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The Dynamic Relationship Between Financial Development and Economic Complexity in Pakistan

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ABSTRACT

Globalization places lots of challenges for emerging nations seeking long-term economic development. These are linked to several other issues, low exports as a consequence of worldwide competitiveness, low foreign currency reserves, rising fuel prices, WTO regulations, and so on. To overcome these obstacles, it is necessary to compete on a global scale. This can be attained by increasing specialization through technological innovation, new manufacturing methods, product diversification, etc. The current global competitive situation and complexity increased pace of the latest technological, financial development, and innovation led this study to examine this relationship in the case of a developing country like Pakistan. The objective of the study is to determine the dynamic relationship between financial development and economic complexity using annual time series analysis from 1990-2019, that was less evident in existing literature in case of Pakistan best of the authors' knowledge. The modeling approach of this study was conducted by using economic complexity theory based on comparative advantage theory. The ARDL bond testing approach is used for empirical estimation. The findings suggests that, cointegration exists in the model, financial development positively impacted the economic complexity in Pakistan during the reference period. Thus, it is recommended that the State Bank of Pakistan should adopt flexible financial policies and ease of doing business, expands bank networks, which increases people's access to finance and raises their capacity to invest in a business, research and Development.

1 Introduction

Globalization is accelerating; countries prioritize integration and the expansion of trade relations with other countries (Kolb, 2018). Global economic growth trends, on the other hand, are uneven and vary by country. Furthermore, it is a critical challenge that poor countries' growth differs significantly from that of rich countries (Wolla, 2017). According to the World Bank, the United States ranks first out of 190 countries with a share of global GDP of 24.08%, China ranks second with a share of 15.08%, and Japan ranks third with a share of 6.02%. (World Bank, 2017). Pakistan, on the other hand, ranks 40th with a share of 0.38%, which is significantly lower than the top countries. Numerous countries, including Kiribati and Tuvalu, continue to have no global GDP share (World Bank, 2017). The reason for this is that countries lack development policies, and several factors affect this, one of which is trade (Goldin, 2019).

The debatable and central question of the current study is the evidence of variation in trade policies and performance. Due to the importance of trade policy in promoting growth

through resource diversification, extensive research is conducted on its proper formulation (Sepehrdoust et al., 2019). According to Goldin (2019), trade policies differ across countries in the same way that development policies differ. Thus, economic growth varies according to policies implemented or resources available.

Several national and international organizations launched numerous initiatives to boost global trade and economic growth. For example, the World Trade Organization (WTO) system lowers barriers between trading economies and governments. (WTO, 2022). The World Trade Organization was founded on January 1, 1995. Similarly, the UNCTAD pursues to benefit developing economies and transition economies participate in international discussions and policy debates (Canton, 2021).

Regardless of the various efforts mentioned above, worldwide growth remains unsatisfactory and is expected to drop from 5.7% in 2021 to 2.9% in 2022. (Ha and colleagues, 2022). The COVID-19 pandemic has caused damage to economies around the world. But still it's a worrying situation for developing countries, particularly Pakistan, which is already dealing with political insecurity, currency fluctuations, and rising global oil prices. The vulnerabilities of developing countries following the end of pandemics have been revealed, and rapid recovery strategies must now be investigated (Gnangnon, 2021). Rising energy prices, given the region's reliance on energy imports and increased energy subsidies in some countries, could stifle growth and threaten fiscal growth.

The rest of this paper is structured as follows: Section 2 includes a brief review of the relevant literature as well as the study's theoretical and conceptual frameworks. Section 3 contains the data and the econometric methodology; Section 4 presents the results and discussion including findings. The last Section concludes the study, and recommends some policy measures, and future research directions.

2 Literature Review

The production of a country's output could be used to explain economic complexity (EC). Economic complexity can be explained in a variety of ways, such as decision-making complexity or economic technique complexity. Economic complexity, on the other hand, is used in the context to determine the production or manufacturing process, as well as the trade of commodities and services. By focusing on and improving the production process, a country can be led to economic development. The EC can be influenced by international trade. According to Ricardo, a country can benefit from trade because specialization enables the entire world to benefit from increased commodity production (Tuano Jose, 2017). Ricardo determined which countries should specialize in their product based on comparative advantage. This study gets the comprehensive financial development index by adding these indexes together. This study was carried out using economic complexity theory, which is based on comparative advantage theory.

2.1 Financial Development & Economic Development

Hidalgo and Hausmann et al. (2011)'s recent Atlas of Economic Complexity, which demonstrates that production sophistication is a major source of economic development, stands out as a major significant empirical discovery. According to the literature, economic complexity reflects an economy's level of development and shows how it manufactures and exports sophisticated goods to a greater extent (Lapatinas, 2019). In contrast, financial

development is the improvement of the financial system. It provides businesses with sufficient funds at a low cost, allowing for business expansion. It happens only when the financial system is in good shape. Financial development leads economic growth (Ibrahim and Alagidede, 2018; Batuo et al., 2018; Bist, 2018; Pan and Mishra, 2018; Kim et al., 2018; Asteriou and Spanos, 2019; Khan et al., 2021; Shahbaz et al., 2022). Khalil (2018), reexamined the financial sector's relation to the real sector by using volatility of gross domestic product due to financial market's development. This study used time series data from 1993-2017 and generalized autoregressive conditional heteroskedasticity as well as vector error correction model for analysis. The study's findings revealed that the real and financial sectors both promoted economic growth and were interdependent, which shed light on the impact of financial market development on GDP growth. Khalil et al., (2018), evaluated Pakistanâ€TMs economic position in relation to international competitive nature in regards to technological development and trade advancement. According to the findings of the study, countries' export markets had grown progressively stronger with time. It was essential that they advance technologically and improve their governance. Pakistan had arrived at the point where international competitiveness standards were required.

2.2 Financial Development & Economic Complexity

Financial development (FD) indicated the capability of people and businesses to obtain financial facilities, as well as market size and liquidity. Aslam et al., (2022) examined the impact of impact of financial development on economic complexity in thirty-three belt and road initiative countries. The researchers used GMM methodology for analysis. They found that financial development had a negative and insignificant impact on economic complexity but its impact was positive when they used interaction term "institution". Nguyen and Su (2021) used the broad index of FD to empirically investigate financial development's relation with economic complexity by using 86 countries data during 2002 to 2017. In this study, the GMM was used for estimation. According to the findings, economic complexity has a positive relationship with sub-indices of FD.

Yu and Qayyum (2021) empirically investigated the financial openness's effect on economic complexity in 126 economies during 1996 to 2016. This study's panel model included dependent variables as a lagged variable. The GMM technique is used to estimate it. According to the findings, increasing financial openness had risen the country's economic complexity and openness. Furthermore, in high-income countries, the significant economic complexity index development pathway was heavily emphasized. Increased value chain participation or decreased banking concentration improves economic complexity (EC). Yasmeen Yalta & Yalta (2021) analyzed the economic complexity's determinants in MENA countries from 1970 to 2015. The GMM method was used for estimation in this study. Human capital had positively impacted the economic complexity index, whereas natural resource rent had negatively impacted, according to the findings. The findings also show that aggregate human capital and natural resource rent had impacted the economic complexity.

Avom et al. (2021) examined output, trade terms' relationship with economic complexity in 119 countries during 1998 to 2017. In this study, an OLS and GMM approaches were used. According to the findings, output and terms of trade (TOT) had negatively impacted to economic complexity. It demonstrated that volatility is a bigger problem in emerging nations than it is in developed nations. It focuses on the sources of volatility and how they affect

economic complexity. Natural resources had negatively impacted to economic complexity, while financial development, FDI, income and internet had positively impacted.

Njangang et al., (2021) did an empirical study on the impact of financial development on the complexity of a country. The researchers estimated using data from 24 countries from 1983 to 2017. In this work, the GMM approach was applied for analysis. According to the report, financial development has had a favorable impact on the complexity of African countries. They discovered that as the African country's financial success climbed, so did its complexity. Financial development has been proved to be more beneficial in all countries.

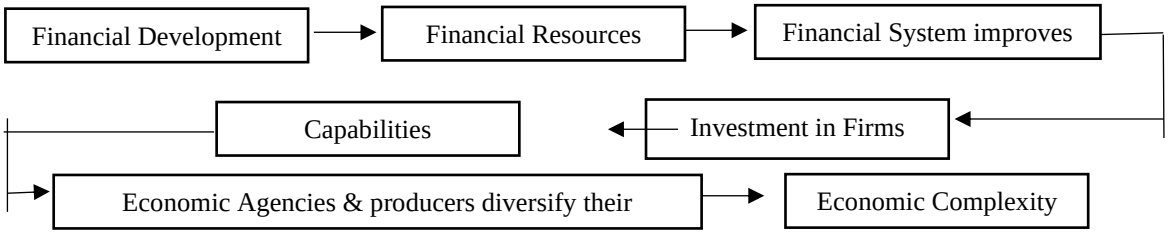
Nguyen et al. (2020) conducted an empirical investigation of patents and financial development's effect on economic complexity. They captured the effect for 52 economies, high- and middle-income countries, using two indicators, ECI/ECI+ during 1995-2017. The researchers used pooled OLS, FGLS (Feasible General Least Squares), and GMM. The results revealed bidirectional casualty and long-run cointegration. The findings also revealed that patents have a long-run positive relationship with economic complexity, whereas financial development has a short-run positive relationship with economic complexity but a long-run negative relationship. Furthermore, the financial markets may provide an additional source of funding for patents and knowledge.

Khan et al. (2020) conducted an empirical study of the FDI's relation with economic complexity in China using the data during 1985-2017. The ARDL and Vector ECM approaches were used in this study to estimate the relation. According to the findings of this study, there was long-run relation in both directions. Moreover, there was one-way relation in short run. By using the data of 94 countries during 1968-2015, Chu (2019) investigated financial development's impact on economic sophistication. The ECI was applied to measure the sophistication of the economy, and GMM was used for analysis. The findings revealed that the expansion of the stock market and banking sector had positively impacted the economic sophistication. The researcher discovered, financial intermediaries' growth and the stock market's growth had a positive effect on productivity knowledge. He also discovered that the banking sector played a larger role in developed countries. In contrast, the stock markets played the same role in all countries. Svirydzenka (2016) examines the financial development's relationship to economic growth, in 183 countries from 1980 to 2013. By constructing the nine small group indexes, this study introduced the broad index of financial development. The paper's main contribution is to create small groups of six indexes, combine these indexes, and then sum up the two major indexes to create the broad index known as the financial development index (IMF Paper, 2016).

After reviewing the literature related to financial development and economic complexity, it is concluded that there is very limited literature available on financial development's impact on economic complexity specifically in Pakistan to the best of the researcher's knowledge. So, the objective of the current study is to determine the long-run financial development index (FD index) impact on the economic complexity index (ECI) in Pakistan. And give some policy recommendations related to financial development which enhance economic complexity. The novelty of this study is to determine the dynamic relation between financial development and economic complexity in Pakistan by employing time series analysis. Because no one determine that relation by using time series analysis specifically in Pakistan, best of researcher's knowledge.

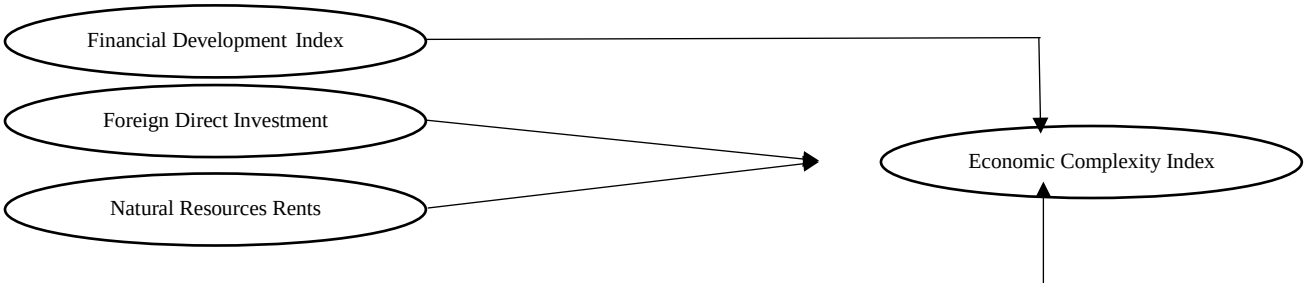
2.3 *Theoretical Framework*

This section provides the theoretical background related to the relationship between financial development and economic complexity. Previous studies used e.g. Hidalgo and Hausmann (2009) was theoretically based on Adam Smith's theory and Endogenous growth theory. They contended that when people and industries specialize in diverse productive tasks, economic efficiency improves. Chu (2020) used Adam Smith's theory of national wealth, the money market, and other tools to study the effects of financial development on economic complexity. The current study based on economic complexity theory which is drives from comparative advantage theory. This is a theoretical gap of this study, because no one used the economic complexity theory to analyze the relation between financial development and economic complexity to the best of researcher's knowledge. Previous theories merely explain why different countries specialize in different things. These theories are incapable of forecasting diversity (the number of items produced by a country) or ubiquity (the number of countries that produce that product). The Economic Complexity Index (ECI) was created by Hidalgo and Hausmann (2009). The ECI assesses the amount of know-how inherent in manufacturing and export structures, as well as the degree of interconnection along the present global market. Economic growth differs by country (Wolla, 2017). Some countries, for example, are more developed than others (Frieden, 2001), so country inequality is an issue. Pakistan is ranked as the least developed country for a variety of reasons. The economic complexity of Pakistan is one of the reasons it ranks among the least developed countries. Policy discussions about economic complexity are already taking place. As the country's economic complexity grows, costs will fall, specialization in production will increase, and export quality will improve. The theoretical framework of the current study is given below:



2.4 *Conceptual Framework*

This paper provides a quantitative investigation, to determine the long-run financial development index's (FD index) impact on the economic complexity index (ECI) in Pakistan. Although there are few studies available, to the best of the researcher's knowledge, there is still a gap in the existing literature. The single country, "Pakistan," has been chosen for two reasons: it has a low economic complexity rank but the potential for development and growth. Financial development can enhance economic complexity, benefiting the country's trade and growth. The conceptual frameworks of this study are given below.



Trade Openness

3 Data and Econometric Methodology

3.1 Data

The ARDL methodology is used in this study to determine the long-run financial development index's (FD index) impact on economic complexity index (ECI) in Pakistan. The data for this study is analyzed from 1990 to 2019. The ECM and ARDL bound tests are used to achieve the objective of this paper. The data used in this study is obtained from different sources, for instance, the observatory of economic complexity (OEC), IMF, and WDI. This study used two indexes economic complexity index (ECI) and the financial development index (FD index). The ECI is the dependent variable, the FD index is the independent variable and foreign direct investment (FDI), natural resource rent (NRR), and trade openness (TO) are used as a control variable. The proxy of all control variables is the % of GDP.

3.2 Methodology

The study's econometric model depicts the long-run financial development index's (FD index) impact on economic complexity index (ECI) in Pakistan. The model is shown below to analyze the relationship between the variables in Pakistan:

$$\boldsymbol{EC_t = \alpha_0 + \alpha_1 FD_t + \alpha_2 FDI_t + \alpha_3 NRR_t + \alpha_4 TRA_t + \varepsilon_t} \quad \textbf{(1)}$$

Where EC stands for economic complexity, an Atlas Media index based on the production of higher-value-added goods by countries. Financial Development (FD) is the combined index of nice indexes. It demonstrates how the financial institution and financial market development occur in terms of depth, access, and effectiveness. The comprehensive index known as the financial development index was created by combining the nine small group indexes. Foreign direct investment (FDI), natural resource rent (NRR), and trade openness (TRA) are all control variables.

Using the ARDL approach, this study achieves the objective of this paper. This study used the unit test, in which it uses the ADF test. Except for FDI, the results showed that all variables are integrated into order 1. Because the results are mixed, we employ the ARDL methodology.

The ARDL bound test is used to determine long-run relationship. The following is the model equation used in this study:

$$\begin{aligned}\Delta \boldsymbol{EC_t} = \boldsymbol{\alpha_o} &+ \sum_{\mathrm{h}=\boldsymbol{0}}^{\boldsymbol{m}} \boldsymbol{\alpha_{1\mathrm{h}}}\, \Delta \boldsymbol{EC_{t-\mathrm{h}}} + \sum_{\mathrm{h}=\boldsymbol{0}}^{\boldsymbol{n}} \boldsymbol{\alpha_{2\mathrm{h}}}\, \Delta \boldsymbol{FD_{t-\mathrm{h}}} + \sum_{\mathrm{h}=\boldsymbol{0}}^{\boldsymbol{n}} \boldsymbol{\alpha_{3\mathrm{h}}}\, \Delta \boldsymbol{FDI_{t-\mathrm{h}}} \\ &+ \sum_{\mathrm{h}=\boldsymbol{0}}^{\boldsymbol{n}} \boldsymbol{\alpha_{4\mathrm{h}}}\, \Delta \boldsymbol{NRR_{t-\mathrm{h}}} + \sum_{\mathrm{h}=\boldsymbol{0}}^{\boldsymbol{n}} \boldsymbol{\alpha_{5\mathrm{h}}}\, \Delta \boldsymbol{TRA_{t-\mathrm{h}}} + \boldsymbol{\alpha_6 \Delta EC_{t-1}} \\ &+ \boldsymbol{\alpha_7 \Delta HD_{t-1}} + \boldsymbol{\alpha_8 \Delta FD_{t-1}} + \boldsymbol{\alpha_9 \Delta NRR_{t-1}} + \boldsymbol{\alpha_{10} \Delta TRA_{t-1}} \\ &+ \boldsymbol{\varepsilon_t}\end{aligned} \quad \textbf{(2)}$$

Where Δ shows the first difference term, t-i shows the lag choice. The equation for the Error Correction Model is as follows:

$$\alpha_o + \sum_{h=0}^{e} \alpha_{1h} \Delta EC_{t-h} + \sum_{h=0}^{r} \alpha_{2h} \Delta FD_{t-h} + \sum_{h=0}^{r} \alpha_{3h} \Delta FDI_{t-h} + \sum_{h=0}^{r} \alpha_{4h} \Delta NRR_{t-h} + \sum_{h=0}^{r} \alpha_{5h} \Delta TRA_{t-h} + \pi_1 ECT_{t-1} + \varepsilon_t \quad (3)$$

where the ECT term shows the speed of convergence and the amount of disequilibrium adjusted within the period.

4 Results and Discussions

4.1 Descriptive Statistics

Descriptive statistics show the description of the variables used in this paper. A detail description of the selected variables is shown in the Table 1. After the descriptive analysis, the next step is to check the stationarity and non-stationarity of the variables.

Table 1

Variable Description and Summary Statistics

Variables	Notation	Mean	Median	Max	Min	Std. Dev
Economic Complexity Index	ECI	-0.745	-0.761	-0.521	-1.066	0.135
Financial Development Index	FD Index	0.254	0.228	0.366	0.149	0.062
Foreign Direct Investment	FDI	0.011	0.008	0.037	0.004	0.008
Natural Resources Rents	NRR	0.015	0.012	0.026	0.008	0.006
Trade Openness	TO	0.322	0.329	0.385	0.253	0.039

4.2. Stationarity Test

It is beneficial to check the variable's stationarity through unit root test, before the ARDL approach to ensure that none of the variables are integrated into order 2. (Khan et al., 2020). Because each test has some drawbacks, we use the ADF (Augmented Dickey-Fuller) test to produce robust results. This test yielded the following results:

Table 2

Results of Unit Root Test

Variable	At level		At first difference		Order of Integration
	t-stat	P- value	t-stat	P-value	
EC	-2.55	0.115	-5.816	0.000***	I(1)

Table 2 (Continued)

FD	-1.447	0.546	-4.106	0.004***	I(1)
FDI	-3.067	0.041**			I(0)
NRR	-1.68	0.43	-4.985	0.000***	I(1)
TRA	-1.883	0.335	-5.306	0.001***	I(1)

The stationarity test results revealed that the results are mixed. Thus, this study achieves the objectives by using the ARDL method. The ADF (Augmented Dickey-Fuller) test was used. Foreign direct investment has stationary at level. Expect FDI; all other variables are become stationary after taking first difference. The ARDL methodology is used because the variables produce mixed outcomes.

4.3. Bound Test for Co-integration followed by Short Run and Long Run Results

The f-statistics value is 9.089, which is greater than the upper bound indicating that cointegration between variables exists.

Table 3

Results of Bound Test for Cointegration

t-statistics	**Value**	**Significance**	**I(0)**	**I(1)**
		10%	2.45	3.52
F-statistics	9.089	5%	2.86	4.01
		1%	3.74	5.06

Cointegration with a negative coefficient value indicates convergence. ECT=0.4 indicates that a 40% adjustment occurs within a period. If an economy enters a state of disequilibrium, the ECT term indicates how long it takes to return to equilibrium. The following table shows the short-run results:

Table 4

Results of ARDL estimated Error Correction Model (ECM)

Variable	**Coefficient**	**St. Error**	**t-statistics**	**Probability**	
C	-0.173	0.025	-6.874	0.000*	
FD	0.856	0.401	2.133	0.049*	
FDI	1.915	2.624	0.13	0.476	
TRA	0.782	0.51	1.534	0.145	
Coint Eq	-0.496	0.066	-7.537	0.000*	
R^2	0.79	Adjusted R^2	0.716	Durbin-Watson stat	2.152

*Where * ,** ,*** presents 1% , 5%, and 10% level of significance respectively.*

The ARDL bound test approach is applied to investigate long run relationships, in different orders of integration. This study uses the Adjusted R2 test with a maximum of two lag orders. The bound test for cointegration yielded the following results:

Table 5

Results of ARDL Long-Run Test

Variable	Coefficient	St. Error	t-statistics	Probability
FD	1.191	0.515	2.312	0.034**
FDI	15.519	7.412	2.094	0.053**
NRR	-18.893	7.968	-2.371	0.003**
TRA	1.887	1.312	-1.438	0.17

*Where * ,** ,*** presents 1% , 5%, and 10% level of significance respectively.*

The overall results are positive, indicating that the model has a long-run relationship. Moreover, bound tests show that economic complexity has positively and significantly impacted the by the financial development similar to previous studies (Chu, 2019; Kamguia, 2022; Kamguia and Ngameni, 2021). Other variables' results show that foreign direct investment has a positive relationship with ECI, NRR has an inverse relationship, and trade openness has a positive but insignificant relationship. An error correction model can be created by simply transforming the ARDL model.

4.4. Diagnostic Tests

All diagnostic tests have a probability value greater than 0.05, indicating that the model lacks autocorrelation, heteroskedasticity, and multicollinearity. Using the diagnostic tests, we discovered that our model has no autocorrelation, heteroskedasticity, or multicollinearity. The following are the results of diagnostic tests:

Table 6

Results of Diagnostic Tests

Heteroskedasticity			**Autocorrelation**			**Ramsey Reset Test**		
R^2	**f-stat**	**Prob.**	**R^2**	**f-stat**	**Prob.**	**t-stat**	**f-stat**	**Prob.**
12.844	1.233	0.3442	2.588	0.173	0.507	1.016	1.032	0.326

When there are a lot of observations, a histogram diagram comes in handy. The Jacque-Bera test is more appropriate for determining residual normality. The histogram diagram is as follows:

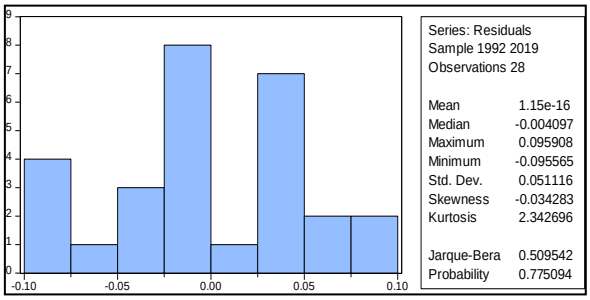


Figure 1
Jarque Bera Normality

The cumulative sum and cumulative sum of the square were used in this study to evaluate the constancy of the coefficients. The CUSUM and CUSUMSQ graphs display the stability of the model's coefficients at a 5% level of significance. To put it another way, the blue line is between the red lines, indicating that the coefficients are stable.

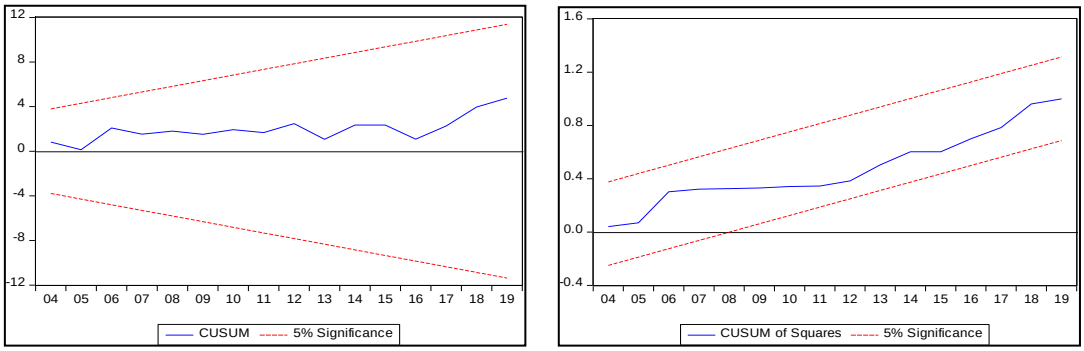


Figure 2
CUSUM AND CUSUM SQUARED

The variance inflation factor is used to determine, whether there is multicollinearity between variables in the study model or not. The centered values of all variables is below 5%, indicates that there is no multicollinearity in the model. The results of the VIF is given in below table 7.

Table 7

Results of Variance Inflation Factor (VIF) for Multicollinearity

Variable	Centered VIF
FD	1.873596
FDI	2.274041
NRR	1.227294
TRA	1.388425
C	NA
All Variables < 5 (No Multicollinearity)	

5 Conclusion

This paper intends to determine the impact of financial development on economic complexity in Pakistan using annual data from 1990 to 2019. The structure of the model was grounded on the comparative advantage theory for economic complexity and independent variables. Empirical estimation was done through ARDL bond testing approach. The findings indicate that financial development has positively and significantly impacted Pakistan's economic complexity. This implies that increased financial development generates financial resources and strengthens the financial system, resulting in increased firm investment. Economic agencies and producers diversify their products through this channel, increasing economic complexity. Hence, it is suggested the State Bank of Pakistan should prioritize lending and expanding the bank's network, access to financial networks, and increase financial resources. Additionally, provide savings incentives in order to improve the country's finances. This will enhance the capacity to invest or innovate if strong financial backing is available. New investment generates new ideas, which leads to innovation and increases product diversification and economic complexity. This study hopes to provide insight to adopt flexible financial policies, and an attractive business environment in addition to the awareness to invest in diversified products and innovate for better trade outcomes in countries like Pakistan having rich natural resources.

References

Abbassi, Z., & Burdey, M. B. (2008). The changing paradigms of human resources in the economic development of Pakistan. *IBT Journal of Business Studies (JBS)*, *1*(1), 1-11.

Ahmad (2022). The Human Capital of Pakistan. Available at. https://dailytimes.com.pk/963629/the-human-capital-of-pakistan/

Aslam, A., Ghouse, G., & Khan, B. (2022). The driver role of financial development on the economic complexity: An empirical evidence from 33 BRI Participation Countries. *Audit and Accounting Review*, 2(1), 26–47.

Asteriou, D., & Spanos, K. (2019). The relationship between financial development and economic growth during the recent crisis: Evidence from the EU. *Finance Research Letters*, *28*, 238-245.

Avom, D., Kamguia, B., & Ngameni, J. P. (2021). Does volatility hinder economic complexity? Economics Bulletin, 41(3), 1187-1202.

Batuo, M., Mlambo, K., & Asongu, S. (2018). Linkages between financial development, financial instability, financial liberalisation and economic growth in Africa. *Research in International Business and Finance*, *45*, 168-179.

Bist, J. P. (2018). Financial development and economic growth: Evidence from a panel of 16 African and non-African low-income countries. *Cogent Economics & Finance*, *6*(1), 1449780.

Canton, H. (2021). United Nations Conference on Trade and Development—UNCTAD. In *The Europa Directory of International Organizations 2021* (pp. 172-176). Routledge.

Chu, L. K. (2020). The effects of financial development on economic sophistication: evidence from panel data. *Applied Economics Letters*, *27*(15), 1260-1263.

Erkan, B., & Yildirimci, E. (2015). Economic complexity and export competitiveness: The case of Turkey. *Procedia-Social and Behavioral Sciences*, *195*, 524-533.

Frieden, J. (2001). Inequality, causes and possible futures. *International Social Science Review*, *2*(1), 33-40.

Gnangnon, S. K. (2021). Economic complexity and poverty in developing countries. *Economic Affairs*, *41*(3), 416-429.

Goldin, I. (2019). Why do some countries develop and others not. *Development in turbulent times*, *13*.

Ha, J., Kose, M. A., & Ohnsorge, F. (2022, June). Global Stagflation. In *Koç University-TUSIAD Economic Research Forum Working Papers* (No. 2204). Koc University-TUSIAD Economic Research Forum.

Hausmann, R., & Hidalgo, C. A. (2011). The network structure of economic output. *Journal of Economic Growth*, *16*(4), 309-342.

Hidalgo, C. A., & Hausmann, R. (2009). The building blocks of economic complexity. *Proceedings of the national academy of sciences*, *106*(26), 10570-10575.

Ibrahim, M., & Alagidede, P. (2018). Effect of financial development on economic growth in sub-Saharan Africa. *Journal of Policy Modeling*, *40*(6), 1104-1125.

Kamguia, B., Tadadjeu, S., Miamo, C., & Njangang, H. (2022). Does foreign aid impede economic complexity in developing countries?. *International Economics*, *169*, 71-88.

Khalil, M. A. (2018). *Relationship between financial and real sectors: implications for stable economic development [evidence from Thailand]* (Doctoral dissertation, National Institute of Development Administration).

Khalil, M. A., Khalil, R., Arshad, I., & Khalild, M. K. (2018). Global Trade and Technology as Indicators of Competitiveness and Economic Development: A Study of Pakistanâ€™s Position in International Market. *The Journal of Social Sciences Research*, 498-504.

Khan, H., Khan, U., & Khan, M. A. (2020). Causal nexus between economic complexity and FDI: Empirical evidence from time series analysis. *The Chinese Economy*, *53*(5), 374-394.

Khan, I., Hou, F., Irfan, M., Zakari, A., & Le, H. P. (2021). Does energy trilemma a driver of economic growth? The roles of energy use, population growth, and financial development. *Renewable and Sustainable Energy Reviews*, *146*, 111157.

Kim, D. W., Yu, J. S., & Hassan, M. K. (2018). Financial inclusion and economic growth in OIC countries. *Research in International Business and Finance*, *43*, 1-14.

Kolb, M. (2018). What is globalization? And how has the global economy shaped the United States. *Peterson Institute for International Economics. https://www. piie. com/microsites/globalization/what-is-globalization*.

Lakhan, A. B., Keeryo, Z. A., & Mumtaz, J. (2020). Causes And Consequences Of Trade Deficit In Pakistan. *Ilkogretim Online*, *19*(4), 6360-6370.

Lapatinas, A. (2019). The effect of the Internet on economic sophistication: An empirical analysis. *Economics Letters*, *174*, 35-38.

Nguyen, C. P., & Su, T. D. (2021). Financing the economy: The multidimensional influences of financial development on economic complexity. *Journal of International Development*, *33*(4), 644-684.

Nguyen, C. P., Schinckus, C., & Su, T. D. (2020). The drivers of economic complexity: International evidence from financial development and patents. *International Economics*, *164*, 140-150.

Njangang, H., Asongu, S., Tadadjeu, S., & Nounamo, Y. (2021). Is financial development shaping or shaking economic sophistication in African countries?. *European Xtramile Centre of African Studies WP/21/018*.

Pan, L., & Mishra, V. (2018). Stock market development and economic growth: Empirical evidence from China. *Economic Modelling*, *68*, 661-673.

Sepehrdoust, H., Davarikish, R., & Setarehie, M. (2019). The knowledge-based products and economic complexity in developing countries. *Heliyon*, *5*(12), e02979.

Shahbaz, M., Nasir, M. A., & Lahiani, A. (2022). Role of financial development in economic growth in the light of asymmetric effects and financial efficiency. *International Journal of Finance & Economics*, *27*(1), 361-383.

Svirydzenka, K. (2016). *Introducing a new broad-based index of financial development*. International Monetary Fund

Tuano, J., (2017). Trade and Economic Complexity of Nations. Available at https://thesis.eur.nl/pub/39088/Tuano_380692jt.pdf

Wolla, S. A. (2017). Why Are Some Countries Rich and Others Poor? *Page One Economics®*.

World Bank (2017). GDP figures published by the World Bank. Available at https://www.worldometers.info/gdp/gdp-by-country/

WTO, (2022). The WTO in brief. Available at https://www.wto.org/english/thewto_e/whatis_e/inbrief_e/inbr_e.htm

Yalta, Y. A., & Yalta, T. (2021). Determinants of Economic Complexity in MENA Countries. *Journal of Emerging Economies and Policy*, 6(1), 5-16. e-ISSN: 2651-5318.

Yu, Y., & Qayyum, M. (2021). Impacts of financial openness on economic complexity: Cross-country evidence. *International Journal of Finance & Economics*.

Appendix

Appendix 1 Variables Construction

Variables	Notation	Proxy	Data Sources
Dependent Variable			
Economic Complexity Index	ECI	Measured by • Diversity • Ubiquity	Atlas of economic complexity issued by OEC, Our World in Data
Independent Variables			
	FDI	Measured by	IMF

Financial Development Index		• financial institution • financial market in terms of access, depth, and efficiency	
Natural Resources Rent	NRR	% Of GDP	WDI
Trade Openness	TO	% Of GDP	WDI

Appendix 2 Correlation Analysis

Correlation **t-Statistic** **Probability**	**EC**	**FD**	**FDI**	**NRR**	**TRA**
EC	1.000000 ----- -----				
FD	0.252679 1.381895 0.1779	1.000000 ----- -----			
FDI	0.429897 2.519501 0.0177	0.557847 3.556684 0.0014	1.000000 ----- -----		
NRR	0.235834 1.284136 0.2096	0.125326 0.668430 0.5093	0.391822 2.253519 0.0322	1.000000 ----- -----	
TRA	0.341955 1.925537 0.0644	-0.200058 -1.080452 0.2892	0.280231 1.544736 0.1336	0.039552 0.209452 0.8356	1.000000 ----- -----