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EFFECT OF FINANCIAL FACTORS ON EXPORT ORIENTED FIRM PERFORMANCE: AN EXPLICATION FOR MANUFACTURING INDUSTRY

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APPROVAL

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DECLARATION ON RESEARCH ETHICS AND

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In addition, I acknowledge that any claim of irregularity that may arise in relation to this work will result in a disciplinary action in accordance with the university legislation.

IMRAN RAMZAN

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29.11.2022

To my lovely wife Eisha and dearest parents...

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EFFECT OF FINANCIAL FACTORS ON EXPORT ORIENTED FIRM PERFORMANCE: AN EXPLICATION FOR MANUFACTURING INDUSTRY

ABSTRACT

Exports at the firm level improve the financial performance and thereby contribute to economic growth. Exporting activities require additional financing and become a challenge for manufacturing firms, thus affecting managerial financing decisions. This thesis attempts to use panel data of manufacturing firms listed on the Pakistan Stock Exchange for the period of 2013–2019 and contributes to the literature on leverage, export intensity, and firm growth. This thesis collects the annual data from the PSX database and covers 156 manufacturing firms, comprising 117 exporter firms and 39 non-exporter firms. The univariate analysis reveals that exporter firms are highly leveraged, older, and larger relative to non-exporter firms. We examine the impact of leverage on export intensity by using the two-step system GMM method. We find that leverage has a negative relationship with export intensity. It implies that exporter firms with higher leverage have a lower export intensity. Furthermore, we find that board size exhibits a negative relationship to export intensity. On the relationship between export intensity and leverage, we find that export intensity is negatively associated with Pakistani manufacturing firms' leverage, and this is consistent with the pecking order theory that exporting firms depend on internal sources of finance compared to external sources of finance due to asymmetric information problems. By unraveling the impact of export growth on firm growth, we document that export growth exerts a significant and positive impact on firm growth and is in line with the hypothesis of export-led-growth. Furthermore, we find that firm growth has a more pronounced positive impact on the return on assets of firms that export to foreign markets. These findings suggest important policy implications for export promotion, specifically for a small-open economy. The results are robust to different sensitivity checks.

Keywords: Leverage, Corporate Governance, Export Intensity.

FİNANSAL FAKTÖRLERİN İHRACAT ODAKLI FİRMA PERFORMANSINA ETKİSİ: İMALAT ENDÜSTRİSİ İÇİN BİR AÇIKLAMA

ÖZET

Firma düzeyinde ihracat, finansal performansı iyileştirir ve böylece ekonomik büyümeye katkıda bulunur. İhracat faaliyetleri ek finansman gerektirir ve imalat firmaları için bir zorluk haline gelir, dolayısıyla yönetimsel finansman kararlarını etkiler. Bu tez 2013-2019 dönemi için Pakistan Menkul Kıymetler Borsası'nda işlem gören imalatçı firmaların panel verilerini kullanmaya çalışmakta ve kaldıraç, ihracat yoğunluğu ve firma büyümesi ile ilgili literatüre katkıda bulunmaktadır. Bu tez, PSX veri tabanından yıllık verileri toplar ve 117 ihracatçı firma ve 39 ihracatçı olmayan firma olmak üzere 156 imalat firmasını kapsar. Tek değişkenli analiz, ihracatçı firmaların, ihracatçı olmayan firmalara göre yüksek kaldıraçlı, daha yaşlı ve daha büyük olduğunu ortaya koymaktadır. Kaldıracın ihracat yoğunluğu üzerindeki etkisi iki aşamalı bir sistem olan GMM yöntemi kullanılarak incelendiğinde aralarında negatif bir ilişki olduğu bulunmuştur. Yani daha yüksek kaldıraca sahip ihracatçı firmalar daha düşük ihracat yoğunluğuna sahiptir. Bu da ihracat yapan firmaların asimetrik bilgi sorunu yüzünden dış finansman kaynaklarına kıyasla iç finansman kaynaklarına bağımlı olduğu hiyerarşik düzen teorisi ile tutarlıdır. Ayrıca, tahta boyutunun da ihracat yoğunluğu ile negatif bir ilişki sergilediği gösterilmiştir. Bu çalışmada, ihracat büyümesinin firma büyümesi üzerindeki etkisi çözülerek ihracat büyümesinin firma büyümesi üzerinde önemli ve olumlu bir etkisinin olduğu ve bunun ihracata dayalı büyüme hipotezi ile uyumlu olduğu belgelenmiştir. Ayrıca, firma büyümesinin dış pazarlara ihracat yapan firmaların varlık getirileri üzerinde daha belirgin bir pozitif etkiye sahip olduğu tespit edilmiştir. Bu bulgular, özellikle küçük-açık bir ekonomide ihracatın teşviki için önemli politika çıkarımları önermektedir. Sonuçlar, farklı hassasiyet kontrollerine karşı dayanıklıdır.

Anahtar Sözcükler: Kaldıraç, Kurumsal Yönetim, İhracat Yoğunluğu.

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LIST OF ACRONMYMS AND ABBREVIATIONS

BN: Billion

BOP: Balance of Payment

FDI: Foreign Direct Investment

FY: Fiscal Year

FE: Fixed Effect

GDP: Gross Domestic Product

K.S.A.: Kingdom of Saudi Arabia

LSM: Large scale manufacturing

MN: Million

MoM: Month on Month

MNC: Multinational Corporations

OLS: Ordinary Least Squares

PBS: Pakistan Bureau of Statistics

PES: Pakistan Economic Survey

PKR: Pakistani Rupee

PSX: Pakistan Stock Exchange

QIM: Quantum Index Numbers

R&D : Research and development

RE: Random Effect

SBP: State Bank of Pakistan

SSM: Small Scale Manufacturing

U.A.E.: United Arab Emirates

U.S.: United States

U.K.: United Kingdom

USD: United States Dollar

WDI: World Development Indictors

YOY: Year over Year

1. INTRODUCTION

1.1. Why leverage and export

Exporting activities are a key catalyst for the nation's health because it boosts trade balance, increases domestic outputs, accumulates foreign reserves, and improves standards of living (Guner et al., 2010; Reis and Forte, 2016; Qasim et al., 2021). A strong correlation exists between export growth and economic growth because, with the increase in exports, it injects additional profit into the domestic economy and increases the domestic output (Burney, 1996; Abual-Foul, 2004). The participation of domestic firms in foreign markets has been widely studied in both developed and developing economies. The foreign market is regarded as an important opportunity for domestic firms because of the rapid and easy entry mode compared to other entry modes. Firms enter into the foreign markets through exporting channels. Several studies at firm-level show that internationalization improves firms' financial performance (Park et al., 2010), long-run survival (Dixon, Guariglia, Vijayakumaran, 2017) and financial health (Greenaway, Guariglia, Kneller, 2007). Therefore, exporting activities have become indispensable for firm internationalization and for economic prospects.

The participation of domestic firms in foreign markets increases both supply and demand of products and services, thereby increasing foreign activities. The cross-border activities not only allow the domestic firms to swap products and services, but also accelerate the firm's growth. The developing and transitional economies are reshaping their export policies and encouraging domestic firms to enter into foreign markets. Export policies that concentrate on firm productivity may not yield productive benefits. Instead of this, relocating public funds and other resources towards productive firms may produce more benefits and contribute towards economic growth.

Export policies that aim to encourage domestic firms range from microeconomics to macroeconomic levels. At the microeconomics level, governments can intervene by relaxing taxes on technology imports, reducing transaction costs, and providing trade financing facilities. At the macro level, governments can intervene through currency devaluation and reductions in tariffs. The government decisions to intervene in the financial market have important implications for exports.

The economy of Pakistan has followed a boom-bust pattern. The economic challenges, soaring inflation, mounting trade deficits, and continuous pressure on rates are a few of the reasons. Pakistan's manufacturing sector has a dominant role in GDP and contributed a 12.4% share of GDP during FY2022. The manufacturing sector has three components[1]. Large-scale manufacturing (LSM) has a share of 74.3% in the manufacturing sector and contributes 9.2% of GDP during FY2022. The second component is small-scale manufacturing (SSM), which has a share of 15.9% and accounts for 2.0% of GDP. The slaughtering is a third component with its 9.8% share in sector and accounts for 1.2% in total GDP. The textile industry (18.2%) has the largest share in LSM, followed by food (10.7%) and coke & petroleum products (6.7%). Pakistan is doggedly facing a trade deficit which has increased dramatically in the last two decades, and the trade deficit reached USD 28.6 billion in FY2021. The share of trade in gross domestic product (GDP) was 32.4% in 1975 and reached its highest of 38.5% in 1993. This declined to 27.6% in 2001 and 25.3% in 2016. In 2020, the share of trade in GDP was 26.2%. Therefore, a pre-eminent policy choice is required to increase exports and improve the trade balance. We attempt to investigate the association between leverage and export intensity. We find that high-leveraged firms have lower export intensity. It suggests that leverage is an important determinant of export intensity. Policymakers consider the leverage element while framing export policies. Many transition and developing economies have implemented a policy that encourages domestic firms to enter foreign markets (Buck et al., 2000).

International trade literature indicates that there are many factors which affect firms' export intensity. Leverage is widely recognized as an important factor, affecting firms' export intensity. A firm faces substantial foreign market entry costs, which are termed as sunk costs. Firms can cover these upfront costs through bank loans; hence, leverage helps firms to grow and sell products and services abroad. The choice of financing is not only related with appropriate asset financing, but also linked with smooth running of firms' operations. Thus, the leverage ratio is used in such a manner that improves the firms' performance (reverse causality). In short, it is an approach which is used to finance firms' assets by borrowing loans from financial institutions.

[1] An entity having ten or more employees falls into LSM, while an entity with less than 10 employees is covered in SSM.

Manufacturing firms in Pakistan use the leverage to meet their operational requirements, both short-term and long-term financing. The premier source of financing for manufacturing firms is bank loans. The banking sector plays a vital role in providing financial facilities for Pakistani manufacturing firms. Unlike developed economies, Pakistan has underdeveloped bonds and equity markets. Consequently, the manufacturing sector heavily relies on banks' loans. The manufacturing firms also utilize certificates or commercial paper as a source of financing, but their level of scale is small. Bond options are also available since the bond market is underdeveloped, and issuance of bonds is also at a small level. Therefore, firms rarely use it. The firms can raise capital through an initial public offering by listing on the stock market. Similarly, non-banking companies provide loans to manufacturing firms to meet their operational requirements. Whereas venture companies also operate in Pakistan and usually provide financing to infant firms which face difficulties in obtaining bank credit besides providing managerial expertise.

1.2. Summary of chapters

This thesis contains three major chapters that contribute to the literature of finance, trade, and growth. Although the chapters are independent of each other, nevertheless they are connected by the common focus on firm-level characteristics, and by the use of econometric strategies. Chapter 2 highlights the exports, imports, and trade performance. It aims to emphasize the importance of exports and its role in the manufacturing sector. Chapter 3 focuses on the direct link between leverage and export intensity within the context of a small open economy. By applying the two-step system GMM, we find that leverage is negatively affecting a Pakistani manufacturing firm’s export intensity. It suggests that an increase in leverage will deteriorate the foreign sales to total sales ratio. The high interest rate in Pakistan may be the reason for this negative relationship because both lending and deposit rates were higher compared to similar economies in the period from 2013-2019. Thus, high interest payments have become a burden for Pakistani firms. Firms that exhaust cash flows due to interest payments and reduce the availability of financing for viable investment opportunities negatively affect performance. Overall, the empirical findings support the trade models based on sunk costs and firm heterogeneity.

Chapter 4 contributes to the export intensity-finance relationship. We show that export intensity is negatively associated with a Pakistani manufacturing firm's leverage and, in line with the pecking order theory that exporting firms depend on internal sources of finance compared to external sources of finance due to asymmetric information problems. We document that board size exhibits a positive link with leverage. It suggests that a larger board size enables the exporting firms to avail more external financing. We note that firm size has a positive relationship with leverage. Wisdom theory postulates that large firms are more diversified and better able to discharge debt obligations. Large firms disclose a high degree of information, have better investment opportunities, and have a low risk of bankruptcy. As the firm grows, its size increases. Moreover, the capacity to borrow also improves and, concurrently, the debt ratio increases, which corroborates with trade-off theory.

Chapter 5 departs from the previous two chapters that focus on leverage-export intensity nexus. Instead, it emphasizes the effects of export growth on firm growth and firm performance. Export growth is important for firm survival, development, and performance. Export growth provides a positive signal to lenders about performance and reduces financial problems. Our results indicate that export growth demonstrates a positive connection with firm growth. We note that profitability and cash holdings have positive and strong associations with firm growth. Moreover, firm size and growth are positively associated. Finally, we document that growth has a positive impact on firm performance, while leverage has a negative relationship with it.

1.3. Significance of the study

Economic growth benefits from the improvement of export performance. Robust exports lessen foreign exchange constraints, enhance technology, and improve productivity. In this regard, regulators and policymakers have focused on financing options to improve firm exports. The literature on financial constraints, productivity, and export participation decisions is well documented. An analysis on how leverage impacts a firm export intensity is not fully answered, and remains less studied, specifically for a small open economy. Moreover, previous studies have investigated the issue in developed economies, while fewer investigations have considered the case of developing economies.

This thesis attempts to fill the gap on the impact of leverage on export intensity by using micro-level data of listed Pakistani manufacturing firms. In addition, we contribute to finance, corporate governance, and export literature. To the best of our knowledge, it is the first investigation that examines a direct link between leverage and export intensity within the context of a small open economy. We show that leverage negatively links with export intensity. In addition, we document that board size exhibits a negative relationship with export intensity. Furthermore, we note that profitability and export intensity are positively connected and corroborate the pecking order theory.

When Pakistani exporting firms enter into foreign markets through export channels, it becomes difficult for local creditors to monitor the exporting activities due to complex operations. Consequently, exporting firms face difficulty when they attempt to borrow loans from local creditors. This thesis intends to analyze the effect of export intensity on manufacturing firms' leverage levels. We show that export intensity is negatively associated with Pakistani manufacturing firm's leverage and in line with the pecking order theory that exporting firms depend more on internal funds relative to external finance due to asymmetric information problems. The high cost of monitoring and asymmetrical information may discourage local lenders to provide debt financing to exporter firms. Consequently, exporting firms depend more on internal funds. The study also shows an interesting finding that cash holding appears as a negative relationship with leverage, while firm size appears a positive relationship with leverage, which is according to expectations and in line with the trade-off theory.

Although export literature shows the effect of exports on productivity, leverage, and innovation, the question of how export growth influences firm growth has received little attention until recently. In this regard, we contribute to firm growth literature by exploring whether export growth is a determinant of firm growth. We show that export growth exerts a significant and positive impact on firm growth and is in line with the hypothesis of exports-led-growth. Moreover, we add an interaction term between the variables exporting firm and firm growth. We find that the interaction term is positively associated with firm performance. This thesis has significance for regulators, policymakers, and firm stakeholders.

The findings suggest that the government develops export promotion policies, which include financial market measures designed to provide export financing at a preferential rate to the manufacturing firm. In addition, growth policies should target a firm with greater export potential. Finally, from the perspective of a small open economy, liberalization policies that allow domestic firms to enter foreign markets should be preceded by reducing the external cost of funds and increasing the supply of credit, specifically to exporters. Policy measures that mature the financial system would improve exports and economic growth.

2. PAKISTAN'S EXPORT, IMPORT, AND TRADE PERFORMANCE

2.1. Economic outlook

Pakistan's economy follows a pattern of ups-downs since 1947. The economic challenges such as continuous increase in inflation, upward pressure on exchange rates, the trade deficit, limited fiscal and monetary support to the private sector are a few reasons. Political instability is also another factor contributing to the economic uncertainty, thus negatively impacting on economic growth. The gross domestic product (GDP) was USD116.76bn in 2000 and reached USD177.17bn in 2010. It remains on an upward trend and reaching USD258.08bn in 2020. However, the GDP at the current market price witnessed an increase, standing at PKR66.96 trillion (provisional), up from PKR55.80 trillion. While it remains at USD383bn in terms of dollars in FY2022. The economy observed the highest growth rate of 11.4% in 1970, followed by the lowest rate of 0.46%. In the last two decades, growth rates have ranged between 1.60% and 7.54%. Nevertheless, Pakistan's economy presents a real growth rate of 5.97% in FY2022, slightly above the previous growth rate of 5.74%. The agriculture sector grows at 4.40% while the industrial and service sectors grow at 7.19% and 6.19%, respectively. The expansion of LSM has significantly contributed to growth momentum. On the other hand, government accommodating policies have also aided to achieve positive growth besides improvement in exports and revenues.

The celebration of positive growth is dampened by macroeconomic imbalance. Moreover, a rise in global commodities prices has an effect on import bill payments. Consequently, the country reports a trade deficit of USD32.9bn for July-April FY22, partially funded through worker's remittance. The trade deficit and soaring inflation on the backlog of geopolitical tension (Russia-Ukraine conflict) have caused economic challenges for economic growth. The conflict has an effect on energy and commodities prices at the international level. With no exception, Pakistan is also negatively impacted and feeling the heatwave of higher prices, transmitted in fuel and energy prices. The inflation rate was observed at 11.3% in Jul-Mar FY2022, up from 8.8% for the same period of the previous year. Similarly, economic shocks cause considerable damage to the economy.

The country ranks in 5th place in terms of population and stands among the top 10 economies in terms of labor force. The unemployment rate stands at 6.3%, down from 6.9% in FY2021. The stock market shows a boom-bust shape in the first nine months of FY2022. Five companies went to initial public offering during the year despite macroeconomic imbalances and geopolitical tension. The economy observes positive growth on the exports side, increasing by 27.6% while services export grew by 18.2% during Jul-Apr FY2022. The fiscal deficit widens despite the significant increase in tax collection and stands at 3.8% of GDP for the period of Jul-Mary FY2022. Pakistan has applied a coordinated monetary-fiscal approach for economic revival. The State bank of Pakistan (SBP) implements a tight monetary policy and increases the policy rate by 675bps between Sept-Apr FY2022 to counter the soaring inflation for sustainable economic prospects. The private sector witnessed an increase in credit expansion by 189% to PKR 1.31 trillion during Jul-Apr FY2022, aided by the SBP financing scheme.

Global trade has shown robust performance due to the improvement in global economic activity. Global trade has recorded growth of 26%, making USD 22.4 trillion, while service trade stands at 15%, reaching USD 5.7 trillion during 2021. An increase in the merchandise trade volume has been observed, increasing by 9.8% in 2021. It is expected that world merchandise trade will increase by 3% and 3.4% in 2022 and 2023, respectively. Figure 2.1 shows the growth trend of exports and imports.

Figure 2.1: Growth of global merchandise trade (%)

Pakistan's goods export shows a positive trend, increasing by 26.6% during Jul-Mar FY22, reaching USD23.7bn, while services export witnesses an increase of 17.1% and reaches USD5.1bn. The country's import bill has also increased significantly despite positive export growth. The conflict between Ukraine and Russia intensified commodities prices as well as created the disruption of crude oil supply, causing an increase in global oil prices. Consequently, the Pakistani economy reports a trade deficit of USD30.1bn, increasing by 55.5%. Foreign remittances partially offset the trade deficit. However, the country reports a current account deficit amounting USD13.2bn in FY22, placing pressure on the exchange rate, and depleting foreign reserves. In this respect, we explore the association between leverage and export intensity, and suggest policy measures that increase exports and improve trade balance.

2.2. Export performance

The export sector shows a robust performance and displays a growth rate of 27.7% in Jul-Apr FY22, reaching USD 26.8 billion, significantly higher than from the previous period of Jul-Apr FY21 where growth rate was 6.7% from period to period, making total exports USD21.01bn. The textile sector significantly contributes towards total exports due to fiscal support from the government and financial support from SBP. Rice exports also display a positive sign due to the varieties of non-basmati.

Table 2.1: Unit wise export structure

Particulars	Jul-Mar 20-21 (USD bn)	Jul-Mar 21-22 (USD bn)	Change (%)
Food Group	3.3	4.0	18.9
Textile Manufacturers	11.4	14.2	25.4
Petroleum Group	0.1	0.2	100.0
Other Manufacturers	2.7	3.0	12.0
Other Items	1.3	1.9	46.2

Source: Pakistan Bureau of Statistics

The group wise data reveals that all units improved appreciably and demonstrated positive growth. Table 2.1 reveals that all groups have shown upward growth trends. The food group has shown an increase of 18.9% during Jul-Mar22, reaching USD 4.0bn from USD 3.3bn. The exports of oils, kernels, and nuts had the highest growth within the food group, increasing by 131.4% from USD 76.6mn to USD 176.7mn during the Jul-Mar FY22. The exports of rice and spices have increased by 15.0% and 18.0%, respectively, and moved to USD 1793.9mn and USD 83.8mn during Jul-Mar FY22. The prices of Pakistani basmati rice remain lower compared to its previous level, making it more competitive in the food market. Hence, it is receiving higher demand from Malaysia, Kazakhstan, and Madagascar.

The textile group has significantly contributed towards Pakistan's total exports, contributing nearly 60% and providing around 40% of industrial employment. Pakistan holds a competitive position in cotton products and stands at fifth position in the world. The exports of textile manufacturers increased from USD11.4bn to USD14.2bn, improving by 25.4% during the Jul-Mar FY22. The demand for finished goods has also increased from foreign buyers, which led to an increase in the demand for intermediate goods. The cotton yarn and cloth increased by 26% and 26.5% respectively. The export volume of cotton yarn reaches USD908.5mn while cotton cloth touches USD1795.5mn during the same period.

Knitwear and bedwear also increase both in quantity and volume. Knitwear increased by 34.1% from USD2780.9mn to USD3729.7mn while bedwear reached USD2448.9mn. The ready-made garment displays a positive sign of improvement and moves to USD2863.6mn from USD2268.4mn, increasing by 26.2%. An issue in logistics and prices in freight prices raised the import unit price, which is factored into the export price. The year 2021 observed a sharp increase in global prices. The petrol group also posted positive growth of 100%, increasing from USD116.1mn to USD236mn. Other manufactured items include carpets, sports, leather products, jewelry, cements, and other manufactured items. Sports and leather manufacturers also show a positive growth of 35.2% and 8.5% respectively.

2.3. Export destination

The U.S. remains the top destination for Pakistan, with its share 21% of total exports for Jul-May FY22. The exports to the U.S. have increased from USD5.03bn to USD6.16bn, increasing by 22.5% for Jul-May FY22. The U.S. is one of the largest export markets for Pakistan. Most of the products which are exported to the U.S. include home textiles, leather apparels, rice, sugar, and rubber. Likewise, exports to China have also increased by 24.5% during the same period, up from USD2.04bn to USD2.54bn. The U.S. is followed by China and the U.K. with a share of 8.7% and 6.6% respectively. The fabrication of top export destinations is given in the Table 2.2.

Table 2.2: Export receipts from top destination

Country (amount USD Billion)	FY19	FY20	FY21	FY22
U. S.	4.04	3.92	5.03	6.16
China	1.86	1.66	2.04	2.54
U. K.	1.76	1.64	2.05	2.01
Germany	1.31	1.30	1.51	1.57
U. A. E. Dubai	1.12	1.28	1.14	1.45
Netherlands (Holland)	0.95	0.98	1.12	1.33
Spain	0.93	0.87	0.80	1.04
Italy	0.81	0.75	0.77	0.96
Bangladesh	0.74	0.70	0.62	0.78
Belgium	0.61	0.52	0.58	0.65
Total Export as per BOP	24.26	22.54	25.64	29.33

Source: State bank of Pakistan

Figure 2.2 shows the share of exports in total exports for FY22, FY21, and FY20. The trade balance with the U.K. is in favor of Pakistan.

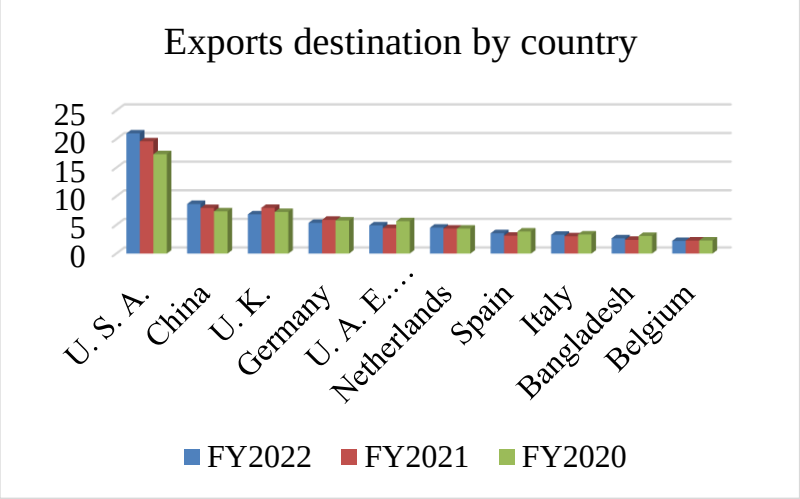


Figure 2.2: Exports destinations by country

2.4. Import and direction

We provide a brief background about imports and their direction. Because it impacts on policy rate, which is directly associated with manufacturing firms' financial decision-making processes. Pakistan's total imports stand at USD65.46bn for the period of Jul-May FY2022 compared to USD47.97bn for the previous year in the same period, indicating a growth rate of 36.5%. The import structure based on group wise is given in Table 2.3. The imports have been witnessed in all groups, including the food, petroleum, and machinery groups. The imports for the food group have increased by 15.5%, up from USD6.12bn to USD7.07bn for the period of Jul-Mar FY22.

Table 2.3: Unit wise import structure

Particulars	Jul-Mar 20-21 (USD bn)	Jul-Mar 21-22 (USD bn)	Change (%)
Food Group	6.12	7.07	15.46
Machinery Group	4.48	5.57	24.21
Petroleum Group	5.47	10.94	100.05
Consumer	2.62	4.18	59.38
Other Items	11.72	19.35	65.16

Source: Pakistan Bureau of Statistics

The machinery group shows that imports have increased from USD4.48bn to USD5.57bn, increasing by 24.2% for the same period. The petroleum group has increased significantly, increasing by 100.05%, up from USD5.47 to USD10.94bn for the period of Jul-Mary FY22. The major import markets include China, U.A.E., K.S.A., Singapore, and U.S., which constitute more than 50% share of total imports.

Table 2.4: Import markets

Country	FY20	FY21	FY22
China	9.57	13.3	15.69
U.A.E.	6.36	6.96	7.53
Saudi Arabia	1.32	2.39	3.78
Singapore	2.37	3.12	3.07
U.S.	2.25	2.45	2.72
Indonesia	1.03	1.31	2.55
Qatar	1.63	1.32	2.19
Total Imports as per BOP	43.65	54.27	65.46

Source: SBP

2.5. Trade balance

Pakistan has been confronting a trade deficit for a long time due to macroeconomic imbalances. The trade deficit has significantly increased in the last few years, jumping from USD21.2bn for the period of FY20 to USD36.1bn for Jul-May FY22. The deficit increased by 45.6% for the period of Jul-May FY22. Nevertheless, worker remittances and exports also boosted for the same period, albeit remaining low. Consequently, the current account deficit has expanded due to the significant increase in the import bill and its payments. The pressure on the trade balance also comes from the continuous depreciation of the local currency, which depreciated by 14.1% in Jul-Mar FY22. The current account registers a deficit of USD15.2bn for the period of Jul-May FY22, increasing from USD1.2bn from the same period of last year.

Figure 2.3 shows the up-down trends of current account deficit for the period of Jul-May FY2022. During the period, the highest deficit was observed in Jan-FY22 when it reached USD2.5bn while the lowest deficit was at USD618mn in Apr-FY22. Goods exports increased by 26.6% in Jul-Mar FY2022, soaring to USD23.7bn from USD18.7bn. However, imports of goods have increased at a higher rate than exports of goods, increasing by 41.3%, reaching USD53.8bn from USD38.1bn for the same period. As a result, the trade deficit jumped to USD30.1bn from USD19.3bn, rising by 55.5% in Jul-May FY2022.

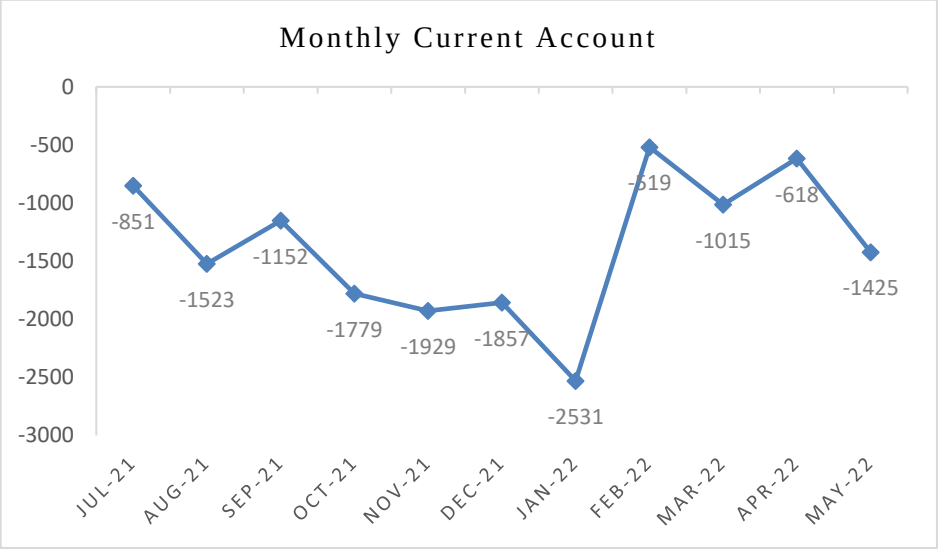


Figure 2.3: Current account on month basis

Pakistan's exports have remained competitive during FY2022. Exports increased over 26.7% in Jul-May FY22, while it was 10.4% for the same period of last year. The domestic currency has depreciated for the same period. Specifically, the depreciation of the real effective exchange rate was 1.9%, becoming the main factor for the competitiveness of exports and supporting the volume of exports. Similar to exports, imports have also increased to 36.5% during the period of Jul-Mar FY22 while it was 19.7% in Jul-Mar FY21. Consequently, the trade balance registered a deficit of USD 36.1bn up from USD 24.8bn for the period of Jul-MayFY21.

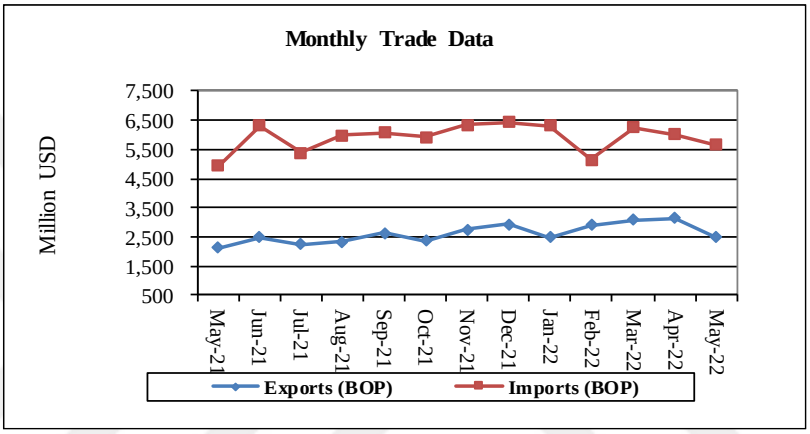
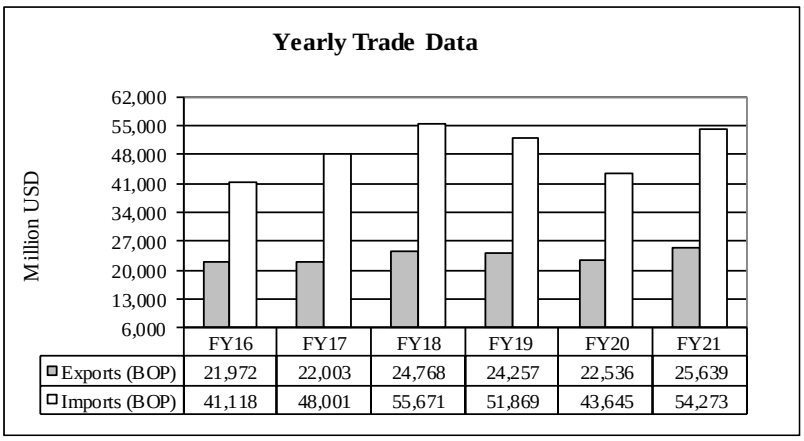


Figure 2.4: Month trade data

Figure 2.5 shows the exports and imports based on yearly data. Although, government applied the accommodating measures to promote the exports. However, import bill remained higher due to the increase in the global energy prices and surge in the commodity prices. This contributes to a trade deficit, partly supported by the workers' remittance. The increase in trade deficit puts the pressure on exchange rate.



	FY16	FY17	FY18	FY19	FY20	FY21
Exports (BOP)	21,972	22,003	24,768	24,257	22,536	25,639
Imports (BOP)	41,118	48,001	55,671	51,869	43,645	54,273

Figure 2.5: Yearly imports and exports

2.6. Pakistan's manufacturing sector

The importance of the manufacturing sector cannot be ignored in any economy, particularly within the context of globalization, in which exports have a significant role for improving the nation's economic health. The manufacturing sector helps to boost the productions, exports, and creates the opportunities for employment, and hence promotes the economic growth. The sector remains an important factor in Pakistan's economy. Pakistan's manufacturing sector composes of automobile, cement, chemical, engineering, fertilizer, food, glass, paper & board, refinery, sugar, and textile industries. The textile industries have the highest contribution towards manufacturing with a weight of 20.92% followed by food, beverage, and tobacco industries having a weight of 12.37% while coke and petroleum products weight 5.51%. Rubber and leather products have the least weight, standing at 0.26% and 0.86% respectively. However, manufacturing sector has 12.79% share in GDP and employs 16.1% of labor force during FY2021. Manufacturing sector is classified into three classes such as slaughtering, large, and small-scale manufacturing. Large-scale manufacturing (LSM) has the highest weight, constituting 70.33% and contributes to 9.73% of gross domestic product (GDP). While the share of small-scale manufacturing (SSM) and slaughtering remain minimal at 2.12% and 0.94% of GDP respectively[2].

According to the world development indicator, the share of the manufacturing sector's exports is 74.67% of total merchandise exports for the year-end 2020. The sector requires investment from both local and foreign investors in order to improve the growth rate and its contribution towards economic development. Pakistan is continuously facing a fiscal deficit and a trade deficit, thereby making it difficult for the government to promote the sector at its optimal level. Therefore, a preemptive policy is required that increases export. The export sector plays an important role in Pakistan's economy and ranks 3rd, following the agriculture and services sectors. The average contribution towards GDP is 12.83% in the last ten years, while the average growth rate is 2.64% for the same period. However, it is observed that the sector remains unstable compared to other economies such as India, China, Russia, Brazil, and South Africa.

[2] Small-scale manufacturing includes both household and industrial units that employ less than 10 employees.

Figure 2.6 shows that the growth rate series has shown ups and downtrends over the past twenty years. The manufacturing growth rate (16.38%) is seen as the highest in 2004, resulting from the progress of democratizing the political system (Kennedy, 2005). After making the highest growth rate in 2004, it started to decline from 2005-2009. The growth rate was observed as a negative (-4.18%) in 2009 due to an increase in uncertainty as well as negative shocks from the financial crisis. The growth rate turned into positive and remained in a positive slot between 2010 and 2018, ranging from 1.37% to 5.43%. But with the emergence of the coronavirus pandemic, it falls again into the negative slot and contracts by 0.66% in 2019. The trend continues in 2020 as the manufacturing sector shrinks by 5.56%.

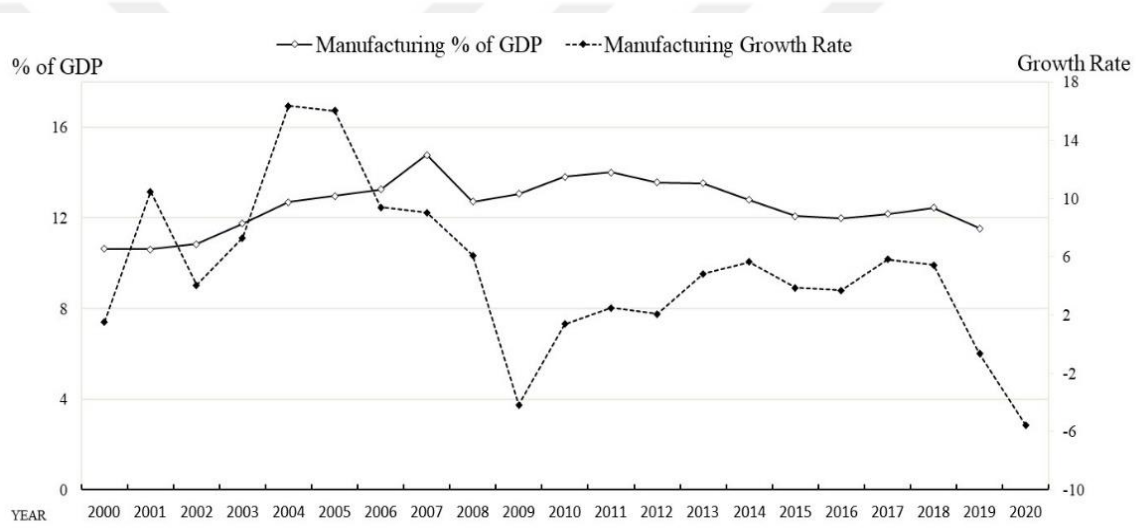


Figure 2.6: Manufacturing growth rate and contribution to GDP

Similarly, the manufacturing sector's share as a percentage of GDP over the years has shown volatile trends. There was an upward trend from 2000 to 2008, and sector share as a percentage of GDP was realized at 14.79%, making it the highest since 1995. After 2008, the series remained volatile and does not show a stable position. The manufacturing sector's share as a percentage of GDP decreases to 12.46% from 12.72% in 2019, which further falls to 11.55% in 2020 due to the negative effects of the coronavirus pandemic on economic activities. The government introduced the smart lockdown measures in order to protect the manufacturing sector from the negative shocks of the coronavirus. Moreover, economic activity was further improved by the appreciation of the domestic currency and the release of the Corona vaccine.

Figure 2.7 shows that LSM growth has remained volatile in the last decade, with an average growth rate of 3.14%. There has been steady growth in LSM from FY2010 to FY2018. But the sector shrinks by 2.30% due to the outbreak of the COVID-19 pandemic, and it further contracts by 5.10% in FY2020. The LSM sector rebounds and registers a growth rate of 9.0% for the period of Jul-Mar FY21, aided by the incentives of fiscal and monetary packages. The data released by the Pakistan Bureau of Statistics (PBS) shows that the LSM sector outperformed in FY2021 with a growth rate of 22.4% year over year (YOY) and better than compared to its previous year.

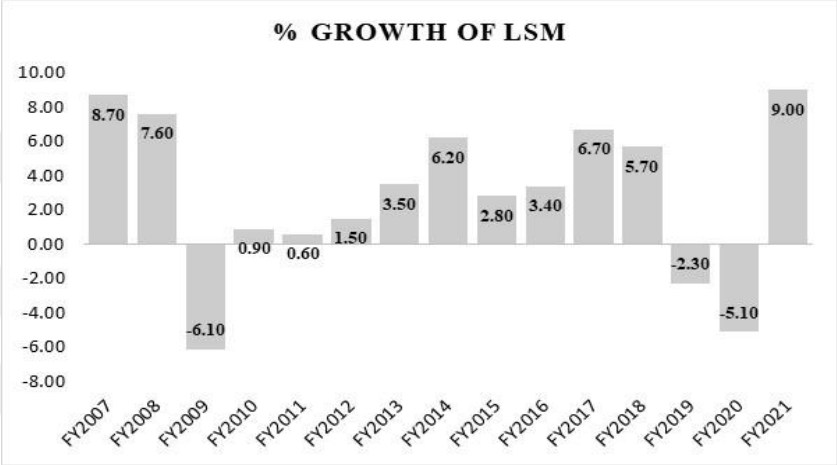


Figure 2.7: Large-scale manufacturing growth rate Jul-Mar

Figure 2.8 clearly shows that LSM's growth rate is on a positive track since July-21 aided by the monetary and fiscal packages. It implies that government initiatives during the pandemic level not only cater to the LSM's requirements but also outperform from its pre-covid level. LSM sees a 22.4% increase in growth rate in March FY2021, while it shrinks by 21.7% in the same period of last year.

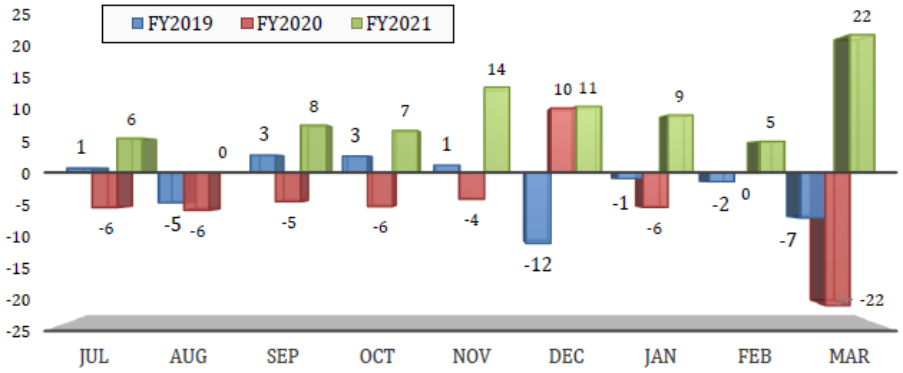


Figure 2.8: LSM growth rate Y-o-Y

2.6.1. Textile industry

The textile industry is the most significant and important factor in Pakistan's manufacturing sector. During FY2022, the industry receives inherited potential to add value, accounts for ¼ of value addition, and employs nearly 40 percent of the labor force. The industry maintains its 61.2 percent share on average of the nation's exports despite the market volatility and fluctuation.

Table 2.5: Pakistan's textile exports (Amount US$ billions)

Particulars	FY2018	FY2019	FY2020	FY2021
Cotton textiles	13.22	13.03	12.21	15.03
Woolen and wools textiles	0.08	0.07	0.05	0.07
Synthetic textiles	0.31	0.30	0.31	0.37
Pakistan's exports	23.22	22.98	21.39	25.30
Share of textile as percentage of exports	58.59%	58.30%	58.81%	61.15%

Source: Textile Commissioner's Organization

The Table 2.5 shows Pakistan's textile contribution towards the national exports and its performance over the year. Cotton textiles have the highest share in the textile industry and exported, amounting to USD15.03bn during FY21, up from USD12.21 from the same period of the previous year. Woolen and wools textiles and synthetic textiles were up USD0.07 billion and USD0.37 billion, respectively. All units show robust performance for FY2021 due to the government's accommodating measures. The share of the textile industry as a percentage of national's exports stood at 61.2% during FY2021.

2.6.2. Automobile industry

The contribution of auto sector in LSM is significant and standing at 15 percent. The sector upsurge by 54.1 percent during the first nine month of FY2022. Automobile industry also shows the robust performance during the FY2022 from July-March. Trucks and cars increased by 77.2 percent and 56.7 percent respectively during July-March 2022 comparing the same period of last year. Light commercial vehicle also

witnesses a significant increase in output by 43.7 percent during FY2022. The increase in the growth resulting due to the relaxation in lock-down measures otherwise growth was stagnant over the previous period or even negative in some period. This sector is also suffering from supply chain disruption, specifically COVID related supply chain issues in chips, PKR depreciation, and soaring inflation, apart from a reduction in auto financing.

2.6.3. Cement industry

The beginning of FY2022 posed serious challenges to the cement industry, and it stayed under pressure due to the revival activities in the construction sector. The industry shrinks during the period of March FY2022 by 6.3 percent due to the reduction in exports. The export sector was largely hit due to the Afghan regime change and trade barriers with India. Moreover, an increase in international freight charges and geopolitical instability are also factors in the decline in exports. According to the Pakistan Economic Survey (PES) 2020-21, LSM has performed well, with an average growth rate of 2.9% month on month (MoM). It is worthy to mention that the manufacturing sector has played an important role in achieving the sustainable growth rate during FY2021.

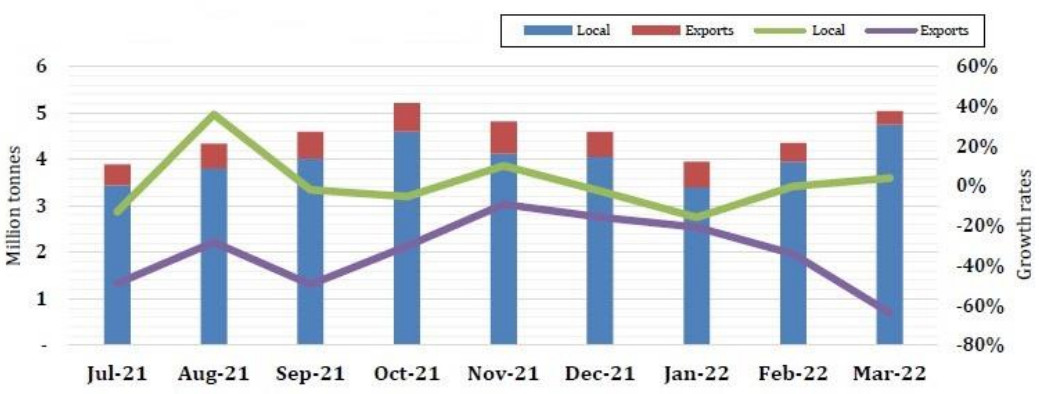


Figure 2.9: Dispatches of cement on monthly basis

Figure 2.10 provides information about the trends of important manufacturing industries on a monthly basis. All sectors exhibit volatile trends over the period of Jan21-Jun21. Petroleum production has been continuously increasing over the last few months and remained higher compared to the previous period. It is also witnessed that all the sectors

improved in June-21 compared to the same previous period. The LSM sector has been analyzed in terms of group wise and consists of textiles, food, beverages & tobacco, coke & petroleum products, electronics, engineering products, automobiles, chemicals, pharmaceuticals, and rubber products.

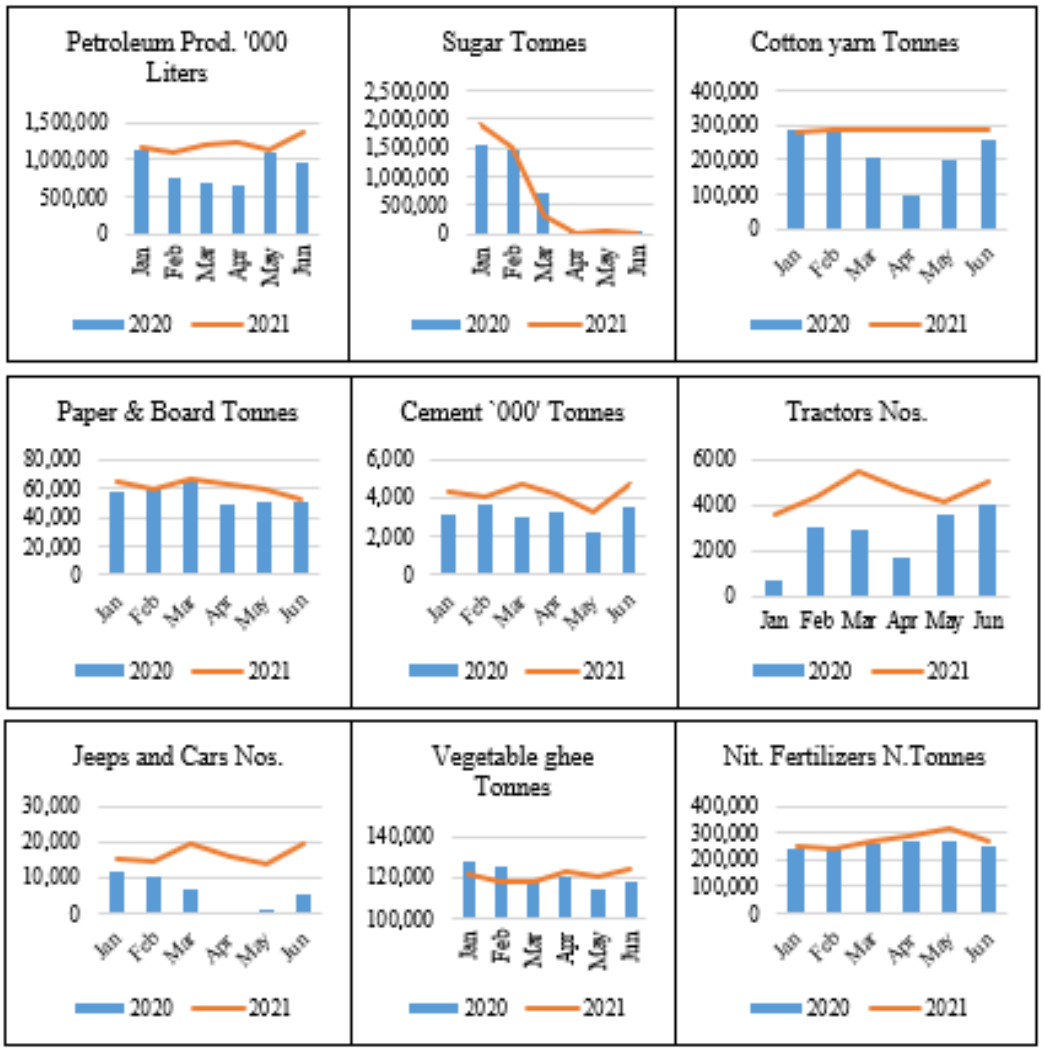


Figure 2.10: Trends of LSM items on monthly basis

The textile industry constitutes 20.9% of the total sector, thereby significantly influencing the sector's performance. The textile industry has increased by 1.2% for the fiscal year (FY) 2021 compared to 1.7% for the same period last year. The weight of the Food, Beverages & Tobacco industry is 12.4%, which is growing modestly by 0.6% for FY21 and consists of sugar, wheat, and cigarette sectors. Similarly, the electronic industry inched up by 1.4% in FY21. The automobile industry grew by 44.6% for FY21 compared to a contraction of 24.9% in last year and has a weight of 4.6% in the LSM

sector. Coke & Petroleum industry shrinks by 3.6% compared to the 18.3% growth in last year. Non-metallic mineral products and Papers & Board industries contracted during FY21 by 10.4% and 8.8%, respectively. Similarly, the rubber industry surged by 33.5% in FY21 compared to 3.1% growth in FY20.

Table 2.6: Growth of LSM industries

Industries	Weights in QIM	Change in July20 (%)	Change in July21 (%)
Textile	20.90	1.70	1.20
Food, Beverages & Tobacco	12.40	25.30	0.60
Coke & Petroleum Products	5.50	18.30	-3.60
Electronics	2.00	-23.90	1.40
Engineering Products	0.40	-43.10	5.60
Non-metallic Mineral Products	5.40	29.00	-10.40
Iron & Steel Products	5.40	-11.10	11.30
Automobiles	4.60	-24.90	44.60
Chemicals	1.70	8.50	13.60
Pharmaceuticals	3.60	20.50	10.00
Papers & Board	0.30	-4.70	-8.80
Rubber Products	0.30	3.10	-33.50

Note: Pakistan Bureau of Statistics

3. EFFECTS OF LEVERAGE ON EXPORT INTENSITY

3.1. Introduction

Exporting activities are the key catalyst for the nation's health because they boost trade balances, increase domestic output, accumulate foreign reserves, and improve standards of living. The foreign market is regarded as an important opportunity for domestic firms because of its rapid and easy entry mode when compared with other entry modes. Firms can enter the foreign markets through exporting activities, and several studies at firm-level show that internationalization improves the firms' financial performance (Park et al. 2010), long-run survival (Dixon et al. 2017), and financial health (Greenaway et al. 2007). Therefore, exporting activities have become indispensable for a firm's internationalization and for national economic growth. International trade literature indicates that there are many factors that have an effect on firms' export intensity. Corporate leverage is widely recognized as an important factor, affecting firms' export intensity. The choice of financing is not only related to appropriate asset financing but also linked to the smooth running of firms' operations. Thus, the leverage ratio is used in such a manner that it improves the firms' performance. In short, it is an approach that is used to finance the firms' assets through financial instruments or borrowing from the financial institutions.

There are various ways that a firm can finance its assets. The choice or selection of financing decisions depends on business activity. A firm can finance its assets through long-term debt or short-term debt. Long-term debt involves bonds, debentures, and notes payable, while short-term debt includes short-term bank loans, commercial papers, and trade credits. Therefore, it becomes essential for firms to select an appropriate leverage ratio that enhances their export intensity. Firms in Pakistan also use leverage in order to fulfill their business requirements, either through short-term financing or long-term financing. The premier source of financing for manufacturing firms is bank loans. The banking sector is one of the leading sources of financing for the manufacturing sector's business operations. The manufacturing firms also utilize the certificates or commercial papers as a source of financing, but their level of scale is small. The bond option is also available since the bond market is not efficiently developed, thereby issuance of bonds is at a small level.

Companies can raise capital through an initial public offering by listing on the stock market. Mehmood et al. (2020) explained that weak macroeconomic indicators may decrease the confidence level in initial public offerings for both investors and issuers. In addition to bank credit, non-banking companies provide loans to manufacturing firms to meet their operational requirements. Whereas capital venture companies also operate in Pakistan and typically provide financing to infant firms.

Pakistan has been continuously facing a trade deficit, which has increased dramatically in the last two decades, and reached USD21.6bn at year-end 2020. The share of trade in GDP was 32.4% in 1975 and reached its highest level of 38.5% in 1993. This declined to 27.6% in 2001 and 25.3% in 2016. In 2020, the share of trade in GDP was 26.2%. Therefore, a preeminent policy choice is required, which will improve the trade balance and increase economic growth. Many transitions and developing economies have implemented a policy that encourages domestic firms to enter into foreign markets (Buck et al. 2000). This has been achieved through entering the manufacturing firms into the foreign market via exporting channels. Internationalization of domestic firms in developing countries, as in the case of Pakistan, is particularly viewed as helpful for economic growth and trade balance adjustment. It is not limited to transitions and developing economies to encourage domestic firms to enter into foreign markets. Bernard and Jensen (2004) document that 50 US states have offices that provide assistance for foreign sales. They also note that a sizable increase in resources have allocated for export activities. The argument is straightforward, that exporting activities are beneficial, and exporting firms are good. Hence, it is good to devise a policy that helps domestic firms to increase their exports.

3.2. Foreign market participation and costs

Developing economies that increase integration with the global economy have attained more income, increased their life expectancy, and improved education. The entry of domestic firms into foreign markets remains important for growth, productivity, performance, and survival. Domestic firms use export channels as a means for globalization and internationalization (Zhao and Zou, 2002). The entry into foreign markets opens the avenue of business development. It is agreed that firms engaged in the foreign markets outperform relative to domestic firms. It enlarges the market size

and benefits from scale economies. Bernard et al. (2003) argue that export firms are more productive since they serve both domestic and foreign markets. It is also established in the export literature that firms engaged in export-oriented activities grow more and are linked with higher productivity. The positive association between foreign market participation and productivity improves the scale of economies and increases the return.

Domestic firms participating in foreign markets enhance their skills and capabilities. The firms that are engaged in the foreign markets learn from their foreign buyers about skills and technologies, thus improving their output and productivity. Most of the domestic firms that engage in foreign markets absorb and apply the foreign technology to improve the product's quality for a better buyer's experience. Atkin et al. (2017) argue that Egyptian manufacturing firms greatly benefit from participating in foreign markets. Participation in foreign markets also improves the exporting firms' ability to produce better domestic output compared to non-exporting firms that are not engaged in foreign market participation. Firms that participate in foreign markets in developing economies may gain an incentive to improve technology, increase productivity, and learn from export knowledge. Moreover, they also gain the benefits from economic incentives such as quotas and subsidized. Bustos (2011) argues that Argentinian firms have significantly improved their technology during the time of the reduction in tariffs. While domestic firms which are operating in the developed countries face intense competition from the firms which are participating in the foreign market. The domestic firms also suffer from a lack of export knowledge.

When entry of domestic firms into foreign markets offers many benefits, then why do all the firms not engage in internationalization? The literature on trade and theoretical models indicate that heterogeneity in firms' production and start-up sunk costs are possible reasons besides sizeable risks and uncertainties.[3] Moreover, there is also a period-by-period small cost in order to continue the foreign markets operations, which is also known as the maintenance cost. Collecting information about a foreign market; developing channels for marketing activities; designing products according to foreign market tastes; dealing with new bureaucratic mechanisms; and learning new approaches

[3] Many empirical studies report that sunk costs matter for exporting activities. See Roberts and Tybout (1997), Greenaway et al., (2007), Dixon et al., (2017), and Alessandria and Choi (2007).

to target the foreign market can all result in significant start-up sunk costs. Moreover, sunk costs may cause hysteresis in the export market, besides export hysteresis. As a result, the largest and most productive firms will enter the foreign market by exporting their goods and services because their expected profits are high enough to offset the entry costs and cover operational costs.

Sunk cost plays an important role in export activities. It is certain that there would be sunk costs in exporting activities, while expected profits are uncertain. There is a temporal discrepancy between expected revenue and costs. It is difficult to enter into a foreign market when information asymmetry exists in an imperfect capital market. Therefore, sunk costs cannot be neglected if a firm enters into a foreign market for exporting activities. Das et al. (2007) illustrate that there are significant barriers to foreign market entry. Roberts and Tybout (1997) link sunk costs with plants' entry decisions to export activity. The firm may not enter into a foreign market when it is unable to cover the sunk costs. The choice of export activity could be sensitive to internal liquidity levels. If it enters into a foreign market, then the probability of exit is low in the case of high sunk costs. Because the nature of sunk costs is irreversible, it decreases the probability of firms' decisions to exit the foreign markets, and they will continue their foreign activities through maintenance costs.

International trade requires fixed and variable costs for firms who desire to enter into foreign markets. Firms rely on internal and external capital for conducting international trade. Trade literature illustrates that firms pay entry costs and other associated costs by borrowing from financial institutions (Kohn et al., 2016; Qasim et al., 2021). The entry costs into the foreign market point out the importance of the financial dimension. It is imperative for firms to pay their sunk costs and fulfill international requirements besides covering their operating costs. One way to cover the sunk costs is through internal sources. A firm can use retained earnings or reserves to pay costs associated with foreign market entry. Mostly, large-sized companies can enter because they make a large amount of profit from domestic sales. By doing so, they can use some portion of the profit for future investment purposes, and it can be used to pay foreign market entry costs. Chaney (2005) stated that firms use internal cash flow generated through domestic sales to pay sunk costs.

MNCs-local firms relationship is important within the context of internationalization and to cover sunk costs. Multinational corporations (MNCs) possess special assets relative to domestic firms that permit them to reduce the disadvantage of foreignness (Hymer, 1960). MNCs have advantages in terms of technology, cross-border knowledge, and resources. Another way to finance sunk costs is to borrow from banks. When internal cashflows or retained earnings are not enough to cover the substantial entry costs, exporters tend to borrow from financial institutions. Therefore, manufacturing firms may finance the export costs by obtaining a bank loan.

Wisdom theory suggests that the external fund helps to improve the exporter firms' liquidity position and can cover the substantial upfront costs of foreign markets entry. Djankov et al. (2010) argue that external funds are crucial for promoting exports at firm-level. Exporting firms require external financing to mitigate and cover the operational costs as internal funds are not sufficient to cover it (Amiti and Weinstein, 2011). Moreover, there are substantial lags between export sales and cash receipts, making it more vulnerable to the exporting firms to rely on external funds.

Sousa et al. (2008) stated that determinants of export performance could be classified into two broad categories, for instance, internal and external factors. However, Manova (2013) advocates that external capital is essential to conduct international trade because internal funds, for instance, retained earnings and reserves, are not sufficient to cover exporting costs. In Pakistan, where equity and bond markets are underdeveloped compared to developed economies, banks play a leading role in providing external financing to manufacturing companies. The financial stability report (2020) indicates that the corporate sector borrowed PKR6.08 trillion from banks, while financing from the capital market remained low. It implies that Pakistani manufacturing firms heavily rely on bank borrowing and gives a signal that firms are financially less constrained. Therefore, both internal and external sources of finance are important for manufacturing firms to cover their entry and operational costs. In this respect, we attempt to analyze the association between leverage and export intensity of manufacturing firms listed on Pakistan stock exchange over the period 2013-2019.

3.3. Financing and export intensity

There is a growing debate in the literature on international trade about the internal financing and export intensity nexus. In recent decades, tariffs have been sharply reduced in developed economies to facilitate exporters and promote international trade. In a similar vein, developing economies are also encouraging domestic firms to sell goods in foreign markets. Because internationalization offers many benefits. For instance, increased productivity, improvement in profit, better employees' wages, technology advancement, long-term survival, and sound financial health. Firms' managers view internationalization as an opportunity to further increase profit, optimal utilization of capacity, competitive advantage, and strengthen the firms' survival.

Exporting activities offer a faster way to enter foreign markets compared to other modes. Exporting firms can offer a wide variety of products in foreign markets. Moreover, exporting firms offer the products in foreign markets through their registered distributors or by establishing a local distribution network. However, distributors are more familiar with local market requirements, culture, and regulations and are better able to manage them. Thus, exporting firms may avail the benefits of distributors and promote their products in international markets. Distributors also help to reduce asymmetrical information and improve exporters' learning about the foreign market.

Exporting of the goods further diversifies the firms' products and minimize the risks. The trend of diversification across the borders has been continuously evolving. Firms that are involved in the diversification of their products perform better relative to non-diversification firms. The export intensity of the firms increases through diversification and provides opportunities to export more products. Beamish et al. (1993) point out that product portfolios involving diversification have a positive influence on export performance. Cooper and Kleinschmidt (1985) observe that export markets that are diversified are likely to perform better for exporting firms. Therefore, diversification not only minimize the risks but also improves the performance. Seringhaus and Botschen (1991) observe that industrialized countries have promoted exports during the early 20th century. Naidu et al. (1997) also note that countries have demonstrated the power of exports that have become industrialized in the last decade.

Governments can design the policies that create favorable environments, well-performing markets, and a supportive corporate governance framework. Alexander and Warwick (2007) state that the government's intervention during market failure is helpful. Government intervention could be possible in a situation when intervening benefits offset the losses. Governments can facilitate domestic firms' access to foreign market information through their counterparts because it acts as a trustworthy reference. Exports have a significant impact on the economy, but information asymmetry in the market creates gaps. Financial intermediaries can facilitate domestic exporting firms by minimizing asymmetric information.

Naidu et al. (1997) urge that economic development can be attained through export promotion. Export promotion also helps to achieve a sustainable economy through diversification. Czinkota (1994) also provides the rationale for promoting exports, facilitating the international diversification of domestic firms' products, and improving the firms' growth by not relying on a specific market. Thus, a firm's export intensity has not only improved the firm's survival but also had a positive impact on the economy.

When there are many advantages to exporting, then why all the firms are not engaged in exporting activities? One possible barrier is entry-cost, which is also referred to as sunk cost. When a firm plans to enter into a foreign market through an exporting channel, it has to establish a new marketing channel, develop the products according to the foreign market tastes, design the packaging in terms of foreign market requirements, build the logistics channels, and learn the new bureaucratic process. Additionally, in order to improve the profit and expand the markets, they will attempt to tap the foreign markets by offering a competitive product and trying to capture a reasonable market position. A firm can utilize the various sources of financing to cover entry costs. Internal financing is one of the important sources and can be used to cover the sunk cost. Internal sources mostly include cash flows generated through domestic sales, retained earnings, reserves, and the disposal of fixed assets. Furthermore, it also includes financial assistance from executive management and directors. The exporting firm may avail financial assistance through its subsidiaries. The financial assistance or support that comes from within a firm's business is known as internal financing.

Companies that are large by asset size and production will enter the foreign markets because they have enough internal resources to cover the initial entry cost. Large companies are already holding a strong position in the domestic market and generating sufficient cash flows from domestic sales. Large companies also have an advantage when it comes to selling in foreign markets because they are not as financially constrained as small businesses and can learn the necessary skills for international sales as well as train their human capital.

There are some companies which are already selling goods and services in foreign markets through export channels. They continue to export goods and services to the foreign markets in order to avoid the sunk costs. Such companies only require the maintenance costs because they have already covered the initial sunk costs. These companies cover the maintenance costs through internal sources such as reserves, retained earnings or cash flows generated through domestic sales. In addition to issuing stocks or borrowing externally, Huang and Liu (2017) show that retained earnings are used to finance exporting activities. A firm can retain some of its profit and will not distribute it among shareholders. Instead, it will be used for future investment. Finally, there are financially constrained companies that face difficulties for obtaining loans. They will also rely on internal sources of funds. Thus, internal financing is an approach in which a firm uses its own capital to finance its exporting activities. Rahaman (2011) explains that internal financing significantly influences firms' growth. Campa and Shaver (2002) describe that exporters have stable cash flows and their internal cash flows are less sensitive to investment. Park and Pincus (2001) note that internal financing does not involve transaction costs and is relatively less costly. Furthermore, Myers and Majluf (1984) demonstrate that internal financing is less costly relative to external financing.

On the other hand, Kaplan and Zingales (1997) observe that external financing involves high premium due to information asymmetry. In this respect, firms are keeping a portion of their profits as a reserve for future investment opportunities. However, an internal source of financing does not ensure that a firm will succeed if it enters into a foreign market through an exporting channel. Therefore, firms' management can use a variety of sources to drive export activity and ensure a better usage of funds.

The international trade model of Heckscher-Ohlin-Samuelson presents the concept of financial dependence. The model is based on two countries and assumes that technologies and consumer preferences are identical. The differences in financial development give a comparative advantage in trade. While the model of Bardhan and Kletzer (1987) pays attention to the financial system. This model also involves two countries, in which one country produces intermediate goods while the other country produces final goods. The country that produces the final goods requires intermediate goods before it can produce the final goods. Therefore, the sector producing the final goods requires external financing to meet its working capital requirements. A moral hazard problem occurs due to information asymmetry, so a country with a weak financial system will face difficulty if it follows credit rationing. However, a country with a strong financial system reduces frictions and provides external financing. Therefore, a weak financial system will have a comparative disadvantage compared to a strong financial system. Beck (2002) further explores the model that trade patterns depend on financial development; even so, external financing is required by both sectors.

These theoretical models have some drawbacks because they are based on certain assumptions about representative firms and do not account for heterogeneity at the firm level. Melitz (2003) works on new-new trade theory and accounts for firm-level productivity. This model includes the financial frictions by involving the fixed and variable costs, which are financed through external sources. The Chaney (2005) model states that the decision to export depends on a firm's production level. Productive firms can sell domestically and generate enough cash flow to cover the export costs. Therefore, highly productive firms are engaged in exporting activities because they are selling domestically and generating enough revenue to cover their export costs.

Manova (2013) further extends the model by assuming the firm and sector's heterogeneity. She emphasizes that frictions in the financial markets reduce foreign market entry, firm selection into production, and foreign sales. Furthermore, weak financial institutions impede international trade flows. The magnitude of distortion is higher in highly vulnerable sectors that have fewer collateralized assets and require more financing from external sources. Therefore, external sources of finance that are

difficult to access may hammer global trade. Besedes et al. (2014) examine the dynamic trade model and claim that credit constraints play an important role in international trade, specifically in the early stages of exporting. Credit constraints diminish the initial volume by restricting the constrained firm's ability to finance their activities. However, the effect disappears within the first three years with the condition of the firm's survival.

The firm's decisions regarding investment are greatly influenced by financial constraints because they involve sunk costs, particularly for young firms who are planning to enter into foreign markets. The entry cost has become a challenge not only for young firms but also for medium and mature firms that are operating with sizeable domestic sales. Stiebale (2011) emphasizes the two basic reasons for which financial constraints are critical for exporting firms' behavior. First, literature on theoretical trade models emphasizes the importance of financial markets and their role in foreign sales. It enables them to generate demand in foreign markets and provides a comparative advantage. Second, fixed initial costs, for instance, sunk costs involved in export activities. Therefore, those firms can cover the sunk costs, having an appropriate liquidity position.

Modigliani and Miller (1958) propose the theorem, which assumes that both internal and external sources of financing are substitutable under perfect capital market. The theorem assumes that firms' managers are fully aware of the value of new investments and assets. Despite that, it is difficult for firms to decide about accessing debt and equity. However, Fazzari et al. (1988) state that investment decisions are associated with internal and external sources of finance. Imperfect capital markets may create adverse selection and moral hazard problems due to information asymmetry. When creditors are not able to distinguish the firm's quality, they assign their average values (Myers and Majluf, 1984). Jaffee and Russell (1976) argue that credit rationing and imperfect information may lead to an increase in interest rates, while Stiglitz and Weiss (1981) assert that inappropriate credit rationing could become the reason. However, Akerlof's (1970) argues that creditors are not able to differentiate between good borrowers and bad borrowers in loan agreements under information asymmetry situations.

Firms are facing difficulties in obtaining external sources of finance due to macroeconomic shocks. The movement in economic activity is connected with the firms' liquidity position. Bernanke et al. (1996) assert that when debt market gets worse, it may amplify the negative spillover to the economy, which is known as financial accelerator theory. The theory states that borrowers have to bear high agency costs at the start of a recession. The credit market suffers from the disruption in economic activity caused by negative shocks. According to Bernanke and Blinder (1988), when monetary policy becomes tight during a recession period, investors will shift to safer horizons and credit flow will decrease through banking channels.

Access to internal funds becomes vulnerable in a situation where it becomes difficult to obtain a loan from external sources, which negatively impacts on investment (Whited, 1992). Financially unsound firms may face an issue while accessing external sources of finance due to asymmetrical information problems (Fazzari et al., 1988). Exporters rely heavily on external financing to cover fixed costs. It includes costs for tangible assets, R&D expenditures, purchasing the inventories, workers' wages, conducting foreign market research, analyzing the pros and cons, enlarging the capacity in line with the foreign market requirement, ensuring compliance with international regulations, designing, customizing the products, establishing the network in the foreign market, and other operational costs before sales take place.

Participating in foreign markets also involves variable costs besides fixed upfront costs. These variable costs include transporting, shipping, loading, and unloading the shipment; customs duties; insurance coverage; and most of which are paid before realization of the export revenue. Exporter firms require additional working capital compared to non-exporter firms who are selling domestically. This is because when goods are exported and shipped via sea, it will take more time to deliver to the foreign markets and payment will not be made until the shipment is received. Furthermore, there are substantial lags in international trade that force the exporters to finance their activities with external funds. The firms' production activities require external funds. Manufacturing firms use internal and external sources of finance for the payment of operational and production activities.

Access to external finance is important for both domestic firms that are selling locally as well as for exporter firms that are selling in foreign markets. In addition, firms' liquidity improves through access to credit (Joeveer, 2016). Amiti and Weinstein (2011) argue that financial access is essential for export promotion at the firm level. When internal funds are inadequate to cover the operational costs for foreign sales, then access to external funds may help to cover them. External funds help to cover the substantial lags that exist in international trade. Moreover, it covers the variable costs such as purchasing the inputs, paying plant bills, wages, freight insurance, offset loading, unloading, and shipping costs. Foreign market participation does not assure that a firm will continue its operation once it enters; instead, it requires a firm to cover the maintenance costs. Therefore, the survival of firms in a foreign market depends on internal and external funds. If firms become financially constrained, then it would become difficult to sustain their export position in international trade.

Manova (2013) illustrates that access to external credit is crucial for financially constrained and vulnerable firms to offset their duties and freight costs when internal cash flows are inadequate to fulfill the working capital requirements. The sources of external finance significantly vary among industries (Manova, 2008). Export costs are classified as fixed and variable costs, and access to external funds is essential for them. When retained earnings and internal cashflows are not sufficient to cover export costs, they make external funds essential for increasing the export size and producing the goods in accordance with foreign market requirements. Therefore, access to external funds has a significant influence on the exporters' decision-making process.

The literature on trade and finance points out three basic rationales for obtaining external funds. Firstly, participation in foreign markets involves large fixed sunk costs together with variable costs. Secondly, there are lags in between the sales and cash receipts. The duration of international transactions is much longer compared to domestic transactions. Finally, exporting firms are exposed to more risks by entering into foreign markets via exporting channels. Exporters are required to obtain insurance for their shipped goods in order to mitigate the associated export risks. In this regard, exporting firms are required to pay the insurance premium on the covered insurance, which will further exaggerate the external cash requirements.

The financial intermediaries provide the funding facility to the exporters. Braun (2003) asserts that manufacturing firms obtain funding facilities from financial intermediaries by pledging their tangible assets. The requirement for collateral will be high if the exporter is exposed to more risk. International trade involves more risks, and there is an asymmetric information problem between the lender and borrower. In such a scenario, banks would require a high value of collateral against the credit facility. Therefore, collaterals are widely used in external financing and their value will be high in the case of poor contractability.

International trade involves various types of risks. Risk varies from micro to macro level, including currency risk, political risk, and counterparty risk. In this respect, financial instruments are used to counter international trade risk. Auboin (2009) opines that financial instruments are used in international trade. The letter of credit is a form of financial instrument widely used in international trade. A letter of credit basically facilitates the buyer and seller by bridging the trust gap, specifically the payments. Ferri et al. (1999) argue that foreign banks refuse to underwrite letters of credit with countries if their credit rating is downgraded. A bank guarantee is another form of financial instrument. It provides assurance to the exporter that the bank will uphold a contract if the importer fails to honor it. Other financial instruments include options, swaps, futures, and forward contracts.

The central bank is another source of external finance. It provides a financing facility for exporters through export finance schemes. These credit facilities are used to cover the production and transportation costs. Governments or related institutions also provide external financing facilities under certain circumstances. External finance has a positive role in a firm's export intensity, as reported in the studies of Amiti and Weinstein (2011), Chor & Manova (2012), Kim (2016), and Castellani et al. (2021). Kiendrebeogo and Minea (2017) document that financial constraints reduce the export participation of Egyptian manufacturing firms. They also report that financial constraint has a negative association with export intensity. Campa and Shaver (2002) note that exports have an impact on a firm's financial health. Bellone et al. (2010) state that financial constraints reduce export intensity and participation in foreign markets. Minetti and Zhu (2011) provide the same remarks that financial constraints reduce foreign sales.

The literature on financial constraints, productivity, and export participation decisions is well documented. Greenaway et al. (2007) use leverage with exporting decisions but do not address leverage, as pointed out by Bellone et al. (2010). Bellone et al. (2010) plug the financial factors, including leverage ratio, into the export behavior equation but do not sort out the relationship between leverage and export decisions. Recently, Nagaraj (2014) considers the leverage ratio in export participation regression and Qasim et al. (2021) employ leverage ratio with export decisions, but these studies do not purely analyze the impact of leverage on export intensity. An analysis of how leverage impacts a firm's export intensity is not fully answered, and remains less studied, specifically for a small-open economy. This study aims to fill the gap by investigating a direct link between leverage and export intensity. Specifically, we analyze how leverage influences export intensity within the context of a small-open economy.

3.4. Corporate governance and firm export

Corporate governance is the procedure by which firms are controlled and directed and focuses on the relationship between management, the board of directors, and shareholders (Clarke 2006). The agency theory states that the board of directors is important for internal controls that supervise the management and eliminate the agency problem. Several studies have observed that firms' decisions to internationalization is not easy, especially from developing economies, and many of them could fail (Vissak et al., 2018; Lukason and Vissak, 2019). On the other hand, firms can also gain substantially if they participate in foreign markets through exporting activities (Atkin et al., 2017; Mataveli et al., 2022).

The corporate governance literature reveals that corporate governance, more specifically board composition and board size, can impact on firms' export behavior and internationalization decisions (Nas and Kalaycioglu, 2016; Dixon et al., 2017). For instance, they can influence risk-taking behavior and access to resources. Furthermore, domestic firms that are participating in foreign markets can greatly benefit from the board members' knowledge, experience, and expertise (Barroso et al., 2011). However, suboptimal governance structures may restrain the managers' ability to participate in export markets (Dixon et al., 2017).

Board size is considered an important variable of corporate governance and past studies provided mixed results. Some authors find a positive association between board size and firms' export intensity (Simeon, 2001; Calabro et al., 2013; Nas and Kalaycioglu, 2016; Nam et al., 2018). Adams and Mehran (2003) contend that a larger board improves the monitoring effectiveness and provides better expertise. Monks and Minow (2004) argue that larger boards are better able to oversee management. Board monitoring helps to make better managerial decisions and leads to improved firm performance. Coles et al., (2008) state that complex firms can benefit from a larger board size because they provide better expertise and advice.

On the other hand, several authors have observed a negative association between board size and export intensity (Mitter et al., 2014; Dixon et al., 2017). For instance, Haldar et al. (2016) argue that firms comprising smaller boards and many independent directors on their boards have more exports. Jensen (1993) argues that strategy formulation and decision-making processes are less effective under a larger board size because it is difficult to reach a consensus on a large board size and agency problems may arise, like free riding of directors. Previous studies observe that larger boards reduce the individual motivation level and adversely effect on participation and commitment (Dalton et al. 1999).

In addition, board independence helps to monitor the managers' actions more effectively. It also ensures that policies are implemented in the interest of shareholders. However, effective institutions have not been established in Pakistan that facilitate the proper functioning of independent directors. Independent directors are appointed just to barely fulfill the regulations. Consequently, they do not play an effective role compared to their counterparts in developed economies (Lau et al., 2007). Despite the importance of corporate governance and its role in firms' export intensity, the association between corporate governance and export intensity has been neglected within the context of a small open economy. To clarify and understand the association between corporate governance and export intensity, we attempt to explore the association between board size, independent directors, and export intensity.

3.5. Theoretical background and empirical evidence

3.5.1. Traditional and new trade theories

Competitive advantage is seen as an important factor in explaining the flow of goods across the boundaries in traditional trade theories. Ricardo (1817) proposed an idea of free trade based on comparative advantage that would be mutually beneficial for both importers and exporters. In this regard, there is empirical evidence that supports the Ricardo argument for trade benefits between countries (MacDougall, 1951; Stern, 1962). The Ricardo model is based on the assumption of a two-country model, in which both countries can produce the commodities and gain the benefit from trade. However, the assumptions of the model do not hold in reality due to multiple goods and different countries. For instance, Joan Robinson (1974) argues that Portugal had to gain more than England, but it did not happen in reality.

The Ricardo model does not explain the differences in production levels among different countries and considers labor as a means of production. Heckscher (1919) and Ohlin (1924, 1933) develops a Heckscher-Ohlin model by extending Ricardo's model (1817) based on the argument that a country gains from comparative advantage based on resources. This model is also based on several assumptions; goods are freely mobilized across the boundary, production is based on the same technology, production factors can be mobilized within the country, scale of economies does not exist, taste is same in all countries, resources are fully utilized, transaction costs do not exist in a perfect competition market. The model assumes that a country will export a commodity that is produced with a cheap and abundant factor, while it imports more commodities based on the scarcity factor of production. It suggests that in an economy where labor is cheaper, such an economy will export labor-intensive product, while such as economy will import capital-intensive products due to a lack of capital. Samuelson (1953) further extends the Heckscher-Ohlin model, which is known as the neoclassical model. Samuelson (1953) claims that if the Heckscher-Ohlin model is correct, then prices of production factors converge in international trade until they become absolutely equal between trading countries.

The neoclassical trade theory states that labor costs and commodity prices will converge as a result of international trade. However, this convergence can only be observed in metropolitan countries, while African countries remain deteriorated despite global integration. Therefore, this trade model stresses free trade, which equalizes the factor of production prices. Trade theories based on comparative advantage or endowment factors do not fully cover the characteristics of international trade. Because goods are exchanged between countries, which is termed as inter-industrial trade. While much of the international trade takes place between intra-industry.

Krugman (1980) develops a trade model based on intra-industry. He argues that trade provides benefits in terms of export gains. This model provides additional sources of gains when a country is specialized in different commodities and can get the benefits from large factors of production. Melitz (2003) has introduced a new-new trade theory that incorporates the sunk cost hypothesis in international trade. Following the dynamic industry model of Hopenhayn's (1992a, 1992b), Melitz (2003) has shown that productive firms will enter into the foreign markets and will reap the benefits of trade exposure. Firms that are less productive will exit foreign markets and will only be able to sell in domestic markets. Therefore, there will be re-allocation of resources within firms which are more productive in order to gain the benefit from trade exposure. Melitz (2003) has also extended the trade model of Krugman (1980) by including the firm's heterogeneity with respect to productivity. It is costly to sell in foreign markets, and a firm will take the decision to enter into foreign markets once it gets information about its productivity.

Chaney (2005) extends the Melitz (2003) model by introducing liquidity constraints. He states that a firm has to pay the exporting costs to enter into foreign markets. The probability of exporting is higher for a firm that has a strong liquidity position. Chaney (2005) explains that exchange rate appreciation reduces export volume, due to a decrease in competitiveness. Manova (2013) also contributes to the Melitz (2003) model by including the external source of funds. She shows that financial frictions in a heterogenous firm model hammer the firm's foreign market entry, production, and foreign sales.

Exporters attempt to match with foreign partners to sell in foreign markets. The literature reveals that a lack of foreign market information is an important barrier to foreign market entry. The collaboration with foreign partners improves the information about foreign markets. In this regard, exporters need to find foreign partners to participate in international trade. The process of finding an appropriate foreign partner, for example, a distributor, relates to export sales. Aeberhardt et al. (2014) extend the Araujo and Ornellas (2007) model. They argue that if small exporters benefit from a reliable partner, then it would improve their exports. Chaney (2014) analyzes how exporters use their existing networks to find a partner in foreign markets. This indicates that there is some sort of heterogeneity that may influence firms' growth and performance. Large firms, which are more active, are better able to gain foreign market information.

3.5.2. Empirical evidence on leverage and export

The literature on trade and finance provides the empirical evidence at micro-level on the relationship between leverage and export intensity. It reveals mixed results, with little emphasis on lower-middle income countries. Some studies report the positive relationship between leverage and export intensity; for instance, Du and Girma (2007), Amiti and Weinstein (2011), Chor and Manova (2012), and Paravisini et al, (2015). Empirical investigations that exhibit a positive linkage between leverage and export intensity uncover that when exporting firms have limited or inadequate internal financing to meet their working capital requirements for foreign sales activities, such firms rely on external borrowing to finance their exporting activities.

Muuls (2015) shows that intensive and extensive trade margins are positively linked with credit constraints for Belgian manufacturing firms. The results reveal that manufacturing firms tend to export or import more if credit constraints are lower. In a firm-level dataset of nine developing and emerging economies, Berman and Héricourt (2010) examine the relationship between financial factors and trade margins of 5,000 firms. They underpin that financially constrained firms exhibit a disconnection between productivity and exports. When firms are able to access finance from external sources, productivity significantly determines the firms' decisions for foreign sales. The findings suggest that external finance has a significant impact on exporting decisions.

Du and Girma (2007) focus on the link between access to finance, foreign direct investment (FDI) and domestic firms' exports by using a dataset of more than 28,000 Chinese enterprises. They find that better access to bank credit promotes domestic firms' exports. Their results suggest that the availability of bank loans is essential for the promotion of enterprises' exports instead of relying on foreign direct investment. Paravisini et al. (2015) contribute to the trade literature by dissecting the supply of credit and its effects on trade. Their results indicate that a shortage of credit reduces export. In the study of Amiti and Weinstein (2011), the authors attempt to link the bank's health with firms' exports over the period of 1990-2010. They uncover that bank health is important for driving the firms' exports during crises. In other words, weak banks are unable to support exporting firms during financial crises, which leads to a drop in the firms' exports.

Chor and Manova (2012) investigate the downfall of international trade during the financial crisis of 2008–09. They observe that tight credit conditions and higher interest rates tend to reduce exports. The effects are more pronounced in industries that rely heavily on external financing and have limited collateral. Therefore, industries which are highly dependent on external financing, their exports are susceptible to the external cost of capital and availability of funds. Their results suggest that the high cost of external financing dampened international trade.

Castellani et al. (2021) analyze the firms' export intensity with respect to diversity in financing during the early stage for more than 13,000 enterprises by using the GEM survey. They witness the positive association between diversity in financing and export intensity during the early stage for startups as well as for established firms. Greenaway et al. (2007) study the link of financial dimension with firms' decisions to participate in foreign markets by using the data of the United Kingdom (UK) manufacturing firms for 1993-2003. Their results show that exporting manufacturing firms have better financial health compared to non-exporting manufacturing firms. In studying the Spanish manufacturing firms and their exporting strategies, Manez et al. (2014) attempt to link the internal and external financing choices with Spanish manufacturing firms' decisions to export for the period of 1990–2011. They note that access to internal and external sources of finance is relevant for export purposes.

Minetti and Zhu (2011) use survey data of Italian manufacturing firms to analyze the credit constraints in terms of credit rationing with firms' exports. They show that credit rationing reduces the manufacturing firms' exports and domestic sales. Their findings propose that credit rationing hampers manufacturing firms' exports, especially those belonging to high-tech sectors and seeking funds from external sources. Similarly, Besedes et al. (2014) note that credit constraints significantly reduce the export volume and hamper during the early stages. Credit constraints limit the financing ability of the firms and reduce export volume.

Huang and Liu (2017) describe the Chinese manufacturing firms' exporting activities by considering a rich database over 2005-2009. They report that the probability of exports will be higher for firms if they have more financing options. Huang et al. (2017) investigate Chinese manufacturing firms' access to finance and export activity. Their results show that manufacturing firms export more when they have higher interest expenditure. Their findings suggest that better access to financing options, for instance, external financing and issuing stocks, leads to an improvement in both export volume and propensity.

The literature on trade also reports the negative relationship between leverage and export intensity. Brancati et al. (2018) examine the export behavior of Italian manufacturing firms and report that leverage is negatively linked with exporting behavior. Their results suggest that the higher the portion of leverage, the lower the space for Italian manufacturing firms to undertake internationalization due to internal constraints or rationing on the credit side. Similarly, Kim (2019) also looks into the effects of financial constraints on Korean manufacturing export performance for 2006-2013. Results indicate that a higher amount of leverage reduces the probability of exports for Korean firms. In examining the effects of bank finance on the size of Nigerian manufacturing firms' exports, Akoto and Adjasi (2021) reveal that bank finance has been unfavorably associated with the size of manufacturing firms' exports, while credit from the suppliers and customers has a positive relationship. Qi et al. (2018) investigate Chinese multinational firms to break down the relationship between leverage and exporting behavior. The results indicate that leverage has negatively impacted on export behavior.

3.6. Data, variables, and descriptive statistics

This study examines the impact of leverage on export intensity by using the micro-level data of listed Pakistani manufacturing firms. We collect the annual data of manufacturing firms from PSX and the EMIS databases for the period of 2013-2019.[4] We selected the year 2013 because at the time of data collection, the 2013's export sales and corporate governance information were the oldest, which were available for most firms. These different data sources allow us to cross-validate the observations and improve the data accuracy. We retain the observation based on financial statement if an item value deviates from another dataset.

Table 3.1: Industry classification

Industry	PSX's sector code	No. of firms	Percentage
Textile	827, 829, 830, 831	55	35.26
Food, Beverages & Tobacco	810, 826, 832	26	16.67
Non-Metallic Mineral	804	18	11.54
Chemicals	805	13	8.33
Automobiles	801, 802	12	7.69
Coke & Petroleum Products	811, 825	7	4.49
Fertilizers	809	4	2.56
Pharmaceuticals	823	7	4.49
Paper & Board	822	5	3.21
Others	803, 808, 816	9	5.76
Total		156	100

Notes: This table shows information about industry classification based on sector code and the number of selected firms from those sectors.

PSX classifies the industry on the basis of unique codes and includes automobile assemblers, automobile parts & accessories, cable & electrical goods, cement, chemical, engineering, fertilizer, food & personal care products, glass & ceramics, leather & tanneries, paper & board, pharmaceuticals, refinery, sugar & allied industries, synthetic & rayon, textile composite, textile spinning, textile weaving, and tobacco. We remove a firm from the sample if it has been assigned DEF (defaulter) status by PSX or has

[4] EMIS contains information on more than 197 emerging markets. It provides information about balance sheet items, income statement items, and cash flow statement items. PSX provides the audited financial statements, which comprise profit and loss, balance sheet, cash flow statement, and their footnote details.

incomplete information on export intensity, leverage, board size, and other selected variables. Table 3.2 summarizes the sample information of listed manufacturing firms for the period of 2013-2019.

Table 3.2: Sample of exporter and non-exporter firms

Exporter Firms		Balanced Non-Exporter Firms	Excluded Firms	Selected Sample
Balanced Data	Unbalanced Data	39	127	156
117	48			

Notes: This table contains information on sample selection, which includes both exporter and non-exporter manufacturing firms.

The final sample consists of 156 Pakistani manufacturing firms, composed of 117 exporter firms and 39 non-exporter firms. Exporter firms have a weight of 75 percent in the selected sample, while non-exporter firms have a weight of 25 percent. We suspect that the sample may suffer from biased selection because manufacturing firms could avail external financing from other sources as well, apart from bank loans. Since there was no such information in the dataset, we proceeded with the available information. Moreover, we try to alleviate the possible biased sample by using the total liabilities to total assets ratio as a proxy for leverage instead of the bank loans to total assets ratio (Rajan and Zingales, 1995; Pinto and Silva, 2021).

Table 3.3: Exporter and non-exporter firms

Particulars	No. of firms	Percent
Exporter firms	117	75
Non-exporter firms	39	25
Total	156	100

Notes: This table shows the information of exporter firms and non-exporter firms.

We use the export sales to total sales ratio as a proxy for export intensity. Previous empirical studies, such as Bernini, Guillou, and Bellone (2015) for France; Dixon et al. (2017) for China; Ferrante et al. (2020) for Italy; Maes et al. (2020) for Belgium; and Pinto and Silva (2021) for Portugal, use the same ratio to measure export intensity. We use the total liabilities to total assets ratio as a proxy for leverage (Rajan and Zingales (1995) and Pinto and Silva (2021).[5] Table 3.4 summarizes the definitions of other variables.

Table 3.4: Variables definition

Variables	Definition
Export Intensity	Exports Sales/Total Sales
Corporate Leverage	Ratio of total liabilities to total assets
BOD Size	Total number of directors on the board of directors
Independent Director	Proportion of independent directors on the board of directors
Operating Leverage	Operating expenses scaled by total assets
Firm's Growth	The growth in firm sales
Firm's Size	Logarithm of firm total assets
Firm's Age	Log of number of years since inception
Short-term Collateral	Inventories and accounts receivable minus accounts payable over total assets
Long-term Collateral	The ratio of fixed tangible assets to total assets
Profitability	Sales to total assets
Cash Holding	Current assets minus inventories minus accounts receivable scaled by total assets

Notes: This table provides information about selected variables and their precise definition.

[5] Frank and Goyal (2009) note that the debt ratio can be calculated on the basis of book or market value. We use book value to calculate the leverage ratio.

Table 3.5 shows the descriptive statistics of selected variables. There are 819 observations of each variable in the sample. The mean value of export intensity is 28%, while its standard deviation is 28%. The statistics indicate that leverage is 51% on average. The board's size is 7.99 on average, while the proportion of independent directors on the board is 16% on average. On average, operating leverage and a firm's growth are 11% and 10%, respectively. The mean value of the firm's size and age is 16 and 1.57, respectively. Short-term collateral has a mean value of 27% on average, while long-term collateral has a mean value of 44% on average. The mean value of profitability is 1.20, while cash holdings have a mean value of 20% on average.

Table 3.5: Descriptive statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
Export intensity	819	0.28	0.28	0.00	0.99
Leverage	819	0.51	0.19	0.09	0.99
Board size	819	7.99	1.37	6.00	17.00
Independent director	819	0.16	0.12	0.00	0.67
Operating leverage	819	0.11	0.13	0.01	1.22
Firm growth	819	0.10	0.20	-0.57	1.60
Firm size	819	16.00	1.41	10.10	20.13
Firm age	819	1.57	0.19	0.78	1.93
Short-term collateral	819	0.27	0.13	-0.04	0.80
Long-term collateral	819	0.44	0.18	0.01	0.86
Profitability	819	1.20	0.60	0.10	4.93
Cash holding	819	0.20	0.13	0.00	0.78

Notes: This table presents the descriptive statistics of dependent variable and selected regressors.

Table 3.6 presents average export intensity and foreign sales across various distributions of leverage. We note that 69 observations have a leverage of less than 25%. 327 observations have a leverage of 25% to 50%, 350 observations have a leverage of 50% to 75%, and 73 observations have a leverage of more than 75%. It suggests that export intensity and foreign sales increase with leverage up to a 75% threshold and then decrease.

Table 3.6: Average foreign sales and export intensity

Leverage	Obs.	Export Intensity	Foreign Sales (PKR'mln)
Leverage < 0.25	69	0.198	1837.07
0.25 ≤ Leverage < 0.50	327	0.271	3918.33
0.50 ≤ Leverage < 0.75	350	0.303	4755.04
Leverage ≥ 0.75	73	0.247	4303.72
Total	819		

Notes: This table presents average foreign sales and export intensity for different degrees of leverage. Leverage represents the total liabilities to total assets ratio. Export intensity is the ratio of export sales to total sales.

3.7. Econometric strategies and models

3.7.1. Endogeneity in corporate finance

The endogeneity problem, which can be broadly defined as a correlation between the error term and the regressors in a regression, has been widely confronted by empirical studies in corporate finance. The estimated coefficients become inconsistent and biased in the presence of endogeneity, which makes the reliable inferences almost implausible. The endogeneity in corporate finance derives from omitted variables, simultaneity, and measurement error in the dependent and independent variables. Omitted variables are the most common cause of endogeneity in regression models that are correlated with response variables and regressors. Omitted variables are not included in the model because they are difficult to observe. Therefore, these omitted variables appear in the error term rather than among the regressors.

Simultaneity bias, which is known as reverse causality, is another common source of endogeneity in corporate finance. It occurs when a response variable and one or more regressors are determined in the equation, that the response variable causes the regressor or that the regressor causes the response variable. For instance, leverage can influence export intensity. At the same time, export intensity can influence leverage. Empirical studies in corporate finance commonly use proxy variables to measure response or regressor variables that are unobservable or difficult to quantify. Measurement error occurs if there is a discrepancy between the proxy variable and the true variable. Therefore, measurement errors can occur in dependent variables and explanatory variables. The panel data has been widely considered in empirical studies of corporate finance, observing short time periods 'T' and large firms 'N'. The panel data allows us to model the unobserved heterogeneity through specific effects or fixed effects. It allows us to remove the endogeneity arising from unobserved variables.

3.7.2. OLS regression

Multiple regression is the backbone of the least square estimation, which depends on the linear model to link the multiple explanatory variables in response to dependent variables. In this regard, we apply multiple regression in order to estimate the baseline regression equation. We apply F-statistics to test the model significance level, and we examine the goodness of fit through r^2, also known as coefficient of determination. However, there are certain assumptions of linear regression which are given below:

i. Parameters must be linear.
ii. It is assumed that regressor should be non-stochastic.
iii. The mean value of disturbance term is zero.
iv. Variance should be homogenous.
v. There should be no autocorrelation.
vi. The error term is uncorrelated with regressors.
vii. Observations should be greater than parameters.
viii. Regressors should not be the same.
ix. There should be no model misspecification or bias.
x. The model does not suffer from multicollinearity.

The general equation of ordinary least squares (OLS) regression are as follow:

$$Export\ Intensity_{i,t} = \alpha + \beta Leverage_{i,t} + \delta X_{i,t} + \varepsilon_{i,t} \quad (3.1)$$

The dependent variable is export intensity, and its definition is given in Table 3.4. The subscript *i* indicates an exporter firm at time *t*, and $X_{i,t}$ is a vector of essential determinants of export intensity which includes leverage, board size, independent director, operating leverage, firm growth, firm size, firm age, short-term collateral, long-term collateral, profitability, and cash-holding, and $\varepsilon_{i,t}$ is error term.

3.7.3. Fixed and random effect estimators

OLS regression is widely applied in panel data. However, there are some problems in estimating the OLS regression. It can produce biased estimators in the presence of outliers. OLS regression does not control the unobserved heterogeneity (specific effects of firms). Because there is a possibility of unobserved effects related to specific firms in OLS (Baltagi, 2005). Moreover, it provides inconsistent and biased coefficients in the presence of reverse causality. Therefore, fixed effect (FE) and random effect (RE) estimators perform better relative to OLS estimators (Le and Phan, 2017)[6]. The fixed effect estimator is appropriate in a situation when we intend to analyze specific firms. The FE estimator captures the correlation between individual specific effects and independent variables. The FE estimator also helps to draw the inference of specific firm behavior. The simple form of the FE regression equation is given below.

$$Export\ Intensity_{i,t} = \alpha + \beta Leverage_{i,t} + \delta X_{i,t} + \mu_i + \nu_{i,t} \quad (3.2)$$

The FE estimator could suffer from a multicollinearity problem due to large numbers of dummy variables. If μ_i is assumed to be random , then The RE estimator may help to avoid the loss of a degree of freedom. The RE estimator assumes that independent variables are uncorrelated with individual specific effects. The RE estimator is appropriate in case of a random sample. In this study, we assume that the FE estimator is more appropriate than the FE estimator because we intend to analyze specific firms.

[6] FE regression eliminates omitted heterogeneity (Wooldridge, 2002). But it produces inconsistent coefficients in the case of a lagged dependent variable.

However, if the model does not contain the unobserved effect, then OLS regression is more powerful. We choose the appropriate model based on the outcomes of the Breusch-Pagan LM test, F-test, and Hausman test (Breusch and Pagan, 1980). We employ diagnostic tests such as cross-sectional dependence, autocorrelation, and heteroskedasticity to improve the model (Le and Phan, 2017). We use Driscoll-Kraay and robust standard errors to enhance the model's efficiency (Hoechle, 2007). We also incorporate industry and time dummies to account for potential industry and business cycle effects (Greenaway et al., 2007).

3.7.4. Dynamic panel model

Wintoki, Linck, and Netter (2012) claim that endogeneity problem still exists in the model because unobserved heterogeneity could be controlled through FE and RE regressions, but they do not control for reverse causality (endogeneity). The presence of reverse causality in the regression equation could produce the biased estimators. Moreover, the question of whether leverage improves export intensity or not is endogenous. Leverage and export intensity could be linked in a dynamic form because access to external finance such as bank loan may improve export intensity. While export intensity may require additional financing to meet the working capital requirement. Therefore, it is important to manage the reverse causality. In this regard, we exploit the endogeneity problem in two ways. Firstly, we use time-variant explanatory variables as one-period lag, excluding dummy variables and the firm's age[7]. Secondly, we apply the Blundell and Bond's (1998) system GMM approach to exploit the endogeneity problem.

Holtz-Eakin, Newey, and Rosen (1988); Arellano and Bond (1991); Arellano and Bover (1995); and Blundell and Bond (1998) developed difference and system GMM methods, which are becoming popular. We use the system GMM because it offers several advantages over other methods. Flannery and Hankins (2013) argue that the GMM approach is a better choice in the case of a dynamic model that requires instruments. The approach is suitable for many individuals, such as a large "N" and a few time periods, for instance, a small "T". This approach does not require external instruments, which are rather more complicated than internal instruments (Wintoki et al., 2012).

[7] Many authors for instance, Bernard and Jensen (1999), Coles, Daniel, & Naveen (2006), Greenaway et al. (2007), Nagaraj (2014), and Dixon et al. (2017) have used a similar approach to deal with the endogeneity problem.

Nagaraj (2014) claims that it removes both endogenous regressors and serial correlation issues in the model. The left-hand side variable is taken on the right-hand side with one period lag, making the dynamic equation. The approach also helps to fix the issues of autocorrelation and heteroskedasticity. It takes the instruments from the available variables, and therefore it does not require external instruments, which are complicated and difficult to find. Therefore, panel dynamic equations will take the following forms:

$$Export\ Intensity_{i,t} = \alpha + \theta Export\ Intensity_{i,t-1} + \beta Leverage_{i,t} + \gamma X_{i,t} + \delta Y_{i,t} + \nu_s + \nu_t + \varepsilon_{i,t} \quad (3.3)$$

Export intensity is a ratio of foreign sales to total sales, while leverage is measured by total liabilities to total assets. X represents the vector of corporate governance proxy for board size and proportion of independent directors on board, and Y indicates other important variables, which include operating leverage, firm growth, firm size, firm age, short-term collateral, long-term collateral, profitability, and cash-holding. Industry and time dummies are represented by ν_s and ν_t respectively, while $\varepsilon_{i,t}$ indicates error terms. Dixon et al. (2017) stated that unhealthy firms involve high leverage. Therefore, it is expected that leverage will negatively influence export intensity, as in the case of Greenaway et al. (2007). Several other factors such as board of director size, independent directors on board, firm growth, firm age, operating leverage, collateral (short term and long term), cash holdings, and profitability can also influence the export intensity.

Roodman (2009) developed the Stata command “xtabond2” to estimate the system generalized method-of-moments. We use the Stata command "xtbond2" to estimate the two-step system GMM model. We apply Hansen and Arellano-Bond tests for joint validity of the instrument set and serial correlation, respectively. It is expected that residuals are correlated in AR (1), while it is uncorrelated in AR (2) (Le and Phan, 2017; Pinto and Silva, 2021). The Hansen test validates the instrument set and has widely used as a diagnostic test for assessing the suitability of GMM method. Roodman (2009) states that the system GMM approach is complicated to estimate and may produce biased results. Therefore, we present the results of OLS, FE, RE, FE-DK, FE-RT, and two-step system GMM to compare and support the main findings.

3.7.5. Quadratic model

It is possible that firms which are expecting to sustain higher export intensity into the future will choose lower leverage in an attempt to protect economic rents (liquidity). However, if high leverage is attached to an unhealthy balance sheet, there is a possibility that at sufficiently higher leverage levels, the impact of leverage on export intensity may be positive. Equation (4) is consistent with the possibility that the association between leverage and export intensity may not be monotonic. In this regard, we develop a quadratic equation to examine the non-linear relationship between leverage and export intensity by following the work of Margaritis and Psillaki (2010) and Le and Phan (2017). The general equation is given below.

$$Export\ Intensity_{i,t} = \alpha + \beta_1 Leverage_{i,t} + \beta_2 Leverage_{i,t}^2 + \gamma X_{i,t} + \delta Y_{i,t} + \varepsilon_{i,t} \quad (3.4)$$

Where α is a constant term, β_1, β_2, γ, and δ are the coefficients of selected regressors, X represents corporate governance, proxy to board size and proportion of independent directors to board size. Y reflects essential determinants of export intensity and include operating leverage, firm size, firm age, firm growth, short-term and long-term collateral, cash holding, and profitability. ε indicates error term. Export intensity is a dependent variable that is calculated by using export sales to total sales ratio. Leverage ratio is formulated by using total liabilities to total assets ratio (Rajan and Zingales, 1995). In order to examine the non-linear relationship, we square the leverage variable and apply the OLS approach to examine the non-linear relationship between leverage and export intensity.

3.8. Findings and analysis

There are threefold objectives for this analysis; to examine the difference between exporting and non-exporting firms in terms of selected variables; to test the association between leverage and export intensity; and to analyze the non-linear relationship between leverage and export intensity. We also applied the Granger non-causality test between the response variable and regressors.

3.8.1. Univariate and multivariate analyses

We begin with a univariate analysis to examine the difference between exporting firms and non-exporting firms in terms of export intensity, leverage, corporate governance, and other important firm characteristics. The statistics from the univariate analysis of exporter and non-exporter firms are provided in Table 3.7.

Table 3.7: Univariate analysis of exporter and non-exporter firms

Variables	Non-Exporters		Exporters		Mean difference (t-statistics)	
	Obs.	Mean	Obs.	Mean		
Export intensity	273	0.00	819	0.28	-0.28***	-28.09
Leverage	273	0.47	819	0.51	-0.04***	-2.96
Firm growth	273	1.13	819	0.10	1.03	1.08
Board size	273	8.18	819	7.99	0.19*	1.95
Independent director	273	0.17	819	0.16	0 .01	1.34
Operating leverage	273	0.10	819	0.11	-0.01	-0.84
Firm size	273	15.02	819	16.00	-0.98***	-8.82
Firm age	273	1.51	819	1.57	-0.02***	-3.32
Short-term collateral	273	0 .234	819	0.27	-0.03***	-3.98
Long-term collateral	273	0 .421	819	0.44	-0.02	-1.22
Profitability	273	1.13	819	1.20	-0.08	-1.56
Cash holding	273	0.25	819	0.20	0.06***	4.33

Notes: This table shows the t-test results that are used to compare the mean value of exporting firms and non-exporting firms.

The results show that exporter firms have a higher leverage mean value of 51.2% compared to non-exporter firms (46.8%), which is statistically significant. It suggests that exporters borrow more, possibly to pay the substantial upfront and operational costs of export markets. It agrees with Qasim et al. (2021), revealing that Pakistani exporters have higher leverage. Nagaraj (2014) reports that exporters (mean=0.03) have higher leverage in relation to non-exporters (mean=0.02). Similarly, Kim (2016) contends that exporters have higher leverage relative to non-exporters. The results illustrate that non-exporter firms have a significantly larger board size relative to exporter firms. This is consistent with the findings of Dixon et al. (2017), who note that non-exporters have a higher board size.

The outcome of the t-test for firm size reveals that non-exporting firms have a smaller size in relation to exporting firms. It also shows that exporting firms are older with respect to non-exporting firms. It agrees with the finding of Qasim et al. (2021), who report that Pakistani export firms are older and larger. Several empirical investigations, such as Bernard and Jensen (1999), Bridges and Guariglia (2008), and Bellone et al. (2010), confirm that export firms are larger in terms of size. Short-term collateral is significantly higher for exporting firms, and it might be used as collateral to obtain external sources of financing. While non-exporting firms have significantly higher cash holdings.

Following the completion of the univariate analysis between exporter and non-exporter manufacturing firms, we switch to multiple regression analysis. We apply OLS, FE, RE, and system GMM approaches to break down the association between leverage and export intensity. Table 3.8 reports the estimated coefficients of the OLS, FE, RE, FE-DK, and FE-RT approaches. The baseline specification in column (1) shows that the coefficient of leverage is statistically significant and negative with export intensity. The board's size and operating leverage appear significantly positive towards export intensity, while the firm's age has a significant negative connection with export intensity. Short-term collateral has a positive relationship with export intensity, and long-term collateral has a negative association with export intensity. However, profitability appears to be statistically significantly negative with export intensity.

Table 3.8: Effect of leverage on export intensity

Variables	(1)	(2)	(3)	(4)	(5)
Leverage	-0.145***	-0.158***	-0.128***	-0.158***	-0.158**
	(0.039)	(0.039)	(0.037)	(0.018)	(0.066)
Board size	0.018***	0.006	0.006	0.006**	0.006
	(0.005)	(0.006)	(0.006)	(0.002)	(0.006)
Independent director	0.108*	0.067	0.056	0.067	0.067
	(0.061)	(0.05)	(0.049)	(0.05)	(0.061)
Operating leverage	0.171**	0.082	0.091	0.082	0.082
	(0.078)	(0.061)	(0.06)	(0.044)	(0.066)
Firm Growth	0.014	-0.050***	-0.040**	-0.050**	-0.050**
	(0.031)	(0.018)	(0.018)	(0.015)	(0.02)
Firm size	0.005	0.106***	0.039***	0.106***	0.106***
	(0.005)	(0.02)	(0.011)	(0.013)	(0.037)
Firm age	-0.078**	-0.452*	-0.152*	-0.452***	-0.452
	(0.037)	(0.247)	(0.088)	(0.069)	(0.34)
Short-term collateral	0.146*	0.204***	0.185***	0.204**	0.204**
	(0.076)	(0.07)	(0.067)	(0.061)	(0.099)
Long-term collateral	-0.193***	-0.026	-0.083	-0.026	-0.026
	(0.064)	(0.054)	(0.051)	(0.043)	(0.064)
Profitability	-0.039**	0.058***	0.035***	0.058**	0.058**
	(0.017)	(0.014)	(0.013)	(0.016)	(0.029)
Cash holding	-0.053	-0.053	-0.052	-0.053	-0.053
	(0.08)	(0.065)	(0.063)	(0.033)	(0.081)
Constant	0.012	-0.852	0.077	-0.852**	-0.852
	(0.139)	(0.528)	(0.236)	(0.247)	(0.829)
Year Dummies	YES	YES	YES	YES	YES
Industry Dummies	YES	YES	YES	YES	YES
Observations	819	819	819	819	819
R-squared	0.662				
R-squared (Within)		0.233	0.218	0.233	0.233
F-test	45.239				
Prob > F	0.00				
F-test (overall)		12.25		559.94	3.48
Prob > F		0.00		0.00	0.00
Wald test			406.05		
Prob > chi2			0.00		

Notes: This table provides the outcomes of all the estimated models of panel data on the impact of leverage on export intensity. Column (1) denotes the OLS outcomes. Column (2) and Column (3) indicate the results of FE and RE, respectively. Columns (4) and (5) show the findings of the FE-RT and FE-DK regressions, respectively. The Hausman test reports 27.567 (Prob > Chi2: 0.004); the F test value is 59.27 (Prob. > F =0.00); Breusch and Pagan LM test value is 1204.08 (Prob > Chi2: 0.000); Pesaran's test 2.991 (p-value: 0.0028); the Wooldridge test for autocorrelation 52.469 (Prob > F: 0.000); and the Wald test for heteroskedasticity 97319.70 (Prob > Chi2: 0.000). ***, **, and * denote significance levels at 1%, 5%, and 10%, respectively.

The F-test value of 45.24 with a p-value less than 0.05 indicates goodness of fitness in the model. The R-squared value is 0.662, indicating that the model can explain the 66.2% change in export intensity. The estimated coefficients of OLS could be biased because it does not control the individual effects that are not observable within cross-sectional data. Therefore, we use the FE and RE estimators apart from the OLS regression.

Estimated coefficients of the FE and RE approaches are given in columns (2) and (3), respectively. The outcomes show that leverage is negatively connected with export intensity under both specifications. We consider the Breusch and Pagan LM test to choose the appropriate model between the OLS and the RE model. The result of the chi-square favors the RE model over the OLS regression. Then, we apply the Hausman test to select between the FE model and the RE model. The Hausman result shows that the FE model is appropriate. The F-test also supports the FE model. There are some other potential issues in the FE model, such as autocorrelation, cross-sectional dependence, and heteroskedasticity. Therefore, we employ Pesaran's test, the Wald test for heteroskedasticity, and the Wooldridge test for autocorrelation to improve model efficiency. The Wooldridge test shows that autocorrelation exists in the model. The Pesaran and Wald tests report that the model suffers from cross-sectional dependence and heteroskedasticity issues. To address these concerns, we re-estimate the FE model with robust standard errors and Driscoll-Kraay standard errors.

Columns (4) and (5) report the results of FE regression with Driscoll-Kraay and robust standard errors. The results again confirm that leverage negatively affects the export intensity of Pakistani manufacturing firms. The significant relationship appears in both specifications. It implies that exporter firms that are highly leveraged have less export intensity. The fitness of models can be observed through the F-test, and the results show that the models are fairly good. The adjustments in the model may help to control the autocorrelation, cross-sectional dependence, and heteroskedasticity problems, but issues pertaining to reverse causality still exist. The relationship between leverage and export intensity could be dynamic in nature because bank credit may help to increase the export intensity. Similarly, entering into a foreign market may require external financing. Therefore, it is important to manage the dynamic endogeneity in the model.

3.8.2. System GMM results

Research in the corporate finance field usually encounters reverse causality, and estimators such as FE and RE regressions could produce biased results. Moreover, previous empirical investigations have suggested that dynamic models may help to exploit the endogenous issue arising from reverse causality. And the GMM method is the best solution to estimate the dynamic model. Therefore, we apply the two-step system GMM approach as developed by Blundell and Bond (1998). It relies on internal instruments and does not require external instruments, which are difficult to find in panel data. We apply the Hansen test for the joint validity of instruments. Finally, we consider the Arellano-Bond test to examine the serial correlation.

In addition to OLS, FE, and RE regressions, we examine the effect of leverage on export intensity by using the two-step system GMM method with robust standard errors. It confirms that leverage is negatively associated with export intensity. It suggests that exporters with higher leverage have lower export sales to total sales ratios. The high interest rate in Pakistan may be the reason for this negative relationship because both lending and deposit rates were higher compared to similar economies in the period from 2013-2019. Thus, high interest payments have become a burden for Pakistani firms. Firms that exhaust cash flows due to interest payments and reduce the availability of financing for viable investment opportunities negatively affect performance.

The result supports the findings of Greenaway et al. (2007), Nagaraj (2014), and Federici, Parisi, and Ferrante (2020), but is contrary to the result of Huang and Liu (2017). It could be explained by an argument presented by Meng et al. (2021) that external funding is important only for new entrants in order to pay the sizable foreign market entry costs, while internal financing is sufficient to pay the maintenance costs. Furthermore, our results also gain support from the pecking order theory that external financing is costly and internal funds are preferred over bank loans. In line with the theoretical argument of Jensen (1993) and empirical evidence of Dixon et al. (2017), we find that board size is negatively linked with export intensity. Jensen (1993) argues that the strategy formulation and decision-making processes are less effective under a larger board size because it is difficult to reach a consensus on a large board size and agency problems may arise, like free riding of directors.

Table 3.9: Leverage and export intensity

Variables	(1)	(2)
L.Export intensity	0.009	0.227
	(0.224)	(0.268)
Leverage	-0.651*	-0.735**
	(0.343)	(0.308)
Board size		-0.107*
		(0.057)
Independent director		0.08
		(0.458)
Operating leverage		-1.967
		(1.506)
Firm Growth		0.047
		(0.068)
Firm size		0.009
		(0.062)
Firm age		-3.576**
		(-1.656)
Short-term collateral		0.198
		(1.084)
Long-term collateral		-0.465
		(0.814)
Profitability		0.208*
		(0.118)
Cash holding		-0.042
		(0.918)
Constant	0.888***	7.082**
	(0.308)	(3.488)
Year Dummies	YES	YES
Industry Dummies	YES	YES
Observations	468	702
AR1/AR2	0.256/0.509	0.378/0.110
Hansen Test	0.533	0.519

Notes: This table examines the influence of leverage on export intensity by employing a system GMM estimator. We estimate the coefficients with robust standard errors in both models. We use industry and time dummies to control industry and business cycle effects. We apply the Hansen and Arellano-Bond tests for joint validity of instrument sets and serial correlation, respectively. *** indicates $p<0.01$, ** indicates $p<0.05$, and * indicates $p< 0.1$, respectively.

We note that firm age appears negatively associated with export intensity. This is consistent with the findings and arguments of Kirpalani and McIntosh (1980) and Love et al. (2016). It suggests that older firms are less dynamic and efficient; therefore, they are less likely to export to foreign markets. Similarly, with the decentralization of foreign trade rights, young firms probably engage more in foreign markets and support the evidence of the born-global hypothesis (Dixon et al., 2017). Profitability appears positive with export intensity and agrees with the previous findings of Huang and Liu (2017) and Meng, Li, Xiao, and Li (2021). It implies that higher-profitable exporter firms have a higher export intensity. Other variables such as operating leverage, firm size, growth, cash holdings, and collateral (short-term and long-term) do not seem to influence export intensity under a two-step system GMM model. Hence, the results suggest that exporting firms borrow to cover the substantial upfront and operating costs of foreign markets and that internal funds are sufficient to improve export intensity.

We apply Arellano-Bond test for first- and second-order serial correlation. We use the Hansen test to examine the validity of instrument variables. However, it is possible that serial correlation may exist in AR(1), but it should not be present in AR(2). The results of AR(1) and AR(2) are insignificant and cannot reject the null hypothesis of no serial correlation. It implies that a serial correlation issue does not exist in the model. The Hansen test confirms that instrument sets are valid.

3.8.3. Non-linear relationship results

It is possible that firms which are expecting to sustain higher export intensity into the future will choose lower leverage in an attempt to protect economic rents (liquidity). However, if high leverage is attached to an unhealthy balance sheet, there is a possibility that at sufficiently higher leverage levels, the impact of leverage on export intensity may be positive. It is expected that relationship between leverage and export intensity may be non-linear. Therefore, we estimate the quadratic equation to examine the non-linear relationship between leverage and export intensity by following the work of Margaritis and Psillaki (2010) and Le and Phan (2017). The outcomes show that non-linear relationship do not appear between leverage and export intensity.

Table 3.10: Non-linear relationship between leverage and export intensity

Variables	**(1)**	**(2)**
Leverage	-0.184	-0.184
	(0.18)	(0.199)
Leverage squared	0.036	0.036
	(0.165)	(0.191)
Board size	0.018***	0.018***
	(0.005)	(0.004)
Independent director	0.105*	0.105*
	(0.062)	(0.062)
Operating leverage	0.171**	0.171***
	(0.078)	(0.058)
Firm growth	0.014	0.014
	(0.031)	(0.028)
Firm size	0.005	0.005
	(0.005)	(0.005)
Firm age	-0.078**	-0.078**
	(0.037)	(0.032)
Short-term collateral	0.148*	0.148*
	(0.076)	(0.078)
Long-term collateral	-0.193***	-0.193***
	(0.064)	(0.052)
Profitability	-0.039**	-0.039**
	(0.017)	(0.017)
Cash holding	-0.054	-0.054
	(0.081)	(0.071)
Constant	0.019	0.019
	(0.143)	(0.118)
Year Dummies	YES	YES
Industry Dummies	YES	YES
Observations	819	819
R-squared	0.662	0.662
F-test	43.894	55.429
Prob > F	0.00	0.00

Notes: The dependent variable is export intensity. Standard errors in parentheses. *** denotes p<0.01, ** denotes p<0.05, and * denotes p<0.1.

3.8.4. Granger non-causality results

We apply the Granger non-causality test to explore the relationship between leverage and export intensity. The null hypothesis states that leverage does not Granger-cause export intensity. The p-value is less than 5%, which rejects the null hypothesis and accepts the alternative hypothesis. It implies that leverage does Granger-cause export intensity. However, the null hypothesis, which states that export intensity does not Granger-cause leverage, is accepted. Board size, independent director, operating leverage, firm's age, short-term collateral, long-term collateral, profitability, and cash holding Granger-cause export intensity. Finally, a firm's growth does not Granger-cause export intensity.

Table 3.11: Results for the Half-Panel Jackknife estimator

No#	Granger Causality	HPJ Wald Stat.	z-stat.	p-value
1	H0: Leverage does not Granger-cause Export intensity.	589.91	24.29	0.00
	H0: Export intensity does not Granger-cause Leverage.	1.65	-1.29	0.20
2	H0: Board size does not Granger-cause Export intensity.	65.99	-8.12	0.00
	H0: Export intensity does not Granger-cause Board size.	271.48	-16.48	0.00
3	H0: Independent director does not Granger-cause Export intensity.	153.63	-12.39	0.00
	H0: Export intensity does not Granger-cause independent director.	811.43	-28.49	0.00
4	H0: Operating leverage does not Granger-cause Export intensity.	234.62	-15.32	0.00
	H0: Export intensity does not Granger-cause Operating leverage.	2459.34	-49.59	0.00
5	H0: Firm growth does not Granger-cause Export intensity.	0.85	-0.93	0.35
	H0: Export intensity does not Granger-cause Firm growth.	4.68	-2.16	0.03
6	H0: Firm size does not Granger-cause Export intensity.	0.13	-0.37	0.7
	H0: Export intensity does not Granger-cause Firm size.	656.78	-25.63	0.00
7	H0: Firm age does not Granger-cause Export intensity.	14.59	-3.82	0.00
	H0: Export intensity does not Granger-cause Firm age.	364.02	19.08	0.00

8	H0: Short-term collateral does not Granger-cause Export intensity.	227.83	-15.09	0.00
	H0: Export intensity does not Granger-cause Short-term collateral.	787.57	28.06	0.00
9	H0: Long-term collateral does not Granger-cause Export intensity.	259.07	16.1	0.00
	H0: Export intensity does not Granger-cause Long-term collateral.	198.04	-14.07	0.00
10	H0: Profitability does not Granger-cause Export intensity.	12.04	3.47	0.00
	H0: Export intensity does not Granger-cause Profitability.	3.76	-1.94	0.05
11	H0: Cash holding does not Granger-cause Export intensity.	166.01	-12.88	0.00
	H0: Export intensity does not Granger-cause Cash holding.	3.63	-1.91	0.06

Notes: Juodis, Karavias and Sarafidis (2021) proposed a Granger non-causality test applicable under homogenous or heterogenous coefficients.

3.8.5. Robustness checks

We apply different robustness checks to support and endorse the findings. We estimate the fixed effect and random effect regressions by excluding the year and industry dummies. The results in column (1) and (2) show that leverage and foreign sales to total sales ratio are negatively associated. To be specific, firms that are more leveraged have lower export intensity. Then, we apply the fixed effect estimator to the whole dataset (204 firms) by winsorizing the variables at a 1 percent level. The results are given in column (3) and show that firms with higher leverage have lower export intensity.

In column (4), we employ a two-step system GMM method by winsorizing the leverage at 10%. The results of the two-step system GMM method show that leverage is negatively associated with export intensity. Then we change the definition of leverage by following Demirguc-Kunt and Maksimovic (1999), who defined leverage as total liabilities minus current liabilities scaled by total assets. The outcome of the two-step system GMM method again confirms that leverage is negatively associated with export intensity. Finally, we apply the two-step system GMM on a dataset including continuous exporters and continuous non-exporters. If a firm does not export in a specific year, then export intensity will be zero. The results show that leverage and

export intensity are negatively connected. The robustness tests confirm that leverage is negatively associated with export intensity and, therefore, support the main finding.

Table 3.12: Robustness checks of leverage and export intensity

Variables	**(1)**	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**
L.Export intensity				0.126	0.355	0.315
				(0.261)	(0.287)	(0.279)
Leverage	-0.132***	-0.077**	-0.055**	-0.672**	-0.726*	-0.721*
	(0.04)	(0.038)	(0.028)	(0.321)	(0.415)	(0.409)
Constant	1.080***	0.906***	-0.565***	9.678**	5.641	3.484
	(0.251)	(0.214)	(0.100)	(4.481)	(3.697)	(3.165)
Corporate Governance Control	YES	YES	YES	YES	YES	YES
Firm's characteristics Control	YES	YES	YES	YES	YES	YES
Year Dummies	NO	NO	YES	YES	YES	YES
Industry Dummies	NO	NO	YES	YES	YES	YES
Observations	819	819	1,428	702	702	936
R-square (within)	0.196	0.175	0.540			
F-test (overall)	15.27		56.29			
Prob > F	0.00		0.00			
Wald test		116.73				
Prob > Chi2		0.00				
AR1/AR2				0.614/0.088	0.111/0.116	0.154/0.546
Hansen Test				0.555	0.35	0.341

Notes: Export intensity is a dependent variable. Columns (1) and (2) show fixed-effect regression and random-effect regression, respectively. Column (3) shows fixed effect regression on the entire dataset when all variables are winsorized at 1%. Column (4) shows two-step system GMM when leverage is winsorized at 10%. Column (5) shows two-step system GMM when leverage is measured using an alternative definition, and column (6) shows two-step system GMM when non-exporter firms are included. *** denotes p<0.01, ** denotes p<0.05, and * denotes p<0.1.

3.9. Conclusion

This chapter uses panel data of manufacturing firms listed on the Pakistan stock exchange for the period of 2013-2019. It aims to explore the relationship between leverage and export intensity within the context of a small-open economy. We find that Pakistani exporter firms are highly leveraged, older, and larger relative to non-exporter firms. We also find that exporter firms possess more short-term collateral than non-exporter firms. It might be used as collateral to obtain external funds. By applying the two-step system GMM, we find that leverage is negatively affecting export intensity. It suggests that exporters that are highly leveraged have lower export intensity. The high interest rate in Pakistan may be the reason for this negative relationship because both lending and deposit rates were higher compared to similar economies in the period from 2013-2019. Thus, high interest payments have become a burden for Pakistani firms. Firms that exhaust cash flows due to interest payments and reduce the availability of financing for viable investment opportunities negatively affect performance. These results are found for a set of different industries composed of manufacturing firms listed on the Pakistan stock exchange that heavily rely on the banking sector due to relatively underdeveloped bond and equity markets.

This chapter also sheds light on the association between corporate governance and export intensity. We find that board size is negatively associated with export intensity. It could be possible that strategy formulation and decision-making processes are less effective under a larger board size. Moreover, it is difficult to reach a consensus on a large board size, and agency problems may arise, like free riding of directors. Furthermore, we find that profitability is positively associated with export intensity. It corroborates the pecking order theory that external financing is costly, and internal funds are preferred over debt to increase export intensity. These findings provide an important policy relevance that policy makers should design the measures aimed at reducing the cost of external financing to those industries with greater export contribution and potential. Export promotion policies in those industries, particularly for young firms, may also indirectly help to access external financing. Finally, from a transition economy perspective, liberalization policies that intensify trade should be preceded by intervening to support and provide external credit at a preferential rate.

4. EFFECTS OF EXPORT INTENSITY ON LEVERAGE

4.1. Introduction

The capital structure is an important component of strategic financial choices and remains a key source of debate. Empirical studies on the subject of capital structure have focused on firm, industry, and country-level determinants (Rajan and Zingales, 1995; De Jong, Kabir, and Nguyen, 2008; Sheikh and Wang, 2011; Ahsan, Wang, and Qureshi, 2016). This chapter is connected with the literature on capital structures as it attempts to investigate the effects of export intensity on firms' leverage. We analyze which firm-level determinants influence the leverage level of listed Pakistani manufacturing firms.

Much of the empirical literature on capital structure has focused on developed economies (Titman and Wessels, 1988; Graham et al., 2015; Kuc and Kalicanin, 2021) and little has been done on developing economies (Booth et al., 2001). These empirical investigations lack consensus with respect to determinants of capital structure due to differences in empirical methodologies and their definitions. Moreover, studies are limited on the subject of export-finance channels because most of them are confined to developed countries. Hence, lack of consensus with regard to determinants of capital structure and a large focus on developed economies are a few reasons. Zafar, Wongsurawat, Camino, and Elgammal (2019) analyze the impact of firm and country level factors on leverage decisions. Gherghina, Vintila and Toader (2020) examine the effects of firm-specific characteristics on a Romanian firm’s capital structure listed on the Bucharest stock exchange.

Psillaki and Daskalakis (2009) state that firm-related factors prevail over country-specific characteristics. However, Joeveer (2013) notes that factors affecting the firm’s leverage vary with respect to firm type. This chapter analyzes the export intensity-finance channel by exploring whether common factors that determine the leverage of listed firms in developed economies also explain the Pakistani manufacturing firm’s leverage, which are listed on Pakistan Stock Exchange.

The export literature indicates that foreign sales to total sales depend upon leverage, size, and the firm’s growth (Minetti and Zhu, 2011; Bernini et al., 2015). However, few

studies have investigated whether export activities influence a firm's leverage. Chen and Yu (2011) analyze the impact of export activities on 566 Taiwanese firms' leverage. They note that export activities reduce the debt level. Bernini et al. (2015) observe the negative connection between exports and leverage in French manufacturing firms. Pinto and Silva (2021) explore the connection between export intensity and leverage of 7,676 Portuguese SMEs. They also show that export intensity has a negative relationship to leverage. Hence, this chapter intends to contribute to the trade and finance literature by analyzing whether export intensity influences a firm's financial structure. We use panel data of 117 manufacturing firms listed on the Pakistan stock exchange (PSX) over the period from 2013-2019. When Pakistani manufacturing firms enter into international trade, it becomes difficult for the local financial institutions to monitor the foreign sales activities. Therefore, exporters face difficulties obtaining external finance. This provokes another question about whether export activities influence a listed manufacturing firm's leverage level.

The results show that export intensity negatively influences manufacturing firm-'s' leverage level. The outcomes are consistent with the hypothesis that exporting firms rely more on internal sources of finance than external funds due to high monitoring costs and adverse selection. The two-step system GMM reveals that board size and firm size have a positive association with debt levels. We find that short-term and long-term collateral have negative relationships with debt financing. In addition, cash holdings are statistically negatively linked with debt level, while profitability, firm growth, firm age, operating leverage, and independent directors do not influence it.

4.2. Determinants of leverage

The literature of capital structure indicates that there are numerous factors that influence capital structure. According to Naseem et al. (2017), a larger board size helps to monitor the operations and positively influence Pakistani non-financial firms' capital structure. Alves, Couto, and Francisco (2015) argue that a board composed of independent directors uses more equity. Therefore, it is expected that board size has a positive association with capital structure, while independent directors could be negatively connected. Frank and Goyal (2009) argue that profitability is negatively associated with leverage, while Fama and French (2002) state that growth reduces debt

levels. However, Frank and Goyal (2009) note that the relationship between firm size and leverage could be positive or negative. Prior studies suggest that firms will use more debt as they grow older, because older firms have more assets to pledge as collateral to obtain loans. Hence, it is expected that the relationship between firm age and leverage is negative.

The exporters need additional working capital to finance export activities. Exporting firms can access external financing by pledging assets as collateral. Cross-border transactions are risky and difficult to monitor. Therefore, collateral may serve as an important instrument to secure loans from banks or other financial institutions. Pledged collateral may also help to reduce the asymmetric information between borrowers and lenders (Steijvers, Voordeckers, & Vanhoof, 2010). Furthermore, the pledged collateral may reduce moral hazard and mitigate credit rationing problems. On the other hand, borrowers who put up collateral may perform poorly. For instance, they could delay their repayments (Berger and Udell, 1990). Stiglitz and Weiss (1981) note that collateral may provoke adverse selection problems because high collateral might be associated with risky borrowers. Inderst and Mueller (2007) argue that borrowers with high risk will pledge more collateral. Moreover, it could be costly and difficult for the banks to seize, repossess, and sell the pledged collateral through a weak legal system. Jappelli, Pagano, and Bianco (2005) note that credit volume increases with the improvement in judicial efficiency and that credit is less likely to be available if trials are prolonged. Costs will further increase if pledged collateral is illiquid or less liquid (Steijvers et al., 2010). Furthermore, the collateral value may decrease over the course of the loan. Therefore, it is expected that collateral and leverage are negatively associated with exporting firms.

4.3. Theoretical background

Under restrictive assumptions, Modigliani and Miller (1958) propose a capital structure theory that states that the debt-equity mix has no effect on firm value. The model is based on the assumption of a perfect capital market. All investors have full information about the securities, and they are free to buy and sell the securities without transaction costs. It also assumes that there are no bankruptcy costs and taxes. They considered two firms to explain the proposition. One firm includes the debt in its capital structure, while

the other firm is without debt. They state that whether the firm includes the debt or not, it does not influence market value. Because cash flow, which is expected to be divided among investors in accordance with the capital structure and value of the firm, remains unaffected. These restrictive assumptions do not hold in reality. In this regard, the choice of debt and equity financing has become an important determinant of firm value. Later on, Modigliani and Miller (1963) state that firms will use more debt under the tax regime in order to gain the benefit from interest payments.

The tax proposition states that firms that are utilizing more debt will gain the benefit from a tax shield. Because interest expenses on debt will be deducted from tax payments, a firm that utilizes debt will be more valuable than firms that do not. They conclude that firms with more debt have a higher firm's value than firms that do not employ debt in their capital structure. Because when the firm pays the interest expenses on debt, its tax payment will be reduced, or it will have to pay a small amount of tax due to the inclusion of debts. Hence, a combination of capital structures influences the market value. Miller (1977) also states that firms will issue more debt under a high tax regime to benefit from an interest tax shield.

The trade-off theory predicts that the firm chooses the debts that trade off the tax benefits and financial costs. Debt holders can avail of a tax benefit that is associated with an interest payment on borrowed funds. Interest payments are deducted from tax payments. Financial costs are linked to bankruptcy costs and agency costs (Jensen and Meckling, 1976). The trade-off model aims to target the debt ratio at an optimal level that maximizes firm value. The theory assumes that borrowing is more favorable than equity financing. A firm that utilizes more debt is able to reduce its weighted average cost of capital. The tax-shield benefits and bankruptcy costs are associated with a trade-off theory, which states that firms will choose an optimal capital structure that improves the value of the firm. It predicts that growth reduces debt levels (Fama and French, 2002). A firm will use more debt to benefit from tax shields, but this mode of financing is associated with agency costs and bankruptcy costs. Agency costs arise due to the conflict of interest between shareholders and managers. The conflict between debt holders and shareholders may arise when the nature of an investment is risky and there is a high probability of default (Mayer, 2001). Debt holders do not take an interest in

business income if it is completely free from default. However, if there is a high probability of default and managers pursue activities with respect to shareholders' interests, then shareholders will realize benefits but at debt holders' expenses.

Bankruptcy is a legal procedure in which creditors take over the business if it triggers default. Bankruptcy costs are incurred by using such legal procedures. Bankruptcy costs could be direct or indirect. Direct costs include professional fees of accountants, administration, and lawyers, while indirect costs include profits lost, revenue lost, and the firm's being unable to get financing facilities from creditors. Direct costs decrease with the size of a bankrupt firm. Warner (1977) notes that a firm's value increases as the ratio of direct bankruptcy costs to firm value starts to decrease.

Myers (1984) and Myers and Majluf (1984) propose a pecking order theory based on assumptions that managers are better informed than outsiders and act in the interests of shareholders. The theory states that a firm depends on internal sources of funds and chooses debt over equity in the case of external funding. The theory follows a pattern of hierarchy for the sources of funds. It prefers to use internal funds over equity in the event that external funding is required. Berger and Udell (1997) note that financial hierarchy is based on a firm's development level and its size because the level of information asymmetry varies for each growth phase. Pecking order theory predicts that exporters are less leveraged than non-exporters and depend more on internal sources of funding due to asymmetric information costs. When exporters enter the export markets, it becomes difficult for local financial institutions to monitor the foreign market activities.

The definition of pecking order theory can be explained in different ways. The exporting firms mostly hold cash or short-term securities in the form of investment. Even so, the firm attempts to obtain external sources of financing. It assumes that such internal funds are employed for transactional costs. Another issue is the preference of debt over equity. It implies that a firm will utilize the equity after exhausting the debts. This is mostly associated with debt capacity. The debt capacity refers to the debt limit that a firm can use under this pecking order theory and then to use equity.

The model can be derived based on adverse selection and agency costs, among other factors. The common idea behind the pecking order model is adverse selection (Myers, 1984). A firm's owners and managers are better informed about the real firm value as well as its future prospects, specifically growth opportunities. Outsiders can only assess the market value based on certain assumptions. Firm managers would be more pleased to issue the equity in the case of overvalued firms, while they would not issue the equity in the case of undervalued firms. Managers know more about the firm's value and investment opportunities than outsiders, so they may pass the information to the outsiders if they need external funding. Investors with limited information about the growth opportunities assess the market value through the manager's behavior regarding equity issuance. Generally, investors perceive new equity issuance as bad and buy it only if it is issued at a discount price.

When new equity is issued at a discount price, it mostly transfers the firm value from existing shareholders to new shareholders. Mostly, managers do not pass on the firm value generated through an investment opportunity by issuing the equity. Therefore, managers rely on internal funds for viable investment opportunities. External funds could be used if those are available and risk-free. If external funds are risky, then it is better to use equity due to adverse selection costs. However, multiple equilibria may exist if debt and equity are both feasible to use. But it is uncertain regarding the selection between equity and debt. There is one-sided asymmetrical information in the model, and the firm makes the financial decision. If two-sided information asymmetry exists, then multiple choices are available.

Pecking order theory and trade-off theory are distinguished by their debt ratios. Pecking order theory does not advocate the manager's targeted leverage ratio, while trade-off theory aims to set the leverage ratio that maximizes the firm's value. Pecking order theory advocates that exporters rely on their internal sources of financing, such as retained earnings. When internal funds are not sufficient, they then turn to external sources of financing and the issuance of equity as a last resort. On the other hand, trade-off theory advocates optimal debt financing and encourages the use of debt financing because the cost of debt is lower than the cost of equity financing. However, managers will not issue the equity until they do not reach the debt capacity. Lemmon and Zender

(2010) argue that the firm uses equity issuance due to debt capacity limitations. However, both theories are unable to explain the facts confronted by reality (Frank and Goyal, 2008). Empirical investigations have often accepted that managers behave in accordance with the pecking order model despite the fact that they are aware of the targeted debt ratio (Fama and French, 2002; Lemmon and Zender, 2010).

Finally, free cash flow theory states that an increase in the debt level will increase the firm's value despite the threat of financial distress (Mayers, 2001). When a firm generates cash flows, a conflict between shareholders and managers could arise about payout policies. The problem may arise that managers could invest such free cash flows in ineffective projects or where the cost of capital is high. Jensen and Meckling (1976) note that agency costs may arise in multinational companies because they are operating in a complex ecosystem. However, Jensen (1986) recommends that debt may help to prevent such problems. Grossman and Hart (1982) note that debt may create an incentive for managers because it is costly to be bankrupt and lose control and reputation.

4.4. Empirical evidence

The export literature indicates that foreign sales to total sales ratios depend upon leverage, size, and firm growth (Minetti and Zhu, 2011; Bernini et al., 2015). However, fewer empirical studies have investigated whether export activities influence a firm’s leverage.

Chen and Yu (2011) analyze the impact of export activities and foreign direct investment on 566 Taiwanese firms' leverage based on the hypothesis of agency theory. They find that export intensity exhibits a negative relationship with the debt ratio, while foreign direct investment is positively associated with it. The interaction effect of exports and foreign direct investment is negative with respect to the debt ratio. The outcomes show that profitability and firm size are negatively linked with debt levels. However, asset tangibility is positively connected with leverage. Their findings conclude that the behavior of the international firms is consistent with the predictions of the agency theory.

Bernini, Guillou, and Bellone (2015) examine the relationship between financial structure and export quality by exploring whether debt financing influences the ability of a firm to compete abroad via export quality. They use a large dataset of French exporters for the period of 1997-2007. They find that leverage is negatively connected with exporters' investment in all specifications, suggesting that with the increase in debt level, exporters will reduce their investment. The impact is stronger and more pronounced in exporting companies that have low cash flow. They document a negative relationship between debt financing and export quality. It indicates that a high level of debt financing hampers the exporters' ability to compete in foreign markets through export quality. They note that exporting firms are better able to compete in the international markets based on non-price competitiveness and rely less on debt financing and have more access to equity financing.

Pinto and Silva (2021) explore the connection between export intensity and leverage of 7,676 Portuguese SMEs. The investigation aims to analyze whether export intensity explains the firm's capital structure. Using the two-step system GMM approach, they note that export intensity negatively impacts on the firm's leverage, indicating that firms with a higher level of debt ratio have a lower export intensity ratio. They document that asset tangibility and profitability are negatively connected with leverage, while growth opportunities are positively associated. Overall, the result is consistent with the hypothesis of the pecking order theory. It implies that exporters depend more on internal funds compared to external funds due to asymmetric information.

4.5. Data and methodology

We examine whether leverage is affected by export intensity based on panel data. We collect the annual data from the PSX database. The annual report contains information about the business nature, balance sheet, income statement, cash flow, and footnote items. The financial statements are accessed for the period of 2013-2019. We drop a firm if data is missing for the selected variables. We further cleaned the data by removing the firms with negative revenue and owner's equity. Moreover, we drop a firm from the sample if it is assigned default status by PSX. Hence, the final sample consists of 117 manufacturing firms listed on the Pakistan stock exchange for the period of 2013-2019.

4.5.1. Econometric approaches and models

We use OLS, fixed effect, and random effect regressions to explore the influence of export intensity on leverage. These approaches are common and widely used in panel data. The linear equation for the baseline model is as follows.

$$Leverage_{i,t} = \alpha + \beta ExpInt_{i,t} + \delta X_{i,t} + \mu_{i,t} \quad (4.1)$$

The subscript *i* indicates the exporting firm at time *t*, $Leverage_{i,t}$ is a dependent variable of *i*-exporting firm at *t*-time, $X_{i,t}$ is a vector of explanatory variables which includes board size, proportion of independent directors on board, operating leverage, firm growth, firm size, firm age, short-term collateral, long-term collateral, profitability, and cash-holding, and $\mu_{i,t}$ is error term. The OLS estimator may produce bias outcomes due to unobserved heterogeneity (specific effects of firm). Therefore, FE and RE regressions perform better compared to OLS regression. The above equation becomes as follows:

$$Leverage_{i,t} = \alpha + \beta ExpInt_{i,t} + \delta X_{i,t} + \mu_i + \nu_{i,t} \quad (4.2)$$

We apply the Breusch-Pagan LM test to choose between random effects and OLS. We consider the F-test to choose between fixed effect and OLS regressions. Finally, we use the Hausman test to select between fixed effect regression and random effect regression. We improve the model efficiency by using diagnostic tests such as serial correlation, cross-sectional dependency, and heteroskedasticity. We also estimate the models with robust standard errors and Driscoll-Kraay standard errors to further improve the model efficiency. Furthermore, we include time and industry dummies to account for potential business cycle and industry effects (Greenaway et al., 2007).

Wintoki et al. (2012) argue that models with adjusted standard errors could eliminate the issues of serial correlation and heteroskedasticity while reverse causality remains. In the presence of reverse causality, FE and RE regressions may produce biased coefficients. The trade and finance literature indicates that dynamic models could help to remove the issue of reverse causality. The dynamic model is as follows.

$$Leverage_{i,t} = \alpha + \theta Leverage_{i,t-1} + \beta Exp\ Int_{i,t} + \gamma X_{i,t} + \nu_s + \nu_t + \varepsilon_{i,t} \quad (4.3)$$

We exploit the endogenous relationship between export intensity and leverage in two ways. Firstly, we use time-variant explanatory variables as one-period lag, excluding dummy variables and the firm's age. Secondly, we apply the Blundell and Bond's (1998) system GMM approach to exploit the endogeneity problem. We also apply the Hansen and Arellano-Bond tests for joint validity of the instrument set and serial correlation, respectively.

4.6. Results and analysis

4.6.1. OLS and multivariate outcomes

We begin the analysis with baseline regression by using an OLS estimator. Table 4.1 presents the outcomes of OLS regression by using leverage as a dependent variable. The results show that export intensity is negatively associated with leverage because the coefficient of estimator of export intensity is statistically significant and negative at a 1 percent level in all models. This implies that exporter firms with high export intensity have lower debt ratios. Specifically, the estimated coefficient of export intensity in column (3) is -0.119, which means that if export intensity is increased by 1%, it decreases the leverage by approximately 0.119%, keeping all else equal. This negative relationship between export intensity and leverage supports the hypothesis of the pecking order theory. It suggests that exporters depend more on internal sources of funds compared to external sources of funds due to asymmetrical information problems. The outcomes also support the argument for the trade-off theory. It shows that exporters face an issue while accessing external debt when entering into export markets due to high monitoring costs.

The coefficient of board size is statistically significant and negative with leverage and is in line with the findings of Berger, Ofek, and Yermack (1997). It means that exporting firms with larger board sizes employ lower leverage. Operating leverage is positively related, while a firm's age is negatively associated with leverage. Finally, cash holdings appear statistically significant and negative with leverage. Column (4) provides the results of OLS regression with robust standard errors that also endorse the main conclusion that leverage is negatively affected by the export intensity of Pakistani manufacturing firms.

Table 4.1: Determinants of Leverage using OLS regression

Variables	(1)	(2)	(3)	(4)
Export intensity	-0.138***	-0.133***	-0.119***	-0.119***
	(0.032)	(0.032)	(0.032)	(0.036)
Board size		-0.011**	-0.010**	-0.010***
		(0.005)	(0.005)	(0.004)
Independent director		0.088	0.041	0.041
		(0.056)	(0.055)	(0.068)
Operating leverage			0.170**	0.170**
			(0.071)	(0.069)
Firm growth			0.017	0.017
			(0.028)	(0.031)
Firm size			0.007	0.007
			(0.005)	(0.005)
Firm age			-0.097***	-0.097***
			(0.034)	(0.034)
Short-term collateral			0.055	0.055
			(0.069)	(0.085)
Long-term collateral			0.089	0.089
			(0.058)	(0.062)
Profitability			0.01	0.01
			(0.015)	(0.019)
Cash holding			-0.235***	-0.235***
			(0.072)	(0.074)
Constant	0.324***	0.675***	0.423***	0.423***
	(0.061)	(0.079)	(0.125)	(0.112)
Year Dummies	YES	YES	YES	YES
Industry Dummies	YES	YES	YES	YES
Observations	819	819	819	819
R-squared	0.311	0.318	0.370	0.370
F-test	14.917	14.23	13.547	90.108
Prob > F	0.00	0.00	0.00	0.00

Notes: Leverage is a dependent variable. It is calculated using the total liabilities to total assets ratio. Column (4) indicates OLS regression with robust standard errors. ***, **, and * represent significant levels at 1%, 5%, and 10%, respectively.

It is important to note that the F-test is statistically significant in all models and their p-value is less than 1%, which implies the fitness of models is good. The r-squared value ranges between 0.311 and 0.370. Specifically, in column (3), the r-squared value is 0.370, which illustrates that the 37% change in leverage is explained by the model. However, as explained in the methodology section, OLS regression fails to capture the unobserved individual effects within a model that are common in cross-sectional data. Therefore, the estimated coefficients may not be BLUE (best linear unbiased estimator). Hence, we apply FE and RE regressions to address the issue of unobserved individual effects.

Determinants of leverage are regressed by using fixed effect, random effect, and fixed effect with Driscoll-Kraay and robust standard errors. All models provide consistent results in which coefficients of export intensity are negative at a 1% significant level. We use the Breusch and Pagan LM test to choose between OLS regression and random effect regression. The value of the chi-square is significant, favoring random effect regression over OLS regression. However, we consider the Hausman test to decide between fixed effect and random effect regressions. The Hausman test value is 58.251 and its p-value is less than 5%, favoring the FE regression over the RE regression. The F-test also favors the FE regression over the OLS regression. Hence, FE regression is selected over OLS and RE regressions. The results of the FE regression confirm that export intensity is negatively associated with leverage. The coefficient value of export intensity in column (1) is -0.146, which implies that, on average, if export intensity is increased by 1%, leverage decreases by 0.146%, holding other variables constant.

Although fixed effect regression may control the unobserved individual effects, problems of autocorrelation and heteroskedasticity lead to model inefficiency. Hence, we apply modified Wald, Pesaran, and Wooldridge tests for heteroskedasticity, cross-sectional dependence, and autocorrelation. The Pesaran's test shows that there is no issue of cross-sectional dependence. However, modified Wald and Wooldridge tests indicate that there is an issue of heteroskedasticity and autocorrelation in the model. We attempt to alleviate these problems by using the FE regression with Driscoll-Kraay (FE-DK) and robust (FE-RT) standard errors.

Table 4.2: Effect of export intensity on leverage

Variables	(1)	(2)	(3)	(4)
Export intensity	-0.146***	-0.120***	-0.146***	-0.146***
	(0.036)	(0.034)	(0.018)	(0.048)
Board size	0.013**	0.006	0.013**	0.013
	(0.006)	(0.005)	(0.005)	(0.008)
Independent director	0.061	0.057	0.061***	0.061
	(0.048)	(0.047)	(0.016)	(0.056)
Operating leverage	-0.002	0.023	-0.002	-0.002
	(0.059)	(0.058)	(0.051)	(0.058)
Firm growth	0.031*	0.043**	0.031**	0.031
	(0.017)	(0.017)	(0.012)	(0.021)
Firm size	0.151***	0.043***	0.151***	0.151***
	(0.019)	(0.01)	(0.015)	(0.042)
Firm age	-0.421*	-0.158**	-0.421	-0.421
	(0.238)	(0.079)	(0.226)	(0.474)
Short-term collateral	0.102	0.089	0.102	0.102
	(0.067)	(0.065)	(0.078)	(0.107)
Long-term collateral	0.130**	0.073	0.130*	0.13
	(0.051)	(0.049)	(0.063)	(0.093)
Profitability	-0.005	-0.028**	-0.005	-0.005
	(0.014)	(0.013)	(0.01)	(0.043)
Cash holding	-0.182***	-0.198***	-0.182**	-0.182
	(0.062)	(0.061)	(0.073)	(0.142)
Constant	-1.383***	0.233	-1.383***	-1.383
	(0.506)	(0.216)	(0.288)	(1.042)
Year Dummies	YES	YES	YES	YES
Industry Dummies	YES	YES	YES	YES
Observations	819	819	819	819
R-squared (Within)	0.20	0.16	0.20	0.20
F-test (overall)	10.05		119.48	7.25
Prob > F	0.00		0.00	0.00
F-test that all u_i = 0	25.33			
Prob > F	0.00			
Wald test		173.59		
Prob > chi2		0.00		

Notes: Leverage is a dependent variable. Hausman's test value is 58.251 (p-value = 0.000), Breusch and Pagan LM's test represent 1009.01 (Prob > Chi2: 0.000), Pesaran's test reports -0.882 (p-value = 0.378), Modified Wald test for heteroskedasticity shows 81137.23 (Prob>chi2: 0.000) and Wooldridge test for autocorrelation indicates 72.180 (Prob>F = 0.000). Standard errors in parentheses; *** denotes p<0.01, ** denotes p<0.05, * denotes p<0.1.

Column (3) reports the results of fixed effect regression with adjusted standard errors. The significant level of estimated coefficients and their relationship with leverage remain similar as with the FE model. The results of FE-DK method confirm that export intensity is negatively connected with leverage. Board size and independent directors have a positive impact on leverage. Similarly, firm growth, firm size, and long-term collateral are also positively impacting on leverage, while internal financing is negatively associated with leverage. The FE-RT estimator provides the results in column (4) and supports the main conclusion that export intensity and leverage are negatively connected.

4.6.2. System GMM outcomes

A fixed effect estimator with adjusted standard errors can control the unobserved individual effects. However, the issue of reverse causality, which is another source of endogeneity problems, still persists. It could be possible that export intensity and leverage have a reverse relationship and using the FE method may provide inconsistent and biased coefficients. Therefore, we apply a two-step system GMM approach to deal with the reverse causality problem. The estimated coefficients by using the two-step GMM approach are reported in Table 4.3. As expected in models (1) and (2), the coefficients of the two-step system GMM again confirm that export intensity is negatively associated with leverage. It implies that exporting firms with higher export intensity have a lower debt ratio. The results are consistent with the pecking order theory that exporters depend more on internal sources of finance compared to external funding due to asymmetric information problems. The outcomes also support the trade-off theory that exporting firms face difficulty in raising external funds by issuing debt due to high monitoring costs. As a result, exporting firms utilize lower debt.

Board size appears significantly positive with leverage. It implies that a larger board size enables the exporting firms to avail more external financing. The results are consistent with the findings of Wen, Rwegasira, and Bilderbeek (2002) who argue that larger boards are associated with higher debt. Anderson, Mansi, and Reeb (2004) argue that the cost of debt is lowered with larger board size and leads towards more debt. Abor (2007) also confirms that board size is positively correlated with capital structure.

Table 4.3: Effect of export intensity on leverage using two-step GMM

Variables	(1)	(2)
L.Leverage	0.118	0.377
	(1.10)	(0.315)
Export intensity	-0.584*	-0.162*
	(0.308)	(0.091)
Board size		0.112***
		(0.039)
Independent director		0.106
		(0.255)
Operating leverage		0.43
		(0.656)
Firm growth		-0.056
		(0.19)
Firm size		0.163**
		(0.062)
Firm age		-0.896
		(1.4250
Short-term collateral		-2.232**
		(0.886)
Long-term collateral		-1.385**
		(0.54)
Profitability		0.057
		(0.065)
Cash holding		-2.229***
		(0.72)
Constant	0.878	-0.067
	(0.713)	(1.974)
Year Dummies	YES	YES
Industry Dummies	YES	YES
Observations	351	468
AR1/AR2	0.823/1.00	0.038/0.555
Hansen Test	0.366	0.698

Notes: Coefficients are estimated by using the Stata command 'xtabond2' developed by Roodman (2009). Robust standard errors in parentheses. Leverage lagged t-3 is endogenous in model (2) and Export intensity, Board size, independent director, Operating leverage, Firm size, Short-term collateral, Long-term collateral, Profitability, and Cash holding are used instrument variables and lagged from t-1 to t-3. *** denotes p<0.01, ** denotes p<0.05, * denotes p<0.1.

Firm size exhibits a positive association with debt ratio. The results corroborate with the findings of Schwartz and van Tassel (1950), who find a positive relationship. Wisdom theory postulates that large firms are more diversified and better able to discharge debt obligations (Pandey, 2004). Large firms disclose high degree of information (Rajan and Zingales, 1995), better investment opportunities (Dittmar, 2004), and low risk of bankruptcy (King, 1977). As the firm grows, its size increases, thereby, improving the capacity to borrow and, concurrently, the debt ratio increases which corroborates with the trade-off theory. We find that short-term and long-term collaterals have negative relationships with leverage. Furthermore, we find that cash holding has a negative association with leverage. The Hansen test confirms the validity of the instruments, and AR1/AR2 shows that there is no issue of serial correlation in the model.

4.6.3. Robustness checks

We perform robustness tests to support the findings and its conclusion. Table 4.4 shows the results of robustness checks, and outcomes are consistent with the main findings that export intensity has a negative association with leverage. It suggests that exporters with higher export intensity have less debt. Firstly, we apply FE regression with robust standard errors by excluding time and industry dummies, and its results are reported in column (1).

Secondly, we use FE regression with Driscoll-Kraay standard errors by excluding time and industry dummies, and its results are reported in column (2). Both models show that export intensity has a negative association with leverage. Thirdly, we apply the Arellano-Bond one-step estimation approach without time and industry dummies, and its results are reported in column (3). Fourthly, we use the Arellano-Bond one-step estimation approach with time and industry dummies, and its results are reported in column (4). The results remain consistent and support the findings of the main empirical model.

Table 4.4: Robustness checks on Export intensity-finance nexus

Variables	**(1)**	**(2)**	**(3)**	**(4)**
L.Leverage			0.492***	0.511***
			(0.083)	(0.093)
Export Intensity	-0.120**	-0.120***	-0.101**	-0.124***
	(0.05)	(0.024)	(0.045)	(0.047)
Constant	-0.369	-0.369**	-0.446	-2.206***
	(0.408)	(0.116)	(0.393)	(0.841)
Corporate Governance Control	YES	YES	YES	YES
Firm's Characteristics Control	YES	YES	YES	YES
Year Dummies	NO	NO	NO	YES
Industry Dummies	NO	NO	NO	YES
Observations	819	819	585	585
R-square (within)	0.177	0.177		
F-test (overall)	5.12	258.53		
Prob > F	0.00	0.00		
Chi-square			394.03	482.71
Prob > Chi2			0.00	0.00

Notes: Leverage is a dependent variable. Column (1) and (2) show FE regression with robust standard errors and Driscoll-Kraay standard errors. Column (3) and (4) indicate Arellano-Bond one-step estimation with robust standard errors by excluding and including the time and industry dummies, respectively. *** denotes significance level at 1% and ** denotes significance level at 5%.

4.7. Conclusion

This chapter contributes further to the export intensity-finance relationship. We show that export intensity is negatively associated with the Pakistani manufacturing firm's leverage, and consistent with the model of Pinto and Silva (2021), and in line with the pecking order theory that exporting firms depend on internal sources of finance compared to external sources of finance due to asymmetric information problems (Myers and Majluf, 1984; Myers, 1984). One possible reason for the negative impact of export intensity on leverage is that when an exporter firm enters its foreign markets, it becomes difficult for the local lenders to monitor the exporter firm's operations. Furthermore, there is an asymmetrical information problem between borrower and lender. The high cost of monitoring and asymmetrical information may discourage local lenders to provide debt financing to exporting firms. Consequently, exporting firms depend more on internal funds. The study also shows an interesting finding that cash holding appears as a negative relationship with leverage. Firm size appears as a positive relationship with leverage, which is according to expectations, and in line with the trade-off theory. This result is consistent with the study of Harris and Raviv (1991) who argue that leverage increases with firm size. Accordingly, Rajan and Zingales (1995) also claim that larger firms fail less because they are more diversified. Therefore, supply of debt is positively related to firm size.

This chapter provides important policy implications that affecting export intensity (for instance, an export promotion scheme). It may also indirectly influence a firm's use of debt financing and therefore on export intensity-finance channels. The results suggest that capital structure composed of debt and equity is an important factor that should be considered when the government plans to support exporting firms. The promotion and growth of the export sector is crucial for an economy such as Pakistan, facing trade deficits for a long time. Therefore, governmental actions for the promotion of exporting firms are critical, particularly for the economies where exporters face problems while trying to access the exporting finance.

5. EFFECTS OF EXPORT GROWTH ON FIRM GROWTH

5.1. Introduction

The world has witnessed a significant change in response to the liberalization of trade and export markets, with a growing number of firms participating in foreign markets through exporting channels (Buckley and Strange, 2015). The participation of domestic firms in export markets is viewed as important for firm growth and performance. Previous studies have emphasized that export policies play a significant role in economic development. Studies based on cross-country data also show a positive association between trade and performance (Frankel and Romer, 1999). The allocation of public funds to exporting sectors improves their financial health.

There is significant heterogeneity in productivity across borders, and firms in developing economies can fill the gap by gaining access to high-income economies. The expansion of domestic firms into global markets offers several benefits. The expansion of domestic firms into foreign markets offers growth opportunities and product improvement. It allows firms to gain an abnormal return if they exploit the imperfections. The firm can reduce the revenue uncertainty through diversification and split the risk in multiple markets. The expansion of the market enables economies of scale through product diversification and increased production. This will reduce the average cost of input items due to the bulk purchase. Therefore, domestic firms selling in foreign markets greatly benefit in terms of growth opportunities and revenue, which consequently improve their overall performance.

The debate on export-growth channels is continuously growing in trade literature. The participation of firms in international trade improves the firm’s growth and overall performance. In developing economies, exporting firms that are selling in the foreign markets have fueled the firm's growth and improved their performance. A firm’s exports are a crucial and key factor for its economic welfare and hence for the firm’s growth and its performance. The firm’s growth and its performance have been widely studied in the growth literature. Several studies point out the importance of this domain. Because a firm’s growth is mostly associated with its survival due to its positive correlation between growth and survival.

Export growth has positive effects on firm performance. The firm's growth and performance is closely related to export growth. Baldwin (2000) claims that there is a disagreement on the conclusion of trade and growth, despite numerous empirical studies and theoretical contributions. Past empirical studies analyze the effects of exports on productivity growth, leverage, and innovation (Clerides et al., 1998; Fryges and Wagner, 2008; Lileeva and Treer, 2010; Pinto and Silva, 2021), while knowledge is limited on the export-growth nexus.

The theories of trade and growth suggest that access to foreign markets increases the market size, which improves the firm's performance (Acemoglu, 2009). Bernard and Jensen (1999) argue that exporting firms are more productive compared to those firms that are selling into the domestic market. The exporting firm has to bear the additional cost in order to sell into a foreign market. Therefore, productive firms export to foreign markets because they are able to cover the additional upfront costs. Melitz (2003) also concludes that exporting firms are more productive, while firms with low productivity can only serve the domestic market or are unable to survive. Wagner (2007) reports similar findings that more productive firms are exporting firms. Exports induce performance spillover, and the performance spillover effect of exports emphasizes the work of Atkin, Khandelwal, and Osman (2017) and Munch and Schaur (2018). However, from an empirical perspective, the question of how export growth influences a firm’s growth has received little attention until recently.

We attempt to explore the export-growth channel by analyzing whether export growth is a determinant of a firm’s growth. We also examine the influence of firm growth on performance. We contribute to the literature threefold. First, we examine the influence of export growth on Pakistani manufacturing firms' growth. Second, we develop the export-growth model by exploiting the issue of endogeneity. For instance, it is difficult to establish the casual effect of export growth on a firm’s growth because unobserved factors like board size and collateral can influence export growth. Export literature indicates that export is affected by size and age (e.g., Bonaccorsi, 1992; Dixon, Guariglia, and Vijayakumaran, 2017). In addition, profitability and leverage are likely to influence exports (Greenaway, Guariglia, and Kneller, 2007; Federici, Parisi, and Ferrante, 2020). Third, we examine the impact of firm growth on firm performance.

5.2. Literature review

It is important to understand the factors that become the reason for a firm's growth because firm growth helps to create value. From the perspective of microeconomics, sustained growth brings new job opportunities, while at the macroeconomic level, it becomes a ground root of social development and wealth creation (Ahlstrom, 2010). This section aims to explore the relationship between export and growth channels, which has been motivated by theoretical and empirical studies.

5.2.1. Theoretical background

Exporters attempt to match with foreign partners in order to sell into foreign markets. The literature shows the lack of foreign market information is an important barrier to foreign market entry. The collaboration with foreign partners improves the information about foreign markets. The process of finding an appropriate foreign partner, for example, a distributor, relates to export sales and hence improves the firm's growth and performance. Aeberhardt et al. (2014) make an attempt to extend the model of Araujo and Ornellas (2007) to depend on the partner in order to sell to foreign markets. The basic problem is that exporters are uncertain and not familiar with the reliability of foreign partners. Chaney (2014) analyzes how exporters use their existing network to find a partner in the foreign market. This indicates that there is some sort of heterogeneity that may influence growth and performance. Larger, more active firms can gain more information about foreign markets through their own networks and experience.

Aghion et al. (2018) proposed a trade and innovation model that shows a positive impact of exports on a more productive firm’s innovation. There are two effects that exist together in international trade, such as the effects of competition and market size. Firms with greater market size provide an incentive for innovation. However, an increase in the competition created by the large market size decreases the incentives for a less productive firm’s innovation. The model revealed that increased competition can produce losses despite higher demand, reflecting low incentives for less productive firms. Based on the previous literature and standard trade model (Melitz, 2003), we expect that export growth and firm growth are positively related.

5.2.2. Empirical evidence

Berthou and Vicard (2013) empirically investigate the French firm's export dynamic. In particular, they investigate the net export growth in foreign markets in relation to size and experience. They note that experience/age and growth are positively correlated. The econometric analysis reveals that experience and size are determinants of the exporters' growth model. Survival firms tend to intensively reduce their net export growth with the passage of experience/age, depending on size. They also observe that there is a non-monotonic relationship between size and net export growth, which supports Gibrat's law. They notice high volatility among young exporters in foreign export markets due to churning (add and drop) of products/destinations and large turnover.

Bas et al. (2021) investigate the effects of globalization on the employment growth and volatility of skilled and unskilled workers, using the rich dataset of French firms for the period of 1996-2007. Their study aims to examine the influence of export intensity on employment volatility for different skilled workers and contributes to the literature on trade and employment growth, particularly the export-employment volatility channel. The correlation analysis shows that export intensity is negatively associated with skilled labor, while the opposite is true for unskilled labor. Using an econometric approach that exploits endogeneity, they show that higher export intensity reduces the volatility of employment growth for skilled workers while increasing employment growth for unskilled workers. Specifically, they note that increasing the large number of foreign destinations or exporting more to foreign markets lowers the volatility of employment growth for skilled workers, while the opposite is true for unskilled workers.

Fryges and Wagner (2008) analyze the export-sale ratio with the labor productivity growth rate in German firms for the period of 1995 to 2005. They use a generalized propensity score approach to break down the relationship between labor productivity growth and export-sales ratio and report a casual effect of the export-sales ratio on productivity growth. They note that the relationship between productivity growth and export activity is not stable over time. Furthermore, they also observe a causal relationship between productivity growth and export-sales ratio based on time-varying. The time-varying relationship could be due to the sales in less advanced countries.

5.3. Data and descriptive statistics

Based on panel data, we examine whether firm growth is affected by export growth. We collect the annual data from the PSX database. The financial statements are accessed for the period of 2013-2019. We drop a firm containing missing information for the selected variables. We remove a firm from the sample if it is assigned default status by PSX. Therefore, the final sample consists of 117 manufacturing firms listed on the Pakistan stock exchange for the period of 2013-2019.

Table 5.1 shows the descriptive statistics of selected variables. The descriptive statistics show that the total number of observations is 819. The export intensity has a mean value of 28% on average, while export growth has a mean value of 8%, and the range of minimum and maximum values is between-0.71 and 1.96. On average, the firm's growth has a mean value of 10% with a standard deviation of 0.20. The range of minimum and maximum values is between -0.57 and 1.60. Similarly, leverage has a mean value of 51% with a standard deviation of 0.19. On average, the board size is 7.99, and the proportion of independent directors to board size is 0.16. Profitability has a mean value of 1.20, while cash holding has a mean value of 0.20. ROA has an average mean value of 7%.

Table 5.1: Descriptive statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
Export intensity	819	0.28	0.28	0.00	0.99
Export growth	819	0.08	0.45	-0.71	1.96
Firm growth	819	0.10	0.20	-0.57	1.60
Leverage	819	0.51	0.19	0.09	0.99
Board size	819	7.99	1.37	6.00	17.00
Independent director	819	0.16	0.12	0.00	0.67
Operating leverage	819	0.11	0.13	0.01	1.22
Firm size	819	16.00	1.41	10.10	20.13
Firm age	819	1.57	0.19	0.78	1.93
Short-term collateral	819	0.27	0.13	-0.04	0.80
Long-term collateral	819	0.44	0.18	0.01	0.86
Profitability	819	1.20	0.60	0.10	4.93
Cash holding	819	0.20	0.13	0.00	0.78
ROA	819	0.07	0.08	-0.20	0.53

Notes: This table provides the descriptive statistics of the selected variables including dependent variable of firm's growth.

5.4. Empirical settings and models

We use OLS regression on the baseline specification. Then, we apply both fixed effect (FE) and random effect (RE) estimators on panel data, which are widely used in the literature. The baseline models of linear equations are as follows.

$$FGrowth_{i,t} = \alpha + \beta ExpGrowth_{i,t} + \delta X_{i,t} + \mu_{i,t} \quad (5.1)$$

$$ROA_{i,t} = \alpha + \beta FGrowth_{i,t} + \delta X_{i,t} + \mu_{i,t} \quad (5.2)$$

The subscript *i* indicates an exporting firm at time *t*, $FGrowth_{it}$ represents firm growth, and ROA_{it} indicates return on assets, measuring the firm performance of *i* exporting firm in *t* year. In Equation (1), $X_{i,t}$ is a vector of essential determinants of a firm growth model and includes export growth, board size, independent directors, leverage, operating leverage, firm size, firm age, short-term collateral, long-term collateral, profitability, and cash holding, and $\mu_{i,t}$ is error term. X denotes firm growth, board size, independent director, export intensity, leverage, operating leverage, firm size, firm age, short-term collateral, long-term collateral, profitability, and cash holding in Equation (2). ROA is the best proxy to measure financial performance (Lu and Beamish, 2004). Baltagi (2005) states that OLS regression produces inconsistent and biased outcomes due to unobserved factors. In this regard, FE and RE estimators perform better than OLS regression. The general equations are as below.

$$FGrowth_{i,t} = \alpha + \beta ExpGrowth_{i,t} + \delta X_{i,t} + \mu_i + \nu_{i,t} \quad (5.3)$$

$$ROA_{i,t} = \alpha + \beta FGrowth_{i,t} + \delta X_{i,t} + \mu_i + \nu_{i,t} \quad (5.4)$$

We apply the Breusch-Pagan LM test in order to select between OLS and RE estimators. Then we use the F-test to decide between OLS and FE estimators. Finally, we employ the Hausman test to choose between the RE and FE methodologies. We apply diagnostic tests to further improve the model efficiency. We also estimate the regressions with robust and Driscoll-Kraay standard errors in order to enhance the efficiency of the model. Furthermore, we control the potential industry and business cycle effects by including the industry and time dummy variables (Greenaway et al., 2007).

The FE and RE regressions can control unobserved individual effects. Furthermore, regressions with adjusted standard errors can manage cross-sectional dependence, heteroskedasticity, and autocorrelation problems. However, they cannot control reverse causality, which is another source of endogeneity (Wintoki et al., 2012). In this regard, we consider a dynamic model to alleviate the possible reverse causality problem. The dynamic equations are as follows.

$$FGrowth_{i,t} = \alpha + \theta FGrowth_{i,t-1} + \beta ExpGrowth_{i,t} + \gamma X_{i,t} + \delta Y_{i,t} + \nu_s + \nu_t + \varepsilon_{i,t} \quad (5.5)$$

$$ROA_{i,t} = \alpha + \theta ROA_{i,t-1} + \beta FGrowth_{i,t} + \gamma X_{i,t} + \delta Y_{i,t} + \nu_s + \nu_t + \varepsilon_{i,t} \quad (5.6)$$

Arellano-Bover and Bondell-Bond proposed one-step and two-step estimation techniques to estimate the dynamic model. We use this approach to break down the relationship between export growth and firm growth. We use the Stata command 'xtdpdsys' to estimate the one-step and two-step difference GMM outcomes. Furthermore, we use the Arellano and Bond test to examine the serial correlation issue.

5.5. Results and analysis

In this section, we perform correlation analysis to examine a correlation between the selected variables. We estimate the OSL model with different specifications, the result shows that export growth positively impact on firm's growth. Then, we estimate the fixed effect and random models to uncover the export-growth relationship. The results confirm that export growth is positively associated with firm's growth. We also use the fixed effect model with robust and Driscoll-Kraay standard errors. The results re-confirm the positive relationship. Finally, we apply GMM approach to estimate the dynamic model. It reveals that export growth positively influences on firm's growth. Therefore, the results suggest that an increase in the export will lead to increase the firm's growth.

In addition to export-growth nexus, we also analyze the impact of growth on performance and show that growth positively influences on firm performance. In order to uncover the relationship between growth and ROA, we apply OLS regression with different specifications including robust standard error. The outcome show that growth

positively associates with performance. Then we use FE and RE estimators to estimate the relationship between growth and performance using robust and Driscoll-Kraay standard errors. Both estimators indicate that firm growth has positive impact on ROA. Finally, we estimate the dynamic model using one-step difference GMM estimator. The results reveal that firm growth exhibits a positive link with performance.

5.5.1. Correlation analysis

Table 5.2 shows the correlation analysis between a firm's growth and selected regressors. The correlation analysis shows that export growth has significant and positive relationships with leverage (0.09), firm's growth (0.36), and short-term collateral (0.12). Board size exhibits a positive correlation with firm size (0.10), age (0.11), and ROA (0.20), while the ratio of independent directors on board size positively correlates with operating leverage (0.11), firm size (0.13), and age (0.07). Leverage forms a positive correlation with long-term collateral (0.25) and profitability (0.08) while it negatively correlates with ROA (-0.42) and cash holding (-0.23).

Table 5.2: Correlation analysis

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
(1) Export intensity	1												
(2) Export growth	0.09	1											
(3) Board size	-0.13	0.04	1										
(4) independent Director	-0.15	0.00	0.05	1									
(5) Leverage	0.11	0.09	-0.05	0.05	1								
(6) Operating leverage	-0.25	0.05	0.01	0.11	-0.05	1							
(7) Firm growth	-0.02	0.36	0.01	0.02	0.02	0.07	1						
(8) Firm size	-0.07	0.01	0.10	0.13	0.02	-0.20	0.04	1					
(9) Firm age	-0.12	0.00	0.11	0.07	-0.05	0.19	-0.05	0.20	1				
(10) Short-term collateral	0.01	0.12	0.01	0.03	0.04	0.26	0.05	-0.14	0.03	1			
(11) Long-term collateral	0.13	-0.05	-0.03	-0.03	0.25	-0.26	-0.04	0.00	-0.19	-0.46	1		
(12) Profitability	-0.04	0.03	0.04	-0.05	0.08	0.35	0.07	-0.23	0.06	0.50	-0.29	1	
(13) Cash holding	-0.08	-0.05	0.03	0.04	-0.23	0.21	0.01	-0.16	0.15	0.02	-0.65	0.23	1
(14) ROA	-0.20	0.02	0.20	0.02	-0.42	0.32	0.20	0.07	0.03	0.16	-0.31	0.26	0.29

Notes: This table provides the information about correlation between response variables and regressors.

5.5.2. Export growth and firm growth

We use the OLS regression to estimate the baseline firm growth model. The outcomes reveal that export growth is positively associated with firm growth. The estimated coefficient of export growth is positive and statistically significant in all models, implying a positive link with firm growth. For each specification, we estimate the OLS regression five times. Firstly, we estimate the regression using export growth as an explanatory variable, and then we include corporate governance variables such as board size and independent directors. Thereafter, we estimate the OLS regression using essential firm's characteristics excluding corporate governance variables, and then we estimate it by including both corporate governance variables and firm's characteristics variables.

Moreover, we estimate the OLS regression by using robust standard errors. All the specifications provide consistent results with respect to export growth and show that export growth is positively linked with firm growth. Specifically, the estimated coefficient of export growth in column (4) is 0.14, which indicates that if export growth increases by 1%, then firm growth increases by approximately 0.14%, keeping all else equal. The coefficient sign of firm size is also positive and statistically significant at 10%, suggesting a positive association with firm growth. The result is consistent with previous studies such as Bentzen, Madsen and Smith (2012) and Du and Girma (2007). Bentzen, Madsen, and Smith (2012) observe the positive association between size and growth for Danish firms. Du and Girma (2007) also report the evidence for the positive connection between size and growth. The outcome reveals that firm age is negatively linked with firm growth. Finally, profitability appears statistically significant and positive with firms' growth.

We estimate the OLS regression with robust standard errors, and its results are reported in column (5). It again confirms that export growth is positively connected with firms' growth and supports the main finding. It is worthwhile mentioning that the F-test appears significant in all models since its p-value is below 1%. The F-test value suggests that the fitness of the model is good. The value of the r-squared ranges between 0.172 and 0.205. Specifically, in column (3), the r-squared value is 0.25, which demonstrates that a 25% change in firms' growth is explained by the model.

Table 5.3: Determinants of firm growth - OLS regression

Variables	(1)	(2)	(3)	(4)	(5)
Export growth	0.141***	0.141***	0.139***	0.140***	0.140***
	(0.015)	(0.015)	(0.015)	(0.015)	(0.024)
Board size		-0.003		-0.006	-0.006
		(0.005)		(0.005)	(0.005)
Independent director		-0.033		-0.03	-0.03
		(0.066)		(0.066)	(0.059)
Leverage			0.016	0.012	0.012
			(0.042)	(0.043)	(0.045)
Operating leverage			0.001	-0.008	-0.008
			(0.083)	(0.085)	(0.082)
Firm size			0.010*	0.010*	0.01
			(0.006)	(0.006)	(0.007)
Firm age			-0.106***	-0.105***	-0.105***
			(0.04)	(0.041)	(0.041)
Short-term collateral			-0.069	-0.058	-0.058
			(0.082)	(0.083)	(0.088)
Long-term collateral			0.02	0.029	0.029
			(0.069)	(0.07)	(0.068)
Profitability			0.084***	0.085***	0.085***
			(0.018)	(0.018)	(0.021)
Cash holding			0.07	0.077	0.077
			(0.087)	(0.087)	(0.078)
Constant	0.053	0.118	0.175	0.221	0.221
	(0.072)	(0.095)	(0.143)	(0.151)	(0.169)
Year Dummies	YES	YES	YES	YES	YES
Industry Dummies	YES	YES	YES	YES	YES
Observations	819	819	819	819	819
R-squared	0.172	0.173	0.204	0.205	0.205
F-test	6.88	6.36	6.30	5.96	5.28
Prob > F	0.00	0.00	0.00	0.00	0.00

Notes: This table reports the outcomes of the OLS regression with different specifications by using firms' growth as a dependent variable. All regressions include industry and time dummies to control the potential business and cycle effects. Column (5) indicates the OLS regression with robust standard errors. "*" denotes significance level at 10% and "***" denotes significance level at 1%.

OLS regression does not capture the unobserved individual effects. Consequently, it produces inconsistent and biased outcomes. To address this concern, we apply the FE and RE regressions to explore the association between firms' growth and export growth for the manufacturing firms listed on PSX. Furthermore, we also estimate the FE regression with robust and Driscoll-Kraay standard errors on the determinants of firms' growth, and its results are given in Table 5.4. The coefficient sign of export growth is positive and statistically significant in all models, indicating that export growth is positively connected with a firm's growth. We use the Breusch and Pagan LM test to choose between OLS and RE estimators. The value of the chi-square is insignificant, favoring the OLS regression over the RE estimator.

We employ the Hausman test to decide between FE and RE regressions. The Hausman result shows a value of 66.685 and its p-value is below 5%, thereby supporting the FE regression over the RE regression. Finally, we consider the F-test to choose between FE and OLS regressions. The F-test value favors the FE regression over the OLS regression. Hence, we use FE regression over OLS and RE regressions. The results of FE regression confirm that export growth is positively associated with firms' growth. In particular, the value of the export growth coefficient in Column (1) is 0.124, implying that if export growth is increased by 1%, a firm will grow by 0.124% while all else remains constant. The coefficient value of leverage (0.190) is positively associated with firms' growth. This suggests that external financing is useful for improving firms' growth. Therefore, exporting firms that avail bank loans can grow. Firm size shows a positive connection with firms' growth because its coefficient value is 0.093 and significant at 5%. However, fixed effect regression may control the unobserved individual effects. The model may suffer from the problems of autocorrelation and heteroskedasticity, which make the model inefficient. In this regard, we implement the Modified Wald, Pesaran, and Wooldridge tests for heteroskedasticity, cross-sectional dependence, and autocorrelation. The Pesaran's test shows that there is no issue of cross-sectional dependence. However, modified Wald and Wooldridge tests indicate that models suffer from heteroskedasticity and autocorrelation problems. To alleviate these problems, we apply FE regression with Driscoll-Kraay (FE-DK) and robust (FE-RT) standard errors. Columns (3) and (4) show the results of fixed effect regression with Driscoll-Kraay and robust standard errors, respectively.

Table 5.4: Effect of export growth on firm growth

Variables	(1)	(2)	(3)	(4)
Export growth	0.124***	0.140***	0.124***	0.124***
	(0.016)	(0.015)	(0.008)	(0.029)
Board size	0.02	-0.006	0.020**	0.020*
	(0.013)	(0.005)	(0.007)	(0.011)
Independent director	-0.025	-0.03	-0.025	-0.025
	(0.103)	(0.066)	(0.035)	(0.108)
Leverage	0.190**	0.012	0.190***	0.190**
	(0.08)	(0.043)	(0.039)	(0.093)
Operating leverage	-0.099	-0.008	-0.099	-0.099
	(0.125)	(0.085)	(0.107)	(0.078)
Firm size	0.093**	0.010*	0.093	0.093**
	(0.041)	(0.006)	(0.057)	(0.047)
Firm age	-0.391	-0.105***	-0.391	-0.391
	(0.507)	(0.041)	(0.388)	(0.454)
Short-term collateral	0.008	-0.058	0.008	0.008
	(0.143)	(0.083)	(0.085)	(0.172)
Long-term collateral	0.318***	0.029	0.318***	0.318**
	(0.109)	(0.07)	(0.068)	(0.124)
Profitability	0.231***	0.085***	0.231**	0.231***
	(0.027)	(0.018)	(0.072)	(0.038)
Cash holding	0.367***	0.077	0.367***	0.367**
	(0.132)	(0.087)	(0.049)	(0.157)
Constant	-1.481	-0.044	-1.466	-1.481
	(1.08)	(0.141)	(1.108)	(1.168)
Year Dummies	YES	YES	YES	YES
Industry Dummies	YES	YES	YES	YES
Observations	819	819	819	819
R-squared (Within)	0.251	0.201	0.251	0.251
F-test (overall)	13.51		25.84	13.2
Prob > F	0.00		0.00	0.00
Wald test		202.50		
Prob > chi2		0.00		

Notes: Firm growth is a dependent variable. Column (1) presents the results of the FE estimator; column (2) shows the RE estimator's results; column (3) shows FE-DK's results; and column (4) shows FE-RT results. The Breusch and Pagan LM test yields 0.00 (Prob > chibar2 =1.0), the Hausman test yields 66.685 (p-value 0.00), and the F-test yields 1.61 (Prob > F = 0.00). *** denotes p<0.01, ** denotes p<0.05, * denotes p<0.1.

The significant level of estimated coefficients and their relationship with leverage remain similar as with the FE model. The results of the FE-DK method confirm that export intensity is negatively connected with leverage. Board size and independent directors have a positive impact on leverage. Similarly, firm growth, firm size, and long-term collateral are also positively impacting on leverage, while internal financing is negatively associated with leverage. We report the results of the FE-RT in column (4). The results show that export intensity and leverage are negatively connected.

FE and RE estimators capture the unobserved individual effects and their adjusted standard errors may control the heteroskedasticity, cross-sectional dependence, and autocorrelation problems. However, they cannot control the reverse causality, which is another source of endogeneity. There is a possibility that export growth and firms' growth have exposed relationships. Therefore, we attempt to exploit reverse causality by using the Arellano-Bover/Blundell-Bond linear dynamic regression. We use the Stata command 'xtdpdsys' to estimate the one-step and two-step difference GMM. This approach allows us to choose the instrument variables within the dataset, which is complicated to find. The estimated coefficients of the Arellano-Bover/Blundell-Bond estimator are given in Table 5.5. Furthermore, we also include the industry and year dummies to control the industry and business cycle effects. The column (1) and (2) shows the results of one-step and two-step difference GMM, respectively. We use robust standard errors to estimate the dynamic models.

Both regressions show that export growth has a positive impact on firms' growth, which is in line with the previous studies. Specifically, the estimated coefficient value of export growth are 0.115 and 0.111 in column (1) and (2), respectively. Both values are positive and highly significant, which suggest that export growth and firm growth are positively associated. Meaning that exporters with higher export growth have higher firm growth. Leverage appears insignificant in the one-step estimation, while it has a statistically positive impact on a firm's growth in the two-step estimation. Cash holdings and profitability both appear statistically significant and positive towards firms' growth. Similarly, firm size has a positive and significant impact on firms' growth because the estimated coefficient of firm size is 0.226 in one-step estimation while it is 0.235 in two-step estimation approach.

Table 5.5: Effect of exports on firm growth

Variables	(1)	(2)
L.Firm growth	-0.017	-0.002
	(0.059)	(0.063)
Export growth	0.115***	0.111***
	(0.035)	(0.036)
Leverage	0.18	0.210*
	(0.119)	(0.112)
Profitability	0.382***	0.392***
	(0.085)	(0.091)
Board size	0.041**	0.027
	(0.017)	(0.017)
Independent director	-0.118	-0.119
	(0.186)	(0.177)
Operating leverage	-0.116	-0.165
	(0.203)	(0.204)
Firm size	0.226***	0.235***
	(0.085)	(0.087)
Firm age	-0.727	-0.151
	(1.492)	(1.091)
Short-term collateral	-0.278	-0.293
	(0.234)	(0.242)
Long-term collateral	0.119	0.084
	(0.15)	(0.118)
Cash holding	0.510**	0.514**
	(0.211)	(0.205)
Constant	-7.614	-7.637
	(11.481)	(11.307)
Year Dummies	YES	YES
Industry Dummies	YES	YES
Observations	702	702

Notes: Robust standard errors in parentheses, *** denotes p<0.01, ** denotes p<0.05, * denotes p<0.1.

We estimate the Arellano-Bond test to improve the model's efficiency. The outcomes of the Arellano-Bond test are given in Table 5.6. The test validates the moment conditions for serial correlation with first differences error. The null hypothesis states that there is no serial correlation in first-differences errors. The model is not mis-specified if the null hypothesis is rejected in the first order. However, if the null hypothesis is rejected at a higher order, then the moment conditions become invalid. We measure the Arellano-Bond test of serial correlation by using the Stata command of 'estat abond'. The value of the Z-score for model 1 is -4.209 in the 1st order and the p-value is less than 5%, rejecting the null hypothesis, while it accepts the null hypothesis in 2nd order because the Z-score value is -1.416 and the p-value is above than 5%. It suggests that there is no issue of serial correlation in model 1.

It implies that moment conditions are valid in the model. The test of Arellano-Bond confirms that there is no issue of serial correlation in higher order, hence we accept the null hypothesis in both models. It suggests that moment conditions are valid in both models. Similarly, we also estimate the Arellano-Bond test to detect the serial correlation in model 2. The results show that a null hypothesis can be rejected at 1st order but cannot be rejected at 2nd order. The Z-score value is -1.210 and its p-value is above 5%, it implies that moment conditions are valid in model 2.

Table 5.6: Arellano-Bond test of serial correlation

Order	Model 1		Model 2	
	Z	**Prob > Z**	**Z**	**Prob > Z**
1	-4.209	0.00	-2.864	0.004
2	-1.416	0.157	-1.21	0.226

Notes: This table provides the outcomes of the Arellano-Bond test. The null hypothesis states that there is no serial correlation. The results are generated by using the Stata command 'estat abond' after running the one-step and two-step difference GMM estimators.

5.6. Robustness checks

We apply multiple robustness checks to validate the main finding that export growth is positively impacting on firms' growth. First, we estimate the FE regression by excluding corporate governance control, firm's characteristics control, year, and industry dummies, and its results are reported in Column (1). Second, we estimate the FE regression by including corporate governance and firm's characteristics controls, and its results are reported in column (2). Both models show that export growth has a positive impact on a firm's growth. Third, we use an alternative definition of a firm's growth, which is a proxy for asset growth based on book value. The results of the Arellano–Bover/Blundell–Bond estimator are reported in column (3) using an alternative definition of the firm's growth. It again confirms that export growth has a positive impact on the firm's growth. Fourth, we estimate the dynamic model by using a two-step GMM model, and its results are reported in column (4). The outcomes support the main finding that export growth is positively associated with a firm's growth.

Table 5.7: Robustness checks of firms' growth

Variables	(1)	(2)	(3)	(4)
L.Firm Growth			-0.06	-0.321***
			(0.046)	(0.106)
Export Growth	0.150***	0.137***	0.050**	0.165**
	(0.029)	(0.028)	(0.022)	(0.07)
Constant	0.087***	-3.234***	0.112	2.72
	(0.002)	(0.487)	(0.442)	(6.433)
Corporate governance control	NO	YES	YES	YES
Firm's characteristics control	NO	YES	YES	YES
Year Dummies	NO	NO	YES	YES
Industry Dummies	NO	NO	YES	YES
Observations	819	819	702	702
R-square (within)	0.118	0.23		
F-test (overall)	26.58	14.87		
Prob > F	0.00	0.00		
Chi2				
p-value				
Wald test			176.94	
Prob > Chi2			0.00	
AR1/AR2				0.115/0.092
Hansen Test				0.23

Notes: Firm growth is a dependent variable. Column (1) show FE regression with robust standard errors by excluding control variables, while column (2) shows the results by including control variables. Column (3) shows the results of Arellano–Bover/Blundell–Bond estimator when firm growth is proxy to asset growth. Column (4) shows the two-step system GMM outcomes. *** denotes p<0.01, ** denotes p<0.05, * denotes p<0.1.

5.6.1. Firm growth and firm Performance

We apply OLS regression to estimate the linear performance model. The outcomes reveal that firm growth is positively connected with ROA. The estimated coefficient of firm growth is positive and statistically significant in all models, implying a positive link with firm performance. This suggests that exporting firms with higher growth have better performance. We estimate the OLS regression four times with different specifications. We estimate the regression using firm growth as an explanatory variable, and then we include corporate governance variables such as board size and independent directors. Thereafter, we estimate the OLS regression by using essential firm characteristics and corporate governance variables. The outcomes reveal that firm growth and ROA are positively associated. In addition to that, we estimate the OLS regression by using robust standard errors. All the outcomes provide consistent results and confirm that firm growth is positively linked with firm performance. Board size demonstrates a statistically positive association with ROA. Consistent with previous studies, leverage is linked negatively with ROA. The coefficient sign of firm size is positive and statistically significant, suggesting a positive association with ROA. The association between firm age and ROA is significant and negative. Finally, cash holdings and profitability are positively associated with ROA. It is important to note that the F-test appears significant in all models, as its p-value is below 1%. An F-test value below 1% suggests the goodness of fit. The value of the r-squared ranges between 0.311 and 0.548. Specifically, in column (4), the r-squared value is 0.548, which demonstrates that the 54.8% change in ROA is explained by the model.

The OLS regression produces inconsistent and biased results due to unobserved individual effects. To address this concern, we use the FE and RE regressions to estimate the relationship between firm growth and ROA for the manufacturing firms listed on PSX. We apply the Breusch and Pagan LM test to select between OLS and RE estimators. The value of the chi-square is significant, which favors the RE estimator. We employ the Hausman test to decide between FE and RE regressions. The Hausman test suggests that FE regression is appropriate to explore the association between firm growth and ROA. The F-test also favors the FE regression over the OLS regression. Hence, we use FE regression over OLS and RE regressions.

Table 5.8: Effect of firm growth on ROA – OLS regression

Variables	(1)	(2)	(3)	(4)
Firm growth	0.075***	0.076***	0.056***	0.056***
	(0.012)	(0.012)	(0.010)	(0.013)
Board size		0.013***	0.009***	0.009***
		(0.002)	(0.002)	(0.002)
Independent director		-0.005	-0.004	-0.004
		(0.024)	(0.020)	(0.019)
Export intensity			0.010	0.010
			(0.012)	(0.011)
Leverage			-0.137***	-0.137***
			(0.013)	(0.016)
Operating leverage			0.053**	0.053
			(0.026)	(0.043)
Firm size			0.013***	0.013***
			(0.002)	(0.002)
Firm age			-0.031**	-0.031***
			(0.012)	(0.012)
Short-term collateral			-0.005	-0.005
			(0.025)	(0.026)
Long-term collateral			-0.023	-0.023
			(0.021)	(0.020)
Profitability			0.044***	0.044***
			(0.006)	(0.008)
Cash holding			0.117***	0.117***
			(0.027)	(0.028)
Constant	0.043	-0.036	-0.225***	-0.225***
	(0.027)	(0.034)	(0.046)	(0.044)
Year Dummies	YES	YES	YES	YES
Industry Dummies	YES	YES	YES	YES
Observations	819	819	819	819
R-squared	0.311	0.346	0.548	0.548
F-test	14.940	16.150	27.150	32.110
Prob > F	0.000	0.000	0.000	0.000

Notes: This table reports the outcomes of the OLS regression with different specifications, using ROA as dependent variable. Time and industry dummies are included in all regressions in order to control the potential business and cycle effects. Column (4) indicates the OLS regression with robust standard errors. * denotes significance level at 10%, ** denotes significance level at 5% and *** denotes significance level at 1%.

Table 5.9 shows the results of FE and RE regressions in columns (1) and (2), respectively. The coefficient sign of firm growth is positive and statistically significant in both models, indicating that firm growth is positively connected with ROA. Although fixed effect regression can control the unobserved individual effects. The models may suffer from cross-sectional dependence, autocorrelation, and heteroskedasticity. In this respect, we apply the Modified Wald, Pesaran, and Wooldridge tests to inspect heteroskedasticity, cross-sectional dependence, and autocorrelation.

The Pesaran's test shows that there is no issue of cross-sectional dependence. However, Modified Wald and Wooldridge tests indicate that models suffer from heteroskedasticity and autocorrelation. Therefore, we apply FE regression with Driscoll-Kraay (FE-DK) and robust (FE-RT) standard errors. We report the results of fixed effect regression with Driscoll-Kraay and robust standard errors in columns (3) and (4), respectively. The results of the FE-DK method confirm that firm growth is positively connected with ROA. We find that export intensity and ROA are positively associated. Furthermore, we also find leverage has a negative association with ROA, while profitability and cash holdings are positively associated with ROA. It is consistent with the pecking order theory, which advocates that firms follow a financing hierarchy from internal financing to equity. When internal funds are not sufficient, they prioritize debt to equity and consider equity financing as a last resort. Firm age exhibits a positive connection with ROA. Similarly, the FE-RT regression confirms that firm growth and ROA are positively associated. Therefore, these results suggest that exporting firms with high growth have a better ROA.

We can control the unobserved individual effects through FE and RE regressions. However, FE and RE regressions cannot control the reverse causality, which is another source of endogeneity. In this situation, FE and RE regressions produce biased coefficients due to a reverse causality problem. Because it is possible that firm growth and ROA have a reverse relationship. In this regard, we apply a dynamic panel model to exploit the possible reverse causality problem. We use the Arellano-Bover/Blundell-Bond method to deal with the reverse causality. We use the Stata command 'xtdpdsys' to estimate the one-step. This approach allows us to choose the instrument variables within the dataset, which is complicated to find.

Table 5.9: Determinants of ROA: Firm growth, leverage

Variables	(1)	(2)	(3)	(4)
Firm growth	0.059***	0.054***	0.059***	0.059***
	(0.008)	(0.008)	(0.013)	(0.006)
Board size	-0.004	0.002	-0.004	-0.004
	(0.003)	(0.002)	(0.004)	(0.005)
Independent director	-0.021	-0.018	-0.021	-0.021
	(0.023)	(0.021)	(0.028)	(0.020)
Export intensity	0.043**	0.024	0.043**	0.043
	(0.017)	(0.015)	(0.019)	(0.028)
Leverage	-0.123***	-0.145***	-0.123***	-0.123***
	(0.018)	(0.016)	(0.040)	(0.015)
Operating leverage	0.000	0.009	0.000	0.000
	(0.028)	(0.026)	(0.026)	(0.031)
Firm size	-0.022**	0.009**	-0.022	-0.022
	(0.009)	(0.004)	(0.015)	(0.015)
Firm age	0.353***	-0.004	0.353**	0.353***
	(0.113)	(0.026)	(0.143)	(0.048)
Short-term collateral	0.038	0.038	0.038	0.038
	(0.032)	(0.029)	(0.046)	(0.037)
Long-term collateral	-0.032	-0.020	-0.032	-0.032
	(0.024)	(0.022)	(0.031)	(0.019)
Profitability	0.038***	0.047***	0.038**	0.038***
	(0.006)	(0.006)	(0.017)	(0.008)
Cash holding	0.089***	0.094***	0.089**	0.089*
	(0.029)	(0.027)	(0.039)	(0.041)
Constant	-0.124	-0.128*	-0.124	-0.124
	(0.240)	(0.075)	(0.326)	(0.344)
Year Dummies	YES	YES	YES	YES
Industry Dummies	YES	YES	YES	YES
Observations	819	819	819	819
R-squared (Within)	0.354	0.3312	0.3542	0.3542
F-test (overall)	20.85		17.45	163.97
Prob > F	0.000		0.000	0.000
Wald test		494.25		
Prob > chi2		0.000		

Note: ROA is dependent variable. Hausman test value: 37.39 (Prob>Chi2 = 0.00); BP LM test value 498.42 (Prob>Chi2 = 0.00); F-test 11.35 (Prob>F = 0.00) Pesaran's test value -0.57 (Pr = 0.569); Modified Wald test 13887 (Prob>Chi2 = 0.00); Wooldridge test 55.39 (0.00).

The estimated coefficients of the Arellano-Bover/Blundell-Bond estimator are given in Table 5.10. We include the industry and time dummies to control the industry and business cycle effects. The column (1) shows the results of a one-step difference GMM by excluding dummy variables, while column (2) shows the results of a one-step difference GMM by including industry and time dummies. We apply robust standard errors in both models. Both models show that firm growth has a positive impact on ROA, which is in line with the previous studies. It suggests that firms with higher growth have a better ROA. It agrees with Yazdanfar (2013) and Kim, Duvernay, and Thanh (2021), who report a positive association between firm growth and financial performance. The results also gain support from the findings of Zeitun and Tian (2007), who argue that firms with more growth opportunities have better financial performance. We find that leverage demonstrates a negative relationship with ROA. It agrees with Salim and Yadav (2012), who argue that leverage is negatively associated with financial performance. Rajan and Zingales (1995) and Huang and Song (2006) also report a negative relationship between leverage and financial performance. We find that profitability and cash holdings are positively associated with ROA. It is consistent with the pecking order theory, which states that firms follow a financing hierarchy from internal financing to equity. When internal funds are not sufficient, they prioritize debt to equity and consider equity financing as a last resort.

We add an interaction term between a firm's growth and exporter firms to further evaluate the relationship between firm growth and ROA. In this regard, we create a dummy variable that equals one for exporter firms and zero for non-exporter firms. Then we interact the dummy variable with firm growth to observe whether exporter firms have a better ROA or not compared to non-exporter firms. We apply the OLS regression and its results are reported in Table 5.11. In column (1), we estimate the OLS regression on the whole dataset by excluding dummy variables. In column (2), we estimate the OLS regression by including industry and time dummies. Both models show that firm growth has a positive association with ROA. Specifically, the coefficient of firm growth in column (2) is 0.052, which indicates a positive and significant association with ROA. It suggests that firms that grow have a higher ROA. The F-test is significant in both models, which indicates a goodness of fit.

Table 5.10: Effect of firm growth on ROA – Difference GMM method

Variables	(1)	(2)
L.ROA	0.665***	0.568***
	(0.102)	(0.080)
Firm growth	0.056***	0.061***
	(0.014)	(0.017)
Leverage	-0.103***	-0.087***
	(0.030)	(0.031)
Board size	0.006	0.001
	(0.005)	(0.004)
Independent director	-0.074*	-0.068*
	(0.042)	(0.039)
Export intensity	-0.028	0.016
	(0.033)	(0.034)
Operating leverage	-0.004	-0.023
	(0.042)	(0.034)
Firm size	0.007	-0.015
	(0.009)	(0.018)
Firm age	0.003	0.027
	(0.073)	(0.135)
Short-term collateral	-0.002	0.056
	(0.047)	(0.046)
Long-term collateral	0.061*	0.041
	(0.036)	(0.031)
Profitability	0.020	0.026*
	(0.015)	(0.015)
Cash holding	0.136***	0.159***
	(0.052)	(0.053)
Constant	-0.152	-0.487
	(0.180)	(1.222)
Year Dummies	NO	YES
Industry Dummies	NO	YES
Observations	702	702

Notes: ROA is a dependent variable. We use the xtdpdsys command to estimate the one-step dynamic model with robust standard errors. Firm growth and leverage have been used as endogenous variables. *** denotes p<0.01, ** denotes p<0.05, * denotes p<0.1.

We estimate the interaction model by using OLS regression. First, we estimate the OLS regression by excluding the dummy variables, and its results are reported in column (3). We find that firm growth has a more pronounced positive impact on the ROA of firms that export to foreign markets. Then we estimate the OLS regression by including the dummy variables, and its results are reported in column (4). Again, we find that the positive impact of firm growth on ROA is more pronounced for firms that export to foreign markets. Overall, we find that firm growth has a positive impact on ROA and that the linkage between firm growth and ROA is more pronounced for exporting firms.

Table 5.11: Effect of firm growth on ROA – Interaction term

Variables	(1)	(2)	(3)	(4)
Leverage	-0.168***	-0.140***	-0.168***	-0.140***
	(0.009)	(0.009)	(0.009)	(0.009)
Board size	0.003	-0.002	0.003*	-0.002
	(0.002)	(0.002)	(0.002)	(0.002)
Independent director	-0.005	0.003	-0.004	0.003
	(0.014)	(0.014)	(0.014)	(0.014)
Operating leverage	0.102***	0.046**	0.102***	0.044**
	(0.016)	(0.019)	(0.016)	(0.019)
Firm size	0.018***	0.019***	0.018***	0.019***
	(0.001)	(0.001)	(0.001)	(0.001)
Firm age	-0.025***	-0.008	-0.026***	-0.009
	(0.008)	(0.008)	(0.008)	(0.008)
Short-term collateral	0.031*	0.022	0.029	0.021
	(0.018)	(0.018)	(0.018)	(0.018)
Long-term collateral	0.002	-0.007	0.001	-0.008
	(0.015)	(0.015)	(0.015)	(0.015)
Profitability	0.032***	0.043***	0.032***	0.043***
	(0.003)	(0.003)	(0.003)	(0.003)
Cash holding	0.081***	0.095***	0.080***	0.095***
	(0.019)	(0.018)	(0.019)	(0.018)
Firm growth	0.055***	0.052***	0.041***	0.039***
	(0.006)	(0.006)	(0.010)	(0.010)
Firm growth*Exporter firm			0.021*	0.021*
			(0.012)	(0.011)
Constant	-0.201***	-0.335***	-0.197***	-0.331***
	(0.029)	(0.034)	(0.029)	(0.034)
Year Dummies	NO	YES	NO	YES
Industry Dummies	NO	YES	NO	YES
Observations	1,428	1,428	1,428	1,428
R-squared	0.434	0.514	0.435	0.515
F-test	98.770	42.090	90.950	41.080
Prob > F	0.00	0.00	0.00	0.00

Notes: ROA is a dependent variable. The columns (1) and (2) show the results of OLS regression on the whole dataset. The columns (3) and (4) show the results of the interaction term on ROA. Exporter firm is a dummy variable that equals one when the firm is an exporter and zero when the firm is a non-exporter. All the variables have been Winsorized by 1% to reduce the influence of outliers. Standard errors in parentheses, ***, **, and * represent significant levels at 1%, 5%, and 10%, respectively.

5.7. Conclusion

This chapter documents that export growth is an important determinant of firm growth. By unraveling the impact of export growth on firm growth, we show that export growth exerts a significant and positive impact on firm growth and is in line with the hypothesis of export-led-growth. We use different empirical settings and our results remain consistent and robust and endorse the export-led-growth hypothesis. The results suggest that firms with higher exports have more growth at the firm level. The outcomes also shed light on the effects of profitability and cash holding on firm growth. We note that profitability and cash holdings have a positive impact on firm growth. Firm size also exhibits a positive relationship with firm growth.

We also analyze the effects of firm growth on returns on assets and find that firm growth exerts a positive impact on returns on assets. It implies that firms with higher growth have better returns on assets. Furthermore, we find that the positive impact of firm growth on ROA is more pronounced for firms that export to foreign markets. Overall, we find that firm growth has a positive impact on return on assets, and the linkage between firm growth and return on assets is more pronounced for exporting firms. From a policy perspective, it suggests that policymakers should design firm growth policies that target firms with greater export potential. Export growth policies may exert a positive impact on firm growth. Finally, from the perspective of a small open economy, liberalization policies that allow domestic firms to sell to foreign markets should be preceded by reducing the external cost of funds and increasing the supply of credit, specifically to exporters.

6. CONCLUDING REMARKS

This thesis sheds light on the subjects of leverage, export intensity, and firm growth by contributing to the literature of corporate finance, trade, and firm growth. Chapter 1 describes the importance of exports and their role in the trade balance and economic prosperity. It explains the association between leverage and exports. It also highlights the significance of the study. In Chapter 2, it describes the background of Pakistan's economy and export performance in terms of groups. It shows the export direction and trade trends. It explains the manufacturing sector and its contribution to exports.

In chapter 3, we show that leverage exhibits a negative relationship with foreign sales to total sales ratio under the dynamic panel model. It suggests that exporting firms with higher leverage have a lower export intensity. The high interest rate in Pakistan may be the reason for this negative relationship because both lending and deposit rates were higher compared to similar economies in the period from 2013-2019. Firms that exhaust cash flows due to interest payments and reduce the availability of financing for viable investment opportunities negatively affect performance. Board size demonstrates a negative connection with export intensity because strategy formulation and decision-making processes are less effective under a larger board size. Moreover, it is difficult to reach a consensus on a large board size, and agency problems may arise, like free riding of directors. The findings suggest that the government develops export promotion policies, which include financial market measures designed to provide low-markup financing to exporter firms with greater export potential.

Chapter 4 shows that export intensity is negatively associated with Pakistani manufacturing firm's leverage, which is consistent with the model of Pinto and Silva (2021) and in line with the pecking order theory. It suggests that exporting firms depend on internal sources of finance compared to external sources of finance due to asymmetric information problems. This chapter also shows an interesting finding that firm size illustrates a positive relationship with leverage, which is according to expectations and in line with the trade-off theory. Because larger firms fail less as they are more diversified and the supply of debt is positively related to firm size. The results provide the policy implications that governments should consider the debt-equity mix while planning to support financial facilities through public funds.

In chapter 5, we demonstrate that export growth is an important determinant of firm growth. By unraveling the impact of export growth on firm growth, we find that export growth exerts a significant and positive impact on firm growth and is in line with the hypothesis of exports-led-growth. We note that profitability and cash holdings have a positive impact on firm growth. Firm size also exhibits a positive relationship with firm growth. Moreover, we find that firm growth has a positive connection with return on assets, while leverage has a negative link with it. Furthermore, we find that firm growth has a more pronounced positive impact on the return on assets of firms that export to foreign markets. The results suggest that policymakers should design growth policies that target firms with greater export potential. Export growth policies may exert a positive indirect impact on firm growth. Moreover, intervention of the government at the firm level, as an intermediate agent with root-level knowledge of foreign markets, is likely to be effective. Finally, from the perspective of a small open economy, liberalization policies that allow domestic firms to sell in foreign markets should be preceded by reducing the external cost of funds and increasing the supply of credit.

The results of the thesis are limited to a single country, which may not be generalized for other strategically important developing and emerging economies. However, the results are derived within the context of a small open economy (underdeveloped bond and equity markets) by using Pakistani manufacturing firms as a sample, and these findings are consistent with theoretical and empirical literature. Therefore, the findings could be applied to those economies that demonstrate a similar context. We would expect that the findings could be stronger for an economy with a more fragile capital market. Although each developing and emerging economy demonstrates its own characteristics, its findings might not be identical with the present thesis. In this regard, there is still a room to further explore the relationship between leverage, exports, and growth based on comparative analysis.

In general, this thesis documents that leverage matters for export intensity at firm-level, and it is necessary to determine effective export policies. This finding is consistent with the recent literature that suggests swap heterogeneity within the trade models. This thesis shows that leverage is an important determinant of export intensity, and it urges government interventions towards exporting firms that are more dependent on external

funds. Additionally, policy measures should be designed that target the scale of production to boost foreign sales. This is pivotal for exporter firms because an increase in exports leads to the firm's growth and consequently improves the trade balance.

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A. Appendix

Table A.1: List of Industries

Industry	PSE's sector code	No. of firms	Weight (%)
AUTOMOBILE ASSEMBLER	801	9	5.77
AUTOMOBILE PARTS & ACCESSORIES	802	3	1.92
CABLE & ELECTRICAL GOODS	803	5	3.21
CEMENT	804	18	11.54
CHEMICAL	805	13	8.33
ENGINEERING	808	3	1.92
FERTILIZER	809	4	2.56
LEATHER & TANNERIES	816	1	0.64
PAPER & BOARD	822	5	3.21
PHARMACEUTICALS	823	7	4.49
REFINERY	825	3	1.92
GLASS & CERAMICS	811	4	2.56
SYNTHETIC & RAYON	827	3	1.92
TEXTILE COMPOSITE	829	25	16.03
TEXTILE SPINNING	830	24	15.38
TEXTILE WEAVING	831	3	1.92
TOBACCO	832	1	0.64
FOOD & PERSONAL CARE PRODUCTS	810	13	8.33
SUGAR & ALLIED INDUSTRIES	826	12	7.69
Total		**156**	**100.00**

Table A.2: Listed exporters and non-exporters

No#	Industries	Exporter Firms	Non-Exporter Firms
1	AUTOMOBILE ASSEMBLER	5	4
2	AUTOMOBILE PARTS & ACCESSORIES	2	1
3	CABLE & ELECTRICAL GOODS	3	2
4	CEMENT	12	6
5	CHEMICAL	11	2
6	ENGINEERING	3	0
7	FERTILIZER	1	3
8	FOOD & PERSONAL CARE PRODUCTS	9	4
9	GLASS & CERAMICS	2	2
10	LEATHER & TANNERIES	1	0
11	PAPER & BOARD	1	4
12	PHARMACEUTICALS	6	1
13	REFINERY	3	0
14	SUGAR & ALLIED INDUSTRIES	11	1
15	SYNTHETIC & RAYON	2	1
16	TEXTILE COMPOSITE	24	1
17	TEXTILE SPINNING	18	6
18	TEXTILE WEAVING	3	0
19	TOBACCO	0	1
	Total	117	39

Table A.3: Multicollinearity result based on export intensity

Variable	VIF	Tolerance	Eigenval
Leverage	1.13	0.89	9.43
Board size	1.03	0.97	0.78
Independent director	1.06	0.94	0.65
Operating leverage	1.28	0.78	0.35
Firm growth	1.02	0.98	0.33
Firm size	1.29	0.78	0.21
Firm age	1.15	0.87	0.10
Short-term collateral	2.11	0.47	0.09
Long-term collateral	3.01	0.33	0.03
Profitability	1.59	0.63	0.02
Cash holding	2.45	0.41	0.01
Mean VIF	1.56		

Table A.4: Multicollinearity result based on leverage

Variable	VIF	Tolerance	Eigenval
Export intensity	1.14	0.88	9.03
Board size	1.04	0.96	0.8
Independent director	1.07	0.93	0.75
Operating leverage	1.36	0.74	0.43
Firm growth	1.02	0.98	0.34
Firm size	1.28	0.78	0.28
Firm age	1.15	0.87	0.21
Short-term collateral	2.13	0.47	0.1
Long-term collateral	2.96	0.34	0.03
Profitability	1.57	0.64	0.02
Cash holding	2.46	0.41	0.01
Mean VIF	1.56		

Table A.5: Multicollinearity result based on firm growth

Variable	VIF	Tolerance	Eigenval
Export growth	1.03	0.97	9.24
Board size	1.03	0.97	0.97
Independent director	1.06	0.94	0.65
Operating leverage	1.28	0.78	0.35
Leverage	1.14	0.88	0.33
Firm size	1.28	0.78	0.21
Firm age	1.14	0.88	0.1
Short-term collateral	2.11	0.47	0.09
Long-term collateral	3.02	0.33	0.03
Profitability	1.59	0.63	0.02
Cash holding	2.46	0.41	0.01
Mean VIF	1.56		

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