Do Financial Sector Activities Affect Tax Revenue in Pakistan?

Naeem Akram[*]

Abstract

By mobilizing savings, financial markets play a crucial role in economic development. Given that the literature does not fully explore the nexus between financial activities and tax revenue, this study attempts to analyze the role of financial markets in generating tax revenue in Pakistan, using time series data for the period 1975–2014. It finds that, in the long run, the number of bank branches and market capitalization have a positive and significant impact on tax revenue. While credit to the private sector has a bidirectional relationship with tax revenue, public sector credit has an insignificant impact. In the short run, only the number of bank branches and market capitalization have a significant impact on tax revenue.

Keywords: Financial sector, financial liberalization, tax revenue, Pakistan.

JEL classification: G1, G38, H21, C32.

1. Introduction

The development of financial markets is crucial to the economic growth of developing countries such as Pakistan. As early as 1912, Schumpeter found that financial development stemming from a country's individual savings could improve social wellbeing and stimulate economic growth. Subsequent studies have supported the view that financial development has a positive impact on economic growth. Additionally, the effectiveness and efficiency of the tax collection mechanism is very important because tax revenues are needed to meet the government's development and nondevelopment expenditures. However, taxes should be levied in such a way that they do not discourage investment (Padda & Akram, 2009).

Fiscal policy affects the overall economy and growth in various ways, of which financial markets are an important transmission channel

---

[*] Assistant Chief, Economic Affairs Division, Islamabad, Pakistan.
The views presented in this paper are those of the author and do not necessarily reflect the views of the institution with which he is affiliated.

(Arin, Mamun & Purushothman, 2009). The key issues that need to be examined are whether taxes affect financial sector development and the role of the financial sector in tax collection. Assuming that both financial and investment activities are similar, an increase in the tax rate can distort financial system development (Clark, 2007). Golob (1995) argues that taxes affect financial markets through three different channels: (i) interest on loans, (ii) municipal securities and (iii) firms' publicly traded shares, which are taxable.

Numerous studies have analyzed the impact of taxation on investment decisions, generally finding that tax policy has a strong impact on financial sector activities. Most studies suggest that an increase in taxes has a negative impact on the activities of the financial sector and that the tax structure significantly influences stock market returns. Taxes have a negative impact on banking activities for foreign banks and a positive impact for domestic banks (see Tavares & Valkanov, 2001; Laopodis, 2009; Clark, 2007; Arin et al., 2009; Ardagna, 2009; Demirgüç-Kunt & Huizinga, 2001).

Banks, other financial institutions and insurance companies supply liquidity to both businesses and consumers by providing different types of payment systems that are essential for noncash transactions (Elliott, 2010). If a country's financial institutions are well developed, transparent and efficient, then businesses and taxpayers will use them to conduct their transactions. In turn, the tax collecting authorities can obtain valuable information from these institutions on taxpayers' income and assets. However, in the case of underdeveloped financial institutions, the size of the underground economy increases and it becomes difficult to collect accurate tax information. Hence, the development of the financial sector is also an important determinant of tax revenue.

A review of the literature suggests that the impact of financial development on taxation is relatively under-investigated in the context of developing countries. Bohn (1990) concludes that there is a positive relationship between financial development and tax revenue. Boyd (2009) emphasizes the significant impact of a downturn in investment in capital markets on tax revenue collection, concluding that, since financial sector development helps determine investment, it also has an impact on tax revenue.

Hung and Lee (2010) find that tax policies play an important role in the development of the banking system, while the taxes paid by foreign

banks increase only slightly with the local statutory tax. Taha, Colombage and Maslyuk (2010) establish a two-way relationship between direct tax revenue and the financial sector. They find that direct tax revenue has a significant relationship with financial activities. Similarly, the development of the bonds and stocks market has a crucial role in revenue generation.

Although tax revenue is the main source of government income, Pakistan has, over the years, failed to collect adequate tax revenue. In FY2014, the tax-to-GDP rate was only 10.1 percent, which is very low compared to other countries: 17 percent in India, 11.6 percent in Sri Lanka and 14.4 percent in the Philippines. Nonetheless, Pakistan's financial market has performed well: in 2014, it was ranked among the top ten best-performing markets in the world (Pakistan, Ministry of Finance, 2015). In this regard, it becomes extremely important for policymakers to design the fiscal policy in such a way that it stimulates the financial market, in turn, contributing to better revenue collection.

This paper is organized as follows. Section 2 describes tax revenues and financial sector development in Pakistan. Section 3 presents the data and estimation methodology used and Section 4 summarizes the results. Section 5 provides a conclusion, policy recommendations and suggestions for future research.

## 2. An Overview of Financial Development and Tax Revenue

Post-independence, Pakistan inherited an underdeveloped economy and financial system. The country's leadership was very keen to boost the economy and develop a well-organized financial system. To this end, the first stock exchange (the Karachi Stock Exchange) was founded in 1947 and the central bank, the State Bank of Pakistan, came into being in 1948. Pakistan's performance in various financial markets and tax revenue collection is described below.

In the last three years, Pakistan's financial market performance has improved substantially. In 2014, it was ranked the third best-performing market in the world. The key factors behind this remarkable performance are the country's improved macroeconomic indicators (particularly forex reserves), expected investment by China, business-friendly reforms, the confidence of donor agencies in Pakistan's economy (particularly the IMF program) and government privatization plans. Figure 1 shows that, after 1991, there was steady growth in market capitalization as a percentage of GDP, with added momentum after 2002.

Figure 1: Market capitalization as a percentage of GDP
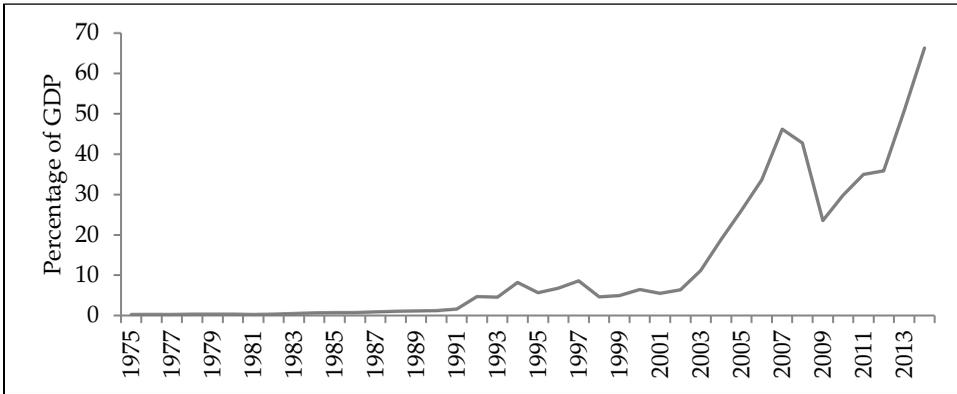
Source: Author's calculations, based on data from the State Bank of Pakistan.

The number of bank branches per 100,000 persons is a performance indicator of the banking sector. Figure 2 suggests there was a decline in the number of branches during 1975–91. Post-1997, banks began to expand their business and open more branches, leading to an increasing trend in the number of bank branches.

Figure 2: Number of bank branches per 100,000 persons
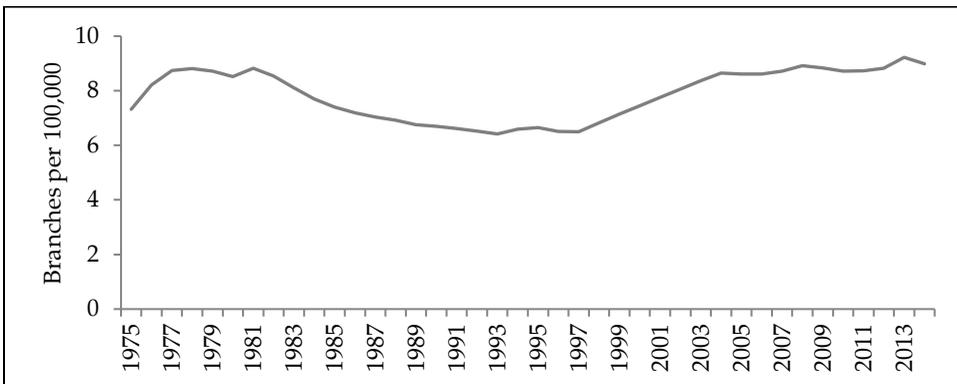
Source: Author's calculations, based on data from the State Bank of Pakistan and Pakistan Bureau of Statistics.

Figure 3 shows that tax revenue as a percentage of GDP has not increased over the years. On average, tax revenues were 13.7 percent of GDP in the 1980s. In the 1990s, this ratio fell slightly to 13.1 percent. In FY2014, tax revenues were only 10.1 percent of GDP. In 2001, Pakistan introduced comprehensive tax reforms to raise its tax revenue. The Federal Board of Revenue has taken steps to enlarge the tax base, introducing a

universal self-assessment scheme and bifurcating medium and large taxpayer units. In absolute terms, there has been a considerable increase in tax revenue, but if we measure taxes as a percentage of GDP, then the reforms appear to have been less successful.

**Figure 3: Tax revenue as a percentage of GDP**
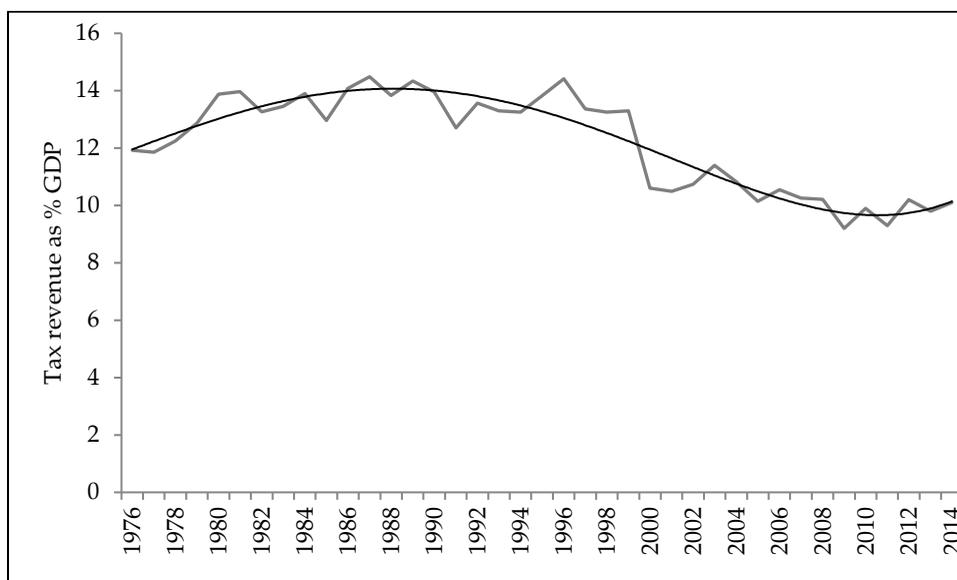
Source: Author's calculations, based on data from the Ministry of Finance.

Taxes in Pakistan are broadly divided into direct and indirect taxes. Direct taxes are further divided into income tax, wealth tax and the Workers Welfare Fund. Indirect taxes are collected primarily under three heads: custom duties, excise duties and sales tax.

Figure 4 shows the composition of tax revenue in Pakistan. The share of direct taxes has increased from 18 percent in 1975 to 40 percent in 2014. This suggests that, over the years, there has been a considerable policy shift from indirect to direct taxation and the share of indirect taxes has fallen. In direct taxes, income tax plays a crucial role, accounting for about 97 percent of total direct taxes. Income tax consists of withholding taxes (56 percent), voluntary payments (32 percent) and out-of-demand taxes (11 percent) (Figure 5).

Figure 4: Direct and indirect taxes as a share of total tax revenue
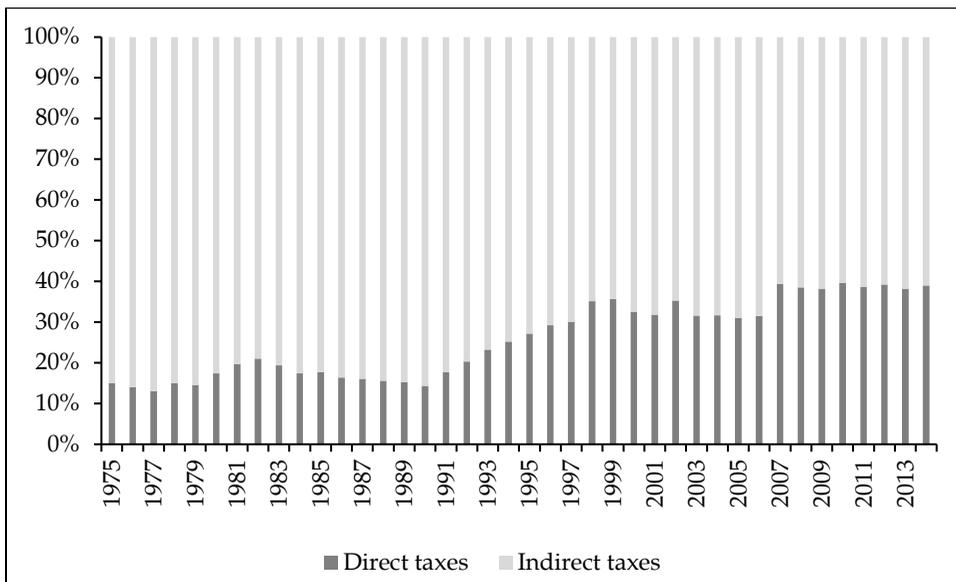
Source: Author's calculations, based on data from the Ministry of Finance.

**Figure 5: Components of income tax**
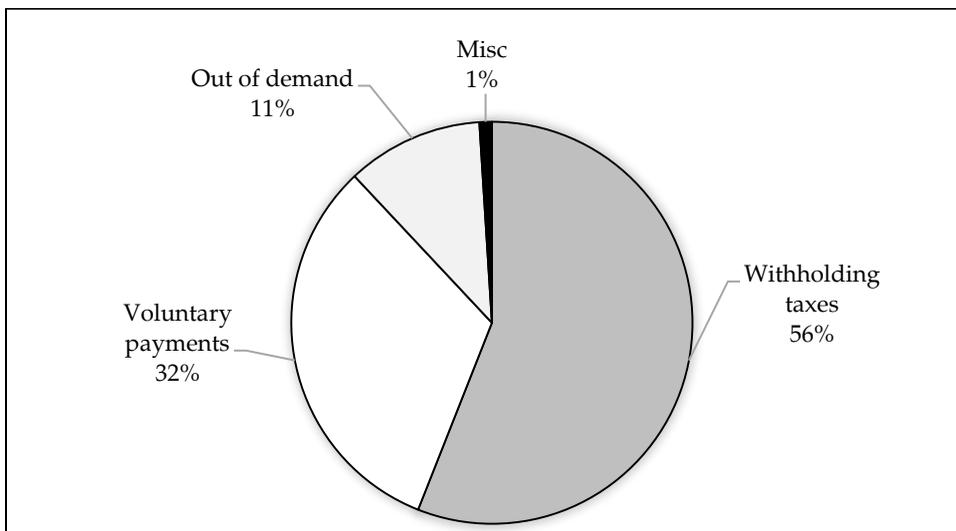
Source: Author's calculations, based on data from the Federal Board of Revenue.

Withholding tax is an advance tax that is levied at source on certain economic activities. Unlike income tax, most of the impact of withholding tax is transferred to the consumer. The highest share is that of contracts. In

the case of indirect taxes, the major share is that of sales tax (70 percent), followed by customs and excise duties (see Figure 6).

Figure 6: Components of indirect taxes
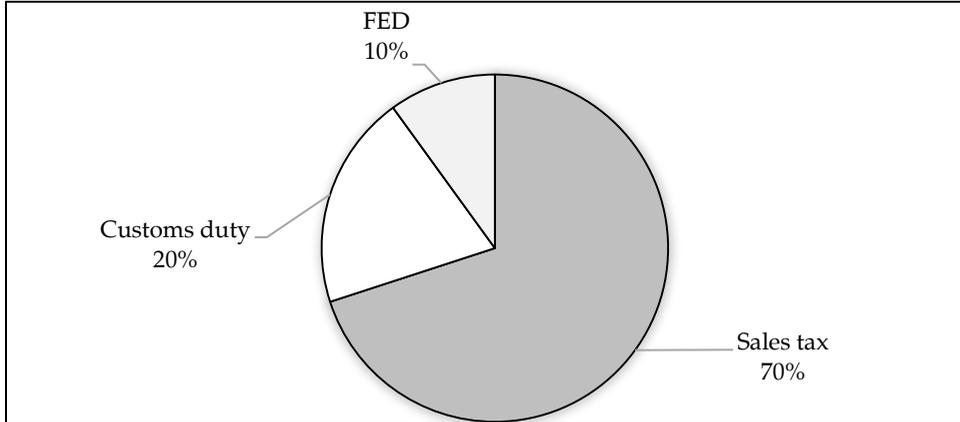
Source: Author's calculations, based on data from the Federal Board of Revenue.

In Pakistan, sales tax is liable on the sale of all taxable goods and services, excluding those goods that are exempted under the sixth schedule of the Sales Tax Act 1990. Sales tax is the leading source of tax revenue, accounting for 43.3 percent of the total tax revenue. Figure 7 illustrates the historical trend in sales tax revenue over the years. Sales tax is divided into two components: sales tax on domestic supplies and on imports. The former accounts for 49 percent of the total sales tax and the latter for the remaining portion.

Figure 7: Historical trend in sales tax collection
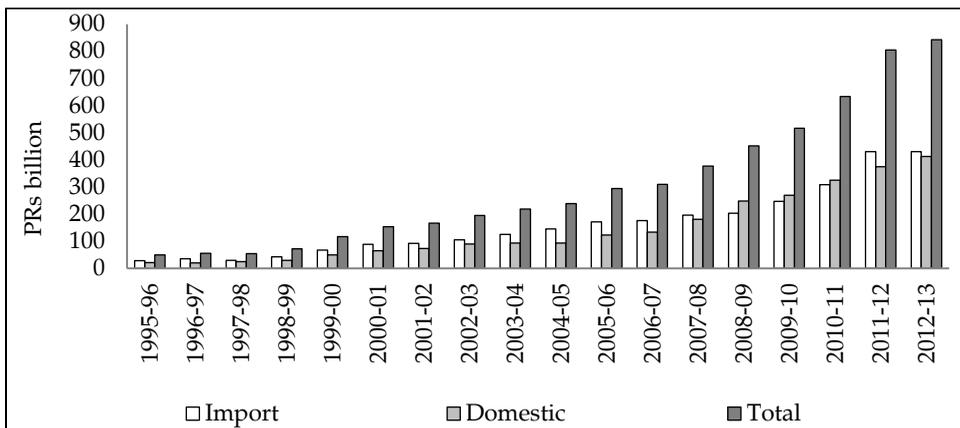
Source: Author's calculations, based on data from the Federal Board of Revenue.

Customs duties, which are levied on dutiable imports, account for 20 percent of indirect tax revenues. The volume of customs duty collection plays a crucial role in creating a base for other taxes on imports such as withholding taxes, excise duty and sales tax on imports. Figure 8 shows the historical trend in customs duty collection over the years.

Figure 8: Historical trend in customs duty collection
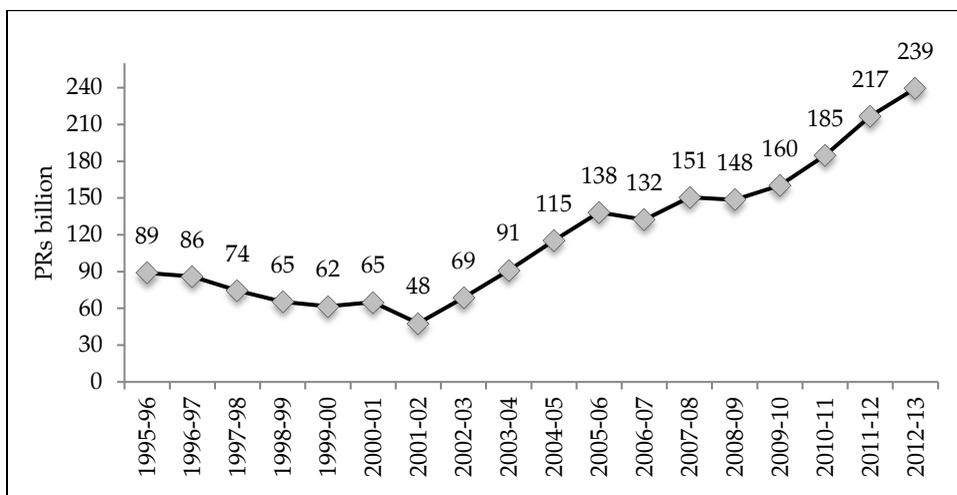
Source: Author's calculations, based on data from the Federal Board of Revenue.

As Figure 6 above shows, 10 percent of the indirect tax revenue is collected in the form of federal excise duty (FED), which is levied on the production of selected commodities and services. These include beverages, cigarettes, cement, air travel, natural gas and POL products. Commodities that are domestically liable to FED are also liable at the import stage. Figure 9 indicates that, unlike other taxes, FED revenues have declined primarily because more and more commodities are being exempted from FED. Nonetheless, its share of total tax revenue remains significant.

Figure 9: Trend in FED collection
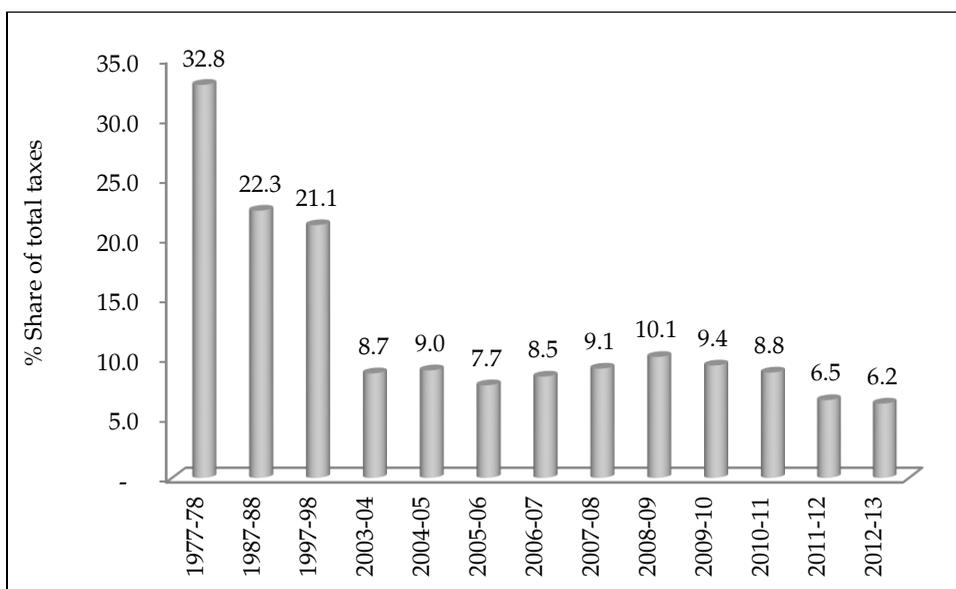
Source: Author's calculations, based on data from the Federal Board of Revenue.

3. Data and Empirical Model

The study's dataset comprises 40 annual observations spanning the period 1975–2014. Based on this, we analyze the impact of financial sector growth on tax revenues. The variables used are presented in Table 1.

Table 1: Variables and sources of data

Variable	Data source	Description
Tax revenue (TX)	Finance Division	Tax revenue as a percentage of GDP (dependent variable)
Market capitalization (MC)	State Bank of Pakistan	Market capitalization of the Karachi Stock Exchange. Used widely as a performance benchmark of capital markets in Pakistan.
Number of banks (NB)	Federal Bureau of Statistics + State Bank of Pakistan	Number of banks per 100,000 persons. Used as an indicator of financial inclusion in the banking sector.
Credit to private sector (LPR)	State Bank of Pakistan	Credit given to the private sector and to the public sector by commercial banks as a percentage to GDP. Used as indicators of banking sector development.
Credit to public sector (LPU)	State Bank of Pakistan	

All the values are taken in natural log form. The calculated long-run and short-run coefficients are their respective elasticities. Tax revenue (*TX*) is assumed to be a function of market capitalization (*MC*), credit to the public sector (*LPU*), credit to the private sector (*LPR*) and the number of bank branches (*NB*):

$$TX = f(MC, LPU, NB) \tag{1}$$

From equation 1, we derive the following reduced-form equation:

$$TX_t = \propto + \beta MC_t + \gamma LPU_t + \omega LPR_t + \delta NB_t + \varepsilon_t \tag{2}$$

where *TX* denotes tax revenue (the dependent variable) and *MC*, *LPU*, *LPR* and *NB* represent market capitalization, credit to the public sector, credit to the private sector and the number of bank branches per 100,000 people, respectively. The $\propto$ term represents the intercept and ε_t is the error term. The data on tax revenue is, arguably, subject to nonrandom measurement error. While this error in the dependent variable will not lead to biased estimates, it can lead to inflated standard errors to some extent.

4. Empirical Methodology and Results

We apply the Granger causality test to check the direction of causality between tax revenue and financial development, the results of which are summarized in Table 2.

Table 2: Granger causality test results

Null hypothesis	F-statistic	Prob.
NB does not Granger-cause TX	1.81602	0.0262
TX does not Granger-cause NB	2.39884	0.0748
MC does not Granger-cause TX	1.09367	0.3796
TX does not Granger-cause MC	2.90807	0.0402
LPU does not Granger-cause TX	0.60612	0.6616
TX does not Granger-cause LPU	1.35893	0.2742
LPR does not Granger-cause TX	3.68828	0.0160
TX does not Granger-cause LPR	1.74122	0.0722

Source: Author's calculations.

The results indicate bidirectional causality between the number of bank branches and tax revenue. In the case of market capitalization, there is unidirectional causality, with the tax revenue variable causing the market capitalization variable. Credit to the public sector does not have a causality

relationship with tax revenue. However, there is bidirectional causality between credit to the private sector and tax revenue. These results suggest that taxes affect financial sector development while the financial sector also affects tax collection.

Since the study focuses on the role of the financial sector in tax revenue generation, we explore the impact of financial sector development on tax revenue, using cointegration. Given that we are using time-series data, the first step is to resolve the stationarity of the data. Granger and Newbold (1974) show that, if certain variables are integrated of order 1 or higher, then standard OLS can yield spurious results. This makes cointegration analysis the most appropriate methodology. The stationarity of the data is determined using the augmented Dickey–Fuller test, the results of which are given in Table 3.

Table 3: Results of unit root test

Variable	Level			First difference		
	Intercept	Trend + intercept	Neither	Intercept	Trend + intercept	Neither
TX	0.542453	-1.684771	12.885210	-5.504681*	-5.493810*	-0.458226
MC	-0.239872	-2.550045	3.617997	-5.910934*	-5.827949*	-4.483500*
NB	0.331735	-2.047563	2.397001	-4.511156*	-4.481678*	-3.755365*
LPR	-0.871464	-2.553923	9.501091	-5.964175*	-5.983396*	-1.766236**
LPU	0.784762	-1.070847	2.435894	-5.583282*	-5.834992*	-5.063219*

Note: Null hypothesis = existence of unit root. * and ** = rejection of null at 5% and 10%, respectively.
Source: Author's calculations.

The results show that all the variables are first-order integrated, i.e., I(1). Accordingly, we apply Johansen's (1988) cointegration test to the multivariate model. This entails the following four steps:

- Determine the order of stationarity (the variables must be stationary of the same order).

- Select an optimal lag length using either the Akaike or Schwarz criterion. In this case, we use the Akaike criterion to determine a lag length of two as optimal for the model.

- Determine the number of cointegrating vectors, based on the eigenvalue and trace statistics.

- Estimate the normalized equation of the cointegration and error correction model.

The results of the eigenvalue and trace statistics are summarized in Tables 4 and 5, respectively. Both tests suggest that there is one cointegrating vector. Next, we analyze the normalized cointegrating equation, the results of which are presented in Table 6.

Table 4: Unrestricted cointegration rank test (maximum eigenvalues)

Hypothesized no. of CE(s)	Eigenvalue	Max-eigen statistic	0.05 critical value	Prob.**
None*	0.580070	32.971340	34.805870	0.0815
At most 1	0.508144	26.963640	28.588080	0.0794
At most 2	0.270503	11.985210	22.299620	0.6563
At most 3	0.148616	6.113907	15.892100	0.7751
At most 4	0.074303	2.933902	9.164546	0.5931

Note: Max-eigenvalue test indicates no cointegration at 0.05 level.
* = rejection of hypothesis at 0.10 level. ** = MacKinnon–Haug–Michelis p-values.
Source: Author's calculations.

Table 5: Unrestricted cointegration rank test (trace values)

Hypothesized no. of CE(s)	Eigenvalue	Trace statistic	0.05 critical value	Prob.**
None *	0.580070	80.968000	76.972770	0.0240
At most 1	0.508144	47.996660	54.079040	0.1560
At most 2	0.270503	21.033020	35.192750	0.6601
At most 3	0.148616	9.047809	20.261840	0.7318
At most 4	0.074303	2.933902	9.164546	0.5931

Note: Trace test indicates one cointegrating equation at 0.05 level.
* = rejection of hypothesis at 0.05 level. ** = MacKinnon–Haug–Michelis p-values.
Source: Author's calculations.

Table 6: Normalized cointegrating equation

Variable	Coefficient	Standard error	T statistic
Constant	-0.74025*	0.352720	-2.09870
NB(-1)	0.45073*	0.052100	8.65132
MC(-1)	0.19664*	0.020150	9.75696
LPU(-1)	0.09785	0.075741	1.29191
LPR(-1)	0.45367*	0.036680	12.36700
Log likelihood = 203.8905			

Source: Author's calculations.

The normalized cointegration coefficients reveal that, in the long run, credit to the private sector is a major determinant of generating tax revenue, given that it has the largest coefficient of the variables. This result is borne out by the financial deregulation that took place in Pakistan after 1990. The number of bank branches is an indicator of financial inclusion or the expansion of the banking sector and has a significant and positive impact on tax revenue in Pakistan. In the long run, therefore, there is potential for generating tax revenue by expanding the banking sector, which would lead to better documentation of the economy.

The study also finds that stock market capitalization has a significant impact on tax revenue. This underlines the importance of stock market activities in Pakistan and suggests that the government should offer incentives for investment in the equity market so that stock markets flourish and generate more revenues. Credit to the public sector does not appear to have a significant impact on generating tax revenue. This can be explained by the unproductive use of public loans in recent years, with most loans being used by the government to clear circular debt or the fiscal deficit. Only a very limited portion of these loans has been used for development purposes. Overall, in the long run, both banking as well as nonbanking financial activities play a significant role in tax collection. This underscores the importance of financial liberalization in Pakistan through regulations and reforms that improve the performance of the financial sector.

The Granger results indicate a bidirectional relationship between credit to the private sector and tax revenue, which raises the possibility of simultaneity bias. However, this problem is unlikely here because the regressors are typically in lagged levels or lagged differences. In addition, OLS is more consistent in the presence of cointegration. Having estimated the long-run coefficients, it is also vital to estimate an error correction model because the existence of cointegration among the variables can lead to short-run error corrections. The results of the short-run error correction model are summarized in Table 7.

Table 7: Short-run error correction model

Variable	Coefficient	Standard error	T statistic
D(NB(-1))	0.621872	0.430530	1.444430
D(NB(-2))	0.581599**	0.328010	1.773120
D(MC(-1))	0.074007*	0.033050	2.239510
D(MC(-2))	0.102944*	0.031460	3.272480
D(LPU(-1))	0.019346	0.019150	1.010220
D(LPU(-2))	-0.012141	0.018730	-0.648360
D(LPR(-1))	0.034481	0.115480	0.298590
D(LPR(-2))	0.251977	0.212833	1.183920
Error correction	-0.671544*	0.112820	-5.952560
R-squared	0.582434	F-statistic	33.626561
Adj. R-squared	0.421832	P-value of F-stat	0.000000

Source: Author's calculations.

The significant error correction term confirms the existence of a stable long-run relationship among the variables. The coefficient of the error correction term represents the speed of adjustment. The results show that, following a shock, approximately 67 percent of the adjustment toward long-run equilibrium is completed after a year.

In the short run, only a few variables have a significant impact on tax revenue. This suggests that the effects of financial sector activities on tax revenues generally materialize in the long run. However, in the short run, the number of bank branches and market capitalization have a positive and significant impact on tax revenue. This implies that bank branches can mobilize tax revenues by channeling financial activities in a short period. Similarly, stock exchange activities have a brief time lag.

5. Conclusion

Over the years, Pakistan's performance among financial markets has improved remarkably, ranking it among the best in the world. On the other hand, the country's revenue collection remains dismal, with a tax-to-GDP rate of only 10 percent. Financial markets can help generate tax revenues by taxing the interest on loans, municipal securities and publicly traded shares of corporations. This study assesses the impact of different financial market activities on tax revenue, using data for the period 1975–2014.

The study finds that, in the long run, the number of bank branches and market capitalization have a positive and significant impact on tax revenue. Credit to the private sector has a bidirectional relationship with tax revenue while public sector credit has an insignificant impact. In the short run, only the number of bank branches and market capitalization have a significant impact on tax revenue.

A key result is that the stock market has a positive and significant impact on tax revenue both in the short run and long run. This has important policy implications. For Pakistan's corporate sector, equities are a major source of funds to finance other investment projects. The government could inject additional liquidity into the stock market by educating potential investors, reducing transaction costs, fees and charges and establishing an efficient trading system. If the dividends earned by shareholders were taxed, this would generate further revenue.

The results also suggest that promoting additional banking activities would help generate tax revenues both in the short and long run. Policymakers could consider waiving the tax on banking transactions: although this yields some revenue in the short run, it also hampers the development of the banking sector and documentation of the economy, with adverse consequences for tax generation in the long run. Cash withdrawals from banks could, however, continue to be taxed. Another important implication concerns the more effective role of credit to the private sector in comparison to the public sector in terms of revenue generation. Policymakers could consider avoiding domestic loans because these crowd out banks' loans to the private sector.

As Arin et al. (2009) suggest, different taxes produce different financial responses. This makes it important to decompose tax revenue by source, including taxes paid by individuals or corporations, taxes in the form of withholding tax, sales tax, income tax and petroleum levy, the share of banks in tax revenues and taxes collected from stock market operations. Such an analysis would provide a more comprehensive picture of the relationship between financial system activities and tax revenue. Moreover, future research could extend this study by conducting a cross-country analysis to gauge Pakistan's performance in comparison to other countries and determine whether financial sector development has had a similar impact on tax revenues.

References

Ardagna, S. (2009). Financial markets' behavior around episodes of large changes in the fiscal stance. *European Economic Review*, *53*(1), 37–55.

Arin, K. P., Mamun, A., & Purushothman, N. (2009). The effects of tax policy on financial markets: G3 evidence. *Review of Financial Economics*, *18*(1), 33–46.

Bohn, H. (1990). Tax smoothing with financial instruments. *American Economic Review*, *80*(5), 1217–1230.

Boyd, D. J. (2009). *What will happen to state budgets when the money runs out?* Albany, NY: Nelson A. Rockefeller Institute of Government.

Clark, W. S. (2007). Tax policy for investment. *e-Journal of Tax Research*, *5*(2), 244–265.

Demirgüç-Kunt, A., & Huizinga, H. (2001). The taxation of domestic and foreign banking. *Journal of Public Economics*, *79*(3), 429–453.

Elliott, D. J. (2010). *Tax policy and bank regulation*. Washington, DC: Brookings Institution.

Golob, J. E. (1995). How would tax reform affect financial markets? *Economic Review* (Federal Reserve Bank of Kansas City), *80*(4), 19–39.

Granger, C. W. J., & Newbold, P. (1974). Spurious regressions in econometrics. *Journal of Econometrics*, *2*(2), 111–120.

Hung, F.-S., & Lee, C.-C. (2010). Asymmetric information, government fiscal policies and financial development. *Economic Development Quarterly*, *24*(1), 60–73.

Johansen, S. (1988). Statistical analysis of cointegration vectors. *Journal of Economic Dynamics and Control*, *12*(2–3), 231–254.

Laopodis, N. T. (2009). Fiscal policy and stock market efficiency: Evidence for the United States. *Quarterly Review of Economics and Finance*, *49*(2), 633–650.

Padda, I., & Akram, N. (2009). The impact of tax policies on economic growth: Evidence from South Asian economies. *Pakistan Development Review*, *48*(4), 961–971.

Pakistan Bureau of Statistics. (1998). *50 years of Pakistan (1947–1997)* (vol. 1–2). Islamabad: Author.

Pakistan, Ministry of Finance. (2015). *Pakistan economic survey 2014–15*. Available from http://www.finance.gov.pk/survey_1415.html.

Schumpeter, J. (1912). *The theory of economic development*. Cambridge, MA: Harvard University Press.

State Bank of Pakistan. (2002). *Pakistan: Financial sector assessment 1990–2000*. Retrieved on 9 November 2015, from http://www.sbp.org.pk/publications/fsa/

Taha, R., Colombage, S., & Maslyuk, S. (2010). The financial system and revenue collection in Malaysia: An empirical analysis. *Empirical Economics Letters*, *9*(11), 1027–1032.

Tavares, J., & Valkanov, R. (2001). *The neglected effect of fiscal policy on stock and bond returns*. EFA 2003 Annual Conference Paper No. 201, UCLA, Los Angeles, CA.