



Exploration of Role of Economic Globalization on Human Longevity

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ABSTRACT

Recent developments which were coined to the opening up of borders have attracted interest of many researchers from many disciplines. A lot of work can be observed regarding the role of globalization / internationalization on economic growth and social development, this study specifically explores the implications of globalization on the ultimate goal that is life longevity. Adapting from the Kuznets curve, this study proposed a quadratic function of economic globalization and life longevity. The results using panel the ARDL model for the SAARC region, it can be seen that expansion of trade globalization de jure and management of financial globalization de facto and de jure may help them to increase longevity in the long run.



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1. Introduction

Globalization is shortening of distances and integration of people, companies and governments across borders. In the capitalist framework, globalization is the expansion of business from local to national and then to multinational, leading to an increasing number of jobs, access to goods and exploitation of indigenous intellect and resources (Deyshappria, 2018; Samimi & Jenatabadi, 2014). Globalization helps in the economies to connect to global supply chains which reduce their production costs and increase economic growth (Athukorala, 1998). Looking at the effect of globalization on growth, it is visible in the direction of resource allocation (Yurttanceikmaz, Kabadayi, & EMSEN, 2014). Globalization has a positive effect on resource allocation as it increases its efficiency by giving increased return from production factor through international factorial flows (Shair, Shaorong, Kamran, Hussain, & Nawaz, 2021; Yay, 2009). In developing countries globalization increases economic growth by contributing to a lot of factors including domestic markets, investments and productivity etc. (Nawaz et al., 2021). By doing so the poverty level is decreased but income inequality is increased. This perspective is supported by organizations like the World Bank, International Monetary Fund (Rao & Vadlamannati, 2011).

Several studies have advocated that an increase in globalization leads to opening up of opportunities and jobs for the labor specific to the exportable goods or sectors where foreign investors are interested. This process eventually leads to alleviation of poverty (Deyshappria, 2018; Hassan, Bukhari, & Arshed, 2020; U. Qadir, Kemal, Mohsin, & Akhtar, 2000). N. Qadir and Majeed (2018) provided the theoretical foundation of the connection between internationalization and human health. They pointed out that the increase in trade globalization leads to increase in education, trade of medicine and transfer for medical practices, which may lead to increase in life expectancy. But while this is happening there is also an increase in the provision of unhealthy foods, drugs and tobacco and an increase in pollution because of industrialization which may lead to decrease in life expectancy (Chien, Sadiq, Nawaz, et al., 2021; Labonté, Mohindra, & Schrecker, 2011). Similarly ease in trade has increased the flow of drugs, artificial food products, counterfeit items, money laundering and weapons. The volume of the flow of these demerit goods define the intensity of harmful effects of trade or financial globalization.

Life expectancy is regularly utilized as an ultimate indicator for social development of a nation and has relentlessly expanded in the course of recent years in many nations of the world (Kabir, 2008). The government’s efforts to increase the standard of living of their residents eventually exhibit in the form of increased longevity and labor productivity, it denotes the provision and quality of health and education facilities to the masses.

Scatter plot of life expectancy data in Figure 1 shows that there is a general tendency of gradual increase in life expectancy over the time. But while exploring the case of South Asian Association and Regional Cooperation (SAARC) economies in figure 2, it is evident that there are differences in the countries in terms of the average value and also differences in terms of how much they have gained. Countries like Pakistan and Sri Lanka have not gained much while Sri Lanka resides on the top. High strides are visible for Afghanistan, Bhutan and Maldives.

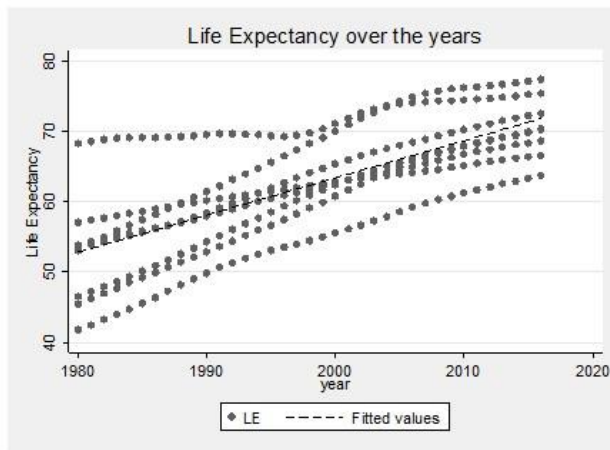


Figure 1 – Growth in Life Expectancy

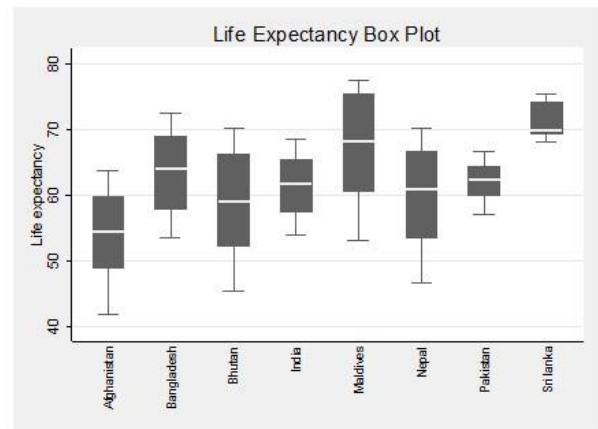


Figure 2 – Life Expectancy differences in SAARC

The Swiss Economic Institute has provided the index of economic and financial globalization which accounts from trade and financial flows respectively. Further it has two sub-types which account for the push and pull factors of globalization named as de facto and de jure estimates (Dreher, 2006; Gygli, Haelg, Potrafke, & Sturm, 2019). Several studies have used these indicators such as (Feld & Voigt, 2003; Khan, Saeed, Ibrahim, & Rizwan, 2018; Kose, Rogoff, Prasad, & Wei, 2003; Pande & Udry, 2006; Samimi, Lim, & Buang, 2011).

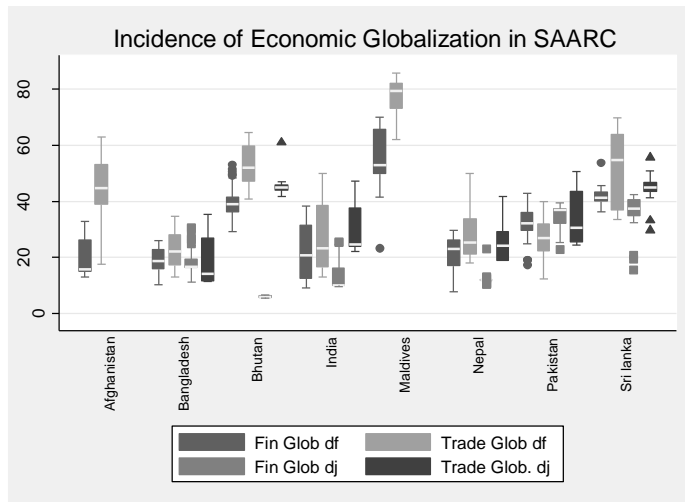


Figure 3 Economic Globalization difference in SAARC

While assessing the incidence of different instruments of economic globalization in figure 3, it is observable that there is a different level of incidence for different indicators of globalization indicating that there is a need to assess the role of globalization in life expectancy.

While exploring the effects of trade and financial globalization on life longevity, there is a dearth of studies which focus on estimating a model which considers the merits and demerits of globalization. This study is focusing on the quadratic function of globalization against longevity which will estimate whether under globalization (for the case of inverted U-shaped relation) or over globalization (for the case of U shaped relation) if fruitful for the case of longevity in the SAARC region. This quadratic transformation is adapted from studies like (Arshed, Anwar, Kousar, & Bukhari, 2018; Hanif, Arshed, & Aziz, 2020).

1.1. Objective of the Study

This study tries to answer the most important question related to humans that is whether globalization can extend human lives? This study is exploring the incidence dependent/quadratic effect of different dimensions of globalization on the longevity of life for the case of SAARC countries.

2. Literature Review

The literature has recognized the importance of globalization and its impact on life expectancy (Alam, Islam, Shahzad, & Bilal, 2020; Prados de la Escosura, 2021; Timothy, 2018). However, these studies are unable to capture the dynamic relationship between life expectancy and globalization. While discussing the dynamics of life expectancy, one must note that all social indicators are related to each other, increase in life expectancy would mean that there is lower incidence of poverty and income inequality and also low incidence of infant mortality rate that is why several studies tend to explore more than one social indicator together (N. Qadir & Majeed, 2018). Hence any literature which deem the negative effect of globalization on poverty, income inequality and infant mortality is also expected to positively affect life expectancy.

Sirgy, Lee, Miller, and Littlefield (2004) demonstrated that globalization produces more social development like more professional opportunities for labor and furthermore relocates starting with one nation then onto the next. Lee and Vivarelli (2006) used trade openness and FDI as indicator of globalization. The after effects of their examination recommended that trade influence social development positively. Bergh and Nilsson (2010b) used the data of 92 countries for 1970 to 2005 to assess the role of economic globalization on life expectancy. Using different estimation techniques authors have provided a robust positive effect of economic globalization on life expectancy. Bergh and Nilsson (2010a) used 80 countries between 1970 to 2005 to assess the role of globalization on income inequality the results showed that economic globalization

increases income inequality in the rich countries. While in their work, Bergh and Nilsson (2011) the role of economic globalization on poverty using around 100 countries. The results indicated that negative effect of economic globalization on poverty.

There are several studies which have tested the role of globalization on poverty as an indicator of social development (Bhatti, Chaudhry, & Bashir, 2021; Heshmati, 2004, 2007; Neutel & Heshmati, 2006), whereby increase in globalization will reduce the cost of transport and communication which may lead to better health outcomes of the people (Shafiq & Gillani, 2018).

Alam, Raza, Shahbaz, and Abbas (2016) analyzed the impact of trade openness and foreign direct investment on life expectancy by utilizing time series information for Pakistan over the time period of 1972-2013. The outcomes recommended that there is growth in life expectancy with rise in trade openness. N. Qadir and Majeed (2018) estimate the effect of trade liberalization as an indicator of trade globalization on the incidence of life expectancy at birth for Pakistan between 1975 to 2016. The results prompted that there is a negative effect of trade liberalization on the life expectancy where authors reasoned that it is due to the increase in trade of illegal and demerit goods. Munir, Meo, Younas, Arshed, and Jamil (2021) and R. M. Amjad, Rafay, Arshed, Munir, and Amjad (2021) also confirmed this case where higher foreign resource dependence and capital flight leads to lower growth of the economy.

Deyshappria (2018) studied 119 countries in order to assess the role of overall globalization on the incidence of \$1.90 poverty. The overall and region wise results prompted that there is a robust negative effect of globalization on poverty level (Bhatti & Fazal, 2020). Hassan, Bukhari, et al. (2020) assessed 73 developing countries between 2005 and 2016 and confirmed that there is a negative effect of trade globalization on incidence of relative poverty.

Arshed, Anwar, Hassan, and Bukhari (2019); Arshed et al. (2018) used the growth model approach to employ the controlling variables like labor force, physical capital and development expenditures to account for social development in SAARC region and Asian region respectively. According to these studies, an increase in these growth inputs is expected to have a positive effect on social development (Fazal, Gillani, Amjad, & Haider, 2020). But in the countries where labor and capital are already abundant, Solow (1956) proposed that an increase in inputs might lead to diminishing or even negative returns.

Leal and Marques (2019) differentiated between the defacto and djure indicators of globalization while assessing its effect on standard of living in EU countries. The results pointed out that defecto indicator is dominant in the high globalized countries while dejure is dominant in low globalized countries in terms of its effects. Bataka (2019) assessed 40 sub-Saharan African countries between 1980 to 2015. According to the study the defacto indicators are growth promoting while dejure indicators are undermining growth.

2.1. Development of Globalization' Perspective and Theories and Its Role of Social Development

In order to grasp theoretical connections between globalization and social development, the paper is classified into two approaches to determine the current standing in the body of knowledge. First perspectives of this field are discussed: *hyperglobalist, skeptical, and transformationalist*. Secondly the major theories are discussed under the sub fields of globalization – *trade theory, social theory, modern social theory, world system theory, modernization theory, nationalism, capitalism, neo-liberalism theory, cosmopolitan theory* etc. – which are being used in multiple fields by researchers since last three years.

Talking about precursors, one of the views claims globalization can be traced back to ancient trade documents found of the Indus valley civilization. As the beginning of this field started from trade document; therefore, economic perspective may be supposed to be a key building block of globalization. Later, industrial revolution replaced humans with machines that built the capacity to produce more. The small producer developed small units of businesses in

other parts of the world on a larger scale called MNCs (Multinational Corporations). It facilitates efficient utilization of resources enabling us to produce more with low cost of production.

Globalization is a phenomenon of multidisciplinary debate and an international process. In this field, there are numerous authors with opposite views. Numerous definitions emphasize on dimensions – i.e. economic, social, political, geographical and psychological. International integration is possible by means of removing artificial barriers of flow of goods and services and moving freely the factor of production around the world market, which is possible through modern development of transportation and communication means. Not the least, since the last three decades technology has been a key driving force of globalization.

Measuring globalization will remain a critical challenge for researchers. Its measurement may cover activities or policies. Cultural, ecological, political and social aspects are considered as dimensions of measurement. This can give a sense how challenging that would be to discuss interdisciplinary fields while discussing globalization (Martens, Caselli, De Lombaerde, Figge, & Scholte, 2015).

In the first half decade, hyperglobalist work of Ohmae (1995) remained focused by other researchers. In response to this, the opposing view authors discussed a globalization skeptical perspective. (Scholte, 1999) gave his views by articulating the intermediary views on both mentioned perspectives, which is called transformationalist perspective.

2.1.1. Hyperglobalist Perspective

It is a new epoch characterized by lowering the authority of the nation state, building on the concept of global market and economics is becoming denationalized. The Brexit in UK started a new debate of nationalism that foster to focus on internal social development (Keating, 2020). This transition of hyperglobalism has manipulating the world economy with dynamic implications on human development. However, there are two perspectives, whether it is beneficial for societies, first, Neo- liberalism believes that economic benefits are enormous because countries have comparative advantage and growth one way or another in global the economy, and on the other hand, neo-Marxist believe that these economic changes are promoting inequality within and between the countries.

2.1.2. Skeptical Perspective

Current international processes are fragmenting and regionalized rather than globalized. This view disagrees with whether segmentation of the world is becoming irrelevant. The world is cleavage into different regions, and third world countries are only suffering and facing discrimination. Global capitalism is a myth, and FDI (foreign direct investment) is in the control of few advanced economies (Shafiq, Hua, Bhatti, & Gillani, 2021). Benefits are only associated with these regions which these multinationals belong.

2.1.3. Transformationalist Perspective

Hyperglobalist perspective said that national government power is decreasing, and skeptical says it is increasing, but transformationalist agreed that the power is changing but does not emphasized on growing or decreasing – which is oversimplification according to them. New word architecture is being emerged different from erosion of old pattern of stratification stated by hyperglobalist perspective. Technological advancement transforms societies and cultures of the world. For instance, shape of new business models such as Amazon, Alibaba Group and other digital platform that transform the societies at large (Wu & Gereffi, 2018). Moreover e-commerce businesses emerge due to COVID19 and most of the world retail industry shifted their businesses online (Bhatti & Nawaz, 2020; Chien, Sadiq, Kamran, et al., 2021; Chowdhury, Akter, Chowdhury, Ahsan, & Arafat, 2021; Hao, Shah, Nawazb, Barkat, & Souhail, 2020). They took this as an opportunity and transform themselves according to new situation. Greater factors are affecting to globalization with uncertain outcomes. Therefore, transformation aspect of

globalization believes that the change in the society is due to change in socio-economic dynamics.

2.1.4.Theories in Economic Perspective

In the domain of economic globalization, normative discussion about efficiency and inequality have been discussed. Moreover, this is interconnected with social and cultural aspects. There are sociological theories that discuss aspects of economic globalization which are required to be known. Economic globalization all started from the late 18th century with the origin of capitalism, which was then simply known and favored by wealthy men.

According to economic perspective, there are numerous authors talking about the importance of globalization phenomena. Many of them have opposite views of globalization. This section covers the present debate of globalization. First of all, if a line divides the problems for and against the concept of globalization, then the trade theory would support that globalization has benefits as it explains how open trade reduces inequality. It is noted that foreign direct investment (FDI), an essential trade has a significant effect on inequality. Asteriou, Dimelis, and Moudatsou (2014) found that capital inflow by FDI increase account openness that is the driving force of inequality (Yang & Shafiq, 2020). This result has a theoretical gap in trade theory. Because in advanced countries, this relationship reverses. It has observed that contradicted views on inequality by authors such as in case of Lin and Fu (2016) who advocated that significant reduction in income inequality in autocracies and democracies. The discussion of trade theory has been shifted from country centric to firms. In this context, firms can reduce fixed trade costs, and can reduce uncertainties that leads to higher productivity, innovation and welfare (A. Amjad, Ehsan, Amjad, & Gillani, 2021; Ciuriak, Lapham, Wolfe, Collins-Williams, & Curtis, 2015). The mechanisms of economic theory focus on foster growth and reducing poverty through specialization, competition, scale economies, incentives for macroeconomic stability and innovation (Ahmad, Bashir, & Hussain, 2018; Bergh & Nilsson, 2014).

In parallel, regional disparities debate is developed. New economic geography theory focuses on economic integration has an influence on spatial distribution of income. According to Ezcurra and Rodríguez-Pose (2013) higher disparities have been observed in countries which have more economic integration with rest of the world. In this study, statistically positive relationship between economic globalization and the magnitude of regional disparities are drawn. Moreover, economic globalization is greater in low and middle-income countries and regional disparities are higher as compared to high-income countries.

Economic activities widely cover financial transactions. Modern theory of financial globalization has been applied to emerging markets lifting cross border restrictions of international financial transactions. Developing countries would benefit from this activity for benefiting from capital inflows (Maggiori & Gabaix, 2015). Financial globalization effect depends upon level of development, domestic savings, productivity and quality of institutions.

2.1.5.Theories of Sociology Perspective

Social and humanities sciences try to see globalization as a process which has possible consequences on the autonomy of people. The World Trade Centre attack had shown deep concern of national security. Talking globalization as a process, it is now restructuring itself and affecting people the way they live and interact with each other. This profound change in human life raised the question of security and the role of authorities. The upcoming environmental challenges are raising fundamental questions of the quality of life of people. Globalization is a process which has changed the current shape of societies. There are two possible outcomes of these changes: first people will get benefits, and second, they may lose autonomy.

3. Methodology

3.1. Sample

To make an inquiry into the subject, this research therefore aims to examine the group of selected Asian countries that are: Afghanistan, Bhutan, Bangladesh, Maldives, India, Nepal, Sri Lanka and Pakistan. Arshed et al. (2018) stated that the SAARC region is concentrated with high poverty, population density and malnutrition. The time period selected is between 1980-2018.

3.2. Variables and Data Sources

The variables used in this study are discussed in Table 1. The data of financial and economic globalization are measures using de facto and de jure measures. The secondary data has been collected from KOF globalization index and World Development Indicators. Since all the variables except the labor force is in percentage form, hence the labor force variable is transformed into natural log form in order to control for heteroscedasticity because of the difference between measuring units/scale (Benoit, 2011).

Table 1
Variable Descriptions

Variables Name (Symbol)	Variable definition (Transformation)	Source
Life Expectancy (LE)	Life expectancy shows how much longer will an infant live during his lifetime.	World Bank (2019)
Physical Capital (K)	GFCF contains development of the land, machinery and buying of equipment, road development and railway development also contains development of offices, hospitals, schools and buildings.	World Bank (2019)
Physical Labor (L)	Labor force includes individuals aged fifteen or more who supply labor for the development of goods and services in a specific time period. This contains all sorts of people who are currently working or who are still trying to look for a job. The size of labor force varies as individuals who work might leave or enter. (Natural Log)	World Bank (2019)
Human Capital (DE)	Development expenditure (% of GDP), includes all kind of expenditures for an economy by government like health and education expenditures etc.	World Bank (2019)
Financial Globalization De Facto (FGDF)	Financial globalization de facto is average of FDI, Portfolio investment, international debt, international reserves and international income payments	KOF globalization index
Financial Globalization De Jure (FGDJ)	Financial globalization de jure is average of investment restrictions, capital account openness, and international investment agreements	KOF globalization index
Trade Globalization De Facto (TGDF)	Trade globalization de facto is imports and exports of goods % of GDP	KOF globalization index
Trade Globalization De Jure (TGDJ)	Trade globalization de jure is the average of trade regulations, trade taxes, and trade agreements	KOF globalization index

3.3. Theoretical Model

The estimation function uses Solow (1956) model and adapted physical labor and physical capital as controlling factors. Based on the extended growth model by Mankiw, Romer, and Weil (1992), this study uses development expenditures. Kuznets (1956) proposed a quadratic function model of income inequality and development which was furthered for human capital Kuznets curve (Arshed et al., 2018), energy Kuznets curve (Hanif et al., 2020) and environment Kuznets curve (Arshed et al., 2018; Hassan, Meo, Abd Karim, & Arshed, 2020; Mohsin, Kamran, Nawaz, Hussain, & Dahri, 2021). This study included the quadratic effect of globalization against life longevity and discussed the quadratic relationship using the (Haans, Pieters, & He, 2016)

framework. N. Qadir and Majeed (2018) discuss that with the increase in trade openness there are two simultaneous changes occurring. First openness leads to an increase in access to knowledge, awareness and provision of health-related goods which increases health outcomes (Gillani, Shafiq, & Ahmad, 2019; Tahir & Majeed, 2021). And second, openness leads to increase in pollution because of an increase in exports and an increase in imports of unhealthy food culture and availability of drugs and tobacco. The interaction of both dynamics leads to a quadratic function between globalization and life expectancy. In this study, the variables are transformed into natural log form in order to experience non-linearity in the elasticities (Benoit, 2011). The equations derived to estimate the quadratic function of globalization are as following.

$$LE_{it} = \alpha_i + \beta_1 L_{it} + \beta_2 K_{it} + \beta_3 DE_{it} + \beta_4 FGdj_{it} + \beta_5 FGdj_{it}^2 + \varepsilon_t \quad (1)$$

$$LE_{it} = \alpha_i + \beta_1 L_{it} + \beta_2 K_{it} + \beta_3 DE_{it} + \beta_4 FGdf_{it} + \beta_5 FGdf_{it}^2 + \varepsilon_t \quad (2)$$

$$LE_{it} = \alpha_i + \beta_1 L_{it} + \beta_2 K_{it} + \beta_3 DE_{it} + \beta_4 TGdj_{it} + \beta_5 TGdj_{it}^2 + \varepsilon_t \quad (3)$$

$$LE_{it} = \alpha_i + \beta_1 L_{it} + \beta_2 K_{it} + \beta_3 DE_{it} + \beta_4 TGdf_{it} + \beta_5 TGdf_{it}^2 + \varepsilon_t \quad (4)$$

This study will plot the post regression partial quadratic function. This process includes the descriptive statistics and the coefficients of the variable in the quadratic function. Previous studies only confirm the presence of U shaped and inverted U-shaped function based on coefficients only, which is not correct as suggested by (Haans et al., 2016).

3.4. Estimation approach

When the data series have long enough time periods, then it is expected that the present value of the data will get feedback from past values. This phenomenon is against the assumption of standard OLS (Gujarati, 2003). This study has used panel variants of ADF and PP unit root test to identify whether the series are stationary (independent from past) or not.

Since this study is using macro-economic variables which are sluggish to change and the time periods are more than 20 which leads this study to conclude that the relationship between globalization and life longevity in the panel data setup will be dynamic (Pedroni, 2008). Hence this study will opt for the Panel ARDL approach proposed by Pesaran, Shin, and Smith (1999).

4. Estimation Results

This section will estimate the provided data to achieve the objectives set by the study.

4.1. Descriptive Statistics

Following table 2 provides the descriptive statistics of the variables which are proposed in the study. Here we can see that all the variables have the mean value higher than the standard deviation which shows that they are under dispersed, whereby selected countries are following in a closed group pattern. Further all of these series have a positive growth rate value indicating that there is a meager but a certain pattern of increase. Lastly other than LE, FGDF, and TGDJ all of the variables are statistically non-normal (Jarque & Bera, 1980), but since the overall sample is above 30, the data can be assumed asymptotically normal (Groebner, Shannon, Fry, & Smith, 2008).

Figure 4 provides the graphical association between the indicators of economic globalization and the life expectancy. Here all the scatter plots have linear fit lines which are positive slope indicating that all four indicators of economic globalization have a positive association with life expectancy.

Table 2
Descriptive stats

	LE	LLF	LK	DE	TGDF	FGDF	TGDJ	FGDJ
Mean	65.25	16.84	3.21	3.93	36.00	30.74	34.11	22.56
Median	64.87	17.19	3.20	3.58	32.17	29.37	32.44	20.32
Std. Dev.	4.62	1.91	0.40	2.38	14.08	9.19	10.89	11.66
Growth	0.01	0.01	0.01	0.01	0.01	0.02	0.02	0.01
Skewness	0.33	-0.61	0.52	1.00	0.71	0.33	-0.18	0.166
Kurtosis	2.38	3.50	2.58	3.80	2.41	2.32	2.27	1.58
Jarque-Bera	5.05	10.77	7.74	28.85	14.57	5.45	3.70	11.72
Probability	0.08	0.00	0.02	0.00	0.00	0.06	0.16	0.00
Observations	158	158	158	158	158	158	158	158

Table 3
VIF Matrix

Variables	LE	K	L	DE	FGdf	TGdf	FGdj
K	1.22						
L	1.03	1.23					
DE	1.08	1.01	1.16				
FGdf	1.19	1.10	1.23	1.02			
TGdf	1.30	1.51	1.32	1.00	2.53		
FGdj	1.01	2.01	1.22	1.01	1.00	1.04	
TGdj	1.36	1.16	1.08	1.06	2.51	1.67	1.01

Table 4
ADF and PP Test

ADF unit root test						
At Level (with intercept)			At First Difference (with intercept)			
Variables	T - test	P- Value	Variables	T - test	P- Value	
LE	41.7	0.00	LE	26.1	0.05	
L	12.5	0.70	L	45.1	0.00	
K	13.67	0.47	K	140.72	0.00	
DE	32.09	0.01	DE	131.82	0.00	
TGDF	15.93	0.46	TGDF	136.65	0.00	
TGDJ	10.66	0.56	TGDJ	90.29	0.00	
FGDF	24.69	0.07	FGDF	148.33	0.00	
FGDJ	27.84	0.01	FGDJ	122.40	0.00	
Phillips - Perron unit root test						
At Level (with intercept)			At First Difference (with intercept)			
Variables	T - test	P- Value	Variables	T - test	P- Value	
LE	47.40	0.00	LE	24.09	0.07	
L	23.60	0.10	L	46.10	0.00	
K	19.11	0.16	K	173.92	0.00	
DE	26.70	0.04	DE	123.06	0.00	
TGDF	15.79	0.47	TGDF	150.03	0.00	
TGDJ	12.63	0.40	TGDJ	94.75	0.00	
FGDF	42.98	0.00	FGDF	221.28	0.00	
FGDJ	27.52	0.01	FGDJ	105.10	0.00	

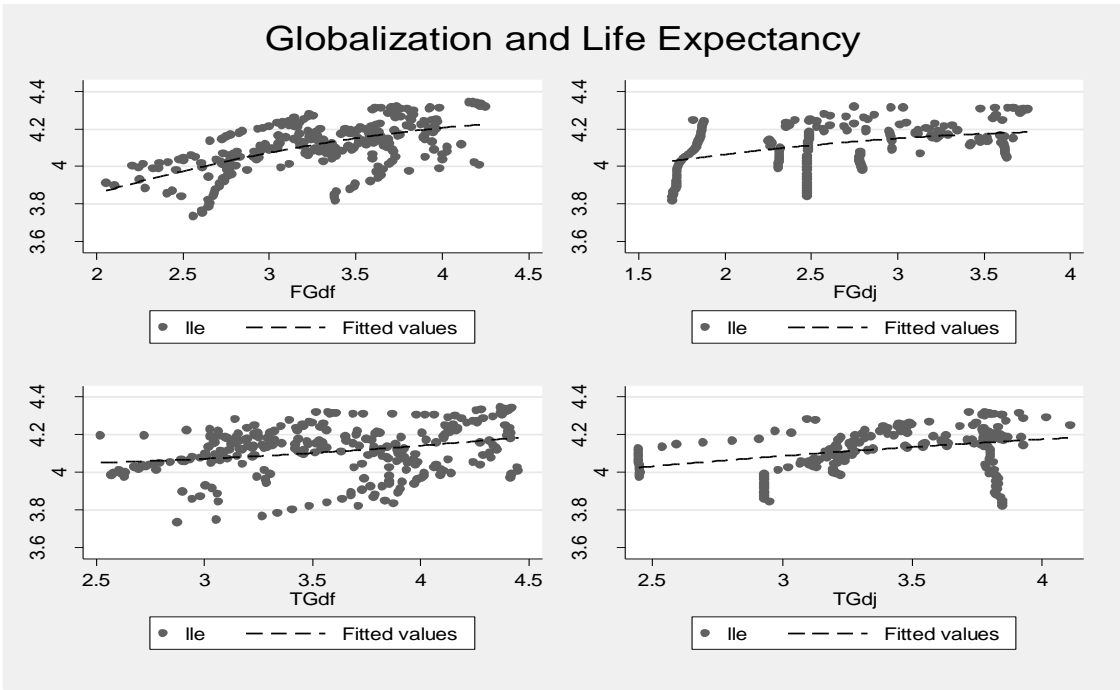


Figure 4: Graphical Association between Globalization and Life Expectancy

Gujarati (2003) iterates that the variance inflation factor (VIF) among the independent variables must be less than 10 so that we can rule out the evidence of multicollinearity. Table 3 provides the VIF estimates where none of them is higher than 10. Since table 4 states that some of the variables are stationary and some are non-stationary, this study cannot use the OLS approach and has to resort to the Panel ARDL model which can entertain a mixture of stationary and non-stationary variables. Further table 5 provides the significant values of KAO panel cointegration test, which confirms that there is a possible long run relation between the selected variables.

**Table 5
KAO Panel Cointegration Test**

Model no.	KAO Test	Probability
1	1.47	0.07
2	-2.28	0.01
3	-2.16	0.01
4	-1.77	0.03

Table 6 reports the long run coefficients of panel ARDL. Here we can see that in the long run for the selected countries in SAARC, increase in labor has a positive effect on the life expectancy for all instruments of economic globalization as suggested by (Arshed et al., 2018). While increase in physical capital has a negative effect on life expectancy as suggested by (Solow, 1956), while it is insignificant for model 1. Further development expenditures have the negative significant effect for model of FGdf and TGdf while it is insignificant for other models.

For the case of economic globalization which is instruments using four indicators, other than trade globalization de jure (TGDJ), the level coefficient is positive and the square coefficient is negative for the case of remaining three indicators i.e. FGDF, FGDJ, and TGDJ. This prompts that there is a hint of an inverted U-shaped relationship between life longevity and FGDF, FGDJ, and TGDJ, while there is a U-shaped relationship between life longevity and TGDJ.

Summing up an initial stage increase in financial globalization (de facto and de jure) and trade globalization de jure has a positive effect on life longevity, as increase in the globalization provides access to resources, procedures and ideas which reduces poverty (Deyshappria, 2018), while trade globalization de jure have a negative effect. Further at high levels, increase in

financial globalization (de facto and de jure) and trade globalization de jure has a negative effect on life longevity (N. Qadir & Majeed, 2018) while trade globalization de jure has a positive effect.

Table 6
Long Run Coefficients

	Model 1 Coef. (Prob.)	Model 2 Coef. (Prob.)	Model 3 Coef. (Prob.)	Model 4 Coef. (Prob.)
L	0.11 (0.00)	0.15 (0.00)	4.056 (0.00)	0.17 (0.00)
K	0.52 (0.23)	-0.50 (0.01)	-0.84 (0.00)	-0.10 (0.69)
DE	-0.06 (0.29)	-0.04 (0.00)	-0.09 (0.01)	-0.04 (0.18)
FGdf		0.16 (0.00)		
FGdf ²		-0.021 (0.00)		
FGdj				0.03 (0.07)
FGdj ²				-0.005 (0.02)
TGdf	-0.04 (0.04)			
TGdf ²	0.001 (0.0.75)			
TGdj			11.49 (0.00)	
TGdj ²			-1.26 (0.00)	
Obs	158	158	158	158

Figure 5 to 8 traces the post regression partial quadratic function using the descriptive statistics and coefficients of globalization and squared globalization. Figure 5 shows that for the case of trade globalization de facto, there is an inverted U-shaped relationship with a longer right tail. This means that natural increase in trade openness increases life expectancy briefly but it leads to a higher reduction in life expectancy. Further, figure 6 shows the case of trade globalization dejure, here the policies to promote trade follows a U-shaped relationship with life expectancy with longer right tail. This shows that if trade is regulated in targeted markets, then these competitive markets (Hameed, Arshed, Yazdani, & Munir, 2021) will have a higher potential to improve the life expectancy in the longer horizon (Kalim, Arshed, & Ahmad, 2021).

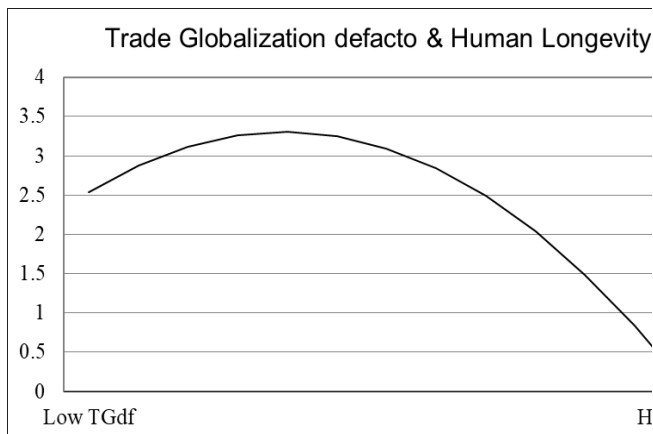


Figure 5: Quadratic Fit for defacto Trade Globalization

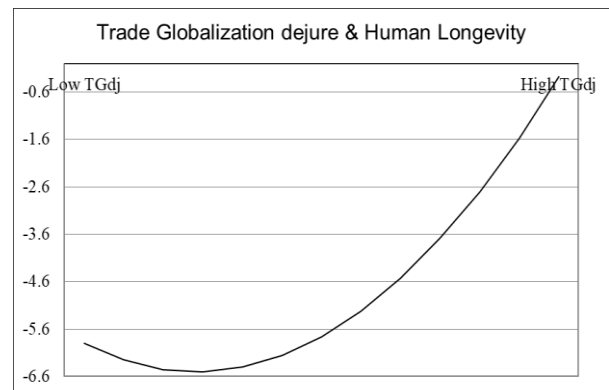


Figure 6: Quadratic Fit for dejure Trade Globalization

Figure 7 shows the case of financial globalization defacto, which is following inverted U-shaped relationship based on the coefficients. But the figure shows that based on the current data, increase in financial globalization is not able to increase the unhealthy goods trade which forces life expectancy to fall. Further figure 8 provides the inverted U-shaped relationship between financial globalization dejure and life expectancy. Here it is evident that the policies focusing on boosting the financial flows do not target the way this translates into consumption. Hence higher financial flows boost the imports of unhealthy fast-food culture which diminishes the life expectancy, further it also undermines our productivity while making us dependent on foreign resources (Munir et al., 2021).

Table 7 reports the short run coefficients of the panel ARDL model. After observing the negative significant coefficient of ECT (-1), it can be stated that the quadratic model of

globalization is converging overall. Policymakers can intervene in economic globalization in expectation to increase life longevity. In the short run only FGdJ is forming a U-shape relation with life longevity, it indicates that government policies to facilitate financing show results on life longevity.

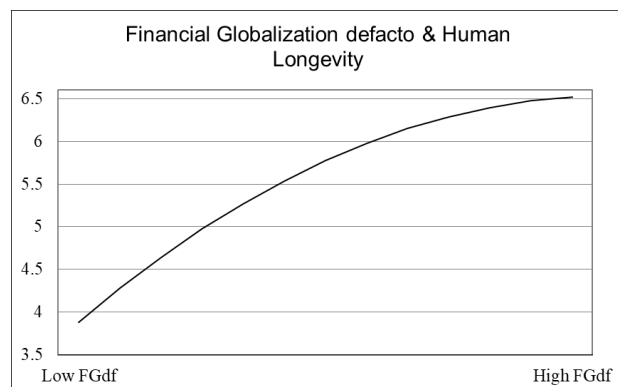


Figure 7: Quadratic Fit for defacto Financial Globalization

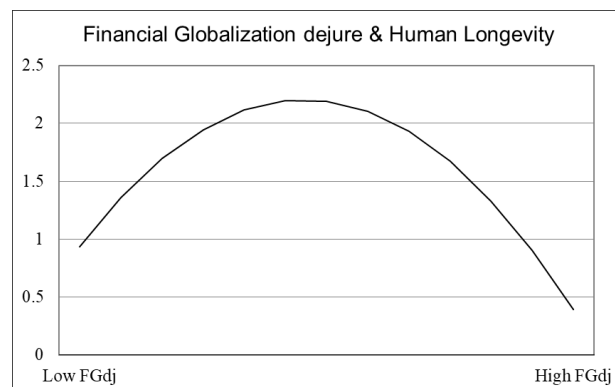


Figure 8: Quadratic Fit for dejure Financial Globalization

Table 7
Short Run Coefficients

	Model 1 Coef. (Prob.)	Model 2 Coef. (Prob.)	Model 3 Coef. (Prob.)	Model 4 Coef. (Prob.)
ECT(-1)	-0.01 (0.00)	-0.02 (0.00)	-0.002 (0.01)	-0.01 (0.00)
L	0.05 (0.65)	0.13 (0.23)	0.17 (0.08)	0.08 (0.53)
K	-0.03 (0.83)	-0.05 (0.12)	0.03 (0.75)	0.08 (0.24)
DE	-0.02 (0.15)	-0.01 (0.52)	-0.01 (0.22)	-0.02 (0.34)
FGdf		0.28 (0.55)		
FGdf ²		-0.03 (0.58)		
FGdj				-0.23 (0.03)
FGdj ²				0.03 (0.04)
TGdf	-0.0005 (0.99)			
TGdf ²	0.001 (0.96)			
TGdj			0.35 (0.12)	
TGdj ²			-0.004 (0.17)	
C	0.045 (0.00)	0.05 (0.00)	-0.07 (0.02)	0.05 0.00

5. Conclusion and Policy Implication

The phenomenon of globalization has seen its aftereffects in all disciplines of life. This process takes economies beyond national borders, ties together economies, cultures, technologies, and thus economic, social and political dimensions that enhance interdependence among countries. This paper explored the role of different indicators of economic globalization on the social development of the SAARC region.

The theories discussed in this study advocate that globalization, if not managed properly, can be a friend and a foe. Adapting from the Kuznets, it was hypothesized that small and high incidence of globalization may have different effects. For this, the quadratic transformations were utilized in the functional form. This study has used the panel ARDL model to estimate the dynamic effect of changes in economic globalization on life longevity for the period of 1980–2018. The significant and negative value of ECT(-1) for all models except TGdf denotes that all the models are converging in the longer run.

The results proposed that trade globalization de jure follows a U-shaped relationship while others are following inverted U-shape relationship. The shape of the model is defined by the respective positioning of the two forces. Policymakers should ensure that an increase in globalization is promoting the access to information and access to healthy goods and health promoting culture and services. This way we can use the outcome in our favor. Hence for the

former, we should ensure that there are maximum efforts to reduce the trade barriers to facilitate trade. While overall volume of trade and financial flows must be managed to restrict artificial, illegal and demerit commodities. Further, for the case of developing and corruption prone economies like SAARC over liberalization of the financial market may be risky as any shock will lead to capital flight from the foreigners and local people. Hence this study urges that the financial globalization de facto and de jure must be managed to ensure that they maximize the social outcomes.

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