

Public Health Effect of Financial Crisis and Governance: Evidence from Asian Countries

Raouf Jaziri¹, Saleh Alnahdi¹, Abdelhafidh Dhrifi²

¹Assistant Professor, Department of Healthcare Services and Hospital Management, College of Business, University of Jeddah, Kingdom of Saudi Arabia, ²Assistant Professor, Department of Economics, Faculty of Economics and Management, University of Sousse, Tunisia

ABSTRACT

Background : Over the past three decades, international financial turmoil led to severe losses. The backlash of this financial instability has affected developed and developing countries around the world. Increased unemployment, loss of income and increased vulnerability have been among the dominant social impacts of the crisis. This paper aims to investigate the effects of financial crisis and governance on health care using a panel data of 35 Asian countries over the period 1996–2016.

Method: The empirical analysis is carried out using the generalized method of moments estimator to deal with potential endogeneity of the explanatory variables.

Results: Findings show that there is a strongly negative relationship between financial crisis and health on the one hand, and a positive relationship between governance indicators and health on the other hand. Moreover, the direct and negative effects of financial shocks on health may be reduced by the indirect and positive effects through good governance and institutions.

Conclusions: This indicates that the financial crisis impacts health and the magnitude of the effects could be reduced through the presence of good governance and institutional interventions. These empirical insights are of particular interest to policymakers as they help identify causes of financial crises and to develop a sound financial system able to resist to external shocks. Policymakers should also regulate and enhance the role and efficiency of domestic institutions.

Key words: Financial Crisis, Governance, Health, Asian Countries

INTRODUCTION

The financial crisis has spurred tremendous interest in their economic and social consequences. Recent studies show that financial crisis is commonplace throughout history and across developed and developing countries and that their consequences can be huge (Claessens *et al.*, 2009; Reinhart and Rogoff, 2009; Luc and Valencia, 2010; Laeven and Valencia, 2012). Economic literature provides a great number of theoretical and empirical studies that link financial crisis to macroeconomic variables. Among these researches, a large body of these studies examine the effects of financial instability on economic growth, inequality, poverty, and education... and although there is much work

that has studied the social impacts of the financial crisis, there is not enough empirical work in literature that links financial crisis to health-care services.

Given the rapid evolution of the crisis and the uncertainty surrounding its impact in different countries, monitoring its effects on the health sector is a priority. The main purpose of the present study is so to fill this research gap by examining the relationship between the financial crisis and health-care quality for the case of 35 Asian countries during the period 1996–2016 using the dynamic of generalized method of moments (GMM) estimator. It can be expected that if the crisis, with its attendant consequences for unemployment, low incomes and poverty, is prolonged to the households health. Worsening nutrition, homelessness and stress due to job loss, the fear of it and the experience of more straitened economic circumstances will all eventually have negative effects on healthcare quality.

Experiences showed that the financial crisis has a very severe social impact especially for developing countries

Access this article online



www.ijss-sn.com

Month of Submission : 10-2018
Month of Peer Review : 11-2018
Month of Acceptance : 12-2018
Month of Publishing : 12-2018

Corresponding Author: Dr. Raouf Jaziri, Asfan Road, University of Jeddah, College of Business, Kingdom of Saudi Arabia.
Phone: +966 (0)538262144. E-mail: rmjaziri@uj.edu.sa

like Asia because it increased inflation which leads to depreciation of domestic currency savings and lowers income in households. The unemployment rates have increased and destroying household income and wealth depreciation. Furthermore, the risk of psychiatric disorders and suicides tend to increase (due to loss of jobs), and public expenditure for health and welfare services are diminished to allocate investments to other areas. Those cuts may lead to a restructure of the roles and functions of the health-care personnel, resulting in a deterioration of the quality of services provided (Notara *et al.*, 2010; Kentikelenis *et al.*, 2011; Zavras *et al.*, 2012; Stuckler and McKee, 2012; Ruckert and Labonté, 2014). In fact, the population's access to healthcare has been negotiated during a recession through mechanisms of demand and/or supply for healthcare. Countries that have suffered financial crisis face problem that when social security programs are cut, government tax revenues shrink and, health-care access, especially for low-income families, and health service delivery become problematic.

From an empirical overview, Van Dijk (2013), using data on 187 banking crisis in 126 countries over the period 1970–2009, they found that exposes broad-ranging implications for society. For example, in the 6 years following a crisis, average life expectancy declines by 9 months. Karanikolos *et al.* (2016) performed also a systematic narrative review of the health effects of the latest economic crisis based on studies of high-income countries. Papers published between January 2009 and July 2015 were selected. Ultimately, 122 studies were selected. The review finds that the 2008 financial crisis had negative effects on mental health, including suicide, and to a varying extent on some non-communicable and communicable diseases and access to care.

For example, Greece is one of the countries most severely hit by the financial shocks, and the studies that have examined the impact of the crisis on health-care provided evidences reductions in public health spending and changes in health-care quality and the pharmaceutical market, with an increasing number of admissions in the public health-care sector (Vandoros and Stargardt, 2013; Ifanti *et al.*, 2013; Simou and Koutsogeorgou, 2014). It was also reported that in the wake of the recent global crisis, in Greece, suicides went up by 45% and HIV infections by 60 % and the rate of stillbirths increased from 3.31/1000 live births in 2008 to 4.36 in 2010. De Belvis *et al.*, 2012, showed also that Italy after the latest subprime crisis faced the risk of investment reductions for preventive medicine, evidence-based medicine infrastructure, and health information systems extra. Ruckert and Labonté (2014) examined the channels through which financial crisis affected health equities in Canada. They found that government austerity

budgets weakened social programs that address the social redistribution of social and economic determinants of health outcomes. For the case of Indonesian crisis of 1997, basic health care becomes unaffordable for the majority of poor people, particularly women. Primary health-care clinics are shutting down due to lack of supplies and the nonpayment of health workers. In the main vein of studies, Hopkins (2006) showed a significant drop in health expenditure in Indonesia, Thailand, and Malaysia during the East Asian financial crisis 1998. Baldacci *et al.* (2002) showed also that during the Mexican crisis, average monthly household income fell 31% between 1994 and 1996 and health expenditure dropped by about 25%.

It is showed that from this existing works presented above that people's health status is definitely affected by the financial crisis and consequently the health-care sector will be charged to meet efficiently the increasing needs. For that reason, improving health around the world is an important social objective, which provides direct payoffs in terms of longer and better lives. We believe that one way to reduce the scale of the financial crisis is to ameliorate governance and institutions because a new global governance architecture in both financial and health sectors may be a solution for stability and sustainability. Institutions and governance have emerged as the backbone of development and are increasingly being shown as critical to income levels (Rigobon and Rodrik, 2004; Rodrik *et al.*, 2004; Kaufmann and Kraay, 2002), fostering thus overall households health. Indeed, institutional quality and the legal framework are likely to affect financial development through the ability of the financial sector to channel resources to finance health sector (Grigorian and Martinez, 2001; Law and Azman-Saini, 2008). Good governance complements financial supervision and is an integral factor to implementing effective risk-based financial oversight. In theory, governance plays an important role in the prudent operation of financial institutions and the stability of the financial sector. Principles of good governance have been a major component of international financial standards, and many regulators view effective governance as the first line of defense.

This paper contributes to the existing literature in the following two ways: First, our study gains interest by what it covers the countries of Asia; the economic literature of recent decades has shown that many countries in this region have been hardly affected by financial crisis including the crisis of 1997 and 2009. Second, although there exists seldom empirical works covering financial crisis and health nexuse; to the best of our knowledge, there is no study that seeks to take in to account the role of governance in mediating the financial crisis-health relationship.

The portions of the study are as follows. The second section covers the model description, empirical methodology, and data sources. Regression results and findings are shown in section three; and finally, section four suggests some conclusions and policy implications.

Empirical Methodologies

The present study aims to examine the impact of the financial crisis on health status with especial emphasis on the role played by governance in the health sector. To do this, the study is based on a panel data of 35 Asian countries for which data are available from 1996 to 2016. The analysis is subdivided into two steps. We examine first, the direct impact of financial crisis and governance indicators on health status. Then, we assess the indirect effect of the financial crisis on health through governance channels. Based on some existing empirical works (Kentikelenis *et al.*, 2011; Fountoulakis *et al.*, 2012; Vandoros and Stargardt, 2013; Ifanti *et al.*, 2013; Dhrifi, 2018 a,b), the following model is specified:

$$H_{it} = \delta_i + \lambda' X_{it} + \epsilon_{it} \tag{1}$$

Where δ_i is the country-specific effect which is also distributed independently and constant over the countries, i denotes the country $i = 1, 2, \dots, 35$ and t denotes time period ($t = 1996, \dots, 2016$); ϵ_{it} is the error-term assumed to be distributed independently in all time periods of the country i . H_{it} is health indicator and X_{it} is a vector of some determinant variables which are hypothesized to affect health status.

The GMM for panel data analyses proposed by Arellano and Bond (1991) and then further developed by Blundell and Bond (1998), is employed here to control for endogeneity in our estimations. The dynamic analysis of the GMM approach includes lagged health as an explanatory variable. This method meets the need of the panel data study by providing solutions to common problems in this area: The heterogeneity of behavior of individuals in the sample, the endogenous (presence of endogenous lagged variables among the regressors model), and simultaneity (bidirectional causality problem between variables). We will estimate a dynamic model (where the endogenous variables are included as explanatory variables with one or more lags). Certainly, we will face these problems that skew estimators. Therefore, the dynamic version of Equation (1) is expressed in the following form:

$$(H_{it} - H_{i,t-1}) = \delta_i + \lambda_0 H_{i,t-1} + \lambda' X_{it} + \xi_{it} \tag{2}$$

The use of lagged variables in levels as instruments in the estimation of the equation in first difference is proposed by Arellano and Bond (1991):

$$\frac{(H_{i,t} - H_{i,t-1}) - (H_{i,t-1} - H_{i,t-2})}{(X_{it} - X_{i,t-1}) + (\xi_{it} - \xi_{i,t-1})} = \lambda_0 (H_{i,t-1} - H_{i,t-2}) + \lambda'_i \tag{3}$$

Then, based on Arellano and Bond (1991), moment conditions are applied in determining the difference estimator as follows:

$$\left. \begin{aligned} E \left[H_{i,t-s} (\xi_{i,t} - \xi_{i,t-1}) \right] &= 0 \quad \text{For } s > 2 \quad t = 3, \dots, T \\ E \left[X_{i,t-s} (\xi_{i,t} - \xi_{i,t-1}) \right] &= 0 \quad \text{For } s > 2 \quad t = 3, \dots, T \end{aligned} \right\} \tag{4}$$

This step is required in the estimation since lagged differences of the explanatory variables are used as instruments in levels equation with the presence of two important assumptions, namely the error term is not correlated and correlation does not exist between difference in the explanatory variables and the error term despite association between the levels of the explanatory variables and the country-specific error term may occur.

As a result, the following stationarity properties are obtained:

$$\left. \begin{aligned} E \left[H_{i,t+p} \eta_i \right] &= E \left[H_{i,t+q} \eta_i \right] \quad \text{and} \\ E \left[X_{i,t+p} \eta_i \right] &= E \left[X_{i,t+q} \eta_i \right] \end{aligned} \right\} \tag{5}$$

For all p and q

Arellano and Bover (1995), the additional moment conditions for the regression in levels are as follows:

$$\left. \begin{aligned} E \left[(H_{i,t-s} - H_{i,t-s-1}) (\eta_{i,t} + \xi_{i,t-1}) \right] &= 0 \quad \text{For } s = 1 \\ E \left[(X_{i,t-s} - X_{i,t-s-1}) (\eta_{i,t} + \xi_{i,t-1}) \right] &= 0 \quad \text{For } s = 1 \end{aligned} \right\} \tag{6}$$

By utilizing the moment conditions in Equations (4, 5, and 6), the GMM system estimator is derived. The validity of the instruments determines how consistent the GMM estimator would be. The Sargan test of over-identifying restrictions is used to examine the validity of the instruments. Finally, to assess the financial crisis and effects on health status, we specify the basic empirical model as follows:

$$H_{it} = \delta_i + \delta_1 H_{i,t-1} + \delta_2 FC_{it} + \lambda' X_{it} + \xi_{it} \tag{7}$$

Where H_{it} denotes the dependent variable which is infant mortality rate per 1000 live births, FC_{it} is the financial crisis variable, X_{it} is a vector of explanatory variables generally used in this type of model, this is GDP growth, financial development, trade openness, inflation, urbanization, density of physicians, environmental degradation and health-care expenditure, λ refers to a vector of parameters to be estimated and ε_{it} is the error term.

Then, for the purpose of testing how much does the impact of financial crisis on health is influenced by governance, the interaction term between governance indicators and financial crisis needs to be included into Equation (7) as follows:

$$H_{it} = \delta_i + \delta_1 H_{it-1} + \delta_2 FC_{it} + \lambda' X_{it} + \gamma' (FC_{it} * GOV_{it}) + \xi_{it} \quad (8)$$

Where X_{it} are control variables as already defined to include $\lambda_1 GDPG_{it}$; $\lambda_2 FD_{it}$ and $\lambda_3 OPEN_{it}$; $\lambda_4 URB_{it}$; $\lambda_5 DENS_{it}$; $\lambda_6 ENV_{it}$ and $\lambda_7 HEXP_{it}$; $\lambda_8 INF$; $FC_{it} * GOV_{it}$ is the interaction term between financial crisis and governance, γ' captures the role of governance in mediating the impact of financial crisis on health system. As mention above, a good governance is deemed to be more able to reduce the negative effect of financial chocs, thus contributing on ameliorating health status. If the estimated γ is positive and significant, it would indicate that a complementarity exists and governance is important in mediating the financial crisis impact on health care services. We are particularly interested in the effect of the interaction term because we expect that the magnitude of financial shocks may be absorbed by other conditions including better governance.

GOV is a matrix of contributing governance indicators to include voice and accountability (VA), government effectiveness (GE), political stability and absence of violence (POL), regulatory quality (RQ), rule of law (RL), and control of corruption (CC). These measures are used individually to compare the importance of each variable in influencing health status. This is basically due to the high correlation that might exist among these indicators and which is suspected, might create serious issues in the analysis due to problems of multicollinearity. We will also use the principal component factor method (PCF) to construct another indicator of institutional and legal development (GOV). This indicator is constructed from the six governance indicators cited above. The choice of this governance variable was made so that it should look synthetic because it contains simultaneously much informations on economic risk, political risk, and social risk. The interest of the decomposition of this variable comes from the fact that it takes into account all the institutions in explaining the links between financial crisis and health-care services. Another reason for the choice of this synthetic variable is the importance of its role as an indicator of good governance. Theorists attribute to it the benefit

Table 1: Descriptive statistics

Variables	Obs	Mean	SD	Min	Max
IMR	735	39.25	5.645	2.31	163
LO	735	-0.193	0.432	-1.146	0.572
VA	735	-0.884	0.409	-1.765	-0.221
GE	735	-0.225	0.483	-1.198	0.638
CCOR	735	-0.149	0.651	-1.093	1.354
RQ	735	-0.272	0.553	-2.023	0.836
PS	735	-0.604	0.663	-2.037	0.395
GDPG	735	4.068	3.685	-4.678	10.691
FD	735	75.354	3.568	49.343	93.848
TRADE	735	0.763	1.863	0.637	0.838
URB	735	3.364	1.235	1.180	7.382
INF	735	4.935	2.673	2.836	11.506
ENV	735	12.617	6.823	2.193	27.394
HEXP	735	13.954	4.382	2.392	36.685
PHYS	735	9.364	7.394	2.046	138.923

Source: Statistics provided by the authors

of having allowed to guarantee an appropriate mode of governance including all the dimensions of the regulations.

Data Sources

To achieve the research objectives for this paper, the study is based on a panel data of 35 Asian countries for which data are available from 1995 to 2016. The selection of countries and time period is strictly based on the availability of the data. Thus, as a result, 35 Asian countries¹ were chosen to achieve the objectives of the study. Some missing data are dealt with by averaging the available data since it is found that country values do not change significantly over time. Selected indicators are more relevant and commonly used in explaining health status. All variables are taken from World Development Indicators and International Country Risk Guide (ICRG); health indicator is measured by infant mortality per 100 live births, environmental degradation indicator is measured by per capita CO₂ emission, TRADE is defined as the sum of exports and imports as a share of GDP, financial development is proxied by domestic credit to private sector (% GDP), and urbanization is measured by the urban population as a share of the total population. Density of physicians measured as the number of doctors per 1000 population and health expenditure represented by total per capita expenditure on health, including government and private spending. For governance indicators, the dataset obtained from the ICRG includes six variables, namely VA, political stability and absence of violence, GE, RQ, RL, and CC. The descriptive statistics of all these variables are listed in Table 1.

RESULTS

The main purpose of the paper is to test the extent of the effects of financial crisis on household health with

¹ The list of the sample countries is presented in Table A.1 in appendix.

special emphasis on the role played by governance in such relationship for a panel of 35 Asian countries using GMM technique over the period 1996–2016. The dynamic GMM is used because it may eliminate any country-specific effect or any time-invariant variable by differencing the model. Further, it can also help to get rid of endogeneity problem caused by the correlation between the country-specific effects and the right-hand side variables (Baltagi *et al.*, 2009). This technique is also used due to the fact that it is a useful technique to estimate the effects of financial crisis on households' health in the sense that it helps to solve the problem of endogeneity involving these variables, Blundell and Bond (1998). The problem can be dealt with by taking the lagged values of the explanatory variables as instruments. Next, Sargan test is applied to examine whether the validity of instruments used. It is with the purpose of examining the null hypothesis that there is no correlation between the instruments used and the residuals. In all the equations, the Sargan test statistic shows that the null hypothesis, Ho: Over-identifying restrictions are valid, cannot be rejected.

To take into account the interrelationships between our interest variables, and to assess the impact of the financial crisis which may affect health through governance indicators, we start by discussing the results from the estimation of the direct impact of financial crisis and governance on health care. Then, we carry out the results of the indirect effects of the financial crisis through its interaction with different indicators of governance.

Table 2 presented below reported the results obtained from the estimation of our model. The dependent variable is health measured by infant mortality rate per 1000 live births, and our variables of interest are a financial crisis and governance indicators. The coefficients of these variables of interest have the correct signs and are statistically significant. Indeed, from model 1 to 7 all the coefficients of financial crisis indicator have positive coefficients and ranges from 0.08 to 0.69. A one standard deviation increase financial crisis leads to 0.08–0.69 increase in infant mortality rate. This confirms the hypothesis that financial shocks have a negative and statistically significant effect on health which can be viewed as an obstacle for households health (Stuckler *et al.*, 2008; Stuckler *et al.*, 2009a; Stuckler *et al.*, 2009b; Kentikelenis *et al.*, 2011; Bonovas and Nikolopoulos, 2012; Fountoulakis *et al.*, 2012; Vadoros and Stargardt, 2013; Ifanti *et al.*, 2013). This implies that the health status of a population of a country depends on its financial sector which suggests that a developed and sound financial sector stimulates economic growth, increases the budget allocated by governments to the health sector which may by consequences ameliorate health-care services (Mladovsky, 2012).

Table 2 indicates also the estimation results using governance indicators. These indices reflect VA, GE, political stability and absence of violence (POL), RQ, RL, and CC, all these indicators are statistically significant, and they have the expected signs. The column 1 to column 7 present, respectively, the change in health status due to one

Table 2: The direct effects of financial crisis and governance on health

Variables	Dependent variable: Health (IMR's/1000 live births)						
	1	2	3	4	5	6	7
Hit-1	2.354*** (0.000)	2.671*** (0.000)	1.983*** (0.003)	2.625*** (0.002)	2.064*** (0.000)	1.375*** (0.000)	2.364*** (0.000)
FC	-0.361** (0.000)	-0.471*** (0.000)	-0.533*** (0.001)	-0.265*** (0.002)	-0.636*** (0.000)	-0.695*** (0.000)	-0.086*** (0.000)
LO	-3.812** (0.032)	-	-	-	-	-	-
VA	-	-3.77* (0.051)	-	-	-	-	-
GE	-	-	-3.748** (0.066)	-	-	-	-
PS	-	-	-	-3.523** (0.037)	-	-	-
RQ	-	-	-	-	-3.292** (0.025)	-	-
COR	-	-	-	-	-	3.475** (0.049)	-
GOV (PCF)	-	-	-	-	-	-	-4.023*** (0.009)
GDPG	-0.954*** (0.000)	-1.139*** (0.000)	-0.894*** (0.000)	-1.092 (0.002)	-0.731** (0.000)	-1.014*** (0.000)	-1.174*** (0.000)
FD	-2.076** (0.03)	-2.348*** (0.000)	-2.456*** (0.000)	-2.051** (0.025)	-2.065*** (0.000)	-2.096*** (0.000)	-2.117*** (0.000)
TRADE	-2.845** (0.058)	-1.984** (0.045)	-1.562** (0.024)	-2.141** (0.033)	-1.635 (0.135)	-1.547* (0.06)	-3.367** (0.012)
URB	-0.155*** (0.010)	-0.185** (0.032)	-0.173*** (0.000)	-0.161*** (0.000)	-0.169*** (0.000)	-0.185*** (0.000)	-0.191*** (0.000)
INF	0.15*** (0.000)	0.067* (0.097)	0.391** (0.056)	0.079** (0.032)	0.232 (0.112)	0.491*** (0.000)	0.035*** (0.000)
ENV	0.039** (0.148)	0.0287* (0.095)	0.055 (0.235)	0.011 (0.165)	0.0255 (0.285)	0.0667*** (0.000)	0.129* (0.070)
HEXP	-0.761*** (0.000)	-0.871*** (0.000)	-0.432*** (0.002)	-0.854*** (0.000)	-0.765*** (0.000)	0.593* (0.082)	0.961*** (0.000)
PHYS	-3.761*** (0.000)	-3.571*** (0.000)	-2.122*** (0.000)	-4.965*** (0.000)	-3.705*** (0.000)	-2.668*** (0.000)	-4.807*** (0.000)
CST	4.48** (0.000)	5.767*** (0.000)	7.943*** (0.000)	2.687*** (0.000)	6.245*** (0.001)	3.257*** (0.000)	4.387** (0.000)
Diagnostic checking							
Sargan Test	0.536	0.687	0.465	0.604	0.557	0.484	0.679
Obs	735	735	735	735	735	735	735

P values are in parentheses. ***, **, and* indicate statistical significance at the 1, 5 and 10% levels, respectively, units and measurements of variables are presented in Table A.2 in appendix

standard deviation increase of governance. Findings show that the effect ranges from 3.4% to 4.02% points. For the political stability indicator, results show that it appears to be significantly negative at 5% level with a coefficient of 3.52 which confirm the hypothesis that countries with more political stability achieve relatively low-level infant mortality. For law and order, the coefficient is found to be negative 3.81 and shown by column (1) indicating that better law and order contribute to good health. Similarly, the coefficient on the VA is reported as negative 3.77 and significant at 5% significance level. As regard the coefficient of GE, appears significantly negative at 5% level reflecting that good perceptions of the quality of public services, good quality of the civil service lead to a better health status. However, CC is discovered to have a negative relationship with the infant mortality rate, as the coefficient is positive (3.47) and significant at 1% level. The result suggests that high scores of CC are associated with lower level of mortality. As regard the synthetic variable of governance conducted by the PCF method and that contain simultaneously much information on the economic risk, political risk, and social risk, it appears statistically positive at 5% level. Results show that infant mortality per 1000 live births declines by 4.02% for every 1% increase of governance.

Overall, the estimated coefficient of governance shows that there is a clear negative relationship between institutions and infant mortality suggesting that institutions quality may be the main factor of health status. Good governance is important in ensuring effective health-care delivery, and that returns to investments in health are low where governance issues are not addressed. This incites countries to develop regulatory structures that encourage internal incentive structures within financial institutions that promote financial stability across the financial system, to avoid incentive structures that encourage short-term returns or excessive risk-taking. It is because good institutions may provide a favorable environment for cooperative solutions that bring about better economic performance (Dhrifi, 2018a).

As for all other relevant variables of control, they present expected signs and are statistically significant. For the GDP growth, results demonstrate that per capita income growth has a positive and significant effect on infant mortality where a 1% increase in per capita incomes infant deaths by 0.73–1.17 point. Findings indicate also that trade has a positive effect on health status. Indeed, exposure to larger markets increases domestic sectors competitiveness and as a result improves market efficiency leading to economic growth which may by consequence affect positively household health. That means that an increase in the volume of trade leads to a decrease in the infant mortality rate. For the estimated coefficient on health spending, it

appears to be positively related to health variable. The coefficients which range from 0.43 to 0.96 indicating that a standard deviation increase in health expenditure would result in a 0.43–0.96 unit decrease in infant mortality rate. This confirms the hypothesis that health expenditure has a positive and statistically significant impact on infant mortality rate which can be viewed as a determinant factor of household's health. It means also that infant health depends on the level of spending on health. This suggests that an increase in health expenditure implies broader access to health care and services which help decrease mortality rates. This result coincides with those found by Berger and Messer, 2015; Dhrifi, 2018b.

Results show also that the coefficients of inflation appear to be significantly negative showing that a 1% change in the inflation index increases infant deaths by about 0.03–0.49 point. For the coefficients of financial development, it appears to be significantly negative showing advanced efficiency of financial intermediates leads to GDP per capita growth which may by consequence contribute positively at financing the health sector. This result illustrates that better financial development is an important factor in relationships between the financial system and health sector. Regarding the coefficient of the physicians' density variable, it appears to be statistically significant at the 1% level suggesting that a higher density of physicians indicates more easily accessible health care, and should, therefore, correlate with good health. For the estimated coefficient on urbanization, results show that increasing urban population by 1% will decrease infant death's rate by about 0.17% point. As regard the environmental quality variable, the estimated coefficient of CO₂ emission appears to be statistically non significant which contradicts results found by Dhrifi, 2018b.

Finally, results presented above regarding the effects of the financial crisis on the health sector, do not reflect comprehensively the relationship between financial instability and health because they reflect only the direct impacts. While financial shocks may also affect health system indirectly through governance and institutions, which constitutes the object of the following section.

The Indirect Impact of Financial Crisis on Health through Governance Indicators

Bearing in mind that the financial crisis may influence health through the quality of institutions, we use, therefore, different measures of governance to test the empirical relationship between these institutional indicators, environmental degradation, and health. Models (1) to (7) include the interaction terms, constructed as a product of governance indicators and financial crisis.

Table 3: The indirect effect of financial crisis on health through governance

Variables	Dependent variable: Health (IMR's/1000 live births)						
	1	2	3	4	5	6	7
Hit-1	1.654** (0.036)	1.591** (0.027)	2.027** (0.033)	0.972* (0.074)	1.376** (0.021)	2.792* (0.085)	2.102*** (0.004)
FC	-0.069** (0.000)	-0.397*** (0.000)	-0.294*** (0.001)	-0.265*** (0.002)	-0.376*** (0.000)	-0.425*** (0.000)	-0.573*** (0.000)
LO*FC	-1.379** (0.007)	-	-	-	-	-	-
VA*FC	-	-1.198*** (0.001)	-	-	-	-	-
GE*FC	-	-	-2.346** (0.066)	-	-	-	-
PS*FC	-	-	-	-1.674*** (0.008)	-	-	-
RQ*FC	-	-	-	-	-2.672*** (0.006)	-	-
COR*FC	-	-	-	-	-	1.354** (0.127)	-
GOV*FC	-	-	-	-	-	-	-2.827*** (0.000)
GDPG	-2.604*** (0.000)	-1.932*** (0.000)	-2.795*** (0.000)	-1.792*** (0.000)	-2.306** (0.000)	-1.413*** (0.004)	-0.937*** (0.000)
FD	-4.267** (0.032)	-4.935*** (0.000)	-3.391*** (0.000)	-2.929** (0.007)	-3.795*** (0.000)	-4.926*** (0.000)	-2.782** (0.021)
TRADE	-0.928*** (0.008)	-1.066** (0.045)	-0.791*0* (0.001)	-1.173*** (0.000)	-0.668** (0.043)	-1.053*** (0.009)	-0.748** (0.012)
URB	-2.356** (0.039)	-1.528** (0.053)	-0.868*** (0.000)	-1.368*** (0.000)	-1.096** (0.080)	-2.455*** (0.002)	-1.836*** (0.000)
INF	0.426*** (0.000)	0.637** (0.027)	0.671*** (0.006)	0.499** (0.032)	0.536*** (0.003)	0.491*** (0.000)	0.560*** (0.000)
ENV	0.165* (0.108)	0.084* (0.095)	0.096 (0.132)	1.326 (0.110)	1.391 (0.125)	1.958 (0.215)	0.792 (0.176)
HEXP	-1.385** (0.025)	-1.094*** (0.000)	-0.892*** (0.002)	-1.159*** (0.000)	-1.222*** (0.000)	-0.993*** (0.002)	-1.358*** (0.000)
PHYS	-2.365*** (0.000)	-1.783** (0.031)	-3.641*** (0.000)	-2.682*** (0.005)	-3.387*** (0.000)	-1.628*** (0.000)	2.673*** (0.000)
CST	7.365** (0.001)	4.681*** (0.000)	6.969*** (0.009)	5.964*** (0.000)	4.972*** (0.002)	7.928*** (0.006)	6.492** (0.000)
Diagnostic checking							
Sargan Test	0.497	0.591	0.516	0.643	0.597	0.694	0.572
Obs	735	735	735	735	735	735	735

P values are in parentheses. ***, **, and* indicate statistical significance at the 1, 5, and 10% levels, respectively

Table 3 presented above summarize the results regarding the impact if financial crisis on health taking into account governance indicators variables; the estimated coefficients for the financial crisis are still negative and statistically significant and ranges from 0.06 to 0.57. This may be explained by the poor regulatory systems or excessive financial liberalization (Arcand *et al.*, 2012). However, the interaction terms between governance indicators and the financial crisis appear to be positively significant expected of the interaction term between the financial crisis and CC. Institutional quality and the legal framework are likely to affect financial development through the ability of the financial sector to channel resources to finance health sector. This indicates that a better quality of institutions may absorb the magnitude of financial shocks (La Porta *et al.*, 1997). This finding confirms the hypothesis that proper improving governance may reduce the magnitude of financial crisis which helps to decrease infant mortality rate. Moreover, good institutions might, therefore, reduce the health effect of financial instability through their general impact on universal health policy issues, such as universal access to high-quality services and universal health insurance and accessible programs. Good institutions may, in addition, provide information and advice about hygiene, good health practice, and other knowledge useful for the population. These arguments predict the stability of financial system channeled by institutional quality. More precisely, a high level of institutional quality decreases the marginal effect of the financial crisis and therefore reduces the negative effect of financial shocks which implies that

the crisis, through their global range, may revealed the weakness of global governance and brought new long time risks with it. This confirms the hypothesis that good institutions can significantly affect health by improving health care services. Overall, a good governance is deemed to be more able to reduce the negative effect of financial instability, thus contributing on ameliorating health status.

CONCLUSION

While financial liberalization was touted as the surest route to the prosperity of developing countries, it provoked acute financial crises. This has resulted in economic and social crises leading to increased unemployment rates, lower household income, wealth depreciation, leading to health, and social welfare disaster in many countries. The objective of this paper is to investigate the role of financial crisis and governance on healthcare services. More specifically, this work stains to investigate how governance could be considered as an additional channel through which financial instability affects health-care quality. To do so, we use a sample of 35 Asian countries for the period 1996–2016. In terms of methodology, we estimate the health model using the dynamic GMM estimator to deal with potential endogeneity of the explanatory variables. Our empirical results suggest that Asian regions exhibit a monotonically decreasing relationship between financial shocks and health-care quality on the one hand, and a positive relationship between governance indicators and health on the other hand. Moreover, the direct and negative effects of

financial shocks on health may be decreased by indirect and positive effects through better governance. This indicates that the financial crisis impacts health and the magnitude of the effects could be reduced through the presence of good governance and institutional interventions. This implies that good institutions affect directly and indirectly not only financial stability but also health care quality in the Asian countries through the strengthening of the financial system and the efficiency of health public expenditure. It has an important role to play in overcoming the financial crisis and restoring confidence for the secure future.

As a policy implication, certain measures must be taken to reduce the magnitude of financial crisis and to ameliorate health care services: Since governance has an important role to play in overcoming the financial crisis, governments must restore confidence in the future and preventing regulatory overkill that would damage the entrepreneurialism needed to secure future economic growth. Global authorities should continue to work with market participants to develop enhanced governance practices that will underpin other regulatory actions being taken to address health problems. In the event of a financial crisis and when the financial system is unable to finance the health sector, global health funds and programs may become increasingly important as sources of aid. Should this be the case, it will be important, particularly for the Global Fund, to look at country grants in the light of the need to ensure adequate delivery systems ones that benefit the health sector as a whole.

Finally, if the present paper presents a detailed analysis of the direct and the indirect impact of financial crises on health, it does not dissociate (due to the lack of data on the different type of crises) between banking crises, currency crises, and twin-crises.

REFERENCES

- Arcand J, Berkes E, Panizza U. Too Much Finance. IMF Working Papers 12/161, International Monetary Fund; 2012.
- Arellano M, Bond S. Some test of specification for panel data: Monte Carlo evidence and an application to employment equation. *Rev Econ Stud* 1991;58:277-97.
- Arellano M, Bover O. Another look at the instrumental variables estimation of error-components models. *J Econom* 1995;68:29-51.
- Baldacci E, de Mello L, Inchauste G. Financial Crises, Poverty, and Income Distribution. IMF Working Paper WP/02/4; 2002.
- Baltagi BH, Demetriades P, Law SH. Financial development and openness: Panel data evidence. *J Dev Econ* 2009;89:285-96.
- Berger M, Messer J. Public financing of health expenditures, insurance, and health outcomes. *Appl Econ* 2002;34:2105-13.
- Blundell R, Bond S. Initial conditions and moment restrictions in dynamic panel data models. *J Econom* 1998;87:115-43.
- Bonovas S, Nikolopoulos G. High-burden epidemics in Greece in the era of economic crisis. Early signs of a public health tragedy. *J Prev Med Hyg* 2012;53:169-71.
- de Belvis AG, Ferrè F, Specchia ML, Valerio L, Fattore G, Ricciardi W, *et al.* The financial crisis in Italy: Implications for the healthcare sector. *Health Policy* 2012;106:10-6.
- Claessens, Stijn, M. Ayhan Kose, and Marco Terrones, (2009), "What Happens During Recessions, Crunches, and Busts?" *Economic Policy*, October, 2012, 653-700.
- Dhrifi A. Does environmental degradation, institutional quality, and economic development matter for health? Evidence from African countries. *J Knowl Econ* 2018a;???:1-16.
- Dhrifi A. Health care expenditure, economic growth and infant mortality: Evidence from developed and developing countries. *Cepal Rev* 2018b;125:???.
- Fountoulakis KN, Grammatikopoulos IA, Koupidis SA, Siamouli M, Theodorakis PN. Health and the financial crisis in Greece. *Lancet* 2012;379:1001-2.
- Grigorian DA, Martinez A. Industrial growth and the quality of institutions: What do (transition) economies have to gain from the rule of law? *J Inst Innov Dev Transit* 2001;5:73-82.
- Hopkins M. Commentary: What is corporate social responsibility all about? *J Public Aff* 2006;6:298-306.
- Ifanti AA, Argyriou AA, Kalofonou FH, Kalofonos HP. Financial crisis and austerity measures in Greece: Their impact on health promotion policies and public health care. *Health Policy* 2013;113:8-12.
- Karanikolos M, Heino P, McKee M, Stuckler D, Legido-Quigley H. Effects of the global financial crisis on health in high-income OECD countries: A narrative review. *Int J Health Serv* 2016;46:208-40.
- Kaufmann D, Kraay A. Growth Without Governance, Policy Research Working Paper No. 2928, World Bank; 2002.
- Kentikelenis A, Karanikolos M, Papanicolas I, Basu S, McKee M, Stuckler D, *et al.* Health effects of financial crisis: Omens of a Greek tragedy. *Lancet* 2011;378:1457-8.
- Laeven, L., Valencia, F. Systemic Banking Crises Database: An Update, IMF Working Paper 12/163 (Washington: International Monetary Fund), 2012.
- La Porta, R., Lopez-de-Silanes, F., Shleifer, A., Vishny, R., Legal determinants of external finance. *Journal of Finance*, 1997, 52, 1131-1150.
- Law SH, Azman-Saini WN. The Quality of Institutions and Financial Development. MPRA Paper, No 12107; 2008.
- Luc L, Valencia F. Resolution of Banking Crises: The Good, the Bad, and the Ugly. IMF Working Paper No. 10/44; 2010.
- Notara V, Koupidis SA, Vaga E, Grammatikopoulos IA. Economic crisis and challenges for the Greek healthcare system: The emergent role of nursing management. *J Nurs Manag* 2010;18:501-4.
- Reinhart CM, Rogoff K. This Time is Different: Eight Centuries of Financial Folly. New Jersey: Princeton University Press; 2009.
- Rigobon, R., Rodrik, D. Rule of Law, Democracy, Openness, and Income: Estimating the Interrelationships. Manuscript. MIT and Kennedy School, 2004.
- Rodrik D, Subramanian A, Trebbi F. Institutions rule: The primacy of institutions over geography and integration in economic development. *J Econ Growth* 2004;9:131-65.
- Ruckert A, Labonté R. The global financial crisis and health equity: Early experiences from Canada. *Global Health* 2014;10:2.
- Ruckert, A., Labonté, R. The Global Financial Crisis and Health Equity: Toward a conceptual framework. *Critical Public Health*, 2012, 267-279.
- Simou E, Koutsogeorgou E. Effects of the economic crisis on health and healthcare in Greece in the literature from 2009 to 2013: A systematic review. *Health Policy* 2014;115:111-9.
- Stuckler D, Basu S, Suhrcke M, Coutts A, McKee M. The public health effect of economic crises and alternative policy responses in Europe: An empirical analysis. *Lancet* 2009;374:315-23.
- Stuckler D, Basu S, Suhrcke M, McKee M. The health implications of financial crisis: A review of the evidence. *Ulster Med J* 2009;78:142-5.
- Stuckler D, McKee M. There is an alternative: Public health professionals must not remain silent at a time of financial crisis. *Eur J Public Health* 2012;22:2-3.
- Stuckler D, Meissner C, King LP. Can a bank crisis break your heart? *Global Health* 2008;4:1-12.
- Thomson S, Jowett M, Mladovsky P, eds. Health system responses to financial pressures in Ireland: policy options in an international context. Copenhagen, WHO Regional Office for Europe for the European Observatory on Health

Systems and Policies, 2012. http://www.euro.who.int/__data/assets/pdf.
 VANDOROS S, STARGARDT T. Reforms in the Greek pharmaceutical market during the financial crisis. *Health Policy* 2013;109:1-6.

ZAVRAS D, TSANTOU V, PAVI E, MYLONA K, KYRIOPOULOS J. Impact of economic crisis and other demographic and socio-economic factors on self-rated health in Greece. *Eur J Public Health* 2013;23:206-10.

How to cite this article: Jaziri R, Alnahdi S, Dhri A. Public Health Effect of Financial Crisis and Governance: Evidence from Asian Countries. *Int J Sci Stud* 2018;6(9):29-37.

Source of Support: Nil, **Conflict of Interest:** None declared.

APPENDIX

Table A1: List of the sample countries

Afghanistan, Bahrain, Bangladesh, Brunei, China, India, Indonesia, Israel, Iran, Iraq, Japan, Jordan, Kuwait, Lebanon, Malaysia, Mongolia, Myanmar, Nepal, North Korea, Oman, Pakistan, Philippines, Qatar, Saudi Arabia, Singapore, South Korea, Sri Lanka, Syria, Taiwan, Thailand, Turkmenistan, United Arab Emirates (UAE), Uzbekistan, Vietnam, Yemen

Table A2: Units and measurements of variables

Units	Measurements
LO	Low and order
VA	Voice and accountability
GE	Government effectiveness
COR	Control of corruption
RQ	Regulatory quality
PS	political stability and absence of violence
GDPG	Gross domestic product growth
FD	Financial development measured by domestic credit to private sector (% GDP)
TRADE	Sum of exports and imports to GDP
URB	urbanization is measured by the urban population/the total population
INF	Inflation measured by the consumer price index
ENV	Environment al quality measured by CO ₂ emissions in metric tons per capita
HEXP	Health public expenditure
PHYS	Number of doctors per 1000 population
FC	Financial crisis (Binary variable)
H	Health indicator measured by infant mortality rate's per 1000 live births