day. The poverty of capability is more pronounced as a result of the high rates of illiteracy, the inadequate access to quality education and to good learning. Labor markets are highly traditional, severely segmented and practically dysfunctional.

UNDP found that most of the Arabs express a desire to emigrate, indicating dissatisfaction with the current conditions and the future prospects in their home countries. An analysis of the global Human Development Index reveals that the range of disparity among Arab countries is almost as large as that for the entire world. Kuwait scores only slightly lower than Canada, the world leader, while Djibouti is close to Sierra Leone, the country with the world's lowest HDI value. Given the importance of challenges to human development – such as those related to freedom, gender equality and knowledge acquisition, the UNDP report emphasizes three critical deficits that face all Arab countries: freedom; women's empowerment; human capabilities and knowledge relative to income. The freedom index characterizes the extent of freedom in Arab countries compared to the rest of the world. It shows as of the late 1990s, that Arab countries had the lowest freedom score out of the seven regions of the world. This score includes a number of indicators measuring the various aspects of the political process, government intervention, property rights, and monetary and fiscal policies. Bureaucratic constraints in the form of control of civic associations by public authorities present serious problems. The attitudes of Arab public authorities range from opposition, to manipulation, to “freedom under surveillance”. The media is at best partly free. The UNDP Arab HDR notes that the Arab-Israeli conflict is a contributing factor to the region's democratic deficit, providing both a cause and an excuse for distorting the development agenda. This conflict disturbs national priorities and slows down political development in the region as a whole. Above all, the UNDP Report concludes that Arab Region needs to create “a virtuous cycle whereby economic growth promotes human development and human development in turn promotes economic growth”. In addition, the UNDP Report identifies the lack of democratic and efficient governance as a major obstacle to economic growth. The Arab states need a transparent rule of law, a fair and fast legal system with a professional judiciary. In most Arab states, pervasive corruption follows from the weakness of the states' legal and institutional support for the enterprise.

As mentioned before, Arab countries are heterogeneous. When it comes to classifying Arab countries, it becomes imperative to note that “oil-versus-non-oil” represents the most meaningful criterion to adopt. Oil producing countries tend to have similar economic structures, notably in terms of the share in the different sectors’ GDP, the degree of export concentration, the share of primary commodity exports in GDP, inflation and saving rates, and investment ratios. The financial structure is somewhat influenced by the country’s rating as a major oil producer. Oil revenues have allowed oil-producing countries to increase their GNP per capita and to accumulate large amounts of foreign assets. This has resulted in high saving rates that necessitated the development of a modern and efficient financial sector. It is not only justifiable to classify Arab countries into oil and non-oil producing countries. In our opinion, this represents the most, if not the only, meaningful criterion to adopt in the overall classification of these countries according to their socio-economic characteristics. One of the widely used applications in Economics is to classify countries according to their level of development. The World Bank (WB) and the United Nations (UN) are among the international institutions interested in this type of classifications. According to World Bank, countries are classified into four income groups (GNP per capita) and five regions. The five regions are: Sub-Saharan Africa, Asia, Europe and Central Asia, the Middle East and North Africa, and the Americas.

The United Nations Development Program (UNDP) classifies countries according to an index composed of three indicators namely, life expectancy, education and income.

The Unified Arab Economic Report, published by a group of four Arab institutions (the Arab Fund for Economic and Social Development (AFESD), the Arab Monetary Fund (AMF), the Organization of Arab Petroleum Exporting Countries (OAPEC), and the Arab League General Secretariat) used to classify Arab countries into oil producing and non-oil producing countries. In a study conducted by OAPEC, the first group consists of countries with large populations and substantial deficits in their balance of payments. These were: Algeria, Egypt, Iraq, and Syria. The second group consists of oil-producing countries with labor supply shortages namely, Bahrain, Kuwait, Libya, Qatar, Saudi Arabia, and the United Arab Emirates (UAE). The third group consists of oil-importing countries with large balance of trade deficits. These are Jordan, Morocco, Tunisia, Yemen, and Oman.

Based on the economic, demographic and educational characteristics, Arab countries may be divided into six groups. Group 1 comprises of countries with high reliance on oil as a source of income, similar population densities, and high school enrollment ratios. These countries are Bahrain, Qatar, and UAE. Group 2 contains only Djibouti that is characterized by its small population size, a high reliance on the service sector, a high urbanization rate, and low mortality rate. Six countries are included in group 3. These are Oman, Saudi Arabia, Libya, Jordan, Iraq and Kuwait. The countries in the third group have a similar level of income and population growth rates, rely on extracting industries, and have high levels of education and life expectancy. Group 4 consists of Algeria, Egypt, Morocco, Syria, and Tunisia. They share in common the same economic structure, several demographic and educational characteristics. Lebanon makes up group 5 with its

high reliance on the service sector and high level of income, life expectancy, enrollment ratios, and urbanization. Finally, group 6 is made of the poorer Arab countries characterized by a heavy reliance on the agricultural sector and low scores in human development indicators. These countries are the two parts of Yemen, Somalia, Sudan, and Mauritania.

2. Characteristics of the Arab Financial Markets

By International Standards, Arab financial markets are considered relatively new. Bahrain, Jordan, Oman, Saudi Arabia, Tunisia, Egypt and Morocco started operation over the last two decades. There are many organized financial markets in The Arab world. We recognize Bahrain, Egypt, Jordan, Kuwait, Morocco, Oman, Saudi Arabia, Tunisia and Lebanon. The activities in Egypt and Morocco have been less than significant.

Arab Financial Markets provide different level of market accessibility to foreign investors and hence are structurally dissimilar. According to the Arab Monetary Fund, the financial markets in Egypt, Jordan and Morocco are freely accessible to foreign investors, while that of Oman and Tunisia, foreign ownership is restricted to 49 percent of common stocks. More types of restrictions are imposed in oil producing countries. Bahrain restricts foreign ownership to 49 percent to all Gulf Cooperation Council (GCC) nationals, and to 24 percent for all other investors and in limited number of companies. Kuwait limits ownership to GCC nationals but with no ceiling on their investments. Saudi Arabia allows GCC nationals limited number of shares in limited number of companies.

Arab Financial Markets

MARKET	Value Traded (Million U.S. \$)	Shares Traded (Million)	Market Capitalizat ion	No. of Contracts / Listed companies
AMMAN FINANCIAL MARKET (AFM)	0.0000	0.0000	6,767.47	0 / 158
BAHRAIN STOCK EXCHANGE (BSE)	1.2836	0.8402	6,623.06	51 / 43
BEIRUT STOCK EXCHANGE (BSE)	0.3666	0.1028	1,397.65	-- / 13
CASABLANCA FINANCE GROUP (CFG)	1.2912	0.0323	9,191.69	177 / 55

EGYPT STOCK EXCHANGE (ESE)	12.6589	2.5956	26,298.09	3004 / 1150
KUWAIT STOCK EXCHANGE (KSE)	0.0000	0.0000	35,692.55	0 / 96
MUSCAT SECURITIES MARKET (MSM)	1.4358	0.3889	4,882.70	321 / 158
SAUDI STOCK MARKET (NCFEI)	99.3778	4.1470	73,352.02	3953 / 68
TUNIS STOCK MARKET (BVMT)	0.6602	0.0387	1,877.46	234 / 50

Total *117.0741* *8.1455* *166,082.69* *7740 / 1791*

Source: Arab Monetary Fund. February 28, 2003

Arab economies are heterogeneous. Economies of the Arab Gulf region (The GCC countries) are considered in relative terms among the most open economies in the Arab region. Open economy is measured economically by the ratio of trade to the Gross Domestic Product (GDP). Articles eight and nine of the Unified Economic Agreement between GCC country members have allowed for the free movement of capital and individuals across GCC countries and for the freedom to exercise economic activities. Economic activities in the GCC countries most heavily depend on oil. Oil represents in these countries on average more than 80 percent of export receipts and budget revenues.

By contrast, other Arab countries such as Lebanon have started the process of capital markets development since the mid-1990s to support the reconstruction and the recovery from the civil war. According to Bank Audi, the market development in Lebanon aimed at ensuring placement of investment vehicles for individual and corporate investors interested in Lebanon's diversified opportunities, thus enabling Lebanese corporations and government to obtain funding for much needed working capital financing, fixed asset expansion or privatization of public assets. While the market proved to be active on the debt side, with Lebanon being the most frequent issuer of debt securities from the MENA region over the post-war years, the equity market on the other hand was adversely affected by environment and technical factors leading to a current state of under evaluation. Within the context of a rapidly evolving domestic and regional environment, Lebanese banks cannot meet the massive needs of Lebanon's economic recovery and various expansion prospects. Alternative financing is increasingly needed in an environment where traditionally the financing is done through private investments (70%) and is expected to gradually decline to the 50% level. Banks are estimated to finance, in the most optimum conditions, 25% of additional private investment needs. This leaves a

residual need of around US\$ 1 billion per annum for capital market financing, whereby policymakers, regulators, private issuers and financial intermediaries have to ultimately join efforts to guarantee the most successful market access, liquidity and efficiency. Today, Lebanon's capital markets consist of around US\$ 27 billion in equity and debt issues as of the end of 2002 (against US\$ 10 billion in 1995). US\$ 3 billion of those pertain to the 13 companies listed on the BSE, US\$ 300 million of the GDRs listed abroad, US\$ 3.2 billion in Eurorobonds, and the equivalent of US\$ 16.6 billion are circulating in Treasuries, dominated in the local Lebanese pound currency. In addition to traditional capital markets securities, finance operations, structured products derived from debt and equity securities or a combination of both, have recently seen the light and represent hybrid capital market products offering various alternatives of risk/return sharing between issuers and investors. (Junior-senior notes linked to LL Treasury bills, share-linked deposits, etc...).

THE RESEARCH DESIGN

Variables and their Measurement

- Measure of individual Arab Countries on the Dependent Variable (Constructing One Factor Score to proxy the Market Financial Risk).

Lack of detailed information on Arab financial markets have been the main cause behind looking for a variable to proxy the financial markets. To overcome this limitation, the researchers decided to model financial market fragility in Arab countries by two sovereign financial risk variables. The first variable is based on Euromoney credit ratings categorization on the basis of the nominal values that are assigned to sovereign ratings from Moody's, S & P and Fitch IBCA. The higher the average rating value, the better the score. That is, a greater perceived level of risk associated with investing in a certain Arab country may be reflected in a fall in rating score. The other variable is the Euromoney access to capital markets ratings, whereby heads of debt syndicate and loan syndications rate each country's accessibility to international capital markets. The higher the average ratings out of 10 the better the score. The inter-correlations of economic and environmental variables for Arab countries were factor analyzed. Then, "Factor Scores" were calculated to form a new index. Factor Oblique Solution of TABLE I show that Credit Ratings and Access to Financial Markets are measuring the same thing (Factor 2). The researchers decided to compute factor score as weighted average of the two ratings in which the weights are being the factor loadings. The overall factor score is used to proxy the dependent variable "Financial Market Risk" in the subsequent recursive analysis.

Table I: Oblique Factor Solution

Total Variance Explained Rotation Sums of Squared Loadings		Extraction Sum of Squared Loadings		Initial Eigenvalues			
Total	Cumulative	Total	% of	Total	Cumulative	% of Component	
	%		Variance		%	Variance	Total
5.107	40.139	40.139	40.139	5.218	40.139	40.139	5.218
2.390	58.437	18.298		2.379	58.437	18.298	2.379
2.302	74.291	15.855		2.061	74.291	15.855	2.061
1.480	83.277	8.986		1.168	83.277	8.986	1.168
					88.588	5.311	.690
					92.827	4.239	.551
					95.767	2.940	.382
					97.570	1.803	.234
					98.462	.892	.116
					99.173	.711	9.248E-02
					99.623	.450	5.849E-02
					99.947	.324	4.210E-02
					100.000	5.311E-02	6.904E-03

Pattern Matrix^a

	Component			
	1	2	3	4
LEGAL SCORE	.982	7.553E-02	-3.12E-03	.125
BLACK MARKET	.904	7.047E-02	-1.43E-02	-.126
PROPERTY RIGHT	.888	-6.55E-02	3.344E-02	-.270
REGULATION	.879	-.104	.135	6.389E-02
TAXATION	.741	.119	.328	-.225
BANKING	.647	-.159	.189	.408
Access to Capital Market	.102	.982	7.614E-02	2.542E-02
Credit Ratings	3.096E-02	.960	.124	-4.85E-02
GOV INTERVENTION	.115	.231	.808	.143
MONETARY POLICY	.455	-8.17E-02	-.792	.227
GDP per capita annual Growth rate 1990-2000	.296	-.452	.602	-.174
FOREIGN INVESTMENT	.387	.117	.541	.535
TRADE POLICY	.430	1.910E-02	.171	-.803

Extraction Method: Principal Component Analysis.
Rotation Method: Oblimin with Kaiser Normalization

a: Rotation converged in 13 iterations.

- Measures of individual Arab Countries on the Independent Variables:
 1. Economic Development. The 1990-2000 Annual Per GDP Growth Rate was used as a proxy for economic development. This score was taken from the 2002 Human Development Report published by UNDP.
 2. Foreign Direct Investment, debt indicator, Official Development Assistance, life expectancy, Adults Literacy were taken from the 2002 Human Development Report published by UNDP.
 3. Since an economic system is the result of its legal system. The researchers used the country legal index as a measure of the country's safety and profitability of investments. This score was taken from "Before You Invest Abroad: The Legal Index".

4. The 2002 Index of Economic Freedom (The Heritage Foundation) was used in measuring the absence of government constraints on the production, distribution and consumption of goods and services. This index explains the reason why some countries are rich while others remain poor. The 10 broad categories of the index are used in this study.

Findings of the Study

TABLE II shows findings of the regression analysis.

TABLE II: Regression Analysis

Model Summary

	Std. Estimate	Error of the Square	Adjusted R Square	RR Square	R	Model
a	.50870252	.741	.827	.910	.910	1
b	.50355235	.746	.814	.902	.902	2

a Predictors: (Constant), GDP per capita annual growth rate 1990-2000, BANKING, GOV INTERVENTION, REGULATION, LEGAL SCORE

b Predictors: (Constant), GDP per capita annual growth rate 1990-2000, BANKING, GOV INTERVENTION, LEGAL SCORE

ANOVA

	Sig.	F	Mean Square	df	Sum of Squares	Model	
		.001	9.593	2.482	5	12.412	1 Regression
				.259	10	2.588	Residual
					15	15.000	Total
		.001	12.039	3.053	4	12.211	2 Regression
				.254	11	2.789	Residual
					15	15.000	Total

VOG, GNIKAB, 2000-1990 annual growth rate na atipac rep PDG, (Constant): a. Predictors INTERVENTION, REGUALTION, LEGAL SCORE

b Predictors: (Constant), GDP per capita annual growth rate 1990-2000, BANKING, GOV INTERVENTION, LEGAL SCORE

c Dependent Variable: REGR factor score 2 for analysis 1

Coefficients^a

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1. (Constant)	-3.668	1.208		-3.037	.013
GOV INTERVENTION	1.224	.262	.773	4.669	.001
BANKING	-.891	.190	-.988	-4.681	.001
REGULATION	-.417	.473	-.304	-.882	.398
LEGAL SCORE	1.377	.451	1.091	3.052	.012
GDP per capita annual Growth rate 1990-2000	-2.39E-04	.000	-.817	-4.264	.002
2. (Constant)	-4.282	.977		-4.381	.001
GOV INTERVENTION	1.261	.256	.796	4.919	.000
BANKING	-.862	.186	-.955	-4.644	.001
LEGAL SCORE	1.051	.256	.833	4.105	.002
GDP per capita annual Growth rate 1990-2000	-2.66E-04	.000	-.910	-5.756	.000

a: Dependent Variable: REGR factor score 2 for analysis 1

Excluded Variables^b

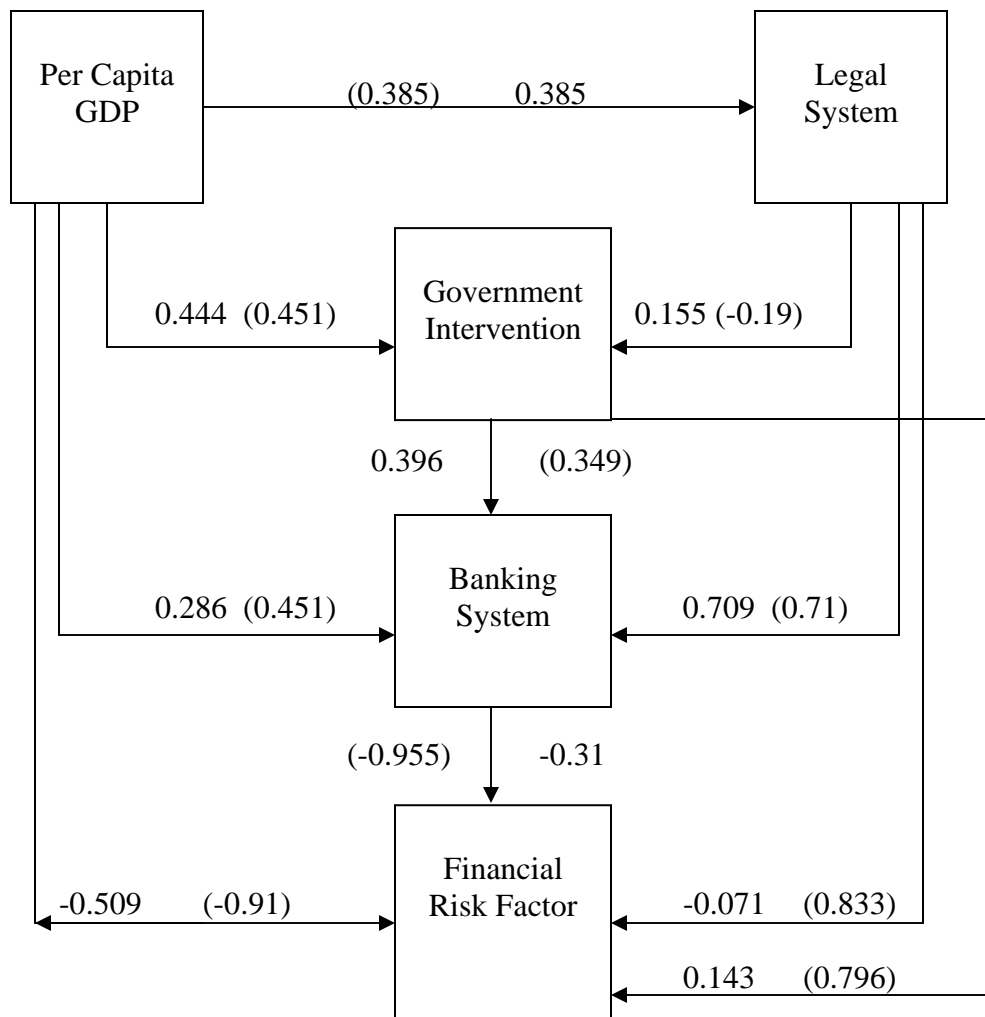
Model	Beta In	t	Sig.	Partial Correlation	Co linearity Statistics
					Tolerance
2 REGULATION	-.304 ^a	-.882	.398	-.269	.146

a. Predictors in the Model: (Constant), GDP per capita annual growth rate 1990-2000, BANKING, GOV INTERVENTION, LEGAL SCORE
b. Dependent Variable: REGR factor score 2 for analysis 1

Recursive System

To test the alternative hypotheses (or independent variables) and to help establish causal connections and inferences, the researchers in this study decided to use the unidirectional causal models known as path analysis. Experts in the area of multivariate analysis recommend the position taken in this study. Blalock (1961) and Kerlinger (1973) believe that causal laws cannot be demonstrated empirically, but it is helpful to think causally. They believe that we are equivocal about thinking causally. Evidence in this study is brought to bear on the empirical validity of the conditional statement of the “If Economic Development Then Financial Risk Measure given Legal and Institutional environment” in the Arab Countries.

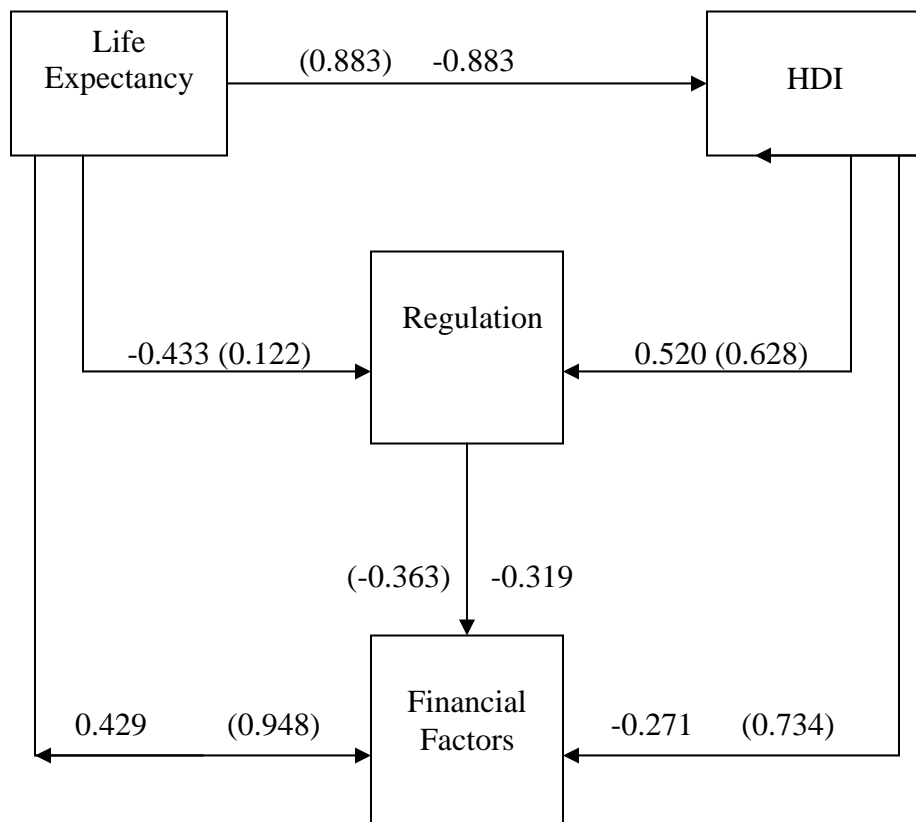
Recursive (Unidirectional) Causal Model Decomposing the Relation Between GDP and Financial Risk Factor in the Arab Countries into Direct and Indirect Effects



The Coefficient of multiple correlations and its square is significant as shown by the F - Test. Eighty two percent of variation in financial risk in Arab Countries is significantly explained by 4 economic and environmental variables. The direct effect of Banking System is negative and the most significant, followed by the negative direct effect of Per Capita GDP Annual Growth. The positive direct effect of Legal System is more significant than the positive direct effect of Government Intervention. The simple relation between Legal System and Financial Risk Factor in very low and negative but the direct effect is positive and almost 10 times the size of the simple relation. The direct positive relation is very strong. Without using recursive system, one may have been led to the conclusion that Legal System does not affect Financial Risk score when it is considered in the context of total pattern of relations with the other variables. In the present study, the direct effect of Banking, Per Capita GDP, Legal system, and Government intervention play an important role in explaining variation in Financial Market Risk in Arab Countries. Indirect effects reduce all of the direct effects.

This study is replicated with a different and larger sample, using Seventy-three developing countries (All developing countries excluding the Arab countries). None of the relations found in the first recursive system did really hold up with different countries as shown in recursive system II.

**Recursive (Unidirectional) Causal Model
Decomposing the Relation Between GDP and Financial
Factor in the Developing Countries into Direct and Indirect Effects**



Comparing recursive systems I and II show that the direct effect of Human Development Indicators are strong and positively affect variation in financial risk scores in developing countries. Using different countries gave different explanatory variables. With this pattern of Macro Economic variables and Environmental – Institutional variables, the researchers in this study were able to provide an empirical evidence of the factors explaining financial risk in global context. Our research provides a base for future analysis of country data in global financial management.

We would like to end our discussion with some words of the philosopher, Braithwaite (1953) as were reported by Erlanger and Pedhazur (1973):

Man proposes a system of hypotheses: Nature disposes of its truth or falsity. Man invents a scientific system, and then discovers whether or not it accords with observed fact.

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