

Paudel, Ramesh; Alharthi, Majed

Article

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*Corresponding author: Majed Alharthi, Finance Department, College of Business, King Abdulaziz University, Rabigh, Saudi Arabia
E-mail: mdalharthi@kau.edu.sa

Reviewing editor:
Robert Read, Economics, University of Lancaster, United Kingdom

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DEVELOPMENT ECONOMICS | RESEARCH ARTICLE

Role of financial development in the export performance of a landlocked developing country: The case of Nepal

Ramesh C. Paudel^{1,2} and Majed Alharthi^{2*}

Abstract: This paper, using the most recent index of financial development as developed in an IMF publication by Svirydzienka, examines the role of overall financial development, financial institutions, and financial markets in the export performance of Nepal employing the Autoregressive distributed lag (ARDL) approach of cointegration using the annual data from 1980 to 2017. The results show that financial development does not have a strong long-run positive relationship with the export performance of Nepal. Financial institutions and financial markets also indicate a negative association with exports. Therefore, it can be suggested based on the results that there is a need for developing strategies for the proper financial development improving the financial institution quality, and widening the financial market targeting to facilitate more meaningfully to the exporters and manufacturers to boost export performance.

Subjects: Economics and Development; Macroeconomics; Development Economics

Keywords: Financial development; export performance; ARDL approach of cointegration

ABOUT THE AUTHOR

Dr. Ramesh Paudel is an Associate Professor of Economics at the Central Department of Economics, Tribhuvan University, Kirtipur, Kathmandu, Nepal. Currently, he is also serving as a member of Board of Trade, Government of Nepal. He holds a PhD in Economics from the Australian National University in 2013 and Master by Research from the University of Wollongong University, Australia. His PhD thesis is about the trade performance and economic growth of landlocked developing countries. Dr. Paudel brings academic and policy experience together for more than 15 years, from which he has extensively published in international peer reviewed journals.

Dr. Majed Alharthi

Dr. Majed Alharthi is an Assistant Professor in Economics and Finance at King Abdulaziz University, College of Business, Rabigh, Saudi Arabia. His research interests are on sustainability, economics, energy, environment and finance. Moreover, Dr. Alharthi is reviewing papers for some high-ranked journals. Dr. Alharthi is a distinguished researcher who has currently papers published in well reputed SSCI and SCI journals.

PUBLIC INTEREST STATEMENT

This study examines the impacts of financial development, financial markets, labor force, foreign direct investment (FDI), and economic growth on export performance in Nepal during the period 1980-2017. The findings of our study suggest that FDI increase the export performance significantly and positively. In contrast, the correlation between export performance and financial markets growth is significant and negative. The financial development, financial institutions, labor force, and economic growth have insignificant and negative impact on export performance. Based on the results, this study recommends finding strategies for financial development to enhance financial institutions and markets, which results to improve export performance.

Subjects: codes: C23; O16; O40

1. Introduction

The role of financial development in export performance is not much discussed in the literature compared to its role in economic growth. Most of the studies about financial development have focused on the role of economic growth concluding the positive impact of financial development, if it appears to be, in economic growth is due to its motivation to the economic activities and trade. The literature gives a perception that financial development promotes trade in the economy, contributes to increasing economic activities, and creates a trade-friendly environment. These logics show that financial development first facilitates the trade accelerating the economic activities in the economy, such as creating employment and smoothing public and private expenditure, via which it promotes the economic growth. Also, financial development motivates the export performance supplying the required capital for the production activities that stimulate exports and by there the economic growth. It refers that the channel through which financial development contributes to economic growth is through promoting export performance, which is one of the major concerns of the growth target set by the policymakers and stakeholders.

A notable point from the literature is that very few studies have been directly concerned about the role of financial development in export performance, and this seems unlike the case of the relationship between financial development and economic growth. More than that the discussion of the role of the component of financial development has not been analyzed systematically yet in the context of Nepal. Very few papers have discussed the role of financial development in export performance in recent years.

Looking at the data for the financial development index and its major components as discussed in Svirydzienka (2016) and export growth, we see that financial development has not impacted the export performance (Figures 1 and 2, explained in detail in Section 2). But this issue has not been tested empirically in the context of Nepal yet. Therefore, a systematic analysis investigating the role of financial development and its components in export performance in the country-specific setting of a landlocked developing country, Nepal, is essential to shape the literature in the context. This study aims to contribute to the financial development and export literature bridging the stated gap.

Nepal is a unique country for the country-specific case study because of various reasons, such as it represents the group of landlocked developing countries and lagging with poor export performance even having lots of natural resources, large markets in the closed neighbourhood, comparatively cheap labour force with high demographic dividend, evergreen suitable climate for agriculture, and being an earlier entrant in the liberalization and reform policy. Notably, Nepal started policy reform in the mid-1980s as prescribed by the international financial institutions, donor agencies, and development partners aiming to improve export performance. Therefore, if we believe the conventional perception that the country with liberalization and reform policy support for financial development and trade performance, Nepal should have been in a unique position in terms of economic growth and export performance as discussed in (Kalirajan & Paudel, 2015). Also, Nepal is a landlocked developing country that may have a different impact on financial development and its trade might be naturally lower than other developing countries as discussed in Paudel and Cooray (2018). These scenarios seek attention on whether the role of financial development and its components are contributing positively to boost the export performance or not in Nepal. Most importantly, urgency in the policy side seems important to know about the components of the financial development, which may be crucial for better export performance enhancing the economic activities including manufacturing and trade.

This study uses the financial development index and the components of financial development, named as financial institutions and financial market access, as developed in Svirydzienka (2016), which has not been used in any study to date. As the index is available for Nepal covering the period from 1980 to 2017, we cover the same study period. This index was developed creating nine indices that summarize how developed financial institutions and financial markets are in terms of their depth, access, and efficiency, and then aggregating into an overall index of financial development. Svirydzienka (2016) explains the components of the financial development index stating that financial institutions refer to banks, insurance companies, mutual funds, and pension funds.

The major aim of this paper is to investigate the role of financial development in the export performance of Nepal and to detect the most crucial component of the financial development so that more credible results can be obtained for better policy inferences to improve the export performance.

This article is divided into six sections. The following section highlights the financial development analyzing the issues and trends of financial development and export performance in the context of Nepal. In Section Three, we discuss the research methodology. In Section Four, we discuss the adopted research methodology of the paper. The estimated results have been discussed and interpreted in Section Five before concluding in Section Six.

2. Financial development and export performance in Nepal

Nepal's formal financial sector begins with the commercial bank, that is, Nepal Bank Limited was established as the first bank in 1937 by the investment from both government and private sector with the share of 51 and 49%, respectively. A second step in the development of the financial sector was the establishment of the Central Bank of Nepal (Nepal Rastra Bank) in 1956 (Acharya, 2003; Maskay & Subedi, 2009). Also, Nepal started its first 5-year development planning system in 1956 that paved the way to flourish the financial sector to the next step. Nepal had two commercial banks, two development banks, two insurance companies, Security Exchange Center, Employees Provident Fund, and the Credit Guarantee Corporation until the mid-1980s.

By the time of the restoration of democracy in 1989/90, these institutions were focused in the urban areas of the country, then the financial sector has been expanded due to the implementation of various measures of the financial liberalization, such as removal of entry barriers in 1984, the introduction of prudential norms in 1988, establishment of a credit bureau in 1989, strengthening of the government-owned commercial banks in 1991 onward, reform in the capital market, enactment of development bank Act in 1996, Revision of Nepal Rastra Bank Act 2001/02 and many other efforts (Shrestha, 2005). As a result of these entire efforts, the Nepalese financial market is ranked as an open market. Foreign banks have a good attraction in the country. A total of six, out of 27 commercial banks, have been established under the joint venture with the foreign banks.

If we look at the issues in the financial development and export performance, we find that the established link to contribute to economic growth by financial development is through motivating various factors of production. For example, a developed financial sector can provide sufficient working capital, investment and credit facilities, financial information, financial knowledge, and innovative ideas to the entrepreneurs so that the output of a nation can be increased to contribute to economic growth (Paudel & Jayanthakumaran, 2009; Shrestha, 2005). Similarly, Jangam and Akram (2020) state that financial integration, the part of financial development, contributes significantly to export diversification that can help for better export performance.

Another influential factor in export performance, as a part of financial development, is the foreign direct investment (FDI) that seems very stagnant in the Nepalese context. Because of various reasons, until now, Nepal has not become an attractive place for FDI. Being the small-

middle size of the domestic market and the large markets in the neighbourhoods, the firms associated with the FDI are targeting for exporting market at present or the potential for exports in the future.

Another link is said to be the policy context to motivate the factors of production to improve export performance. Nepal has adopted a liberal policy in the financial sector because of which the financial sector has a slight growth in terms of the number of institutions and market access, and other financial development indicators. If we look at the banking sector, it has grown quite remarkably. For example, a total of 27 commercial banks are active and performing well and their profits are reported increasing over the years. Almost all, a total of 739 out of 753, local governments have banking facilities available in the locality, and notably, those 14 out of banking access have access to finance and microfinance accesses (Nepal Rastra Bank, 2019). But as can be seen in [Figures 1](#) and [Figures 2](#), the export growth is not satisfactory.

[Figure 1](#) shows a trend of financial development indicators and export growth in Nepal for the duration of 1980–2018. The broad money and domestic credit to the private sector have followed an almost similar trend over the period except for a few years after 2002 where outmigration from Nepal picked up due to the political situation. Domestic credit to the private sector declined in the early 2000s due to the same reason. Then, it gradually increased when political turmoil was ended by the comprehensive peace agreement between the government of Nepal lead by major political parties and the Nepal Communist Party (Maoist) in 2006 (Hachhethu, 2009). The figure shows that the situation of broad money, domestic credit to the private sector, and gross capital formation in the country, the export growth remained low over the period. The export growth rate is highly fluctuated, reached to about 42 per cent in 1995 and fluctuated being positive in most of the time. There are jerks of negative shocks in the early 1980s, late 1990s, early 2000s, and 2016.

The reasons for this situation are clear, that is, in the early 1980s was due to political struggle (student movements and referendum for the Multiparty system or Autocratic system). The export shock in late 1989/90 was due to again the political struggle for the restoration of democracy and blockade from the Indian side. From 1996 Nepal Communist Party (Maoist) started an armed struggle, cause that lots of strikes, shutdowns, and closers were there for the negative shocks in the entire economy that resulted in the negative growth of exports in different years until 2006.

Figure 1. Financial development indicators and export growth, 1980–2018.

Source: author's presentation using the data from World Bank (2021)

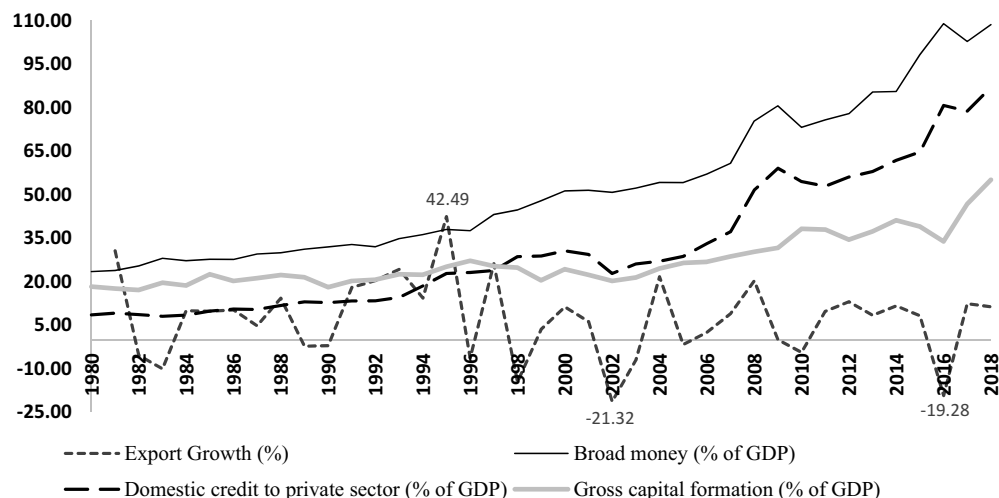
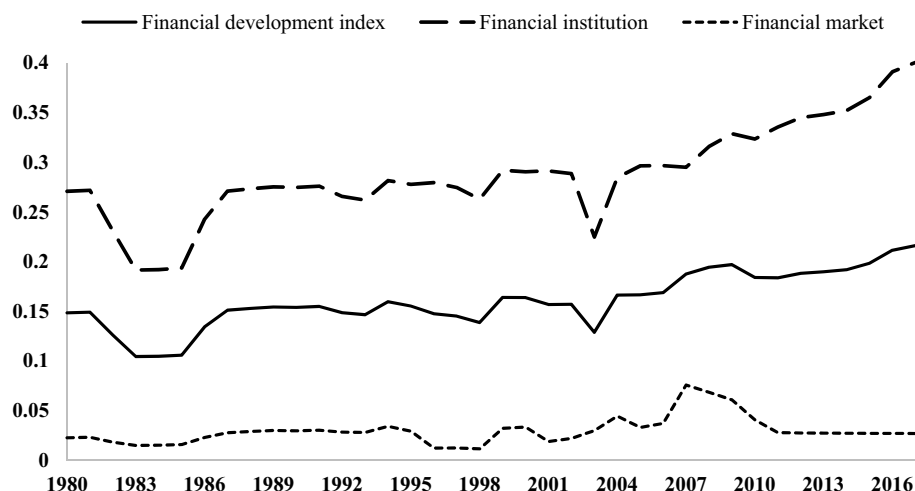


Figure 2. Financial development index for Nepal, 1980–2017.

Source: author's presentation using the data from Svirydzienka (2016)



Since, 2001 when Nepal Communist Party (Maoist) entered the city regions, out-migration picked up and the economy largely started to rely on remittance that has resulted from the largest negative growth of exports in 2002. The reasons for the 2016 negative growth of exports are due to two exogenous shocks in 2015, i.e., a devastating earthquake and an undeclared trade blockade in the Indian borders due to Nepal's internal political turmoil. The average export growth over this period is just about seven and a half per cent.

Figure 2 presents the financial development index and two important components of the financial development, such as financial institutions and financial markets for Nepal as developed in Svirydzienka (2016). She has analyzed the overall financial development issues and relevant variables to use the principal component analysis for financial institution depth, financial institution access, and financial institution efficiency to get financial institution and financial market scores to obtain a single index for financial development. The figure shows that the financial market has had an increasing trend over the period and that has led to maintaining the slow but positive trend of financial development. The financial market situation seems a nearly stagnant position with some fluctuations. It clearly shows that financial development in Nepal is largely dominated by the financial institution rather than the financial markets.

3. Literature review

3.1. Theoretical foundation

Most of the literature on financial development is concerned with the role of financial development in economic growth. Probably the first organized study in the modern field of financial development, largely in qualitative analysis, Bagehot (1873) has established the role of the financial sector in economic development. Schumpeter (1934) links entrepreneurial initiatives to economic development. Similarly, Goldsmith (1969), McKinnon (1973), and Shaw (1973) explore the relationship between financial development and economic growth considering the role of the financial system, financial intermediaries, and overall financial sector in many ways.

Arestis and Demetriades (1997), employing both cross-country regression and time series method, study the relationship between financial development and economic growth and conclude that financial development leads to economic growth. Also, this paper suggests that time-series analyses show more consistent results than the cross-country regression method. Further,

Acaravci et al. (2009) state that the debate in this field of studies is in broad issues: first, whether financial development results in faster economic growth and the second, how financial development affects economic growth. Fang et al. (2015), covering the panel data from 31 provinces and municipalities of China for the period of 2002–2008, analyze and find that financial development is an important factor to upgrade the technical sophistication required for the export trade. More recently, Akoto and Adjasi (2020) find that financial development has contributed to export diversification in Sub-Saharan Africa.

These representative studies suggest that the financial development promotes different scopes of export performance, motivates production forces, stimulate economic activities so that national output increases. Therefore, the channel seems from financial development to trade performance, then to economic growth.

3.2. International context

Most of the literature since the 1990s, we find the empirical work in different countries' contexts. Few of them are in panel studies and cross-sectional studies. For example, Levine (1997) states that a growing body of empirical analyses from firm-level studies, industry-level studies, country-specific case studies, and cross-country analysis, employing various methods and tools of analysis, clearly demonstrate a strong positive relationship between the financial system and long-run economic growth.

A notable point from the literature is that very few studies have been directly concerned about the role of financial development in export performance. If we take a note of the studies from recent years, we find few studies related to financial development and different areas of economies including export performance. For example, Okafor et al. (2020) suggest that promoting publicly funded financial incentives along with conventional schemes, such as R&D subsidies may be a good way to improve export performance even in the developed countries. Chen et al. (2020), using the firm-level data from 260 cities of China for the period from 1997 to 2012, find that the firms with more financially vulnerable sectors have underperformed compared to foreign affiliates firms that are much stronger in case of financial capacity. Pradhan et al. (2020), using the ARDL approach of cointegration in quarterly time-series data from India from 2000 to 2014, finds a positive association between bank credit (the widely accepted proxy of financial development) and export. Bereket (2020) finds that financial development is one of the major contributors to export performance in the case of Ethiopia.

Kumarasamy and Singh (2018) explain how access to finance and financial development contributes positively to export performance using the data from Asia Pacific countries. This paper suggests that access to finance and financial development helps the business firms to enter into the export market so that export performance also can be improved. Adeola and Evans (2017) analyze the economic diversification caused by financial development. Zhao et al. (2017), using panel data for 108 countries for the period from 1990 to 2011 concluded that financial development has an inverted U-shaped impact on export performance.

Ghimire et al. (2016) examines the role of the financial sector in export performance of 121 aid recipient developing countries and states the role of financial development on creating employment and promoting export performance, which would help for productivity gain and export diversification that would lead towards the economic diversification.

Coban (2015) investigates the causal relationship between financial development and export performance of Turkey using the data for the period of 1991–2012 based on time series analysis. This paper constructs banking sector and stock market financial development indexes and groups

the firms to suit the context of the indexes for testing the causality tests. Jaud et al. (2015) suggest that export-related financial facilities boost the exports. This raises the question that what is the role of overall financial development in export performance in the macroeconomic sense? Wamboye and Mookerjee (2014) state that financial development in some cases has a negative or ambiguous relationship with export performance based on the research work conducted in the context of a total of 29 African countries case.

Anagaw and Demissie (2012) state that financial development promoted export performance in Ethiopia. Jarreau and Poncet (2011) employing the firm-level data suggest that the credit constraints, a part of the financial development, restrict international trade flows in the case of Peoples' Republic China. It suggests removing the financial constraints to improve the export performance as it would help to smooth the production activities of the firms. Beck (2002) suggest that the country with a higher level of financial development experience the higher share of exports in their economy.

3.3. Nepalese context

As in the international context, the role of financial development in Nepal's export performance has been unable to attract much attention from the research scholars. Most of the studies have focused on the role of financial development in economic growth and suggested that financial development motivates economic activities to increase national output leading to economic growth. Paudel (2020) states that financial development should support a trade-friendly environment so that economic growth is possible in Nepal. There are few studies on the financial development and export performance of the countries like Nepal. Rana (2019) finds that bank-based and market-based financial development in Nepal helps to make innovations and exploit available resources to accelerate economic growth. This finding indicates that financial development motivates trade performance by exploiting resources and then contributes to economic growth.

In the context of Nepal, looking at the data for the financial development index and its major components as discussed in Sviryzdenka (2016) and export's growth, we see that financial development has not impacted the export performance (Figures 1 and Figures 2, explained in detail in Section 2). But this issue has not been tested empirically in the context of Nepal yet. Therefore, a systematic analysis investigating the role of financial development in export performance in the country-specific setting of a landlocked developing country is essential to shape the literature. This study aims to contribute to the financial development and export literature bridging the stated gap.

4. Research methodology

Measuring financial development has been a complex issue. Normally, money supply, banking facilities, credit supply, capital formation, credit to the private sector, and so on are used as proxies of financial development in many studies. It was confusing because there was no uniformity in the proxy and conclusions were made based on different assumptions and proxies. In the modern economy, particularly in the era of globalization, the export performance of the developing country has been a serious issue. We develop the research methodology to address our main concern of whether the role of financial development is paying a crucial role in the export performance of a landlocked country.

For this, employ annual data for the period from 1980 to 2017. We limit this study to this period as the major objective is to test the financial development index developed in Sviryzdenka (2016), which has the index until 2017. As the covered period is of 38 years, time-series data may have different orders of cointegration. Therefore, we test the time-series properties of data first, then we use the data set in the standard model to analyze the financial development's role in export performance. The main variables of interest are financial development, financial institutions, and

financial markets to identify the role of these main variables of interest in export performance. To conduct the econometric estimation, we develop a model as explained in the following subsections. At the final stage to confirm the results are robust, we conduct the estimation employing alternative specifications of the model.

4.1. Model, variables, and data

This paper employs an export performance model similar to that of Kadochnikov and Fedyunina (2017), which is about the Russian export performance using the gravity modeling approach. However, our approach is different from this paper in the methodological approach, for example, we use time-series analysis instead of panel data analysis. Therefore, the adopted methodology in this paper is different from those of Kadochnikov and Fedyunina (2017) even the major variables are in common except gravity variables and human resources. Also, we use a composite indicator for financial development. Only for the modeling approach, Coban (2015) in the case of Turkish exports has adopted a similar approach in modelling as we do in this paper. Our approach is different from Coban (2015) in few aspects, for example, Coban (2015) uses the firm-level data, but we use the time-series annual data of total exports. Also, our model differs from much of the literature in terms of using the proxy for financial development. We use the financial development index as developed in Svirydzenka (2016) and the robustness checks are performed using the financial institution and financial markets components of the financial development as developed in the same research work.

Also, financial markets refer to the stock and bond markets. The combined efforts of financial institutions and financial markets create the financial development index. Further, both financial institutions and financial markets are judged based on the depth (size and liquidity of markets), access (the ability of individuals and companies to access financial services), and efficiency (the ability of institutions to provide financial services at low cost and with sustainable revenues, and the level of activity of capital markets).

The advantage of this index and the components is that represent the overall financial development situation of a country as a single variable (by index) as well as the components capture the financial institutions and financial market access (two major components of financial development). These components also can be used as separate independent variables in the export modeling purpose. The main contribution of this paper is a systematic analysis of the role of financial development and its two major components in Nepal's export performance using the new financial development index, which has not been tested in the Nepalese context yet.

In doing so, we understand the limitation of one index instead of their many components, such as the estimated effect would be in aggregate not the components' specific. We note there are various indicators proxied of financial development in many literatures, but we aim to evaluate the impact of financial development in aggregate, and test as a robustness check through its components.

The total amount of exports in the natural log form (LEXPORT), the dependent variable, is employed as the proxy of export performance. The independent variables are financial development index (FD) to represent the overall financial development proxy, working-aged population in the natural log form (LWAPOP) to represent the labour force, net foreign assets/investment in the natural log form (LFDI) to represent the capital as well policy reform context, and per capita gross domestic product in natural log (LGDP) to represent the economic growth impact as well as the proxy for the quality of the infrastructure development as in the equation (1) form:

$$EXPORT_t = \alpha + \beta_1 FD_t + \beta_2 LWAPOP_t + \beta_3 LFDI_t + \beta_4 LGDPPC_t + \epsilon_t \quad (1)$$

Where, α is a constant term, $\beta_1 \dots \beta_4$ are the coefficients of the variables of the model, ϵ is the error term, t refers to the period, i.e., year as we are using the annual data from 1980 to 2017. Based on the literature, we expect $\beta_1 \dots \beta_4$ to be positive. The model largely represents the supply side factors of the exports as discussed in (Paudel, 2016). The FD would be replaced by the financial institution (FI) and financial markets (FM) in the alternative specifications of the model.

The data used in this empirical analysis are collected from the world development indicators as given in World Bank (2021) except for FD, FI, and FM which are collected from Svirydzhenka (2016), which introduced a new broad-based index of financial development of 183 countries for the year 1980–2017.

4.2. Unit root tests

Our next step in the process is to conduct the unit root test to confirm whether each series is integrated and has a unit root using the Dickey-Fuller test (DF), augmented Dickey-Fuller (ADF) test, and the Phillips and Perron (PP). These tests are performed to know the time-series properties of the data.

The test results are achieved assuming the presence of a unit root (non-stationary variable) in the null hypothesis (H_0) and no unit root (stationary variable) in the alternative hypothesis (H_a). For this, a decision is made based on the calculated statistic and McKinnon's critical value; that is, if the calculated statistic is higher than McKinnon's critical value, then H_0 is not rejected, and the considered variable is non-stationary (has a unit root). To make the test systematic and reliable, we observed in level and then in first differences, including the intercept and time trend, because this is the most flexible specification of the test, as illustrated in equation (2).

$$Z_t = \alpha_1 + \alpha_2 t + \gamma Z_{t-1} + \sum_{j=1}^k \beta_j Z_{t-j} + \epsilon_t \quad (2)$$

Where, Δ is the first difference operator, Z is the variable of interest, α_1 is the intercept, t is the time, ΔZ is the augmented terms, k is the appropriate lag length of the augmented terms, and ϵ is the white noise error term. The ADF test is essentially the test of the significance of the coefficient γ in the above equation. The DF test is performed without the augmented term. To select the lag length k , we start with a maximum lag of 4 and pare it down to the appropriate lag by examining the Schwarz Criterion (SC) following standard procedures.

Table 1 presents the unit root test results of all seven variables. DF, ADF, and PP tests are conducted with two lags selected from the selection method and the results of the unit root tests show that only the variable LWAPOP is stationary in level form, so, known as $I(0)$ variable. The rest of all variables are not $I(0)$, may be of $I(1)$ or greater order of integration. Therefore, we move further to test for the other variables in the first difference. The lower panel of Table 2 presents the test results for other than LWAPOP variables. The lower panel of the results shows rest of all variables are $I(1)$. Therefore, we can conclude that the empirical variables are mixed with $I(0)$ and $I(1)$. This refers that the order of cointegration is not unique, one variable is integrated at the level and the rest variables are integrated at the first difference.

Table 1. Unit root test results of the variables

Unit root test at level	Test with constant			Test with constant & trend		
Variable	DF	ADF	PP	DF	ADF	PP
LEXPORT	0.268	-1.254	-1.270	-1.861	-1.810	-1.829
FD	-0.76	-0.731	-0.793	-2.857	-3.184	-3.249
FI	-0.461	-0.366	-0.305	-2.517	-2.812	-2.877
FM	-2.296	-2.33	-2.385	-2.527	-2.433	-2.532
LWAPOP	-1.952	-1.105	-1.825	-2.839	-4.472**	-0.477
LGDPPC	2.166	1.331	1.367	-0.859	-0.781	-0.821
LFDI	0.315	-0.751	-0.522	-2.622	-2.547	-2.590
Critical value @ 5%	-1.950	-2.943	-2.943	-3.190	-3.536	-3.537
Unit root test at difference	Test with constant			Test with constant & trend		
	DF	ADF	PP	DF	ADF	PP
LEXPORT	-4.73**	-6.52**	-6.52**	-6.09**	-6.43**	-6.43**
FD	-5.92**	-5.84**	-5.84**	-6.08**	-5.92**	-5.92**
FI	-5.85**	-5.77**	-5.81**	-6.13**	-4.59**	-4.59**
FM	-5.43**	-5.35**	-6.21**	-5.44	-5.28**	-6.40**
LGDPPC	-4.48**	-5.50**	-5.58	-5.66**	-6.13**	-6.13**
LFDI	-6.82**	-6.72**	-7.62**	-6.81**	-6.62**	-7.52**
Critical value @ 5%	-1.95	-2.94	-2.94	-3.19	-3.548	-3.540

Note: ** indicates the statistics are significant at 5% level of significance.

4.3. Econometrics

Once the time series properties are analyzed for the model and all variables, then we are fundamentally ready to go for the cointegration tests. Now, the standard procedure is to conduct the cointegration test to find out the coefficients to explain the relationship among the dependent and independent variables. As we have the time series data with the different order of integration, the variables included in [equation \(1\)](#) will be analyzed using a co-integration test based on the autoregressive distributed lag (ARDL) approach of cointegration. This method is best suited because of two reasons: first, we have a mixed set of the cointegration vector of the variables, that is, $I(0)$ and $I(1)$ and the approach provides the best results in such context (Anser et al., 2020). Second, this method provides the coefficients for both long-run and short-run so that we can estimate the results on the impact of financial development in export performance looking how is the direction in the long-run and short-run as discussed in many works of literature (Paudel & Jayanthakumaran, 2009; Pesaran et al., 2001).

Therefore, the benchmark model as stated in [equation \(1\)](#) will be modified as in [equation \(3\)](#) to represent the ARDL version of the specification.

$$\begin{aligned} \Delta \text{EXPORT}_t = & \alpha + \beta_1 \text{EXPORT}_{t-1} + \beta_2 \text{FD}_{t-1} + \beta_3 \text{LWAPOP}_{t-1} + \beta_4 \text{LFDI}_{t-1} \\ & + \beta_5 \text{LGDP}_{t-1} + \sum_{i=1}^{38} \gamma_i \Delta \text{EXPORT}_{t-i} + \sum_{i=1}^{38} \delta_i \Delta \text{FD}_{t-i} + \sum_{i=1}^{38} \theta_i \Delta \text{LWAPOP}_{t-i} \\ & + \sum_{i=1}^{38} \varphi_i \Delta \text{LFDI}_{t-i} + \sum_{i=1}^{38} \lambda_i \Delta \text{LGDP}_{t-i} + v_t \end{aligned} \quad (3)$$

Equation (3) captures the dynamic impact in the form of the Auto-Regressive Distributed Lag Model. In the model, Δ stands for the first-order differential variable, α is the intercept, $\beta_1, \beta_2, \beta_3, \beta_4$ and β_5 are the coefficients of first-order variables. Similarly, $\gamma_i, \delta_i, \theta_i, \varphi_i$ and λ_i are the parameters of the error correction model, and v_t is the vector of random error.

5. Results and discussion

In this section, we discuss the results of the econometric estimation. **Table 2** presents the long-run relationship results for the model of different specifications in columns (1), (2), and (3). Similarly, **Table 4** presents the results for the ECM (Error Correction Model) version in different specifications of the benchmark model. These tables show the long-run and short-run coefficients of ARDL with different lags as shown in their headings for the given model. Schwartz-Bayesian Criteria (SBC) is selected due to the relatively small size of the series.

In both tables, column (1) presents the results for the model with the financial development index (FD), which is a composite index to represent the overall financial development situation in Nepal. Column (2) presents the results with financial institutions (FI) and column (3) presents the results with the financial market (FM). Here, FI and FM represent the components of financial development to represent the financial institution and financial market situation in Nepal. In all the specifications of the model, the F-statics (Bound test) values are higher than that of the upper bound of the critical value indicating that the long-run relationships exist in the model.

The results in **Table 2** show that the financial development index (FD) does not have a strong long-run relationship with export in case of Nepal. Rather, the relationship is negative even though it is not statistically significant indicating overall financial development (FD) does not cause to grow the exports in Nepal. The assertion from the results is that most of the financial facilities have contributed to consumption based on imports, which is fed by workers' remittances as discussed in Paudel et al. (2020). This reflects the situation as shown by **Figure 1**. Further, financial institution (FI) and financial market (FM) variables are included in the estimations and results are presented in the column (2) and (3) respectively of the same table. The financial institution variable in column (2) also does not indicate the different effect in exports than that of column (1) of the given table. Column (3) of the table shows the statistical significance only at 10% level of significance and the impact is negative on the export performance. This refers that an index point increase in the development of the financial market generally causes to decline in the value of exports, on average, by about 6 per cent, holding other variables in the model constant. This implies that the exportable sectors have not really gained, rather lost, from the financial markets development in the country. All the proxies of financial development used in the model have a negative sign, however not statistically highly significant in all cases, this indicates that the financial development needs to be followed by the policies improvements to motivate the exports so that it can contribute to improving the export performance of the country. Also, the inference is that the financial development activities are boosted because of remittance based imports in the country.

Financial development can contribute to export performance only if the supplied funds are used for production activities or to increase the productivity of the production forces maintaining easy access to the entrepreneurs (Kumarasamy & Singh, 2018). The major financing areas of the banks seem to be in the real state, building and construction, hospitals and educational institutions, and wholesale and retail

Table 2. ARDL (2 2 2 2 2) model, long-run coefficients results

Dependent variable: exports-log (LEXPORT)	(1)	(2)	(3)
Financial development index (FD)	−4.940		
	(4.967)		
Financial institution (FI)		−1.262	
		(3.655)	
Financial markets (FM)			−6.152*
			(3.193)
Working aged populations-log (LWAPOP)	−0.179	−0.152	0.802
	(1.168)	(1.419)	(0.905)
Foreign direct investment-log (LFDI)	0.366***	0.357***	0.271***
	(0.108)	(0.137)	(0.078)
Per capita GDP-log (LGDPPC)	−0.143	−0.244	−0.234
	(0.275)	(0.321)	(0.178)
<i>Number of observations</i>	36	36	36
<i>Root MSE</i>	0.03	0.03	0.03
<i>Log-likelihood</i>	41.04	39.78	41.93
<i>R-squared</i>	0.61	0.58	0.63

Note: ***, ** and * indicate that the statistics are significant at 1%, 5%, and 10% level of significance. The figures in the parenthesis are the standard error.

trade. These performed activities are related to imports rather than exports and boost the imports of goods and services (Government of Nepal, 2021; Nepal Rastra Bank, 2020). This scenario has been replicated clearly in the econometric estimation too. The results are supported in the literature that states that financial development in some cases has a negative or ambiguous relationship with export performance as discussed in Wamboye and Mookerjee (2014), which state that out of a total of 29 African countries' case, financial development has a positive association with export performance only in 11 countries but in case of other seven countries the relationship is opposite and the contribution of financial development in export performance is ambiguous in rest of the 11 countries.

Against the normal expectation and against the general perception based on the role of labour theory in the trade, it can be summarized that the working-age population-the proxy of the labor force does not have a statistically significant impact on the export performance. It may be due to many out migrated working-age population every year so that they have not contributed to export performance meaningfully rather import based on the remittances, which is sent into the country.

Foreign direct investment has a statistically significant impact on the export performance of Nepal. It shows that a one per cent increase in foreign direct investment contributes to increasing export performance by almost half per cent on average, holding other variables in the model constant. It supports the voice that Nepal needs capital to inject into business and entrepreneurship so that exports can be boosted because technologies also will be followed to the FDI to increase the productivity and by that output, which can be exported, and results are consistent with the literature in the context, such as in Athukorala and Sharma (2005).

The results in columns (2) and (3) of [Table 2](#) also have an almost similar explanation as in column (1) of the table. The LFDI maintains the significance level at 1 per cent in all cases but the coefficients are slightly different indicating these results are robust. The results for the infrastructure proxy-LGDPPC does not have a statistically significant impact on exports meaning that the increased per capita income has not contributed to exportable production. Also, it indicates that there is a need to building infrastructure to support the production activities, not just the means of transportation and the development of the residential areas. It replicates the scenario of Nepal in that most of the roads, communication, and other infrastructures are focused on residential areas. It shows a need for tying up the infrastructures with the production hubs more carefully so that it will boost the output and exports.

[Table 3](#) presents the short-run results of the model. In all three specifications, ECM (–1) results are statistically significant with the expected negative sign indicating the disequilibrium that occurred in the previous period is corrected in the present period following a short-run shock at a relatively quicker pace if the coefficients are greater than 0.50. We did not find that impressive impact of the variables in the short run except few variables.

The variables, FM in column 3 have a statistically significant positive impact on exports performance but only at 10 per cent level of significance. It shows that the financial market has a positive impact in the short run. Also, in the short run, the working-age population has a negative impact if we take at 10 per cent level of significance for the one lag period but it turns to be positive with greater significance for the two lags referring that when the working-age population goes to the market involving the export or production sector, they will learn in the first year, and start contributing positively from the second year of their entrance.

Considering the post estimation tests statistics, we say that the moderately high value of R-square shows that the overall goodness of fit of the model is moderately high. The diagnostic test results show that the model passes the tests for serial correlation, functional form, normality, and heteroscedasticity. Further, the stability test results (CUSUM and CUSUMSQ) plotted against the critical bounds of 5 per cent level of significance are within the range, indicating that the model is structurally stable ([Figures 3, 4 and 5](#)). The stability tests show the estimated results lie within the boundary of a 5 per cent level of significance. These results indicate no evidence of misspecification and instability during the period covered for the estimation in the econometric modelling process.

6. Conclusions

Nepal's export performance has become a serious concern among policymakers as it has been deemed for many decades now despite many efforts from the stakeholders. Noting this point, we documented a brief history of financial development and a descriptive reflection of financial development in the export performance of Nepal. In this process, we highlighted the main issues and trends of the financial development in Nepal and then moved to analyze the time-series properties of the annual data before stepping to investigate the role of financial development in export performance. Then we investigated the role of financial development in export performance using the ARDL approach of cointegration employing a comprehensive financial development indicator for the period of 1980–2017.

During the empirical estimation, we followed the standard procedures and detected the long-run and short-run relationship among the dependent and independent variables in the model employing different specifications so that the results and findings are robust. Then, we looked at the post estimation statistics to satisfy the procedures that are followed correctly and presented the results and relevant figures in suitable places.

Table 3. ARDL (2 2 2 2) model, ECM results

Dependent variable: $\Delta \text{Exports-log}$ (ΔEXPORT)	(FD)	(FI)	(FM)
FD (-1)	1.630 (1.844)		
FD (-2)	3.068 (2.119)		
FI (-1)		0.793 (1.185)	
FI (-2)		0.966 (1.335)	
FM (-1)			2.111 (2.358)
FM (-2)			3.809* (2.167)
LWAPOP (-1)	-16.09** (7.622)	-15.503* (7.987)	-18.662* (7.261)
LWAPOP (-2)	13.99 (8.931)	12.679 (9.194)	15.738** (8.955)
LFDI (-1)	-0.075 (0.055)	-0.072 (0.058)	-0.086 (0.053)
LFDI (-2)	-0.081 (0.052)	-0.060 (0.052)	-0.071 (0.046)
LGDPPC (-1)	0.21 (0.341)	0.222 (0.346)	0.316 (0.351)
LGDPPC (-2)	-0.097 (0.318)	-0.185 (0.318)	0.034 (0.322)
ECM (-1)	-0.502*** (0.167)	-0.467** (0.177)	-0.66*** (0.209)

Note: ***, ** and * indicate that the statistics are significant at 1%, 5% and 10% level of significance. The figures in the parenthesis are the standard error

Figure 3. CUSUM and CUSUMSQ plotted against the critical bounds of 5% level of significance

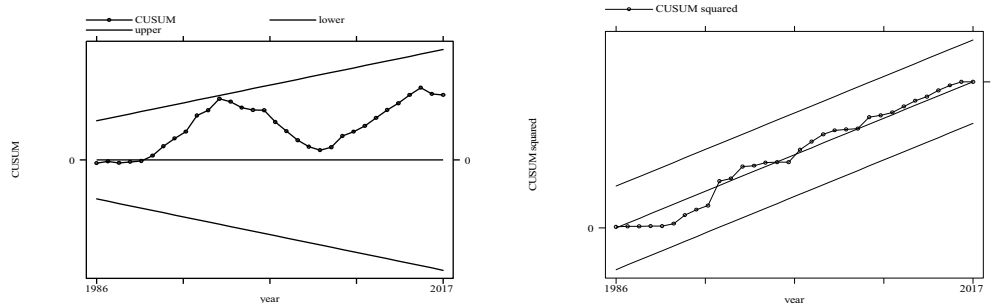


Figure 4. CUSUM and CUSUMSQ plotted against the critical bounds of 5% level of significance

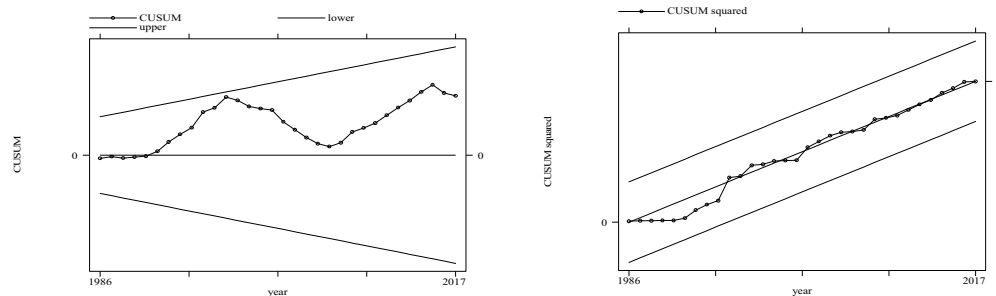
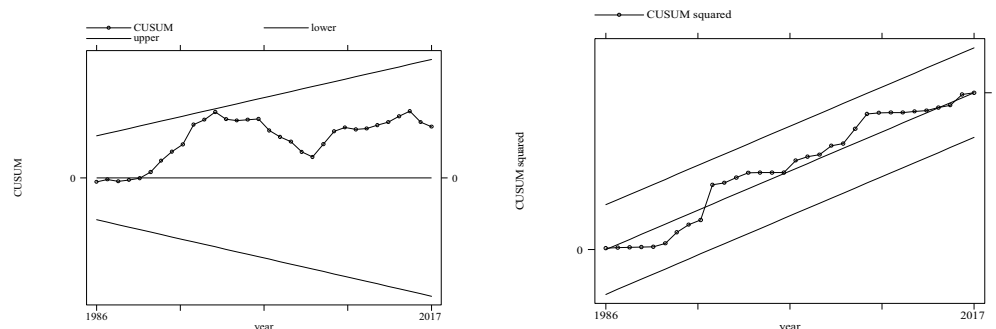


Figure 5. CUSUM and CUSUMSQ plotted against the critical bounds of 5% level of significance



From the empirical analysis, the results, consistent with a stream of the literature and against the finance-trade theory, showed that financial development does not have a significant impact on export performance in the case of Nepal. The financial market has a negative association with the export performance, indicating that a one index point (one per cent increase in index) of the financial market (FM) causes to decline of the export performance, on average, by about six per cent. The reason behind such a situation may be the banking and financial access have not been designed to fulfil the requirements of the business sectors. It indicates that all the banking and financial products need to be redesigned to suit the production and business activities that will help to develop an entrepreneurship environment. Doing this will help to contribute to increasing the output and by there the export performance.

The major policy inference from the finding is that there is a need to improve the entire financial sector aiming to provide benefits for small and medium scale firms and industries. One way to improve the export performance of Nepal may be to make a more favourable environment for foreign investors as the results show the strong positive relationship of foreign direct investment with export performance. Making FDI friendly environment in the country would not only full fill the capital requirement of the business sectors but also would help to increase productivity as the FDI normally brings the know-how (technology) from the source country. Also, there is a need to building infrastructure to support the production activities, not just the means of transportation.

The major contribution in the literature from this paper is that it brings a consolidated document to those interested in Nepal's financial development and export situation. This is the first of its kind document to explain the role of financial development in export performance using the latest index for financial development. On the other hand, the major limitation of this paper may come

from the quality of the annual data of the financial development index, which are collected to make consistent with other 183 countries. These data sources are different from that of the World Bank database but both data sources are largely based on the national sources of data. Therefore, we can confirm that this limitation would not change our policy recommendation. And confidently can say, based on the estimated results, that strengthening the financial sector to motivate the economic activities, attracting more FDI, and tying the infrastructure with the production hubs may be the ways to improve the export performance in Nepal.

The findings of this paper have some important policy implications as the financial sector development is one of the major issues of economic development in Nepal. This systematic examination of the role of the financial development index, and its components: financial institutions and financial markets provide some insightful inferences to policymakers' perspectives and other stakeholders including customers and different elements of financial institutions and financial markets. This helps the policymakers to amend the financial development policies understanding the role played by these variables for export performance. The findings ask about the important changes in the future. These variables suggest that policies need to be changed making the overall financial system more trade-friendly. The other stakeholders can know the direction of the future of the financial system and be prepared for the required changes that may occur as the role of the financial system to promote export performance is not satisfactory to date.

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Author details

Ramesh C. Paudel^{1,2}

Mojed Alharthi²

E-mail: mdalharthi@kau.edu.sa

ORCID ID: <http://orcid.org/0000-0003-3553-243X>

¹ Central Department of Economics, Tribhuvan University, Kirtipur, Kathmandu, Nepal.

² Finance Department, College of Business, King Abdulaziz University, Rabigh, Saudi Arabia.

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