4 TRADE LIBERALIZATION AND REAL SECTOR INVESTMENT DECISIONS: NEW PANEL DATA EVIDENCE

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Abstract

Trade liberalization has a dynamic role in overall economic growth. Any change in trade can change the efficiency of almost all sectors of an economy. Among the others, this study attempts to investigate the role of trade openness in determining real sector investment decisions. For empirical analysis, we consider ten years of data of non-financial sector firms from 11 Asian economies and employ the system GMM model to examine the regression among variables. The statistical results first imply that both accumulated trade openness and import orientation have a statistically significant but inverse relationship with real sector investment decisions. Nonetheless, the export orientation demonstrates the positive significant link with industrial investment. Focusing on export orientation can leverage the industrial investment. The empirical findings suggest important trade-related instructions for Asian economies. Such economies should not follow trade liberalization specifically import orientation because it hampers the growth of the industrial sector. However, Asian economies can expedite the industrial growth regarding new investment by focusing on export orientations. Overall, this study illustrates that trade orientation of a country has a significant contribution in shaping corporate investment decisions. It explores distinct implications of trade orientations in real sector investment decisions.

Keywords: Asian Economies; Capital Investment; Export Orientation; Import Orientation; Trade Openness

JEL Codes: F10, F14, G31

1. Introduction

During the past few decades, trade-growth nexus has been debated extensively across the academic community and in economic literature (Tahir & Azid, 2015). It is explicitly evident from empirical findings of previous studies arranged on similar theme that trade openness positively contributes to economic growth (Hye & Lau, 2015; Tahir, et al., 2018; Raghutla, 2020). The findings of these studies specified channels through which trade openness can accelerate the economic growth such as transfer of technology across the borders, economies of scale regarding production, formulation of capital, and access of traders to foreign markets having better prices for their products. Irrespective of such beneficial outputs, some studies have criticized the trade openness because it can hamper economic growth (Ulaşan, 2015). Trade openness deemed to

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create economic complexities including tough competition regarding product quality and quantity for local industrial sector. Thus, such inconclusive literature findings suggest exploring further studies that examine linkages between trade openness and performance of other economic sectors. It is evident from literature that trade liberalization has an impact on real sector i.e., industrial sector growth (Chandran & Munusamy, 2009). The growth of industrial sector strategically links with industrial investment i.e., investment to widen their production operations. Following these notions, the focus of current study is to explore the nexuses between trade openness and its relevant impacts on real sector investment decisions.

The liberalization of trade can uplift the economic growth of a country, based on resource endowments and comparative advantages of such liberalization (Rahman, et al., 2017). A country facing a declining trend regarding economic growth can get advantages by following specific trade orientation which can expedite its economic growth. The developing economies are trying their best to reduce the current account deficit steming from high population growth, low product quality, lack of industrial technology innovation, and poor governance situations by extensive focus on its industrial sector growth (Hassan, et al., 2017). In this regard, such economies are trying to articulate such trade policies that meet the objective. The impact of foreign trade orientation on local industrial sector depends upon sensitivity and capacity of industrial sector to respond to such orientations. Whereby trade liberalization boosts the economic growth due to free access to international market, it can impede the growth of domestic industrial sector through unfavored competition between foreign and local products, preference of consumers to foreign products over local products, increment in supply of products that deemed to be low demand and thus low prices (Umer & Alam, 2013). Such factors eventually reduce the growth of local industrial sector. Therefore, developing economies need to adopt the suitable trade orientations that do not hamper the growth rate of domestic industrial sector.

The nexus between trade openness and economic growth has been extensively debated in literature (Brueckner & Lederman, 2015; Salahuddin & Gow, 2016; Bourdon, et al., 2018). Most studies have stated that trade openness accelerates the economic growth. But it is still unexplored in literature what are the possible consequences of trade liberalization for domestic sector specifically how it determines the investment decisions of industrial sector. The connectiveness between trade openness and industrial sector growth can be understood through the channel of export and import orientation of a country. If a country is export oriented, it can obtain benefit from trade openness because such orientation allows its industrial sector to access the foreign market for selling its products. It further facilitates the industrial sector of a country to achieve the economies of scale through production at larger level. The objective of voluminous production is directly connected with more investment in proliferation and acquisition of three production factors i.e., property, plant, and equipment (PPE hereafter) collectively known as capital investment (Farooq, et al., 2021). However, the import orientation of a country can create multiple economic complexities. Among others, it can demolish industrial sector growth by tough competition regarding product quality, giving way to more trade deficit and unemployment due to the destruction of industrial sector which absorbs the sufficient labor force. Thus, it is necessary to devise such trade orientations that ensure the industrial growth.

This study intends to find out the empirical relationship between trade openness and real sector investment decisions. For regression analysis, we considered non-financial sector firms from 11 Asian economies and apply the system GMM model. The statistical outputs of this model imply that accumulated trade openness has a negative and significant impact on real sector investment. This negative influence was found stable across import orientation and alternative estimation technique (generalized linear model). The trade liberalization generates tough competition for domestic industrial sector which deteriorates the investment of this sector. However, the statistical analysis demonstrates the positive and significant influence of export orientation on industrial sector investment. The findings of the current study argue the sensitivity of industrial sector investment decisions regarding trade liberalization. This study further extends the existing

literature by exploring the empirical nexus between trade openness and investment decisions of industrial sector. It is equally important to investigate the impact of trade orientation on the real sector investment which is key respondent of such trade orientations.

This study contributes in the following way: first, it enriches existing literature by exploring the empirical nexus between trade orientation and corporate investment. It extends the empirical analysis conducted by Li, et al., (2018) by adding the export orientation and accumulated trade openness. They have only studied the penetration of import orientation into industrial sector investment for U.S. financial market. However, current analysis provides robustness regarding import orientation in alternative data specification and adds new thoughts regarding the influence of export orientation on investment decisions in alternative data set. Second, we empirically demonstrate that Asian economies should not follow the trade liberalization and specifically import orientation because such orientation causes the negative effect on real sector investment. Most studies focused on trade-economic growth nexus; however, the consequences of such policies for the real sector and specifically for investment decisions have been extensively overlooked. Thus, this study is innovative by providing comprehensive impact on all trade orientations including accumulated trade orientation, export orientation and import orientation on real sector investment decisions.

The paper is structured as follow: Section 2 presents the literature review and hypotheses development, section 3 explains the data and methodology details employed to achieve the objective, and section 4 describes the empirical results. In section 5, we discuss comprehensively the main regression results. Section 6 concludes the whole discussion of the paper and reference details are given at the end of the paper.

2. Literature Review

This study contributes to mainstream literature on nternational trade and financial economics by adding the relevant impacts of trade openness on real sector investment decisions. Meanwhile, most studies suggested the positive influence of trade openness on economic growth (Keho, 2017; Makun, 2017; Raghutla, 2020). The empirical findings of these studies argued that trade openness can facilitate the transformation of modern technology across borders, enhance bilateral and multilateral cooperation among countries and diminish the other trade barriers including tariffs. Such favorable trade policies can uplift the overall economic prosperity. These theoretical notions were also supported by *Neoclassical Theory* of trade; suggesting that trade openness permits the efficient allocation of resources and more capital formulation, eventually leading to instant economic growth (Helpman & Krugman, 1985). Likewise, new growth theory argued the positive supremacy of trade openness by shedding the light on favorable impacts regarding technology sharing and utilization of factors of production (Romer, 1986). Conversely, a study conceived by Ulaşan (2015) holds the views that trade openness can slow down the economic growth by transformation of international competition regarding product quality into domestic industrial environment. The unrestricted flow of industrial goods across the nations can mitigate the domestic industrial growth by creating tough competition. Such deterioration of industrial growth is more obvious in developing economies producing low-quality goods due to lack of modern technology (Melo & Solleder, 2020).

Empirically, a recent study conducted by Saleem, et al., (2020) has concluded the positive influence of trade openness and FDI on economic growth in Asian economies. Hossain and Maitra (2020) documented the positive impact of monetary policy and trade openness on the economic growth of India. Brueckner and Lederman (2015) argued the simultaneity between trade openness and economic growth. Their study documented the negative impact of economic growth on trade openness while trade liberalization positively related to economic growth. They documented that 1% increase in trade to GDP ratio uplifted the economic growth by 0.5% in short

run. Later, Makun (2017) provided the robustness to such literature direction by exploring the Malaysian market. He also conjectured the positive nexus between trade openness and economic growth. In spite of the excessive literature on the nexus between trade openness and economic growth, we found no study to explore the underlying relationship between trade openness and real sector investment decisions. Thus, current analysis attempts to fill this instant gap in the literature.

Trade Openness and Investment

The impact of trade openness on the industrial sector development is not unanimous in literature. Some studies found the positive influence of trade openness on industrial growth (Umer & Alam, 2013; Goldar, et al., 2020) while others contradicted the existence of this influence (Chen, et al., 2017; Shu & Steinwender, 2019) specifically in emerging economies facing low technological development. The opponents of the favourable impacts of trade openness on industrial growth vowed that trade liberalization spurs industrial growth by imparting product competitiveness. It could result in an influx of unfavourable foreign competition into the local market which could further diminish the output of domestic industrial sector. According to the Ricardian model (Ricardo, 1817), gains from trade liberalization of a specific country depend upon comparative advantages from openness to trade and its responsiveness capacity to such policies. As developing economies have low development of industrial technology (Pietrobelli & Rabellotti, 2011), trade openness can bring product disparities that hamper domestic industrial growth. In this regard, Magacho et al., (2018) vowed the negative influence of trade openness on local industrial development. Omoke and Charles (2021) asserted that openness to trade deteriorated the institutional quality which further decreased industrial growth.

Irrespective of such literature findings, no specific study was found to explore the relationship between trade openness and real sector investment. However, some studies indirectly guided towards a proposed relationship such as Umer and Alam (2013) proposed the negative relationship between trade liberalization and industrial growth. Industrial growth can be termed as an industrial investment. Similarly, Shu and Steinwender (2019) found the negative influence of trade openness on productivity and innovation activities of corporate firms in developing economies. Khobai and Moyo (2021) suggested that trade openness negatively related to domestic industrial performance due to product competitiveness and increment in imports. Low industrial performance directly determined the declining investment behaviour. Thus, it can be suggested that,

H_1: Trade openness has a negative and statistically significant impact on domestic real sector investment decisions.

Export Orientation and Investment

It is substantial to widen the export volume to sustain the economic growth and development of other economic sectors. A country having extensive export volume can mitigate unemployment through absorption of labour by industrial sector (Feenstra, et al., 2019), and can expediate its economic growth (Keho, 2017). Additionally, export orientation has spillover effects on industrial expansion and production system (Buturac, et al., 2019). An empirical study conducted by Osakwe, et al., (2018) indicated that trade liberalization in terms of export diversification tended to enhance the export volume of developing economies which eventually led to more industrial growth. More specifically, Cheung (2010) found the positive spillover effects of exports on industrial innovation activities. He made the analysis on the Chinese market and vowed that export expansion regarding industrial products accompanied the better innovation performance. Westphal (2002) articulated that those technological developments of Taiwanese firms were driven by foreign market access to the selling of the products. Yang and Chen (2012) highlighted the growth factor of Indonesian firms that was interaction with foreign customers. Similarly,

Caldera (2010) documented that increment in export volume enabled the Spanish firms to leverage their innovation activities. Recently, Li, et al., (2022) added that access to foreign markets can enhance the firm level innovation in China.

Irrespective of abundant literature on positive impacts of export on industrial sector development, no specific study was found to explore the linkages between export orientation and real sector investment. However, this relationship can be developed by linking the demand increments of industrial products due to high export volume to voluminous production of such products by industrial sector. Such an increase in production argues to enhance the acquisition of capital assets i.e., property, plant, and equipment collectively known as capital investment (Chaudhuri, et al., 2010). By learning from empirical findings of these studies, it can be suggested that.

H_2: Export orientation has a positive and statistically significant impact on corporate investment decisions.

Import Orientation and Investment

Since the last decade, the exogenous impacts of tariff reduction have been identified on domestic product market competition. An array of studies has suggested the causal penetration of imports on dividend payout policy (Zhou, et al., 2013), financing decision (Xu, 2012), cash holding (Hoberg, et al., 2014), and cost of debt (Valta, 2012). The empirical findings of these studies explicitly described the divergent impacts of import orientation on multiple decisions of industrial sector. The inflow of foreign industrial goods exaggerates the product competition into domestic product market and hurdled the local firms to achieve maximum sale volume. In this regard, a recent study conducted by Li, et al., (2018) has examined the joint influence of imports and FDI on capital investment decisions of domestic firms. They have analysed the U.S. market and suggested the negative relationship between imports and capital investment decisions. The increased import volume impedes the sale volume and thus low cash-inflow from capital investment which substantially discouraged the corporate managers to invest more in acquisition of fixed assets. However, their study intended to explore the U.S. market while current analysis considers the Asian market which may have different business model.

Likewise, another study carried out by Frésard and Valta (2016) conjectured the negative trends in capital investment decisions in response of tariffs reductions. This notion was later supported by Wang (2017). He vowed that inflow of foreign capital negatively impinged upon investment decisions of domestic firms by hampering the cash-inflow volume. The intensive inflow of foreign products restricted the domestic firms to achieve the economies of scale in its production due to lower sale and thus led to higher production cost. In such situation, corporate firms suffered from low profit, less capital reserve and less availability of funds to invest in capital projects (Farooq, et al., 2021). Following the literature findings, it can be hypothesized that.

H_3: There exists significant and negative relationship between import orientation and corporate investment decisions.

3. Material and Methods

The aim of the current study is to explore the empirical linkages between trade orientation and industrial sector investment. To achieve the aim, we employ the ten years of data (2010-2019) of non-financial publicly listed firms from 11 Asian economies (detail in Table 1). We select this span due to the significant increase in the international trade volume of underlying economies during this period (Tang & Abosedra, 2019). Moreover, it is the recent data before the spread of COVID and therefore it is more appropriate to select this span. Similarly, the motivation for the selection of underlying countries is that all economies are situated within the Asia region and have strong trade connections. The trade orientation of one country may overlap with others and can significantly influence the investment arrangements. Therefore, it is interesting to explore the

underlying objective of the study by sampling these economies. We considered the non-financial sector firms as the objective was to check the impact of trade openness on real-sector investment decisions, not the financial sector. Furthermore, the financial sector does not produce any physical products and it is unrelated to export or import. Therefore, we exclude the financial sector firms carrying SIC code 6000-6999. We exclude the firms missing financial information for any specific variable for five or more than five years and make the data more transparent by winsorizing at 5% from both ends. After applying such tools, 6647 firms were selected for final analysis. The financial information on firm-specific variables was obtained from Thomson Reuters DataStream and numerical information on macroeconomic variables was derived from WDI (*World Development Indicator), The World Bank.* Data availability statement comprises as[2]

$$Y_{ijt} = \beta_{\circ} + \alpha_1 X_{jt} + \beta_1 FCV_{ijt} + \gamma_1 MCV_{jt} + \varepsilon_{ijt} \quad (1)$$

$$INV_{ijt} = \beta_{\circ} + \beta_1 TTO_{jt} + \beta_2 FS_{ijt} + \beta_3 LVG_{ijt} + \beta_4 ROA_{ijt} + \beta_5 IFR_{jt} + \beta_6 IR_{jt} + \beta_7 GDP_{jt} + \beta_8 FDI_{jt} + \mu_i + \gamma_t + \varepsilon_{ijt} \quad (2)$$

$$INV_{ijt} = \beta_{\circ} + \beta_1 EXP_{jt} + \beta_2 FS_{ijt} + \beta_3 LVG_{ijt} + \beta_4 ROA_{ijt} + \beta_5 IFR_{jt} + \beta_6 IR_{jt} + \beta_7 GDP_{jt} + \beta_8 FDI_{jt} + \mu_i + \gamma_t + \varepsilon_{ijt} \quad (3)$$

$$INV_{ijt} = \beta_{\circ} + \beta_1 IMP_{jt} + \beta_2 FS_{ijt} + \beta_3 LVG_{ijt} + \beta_4 ROA_{ijt} + \beta_5 IFR_{jt} + \beta_6 IR_{jt} + \beta_7 GDP_{jt} + \beta_8 FDI_{jt} + \mu_i + \gamma_t + \varepsilon_{ijt} \quad (4)$$

Equation (1) shows the general econometric model that is to be tested in this study. In this equation, Yijt is an acronym for dependent variable and Xijt is the representation of independent variable. FCV shows the firm-specific control variables while MCV is for macroeconomic control variables. The subscripts i shows the cross-section, j country, and t is for time. Similarly, β is constant showing the slope of regression line. The econometric equation (2) exemplifies the relationship between INV (investment) and other variables of the study including TTO (total trade openness), FS (firm size), LVG (leverage), IFR (inflation rate), IR (interest rate), GDP (gross domestic product growth rate), FDI (foreign direct investment). The brief estimation detail of these variables was provided in Table 2. Similarly, equation (3) mainly shows the relationship between INV and EXP (export orientation) and equation (4) describes the relationship between INV and IMP (import orientation). Both equations consist of control variables.

Table 1. List of Selected Countries

Sr. no.	*Country Name*	*No. of selected firms*
1	China	1,503
2	India	1,154
3	Indonesia	138
4	Japan	1,961
5	Malysia	366
6	Pakistan	112
7	Philippines	55
8	Singapore	171
9	South Korea	821

[2] *Data that support the findings of study are available on Thomson Reuters DataStream and The World Bank. The Data from aforementioned sites are available on monetary subscription while the access of The World Bank is free-of-cost.*

Sr. no.	Country Name	No. of selected firms
10	Thailand	256
11	Turkey	110
	Total	6,647

Note: The strength of companies listed in Table 1 are the non-financial firms Source: stock exchanges, central banks, and also the financial sheets published by specific companies.

Table 2 presents the description of the variables of the study. It shows the relevant role, measurement, and reference detail of relative study from which calculation was extracted.

Table 2. Variables of Study

Sr. No.	Variables	Role	Measurement	Reference
1	Corporate Investment	DV	Capital expenditures for acquisition of property plant and equipment (purchase of fixed assets/total assets)	(Yang, et al., 2017; Li, et al., 2020; Farooq, et al., 2021)
2	Trade Openness	IV	Exports/total GDP Imports/total GDP Total trade/total GDP	(Chandran & Munusamy, 2009; Liargovas & Skandalis, 2012 Hye & Lau, 2015; Bourdon, et al., 2018; Raghutla, 2020)
3	Firm Size	FCV	Log of total assets	(Ajide, 2017)
4	Leverage	FCV	Total debt/total assets	(Ajide, 2017)
5	Profitability	FCV	EBIT/total assets	(Ajide, 2017)
6	Inflation Rate	MCV	CPI (consumer price index)	(Farooq, et al., 2021)
7	Interest Rate	MCV	Lending interest rate	(Farooq, et al., 2021)
8	GDP growth rate	MCV	Percentage increment in total GDP	(Farooq, et al., 2021)
9	FDI	MCV	Net FDI inflow	(Farooq, et al., 2021)

Acronyms: DV= dependent variable, IV= independent variable, FCV= firm-specific control variables, MCV= macroeconomic control variables Source: Previous studies carried out on the same theme

4. Methodology

To test the empirical relationship between the variables of study, we first employ the panel fixed effect model (results of this model hidden) to estimates the predicted research models. However, due to the presence of a set of macroeconomic variables that are likely to be endogenous with error term and probability of improper measurements of variables, the regression estimation through this model can give biased regression results due to the presence of endogeneity issue. To empirically test this issue, we employ the Wald test and report the analysis in Table 4. The significant p-value of chi-square (shown in Table 4) confirms the existence of the endogeneity issue. In addition, it is necessary to check the stationarity of series specifically when analysis contains several macroeconomic variables. For this purpose, we run the unit root testing and present the results in Table 3. The probability value of ADF test accepts the alternative hypothesis i.e., *data are stationarity at normal*. Following these econometric predictions, we finalize the two-

step system GMM model (shortly abbreviated as system GMM) to check the regression. This model was firstly developed by Arellano and Bond (1991) to deal with the problem of endogeneity in panel data estimation.

The GMM estimation is preferable as it does not require any additional instrument to resolve the problem of endogeneity. Additionally, this technique considers the first difference or lagged levels of all explanatory variables as instruments that can further eliminate the country biasness by fixing the cross-sections. It reduces the omission of country-specific determinants of investment decisions and thus low chances of presence of endogeneity result (Arellano & Bover, 1995). Furthermore, dynamic GMM is not persistent when there is less variance in data across t (time). Therefore, we employ the system GMM model which tends to provide unbiased regression estimation. To validate the instruments that were employed in GMM estimation, we consider the Hansen J-test (known as J-statistics) and report the results at the bottom of the main regression Tables 8, 9, & 10. The null hypothesis for this model states that "*instruments are valid*". As statistics shows, the insignificant value of J-statistics results in acceptance of null hypothesis i.e., *selected instruments are valid.* The robustness was performed by employing the GLM (generalized linear model) model.

Table 3. Panel Unit Root Test

	Unit root Testing			
	ADF - Fisher Chi-square		*Im, Pesaran and Shin W-stat*	
Variable Name	*Statistic*	*Prob.*	*Statistic*	*Prob.*
INV	10325.700	0.000***	103.700	0.000***
EXP	18259.000	0.000***	-134.886	0.000***
IMP	12693.000	0.000***	-76.325	0.000***
TTO	16373.400	0.000***	-114.406	0.000***
FS	14692.300	0.000***	-36.138	0.000***
LVG	9462.120	0.000***	-65.322	0.000***
ROA	11640.800	0.000***	-82.746	0.000***
IFR	22212.100	0.000***	-63.139	0.000***
IR	18758.700	0.000***	-78.039	0.000***
GDP	34042.300	0.000***	-84.661	0.000***
FDI	97900.621	0.000	-114.889	0.000***

Source: Author's own calculation

Table 4. Wald Test

Test Statistic	*Value*	*Df*	*Probability*
Panel estimation			
F-statistic	285.672	(10.397180	0.000***
Chi-square	2856.726	10	0.000***
Individual estimation			
Coefficient Restriction		Probability	Std. Error
C (1)		0.431	0.014
C (2)		0.008***	0.073

Test Statistic	Value	Df	Probability
C (3)		-0.013***	0.071
C (4)		0.020***	0.072
C (5)		-0.031***	0.002
C (6)		0.097*	0.004
C (7)		-0.092*	0.006
C (8)		0.002***	0.003
C (9)		-0.003***	0.002
C (10)		-0.004***	0.002

*Note: *=significant at 10% level, **=significant at 5% level, ***=significant at 1% level, Description: The significant p-value of coefficients restrictions indicates the coherence of explanatory variables with error term which create the issue of endogeneity*

5. Empirical Results

This section presents the statistical outcomes of the study in the form of descriptive statistics, correlation analysis, and regression analysis.

Descriptive Statistics

In this part, we have described the descriptive statistics.

Table 5. Overall Descriptive Statistics

	Mean	Median	Std. Deviation	Maximum	Minimum
INV	0.390	0.361	0.001	0.901	0.010
EXP	0.331	0.124	0.042	2.391	0.086
IMP	0.318	0.219	0.103	2.192	0.113
TTO	0.601	0.415	0.052	4.172	0.222
FS	2.214	2.189	0.076	5.677	0.012
LVG	0.233	0.221	0.123	0.909	0.010
ROA	0.053	0.054	0.071	0.901	-0.081
IFR	4.154	4.318	0.049	20.286	-0.352
IR	3.192	3.231	0.311	11.782	-0.079
GDP	4.741	4.912	0.059	14.525	-5.416
FDI	11.218	11.335	0.055	11.463	8.059

Source: Own calculation, Abbreviation: INV= capital investment, EXP= export orientation, IMP= import orientation, TTO= net trade openness, FS=firm size, LVG=leverage, ROA=profitability, IFR=inflation rate, IR= interest rate, GDP= growth rate, FDI= foreign direct investment

Table 5 shows the descriptive analysis in the form of mean, median, and standard deviation etc. As shown in the table, the mean value of INV is 0.390. This value exemplifies the trend of corporate firms regarding investment in acquisition of fixed assets. As for concern trade openness, percentage of EXP (exports) to total GDP is 33.1% and percentage of imports is 31.8%. while total trade volume is 63.3%. These values provide information on basic trade activities of the analysed countries. More specifically, this trend can be comprehended from Table

6 which provides the information on individual statistics of all countries. According to statistics shown in Table 6, the maximum export volume is 1.960 for Singapore while its average import volume is 1.707 which is also the highest number as compared to other countries. If we are to analyse, the average investment volume in Singapore is 34.5% which is lowest value. This value clearly supports the notion that a country that is more open to trade (3.668) must bear less real sector investment (0.345). Similarly, other countries carry the specific mean values (shown in Table 6) regarding the variables of study. These values provide comprehensive information on country-wise trends.

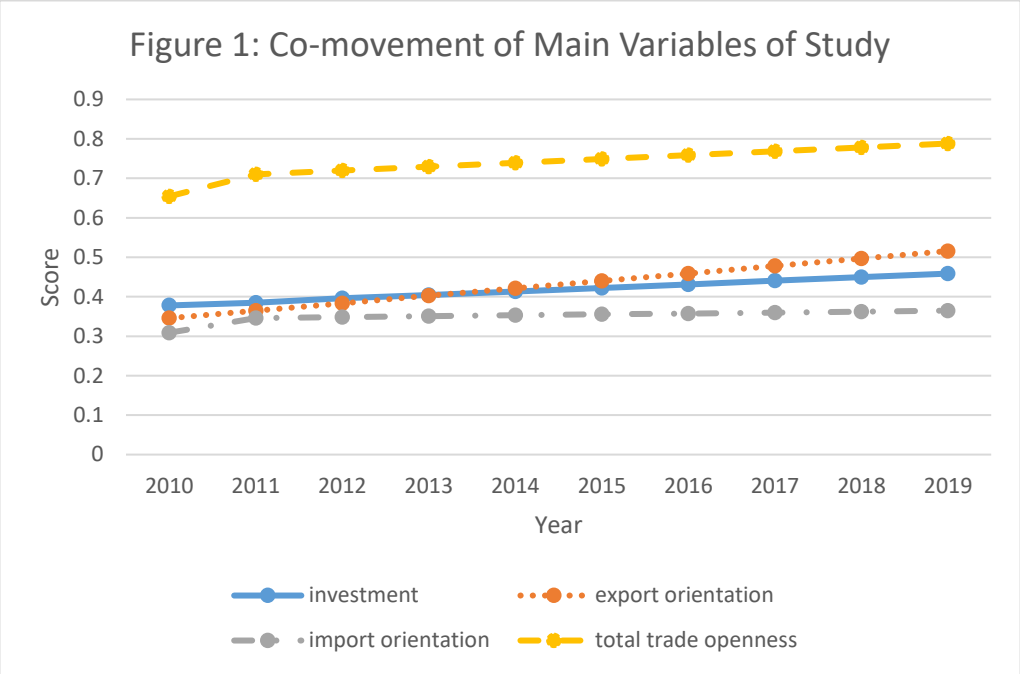
Table 6: Country Wise Trend

	INV	*EXP*	*IMP*	*TTO*	*FS*	*LVG*	*ROA*	*IFR*	*IR*	*GDP*	*FDI*
China	0.374	0.259	0.220	0.480	2.570	0.305	0.056	2.934	2.020	9.004	11.328
India	0.416	0.222	0.268	0.490	2.521	0.348	0.082	8.383	4.053	6.776	10.525
Indonesia	0.414	0.231	0.215	0.447	2.289	0.308	0.097	5.848	4.557	5.558	10.104
Japan	0.348	0.161	0.164	0.326	2.693	0.241	0.046	0.282	1.779	0.492	10.008
Malysia	0.383	0.835	0.698	1.533	1.914	0.237	0.058	2.395	2.450	4.782	9.826
Pakistan	0.503	0.132	0.218	0.351	1.948	0.348	0.109	9.818	2.735	3.655	9.321
Philippines	0.358	1.459	1.297	2.756	2.341	0.232	0.060	2.745	3.936	5.235	10.317
Singapore	0.345	1.960	1.707	3.668	2.334	0.220	0.051	2.430	4.005	5.081	10.667
S. Korea	0.379	0.477	0.439	0.916	2.342	0.281	0.042	2.337	3.074	3.342	9.966
Thailand	0.437	0.681	0.623	1.305	2.196	0.299	0.076	2.030	2.607	3.222	9.864
Turkey	0.393	0.228	0.269	0.497	2.478	0.276	0.082	8.117	2.842	4.848	10.156

Source: Own calculation, Abbreviation: INV= capital investment, EXP= export orientation, IMP= import orientation, TTO= net trade openness, FS=firm size, LVG=leverage, ROA=profitability, IFR=inflation rate, IR= interest rate, GDP= growth rate, FDI= foreign direct investment

Figure 1 indicates the co-movement of main variables of study. Additionally, this figure provides robustness regarding main findings of the study i.e*., trade decreases, investment of domestic industrial sector increases*[3].

[3] *As we can see, when trade lines are moving downward, the line of investment is flowing upward. This opposite movements of variables suggest the negative relationship.*



Correlation Analysis

This subsection provides the information about correlation analysis.

Table 7: Correlation Analysis

	INV	*EXP*	*IMP*	*TTO*	*FS*	*LVG*	*ROA*	*IFR*	*IR*	*GDP*	*FDI*
INV	1.000										
EXP	0.004	1.000									
IMP	-0.016	0.988	1.000								
TTO	-0.010	0.997	0.996	1.000							
FS	-0.059	-0.108	-0.134	-0.120	1.000						
LVG	0.325	-0.049	-0.034	-0.042	0.009	1.000					
ROA	-0.054	-0.011	0.006	-0.002	0.084	-0.227	1.000				
IFR	0.124	-0.037	0.055	0.004	-0.283	0.187	0.187	1.000			
IR	0.042	0.050	0.078	0.063	-0.097	0.061	0.001	-0.038	1.000		
GDP	0.061	0.074	0.060	0.068	-0.137	0.135	0.113	0.439	0.013	1.000	
FDI	-0.004	-0.080	-0.112	-0.095	0.040	0.090	0.016	0.171	-0.056	0.581	1.000

Source: Own calculation, Abbreviation: INV= capital investment, EXP= export orientation, IMP= import orientation, TTO= net trade openness, FS=firm size, LVG=leverage, ROA=profitability, IFR=inflation rate, IR= interest rate, GDP= growth rate, FDI= foreign direct investment

Table 7 explains the correlation matrix among the variables of study. The correlation trends of EXP, IMP, and TTO are parallel with the notions of developed hypotheses i.e., export orientation

boosts the investment while import and trade liberalization lead to impeding the real sector investment. The lowest correlation values can be explained by the indifferent nature of variables i.e., investment is firm-specific variable while trade orientations are non-firm specific variables. Importantly, as shown in column 3 of Table 7, proxies of trade openness have the highest correlation values i.e., 0.988 for IMP while 0.997 for TTO. Thus, it can create the biasness if we include all proxies in a single econometric equation for regression estimation. Therefore, we develop separate econometric models and report the results in Tables 8, 9, & 10.

Regression Analysis

This part presents the regression analysis between explained and explanatory variables of study.

Table 8. Effect of Trade Openness on Industrial Sector Investment

Statistical Outputs of GMM (Estimation of equation 2)

Variable Name	*Coefficient*	*Std. Error*	*Prob.*
C	0.529***	0.109	0.000
INV (-1)	0.339***	0.121	0.000
TTO (total trade openness)	-0.213***	0.011	0.000
Firm specific control variables			
FS (firm size)	0.193***	0.006	0.000
LVG (leverage)	0.241***	0.012	0.000
ROA (profitability)	-0.510***	0.152	0.000
Macroeconomic control variables			
IFR (inflation rate)	-0.012***	0.001	0.000
IR (interest rate)	-0.008***	0.002	0.000
GDP (GDP growth rate)	0.019***	0.013	0.000
FDI (foreign direct investment)	-0.008***	0.004	0.000
Adjusted R-squared		0.629	
S.E. of regression		0.015	
AR (1)		0.002	
AR (2)		0.198	
Prob. J-statistics		0.191	

*Source: Author's own calculation. Description: *=significant at 10% level, **=significant at 5% level, ***=significant at 1% level Instruments Specification: INV (-1) TTO (-1) FS (-1) LVG (-1) ROA (-1) IFR (-1) IR (-1) GDP (-1) FDI (-1)*

Table 8 presents the regressions outputs for econometric equation 2. As shown in table, TTO (trade openness) has a negative and significant coefficient value -0.213. Trade openness is significant at 1% level, showing that a one-unit shift in TTO could lead to 21.3% variation in investment volume while keeping other variables constant. This value further specifies the acceptance of alternative hypothesis (H1). As for the concerned firm-specific control variables, FS and LVG have positive and significant coefficients' values 0.193 and 0.241 relatively while ROA has negative and significant coefficient value -0.510. At macro-level, IFR, IR, and FDI have negative and significant coefficient values while GDP has positive and significant coefficient value. Their coefficient values are -0.012, -0.008, -0.008, and 0.019 relatively.

Table 9: Effect of Export Orientation on Investment Decision

Statistical Outputs of GMM ((Estimation of equation 3)			
Variable Name	*Coefficient*	*Std. Error*	*Prob.*
C	1.124***	0.103	0.000
INV (-1)	0.781***	0.133	0.000
EXP (export orientation)	0.233***	0.011	0.000
Firm specific control variables			
FS (firm size)	0.123**	0.004	0.000
LVG (leverage)	0.145***	0.012	0.000
ROA (profitability)	-0.604***	0.041	0.000
Macroeconomic control variables			
IFR (inflation rate)	-0.006***	0.002	0.000
IR (interest rate)	-0.023***	0.010	0.000
GDP (GDP growth rate)	0.018***	0.002	0.000
FDI (foreign direct investment)	-0.084***	0.014	0.000
Adjusted R-squared		0.683	
S.E. of regression		0.041	
AR (1)		0.007	
AR (2)		0.212	
Prob. J-statistics		0.128	

*Source: Author's own calculation. Description: *=significant at 10% level, **=significant at 5% level, ***=significant at 1% level Instruments Specification: INV (-1) EXP (-1) FS (-1) LVG (-1) ROA (-1) IFR (-1) IR (-1) GDP (-1) FDI (-1)*

In Table 9, we provided the regression outputs for econometric equation 3. As statistics show, EXP has a positive and significant coefficient value 0.233. Contrary to total trade openness, this value shows the significant and positive influence of export orientation on real sector investment, explaining that from one-unit change in EXP results 23.3% variation in real sector investment. Other variables of study have similar regression trends as explained in Table 8.

Table 10. Effect of Import Orientation on Investment Decision

Statistical Outputs of GMM ((Estimation of equation 4)			
Variable Name	*Coefficient*	*Std. Error*	*Prob.*
C	1.131***	0.161	0.000
INV (-1)	0.888***	0.212	0.000
IMP (import orientation)	-1.313***	0.091	0.000
Firm specific control variables			
FS (firm size)	0.021***	0.008	0.001
LVG (leverage)	0.221***	0.011	0.000
ROA (profitability)	-0.575***	0.062	0.000
Macroeconomic control variables			
IFR (inflation rate)	-0.130***	0.004	0.000

Statistical Outputs of GMM ((Estimation of equation 4)			
Variable Name	*Coefficient*	*Std. Error*	*Prob.*
IR (interest rate)	-0.031***	0.002	0.000
GDP (GDP growth rate)	0.012***	0.002	0.000
FDI (foreign direct investment)	-0.161***	0.019	0.000
Adjusted R-squared		0.671	
S.E. of regression		0.081	
AR (1)		0.000	
AR (2)		0.415	
Prob. J-statistics		0.161	

*Source: Author's own calculation. Description: *=significant at 10% level, **=significant at 5% level, ***=significant at 1% level Instruments Specification: INV (-1) IMO (-1) FS (-1) LVG (-1) ROA (-1) IFR (-1) IR (-1) GDP (-1) FDI (-1)*

Table 10 provides the statistical information on regression analysis for econometric equation 4. It can be observed that import orientation has a negative and significant coefficient value -1.313. This negative effect is stronger as compared to TTO and EXP. It can be suggested that import orientation can severely deteriorate the investment of real sector of sampled countries. This negative value further implies the acceptance of third alternative hypothesis (H3). Additionally, the regression trends of other control variables are still consistent as mentioned in Tables 8, 9, & 10. We check the robustness by employing the GLM (generalized linear model) and report the analysis in Table A1.

6. Discussion

This study sets out to explore the transformation channel of trade liberalization into real sector investment. Additionally, the current analysis deemed to quantify the penetration of export and import orientations into corporate-level decisions i.e., investment decisions. For this purpose, we apply the system GMM model and report the results in Tables 8, 9, & 10. As the statistics show, trade openness has a significant and negative influence on corporate investment decisions. This adverse influence can be explained through the channel of increase competition which hampers the growth of domestic industrial sector specifically in emerging economies lacking technological innovation. Trade liberalization intensifies the threat of competition due to presence of foreign products on the domestic market (Chen, et al., 2017). Developing economies are unable to get the advantages from trade liberalization because the industrial products of such economies are not compatible with the products of developed countries to beat the latter on the international market. In this regard, Magacho et al., (2018) explicitly found the adverse effects of trade liberalization on industrial development of country. Later, Shu and Steinwender (2019) also favoured the notions of negative influence of trade openness on industrial growth reflected by industrial investment. The current analysis offers the robustness to the empirical findings of their studies and complements the literature by extending the role of trade openness in corporate investment.

However, export orientation has a positive and significant relationship with investment decisions (As shown in Table 9). Focusing on export orientation, a country can allow its industrial sector to boost its production volume which further results in achieving economies of scale in production system (Buturac, et al., 2019). The export of industrial products allows the enhancing of the sale volume which further enhances the profitability of enterprises. This factor encourages the corporate managers to expand their industrial investment to meet the increasing demand for their products. Following this, Osakwe, et al. (2018) argued that export orientation significantly

accelerates the industrial expansion and production capacity. Caldera (2010) also highlighted the favourable impacts of export orientation on industrial innovation activities achievable only through active investment in acquisition of PPE. This study extends the literature by exploring role of export orientation in corporate investment decisions. However, import orientation has a negative relationship with corporate investment. Li, et al., (2018) explicitly defined the two channels i.e., sluggish cash-inflow and financing constraints through which imports hamper the investment of domestic industrial sector. The transfer channel of import orientation into investment decisions of enterprises can be comprehended as the entry of foreign products into domestic market reduces the sale volume of domestic industrial sector which further declines the cash-inflow on investment. Moreover, such decline in the sales volume impedes profitability which eventually diminishes the capital reserve of enterprises for any new investments. In such situation, industrial sector follows conservative investment strategies. In brief, it can be stated that both trade openness and import orientation have negative while export orientation has a positive relationship with corporate investment decisions. The important lesson for policy officials from the current analysis is that they should not follow the trade openness orientation as it has adverse impact on corporate investment. This study offers the corporate-level penetration effect of trade-related orientations.

In addition to trade related policies, we also consider a set of control variables both at firm-level and macroeconomic level to make the analysis more comprehensive. At firm level, firm size carries the significant and positive coefficient value, showing the positive role of the firm size in determining the capital investment. Larger firms are more optimistic in making capital investments due to maximum utilization capacity and high return from such investments (Chen, et al., 2017). Additionally, such firms have excessive demand for their products that require more installation of PPE. Similarly, leverage has a positive and significant impact on corporate investment decisions. The availability of bank loans provides the financial flexibility to make the capital investment. Furthermore, corporate managers normally acquire bank loans when they decide to start a new capital project. An empirical study conducted by Ajide (2017) supported similar trends of firm size and leverage in determining corporate investment decisions. However, as the statistics shows, ROA negatively and significantly related to firm investment decisions. Contrary to common literature findings, this negative relationship can be understood through the optimistic behavior of profitable firms. Such firms are interested in investing in early-return projects which eventually limit the capital investment options. A recent study carried out by Farooq, et al., (2021) explicitly documented a similar relationship.

At macroeconomic level, statistics illustrate that inflation rate and interest significantly but negatively impinges upon corporate investment decisions. A high inflation rate tends to depreciate the future cash flow of an investment. Similarly, a high interest rate creates an opportunity cost to invest in physical project. Corporate managers are attracted to invest in government securities offering high interest rate instead of physical investment (Yang, et al., 2017). Thus, both factors negatively corroborate the investment decisions. However, as the findings reveal, GDP growth rate has a positive influence on corporate investment decisions. High GDP growth rate is an indication of overall economic prosperity which eventually leads to more demand for industrial goods and more industrial investment (An, et al., 2016). Foreign direct investment which is a country-level funds inflow carries a negative association with investment decisions. An inflow of funds specifically for the purpose of establishing the industrial units ultimately intensifies the competition and mitigates the growth of domestic industrial sector. It generates considerable product competition which has negative spillover effect on industrial investment (Ajide, 2017). The influence of macroeconomic variables is consistent with empirical findings of past studies carried out by Li, et al., (2018) and Farooq, et al., (2021).

Briefly, the statistical findings suggested the negative and significant influence of trade liberalization and import orientation while a positive impact of export orientation on real sector investment decisions. It further visualizes the dynamic impact of other control variables.

Conclusion

This study aims to identify the influence of trade liberalization on real sector investment decisions and how rising volume of imports and exports changes these decisions. For this purpose, we sampled the non-financial sector firms in Asian economies and applied system GMM model for regression analysis. The statistical findings first imply that trade liberalization and import orientation negatively and significantly influence real sector investment decisions. However, such negativity can be diverted by focusing on export orientation. Additionally, this study also highlights the dynamic influence of a set of control variables considered both at firm level and country level on real sector investment decisions. Our empirical results provide better insights regarding consequences of trade liberalization policies. The empirical analysis suggests that in addition to other macroeconomic and routine determinants of corporate investment, trade policies also matter for industrial growth. This study exhibits an interesting fact that liberalization of trade and import volume can also mitigate the industrial investment volume by escalating products competition. However, export orientation allows the industrial sector to flourish. The statistical findings further imply the acceptance of all alternative hypotheses (H1, H2, H3).

Policy Implications and Limitations

The following policy implications emerge from current analysis. The under-analysis countries should not follow the trade liberalization orientation because it hampers the industrial sector investment which is a key player of the economy. It is also suggested that such economies should minimize their import orientation because it works as double edge swords i.e., trade deficit and adverse effect on industrial sector regarding investment decisions. Policy officials should focus more on export orientation instead of trade openness and import orientation because such trade orientation can bring many positive outcomes in the form of positive industrial investment and decline in trade deficit etc. Similarly, the important lesson for corporate managers from the current analysis is that they should consider trade-related orientation of the federal government while making investment decisions. In addition to firm-level determinants e.g., firm size, leverage etc., corporate managers should consider the trade orientation sensitivity of investment. Despite many policy yields, the limitation of the current analysis is that it considers all economies in a single analysis while each economy may have different market arrangements and therefore the magnitude of the effect of trade orientation on investment may be deferent from others. Therefore, the policies yielded from the current analysis cannot be generalized for other economies. Moreover, the effect of trade orientation on investment across various industrial sectors was also ignored in the current analysis. Each sector of an economy may respond differently to national trade pressure. Future studies can be conducted by introducing the industry dummy and by considering the other important factors e.g., an institutional quality that can potentially moderate this relationship.

Highlights

This study enriches the understanding on following points.

Trade openness negatively influence the real sector investment decisions.

Import orientation has negative impact on real sector investment decisions.

Export orientation has positive influence on real sector investment decisions.

Trade liberalization has a significant contribution in determining the capital investment decisions of non-financial sector firms from Asian economies.

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Appendix

Table A1: Robustness Analysis

	Trade openness		*Export Orientation*		*Import Orientation*	
	Coeff.	*Prob.*	*Coeff.*	*Prob.*	*Coeff.*	*Prob.*
C	0.425***	0.000	0.424***	0.000	0.425***	0.000
TTO	-0.004***	0.007	-	-	-	-
EXP	-	-	0.008***	0.005	-	-
IMP	-	-	-	-	-0.008***	0.012
FS	0.009***	0.000	0.009***	0.000	0.009***	0.000
LVG	0.336***	0.000	0.336***	0.000	0.336***	0.000
ROA	-0.024***	0.025	0.024***	0.025	-0.024***	0.025
IFR	-0.002***	0.000	-0.002***	0.000	-0.002***	0.000
IR	-0.001***	0.000	-0.001***	0.000	-0.001***	0.000
GDP	0.006***	0.037	0.005***	0.044	0.006***	0.029
FDI	-0.013***	0.000	-0.013***	0.000	-0.013***	0.000
Akaike info criterion (AIC)	-0.679		-0.679		-0.676	
Schwarz criterion (SIC)	-0.678		-0.681		-0.625	

*Source: Author's own calculation. Description: *=significant at 10% level, **=significant at 5% level, ***=significant at 1% level. Abbreviations: EXP= export orientation, IMP= import orientation, TTO= net trade openness, FS=firm size, LVG=leverage, ROA=profitability, IFR=inflation rate, IR= interest rate, GDP= growth rate, FDI= foreign direct investment.*