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Article

Spatial impacts of economic globalisation on structural change : a panel data analysis of ASEAN member nations

Pakistan journal of applied economics

Provided in Cooperation with:

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Reference: Sarwar, Saima/Aslam, Raees (2023). Spatial impacts of economic globalisation on structural change : a panel data analysis of ASEAN member nations. In: Pakistan journal of applied economics 33 (2), S. 193 - 209.
<http://www.aerc.edu.pk/wp-content/uploads/2024/02/Paper-1022-Saima-Sarwar-IV.pdf>.

This Version is available at:

<http://hdl.handle.net/11159/703189>

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SPATIAL IMPACTS OF ECONOMIC GLOBALISATION ON STRUCTURAL CHANGE: A Panel Data Analysis of ASEAN Member Nations

Saima SARWAR* and Raees ASLAM**

Abstract

This study has analysed spatial effects of economic, social and political globalisation on structural change while controlling for financial access and human capital in eight ASEAN member nations: Brunei Darussalam, Cambodia, Indonesia, Malaysia, Philippines, Singapore, Thailand and Vietnam. Data has been taken from the WDI Database, KOF Index of Globalisation, General Statistics Office of Vietnam and Statistics Department Singapore from 1993 to 2014. Panel Spatial Static SDM has been used to find out long-run spatial impacts of variants of globalisation and covariates on structural change. Empirical findings highlight the existence of long-run spatial negative effects of economic and political globalisation on own country's structural change and positive impacts of human capital on structural change. The cross-border spillover effects of neighbouring members on structural change of neighbour economy is such that economic globalisation has a negative, whereas social globalisation has a positive impact. The study recommends increasing human capital stock as it has a positive impact on driving structural change in ASEAN member nations in this study.

Keywords: Structural Change, Globalisation Trade, Human Capital, Financial Access, Spatial Modeling.

JEL Classification: L16, F63, J24, F36, C31.

I. Introduction

Washington consensus led to the shift in the policies of three main transnational institutions: World Bank, International Monetary Fund and World Trade Organization, among others, which have far-reaching impacts on economic performance across the globe. That shift was based on the agenda of liberalism, focusing mainly on globalisation, also known as openness and de-regulation of the economies. Economic globalisation refers to the increase in interdependence of economies across the globe owing to growth in a scale of cross-border trade of commodities and services, flow of inter-

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national capital and wide and rapid spread of technologies. The heterogeneous impacts of globalisation on economic performance across nations have developed three separate schools of thought on the globalisation-led growth nexus; globalisation increase economic growth [Dollar (1992), Dreher (2006), Edwards (1998) and Sachs, et al., (1995)] globalisation retards economic growth [Alesina, et al., (1993), Krugman (1993), Rodriguez and Rodrik (2000), Rodrik (1998)] and globalisation impacts growth only in the presence of complementarities [Borensztein, et al., (1998), Calderón and Poggio (2010), Chang, et al., (2009)]. Empirically, the acceleration and deceleration of economic growth have been affected by a wide gradient of factors, of which structural change has great importance.

Structural change has been defined as inter-sectoral shifts of resources from primitive to modern within the economy through demand pulls effects, cost-push effects or both. Demand hypotheses entail differential income demand elasticity across primary, secondary and tertiary sectors, resulting in demand-driven structural change [Rowthorn and Ramaswamy (1999)]. Supply-side dynamics entail differential impacts of inter-sectoral changes in technology in value-added outputs across sectors, the differential in wages paid across sectors and the shifting of labour and capital across sectors (primary, secondary and tertiary). Globalisation has turned out to have a significant impact on the economic performance of nations due to openness in macroeconomic, social and political facets, dubbed as economic, political and social globalisation. Theoretically, variant facets of globalisation can have significant conducive or retarding impacts on structural change depending on within-border and cross-border factors.

Association of South East Asian Nations (ASEAN) members are geographically loosely bound nations connected through numerous threads, among which economic integration is very important. ASEAN has rolled out numerous projects to strengthen the association: free-trade agreements (AFTA), the ASEAN Capital Market Forum (ACMF), the Monetary Union, etc. These major programs focus on reducing growth and development gaps among member nations through the Initiative for ASEAN Integration (IAI). For materialising IAI, structural transformation and economic growth of ASEAN members are the prime requisites. The declared objective of ASEAN is to improve economic performance, which can be realised by many alternatives, of which structural change has been analysed here. The conventional wisdom, as professed by Neo-Classicals, is to let technological evolution alone improve aggregate output levels over time, whereas the contrasting view is of Structuralists who place structural change as the engine of economic growth and economic development. Not demeaning the importance of internal factors, there is a stronger urge to estimate cross-border impacts of the same variables.

Economic globalisation builds on trade openness complemented with the least restrictions regarding effective and average tariff barriers, capital and liabilities stocks, and FDI flows. Political globalisation builds on political integration with the world through opening embassies and becoming part of transnational agreements. Social globalisation entails social integration through personal contacts and the free flow of

information. Given the composition of globalisation, there are possibilities of having the various impacts of these facets of globalisation on structural change within member nations and cross-border impacts on structural change of neighbouring member(s). Beyond doubt, other factors affect structural change, but this study investigates the spatial impacts of variants of globalisation, financial access and human capital only.

The study sets out two objectives — estimate the Structural Change Index for ASEAN member nations and estimate long-run spatial own-country effects and cross-border spatial effects of three facets of globalisation, human capital and access to finance on structural change of own country in ASEAN member nations.

The rest of the paper is organized so that Section II provides a review of globalization and structural change; Section III outlines the objective of the study. The theoretical framework is discussed in Section IV, while Section V presents the study's data. Section VI concludes the paper, and Section VII provides some recommendations.

II. Globalisation and Structural Change Review

Structural change has been defined in several ways, some fall into economic growth and development, while others do not [Machlup (1990)]. Palgrave Dictionary of Economics defines structural change as a change in the weights of different macro indicators of the economy. SC and EG have been debated among Classical economists, but there is ambiguity in the direction of causation between SC and EG [Silva and Teixeira (2008)]. However, Neo-Classicals and New Growth Theorists emphasise technology as a harbinger of EG and assume sectoral shares to remain static. There have been attempts in the recent past to incorporate SC into the EG framework, for instance, the work of Bonatti and Felice (2008), Foellmi and Zweimuller (2002), and Ngai and Pissarides (2008).

A review of the extant literature on globalisation reveals that it has no unidirectional impact. In the wake of globalisation, it was assumed that international trade and competition among producers would boost internationally. However, in resource-rich economies, globalisation has negatively impacted structural change and productivity [M. S. McMillan and Rodrik (2011)]. International competition has not only driven such economies out of the export market, but rather, such economies now rely more on imports. A similar finding is from Africa, where resource-rich economies have started struggling to export after globalisation [(M. McMillan, et al., (2014)]. Such economies need improved human capital to expedite economic growth and structural change in the presence of globalisation. Another stream in the literature shows that globalisation impacts structural change and productivity in economies differently, depending on their average income levels. It has positively impacted productivity levels in high-average-income economies: for the Brazilian economy, refer Ferreira and Rossi (2003), and for Latin American economies, consult Paus, et al., (2003). Whereas it had a constraining impact in resource-rich countries [M. McMillan, et al., (2014), M. S. McMillan and Rodrik (2011).]

Globalisation impacts differently when complementarities are taken into context. For instance, globalisation has reportedly cast a negative impact on economic growth and change in the economic structure of economies in the absence of complementarities like education, innovation, health facilities, institutional infrastructure and others, retards economic growth as it hampers inter-sectoral resource shifts [Calderon and Poggio (2010)]. Trade openness, complemented with skills endowment in labourers, has benefited economic growth [Chang et al., (2019)]. Furthermore, it is noted that improved human capital in transition, OECD and Mediterranean economies had a positive impact on structural change over a shorter time period [Teixeira and Queirós (2016)]. Therefore, a strong focus on improving complementarities, e.g., human capital in developing economies, can help reap the benefits of globalisation. Otherwise, globalisation will produce undesirable results — high-tech imports displace labourers into sectors that do not compete in internationally competitive markets.

Financial deepening is another complement that impacts structural change and human capital. Thiel (2001) has noted that, as expected in theory, financial deepening significantly impacts structural change in disaggregated level data. The study by Jeong and Townsend (2007) noted the positive impact of financial deepening on structural change and human capital. Cetorelli and Gambera (2001) stated that the concentration of banks in any sector or industry generates depressing effects on economic growth and structural change in the economy since concentrating finance in some production sectors tends to decrease the overall productivity level of the economy.

The empirical literature on ASEAN in the context of globalisation and structural change is relatively thin. Such studies have broadly focused on the relationship between globalisation and economic growth. For instance, economic and political globalisation positively impacts economic growth in ASEAN in the long-run [Hasan (2019)]; but social globalisation has a negative impact on economic growth in ASEAN [(Ying (2014)]; labour–shift factors and resource mobility across sectors have a positive effect on economic growth in Asian economies [Foster-McGregor (2016)]. However, spatial effects have only been studied in the context of foreign direct investment and economic growth by Uttama (2016), spatial intra-industry gravity model by Nguyen Thi Xuan (2017), vertical intra-industry trade by Chin (2015) and spatial poverty reduction strategies by Uttama (2015).

Reviewing past literature shows that studies estimating the effects of globalisation, human capital, and financial access on structural change are very few and use conventional econometric techniques measuring only direct effects. Therefore, this study aims to add to this stream of literature by using spatial econometrics. This is a recent tributary in econometrics for estimating the impact of the desired independent variables on the home country's structural change and the neighbouring country. In the wake of globalisation, the own and spatial effects have become extremely important as decisions of one economy imply changes in the economy of connected nations. ASEAN members are prone to cross-border positive and negative impacts of globalisation on mem-

ber nations. The literature on spatial impacts of globalisation on structural change is very thin concerning world economies in general and ASEAN in particular. This study intends to investigate the own effects and spatial effects of globalisation and co-variants on structural change in ASEAN member nations. The available literature has focused on the spatial impacts of globalisation on economic growth, labour mobility and regional inequality. This study attempts to add the perspective of spatial impacts on structural change in the ongoing debate.

III. Theoretical Framework

Structural change is the replacement of the traditional agriculture sector by the modern manufacturing sector due to wage differential between the traditional and modern sectors [Lewis (1955)]. For Kuznets (1973), structural change is the reallocation of labour from agriculture to the manufacturing and service sector, changes in the output and changes in organisational structure along with equivalent changes in the labour position. Structural change significantly contributes towards economic growth [Syrquin (1988)].

Globalisation is the increase in cross-border transfer of goods and services, either of physical or capital by nature. Due to cross-border transactions, there are demand-side and supply-side impacts on economic activity.

Through globalisation, the better access of domestic consumers to sophisticated/high-value-added goods from abroad at competitive prices not only affects the demand patterns for local and international products (i.e. demand-side effect) but also impacts the production patterns of local industry and international market producing the same or slightly differentiated products (i.e. supply-side impact). The dynamics of effects are,

1. If globalisation is such that high-tech-products importer countries do not upgrade their domestic industries to competing standards through technological improvements, cost cuts, advertisement, etc., then such globalisation will negatively impact the domestic industry of importer countries and vice versa.
2. Due to globalisation, the changes in patterns of demand and production drive significant changes in resources across sectors.
 - a) Suppose demand for primary sector commodities faces a decline due to the availability of better substitutes. In that case, the derived demand for labour and capital in this sector will eventually fall, and resources will shift from the primary sector to any such sector where the demand for commodities and derived demand for factor inputs is higher. Such shifting of resources across sectors is dubbed as structural change.
 - b) If the industrial base is weaker and the economy has opened to international markets through globalisation, then the vector of products produced by the domestic

economy will decline. In turn, there will be higher reliance on imports, which will further deteriorate the output vector. Now, the resources have been shifted to the tertiary sector, a services-based sector (i.e. structural change), so there will be recursive impacts on economic growth.

3. The spatial effects of globalisation have even different impacts. The propagation dynamics of spatial impacts are;
 - a) If any positive or negative shock exists in one of the economy, the other connected economies will bear the spillovers.
 - b) If the set of connected economies are alike and any one of the economy provides a more conducive environment, then it will diverge the benefits of neighbours or connected nations in her favour.
 - c) The divergence or convergence of resources due to spillovers will potentially impact direct demand patterns of commodities and derived demand patterns of factor inputs in domestic and connected economies. Thus, spillovers will impact structural change in the domestic economy.
 - d) The divergence or convergence of resources due to spillovers will have a potent impact on production patterns in the local and international markets along with its own and spatial effects. Such shift of resources due to spillovers will also impact structural change in the domestic economy.

IV. Data

This panel data study has used annual data on eight ASEAN countries: Brunei Darussalam, Cambodia, Indonesia, Malaysia, Philippines, Singapore, Thailand and Vietnam for the years 1993 to 2014 from the WDI Database, KOF Index of Globalization, General Statistics Office of Vietnam and Statistics Department Singapore. Owing to the non-availability of data on variables used for the calculation of the structural change index and a few other variables under study, this study could not use data earlier than 1993 and data later than 2014.

1. *Measuring Structural Change*

Structural change originates from the demand and supply side due to changes in the homotheticity of demand and differentials in productivity. The index measures the speed of change in the structure of the economy. Structural change and cumulated structural change have been measured through the Norm of Absolute Value, also known as Michaely-Index or Stoikov-Index. NAV is computed through the percentage share of all sectors (value-added) in the gross domestic product of ASEAN member nations. As done by Dietrich (2009), NAV has been derived by taking the differences in value-added shares

of three sectors. x_i ($i=1, \dots, n$) over time period $t=1 \dots T-1, s=2, \dots T$. After taking differences, the values of all three sectors are transformed into absolute terms and summed respectively for each year. The summed values are then divided by one half because this standard approach takes all the changes two times [(Schiavo Campo, 1978)].

$$SC = \frac{1}{2} \sum_{i=1}^n |x_{it} - x_{is}| \text{ where } x_{it} > 0 \text{ and } x_{is} > 0$$

SC index shows the share of movement of sectors of the economy as the percentage of GDP of the whole economy. The range of this index is from 0 to 1. If the SCI = 0, then SC remain unchanged at all over time. If SC = 1, then there are large sectoral changes in the whole economy. The methodology of the cumulated structural change index is to take the cumulative sum of the structural change index already calculated with the base year as 1993 for all member nations.

2. *Expected Relationship between Structural Change, Globalisation and Covariates*

Structural change is theoretically affected by a wide gradient of covariates. This study has built on the premise of complements as requisite for checking the effects of globalisation; therefore, compliments complements like access to finance and human capital have been used as covariates.

a) *Structural Change (SC)* is an index that has been measured through the Norm of Absolute Value Index built on the absolute change in GDP value-added share of all three sectors (Agriculture, Industry, Services) of the economy. An increase in SC implies an increase in the share of higher value-added output production in the economy. It is expected to be affected by economic globalisation, financial access and human capital in ASEAN member nations.

b) *Economic Globalisation (EG)* is an index built on two sub-indexes, i.e. actual flows and restrictions. Actual flows include trade, foreign direct investment and portfolio investments, whereas restrictions include hidden import barriers, tariff rates, taxes on international trade and coital controls. The nature of the impact of the increase in economic globalisation on structural change depends on a host of factors. Since developing nations have comparatively lesser tendencies to export goods at par with developed nations, globalisation floods domestic markets of developing nations and forces domestic industry to exit the market. The expected own-country impact and spatial impacts of economic globalisation on structural change in member nations of ASEAN are uncertain.

c) *Political Globalisation (PG)* is an index built on the political openness of the economies measured through a number of international agreements, political cohesion and diplomatic representation across nations of the world. An increase in political glob-

alisation can have a conducive or retarding impact on structural change as it depends on a host of various factors. Since developing nations have comparatively lesser representation on international forums, there are possibilities of getting rigged effects of political globalisation from rich economies in terms of political economy. The expected own-country impact and spatial impacts of political globalisation on structural change in member nations of ASEAN are uncertain.

*d) **Social Globalization (SG)*** is an index built on cultural proximity, information flow, and personal contacts. An increase in social globalisation can have a conducive or retarding impact on structural change as it depends on a host of factors in the home country and the spatial effects of neighbouring countries. Since even in developing nations, there has been a free flow of information and contact with people from around the world is increasing, there will be derived demand for commodities across sectors, and it will change consumption and production patterns accordingly. The expected own-country impact and spatial impacts of political globalisation on structural change in member nations of ASEAN are positive.

*e) **Financial Access (FA)*** has been measured as access of domestic credit to the private sector as a per cent of gross domestic product. An increase in financial access catalyses the shifting of resources from one sector to another by providing financial help to firms and loan seekers. Irrespective of type of resource shift, an increase in access improves the odds of success of the shift. The expected own-country impact and spatial impact of financial access on structural change in member nations of ASEAN is positive.

*f) **Human Capital (HC)*** has been measured as the enrollment ratio of the number of primary school enrollments to the total enrollments in the age bracket of primary school enrollments. A better measure of human capital as an index of human capital per capita built by Penn World Table 9.0 is also available, but owing to missing data for Singapore, it has not been used. An increase in schooling and returns on education reflect an increase in the skills of the individual i.e., an increase in human capital. An increase in human capital is expected to catalyse and speed up structural change as skilled individuals will be utilised in high-value-added products, and it will drive structural change. The expected own-country impact and spatial impact of human capital on structural change in member nations of ASEAN is positive.

V. Estimation Methodology

This study has used spatial econometrics techniques to find out determine the effects of economic globalisation and covariates on structural change. Before the employment of spatial econometrics, the cross-sectional dependence is checked, as

spatial effects are present only if cross-sectional dependence is present among panel members. Breusch Pagan cross-sectional dependence test, Breusch and Pagan (1980), have been used for checking cross-sectional dependence.

The first step in spatial modelling is to construct a spatial weight matrix. A matrix having n-dimension (8 x 8) and t-dimension ($t = 1 \dots T$) is designed on the basis of geographic contingency, i.e. the countries with the same border are given weight 1, whereas weight 0 is assigned to the member nations of ASEAN which are not geographically connected. Self-neighbors, the diagonal elements in the weight matrix, are assigned 0 weights. The ASEAN member nations are spatially located in a way that some are geographically connected, whereas a few are islands, so weight one is assigned if the island is in geographical proximity to the nearest member nation and weight 0 otherwise. The resultant spatial weight matrix is then normalised and stored in STATA 14 for estimation purposes.

Step two is to check for the absence of a unit root process in the dependent variable. Pesaran (CIPS) unit root test, Pesaran (2007), developed for panel data with cross-sectional dependence has been used for checking the unit root process. In step three, a choice was made between two variants of Spatial Static Panel Data Models, i.e. Spatial Autoregressive Model and Spatial Durban Model [(Anselin (, 1999) and; Anselin & and Bera (, 1998)] using a comparison test. The statistics of the test recommended the spatial Durban model (given in the result section). When it comes to Regarding the Spatial Durbin Model, we have to decide between the Spatial Durban Fixed Effects Model and the Spatial Durban Random Effects Model. The Hausman test is being applied in this regard to make this selection of the model. The diagnostic tests of Spatial Models are in the development phase, so no diagnostic tests have been applied here. The spatial Durban Model Equation (1):

$$y_{it} = \rho W y_{it} + X_{it} \beta + W Z_t \theta + \mu_t + \varepsilon_{it} \quad (1)$$

y_{it} is the vector of the lagged dependent variable SC , ρ is the spatial lag parameter, W is the matrix represents the geographical contingency between ASEAN member nations, $W Z_t$ are spatially weighted regressors, $W y_{it}$ are spatially lagged dependent variables and X_{it} is the matrix of all independent variables i.e. EG , PG , SG , FA and HC .

VI. Empirical Strategy

1. Cross-sectional Dependence

Table 1 shows that cross-sectional dependence among ASEAN nations exists when analysed from the perspective of the impact of globalisation and covariates on structural change. Time-fixed effects are also significantly present in this data.

TABLE 1
Cross-section Dependence

Time Fixed Effects	
<u>Null Hypothesis</u>	
The coefficients for all the years are jointly equal to zero.	
F-Statistics	1.95
P-Value	0.01***
BP-LM Test of Independence	
<u>Null Hypothesis</u>	
The residuals across entities are not correlated	
F-Statistics	41.27
P-Value	0.05**
Pesaran CD Test	
<u>Null Hypothesis</u>	
The residuals across entities are not correlated.	
F-Statistics	-3.22
P-Value	0.00***

Source: Authors' estimation.

Note: ***, ** significant at 1 per cent and 5 per cent.

2. Unit Root Tests

Pesaran CIPS unit root test is recommended in the presence of cross-sectional dependence. The spatial Durbin Model requires the dependent variable to be stationary at level. Table 2 shows that the dependent variable is level stationary, whereas all repressors are stationary at first difference.

TABLE 2
Panel Unit-Root Test, Pesaran CIPS

Independent Variable	SC	EG	SG	PG	FA	HC	Δ EG	Δ SG	Δ PG	Δ FA	Δ HC
Intercept	-4.81***	-2.00	-1.44	-1.66	-1.27	-1.57	-4.20***	-4.08***	-3.68***	-4.11***	-3.74***
Intercept & Trend	-5.02***	-2.34	-2.74	-1.84	-2.33	-2.28	-4.17***	-4.22***	-3.61***	-4.27***	-4.06***

Source: Authors' estimation.

Note: ***significant at 1 per cent, Δ denotes first difference.

3. Spatial Estimation Technique Choice

In spatial estimation, there are two mutually exclusive streams of estimation. Given the differences based on econometric methodology, the comparison test is

TABLE 3
Spatial Estimation Technique Choice Test

Comparison Test	
<u>Null Hypothesis</u>	
Spatial Auto-Regressive is a more suitable model than Spatial Durbin Model	
χ^2 - Statistics	15.36
P-Value	0.00***

Source: Authors' estimation.

Note: ***significant at 1 per cent.

used to check the appropriateness of methodology for given data. Table 3 shows the results of the comparison test.

4. Results and Discussion

The fixed effects and random effects of the Spatial Durbin Model have been developed in this study. Table 4 shows the direct effects (impact of own country regressors on own country regressand), indirect effects (impact of neighbouring country regressors on own country regressand) and total effects. Sigma variation in both models is statistically significant, but the spatial effects are present only in the fixed effects model. Hausman test has also recommended fixed effects model SDM as efficient and consistent.

Direct effects of spatial impacts of globalisation and covariates on structural change in ASEAN member nations have shown that economic and political globalisation have a statistically significant and negative impact on structural change. This is because economic globalisation drives patterns of demand and production so that instead of having resources shift from a low-productive sector to a high-productive sector, the economy starts relying on imports. Political globalisation negatively impacts structural change because the increase in political globalisation means an increase in the transnational political impact of the world on the home country. As more treaties are signed and political openness is witnessed, economic globalisation, along with political globalisation, evolves into a unique political economy. Such a political economy is less beneficial for developing economies. The trade policies that are politically backed will turn terms of trade in their favour, and so they shift the patterns of resources accordingly. Social globalisation is found to have a positive impact on structural change because due to an increase in cultural proximity or flow of information between the home country and the world, there are positive and conducive impacts on resource shift from the low productive sector to the modern sector through modernisation. The demonstration and spillover effects are driving forces behind the positive impact of social globalisation on struc-

TABLE 4
Spatial Durban Model Results

	Dependent Variable: Structural Change (SC)					
	SDM – Fixed Effects			SDM – Random Effects		
Spatial Effects						
Spatial Coefficient	-0.2408061 (0.00)***			0.0404516 -0.55		
Variance						
Sigma2_e	1.108982 (0.00)***			1.575836 (0.00)***		
lgt_theta	n.a.			13.56231 -0.97		
Long Run Effects						
	Direct Effects	Indirect Effects	Total Effects	Direct Effects	Indirect Effects	Total Effects
EGi,t	-0.0509331 (0.00)***	-0.0548196 (0.09)*	-0.1057527 (0.00)***	-0.0252894 (0.19)	0.0101524 (0.75)	-0.0151369 (0.68)
PGi,t	-0.0356419 (0.00)***	0.0218288 (0.12)	-0.0138131 (0.49)	-0.0216737 (0.04)**	0.0215892 (0.10)	-0.0000845 -0.99
SGi,t	0.0248348 (0.04)**	0.0381926 (0.04)**	0.0630274 (0.00)***	0.0168156 (0.20)	0.0106836 (0.60)	0.0274993 (0.17)
FAi,t	0.0974081 (0.47)	-0.0899663 (0.52)	0.0074418 (0.97)	-0.0992721 (0.41)	-0.119432 (0.43)	-0.2187041 (0.27)
lnHCi,t	3.100436 (0.02)**	-2.130577 (0.15)	0.9698586 (0.61)	1.956555 (0.20)	-3.275145 (0.07)**	-1.318591 (0.61)

Hausman Test Results For Selection Between Fixed Effects and Random Effects

Null Hypothesis

SDM with Random Effect is efficient & consistent whereas SDM with Fixed Effect is consistent but inefficient.

χ^2 - Statistics

238.71

P-Value

0.00***

HO is not rejected.

SDM Fixed Effects estimator is efficient and consistent than SDM Random Effects.

Source: Authors' estimation.

Note: The values in brackets are corresponding p-values. ***, **, * significant at 1, 5 and 10 per cent.

tural change. Access to finance is found to have an insignificant impact on structural change, whereas human capital behaves as expected in theory.

Indirect effects show that only economic globalisation and social globalisation in the neighbouring country have a statistically significant bearing on own country's structural change. It implies that economic globalisation in neighbouring member nations also has a negative impact because of changes in derived demand for products and resource market patterns. The same negative impact of globalisation propagates across member nations. Social globalisation of neighbouring nations is found to have a positive impact on structural change in the home nation owing to the reason that there are demonstration effects of changes in production and consumption patterns. An increase in demand for high-tech products in neighbouring economies also drives the demand for high-tech products in the home country, and thus, it impacts structural change in a positive manner.

Total effects show that only economic and social globalisation significantly impact structural change in negative and positive dimensions, respectively.

VII. Conclusion

This study has analysed eight ASEAN member nations over the time period 1993 to 2014 to find the impact of economic globalisation, political globalisation, social globalisation, financial access and human capital on structural change. The choice test for spatial static modelling recommended the Spatial Durbin Model over the Spatial Auto-Regressive Model for estimating the long-run direct, indirect, and total effects. The spatial coefficient has revealed the existence of statistically significant spatial effects. SDM-Fixed Effects method has been preferred by the Hausman test. In direct effects, the slope coefficients have shown a statistically significant and negative impact of economic and political globalisation on structural change, whereas positive impact is of social and human capital. In indirect effects, the slope coefficients have shown statistically significant and negative impacts of economic globalisation, and a positive impact is of social globalisation on structural change. Total spatial effects align with indirect spatial effects of economic globalisation and covariates on structural change in ASEAN member nations.

The structural change reflects the modernisation of the economy with the shifting of resources from less productive to more productive. The results of this study highlight that structural change is negatively affected by globalisation in economic and political formations, whereas only human capital is conducive for structural change in ASEAN nations. Therefore, this study recommends that human capital be given prime focus as such policies can increase the pace of structural change in member nations of ASEAN as higher speedy structural change implies higher levels of economic growth with development.

VIII. Recommendations

Keeping in view the findings of the model, here are a few recommendations based on this empirical analysis:

- The findings suggest that the Governments should focus on forming human capital to bring structural change in these economies.
- Financial access should be made easier because investing in technology will increase production capacity. That new technology will lead to innovation, and structural change in the economies will be sped up.
- These economies are in an emerging state of development with a high rate of production; however, due to openness in trade policy will interrupt their strategy of internalising the resources. Therefore, the governments of these economies should try to follow the protectionism policy to increase the pace of structural change and transformation in their economies.
- In the end, the findings of the study recommend that the policymakers try to focus more on social globalisation in this region as it is showing a positive impact on structural transformation through improving information accessibility for all classes in society. However, political openness must be improved through cooperation policy within the region so that this could also be used as a policy instrument for reshaping the structure of these economies.

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APPENDIX

TABLE A-1
Fixed Effects Model

Fixed-effects (within) regression	Number of obs	=	176
Group variable: id	Number of groups	=	8
R-sq:	Obs per group:		
within = 0.0100	min =		22
between = 0.4239	avg =		22.0
overall = 0.1070	max =		22
	F(5,163)	=	0.33
corr(u_i, Xb) = 0.1672	Prob > F	=	0.8946

	sc	Coef.	Std. Err.	t	P> t	[95 per cent Conf. Interval]	
eg		-.0008189	.0238713	-0.03	0.973	-.0479558	.046318
sg		.0103376	.0291137	0.36	0.723	-.047151	.0678263
pg		-.0099744	.0147484	-0.68	0.500	-.0390969	.0191481
fa		-.1041382	.2116974	-0.49	0.623	-.5221612	.3138847
hc		-.3255961	1.875666	-0.17	0.862	-4.029333	3.378141
_cons		6.330437	8.817491	0.72	0.474	-11.0808	23.74167
sigma_u		.57409451					
sigma_e		1.2973505					
rho		.16375219	(fraction of variance due to u_i)				
F test that all u_i=0: F(7, 163) = 2.55				Prob > F = 0.0161			

TABLE A-2
Correlation matrix of residuals

	__e1	__e2	__e3	__e4	__e5	__e6	__e7	__e8
__e1	1.0000							
__e2	0.1106	1.0000						
__e3	0.3064	0.1421	1.0000					
__e4	0.5041	-0.2447	-0.0660	1.0000				
__e5	0.3104	-0.2580	0.2896	0.1889	1.0000			
__e6	0.3075	0.2606	-0.1133	0.2083	0.0092	1.0000		
__e7	0.1263	-0.4769	0.2170	-0.0610	-0.0949	-0.3382	1.0000	
__e8	0.3170	-0.0971	0.0064	-0.0867	-0.0242	0.0889	0.5083	1.0000

Breusch-Pagan LM test of independence: chi2(28) = 38.452, Pr = 0.0901
Based on 22 complete observations over panel units