



AMERICAN JOURNAL OF ECONOMICS AND BUSINESS INNOVATION (AJEBI)

ISSN: 2831-5588 (ONLINE)

VOLUME 1 ISSUE 3 (2022)



Indexed in



PUBLISHED BY: E-PALLI, DELAWARE, USA

The Impact of Export and Diversification on Firm Performance: Evidence from Pakistan

Khawaja Abdul Haq^{1*}, Shahzad Munir¹, Sohail Raza¹

Article Information

Received: September 01, 2022

Accepted: September 22, 2022

Published: September 24, 2022

Keywords

*Export, Diversification,
Sales Performance, Estimated
Generalized Least Square*

ABSTRACT

The pursuit of internationalization is an important element for a variety of emerging and transitioning economies in their ongoing reform process, following exhibits of export-led development stories in nations such as China, Singapore, and South Korea. Moreover, firms play a major role in the country's economy; hence, this study empirically analyzes the impact of export and diversification on the performance of firms in Pakistan. This paper utilizes World Bank enterprise data for Pakistani firms across the whole country for the years 2007 and 2013, it is a panel data comprising 454 firms. The dependent variable for this study is sales per employee that we use as our performance measure and the independent variables are Export in terms of Export intensity and Geographic diversification in terms of an inverse measure named export concentration calculated by the Herfindahl-Hirschman index (HHI). For analysis, this paper utilizes Panel EGLS (estimated generalized least square) and the estimation suggests that exports and diversification both positively and significantly correlated in their respective sample. Nonetheless, there is an endogeneity issue with Panel EGLS and to counter that two-stage Panel EGLS is used with "average days to clear customs" as an instrumental variable (IV). Results show a positive association of exports with firm performance again. However, the diversification variable proved to be exogenous as per the exogeneity bias test, so its IV results are not robust. Thus, the findings indicate that Pakistani firms perform better if they export, thus supporting the learning by exporting hypothesis, in addition to their exports being geographically diversified.

INTRODUCTION

The process of internationalization of business and trade is influenced by enterprises' growth requirements. Internationalization is the entirety of cross-border activities whether they be assets, goods, or services manufactured or traded within the same institution or amongst independent economic agents (Dunning, 1993). The internationalization determinants have a very diverse list; one of the main entry-level determinants is Exports, which are widely recognized in developing countries as the prerequisite for economic growth. In an analysis of the miracle of East Asia, for example, the World (1993) found out that export-oriented economic policies play an important role in the region's rapid economic growth. When it comes to firms, the level of exporter has a significant impact on the performance and the effects of learning by exporting are more important for established exporters than new exporters (Kraay, 1999). Another key determinant of internationalization is diversification, which can apply to both product and geographical location. Diversification of the products is achieved by modifying or extending the current export basket of goods. Meanwhile, Geographic diversification can be seen as another global strategy for diversification and may be characterized as expansion Bank across the boundaries of foreign countries and regions into several markets or geographic locations (Hill *et al.*, 1992). The developing world could potentially gain a more reliable income flow by diversifying export strategies than focusing only on a few markets or goods. According to

the literature, the level of diversification also contributes to firm performance.

Moreover, with increasing economic activity around the world and the elimination of the major obstacles that have long limited businesses to the global marketplace, many firms can achieve significant growth opportunities by gaining international expertise, product development strategies, and technological spillovers from foreign trade. However, all these benefits come with various challenges, and due to that literature for firms that internationalize has mixed findings. Researchers have extensively studied the impact of internationalization on both micro and macro level, yet, there is comparatively limited research for Pakistan in those aspects. In light of all this detail, this paper particularly focuses on analyzing the impact of Exports and Geographic diversification on the sales performance of Pakistan's firms. First, it deals with the concept of learning-by-exporting (LBE), which means that exporting firms learn from their foreign activities which results in better performance compared to the non-exporters. Nonetheless, empirical research supporting the LBE hypothesis is not yet conclusive. Second, this paper also contributes to the Diversification vs. Concentration debate, where there is mixed empirical evidence of better performance by choosing either one of these two paths by firms. Third, it also conceptually differentiates between two definitions, as the export intensity was used as a measure of diversifications (Contractor *et al.*, 2007; Geringer *et al.*, 2000; Reeb *et al.*, 1998) as foreign sales over total sales proportion, it generally does not mean the

¹ Wang Yanan Institute for Studies in Economics (WISE), Xiamen University, 422 South Siming Road, Xiamen, 361005, China

* Corresponding author's e-mail: kahaq100@gmail.com

company has diversified exports across several nations. By contrast, a vast number of highly diversified firms can still focus on the domestic market while their export intensity is low. Thus, the diversification of geographical exports and the intensity of exports are completely different concepts.

This paper use World Bank enterprise data for Pakistan's firms across the whole country for the year 2007 and 2013. It is a survey panel data comprising 454 firms. The dependent variable for this study is sales per employee, the independent variables are Export in terms of export intensity, and Geographic Diversification in terms of an inverse measure called export concentration calculated by the Herfindahl-Hirschman Index (HHI). For our analysis, this paper utilizes Panel EGLS (estimated generalized least square) and the estimation suggests that exports and diversification both positively and significantly correlated in their respective sample. Nonetheless, there is an endogeneity issue with Panel EGLS as per the exogeneity bias test, and to counter that two-stage Panel EGLS is utilized with Average days to clear customs as an instrumental variable. Results again show a positive and significant association of Exports with firm performance, thus, supporting the learning-by-exporting hypothesis. However, the Diversification variable proved to be exogenous so its IV results are not robust. The remainder of this paper is organized in the following way.

section 1.1 deals with Pakistan's background in Exports. section 2 summarizes past literature and empirical research that has been conducted to study Internalization in the context of export and diversification. Section 3 describes the dataset and its source for modeling the hypothesis. Section 4 explains the methodology used for evaluating the hypothesis. The empirical findings on the impact of Export and Diversification on firm performance are presented in section 5 and are concluded and discussed for future research works in Chapter 6 later

Background

In the country's economy, exports are one of the major growth factors and play a significant role. In the last decade, Pakistan has struggled together to liberalize its global trade with little or no success. Pakistan has recently ranked 68th in the world's largest exporting country with a share of 0.11% in global exports . In Figure 1, exports used to make up about 13 percent of Pakistan's GDP in 2007 can be seen; recently they have been reduced to 8 percent in 2017. Pakistan's export performance is influenced by several factors. The conflict between its economic and monetary policies is the most significant, as almost 45 products have lost their competitiveness on the global market since 2013 . In addition, Pakistan's currency rise affects competitiveness with competitors like India and Bangladesh. The import tariff on export products has increased production costs more .

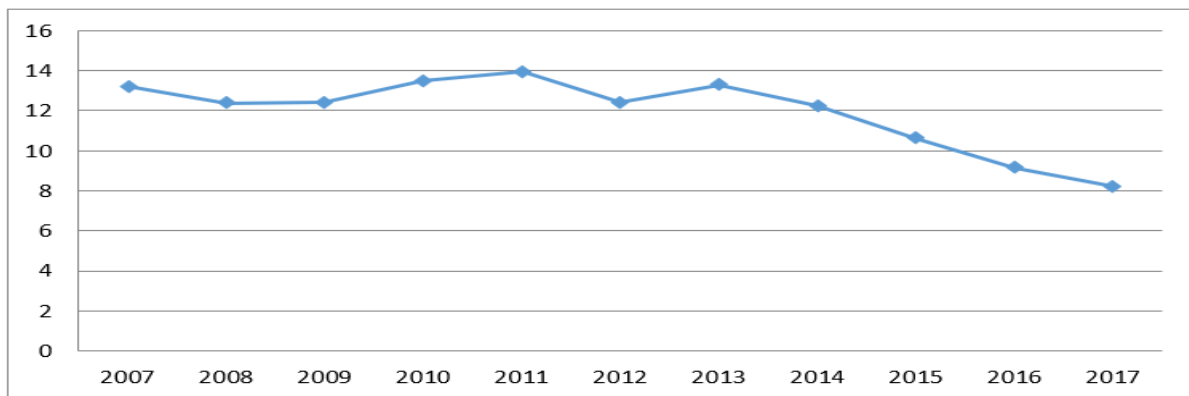


Figure 1: Pakistan Exports of goods and services (percentage of GDP)
Source: World Bank national accounts data, and OECD National Accounts data files.

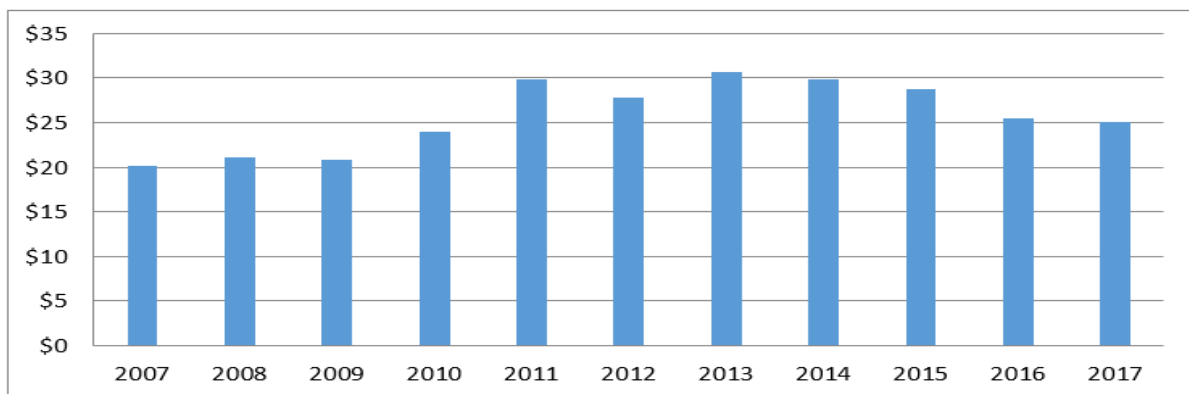


Figure 1: Pakistan Exports of goods and services (percentage of GDP)
Source: World Bank national accounts data, and OECD National Accounts data files.

Comparing Figure 1 and Figure 2, given a steady fall in export contributions to GDP, the export value (based on current US dollars) saw its vicissitudes. From 2007 to 2011, we can see a U curve in Figure 1, which is 2008-2009 reflects a decline that represents the US crisis in which several nations, including Pakistan, have been

impacted by the recession as their largest exporting partner in the United States. In 2011, exports rose before they again fell in 2012 as a result of the decline in world trade due to Europe's sovereign debt crises and increasing oil prices. The domestic energy shortage led to the poor performance of exports, too .

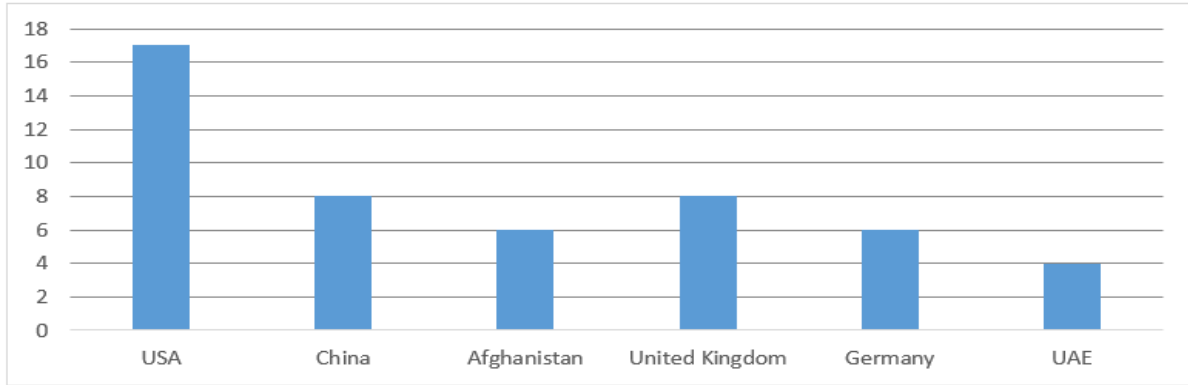


Figure 3: Pakistan's Top 50% of Export Share in 2017

Source: WITS (World Integrated Trade Solution), a subsidiary of World Bank

The diversification of export markets and goods is a significant irritant in raising export revenues. At present, the majority of exports come from the textiles and clothing sectors, which account for around 60 percent . The export destinations of Pakistan are largely focused on a few countries. Per figure 3, the top 50 percent of Pakistan's exports go to the United States, China, Afghanistan, the UK, Germany, and UAE. Among these countries, the United States accounts for the largest 17% and the United Arab Emirates the lowest at 4% for 2017. This pattern is not only seen in recent data but can also be seen in previous years. Regional market trading capacity remains still under-exploited.

LITERATURE REVIEW

Many empirical research papers have shown the higher performance of exporting firms compared to the non-exporters. As foreign buyers may provide exporters with technical assistance in increasing their production efficiency (Grossman & Helpman, 1991). High-quality standards could give businesses more incentive the upgrading production technologies in global markets than in domestic markets (Verhoogen, 2008). Participation in exports can contribute to a quicker understanding of new product market potential (Maurin *et al.*, 2002). Exports could enhance capacity utilization by increasing sales, thereby reducing the exposure of businesses to periodic domestic downturns (World Bank, 1993).

Sohl *et al.* (2020) investigated the impact of diversification on the firm performance by employing firm level data of five Asian economies and found that there exists a direct positive relationship between diversification and firm revenue increment. On the other hand, Gnanon (2021) studied the effect of export on the firm revenue using the corss-section data at firm level of developing economies and found that export plays an important role in increasing firm revenue. Niemenen (2020) found that

the multidimensional aspect of diversification has played a significant role in boosting the firm revenue directly. Varieties of channels have been established by research through which exports will impact the performance of a firm, though there are only two theories that are commonly used, they are referred to as Self Selection (SS) and Learning-by-Exporting (LBE). SS is characterized as highly productive firms that are more prone to becoming exporters, as only those with low marginal costs have enough profits to meet global market entry fixed costs. On the other hand, LBE refers to firms that perform better after entering international markets. Industries entering international markets gain greater knowledge via the demands of consumers from abroad, adopt new manufacturing techniques with higher capacity usage and thus boost performance in international markets. Other studies such as (Kraay, 1999) and (Dunning, 1993) found that established exporters and level of export intensity play a bigger role in LBE rather than just being part of it. This paper, in particular, focuses on the LBE hypotheses, this topic is being extensively covered in the past but its results are not yet conclusive along with Pakistan not being part of past studies.

(Castellani 2002) Used sample data of over 2000 Italian manufacturing companies and estimated regressions of labor growth rate on export. His findings concluded that when the export was used in terms of export intensity (share of the international sale in total sale); it has a significant and positive impact on firm productivity growth. However, when the export was used as a dummy variable the firm's productivity was not affected. The key point, however, is that the learning results are only above a specific level of international engagement. The paper's analysis, in particular, highlights the key conclusion that the learning effects exist just above a certain specific level of export intensity. In another study, in his panel of 2105 Chinese industry firms between 1988 and 1992, Kraay

(1999) investigated how businesses benefited from learning by exporting. He observed that past exports contribute to substantial enhancements in business efficiency by controlling past performance and unobserved enterprise characteristics. Surprisingly, these learning effects among existing exporters were most prominent. The learning results are insignificant and often negative for new entries to export markets. Greenaway and Kneller (2008) evaluated the export starters with non-exporters with UK firms' data (1988-2002) and found that businesses earn substantial productivity improvements during the year they join, in contrast with similar firms that do not. They also find that the possibility to further improve in coming years is to raise the proportion of export sales in a firm's overall sales, thus conforming to the LBE hypothesis. Nonetheless, some studies indicate no confirmation of the LBE hypothesis. Data from over 30,000 Indian manufacturing firms were used by Haidar (2012) to examine the relationship between productivity and participation in the export market throughout the 1991-2004 period. His estimates for the study indicate no improvement in productivity from entering export markets. The paper's key finding was that the most successful companies choose the path of becoming an exporter, however, learning by exporting is in no way to speed up India's manufacturing growth. Greenaway *et al.* (2005) study an empirical analysis of Swedish production exporters and non-exporters. They used panel data set of 3570 firms that span from 1980 to 1997. They found that exporters and non-exporters had interestingly identical performance traits. They did not find evidence of learning by export possibly due to the fact of Sweden's highly open economy. Bernard & Wagner (1997) German industry panel data covered the period from 1978 to 1992; their findings show that exporting could lead to success if competition is more severe internationally than in the German domestic market. They found no evidence of the LBE hypothesis and indicated that firms are already productive three years before they enter the export market.

Firms wanting potential competitive advantage diversify geographically, as they can achieve economies of scale and scope. Geographical diversification raises prospective customers and distributors, provides resource access, promotes the stabilization of cash flow, and thus decreases overall risk (Rugman & Verbeke, 2004). In reaction to expected and unanticipated downward shifts in domestic or international demand, the company can quickly shift revenue and investment in markets where it anticipates higher performance (Lee & Song, 2012). However, geographic diversification has also its disadvantages. In the early stage, companies have different environments to cope with in terms of cultural working environments, regulations, capital markets, and goods, which could raise management and planning costs (Hennart, 2007). Throughout the macro-economic downturn, maintaining global operations and decision-making can lead to additional coordinating costs and

undermining productivity under a high point of external uncertainty (Hill *et al.*, 1992).

Bühner (1987) used data from the top 300 firms in Germany from 1966 through 1981. The author used the Herfindahl index to measure export diversification. By applying the generalized least square method and using accounting and market performance measures he concluded that diversification is positively correlated with firm performance. Furthermore, Riahi-Belkaoui (1996) showed a positive relation between firm performance and diversification by using a sample of French companies in 1990. Return on asset was used as a performance measure and FSTS (Foreign sales/Total sales) was utilized for diversification.

Geographical diversification has an ambiguous impact on firm value. Bodnar *et al.* (1997) found that firm value increased in geographical diversification; similarly, Denis (2002) found that geographical diversity decreases the firm value. An interesting thing is that the two studies have used the same sampling period and methodology though the findings are considerably different. While, Denis *et al.* (2002) used FSTS as a geographic diversification measure, Bodnar *et al.* (1997) used this sample as well as companies reporting on overseas taxes. Therefore, more internationally diversified companies are included in the Bodnar (1999) study. This disparity may account for the different outcomes. Later Kim (2008) used the same sample and has consistent results with Denis *et al.* (2002). He suggested that the cost of diversification outweighs the benefits.

From 1977 to 1993, Geringer *et al.* (2000) analyzed Japanese multinationals' performance relationship with geographic diversification. In multiple regression models, pooled cross-section time series data was used. With several periods, he shows the connections between diversification and performance changed. In general, he did not identify strong interactive effects on diversity with firm performance.

Data Analysis

Sampling data and collection

The objective of this study is to examine the impact of exports and their geographic diversification on Pakistan's firm performance. This paper is based on a survey of 454 enterprises across the country engaged in International and national business. This is a panel dataset for the years 2007 and 2013, and firms surveyed in these years are a complete match denoted by the ID number given to them initially. Since the data used yearly panel data from the years 2007 and 2013, the total number of observations for this study is 908 in total. This study uses 2007 and 2013 cross-sectional data set as the data after 2013 which will better understand the performance of the Pakistani firms before and after the financial crisis.

With respect to data source, this study obtains it from the World Bank's 2007 and 2013 surveys of Pakistani enterprises. This particular dataset contains all the main independent variables and control variables.

Description of Variables

For this study, Firm performance (sales per capita) is the dependent variable. It is total sales divided by the total number of employees of a firm to measure performance. It can also be denoted as labor productivity according to some studies. Usually when calculating the performance of a firm most popular measure is Total factor productivity (TFP) but due to the limitations in the data, I went with the second most common measure of firm performance denoted below.

$$\text{Firm Performance} = (\text{Total Sales}) / (\text{Total Number of Employees})$$

My main independent variables are:

1. Percentage of direct exports among total sales (Export Intensity).
2. Diversification of export destination calculated by the Herfindahl-Hirschmann Index:

$$\text{HHI} = \sum_{i=1}^n s_i^2 \quad i=1,2,\dots,n$$

Where s_i is the percentage export to a particular region and n is the number of regions. It is an inverse indicator of export diversification, based on the Herfindahl-Hirschman index, a concentration ratio. Values ranges from 0 to 10,000 on this ratio, values near 0 are more export diversified and the value of 10,000 is a perfect concentration of the exports. When the HHI values are below 1500, exports can be labeled diversified. Concentrated exports can also be split between the moderate ($1500 \leq \text{HHI} < 2500$) and high ($\text{HHI} \geq 2500$) sub-categories.

Regarding the control variable, this study uses firm-specific factors that can affect a firm's performance. There are ten control variables:

1. Labor cost is defined by the total cost of labor divided by the total number of employees. $\text{Labor cost} = (\text{Total cost of labor}) / (\text{total number of employees})$.
2. The number of employees is the total full-time employees of a firm in a given year.
3. Age of firm
4. Operation hours are the total hours of operation of the

firm in a given year.

5. Employee education is the average number of years of education of a typical production worker.

6. Capacity Utilization is the establishment's output produced as a proportion of the maximum output possible if using all the resources available.

7. Manager experience is the years of experience top managers have in the firm.

8. Training is a dummy variable, where 1 is if employees received any kind of training from the firm and 0 means if they did not receive any training.

9. Power outages are a dummy variable, where 1 is if the firm had power outages during the year and 0 means if there were not any power outages.

10. Foreign ownership is the percentage of ownership of the firm by a foreign individual, company, or organization. As our model is prone to endogeneity, we are using Average days taken to clear customs at exporter exit point (airport or seaport) as an instrumental variable.

Summary Statistics and correlations

Table 1 reports the summary of descriptive statistics for all variables used in this thesis measured yearly. The observation period belongs between the years 2007 and 2013, with 908 observations. The table contains the mean, standard deviation, minimum, maximum values, and several observations of each variable. Some control variables, e.g., Training and Power outages are dummy variables.

Table 2 presents the correlations between all explanatory variables used in this study to check for multicollinearity. Regarding a rule of thumb, the absolute values of correlations among independent variables should not be higher than 0.8. The high correlation among independent variables will lead to a multicollinearity issue. As we can see from table 2, all the absolute values of correlation coefficients are not higher than 0.8. Therefore, there is no multicollinearity issue for this study. Later, in the empirical results section, I have included another multicollinearity test known as the Variance inflation factor (VIF) for more reliability.

Table 1: Summary statistics

Variable(s)	Mean	Max	Min	SD	N
Firm Performance (Logarithm)	5.836	9.012	0.699	0.722	797
Exports (Percentage)	11.650	100	0	29.850	859
Export concentration (Logarithm)	3.710	4	3.097	0.190	148
Labor Cost (Logarithm)	4.847	7.716	0.398	0.591	783
Number of employees (Logarithm)	1.376	3.740	0	0.629	904
Employee Education (Years)	4.978	20	1	8.524	809
Firm Age (Years)	22.644	101	1	13.443	894
Operation hours (Logarithm)	3.491	3.941	2.318	0.185	777
Capacity Utilization (Percentage)	73.922	100	3	20.542	752
Manager Experience (Years)	19.581	56	2	10.523	887
Training (Dummy)	0.163	1	0	0.369	892
Power Outage (Dummy)	0.917	1	0	0.276	907
Foreign Ownership (Percentage)	1.636	100	0	8.709	899
Average custom days (Instrument variable)	4.542	60	0	9.916	844

Note: See section 3.1 for the data sources. The variable measurements are provided in section 3.2. The units of observations are in parentheses

Table 2: Correlation Matrix

	Ex	EC	LC	No. of E	EE	FA	OH	CU	ME	T	PO	FO	ACD
Ex	1												
EC	0.1577	1											
LC	-0.0119	0.0970	1										
No. of E	-0.1487	0.0934	0.0185	1									
EE	0.0754	0.1580	0.2644	0.1577	1								
FA	-0.0440	-0.0295	-0.0429	0.1218	-0.0174	1							
OH	-0.1425	0.0443	0.0550	0.0633	-0.0134	0.0083	1						
CU	-0.0187	0.0434	0.1620	0.2313	0.1173	0.0785	0.3018	1					
ME	-0.1114	-0.2487	-0.0152	0.0247	-0.1685	0.2861	-0.1032	0.0844	1				
T	-0.3240	0.1518	0.0893	0.5108	-0.0250	0.1047	-0.0649	0.0875	-0.0271	1			
PO	0.0089	0.0402	-0.0135	-0.2772	0.0441	-0.0926	-0.0006	-0.1165	0.0070	-0.1548	1		
FO	-0.0865	0.0206	0.0888	0.1647	-0.0215	0.0757	0.1137	0.1788	0.0011	0.0915	-0.4037	1	
ACD	-0.1929	-0.087	0.0451	-0.0075	-0.0377	-0.0758	0.0406	-0.0551	-0.0855	-0.0580	0.0450	0.1071	1

Note: The table reports the correlations among all the explanatory variables used in this paper. Ex denotes Exports, EC refers to Export concentration, LC means labor cost, No. of E denotes Number of employees, EE refers to Employee education, FA means firm age, Ob denotes operation hours, CU refers to capacity utilization, ME refers to manager experience, T is denoted by Training, Po means Power outage, FO denotes Foreign ownership and ACD means average days taken to clear customs

METHODOLOGY

Estimated Generalized Least Square (EGLS)

The problem of heteroskedasticity is frequent in panel data. Heteroskedasticity means that when the variance of error terms varies over the observation. In that case, although least square estimates remain unbiased the standard error of estimators is wrong making statistical inference not reliable and providing misleading results. To overcome this problem, we need to make data homoskedastic using an appropriate transformation and then apply the least square estimation technique to estimate the unknown parameters; the resulting estimates are known as estimated generalized least square (EGLS). Therefore, this paper applied this methodology to find the impact of exports and diversification on firm performance and they are estimated in the following models:

$$\text{Log(Firm Performance)}_{it} = \beta_0 + \beta_1 \text{Exports}_{it} + \gamma_k X_{it} + \alpha Y_{it} + u_{it} \dots\dots\dots (1)$$

$$\text{Log(Firm Performance)}_{it} = \beta_0 + \beta_1 \text{Exportst Concentration} + \delta Z_{it} + u_{it} \dots\dots\dots (2)$$

In equation (1), Log has denoted as base 10 logarithm, Firm performance_{it} denotes total sales divided by total employees of firm i at time t. Exports denotes the export intensity of firm i and time t. X are the labor-specific control variables of firm i and time t which include labor cost, number of employees, and average education of employees. Y are firm-specific control variables, which consist of firm age, operational hours, capacity utilization, top manager experience, training, power outage, and form of ownership. γ and α are the vectors of the coefficients of control variables. u_{it} denotes the error term. β₁ is the coefficient used to estimate the impact of export on firm performance.

In equation (2), Log has denoted as base 10 logarithm, (Firm Performance)_{it} denotes total sales divided by total employees of firm i at time t. Export Concentration

denotes the concentration of export destinations of firm i at time t. Z are control variables which consist of firm age, operational hours, capacity utilization, power outage, and form of ownership. δ is the vector of the control variables coefficients. u_{it} marks the error term. β₁ is the coefficient used to estimate the impact of diversification on firm performance using an inverse measure of export concentration.

Two Stage Estimated Generalized Least Square (2S EGLS)

The EGLS estimation results in equations (1) and (2) are prone to endogeneity. As export is correlated with firm performance and firm performance is correlated with export. Due to these circumstances, there is a chance of reverse causality. The solution to this problem is to utilize two-stage instrumental variable panel data EGLS (2SLS EGLS). The instrumental variable used is the average number of days to clear customs. Thus, the following model is used for the estimates.

$$\text{Export}_{it} = \beta_0 + \beta_1 \text{Avg Custom}_{it} + u_{it} \dots\dots\dots (3)$$

$$\text{Log(Firm Performance)}_{it} = \beta_0 + \beta_1 (\text{Exports})_{it} + \gamma_k X_{it} + \alpha Y_{it} + u_{it} \dots\dots\dots (4)$$

In equation (3), export was estimated by using an instrumental variable (average custom days), later, firm performance is regressed on the estimated exports in equation (4) where the log is denoted as base 10 logarithm, (Firm Performance)_{it} denotes total sales divided by total employees of firm i at time t. Estimated Exports denotes the export intensity of firm i and time t. X are the labor-specific control variables of firm i and time t which include labor cost and average education of employees. Y are firm-specific control variables, which consist of firm age, operational hours, capacity utilization, top manager experience, training, power outage, and form of ownership. γ and α are the vectors of the coefficients of control variables. u_{it} denotes the error term. β₁ is the

coefficient used to evaluate the impact of estimated export on firm performance.

$$\text{Export Concentration}_{it} = \beta_0 + \beta_1 \text{AvgCustom}_{it} + u_{it} \dots\dots\dots(5)$$

$$\text{Log(FirmPerformance)}_{it} = \beta_0 + \beta_1 (\text{Export Concentration})_{it} + \delta_i Z'_{it} + u_{it} \dots\dots\dots(6)$$

In equation (5), export concentration was estimated by using an instrumental variable (average custom days), later, firm performance is regressed on the estimated diversification in equation (6) where the log is denoted as base 10 logarithm, $(\text{Firm Performance})_{it}$ denotes total sales divided by total employees of firm i at time t . Estimated export concentration denotes the concentration of export destinations of firm i at time t . Z' are control variables which consist of firm age, operational hours, capacity utilization, power outage, and form of ownership. δ is the vector of the control variables coefficients. u_{it} marks the

error term. β_1 is the coefficient used to evaluate the impact of estimated diversification on firm performance using an inverse measure of estimated export concentration.

RESULTS AND DISCUSSION

This section describes the empirical findings and discussion from panel EGLS and two-stage EGLS methods with correlation matrices and covariates. The last section of the thesis discusses the conclusion of this overall study.

Impact of Export on Firm Performance (EGLS & 2S EGLS)

Table 3 shows the effect of export from Pakistan on firms, performances (sales performance). Sales performance is in its logarithmic form, Labor cost is in logarithmic form, the number of employees, Employees,

Table 3: Impact of Export on Firm’s sales performance

Dependent Variable: Sales Performance: Full Sample						
	(1)	(2)	(3)	(4)	(5)	(6)
Exports	0.004*** (0.0005)	0.001 (0.0004)	0.002*** (0.0004)	0.035*** (0.007)	0.039*** (0.004)	0.033*** (0.007)
Labor Cost		0.540*** (0.0126)	0.527*** (0.018)	0.537***	0.544*** (0.057)	(0.071)
Number of Employees		0.124*** (0.009)	0.048*** (0.012)		0.012 (0.073)	
Employees Education		0.005 (0.003)	0.003 (0.003)		-0.001* (0.002)	0.0005 (0.003)
Firm Age			0.010*** (0.001)		-0.003	(0.006)
Operation Hours		0.814***	(0.055)	1.166***		(0.379)
Capacity Utilization		0.002***	(0.0004)	0.005*		(0.003)
Manager’s Experience			0.002 (0.001)			0.039*** (0.014)
Training			0.228*** (0.076)		0.813***	(0.401)
Power Outage			-0.711*** (0.052)		-0.109	(0.237)
Foreign Ownership			0.003 (0.003)			0.010 (0.010)
Constant	13.447*** (0.008)	6.995*** (0.147)	1.048** (0.452)	11.317*** (0.406)	4.819*** (0.938)	-5.537 (3.574)
Observations	729	678	626	722	673	621
R-squared	0.062768	0.760369	0.81705	0.60626	0.702881	0.779813
Adjusted R-squared	0.061479	0.758944	0.813772	0.59689	0.692270	0.758642
F-statistic	48.68844	533.8698	249.2823	18.968	37.90427	17.1600
Prob(F-statistic)	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000

*“Note: *** 1%; ** 5%; * 10%”. The columns labeled (1), (2), and (3) are the estimation results of Panel EGLS techniques while (4), (5), and (6) are the Panel 2SLS EGLS estimation results, using the Average number of days to clear custom as the Instrument.*

is in logarithmic form, and the Operation Hours are in its logarithmic form. Every other variable is in its natural magnitude levels. In Table 3, column (1) to column (3) shows the baseline panel data model EGLS estimation results while column (4) to column (6) shows the Two Stage Least squares panel data model EGLS estimation results. In column (1) we present the simple panel data

EGLS estimation of the impact of export on a firm’s performance which is significantly and positively correlated with the firm’s performance. However, the adjusted coefficient of determination is only about 6.15% of the variations in the firm’s performance. In column (2) we control for employee characteristics like the cost of labor, the number of employees, and the average

employee's education. The result shows the insignificant and positive impact of export on a firm's performance. In column (3), we further control for the firm's specific characteristics such as the age of the firm, operational hours, capacity utilization, manager's experiences, training, a form of ownership, and power outage. The results show that a unit change in export leads to 0.2% in the firm's performance. The adjusted coefficient of determination improves to 81.38%. More so, the F-statistics test result on the joint significant hypothesis on all the explanatory variables is statistically significant in explaining the variations in the firm's performance. The panel data EGLS estimation results presented in columns (1) to (3) are prone to endogeneity bias due to the use of export as an explanatory variable. As export explains a firm's sales and firm's (sale) performance also explains with export. As such, there are chances of reverse causality and the presence of reverse causality bias in the estimates of the panel data model EGLS estimation. One of the ways to correct this bias in the estimation result is to adopt the Two Stage Instrument Variable panel data EGLS (2S EGLS) estimation. The Instrumental variable adopted in this two-stage EGLS analysis is the average number of days it takes from when consignments get to the right point of departure to the time it clear at the

custom. The 2SLS EGLS results are presented in Table 3, column (4) to column (6). In column (4) we present the simple panel data model 2SLS EGLS estimation result. The results show that the effect of export on a firm's performance is around 3.5%. In column (5) we control for employee characteristics like the cost of labor and the average employee's education. The result shows a significant and positive 3.9% impact of export on a firm's performance. In column (6), we further control for the firm's specific characteristics such as the age of the firm, operational hours, capacity utilization, manager's experiences, training, a form of ownership, and power outage. The results show that a unit change in export leads to a 3.3% in the firm's performance. The adjusted coefficient of determination improves to 77.98%. More so, the F-statistics test result on the joint significant hypothesis on all the explanatory variables is statistically significant in explaining the variations in the firm's performance. Therefore, the basic panel data model EGLS estimation underestimates the effect of export on the performance of the firms to be 0.2% instead of 3.3% as shown by the 2SLS EGLS estimation techniques, after controlling for employees' specific and firm's specific characteristics. Table 3.1 shows the Multicollinearity test results of the estimated equations

Table 3.1: Variance Inflation Factor for estimation results in Table 3

Covariates	(2)	(3)	(5)	(6)
Exports	1.565	4.749	1.358	7.834
Labor Cost	1.207	1.414	1.139	1.971
Employees	1.581	7.373	1.482	
Employees Education	1.136	2.011	1.124	1.458
Firm Age		2.730		2.33
Operation Hours		2.808		5.682
Capacity Utilization		1.643		1.291
Manager's Experience		4.431		5.733
Training		1.082		4.552
Power Outage		1.468		1.830
Foreign Ownership		1.199		1.467

in Table 3 corresponding to the exact column numbers in Table 3 (i.e. 2, 3, 5, and 6) using the Variance Inflation Factor (VIF). One could as well use the Tolerance to judge the collinearity in the estimated equations given its inverse relationship with the VIF estimates. The null hypothesis is that there is no multicollinearity and the decision rule is to reject the null hypothesis when the VIF estimates are greater than ten. The results presented in Table 3.1 shows

that there is no VIF estimate that is greater than ten, therefore, we conclude that there is no multicollinearity in our estimated equations.

The second objective of this paper is to investigate the impact of diversification on the (sales) performance of the firm in Pakistan. For this reason, we present the EGLS estimation results in Table 4.

Table 4: Impact of Diversification on Firm's sales performance

Dependent Variable: Sales Performance: Export Sample				
	(1)	(2)	(3)	(4)
Export Concentration	-0.465*** (0.063)	-0.467*** (0.125)	7.628*** (-3.453)	6.686* (3.942)
Firm Age		0.018*** (0.003)	0.022	1.458 (0.010)
Operation Hours		1.159*** (0.068)		5.682 (0.635)
Capacity Utilization		0.020*** (0.002)		5.733 (0.009)

Power Outage		-0.535*	-2.207**	1.830
		(0.317)		(0.919)
Foreign Ownership		0.0114		-0.014
		(0.008)		(0.018)
Constant	17.622***	6.856***	-50.369*	-49.926
	(0.527)	(1.368)	(28.414)	(36.686)
Observations	122	119	115	114
R-squared	0.314798	0.83171	0.303463	0.75291
Adjusted R-squared	0.309088	0.8227	0.314998	0.73906
F-statistic	55.13084	92.2538	6.741498	20.1211
Prob(F-statistic)	0.000000	0.000000	0.010671	0.000000

Note: *** 1%; ** 5%; * 10%. The columns labeled (1) and (2) are the estimation results of Panel EGLS techniques while (3) and (5) are the Panel 2SLS EGLS estimation results, using the Average number of days to clear custom as the Instrument.

Impact of Diversification on Firm Performance (EGLS & 2S EGLS)

Table 4 shows the effect of diversification (using an inverse measure of export concentration) on Pakistan firms' performances (sales performance). Sales performance is in its logarithmic form, Export Concentration is in its logarithmic form, and Operation Hours are in its logarithmic form. Every other variable is in its natural magnitude levels. In Table 4, columns (1) and column (2) show the baseline panel data model EGLS estimation results while columns (3) to column (4) show the Two Stage Least squares panel data model EGLS estimation results for the impact of diversification on firm's performance. In column (1), we present the simple panel data EGLS estimation of the impact of diversification on a firm's performance using Herfindahl-Hirschman Index which is significantly and negatively correlated with a firm's performance. However, the adjusted coefficient of determination is only about 30.91% of the variations in the firm's performance. In column (2) we control for the firm's specific characteristics such as the age of the firm, operational hours, capacity utilization, power outage, and form of ownership. The results show that a percentage change in export concentration leads to an inverse 0.47% percentage change in a firm's performance. The adjusted coefficient of determination improves to 82.27%. More so, the F-statistics test result on the joint significant hypothesis on all the explanatory variables is statistically significant in explaining the variations in the firm's performance.

The panel data EGLS estimation results presented in columns (1) and column (2) may have endogeneity bias due to the use of Export Concentration as an explanatory variable. Arguably, export concentration explains a firm's sales performance and the firm's (sale) performance also explains export concentration. As such there are chances of reverse causality and the presence of reverse causality bias in the estimates of the panel data model EGLS estimation. One of the ways to correct this bias in the estimation result is to adopt the Two Stage Instrument Variable panel data EGLS (2S EGLS) estimation. The Instrumental variable adopted in this two-stage EGLS analysis is the average number of days it takes from when consignments get to the right point of departure to the time it clear at the custom.

The two-stage EGLS results are presented in Table 4, column (3) to column (4). In column (3) we present the simple panel data model two-stage EGLS estimation result. The results show that the effect of export concentration on a firm's performance is around 7.6%. In column (4), we further control for the firm's specific characteristics such as the age of the firm, operational hours, capacity utilization, form of ownership, and power outage.

The results show that a percentage change in export concentration leads to a 6.69% in the firm's performance. The adjusted coefficient of determination improves to 73.91%. More so, the F-statistics test result on the joint significant hypothesis on all the explanatory variables is statistically significant in explaining the variations in the firm's performance. Therefore, the basic panel data model EGLS estimation underestimates the effect of export concentration on the performance of the firms to be negative and 0.47% instead of positive and 6.69% as shown by the two-stage EGLS estimation techniques,

Table 4.1: Variance Inflation Factor for estimation results in Table 4

Dependent Variable: Sales Performance: Export Sample		
Covariates	(2)	(4)
Export Concentration	1.227	7.571
Firm Age	1.036	1.178
Operation Hours	1.160	5.022
Capacity Utilization	1.004	6.626
Power Outage	1.030	2.485
Foreign Ownership	1.086	1.246

after controlling for the firm's specific characteristics. Table 4.1 shows the multicollinearity test results of the estimated equations in Table 4 corresponding to the exact column numbers in Table 3 (i.e. 2, and 4) using the Variance Inflation Factor (VIF). One could also use the Tolerance to judge the collinearity in the estimated equations given its inverse relationship with the VIF estimates. The null hypothesis is that there is no multicollinearity and the decision rule is to reject the null hypothesis when the VIF estimates are greater than ten. The results presented in Table 4.1 shows that there is no VIF estimate that is greater than ten, therefore, we conclude that there is no multicollinearity in our estimated equations. In other words, our estimation result is robust. Intuitively, export

Table 5: Exogeneity Bias Test Results

Covariates	Statistic	P-value	Conclusion
Export	1.721463	0.0857	Endogenous Variable
Export Concentration	1.082383	0.2814	Exogenous Variable

values are perceived as endogenous variables. However, we can also rigorously establish whether a variable perceived to be exogenous is truly endogenous using the exogeneity bias test. In Table 5, the test results on the null hypothesis that Export and Export concentration variables are individually exogenous are presented. Based on the test statistics and/or probability values, we reject the null hypothesis that Export is exogenous and conclude that Export is endogenous at a 10% level of significance. Therefore, the instrumental variable panel data result is robust and valid. Similarly, the endogeneity test was performed for Export concentration and we fail to reject the null hypothesis at a 10% level of significance and therefore conclude that export concentration is exogenous. As such, the panel data EGLS results are robust and intuitive and we draw our conclusions from this result.

In short, Export is positively and significantly correlated with the firm’s performance, whereas Export concentration is negatively significant with the firm performance. On this note, Pakistanis firms that export performs better than the firms that serve domestically. The research results here completely support the theory of learning-by-exporting. On the other hand, geographic diversification also plays a part in the firm favor, as the firm could achieve economies of scale and scope with stable cash flow and lower risk.

CONCLUSION

This paper empirically analyzes the impact of exports and diversification on firm performance in Pakistan by using exports in terms of export intensity and diversification in terms of export concentration as key main independent variables. This paper use World Bank enterprise data for Pakistan’s firms across the whole country for the year 2007 and 2013. It is a survey panel data comprising 454 firms with a total of 908 observations. I investigated the relationship between export and diversification on firm performance using the Panel estimated generalized least square (EGLS) method and two-stage EGLS models. The outcome from Panel EGLS suggests that exports are significant and positively correlated with firm performance, later on, the export sample Export concentration resulted in a negative and significant association with the firm performance.

Similar to Sohl *et al.* (2020) Gnanon (2021), this study finds that with more exposure to export and diversification, the firms in Pakistan have better revenues than the local domestic concentrated firms. This indicates that with export and diversification, the firm could have better revenue earnings which leads to better firm

performance. On the other hand, similar to Niemenen (2020) diversifying their export, successful export development programs, such as the funding of local and international trade fairs, the distribution of reliable information about global markets, and export finance and credit insurance may help in favor of this initiative.

However, Panel EGLS cannot eliminate the endogeneity problem, and as per the exogeneity bias test Exports are found to be endogenous, whereas export concentration concludes to be exogenous. Therefore, we used Two-Stage Panel EGLS to solve this issue. we used Average days to clear customs as an instrumental variable and the result for this model was the same for the exports as it was again positive and significant with its association with firm performance confirming the LBE hypothesis. Nevertheless, there was a change in Export concentration, as its association became negative to positively significant but as this variable is not endogenous, those results are not intuitive.

Such findings for this study may lead to policy impacts and the patterns of results suggest that businesses that export have performed better compared to the ones that serve domestically. Secondly, firms that diversify exports have a positive impact on performance. Thus, to enable firms to enter the export market and to consider diversifying their export, successful export development programs, such as the funding of local and international trade fairs, the distribution of reliable information about global markets, and export finance and credit insurance may help in favor of this initiative.

Nevertheless, there are limitations to this study since the sample is only limited to two years 2007 and 2013, which are the latest available from the World Bank. Moreover, the sample is only for 454 private firms in Pakistan. The survey of companies in other countries might give different results due to the difference in their rules and law. In addition, for future studies, it would be better if there were a larger sample size for Pakistani firms.

REFERENCES

Bernard, A. B., & Wagner, J. (1997). Exports and success in German manufacturing. *Weltwirtschaftliches Archiv*, 133(1), 134–157. <https://link.springer.com/article/10.1007/BF02707680>

Bodnar, G., Tang, C., & Weintrop, J. (1997). *Both sides of corporate diversification: The value impacts of geographic and industrial diversification*. National Bureau of Economic Research Cambridge, Mass., USA. <https://www.nber.org/papers/w6224>

Bühner, R. (1987). Assessing international diversification of West German corporations. *Strategic Management Journal*, 8(1), 25–37. <https://onlinelibrary.wiley.com/doi/abs/10.1002/smj.4250080104>

Contractor, F. J., Kumar, V., & Kundu, S. K. (2007). Nature of the relationship between international expansion and performance: The case of emerging market firms. *Journal of World Business*, 42(4), 401–417. <https://www.sciencedirect.com/science/article/pii/>

- S1090951607000405
- Denis, D. J., Denis, D. K., & Yost, K. (2002). Global diversification, industrial diversification, and firm value. *The Journal of Finance*, 57(5), 1951–1979. <https://onlinelibrary.wiley.com/doi/abs/10.1111/0022-1082.00485>
- Dunning, J. H. (1993). Internationalizing Porter's diamond. *MIR: Management International Review*, 7–15. <https://www.jstor.org/stable/40228187>
- Geringer, J. M., Tallman, S., & Olsen, D. M. (2000). Product and international diversification among Japanese multinational firms. *Strategic Management Journal*, 21(1), 51–80. [https://onlinelibrary.wiley.com/doi/abs/10.1002/\(SICI\)1097-0266\(200001\)21:1%3C51::AID-SMJ77%3E3.0.CO;2-K](https://onlinelibrary.wiley.com/doi/abs/10.1002/(SICI)1097-0266(200001)21:1%3C51::AID-SMJ77%3E3.0.CO;2-K)
- Gnangnon, S. K. (2021). Manufacturing exports and services export diversification. *The International Trade Journal*, 35(3), 221–242. <https://www.tandfonline.com/doi/abs/10.1080/08853908.2020.1779877>
- Greenaway, D., Gullstrand, J., & Kneller, R. (2005). Exporting may not always boost firm productivity. *Review of World Economics*, 141(4), 561–582. <https://www.sciencedirect.com/science/article/pii/S0014292107001055>
- Grossman, G. M., & Helpman, E. (1991). *Trade, knowledge spillovers, and growth*. *European economic review*. <https://www.sciencedirect.com/science/article/abs/pii/001429219190153A>
- Haidar, J. I. (2012). Trade and productivity: Self-selection or learning-by-exporting in India. *Economic Modelling*, 29(5), 1766–1773. <https://www.sciencedirect.com/science/article/pii/S0264999312001241>
- Hennart, J.-F. (2007). The theoretical rationale for a multinationality-performance relationship. *Management International Review*, 47(3), 423–452. <https://link.springer.com/article/10.1007/s11575-007-0023-3>
- Hill, C. W., Hitt, M. A., & Hoskisson, R. E. (1992). Cooperative versus competitive structures in related and unrelated diversified firms. *Organization Science*, 3(4), 501–521. <https://pubsonline.informs.org/doi/abs/10.1287/orsc.3.4.501>
- Kraay, A. (1999). Exports and economic performance: Evidence from a panel of Chinese enterprises. World Bank. <https://rb.gy/ahlsf0>
- Lee, S.-H., & Song, S. (2012). Host country uncertainty, intra-MNC production shifts, and subsidiary performance. *Strategic Management Journal*, 33(11), 1331–1340. <https://onlinelibrary.wiley.com/doi/abs/10.1002/smj.1982>
- Maurin, E., Thoenig, M., & Thesmar, D. (2002). Globalization and the demand for skill: An export based channel. Available at SSRN 320281. https://papers.ssrn.com/sol3/papers.cfm?abstract_id=320281
- Nieminen, M. (2020). Multidimensional financial development, exporter behavior and export diversification. *Economic Modelling*, 93, 1–12. <https://www.sciencedirect.com/science/article/abs/pii/S0264999319313902>
- Reeb, D. M., Kwok, C. C., & Baek, H. Y. (1998). Systematic risk of the multinational corporation. *Journal of International Business Studies*, 29(2), 263–279.
- Riahi-Belkaoui, A. (1996). Internationalization, diversification strategy and ownership structure: Implications for French MNE performance. *International Business Review*, 5(4), 367–376. <https://www.sciencedirect.com/science/article/pii/0969593196000182>
- Rugman, A. M., & Verbeke, A. (2004). A perspective on regional and global strategies of multinational enterprises. *Journal of International Business Studies*, 35(1), 3–18. <https://link.springer.com/article/10.1057/palgrave.jibs.8400073>
- Sohl, T., Vroom, G., & McCann, B. T. (2020). Business model diversification and firm performance: A demand-side perspective. *Strategic Entrepreneurship Journal*, 14(2), 198–223. <https://onlinelibrary.wiley.com/doi/abs/10.1002/sej.1342>
- Verhoogen, E. A. (2008). Trade, quality upgrading, and wage inequality in the Mexican manufacturing sector. *The Quarterly Journal of Economics*, 123(2), 489–530. <https://academic.oup.com/qje/article-abstract/123/2/489/1930844>
- World Bank. (1993). The East Asian miracle: Economic growth and public policy: Main report [Text/HTML]. *World Bank*. <https://documents.worldbank.org/en/publication/documents-reports/documentdetail/975081468244550798/Main-report>