TRADE POLICY UNCERTAINTY AND FIRM RISK TAKING: A CASE STUDY OF EXPORTING FIRMS OF PSX

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CERTIFICATE

This is to certify that this thesis entitled: **"Trade policy uncertainty and firm risk taking: a case study of exporting firms of PSX".** submitted by **Ms. Ayesha Fatima** is accepted in its present form by the School of Economics, Pakistan Institute of Development Economics (PIDE), Islamabad as satisfying the requirements for partial fulfillment of the degree in Master of Philosophy in Economics and Finance.
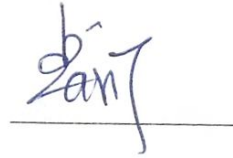
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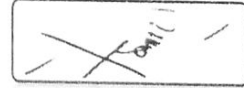
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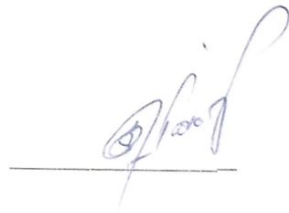Internal Examiner: Dr. Usman Qadir   Signature: _Usman Qadir_

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ABSTRACT

Over the past few years, Pakistan has faced persistent and ever-changing trade policy uncertainty, creating a state of unpredictability and instability. This study attempts to investigate the effect of trade policy uncertainty on firm risk-taking. To investigate this a trade policy uncertainty index of Pakistan is created to reflect the pattern of uncertainty in trade policies of Pakistan through principal component analysis(PCA). The targeted panel sample of 170 listed exporting firms of PSX is used to investigate the impact of TPU on firm risk-taking over the period of 2012 to 2021. A model selection technique of general to specific model approach is used for analyses. Then the study uses panel techniques of hausman tests, fixed effect, and random effect models for the empirical analysis. The result of the general model suggests that trade policy uncertainty has a negative impact on firm risk-taking. The result of the specific model again proves the negative relationship between trade policy uncertainty and firm risk-taking. Along with these, the influencing mechanism is used to test the effect of financing constraints on the relationship between trade policy uncertainty and firm risk-taking. The finding highlights that the financing constraints of firms increase the negative impact of TPU on firm risk-taking. In the same way, further tests suggest that a firm with a higher debt ratio has a more pronounced impact of TPU on FRT. This study also tests the firm ownership concentration effect on the association of trade policy uncertainty. The result highlights that the ownership concentrations reduce the impact of trade policy uncertainty on firm risk-taking. The results of this study are collinear with the financing constraint theory and risk aversion theory. This study is significant as it highlighted the issues of policy uncertainties and their effect on economic growth. So government should make the policy more certain and long-lasting to avoid the risk associated with it.

Keywords: Trade Policy Uncertainty, Firm Risk Taking, Ownership Concentration, Debt Ratio

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LIST of ABBREVIATIONS

ARDL: Auto-regressive Distributive Lag

CCI: Consumer Confidence Index

EER: Effective Exchange Rate

EOBI: Employment Old Age Benefit

EPO: Export Policy Order

EPU: Economic Policy Uncertainty

FBR: Federal Board of Revenue

FDI: Foreign Direct Investment

FDI: Foreign Direct Investment

FRT: Firm Risk-Taking

GDP: Gross Domestic Product

GTA: Global Trading Alert

HI: Harmful Interventions

IMF: International Monetary Funds

IPO: Import Policy Order

LEV: Leverage ratio

LEV: Leverage Ratio

LI: Liberalizing Interventions

M & A: Merger and Acquisition

MPI: Manufacturing Production Index

PBS: Pakistan Bureau of Statistics

PCA: Principal Component Analysis

PSI: Political Stability Index

PSX: Pakistan Stock exchange

R & D: Research and Development

SA: Financing Constraints

SBP: State Bank of Pakistan

SC: Ownership Concentration

SECP: Security Exchange Commission of Pakistan

STPF: Strategic Trade Policy Framework

TPU: Trade Policy Uncertainty

WTO: World Trade Organization

CHAPTER 1

INTRODUCTION

In today's globalized and interconnected world, trade policies are the key to determine the trading activities of any country. Trade policies refer to the target, guidelines, rules, and regulations set by government representatives to have steady trade between the two countries. Such policies safeguard local manufacturers against foreign competition. There are two main trade policies; import trade policies and export trade policies. These policies involve various trade instruments such as tariffs, import quotas, subsidies, and more to regulate international trade. The recent trade policies of Pakistan are documented as the Strategic trade policy of Pakistan, National tariff policy, Import policy order (IPO), Export policy order (EPO), etc.

Trade policy uncertainty refers to the probability of a reversal in trade policy instruments (tariffs, restraints, import quotas, local content requirements, subsidies, administrative policies, voluntary export, and anti-dumping duties). Chicago Booth's Steven J. Davis referred to policy uncertainty in three ways. Uncertainty about policy decisions, uncertainty about who is making decisions, and uncertainty about the effect of these policy decisions on the economy. This uncertainty arises due to unpredictability and lack of clarity about policies' future consistency. On the other hand, trade policy interventions refer to the constraint that temporarily molds trade policies. These interventions usually arise when government officials take some temporary actions to control and regulate international trade. So trade policy uncertainties and intervention in trade policies are not the same concepts. The uncertainty in trade policy arises due to constant changes in the trade interventions of the country. These uncertainties are sudden and have a longer effect on the country's economic activities. Political tensions, changes in trade negotiations, and trade agreements are the main factors contributing to the policy uncertainties of any country.

Pakistan is an emerging economy and its economy is highly dependent on international trade. Pakistan has faced issues of policy uncertainties mainly in trade policies and these uncertainties in the policies even become more abrupt in the last few years. As a result, Pakistani firms face risks related to continual and uncertain changes in trade policies. For example, In January 2023, the government of Pakistan increased the export quota of sugar for the year 2022-2023. The

government of Pakistan has also imposed a higher sales tax on imports of certain goods termed luxury goods. These trade interventions result in constraints in the future investment decisions of firms. These trade policies' uncertainty has macro as well as micro-level effects on the economy. So the problem that need to be addressed is that to measure uncertainty in the trade policies of Pakistan and its influence on the risk taking behavior of the investor. The research problem is that firm always need to face some risk in order to make the investment but due to uncertainty in policies the risk taking behaviour of firm is affected. So this study address this problem by including effect of firm debt ratio as well as firm ownership effect on the relationship between trade policy uncertainty and firm risk taking. This study will focus on the micro factor of the economy and measure the trade policy uncertainty influence on the firm risk-taking behaviors.

Firm risk and firm risk-taking behavior are distinct concepts in the realm of business and finance, and they differ in their definitions and implications. firm risk refers to the inherent uncertainties and potential negative outcomes associated with a firm's business activities, while firm risk-taking behavior relates to the strategic decisions a company makes regarding the level of risk it is willing to embrace in pursuit of its objectives. While firm risk is a set of potential threats, risk-taking behavior involves a company's proactive approach to managing and leveraging those risks strategically. Firm risk is essentially the set of uncertainties and potential negative outcomes that a company faces due to its business activities. These risks can include operational, financial, strategic, and market-related risks. Firm risk-taking behavior pertains to the strategic choices and decisions that a company makes regarding the level of risk it is willing to undertake to achieve its business objectives.

The theories that are most relevant to research are the theory of financial constraint and risk aversion theory. The theory of financial constraint aims to address that the investment decision of firms depends on financing. Firm investment spending increase or decreases depending on its retained earnings. When the government or any trade experts create an uncertain intervention in the trade policies, uncertainty in trade policies will occur. Firms may experience many difficulties such as the cost of market search, and demand forecasting, as well as their suck cost may increase. These obstacles may affect the firm retained earnings so according to financial constraint theory investment decisions of the firm may influence. Second is risk aversion theory

which formulated that in conditions of uncertainty, the firm may prefer to hold capital instead of spending.

This study has created a link between TPU and FRT. For this, a trade policy uncertainty index (TPU) for Pakistan is created and measures firm risk-taking through the standard deviation of total assets and investigates their relationship using a panel regression model. Along with these, this study has also addressed the relevance of other firm-specific characteristics on the association of TPU with FRT. The first objective of this study is to develop a trade policy uncertainty index. The second is to investigate the influence of TPU on firm behavior of risk-taking. The third and fourth objective is to highlight the relevance of firm debt ratio and ownership concentration on firm risk behavior. The reason for selecting the debt ratio in my research objective is simple the debt itself represents the risk. In a period of stable trade policies firms may prefer to take debt for further investment however when there is uncertainty in trade policy firms defer investment plans because of less funding. The decision also varies whether it is risk adverse firm or risk lover firm. The second firm-specific variable is ownership concentration. A firm that has equity concentration is highly risky as there are only a few owners to share the risk in the case of uncertainty in the policy. However highly concentrated firm have few shareholders that have controlling rights so their motive is to get higher return. So investment plans may delay and risk-averse firms reduce their investment spending to avoid the risk.

1.1 Background

In the past few years, developing countries, as well as developed economies, have gone through many uncertainties. These uncertainties affect the economy negatively as well as positively. The researchers are interested to investigate the negative impact of these uncertainties. The repeated occurrence of these uncertainties results in many imbalances in the economy. During the period of uncertainty, people will start increasing the precautionary saving as a strategy to bear the risk associated with these shocks. Similarly, firms delaying the decision of investment and recruitment of new employees may also put it on hold. Along with these problems under high ambiguity in economic policies financial and economic decisions will be unpredictable which results in postponing various decisions. This issue of slowing down and delaying decisions is well-known as the option value of waiting.

In the 1980s many emerging nations saw the need for economic change, structural modification, and trade policy development that was supposed to boost their production level. The International Monetary Fund (IMF) and World Bank highlighted the free-trade policy as a major factor in the growth of any economy. As Dornbusch (1992) emphasized the "pressure of the world bank and testimony of success" is also one of the reasons behind the growing free-trade agreements in many emerging economies of the world. The World Bank launched many lending programs to stimulate this trade liberalization along with the assistance of the IMF. Through these initiatives from the World Bank and rising economies implemented free-trade policies and commercial protection policies are almost discredited by the end of the 1980s.

However, over the past five years, isolationism in trade policies is again instigated. Protectionism in trade policies has become a serious concern for many developing countries to protect their economy from external competition. This shift has inserted many uncertainties in world trade policies. The global covid-19 pandemic adds more to these protectionism policies and stimulates the worldwide economies. Zheng and Zhang (2022) deeply investigated the influence of Covid-19 on the performance of the firm. The potential cash flow of firms has declined, the profitability from sales diminished, the overall cost of output has increased, and their operational decision has been postponed. These all factors adversely affect the firms' overall performance. So to safeguard their enterprises from these outside shocks many countries have adopted protectionism policies. As a result of this trading protectionism, the friction between countries' trade policies intensely raises (Phan & Narayan, 2020).

These uncertainties about the trade policies have adversely affected investment as well as created an uncertain environment for resource allocation. According to Handley and Limao (2015) rise in economic policy uncertainty more adversely impacts economic growth than fiscal and monetary policy uncertainty. As the policy ambiguity postpones the investment, this will create a risk for future investment and growth. The increase in the trade policy uncertainty of the country decreases its financial investment. This inverse relation is stronger in energy firms with low revenue and growth rates of sales. When policy uncertainty increases energy firms with a high marketization strategy and with low serious competition will immediately lower their financial investment (Lin, Li, Lan, & He, 2022). So irrespective of its advantage, trade policy change has often fulfilled skepticism on behalf of private industries because of uncertainty regarding future

policy on trade. The private sector may decide not to act in response to a reform that has less than ideal reliability. One of the example of TPU is removal of subsidies. When a government removes subsidies, it means they are spending less money to support things like lower prices for essential goods or services. Since the government is spending less, they save more money. Saving money can make the government look better to lenders (like banks). However, people who were benefiting from those subsidies (like cheaper gas or food) may get upset because prices could go up. They avoid to take risk because of these uncertainties. On the flip side, if the government shows it's good at managing money by removing subsidies wisely, it can attract foreign investors who want to put money into the country. This can be good for the economy. The government's risk-taking behavior depends on its long-term plans. If they have clear goals and strategies, they might be more willing to take short-term risks by removing subsidies, knowing it could benefit the country in the long run. So effect of these uncertainties are uncertain but it may increase the risk of investor.

Figure1. 1: Trade Interventions in Pakistan

Liberalizing intervantions
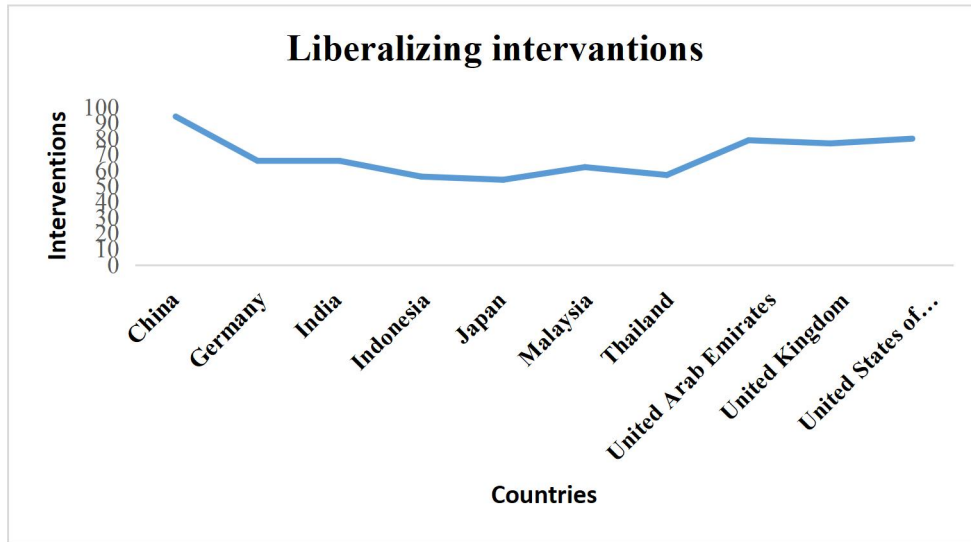
Figure1. 2: Countries Affected by Liberalizing Interventions

Harmful Interventions
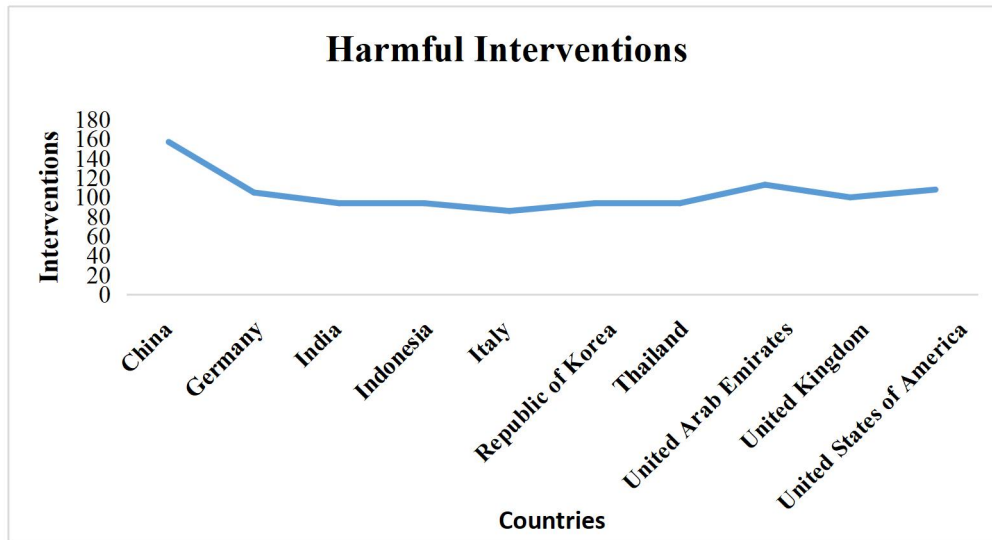
Figure1. 3: Countries Affected by Harmful Interventions

Source: Global Trading Alert(GTA)

Figure1.1 shows the liberalizing and harmful interventions introduced in Pakistan every year. The figure 1.2 and 1.3 shows the top 10 countries affected by liberalizing and harmful interventions by Pakistan respectively.

1.2 Statement of Problem

The increase in uncertainty of the government's policies heightens financial market friction and reduces the supply of capital in the form of investment to the economy. The issues raised after the global pandemic of Covid-19 illustrate exactly how policy uncertainties adversely impact the world economy. This study will provide empirical evidence that how trade policy uncertainty affects firm risk-taking and how firm debt ratio and ownership concentration reinforces the effect of trade policy ambiguity on FRT. When government policies are uncertain firm management may turn out to be conservative to reduce the risk associated with these uncertain policies. So firms may become more risk averse and engage with less risky projects. The existing studies have considered only the economic effect of trade policy uncertainty. When it comes to firms some research explored the influence of trade policy ambiguity on a firm's cash holding (Phan et al, 2019) and firm input choice (Handley et al, 2020) but they have not concentrated on how trade policy insecurity influences the firm's risk-taking. This study will be considered significant because it makes a positive contribution to a reported literature gap in Pakistan by constructing the first trade policy uncertainty index (TPU) of Pakistan. This study will also be important in a practical way to deal with the cost linked with policy uncertainty. So companies need to modify their capital composition and manage their leverage ratio under the appropriate level in the period of high ambiguity.

1.2 Research Question

i. Does the trade policies of Pakistan are uncertain?

ii. What is the effect of trade policy uncertainty (TPU) on firm risk-taking (FRT)?

iii. Does the influence of firm debt ratio strengthen the effect of trade policy uncertainty on firm risk-taking?

iv. How does the influence of ownership concentration of firms reinforce the effect of trade policy uncertainty and firm risk-taking?

1.4 Objective of Research

Following the discussion above, the present study is intended to explore the following objectives:

➢ To measure the trade policy uncertainty index of Pakistan
➢ To investigate the relationship between trade policy uncertainty and firm risk taking.
➢ To highlight that debt ratio, strengthen the impact of trade policy uncertainty on firm risk taking.
➢ To examine the impact of firm ownership concentration on the relationship between trade policy uncertainty and firm risk taking.

1.5 Significance of Research

This study is important as it contributes positively to a related literature gap in Pakistan by constructing standard measures for trade policy uncertainty in Pakistan. This uncertainty index is helpful for the Ministry of Commerce while making new trade policies they can look at the effect of previous policy uncertainties and even they can do the cost and benefit analyses of making uncertain changes in the trade policies. The finding of this study is important for policymakers as well as for firms to navigate future trade policy uncertainties This study is significant because it provides important evidence for policymakers about the connection between TPU and FRT in Pakistan. Therefore, when making macroeconomic policies, the policy expert and government will empirically gauge the potential effect of TPU on the capital market and companies. So they will reduce trade policy uncertainty to establish a good and stable business climate. In this way, operational risk and financial constraints faced by firms will be reduced.

Furthermore, in the procedure of corporate equity planning and organizational structure, firms may also take into consideration diffusing their capital to minimize the effect of TPU on FRT. From a business perspective, this study is important as it gives insight into the link between TPU and FRT. So businesses will make more informed decisions about future investment plans taking into consideration the risk of trade policy attached to it and avoiding losses. Furthermore, this study has used a newly created export radar as a tool to measure TPU which is exclusive in its perception. This study is important in a practical way to deal with the loss related to policy ambiguity, so businesses will modify their capital composition and manage their leverage ratio within the sensible level.

1.6 Limitations/ Future direction

Addressing limitations transparently and planning for future research directions is essential for advancing knowledge and contributing to the academic or practical understanding of the subject. This study has some limitations.

i) As this study focuses only on the exporting listed firm of PSX. The reason for choosing exporting firms is that export contribute almost 21.3 % to the annual GDP growth. However the import is important is well for the growth of the economy. The impact of trade policy uncertainty on importing listed firms should also be analyzed in the future. The analyses for the importing firms of PSX is also followed the same methodology and econometrics techniques.

ii) The second direction for the future studies is that . As due to data constraints, the study chooses the PSX-listed firms for its analyses due to this major exporting firm of Pakistan is left behind. There should be study which focuses on all the exporting firms including the SECP registered firm. For this study there should be first any firm level survey should be conducted to collect the data of firm listed at SECP.

These limitations in this study will help the research to drive future directions from this study.

1.7 Organization of the Study

This study is organized into 9 chapters which are again subdivided into further headings. Chapter 1 of this study presents the introduction of the research. Chapter 2 highlights the theoretical literature and background of the study. Chapter 3 discuss the empirical literature by considering all objective of the research. Chapter 4 highlights the brief of Pakistan's trading economy. Chapter 5 discusses the methodology of the study and variable description which is followed by Chapter 6 with the final finding and result of the study. Chapter 7 discusses the existing trade policy reviews. Chapter 8 includes the qualitative research which involve in interview of relevant experts. Finally, chapter 9 concludes the main findings of the research with policy recommendations.

CHAPTER 2

THEORETICAL BACKGROUND

2.1 Preamble

This chapter has briefly discussed the theoretical framework for supporting evidence concerning the effect of trade-policy uncertainty (TPU) on firm risk-taking (FRT). If you look at the existing literature theories that provide the basis for this relationship are "Financial Constraint Theory and Risk Aversion Theory". However there is third theory which provide the background for trade policy uncertainty is "Theory of Rational Expectation".

2.2 Theoretical background

Financial constraint concept discusses the financial constraint faced by firms in doing investment. It states the influence of financial tension on a corporation's investment. Bortolon, Almeida and Bortolon (2015) investigated that financing is a key factor in determining investment decisions. This outcome is consistent with financial constraint theory which suggests that the "investment preferences of any enterprise are closely associated with its funding". During the period of elevated TPU firms avoid the risk, and chose stiffer credit policies. As there the anticipation of future cash flow is running low as a result creditworthiness of the corporation will decline (Bradley, Pantzalis, & Yuan, 2016).

 As we know the strategy of a corporation high risk is going to yield a high return. Fan (2020) discover that in high policy ambiguity, corporations that are suffering low credit scores will lower their future funding. So inadequate funding and high financing costs oblige firms to forego risky projects. However risky projects generate more returns but they require high R & D expenditure as well as a large capital structure. Huang et al (2015) examined the impact of the country's political instability risk on its payout policy. He pointed out that high political crises in nations increase their external financing cost using panel data of 35 countries from 1990 to 2008. They further investigate that existing dividend payers are more inclined to terminate it when they are expecting policy uncertainty in the near future and new dividend payers are less inclined to initiate the dividend payment during a period of high ambiguity. This influence of policy

uncertainty and political instability on the payout ratio of the country is firmer for multinational corporations.

This influence of policy uncertainty and political instability on the payout ratio of the country is firmer for multinational corporations.

The second theory related to over-research is the risk aversion theory. Risk aversion theory asserts that investors who prefer to hold capital to avoid the associated risk with it are risk averse. Such financiers have a high tendency to avoid risk. According to risk aversion theory, Bloom, Bond, and Reenen (2007) emphasized that the increase in the TPU of the country induces more uncertainty about future cash flow, future profit, and uncertainty about the future financial investment of the firm. The firm may hold more liquid assets.

In high TPU the firm business goals and plans can't be achieved, so they choose to deviate from their original plans (Polemis & Soursou, 2020) . This deviation from the business objective results from the fluctuation in the firm operation resulting in a loss in the operating performance (Dichev & Tang, 2009). Furthermore, Gulen and Ion (2016) referred to trade policy uncertainty as a systematic risk faced by any firm which is unavoidable by any firm. Simply increase in trade policy uncertainty make enterprises more pessimist about future investment so they choose risk-averse behavior and become more conservative in choosing future investment projects.

2.2.1 Financial Constraint Theory

Financial constraint theory refers that financing decisions based on funding. When there are uncertainty firm's cost of investments will be increased such as operating cost, sunk cost and cost of market search. As a result firms retained earnings will be uncertain so its investment plans may be delayed. The economic effect of this delay results in a reduction in production. However, the demand is high, and supply is low which results in uncertainty in economic activity and effected the overall GDP.
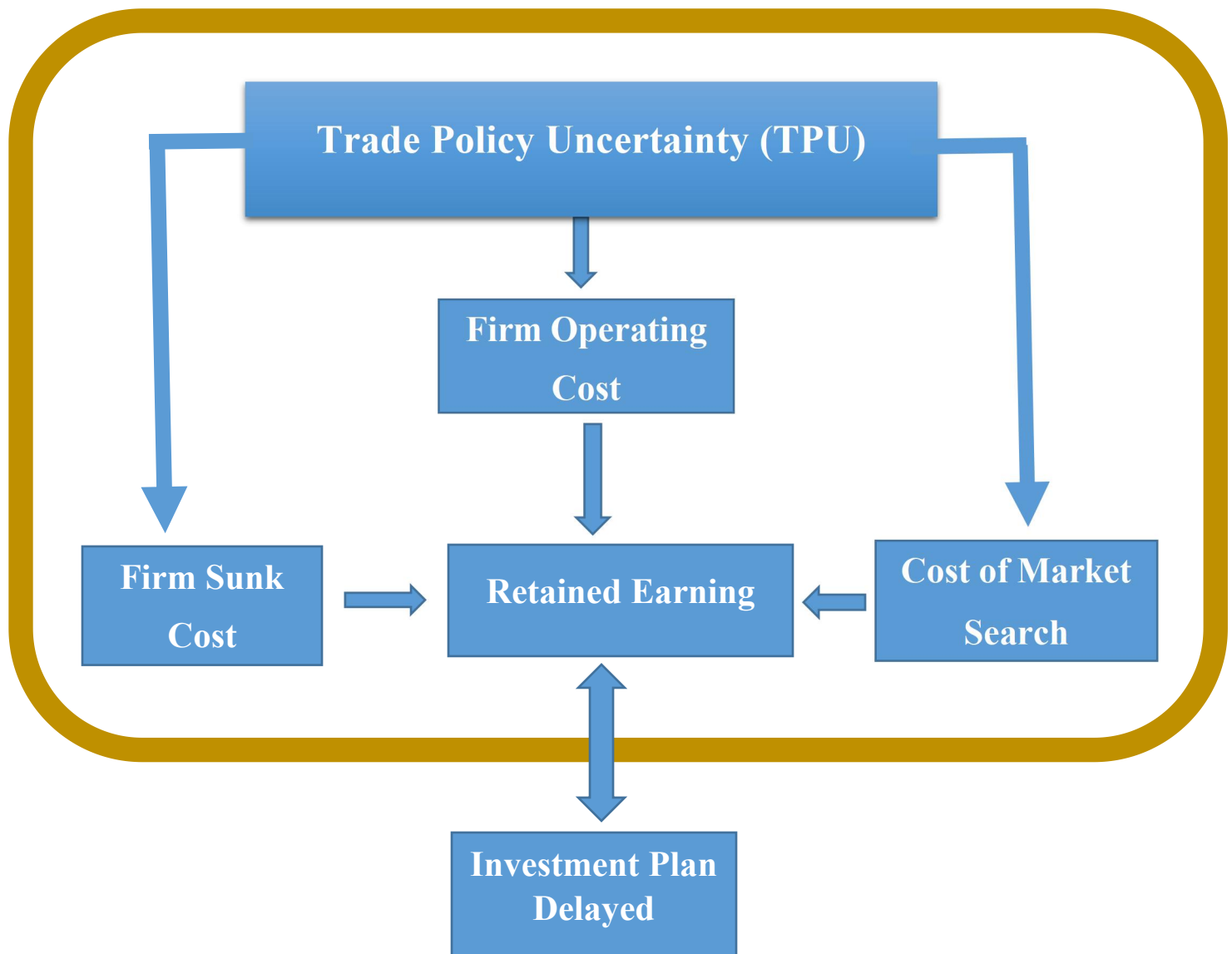
Figure2. 1: Financial Constraints Theory Frameworks

Source: Author

Trade policy uncertainty can make it harder for international trade firms to get the money they need. When trade policies are uncertain, these firms may be unsure about making big investments or expanding because they don't know what the business environment will be like. This uncertainty makes the risks seem higher, which makes banks and other lenders more careful about giving them money. As a result, these firms may have a harder time getting the funding they need, which makes it difficult for them to grow and take advantage of new opportunities. This can lead to more financial problems for these firms. This concept is related to financial constraint theory which suggests that the firm financing decision is based on funding. So high TPU will increase the constraint in getting external funding so investment plan will be delayed.

2.2.2 Risk Aversion Theory

In periods of uncertainty, the risk-averse firm prefers to hold capital instead of investment spending to avoid the risk associated with uncertain intervention in trade policies.
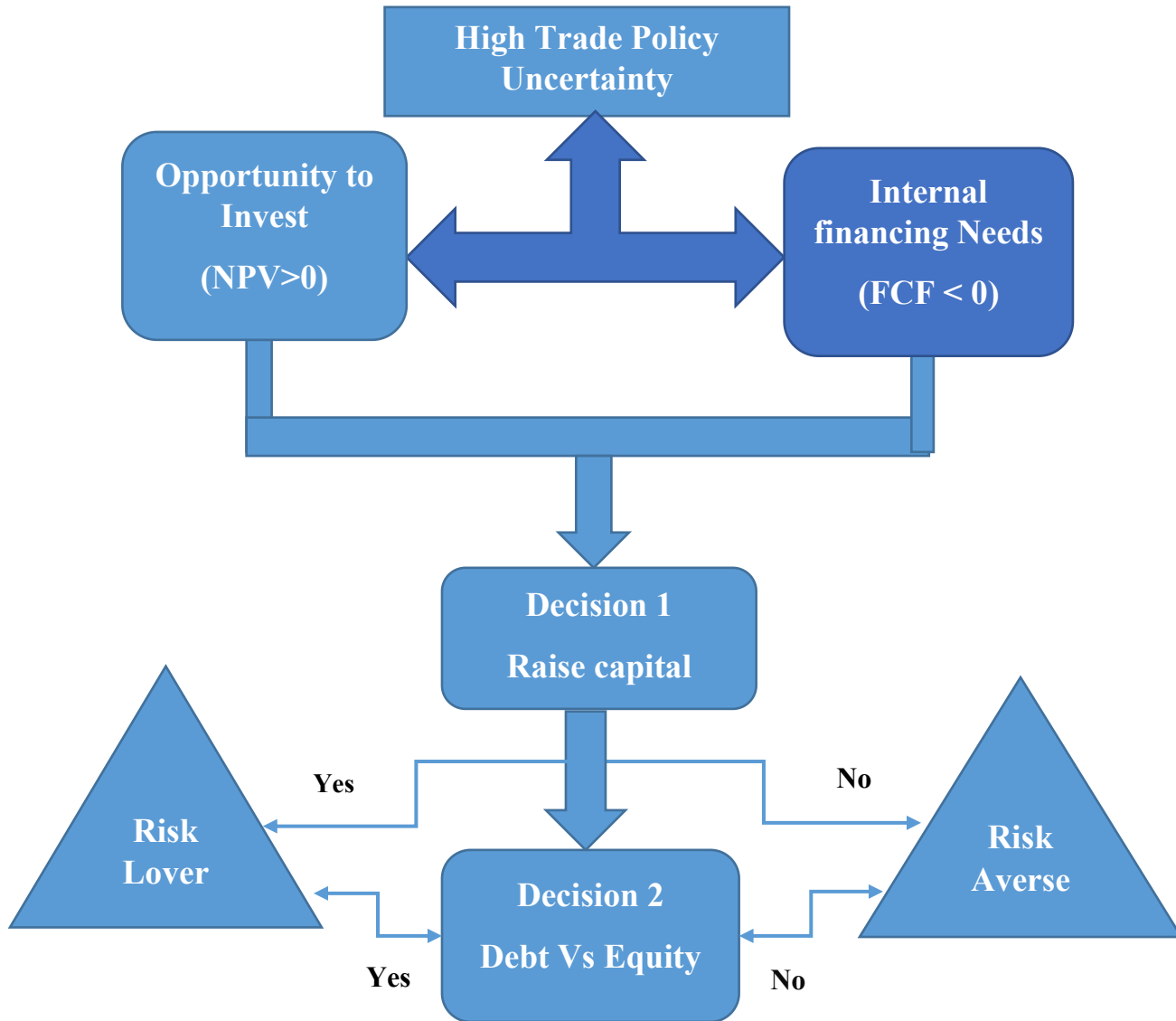
Figure2. 2: Risk Aversion Theory Frameworks

Source: Author

When there is TPU and firm want to make investment firm look at two things first its NPV is greater than zero and other its FCF. To make the investment firm have two choices either to raise capital on own or take debt for investment. The risk lover will said yes to investment but the risk averse firm will not make investment in the period of high TPU. The interplay between trade policy uncertainty and risk aversion can have a significant impact on firm risk-taking behavior. When faced with uncertain trade policies, risk-averse firms may become even more cautious in their approach to investments and expansion. They may prioritize preserving their current market position and financial stability rather than taking bold risks. This risk-averse behavior can hinder their ability to capitalize on potential growth opportunities arising from changes in trade policies.

2.2.3 Theory of Rational Expectation
This idea provides the theoretical foundation for the trade policy uncertainty index. (Muth, 1961) an American economist, pioneered the concept of rational expectations. However, it was popularized in the 1970s by economists Robert Lucas and T. Sargent and was widely utilized in microeconomics as part of the new classical revolution.

The theory makes the following assumptions:

◆ With rational expectations, people always learn from their mistakes.

◆ Forecasts are unbiased, and people make judgement using all available information and economic theory.

◆ People comprehend how the economy works and how government policies affect macroeconomic indicators like as the price level, unemployment rate, and aggregate output.

 Rational expectations is an economic theory that claims that individuals make decisions based on the best available market information and learn from prior trends. People will be mistaken occasionally, but they will be correct on average, according to rational expectations. According to the theory of rational expectations, economic agents, including businesses and investors engaged in international trade, will form their expectations about future trade policies in a rational and efficient manner. They will use all available information, including government announcements, political events, and economic data, to predict how trade policies may change in the future. When trade policy uncertainty arises due to potential changes in tariffs, trade

agreements, or trade regulations, economic agents with rational expectations will adjust their behavior accordingly. For example firm's may delay investment decisions or modify their supply chain strategies in response to uncertain trade policies. Investors may adjust their portfolio allocations based on their expectations of how trade policy changes will affect different industries and sectors.

2.3 Conclusion

Financial constraint theory and Risk aversion theory and theory of rational expectation are the most relevant theories for this research and provide the background of effect on trade policy uncertainty on firm risk-taking. These three theories are are interconnected and collectively shape a firm's behavior and decision-making in the complex landscape of international trade and investment. The interplay between these concepts highlights the importance of considering multiple factors when analyzing and understanding firm strategies in uncertain trade enviro

CHAPTER 3

LITERATURE REVIEW

3.1 Preamble

This chapter includes a review of the literature on the relationship between TPU and FRT. The literature comprises five parts. The first part is about the economic effect of trade policy uncertainty. The second part discusses the micro effect of TPU from the perspective of firm risk-taking. The third and fourth part discusses the existing literature on firm-specific variable which is debt ratio and ownership concentration. The fifth part discusses the literature gap.

Economic effect of Trade policy uncertainty (TPU)

<u>**Macro Perspective**</u>
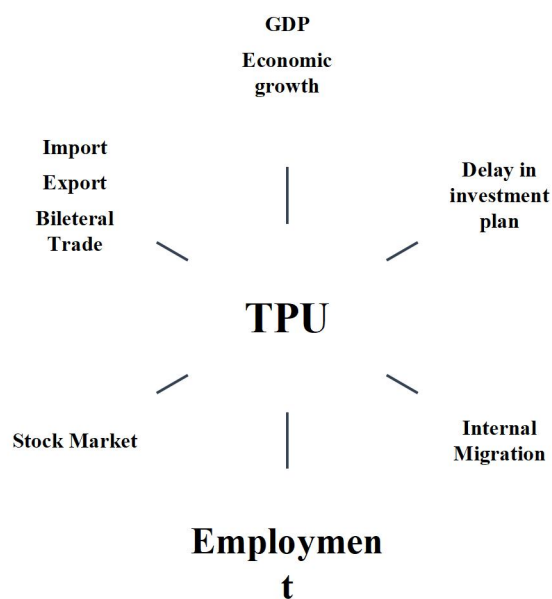
Figure3. 1: Macro Perspective of TPU existing literature

Source: Author

Micro Perspective
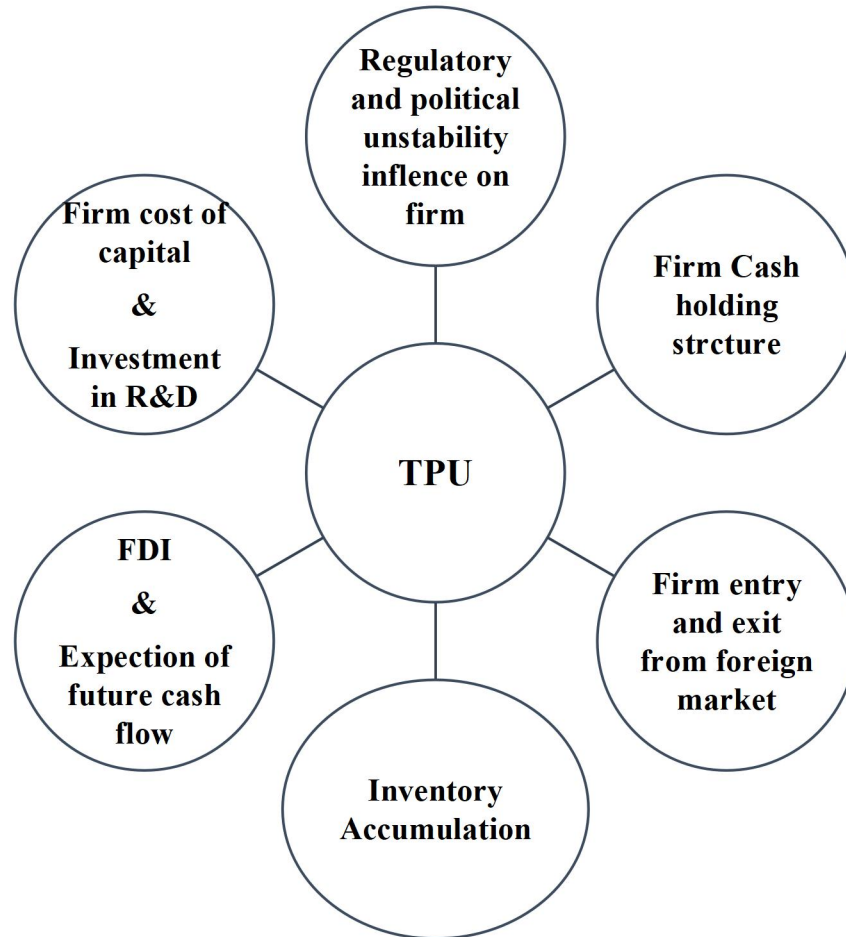
Figure3. 2: Micro Perspective of TPU existing literature

Source: Author

3.2 Trade Policy Uncertainty

The prevailing literature focuses mainly on the economic effect of TPU on the macro aspect of the economy like GDP, investment, Import, Export, etc. The figure 3.1 show the existing literature on the economic effect of TPU from micro perspective.

A study by Sudsawasd and Moore (2006) investigates that trade policy uncertainty hurts investment. They used data of 100 countries from 1960 to 2000 and used extreme bounds analyses(EBA). They find that share of investment in GDP and country policy uncertainty are negatively related to each other. Similarly, Kang, Lee, and Rattic (2014) explore the economic effect of ambiguity in the policies of countries on firms' future investment from 1985 to 2010 using error correction model (ECM). They also analyze the effect of the component of policy ambiguity on investment. The result reveals that the influence of news shocks has stronger and adverse on a firm future investment. This adverse effect of economic policy uncertainty is much more stagnant in a period of recession. It means it is also associated with the firm business cycle. However, negative impact of policy uncertainty is weaker for a larger firm. It means the investment plan of the larger firm is not much affected by policy uncertainties. These studies highlighted the effect of TPU on investment opportunities for economy.

Along with the investment other economic activities highlighted in figure 3.1 that are also affected by TPU such as their employment level and the migration ratio of the country. From a macroeconomic perspective, Pierce and Schott (2016) found that a reduction in the tariff potential of the US on China products reduced the employment rate of the US manufacturing industry. Facchini, Liu, and Mayda (2019) examine the effect of TPU on the country's internal migration rate. The higher the TPU higher will be the country's internal migration. They further investigated that these migrants also found jobs in the place of migration. These studies highlight the friction in economic activities. However, TPU also created tension in the financial market and reduce the supply of capital. Bianconi, Esposito and Sammon (2021) examine the impact of TPU on a country's stock market and pointed out that greater TPU leads to a decrease in share prices. The more uncertainty in the policy the more volatility in the returns. This effect of TPU also increase the risk for investor.

Trade policy uncertainty (TPU) not just impacts its resident country but these ambiguities also have an impact on their partner countries' economies. Ongan and Gocer (2021) look into the effects of TPU on the bilateral trade balances of the US and Japan using news built trade policy uncertainty index and ARDL methodology. The model-level anecdotal results reveal that although the rises in trade policy insecurities in Japan enhance the US bilateral trade balance declines worsen it. The increase in the TPU increase the risk of rise in trade balance of country.

The existing literature also highlighted the different method to measure of TPU. The news-based ambiguity index is the first place set up by Baker, Bloom and Davis (2016). He created index of economic policy uncertainty which takes into account all economic policy uncertainty issues compositely into one index. This index scan and counts the frequency of specific words which might reflect the issue of economic policy ambiguity. Later in Pakistan Ali (2020) develop an economic policy uncertainty (EPU) index over the Pakistan following Baker, Bloom and Davis (2016) by extracting news articles from the website. The recently same method has been used by many researchers to construct uncertainty index for different countries such as Chile (Cerda, Silva, & Valente, 2016), Japan (Arbatli, Davis, & Ito, 2022), China (Huang & Luk, 2019), for Spain (Ghirelli & Perez, 2019), for Columbia (Silva, 2018) and, for Ireland (Zalla, 2017). These all countries use the same procedure to develop the index. However later on Hong (2021) revisit this trade policy uncertainty index constructed by Baker, Bloom and Davis (2016) by extending and altering the set of search phrases, and limiting the attention to the national press. The limitation of the text search method is that we can't develop the index for a longer period because of the limited availability of previous newspapers.

So to avoid this limitation Handley (2014) used tariff water as a measure of TPU and employed PPML to estimate the nexus between TPU and export performance in the case of Australia. The study concluded that high TPU discourages exports. Further, this study also disaggregated TPU in its several components. This method of measuring TPU only incorporates one policy in its measurement.

Caldara and Laccoviello (2019) used two measures of trade policy uncertainty text-search queries and firms earning calls. The study used DSGE modeling to analyze the datasets. The finding reveals that TPU in the U.S. hurts the U.S. GDP and the GDP of both developed and

emerging economies. In the same year, Imbruno (2019) measured TPU as difference bound rate of country and applied tariff of country and explored that TPU of China enables access to a wider range of foreign goods, that are also linked to higher-quality. Simultaneously, tariff binding is leading the more Chinese manufacturers and trade intermediaries to begin importing, thus enabling a greater number of businesses and consumers to enjoy the potential benefits from imports. Feng and Li (2017) also used the difference between the bond rate of country and the applied tariff rate of country as a proxy for TPU.

Trade policy uncertainty also influences the R&D investment of the firms. Kun, Hu and Liu (2022) highlighted that when economic policy uncertainty is high R & D investment is high, and when monetary policy uncertainty is high R&D investment will be lower. Uncertainty in trade policies also influences the firms' export behaviors. Zhou and Wen (2022) pointed out that an increase in TPU inhibits significantly the intensive and extensive margin of firms' export level. However, more exporting firms don't need to be more profitable and grow more than their non-exporting competitors (Grazzi, 2011).

3.3 Trade Policy Uncertainty and Firm Risk Taking

The figure 3.2 highlighted the investigation of the micro perspective of the effects of trade policy uncertainty on firm-level approaches. The previous study on factors affecting the firm's risk-taking involves the manager's experiences and the firm internal management etc. However, there are only a few studies that relate policy uncertainty to the behavior of firm risk-taking.

Firm risk-taking refers to the trend of enterprises where they are willing to bear high risk to get high returns (Liu & Mauer, 2011). So due to this behavior of firms, the enterprises which are sensitive to change in policy are more likely to contribute to the political campaign than the firm which are policy-natural (Akey & Lewellen, 2016). They examines the links between policy uncertainty, political capital, and firm risk-taking and performance using a sample of close Congressional elections in the United States from 1998 to 2010. As profits or losses of the political party have a huge impact on the firm which is policy sensitive. That's why they contribute a huge amount to the winning of their associated political party.

Bonaime, Gulen and Ion (2018) investigated the impact of policy ambiguity on mergers and acquisition performance using the VAR from 1985 to 2014. The finding reveals that at the firm's level country regulatory and political instability have an inverse relation with M & A performance. One standard deviation rises in the policy ambiguity results in a 6.6% reduction in aggregate M & A deal worth and a 3.9% drop in the number of deals over the next 12 months. To upgrade the high-risk high-profit trade portfolio of investors, rising country TPU will convert the favorite investment plans into risky assets of firms (Kyriazis, 2021) . These risk will ultimately decrease the investor willingness to take risk.

As the policy uncertainties lead to delays in the investment plan of the firm so firms tend to hold more cash in high TPU. Trade policy uncertainty and firm cash holding strategies are positively related to each other due to the precautionary motives of firms (Phan, Nguyen, Nguyen, & Hegde, 2019) . They further highlighted that the firm dependence on government spending reinforces the positive relationship between TPU and firm cash holding. Moreover, the firm cash holding structure also depends on the business cycle. Uncertainty in trade policy also influences the firm entry into a foreign market. Crowley, Meng and Song (2018) investigated the Chinese firm's entry and exit in case of high TPU from 2000 to 2009. They found that in high TPU Chinese firms leave the foreign market and new firms from China are less likely to enter the market. They further estimated that in case of no TPU Chinese firm entry into the market increase by 2%.

Trade policy uncertainty also influences the firm exporting performance. The reduction in TPU increases foreign export and reduces the export obstacles of firms. As Handley (2014) highlighted that WTO innovation promotes export performance and decreases uncertainty in Australian firms. Company inventory accumulation nature also changes with increasing TPU. Darby, Ketchen and Williams (2020) explored that high TPU firms prefer to hold more inventory as support against the risk associated with policy uncertainty. The reduction in trade policy ambiguity also influences FDI. Sun and Zhou (2020) used the China-Asia free trade area from 2001 to 2013 to investigated that when regional TPU reduces in China by implementing a free-trade strategy in the country their FDI grows using difference in difference approach. So the reduction of TPU has a positive impact on the outward FDI of Chinese firms.

The policy uncertainty in the country also affects the baking and corporation of the state. As Corporations and banking, sector will lower their borrowing and spending in periods of recession and high uncertainty. Rodrik (1991) investigated that firms in developing economies usually diminish their investments due to insecurity in policies. Similarly, Gulen and Ion (2016) investigated the capital investment of corporations reduced by 32% in the period of high recession and EPU. They further examine that firm dependence on government spending reinforces this adverse effect of EPU. Alternatively, a higher TPU will increase the firm cost of capital as a result firm will lower its investment and production (Jeong, 2002). This means policy ambiguity even affects the corporation's activity.

Colombo (2013) pointed out that policy uncertainty not only influences the performance of its firm but also the partner country firms. Increase in EPU in the US spillover its effect on Europe. The increase in EPU in the US reduces the production of Europe. So corporations behave conservatively to avoid risk and delay investment plans in high EPU.

3.4 The Interaction Effect of Debt Ratio

The debt ratio of a firm referred to the total debt that the firm used to finance its assets. An increase in the debt ratio of a profitable firm may increase its profitability but an excessive rise in the debt ratio beyond the limit may increase the financial risk for the firm. Modigliani and Miller in 1958 highlighted that firm leverage ratio is also a determinant of firm risk. Auila and Siregar (2018) show empirical evidence of using the leverage ratio to show the company's risk. In addition, they highlighted that firm debt maturity and efficiency of investment are inversely related. However, the leverage ratio of the firm does not influence firm investment efficiency in case of underinvestment.

During high trade policy ambiguity, a high leverage ratio firm makes the investment plans more careful to avoid risk. So by carefully making the investment decision, the firm is lowering the risk level of the firm. Dang (2011) investigated that a firm with a low debt ratio involves in short-term financing however a firm with a high debt ratio uses long-term financing. A firm with high debt is uncertain about its future investment decision because of the high risk associated with it. So to avoid this uncertainty and risk firm defer their current investment plans and wait for future profit information (Harjoto & Laksmana, 2016).

In theory though tax policy can have a significant impact on business financial decisions. (Miller & Modigilani, 1963) pointed out that if corporations can subtract debt interest before arriving at taxable profits, the balance is driven between the after-tax costs of equity and debt, creating an exception to their famous irrelevancy theorem. (Garaham, 2003) evaluated the research and concluded that, in general, taxes have an impact on business financial decisions, but the magnitude of the impact is "not large. (Gordon, 2001) discovered that (US) corporate tax increases have a significant influence on leverage, particularly for the largest and smallest enterprises. Other studies have looked at taxation as just one component of a larger model of business financial decisions.

3.5 The Interaction Effect of Equity Concentration

The firm ownership structure is also a key factor in corporate governance. Equity concentration examines the structure of firm share ownership whether listed corporation shares are narrow are widely held. The literature has extensively studied the influencing mechanism between ownership concentration and firm performance. On one hand the high equity concentrated firm has a positive impact on corporation value because the firm share price is also affected by large shareholders (Shleifer & Vishny, 1986). However, on the other side, highly concentrated ownership firms have a negative effect on firm value and performance because of minority shareholder risk and their expropriation effect (Shleifer & Vishny, 1997). The one reason behind this changing relation between the ownership concentration and business performance is the external environment.

As the financial crises also influence the relationship between ownership concentration and firm value. Alimehmeti and Paletta (2012) investigated the relationship between firm performance and ownership structure from 2006- 2009. They included the period of financial crises in their estimation to see the difference in the relationship before and during the financial crises. The result reveals that ownership concentration has a positive impact on firm performance except in 2008. This change in the relationship means that financial crises reinforce the minority shareholder risk and its expropriation effects.

Teodora and Paligorova (2010) investigated that substantial ownership of shareholders in a single firm may lead to conservative investment decisions among shareholders because of the

high risk associated with it. As shareholders invested in a single firm there, risk exposure will be high. The ownership of family shareholders continually increases unlike mutual funds, industrial companies, banks, etc, so they avoid corporate risk. In addition, they investigated that high legal shareholder rights protection increases the firm's risk-taking. The stronger creditor rights protection lowers the firm's risk-taking.

3.6 Closing Remarks

The figure 3.1 gives a snapshot of existing studies that analyze the impact of TPU on economic activities such as Investment, GDP, export, etc. The existing literature highlighted that TPU have overall negative effect on all the macro level indicators of economy. Second figure 3.2 highlighted the micro effect of TPU on firm. From the micro perspective, they studied only the empirical correlation between FRT and company internal administration but comparatively few precise research on the effect of TPU on FRT. Third the existing studies have linked only the firm capital structure and input choice behaviors etc with policy uncertainty. However, there are rigorous studies on how firm-specific variables such as debt ratio and ownership concentration strengthen this link of TPU on firm risk.

3.7 Literature gap

From the above discussion, this study is different in many ways. First, this study covers the literature gap by creating a trade policy uncertainty index for Pakistan. As previously there is only economic policy uncertainty index developed in Pakistan. Second this study provides an empirical indication of the link between trade policy uncertainty (TPU) and firm risk and explores the manipulating structure between them. The increase in the TPU strengthens the ambiguity of the firm potential profit and enhances the ambiguity of future cash flows. Tran (2019) investigated that EPU is negatively related to corporate risk-taking. Third, this study uses the newly established export radar-based index as a measure of trade policy uncertainty. Fourth, this research demonstrates that the effect of TPU on FRT is more evident in a firm with a larger debt ratio and equity concentration. The existing studies analyze the economic effect of trade policy uncertainty and from a company risk perspective, they studied only the empirical correlation between FRT and company internal administration but there is relatively little precise

research on the effect of TPU on FRT. Below I have given a short snapshot of existing literature on trade policy ambiguity and corporation risk from macro and micro perspectives.

CHAPTER 4

PAKISTAN ECONOMY

4.1 Preamble

This chapter will provide a snapshot of the import-export trend of Pakistan. First, the export-import trend over the past years is examined then trade among different groups is discussed. At last concerning the objective of this study firms' contribution to exports specifically the listed exporting firm of PSX is addressed.

4.2 Trade in Pakistan

Trade plays an important role in the country's productivity. Trade opens the door for the capital and labor to move freely and to shift in the industry in which they will employ more efficiently. Trade also contributes to the country's economy by providing new markets for business, increasing resilience, and urging growth. According to the World Bank report growth in the trade of a country is more beneficial for low-income economies. It enhances productivity and competition and helps to keep the prices lower in the country. For example, if a country only sells winter cloth in its own country then it will likely experience demand only in winter but if they start trade they may experience demand in summer as well because it would be winter in other countries.

4.2.1 Export-Import of Pakistan

Pakistan has a diverse range of exports, mainly textiles and clothing, leather goods, rice, fruits and vegetables, sports goods, chemicals, and carpets. The targeted export of Pakistan for the year 2022 was US $31.20 billion. After the downfall of Covid-19, Pakistan start stabilizing its economy and industrial activities. In the FY22, Pakistan achieved its targeted export with a total of $31.78 billion. In fact, FY22 encounter a 25.60% growth in export as compared to FY21. This export figure is the highest export level Pakistan has experienced since 1947.

The imports of Pakistan for FY21 were US $ 56.80 billion, however, in FY22, this amount increased to US $80.14 billion. There is almost a 42.1% increase in imports as compared to the previous year. There are multiple reasons for this rise in imports. The main reasons are increase

in global commodity prices, Covid-19 related disruption, and global uplift in the demand due to Covid-19 related recoveries are contributing to this rise in imports.

Figure 4.1 and 4.2 represents the historical trend of Pakistan's export, imports, trade balance, and trade to GDP ratio for the year 2012- 2022.
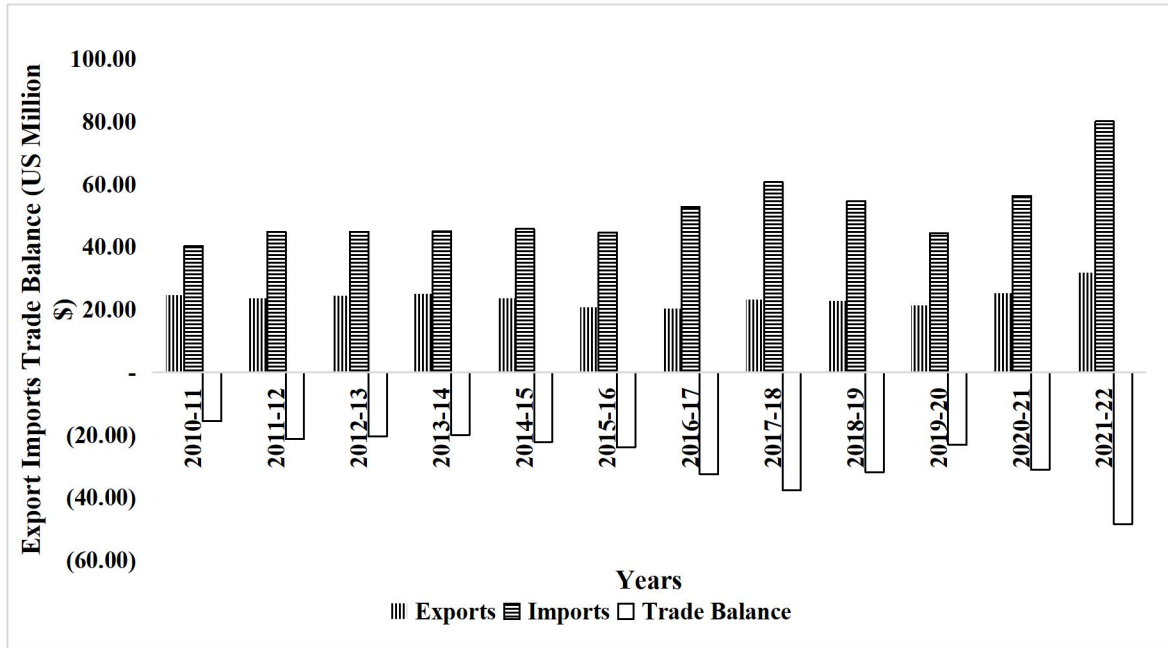
Figure 4. 1: Export, Import and Trade Balance of Pakistan

Source: Pakistan Bureau of Statistics (PBS)
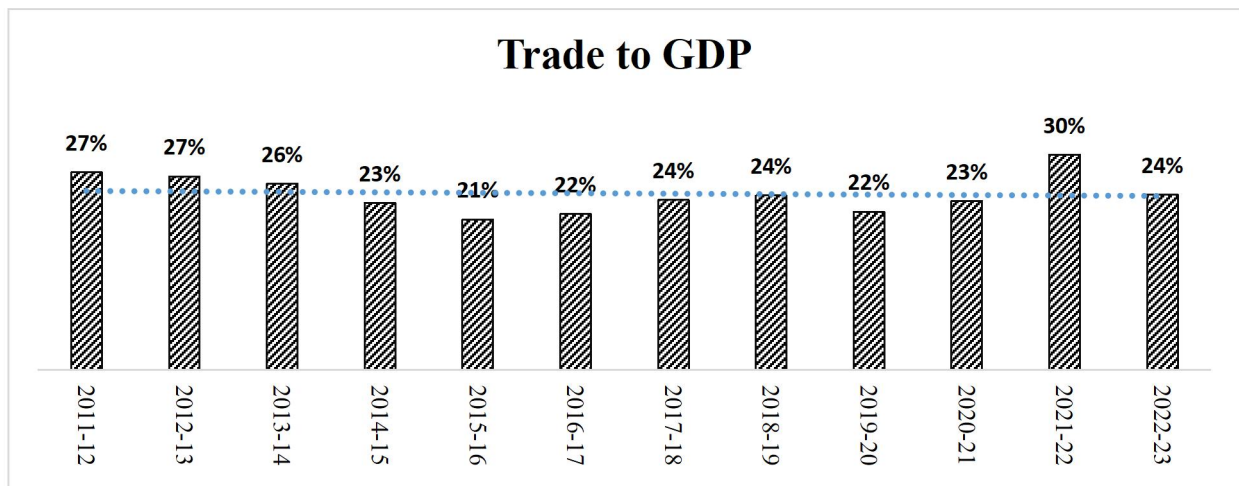
Figure 4. 2: Trade to GDP ratio of Pakistan

Source: Pakistan Bureau of Statistics (PBS)

4.3 Trade by Group

The detail of import and export by a different group of Pakistan in 2022 is given below

4.3.1 Trade by Countries

Here is the breakdown of Pakistan's trade by countries

Export: The export destination countries of Pakistan plays very important role in country economy and trade dynamics. The USA is the top export destination of Pakistan over the few past years. However, the export amount is reduced in 2022 than in 2021 but still most of export goes to USA. The top ten export destination of Pakistan is shown in the figure 4.3.

Export Destinations (USD Million)

USA: 6791, 5239
China: 3095, 2615
UK: 2173, 1943
Netherland: 1657, 1581
Germany: 1747, 1579
Spain: 1264, 1416
UAE: 1368, 1396
Italy: 1129, 1163
Afghanistan: 1070, 968
Bangladesh: 1047, 729

2021-22 2022-23

Figure 4. 3: Export Destination of Pakistan

Source: FBR

Import: The importance of import destination countries for any economy can't be overstated. The top import origin country of Pakistan is China and UAE is at second number. In FY22 Pakistan import from china US $ 20839 million. However, in FY23 the import is reduce by 44% by US $ 11702 million import in FY23.

Figure 4. 4: Import Destination of Pakistan

Source: FBR

4.3.2 Trade by Regions

Trade by regions contributes to economic growth, job creation, and improved living standards for the participating countries. Figure 4.5 and 4.6 shows the export and imports of Pakistan by regions.

Export: Export by regions holds significant importance for countries and regions alike, offering a range of benefits and opportunities.

Figure 4. 5: Export of Pakistan by Regions

Pakistan highest export in FY22 and FY23 is with European Union which is 8871 and 8531 USD million respectively. There is almost 11% change in export over the year. The figure 4.5 shows the top export regions of Pakistan for year 2022 and 2023.

Import: The total imports for the FY 2023 is 54662 USD million. The highest import region of Pakistan is China. In FY23 Pakistan import is 54662 USD million out of which 11702 USD million is from region China. However in FY22 the total import with china was 20839 USD million. There is 44% decrease in the imports from china in FY23 than in FY22.
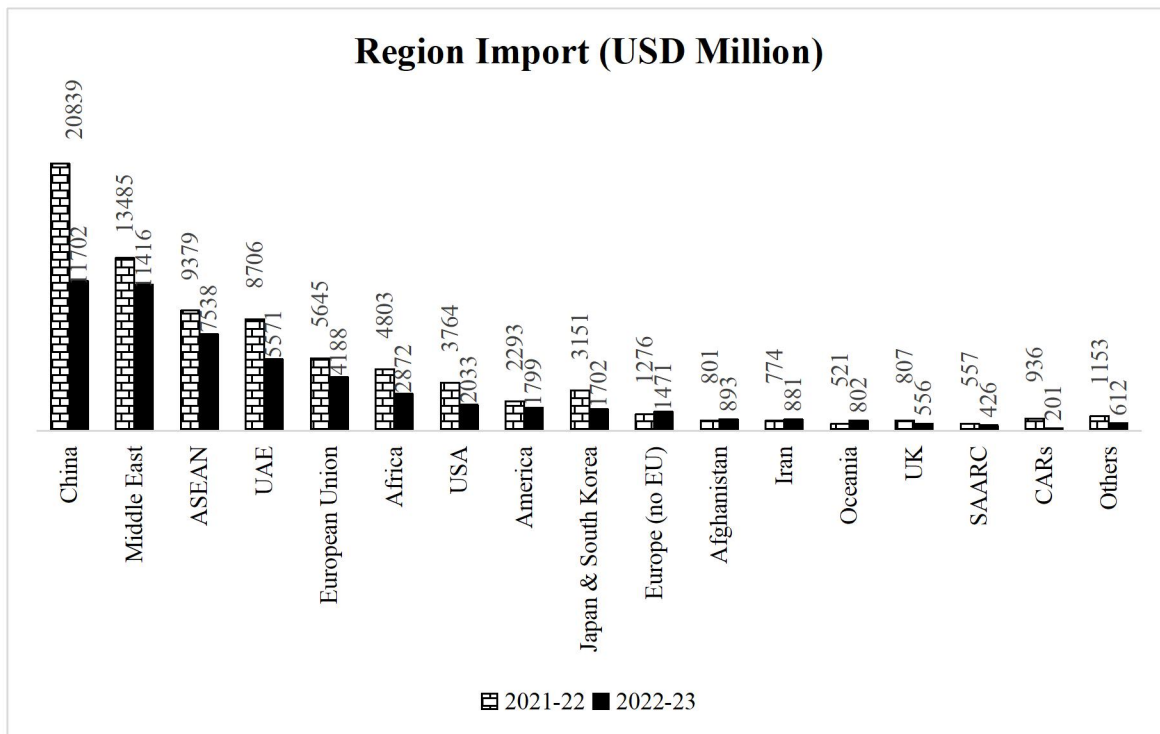
Figure 4. 6: Import of Pakistan by regions

4.3.3 Trade by Products

Pakistan trade is broadly categorized into the Textile Group, Food group, Petroleum group, machinery group, transport group, agriculture group, metal group, surgical group and other

manufacturing groups. However, the major contribution to the trade is from the textile and food group.

Exports: The textile and clothing industry of Pakistan has a major contribution to the economy. Pakistan textile group has major contribution to the exports. During FY2022 Pakistan's export was almost US $31.78 billion. The textile sector export was US $19.33 billion which contributes almost 62% of the overall export of Pakistan for the FY22. The textile sector exports include cotton, wool, and silk fabrics, ready-made garments, knitwear, and home textiles.
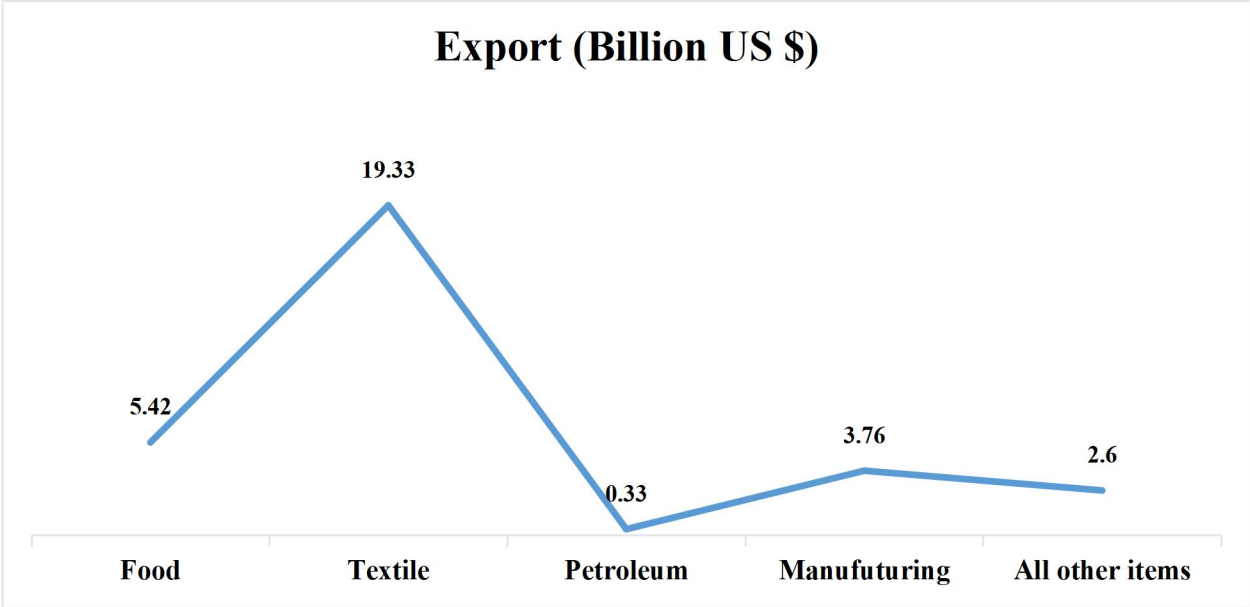
Figure 4. 7: Pakistan Export by Products

Source: Pakistan Bureau of Statistics (PBS)

Imports: Petroleum products have a major contribution to Pakistan's imports. The Petroleum oil had the largest share in energy imports. During the FY22 Pakistan's Imports are amounted US $80.14 billion. The petroleum group import increased by 105.3% and reach around US $ 23.32 billion as compared to import in FY21 that was US$ 11.36 billion.

IMPORT (BILLION US $)

Food: 9.01
Machinery: 10.9
Transport: 4.45
Petroleum: 23.31
Textile: 4.78
Agri & Chemical: 14.08
Metal: 6.52
Miscellolous: 1.19
Other items: 5.8
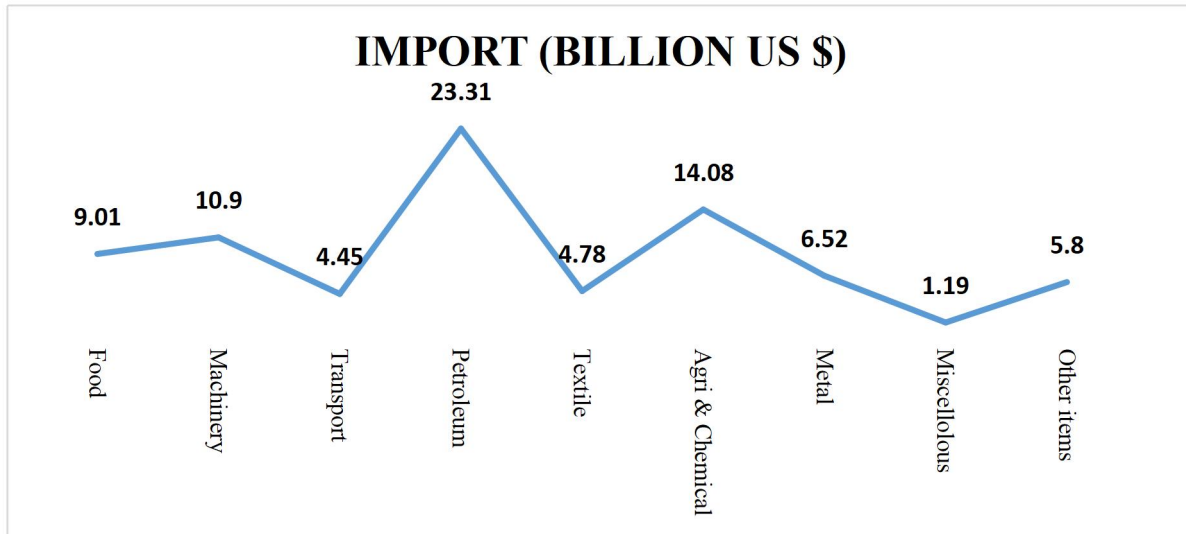
Figure 4. 8: Pakistan Imports by Product

Source: Pakistan Bureau of Statistics (PBS)

4.4 Firm's Contribution to Pakistan's Economy

Firms are important contributors to the economy of Pakistan. They create jobs, generate income, pay taxes, promote innovation and entrepreneurship, and participate to the overall economic growth and development of the country. Firms play a significant role in Pakistan's trade by contributing to both exports and imports, making important investments, and creating employment opportunities for the population. In Pakistan to start a business or firm involve several steps. One of the major steps is to get registered with the Security Exchange Commission of Pakistan (SECP). In order to enhance firm access to capital and visibility in the market firms have another option to get listed on Pakistan Stock Exchange (PSX). A listed firm means its shares are listed on the PSX and are available for trading in the stock market. PSX provides the company with greater visibility and access to capital through the stock market. SECP registration is a regulatory requirement, while PSX listing is an optional choice made by companies to enhance their access to capital and visibility in the market. Here are some key data points which demonstrated the total number of registered firms in Pakistan versus PSX-listed firms.

4.4.1 SECP-registered companies in Pakistan

The Securities and Exchange Commission of Pakistan (SECP) is the regulatory body responsible for regulating and supervising the capital markets, insurance companies, non-banking financial companies, and private pension schemes in Pakistan. It was established in 1997 under the SECP Act, 1997. The SECP's main objective is to protect investors' interests, promote transparency

and efficiency in the financial markets, and facilitate the growth of the financial sector in Pakistan. The SECP also plays a key role in promoting investor education and awareness about investing in securities and other financial products. There is a total of 176329 companies registered under SECP. In August FY2022 about 2362 new companies registered under SECP. As a result, the total capitalization for the month increased to Rs 4.9 billion. In the fiscal year 2022, 33 percent of businesses were registered as single member corporations, 64 percent was registered as a private limited companies, and 3 percent were registered as limited liability partnerships, foreign businesses, not-for-profit organizations, and public unlisted firms. The list of sector-wise registered companies is given below in table 4.1.

Table 4. 1: Total registered companies with SECP

Sectors	No of companies	Sectors	No of Companies
Service sector	2408	Paper and board	218
E-commerce	1038	Cable and electricity good	212
Education	962	Fuel and Energy	211
Food and beverages	937	Broadcasting and telecasting	161
Tourism	790	Steel and Allied	135
Textile	701	wood and wood product	110
Marketing & advertisement	671	Art and Culture	109
Corporate agricultural farming	622	parlor and other related services	79
Engineering	611	Sport and allied	72
Pharmaceutical	534	Leather and tanneries	69
Healthcare	492	Synthetic and rayon	55
Chemical	431	Sports goods	47
Transport	423	finance and banking	45
Mining and quarrying	361	Footwear	38
logging	332	Glass and Ceramics	28
Power generation	326	Insurance	17
Auto and Allied	303	Cement	10
Communication	251	Other sectors	355
Cosmetics and toiletries	225		

For FY22 foreign investment is captured in 672 SECP-registered companies. SECP is also integrated with the federal board of revenue (FBR). As a result of this integration with FBR and other provincial departments 539 employment old-age benefit institutions (EOBI) were registered with FBR, for national tax number (NTN) generation 25042, for Excise and Taxation department 343 companies were registered with FBR.

4.4.2 PSX Listed Companies

The stock market is also known as an equity market. The stock market is a place where share of listed companies is being traded by public. There are almost more than 500 listed companies on PSX. The market capitalization of these listed companies is more than 7 Tn. These companies are distributed among more than 35 sectors or groups of industries. Shares or stocks are also known as equities. According to State Bank of Pakistan (SBP) analyses there are almost 453 non-financial firms listed at PSX out of which only 187 are exporting firms. Most of the firms are from the textile sector. The textile sector is again subdivided into three main sub-sectors including spinning, weaving, and finishing of textile, made up of textile. The number of textile firms listed in PSX and out of which exporting firms of textile sectors along with their subdivision is illustrated below in the figure 4.9 and Figure 4.10 represents the overall number of listed and exporting firms of all sectors.
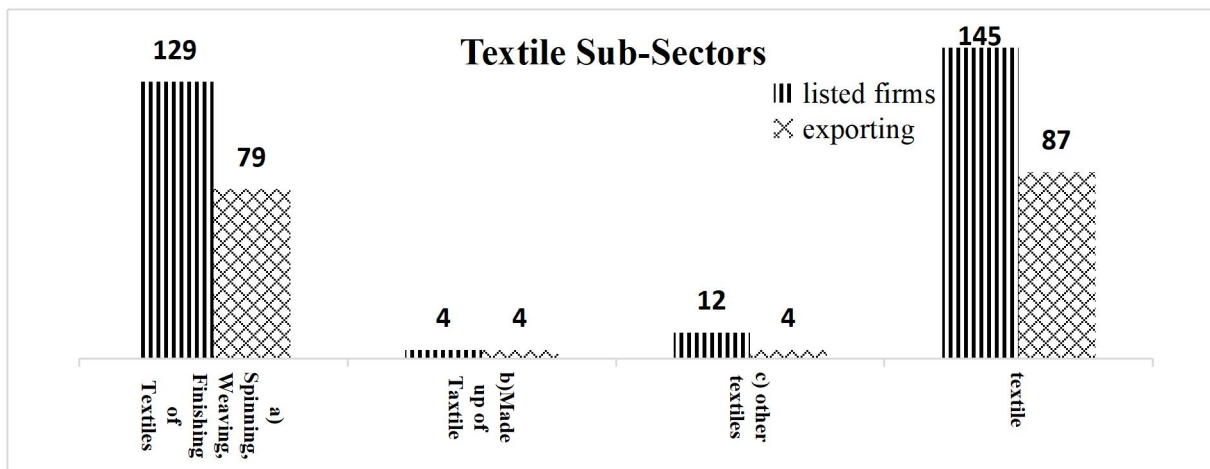
Figure 4. 9: Total Listed and Exporting Textile Firms of PSX

Source: SBP

Figure 4. 10 : Total listed and exporting firms of all sectors

Source: SBP

Here is the export analysis of PSX-listed firms from 2012 to 2021. The PSX-listed firm's exports for FY21 were 869.2 billion rupees which are highest recorded export value during the sample time period.

Figure 4. 11: *Exports of listed firms from 2012 to 2021*

Source: SBP

The total export of the listed firms for the year 2021 was 869.2 billion rupees. Most of the firms are from the textile sector including spinning, weaving, finishing of textile, made up of textiles, and other textile firms. The net export sale of the textile sector for the year 2021 was 607.6 billion rupees which is the highest of all other sectors. The textile sector contributes as 70% of the exports of all listed firms.
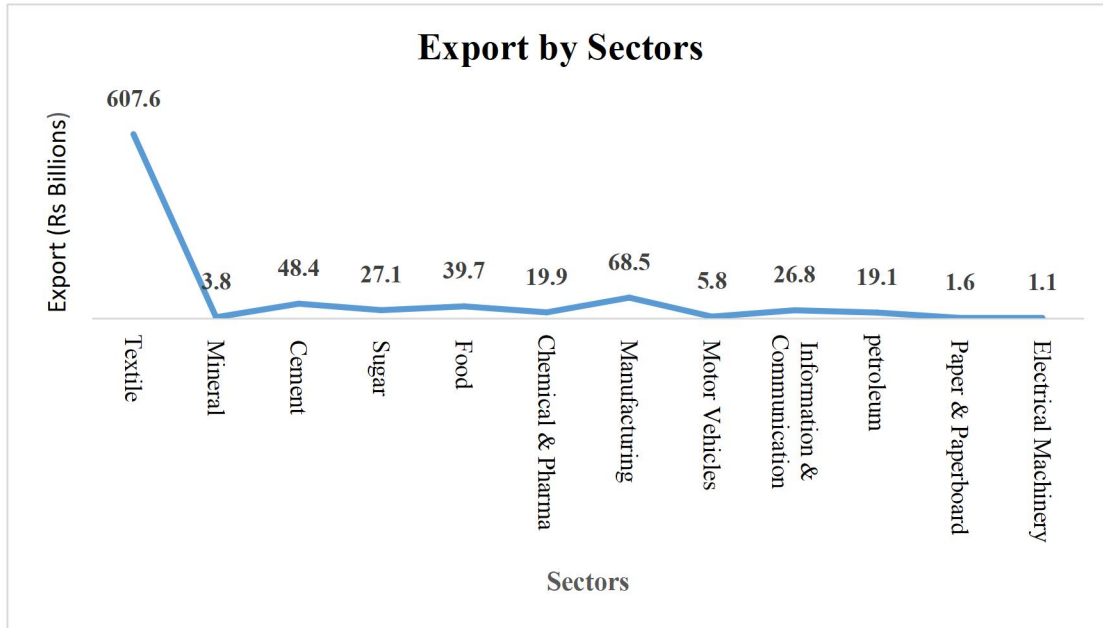
Figure 4. 12: Exports by sectors of all listed firms of PSX for FY21

Source: SBP

4.5 Conclusion

As Pakistan is a developing country so its economy is highly dependent on trade. The conclusion drawn from all the above analyses shows that export of Pakistan is increasing over the year. However, the trade balance is also increasing this is due to an increase in imports. The top export product of Pakistan is textile. Pakistan receive revenue from the export of textile which was US $19.33 billion in FY22. The top import product is petroleum. Pakistan spends huge money about US $ 23.31 billion on imports of petroleum. The firms also contribute a lot to the Pakistan trade. There a total 176329 firm registered under SECP but out of which only 500 listed at PSX, out of which 187 are exporting firms. The overall export for the FY21 was US $ 25.30 billion but export of listed firm is only 869.2 billion rupees. These analyses highlighted that most of the firm hesitate to get listed at PSX. However their contribution to overall trade is significant.

CHAPTER 5

RESEARCH METHODOLOGY

5.1 Preamble

This chapter highlights the research methodology used for this study. The first step is to highlights the strategy of research. The second step is to select the sample. In the next step the main hypothesis of the study is highlighted. which is followed by model selection criteria. The description of variable is provided with main dependent variable is TPU and independent is FRT debt ratio and ownership concentration. The general to specific model is chosen for the study and at the last there is short description of different econometrics techniques used in the study.

5.2 Research Strategy

In this study, the mixed methodology is applied. Mixed research methodology involves both quantitative methods and qualitative methods. It helps us to find the full picture to achieve the aims of the study. As this research will rely mostly upon secondary data. However, the interviews are conducted before and after the estimation from the relevant experts to discuss the procedure and findings of the study. In this way, the reliability of the research will be tested. Therefore, it is a mixed-method approach.

5.3 Research Design

The objective of this research is to build a measure for trade policy uncertainty and explore the link between trade policy uncertainty and firm risk behavior. This implies that this research is a causal study as in causal research design, the effect and causes relationship is being tested between two variables. In causal research, variability in dependent variable caused changes in the independent variable. As this study is investigating the influencing mechanism between TPU and firm risk and how TPU affects firm risk-taking.

5.4 Sample Selection

This study initially takes information from all the listed firms of PSX from 2012 to 2021 and settle the sample by removing.

1) Firms listed for less than 10 years.

2) Firms missing data for any variable.

3) Excluding all financial firms

4) Excluding the Non-Exporting Firms

There are almost 453 non-financial listed firms at the Pakistan Stock Exchange (PSX) out of which 187 firms are exporting firms. After dealing with all data availability issues this study selected a sample of 170 exporting firms of PSX. The sample includes 10 main sectors which are the textile sector, sugar sector, food sector, chemical Products and pharmaceuticals sector, manufacturing sector, mineral products sector, cement sector, motor vehicles, trailers auto parts sector, information and communication sector, and coke, refined petroleum products sector. The sample of firms selected from each sector is as follows:

Table5. 1: Sample Size of Firms

Sectors	No. of Firms. of Firms
Textile Sector	74
Sugar Sector	19
Food Sector	5
Chemical $ Pharma Sector	23
Manufacturing Sector	15
Mineral Sector	5
Cement Sector	13
Motor Vehicles, Trailers & Auto parts	8
Information and Communication Services	2
Petroleum Sector	6
Total	170

The reason for choosing the period from 2012-2021 is to cover a period of Covid-19 shock as well as the period of stable trade policies in Pakistan. As most of the firms publish their annual report in June that why this research takes data of firms till 2021. The data variable of trade policy uncertainty is till 2022. The data for all the variables are collected from the Pakistan stock exchange (PSX) website and financial statements of the respective firms except the TPU indicators data.

5.5 Hypothesis

Hypothesis(a)

Ho: Ceteris paribus, Trade policy uncertainty (TPU) positively affects Firm risk-taking (FRT)

H1: Ceteris paribus, Trade policy uncertainty (TPU) negatively affects Firm risk-taking (FRT)

Hypothesis(b)

Ho: The debt ratio does not reinforce the influence of TPU on FRT

H1: The debt ratio reinforces the influence of TPU on FRT

Hypothesis(c)

Ho: Ownership concentration does not strengthen the effect of TPU on FRT

H1: Ownership concentration strengthens the effect of TPU on FRT

5.6 Model

This research plans to investigate the relationship between trade policy uncertainty and firm risk-taking of PSX exporting firms. The general form of our model is as follows:

$$FRT_{i,t} = f(TPU_{i,t}) \tag{5.1}$$

Where FRT is the dependent variable representing the firm risk-taking, TPU is the independent variable which represents trade policy uncertainty while I represent the cross-sections and t is the number of years. This variable is the main variable of the model. As we are estimating the effect of TPU on FRT.

5.6.1 Model Selection Criteria

As doing any research need to specify model selection criteria. There are two types of model selection criteria

1) Simple to General Approach (S2G)

2) General to Specific Approach

This study has use general to simple model selection criteria.

5.6.2 General to Specific Approach

In general, to a specific modeling approach, the general model is created on the bases of previous literature and the theoretical background of the data variables which is called the general unrestricted model (GUM). The general model will be then tested by several economic restrictions to make a simplified model to get a congruent representation. There are many ways to transform the general model into a specific one and see which model is preferred. The first method is to remove the variables which have the highest p-value and are left with only significant variables in the model. This is done step by step removing each insignificant variable and left with only specific variables. This general to-specific modeling approach is the practical example of the theory of reduction which is proposed by (Hendry, 1995) that's why it is also called Hendry methodology. This modeling approach will help to remove the issue of multicollinearity in the model. This method is preferred over another method such as the simple to general method. As the S2G approach starts with a minimum variable so it has a chance of under-specification in the model. This problem of under-specification is covered using the general-to-specific modeling approach.

So in this study, we have used the general-to-specific approach. First test the general model and then simplified it by removing the insignificant variable. The final specific model is then tested by F stat to check whether the restriction imposed is valid or not.

$$F \; = \; \frac{(SSE_0 \; - SSE)/m}{SSE/(T-K)} \qquad\qquad (5.2)$$

5.6.3 Empirical Analysis of General Models

This study tests the three hypotheses one by one. The general model is based on the existing literature provided by (Wang, Shen, Tang, Wu, & Ma, 2021).

➢ Hypothesis(a) investigates that adjusted for other variables, TPU is adversely or positively associated with firm risk-taking.

To test this hypothesis, the following panel fixed effects model is used:

Model: 1

$$FRT_{i,t} = \alpha + \beta_1 TPU_{i,t-1} + \beta_2 TPU_{i,t} + \beta_3 Size_{i,t-1} + \beta_4 SIZE_{i,t} + \beta_5 MB_{i,t-1} + \beta_6 MB_{i,t} + \beta_7 ROA_{i,t-1} + \beta_8 ROA_{i,t} + \beta_9 LEV_{i,t-1} + \beta_{10} LEV_{i,t} + \beta_{11} BSIZE_{i,t-1} + \beta_{12} BSIZE_{i,t} + \beta_{13} INDEP_{i,t-1} + \beta_{14} INDEP_{i,t} + \beta_{15} FIRST_{i,t-1} + \beta_{16} FIRST_{i,t} + \beta_{17} STATE_{i,t} + \beta_{18} STATE_{i,t} + \beta_{19} IHP_{i,t-1} + \beta_{20} IHP_{i,t} + \varepsilon_{i,t-1}$$

$$(5.3)$$

Where FRT is a dependent variable and the independent variable is TPU. To test the influencing mechanism, the interaction model $TPU_{i,t-1} * SA_{i,t-1}$ and $TPU_{i,t} * SA_{i,t}$ will be inserted in equation (5.3)

Where SA is used to represent financial constraint. It is measured through the SA index of five-level financing constraints.

➢ Hypothesis(b) will investigate that debt ratio strengthens the impact of trade policy uncertainty on firm risk-taking.

To check this hypothesis $TPU_{i,t-1} * LEV_{i,t-1}$ $TPU_{i,t} * LEV_{i,t}$ will be inserted into the equation (5.3)

Model:2

$$FRT_{i,t} = \alpha + \beta_1 TPU_{i,t-1} + \beta_2 TPU_{i,t} + \beta_3 TPU_{i,t-1} * LEV_{i,t-1} + \beta_4 TPU_{i,t} * LEV_{i,t} + \beta_5 Size_{i,t-1} + \beta_6 SIZE_{i,t} + \beta_7 MB_{i,t-1} + \beta_8 MB_{i,t} + \beta_9 ROA_{i,t-1} + \beta_{10} ROA_{i,t} + \beta_{11} LEV_{i,t-1} + \beta_{12} LEV_{i,t} + \beta_{13} BSIZE_{i,t-1} + \beta_{14} BSIZE_{i,t} + \beta_{15} INDEP_{i,t-1} + \beta_{16} INDEP_{i,t} + \beta_{17} FIRST_{i,t-1} + \beta_{18} FIRST_{i,t} + \beta_{19} STATE_{i,t} + \beta_{20} STATE_{i,t} + \beta_{21} IHP_{i,t-1} + \beta_{22} IHP_{i,t} + \varepsilon_{i,t-1}$$

$$(5.4)$$

Where if the coefficient of $TPU_{i,t-1} * LEV_{i,t-1}$ $TPU_{i,t} * LEV_{i,t}$ that is β_3 and β_4 is significant and negative then the null hypothesis will be rejected. Where LEV represents the financial leverage of firms

➢ Hypothesis(c) will investigate that equity concentration reinforces the effect of trade policy uncertainty on firm risk-taking.

To test this hypothesis, add $TPU_{i,t-1} * SC_{i,t-1}$ and $TPU_{i,t} * SC_{i,t}$ to model equation (5.3)

Model:3

$$FRT_{i,t} = \alpha + \beta_1 TPU_{i,t-1} + \beta_2 TPU_{i,t} + \beta_3 TPU_{i,t-1} * SC_{i,t-1} + \beta_4 TPU_{i,t} * SC_{i,t} + \beta_5 Size_{i,t-1} +$$
$$\beta_6 SIZE_{i,t} + \beta_7 MB_{i,t-1} + \beta_8 MB_{i,t} + \beta_9 ROA_{i,t-1} + \beta_{10} ROA_{i,t} + \beta_{11} LEV_{i,t-1} + \beta_{12} LEV_{i,t} +$$
$$\beta_{13} BSIZE_{i,t-1} + \beta_{14} BSIZE_{i,t} + \beta_{15} INDEP_{i,t-1} + \beta_{16} INDEP_{i,t} + \beta_{17} FIRST_{i,t-1} + \beta_{18} FIRST_{i,t} +$$
$$\beta_{19} STATE_{i,t} + \beta_{20} STATE_{i,t} + \beta_{21} IHP_{i,t-1} + \beta_{22} IHP_{i,t} + \varepsilon_{i,t-1}$$

(5.5)

Where if the coefficient of $TPU_{i,t-1} * SC_{i,t-1}$ and $TPU_{i,t} * SC_{i,t}$ that is β_3 and β_4 is significant and negative then the null hypothesis will be rejected. Where SC represents ownership concentration.

The above shown all are the general model of estimation, the specific model of study with their finding is discussed in chapter 6 of results and discussion.

5.6.4 Combination of Lag and Level

It is common to frame models both in terms of levels and lags because this allows for a more comprehensive understanding of the data and helps capture different aspects of the underlying processes being studied. This study use combination of lag and level in the comprehensive analysis of the data. It allows to assess both immediate and delayed effects, capturing short-term and long-term relationships. It helps identify cause-and-effect relationships that may not be evident when looking solely at levels or lags. It enhances the ability to make predictions, conduct policy evaluations, and gain insights into how entities change and respond over time. The one of the practical example of this type of modeling is autoregressive distributive lag (ARDL). This type of modeling is also used in the existing literature as well to capture both current and previous period effect. A study by (OLASODE & BABATUNDE, 2016) use both lag and current period of independent variable using ARDL approach to measure the effect of external debt on the economic growth. The study also reveal that the effect of current and previous year external debt on economic growth is different.

5.7 Variable Description

The description of all the dependent independent and control variables used in this research is as follows:

5.7.1 Dependent Variable

Firm Risk Taking (FRT) The variable risk-taking of a firm show the willingness of the firm to make the decision that may result in unfavorable outcomes to get a high profit in return for this risk. This study calculated firm risk-taking in two ways to ensure the reliability of the result.

FRT1: Sector-adjusted standard deviation of return on assets (ROA) of firms during the past three observation period.

$$Return\ on\ Asset\ (ROA) = (Net\ Income)/\ (Total\ Assets) \qquad (5.6)$$

FRT2: Sector-adjusted standard deviation of annual stock returns of firms during the past three observation periods

$$Stock\ return = ln(\frac{P_t}{P_{t-1}}) \qquad (5.7)$$

The adjustment of the firm in industry is done by removing the effect of the industry from the firm. As the industry's characteristics may vary such as these characteristics, operating dynamics, and market conditions a well. So removing the industry effect is helpful to avoid spurious assessments of the firm's performance. So this adjustment helps to compare the firms in the same industry relative to their peers.

To do this adjustment ROA average of firms within the industry is subtracted from the firm ROA of each year. After the adjusting the rolling standard deviation will be applied. The same method of adjustment and standard deviation is used for stock return to calculate the FRT2. This method of adjustment and calculation of FRT1 and FRT2 is used previously by (Huang A. g., 2009) to calculate cash flow volatility.

This study used standard deviation of ROA as measure for risk taking. However there are other measures such as cash flow volatility. The choice between using standard deviation of ROA or cash flow volatility depends on the specific objectives of the analysis and the aspects of risk that are most relevant. For example, an investor concerned about the stability of returns might focus

on standard deviation of ROA, while a creditor worried about debt repayment might emphasize cash flow volatility. As this study is concerned about the analyzing the returns. So it use standard deviation of ROA.

The choice between cash flow and ROA should align with your research or analysis objectives. If you are primarily concerned with a firm's ability to generate cash to meet short-term obligations and manage liquidity risk, cash flow metrics like operating cash flow to total assets may be more appropriate. If your focus is on a firm's strategic risk-taking behavior and its ability to generate long-term profitability and returns on its invested assets, ROA can provide valuable insights. As this study focus on the return and profitability so using standard deviation of ROA is more appropriate. The existing literature (wang, Shen, & Tang, 2021) use standard deviation of ROA and standard deviation of stock returns as a measure for the firm risk taking behavior. So same is used in this research as well.

5.7.2 Independent Variable
Trade Policy Uncertainty (TPU)

To measure TPU this particular study uses indicator of export radar along with other indicators that cause trade policy uncertainty.

Export radar indicators include net positive answers of trade experts to the question: "Your view is the number of foreign orders high, normal, or low?" Net effective exchange rate, change in manufacturing country production.

Other trade policy uncertainty indicators show strong relevance to Pakistan's trade policy uncertainty in the existing literature. These indicators include the Consumer confidence index (Bergman, 2020) , the number of new harmful interventions per year, and the number of new liberalizing interventions per year. The principal component analysis (PCA) is used to make the index using all these indicators.

Leverage Ratio (LEV)

This ratio demonstrates a business's financial leverage in terms of its assets, equity, and liability. It emphasizes how much the company's assets are funded through liabilities or debt. In this study, I use the Debt to asset ratio as an indicator of a firm debt level.

$$Debt\ To\ Asset\ Ratio = \frac{Total\ Libilities}{Total\ Assets} \qquad (5.8)$$

Ownership Concentration (SC)

Ownership concentration refers to shareholders who own a large share of the firm. If fewer people own a large number of shares of a firm it means firm is highly concentrated and these shareholders have controlling right as well to make most of the decisions of the firm. The less concentrated firm means that the firm share is owned by a lot of people not a small group of people.

$$Ownership\ Concentration = \frac{Shareholding\ proportion\ of\ first\ largest\ Shareholder}{Shareholding\ proportion\ of\ second\ largest\ shareholder} \qquad (5.9)$$

It is a measure of how much influence or authority a specific individual, group, or entity has inside an organization.

In Pakistani firms, the ownership structure can vary, but it's important to note that the dominant shareholder in many cases is often a family or a group of closely related individuals. Here the objective is to measure the effect of ownership concentration on relationship between trade Policy uncertainty and firm risk taking. Dominant shareholder is an entity with significant influence or control over a company due to its large ownership stake, while ownership concentration refers to how widespread or concentrated ownership is among various shareholders. Dominant shareholders often contribute to high ownership concentration, but ownership concentration itself does not necessarily imply a single dominant shareholder. Both concepts are essential to understanding the dynamics of corporate ownership and governance. The existing study by (wang, Shen, & Tang, 2021) also measure the ownership concentration by shareholding proportion of first and second largest shareholder.

Type of ownership concentration

Distributed Ownership: In a company with distributed ownership, ownership is distributed among a wide number of shareholders, and no single entity or organization owns a major percentage of the shares. This is common in publicly listed corporations.

Concentrated Ownership: In contrast, concentrated ownership means that a relatively small number of shareholders or a single entity holds a substantial portion of a company's shares. This can lead to significant influence or control over the company's decisions.

In Pakistani firms, the ownership structure can vary, but it's important to note that the dominant shareholder in many cases is often a family or a group of closely related individuals. This is a common feature in many family-owned businesses in Pakistan, and such dominant shareholders typically hold a significant portion of the company's shares and have a substantial influence on decision-making and corporate governance.

5.7.3 Control Variables

This study will incorporate a set of control variables based on preceding studies, as follows: (INDEP) An independent director, also known as an outside director or non-executive director, is a member of a company's board of directors who does not have any significant financial or operational ties to the company.

(SIZE) Firm size typically refers to the measurement of a company's magnitude or scale in terms of various metrics, such as revenue, market capitalization, assets, number of employees, or other relevant factors

(ROA) Return on Assets is a financial ratio that measures a company's profitability in relation to its total assets.

 (LEV) leverage ratio is a financial metric that measures the proportion of a company's debt to its equity or other financial measures.

(MB) Market to Book ratio is a financial metric used to compare a company's market value to its book value per share. When modeling factors related to financial risk, such as bankruptcy risk or credit risk, the market-to-book ratio can be included as a control variable. Companies with lower market-to-book ratios may be considered riskier due to potential financial distress. (FIRST) common shares held by the controlling shareholder,

(BSIZE) Board size refers to the number of directors or members that comprise a company's board of directors.

(IHP) the total shareholding ratio of institutional investors. It measure what percentage of the company's ownership is concentrated among institutional investors. A higher ratio indicates a significant institutional ownership stake, which can influence various aspects of the company, including corporate governance, decision-making, and potentially stock price volatility.

(STATE) indicating that firm owner is state-owned or not.

These control variable are chosen on the base of existing literature (Wang, Shen, Tang, Wu, & Ma, 2021).

5.8 Unit of Data Collection

The data for the trade policy uncertainty index and other firms' characteristics are calculated from different sources. The macro-level data for trade policy uncertainty is mostly taken from State Bank and World Bank Data sources. The data about the firm characteristics are taken from annual financial reports of firms and non-financial firm analyses of State Bank. The description of formulas for the calculation of variables is given below in the table 5.2.

Table5. 2: Units of Data Collection

Variable	Measurement	Source	Year
TPU Indicators			
FDI Inflow	In your view is the number of foreign orders high, normal, or low?	WDI	2012-2022
FDI Outflow	Same as above	WDI	2012-2022
Effective exchange rate	Real effective exchange rate index	WDI	2012-2022
Manufacturing Production.	Manufacturing value added %age of GDP	WDI	2012-2022
Consumer confidence index	Consumer confidence index	State Bank of Pakistan	2012-2022
Harmful interventions	Harmful Interventions in trade policies	Global Trading Alert (GTA)	2012-2022
Liberalizing intervention	Liberalizing intervention in trade policies	Global Trading Alert (GTA)	2012-2022
Firm Characteristics			
FRT1	Sector adjusted standard deviation of ROA of the firm for the last 3 period	Annual report of the firm and PSX	2012-2021
FRT2	Sector adjusted standard deviation of stock returns of the firm the for last 3 period	Annual report of the firm and PSX	2012-2021

INDEP	The ratio of an independent director to total directors	Annual report of the firm and PSX	2012-2021
SIZE	Natural logarithm of total assets	Annual report of the firm PSX	2012-2021
ROA	Company after-tax earnings divided by average of current and previous total assets	Annual report of the firm and PSX	2012-2021
LEV	Total liabilities divided by average of current and previous total assets	Annual report of the firm and PSX	2012-2021
MB	Market capitalization divided by the total book value	Annual report of the firm and PSX	2012-2021
FIRST	The common share proportion held by controlling shareholders	Annual report of the firm and PSX	2012-2021
BSIZE	Natural logarithm of total directors	Annual report of the firm and PSX	2012-2021
IHP	Institutional investor shareholding ratio	Annual report of the firm and PSX	2012-2021
STATE	A dummy variable will be used	Annual report of the firm and	2012-2021

	One of the owners is a	PSX	
	state-owned or local		
	government enterprise		
	Zero otherwise		
SC	The shareholding ratio of the first-largest shareholder divided by the shareholding proportion of the second-largest shareholder	Annual report of the firm and PSX	2012-2021
SA	SA index of five-level financing constraint $SA=-0.737*SIZE+0.043*SIZE*SIZE-0.04AGE$	Annual report of the firm and PSX	2012-2021

5.9 Econometrics Techniques

As there is first a need to look at the nature of data to select the suitable econometrics technique. Descriptive statistics is used to understand the central tendency, dispersion, and shape of the data distribution. As this study is based on panel data set so pooled OLS, random effect model, and fixed effect model is the most appropriate method for estimation. The Hausman test is used to make a choice between random and fixed effect models for the analyses. As there is no representative of the trade policy uncertainty of Pakistan this will be constructed through principal component analysis (PCA). The explanation of all econometrics techniques used in this study is given below.

Descriptive statistics

Descriptive statistics is a subsidiary of statistics that involves reviewing and describing key features of a datasets. Descriptive statistics play a vital role in data analysis by summarizing and

describing the main characteristics of a datasets. They provide a foundation for data exploration, visualization, comparison, and quality assessment, aiding in understanding and interpreting the data and effectively communicating the findings.

Correlation

Correlation techniques are used to measure and analyze the relationship between variables. Correlation refers to the statistical link or dependence between two or more variables, indicating how changes in one variable are associated with changes in another variable. The sign with the correlation variable suggests the direction of relations between the two variables.

Principal Component Analysis (PCA)

Principal Component Analysis (PCA) is a statistical technique used to minimize the dimensionality of a datasets while preserving the most important information. It achieves this by converting original variables into a new series of uncorrelated variables called principal components. Principal component analysis is a valuable tool for index making as it simplifies data, identifies underlying factors, facilitates index construction, deals with multicollinearity, assigns variable weights, and aids in result interpretation. These benefits make PCA an effective and widely used method in various fields for creating composite indices and summarizing complex datasets. Many studies used PCA to develop Index. As Howe and Huttly (2008) uses PCA for the construction of wealth indices for the dimension of socio-economic position in countries with low income. Similarly, Tripathi and Singal (2019) use PCA for analysis of parameter selection to develop a Water Quality Index based on the Ganga River of India.

Fixed Effect Model

The fixed effects model is also known as the within estimator or the individual-specific effects model. It assumes that individual-specific effects are fixed and constant over time. It controls for individual heterogeneity by including individual-specific dummy variables in the regression equation. These dummy variables capture the time-invariant characteristics of each individual and eliminate the individual-specific effects from the model. The fixed effects model allows for estimating the within-group variation and can be interpreted as estimating the average effect within each individual or group.

$$Y_{it} = \alpha + \beta X_{it} + \gamma D_i + \mu_{it} \qquad (5.10)$$

D_i is the individual-specific dummy variable for individual i.

Random Effect Model

The random effects model is also known as the between estimator or the individual-specific effects model. It is assumed that individual-specific effects are random and uncorrelated with the independent variables. It treats the individual-specific effects as random variables and estimates them using the method of moments. The random effects model allows for estimating the overall variation across individuals and can be interpreted as estimating the average effect across individuals.

$$Y_{it} = \alpha + \beta X_{it} + C_i + \mu_{it} \qquad (5.11)$$

C_i is the individual-specific random effect. The random effect C_i is assumed to be uncorrelated with the independent variable X_{it}.

Hausman Test

This is also called Hausman specification test. This test is performed for choosing the model between fixed effect or random effect model to compare the estimator of models.

Null Hypothesis: The compared model gives efficient and consistent results while the other model gives inefficient but consistent results

Alternative Hypothesis: The compared model gives inconsistent results while the other model gives consistent results.

5.10 Discussion on Results

The qualitative analysis involves in the measurement of the trade policy uncertainty index. This will be done through a survey from the trade policy expert to select the most appropriate indicators of trade policy uncertainty. After all the estimation is done interviews are conducted with some economists and experts from the Ministry of Commerce, National Tariff Commission, Chief economists and trade policymakers of Pakistan, and some professors from universities who are experts in international trade economics on our estimation results and their view about the

trade policy uncertainty and firm risk-taking relation. For the selection of trade experts and to include their opinion in this research I choose the random selection criteria. I selected the trade expert who are currently working in the ministries with trade expertise and has experience in the relevant field. As I have conducted discussion base interview with Imran Zia who is director general at National Tariff Commission (NTC). He has working experience in field of trade policies of at least 25 years. I also conducted Interview with Muhammad Hamood from NTC having working experience in the trade policies and relevant field. I also contacted the Gonzalo Varela senior economist in trade and investment in world bank. Along with these I also conducted the interview from the trade experts of ministry of commerce who have working experience in the trade related policies and issues.

5.11 Conclusion

At stage one, this study will develop a trade policy uncertainty (TPU) Index using both reflective and formative models, after analyzing the indicators used for trade Policy uncertainty. In the second stage, this study will develop a link between the TPU index with the exporting firm's risk-taking behavior, and how their investment decisions will affect. To meet this objective panel of exporting firms' risk behavior will be analyzed with TPU along with other control variables both firm and country-specific. The exact specification of the Panel data model will be specified after testing different panel data tests like Hausman Test etc.

CHAPTER 6

RESULTS AND DISCUSSION

Preamble

This chapter discusses the estimation result of the research. This study investigates the relationship between trade policy uncertainty and firm risk-taking. This chapter is divided into three main sections. The first section discusses the steps and estimation results of making the trade policy uncertainty index of Pakistan. The second section of this chapter includes pre-estimation tests such as descriptive statistics, and correlation tests. Section two also presents the estimation results for the relationship between TPU and FRT of PSX-listed firms. Section three of this chapter discusses the effect of influencing the mechanism of financial constraint, along with the moderating effect of debt ratio and ownership concentration on the association of trade policy uncertainty with risk-taking. The estimation of this study is done using software E-views and SPSS.

Section I

Trade Policy Uncertainty (TPU) Index of Pakistan

6.1 Background of Indicators

The variables that are used to develop the trade policy uncertainty index are DUTCH EXPORT RADAR (Ruth, 2009) indicators and some other indicators that show a strong relation to Pakistan's trade policies. The first three are export radar indicators and the last three indicators are chosen from existing literature on Pakistan. The structure of the TPU index is given below:
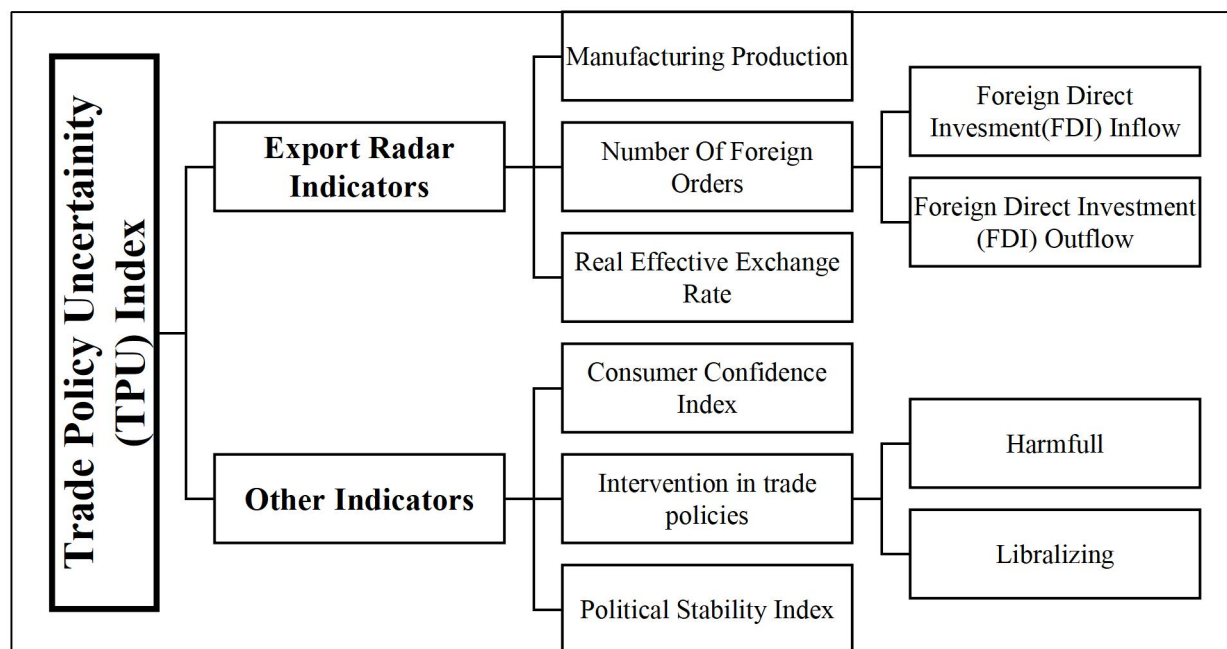
Figure 6. 1: Trade Policy Uncertainty index Indicators

Source: Author

A brief explanation about choosing these indicators and their historical literature about trade policy uncertainty is given below:

Effective Exchange Rate (EER): This rate measures a country's currency value relative to the currency of other countries. Effective exchange rates and trade policy uncertainty have a two-way relationship. An increase in trade policy uncertainty creates an uncertain environment for the country trader and alters the competition in the market. On the other hand, TPU may alter the EER. As changes in trade barriers affect the foreign currency entry and exit in the country so higher the trade policy uncertainty more volatile the will be exchange rate as a result investment plans and trade flow will be affected. Siddiqui and Erum (2016) also, disclose the negative and significant impact of exchange rate volatility on the export and import volume of Pakistan.

Manufacturing Production Index (MPI): The trade policies have a strong effect on the manufacturing sector of Pakistan. A change in trade policies such as trade restriction and trade liberalization may disturb the supply chain by increasing the input costs and also influencing investor and consumer confidence.

FDI inflow and outflow: Trade policy uncertainty can influence FDI inflows and outflows. Uncertainty in trade policies creates risk and ambiguity for foreign investors, who may be hesitant to commit capital in an uncertain environment. High trade policy uncertainty can discourage FDI inflows as investors seek stable and predictable markets. Similarly, domestic companies may also hesitate to invest abroad in uncertain trade policy conditions, leading to reduced FDI outflows. As Nguyen, Kim and Papanastassiou (2017) highlighted firms tend to increase their level of foreign direct investment in countries that have a lower level of economic policy uncertainty compared to their home country. Similarly, Bao et al (2022) investigated that when there is less uncertainty in trade policies, it encourages foreign companies to invest more in China, especially in industries that rely heavily on exports to the US. This indicates that reducing trade policy uncertainty in major economies can help stimulate global FDI flows and support economic recovery.

Political Stability Index (PSI): Political stability is an important factor for trade policy uncertainty. Stable political conditions provide a conducive environment for consistent and predictable trade policies. Conversely, political instability can lead to frequent changes in government, policy reversals, and uncertainty in trade policy decisions. Trade policy uncertainty is often higher in politically unstable countries. As shifts in leadership or ideological changes can result in significant fluctuations in trade policies, tariffs, and regulations. The shocks in the political relationship between countries have a significant and enduring impact on bilateral trade (Whitten, Fan, Dai, & Pang, 2020). They had observed the US-China trade war and suggested that changes in the political relationship often lead to changes in trade pattern

Consumer Confidence Index (CCI): Trade policy uncertainty can impact consumer confidence by creating uncertainty about job security, income levels, and the overall economic outlook. Uncertain trade policies, such as the threat of trade wars or changes in tariffs, can lead to higher prices for imported goods, supply chain disruptions, and market volatility. These factors can undermine consumer confidence, leading to reduced consumer spending, which in turn affects domestic production and trade. A sudden increase in EPU in Pakistan has a negative and significant effect on consumer confidence (Kaneez & Arshad, 2021). They also investigated that this effect persists for a period of more than 20 forecast horizons. So it means consumer confidence not only reflects the current economic situation but also incorporates expectations

about future changes in key economic factors. So it is very important to address policy uncertainties while designing forward-looking policies.

Interventions in Trade Policies

Harmful interventions (HI) in trade policies involve excessive regulations, protectionist measures (such as tariffs or import restrictions), or inefficient government interventions in market activities. This will impede economic growth, reduce competitiveness, and distort trade patterns.

Liberalizing intervention (LI) in trade policies refers to government actions or policies designed for promoting economic liberalization and free trade. These interventions typically involve reducing trade barriers, deregulation, promoting competition, and creating a favorable business environment. Liberalizing interventions are intended to stimulate economic growth, enhance market efficiency, and encourage international trade.

However, both harmful and liberalizing interventions have the potential to add to trade policy uncertainty, in different ways. Harmful interventions can generate uncertainty by familiarizing new trade barriers and regulations while liberalizing interventions can introduce short-term ambiguity during the transitional period (PIEKUTOWSKA, 2022).

6.2 Construction of Trade Policy Uncertainty(TPU) Index with Principal Component Analysis (PCA)

Principal Component Analysis (PCA)

It is the statistical method to reduce the dimensionality and helps in data analysis. Its aim is to identify the essential structure and direction of data in which it varies. PCA is mostly used for feature representation of the data by making the index from different indicators. This index will represent the overall market performance over time. As in the case of the trade policy uncertainty index (TPU) we have identified the indicators that show a strong relation with trade policy variations over time.

Calculate the Eigenvalues and Eigenvector to make the principal component from covariance metrics

Eigenvalues show the variation explained by each component and Eigenvector shows the principal component. The mathematical equation behind calculating the eigenvalues is as

$$|A - \lambda I| = 0 \qquad (6.1)$$

Where A is the Squared matrices, I is the identity matrix and λ is the eigenvalues that satisfy

$$AV = A\lambda \qquad (6.2)$$

V is the eigenvector

The result for eigenvalues is shown below in the table

Table 6. 1: Initial Eigenvalues of TPU

Component	Total	Percentage of Variance	Cumulative percentage
Comp 1	3.867	48.342	48.342
Comp 2	2.547	31.834	80.176
Comp 3	0.776	9.702	89.878
Comp 4	0.377	4.708	94.586
Comp 5	0.223	2.785	97.370
Comp 6	0.152	1.902	99.272
Comp 7	0.046	.569	99.842
Comp 8	0.013	0.158	100

Note "Percentage of variance indicating how much of the data variance is explained by that component and cumulative percentage represents the cumulative contribution of factors or components to the overall variability in a datasets"

For 8×8 there are 8 eigenvalues. In PCA the eigenvalues are shown in descending order. As there are 8 indicators used for index construction, so there are 8×8 covariance matrices and 8 eigenvalues.

Kaiser criterion

In PCA, the decision to retain components with eigenvalues greater than 1 is based on the Kaiser criterion or the eigenvalue-greater-than 1 rule. This rule suggests that components with eigenvalues greater than 1 should be retained because they explain more variance in the data than a single original variable.

Selection of Component

This study develops the TPU index by using the first 2 components as they are explaining most of the variations in the datasets.

Table 6. 2: Extraction Sum of Squared loading of TPU

	Total	% of Variance	Cumulative %
Comp 1	3.867	48.342	48.342
Comp 2	2.547	31.834	80.176

In this case, the first component explains 48.342% of the variance, indicating that it captures a substantial amount of the overall variability in the trade policy uncertainty index. The second component explains an additional 31.834% contributing to the overall explanation of variance. However, cumulative these two components together explain 80.176 % of the variation in the trade policy uncertainty index developed by the PCA. These two components are cumulative mean the eight indicators (consumer confidence index, effective exchange rate, manufacturing production index, FDI inflow, FDI outflow, liberalizing intervention, harmful intervention, and political stability Index) are responsible for 80.176% variation in the trade policy uncertainty Index(TPU).

Components Metrics:

This table 6.3 displays the component matrices of the original variables on the two principal component factors obtained from PCA. The highlighted cell shows the higher value of loadings.

As in Component 1, there is a higher absolute value of manufacturing production, liberalizing policy intervention, harmful policy interventions, FDI outflow, and political stability. This means that these five indicators have a stronger association with component 1. In the Component 2 consumer confidence index, effective exchange rate and FDI inflow have a high absolute value which means these three indicators have a stronger association with Component 2.

As none of the components explain the variation of all indicators. They are explaining collective association with indicators so there is a need to set a central line to get the average value of the index which explains the maximum variation of the indicators.

Table 6. 3: Components Metrics of TPU through PCA

	Component 1	Component 2
CCI	-0.684	**0.642**
EER	-0.680	**0.448**
MP	**-0.264**	-0.877
LI	**0.908**	0.243
HI	**0.843**	0.361
FDI Inflow	-0.275	**0.884**
FDI Outflow	**0.692**	-0.180
PSI	**0.882**	0.403

Note "component 1 and 2 represent the two component factor obtained from PCA"

6.3 Final Trade Policy Uncertainty Index

PCA1, and PCA2 in the table 6.4 represent PCA factors which represent some variation in the trade policy uncertainty index with single-stage PCA by taking the highest component. The next step is to take the average to get the middle line index which contains the characteristics of both components.

Table 6. 4: Trade Policy Uncertainty Index of Pakistan along with PCA factors

Principal Component Analysis (PCA)

Year	PCA1	PCA2	TPU
2012	-1.17826	-1.6241	-1.40118
2013	-0.84309	-1.07228	-0.957685
2014	-0.66494	-0.11327	-0.389105
2015	-0.59922	0.3862	-0.10651
2016	-0.37091	1.42064	0.524865
2017	-0.00978	1.46761	0.728915
2018	-0.28393	0.51955	0.11781
2019	-0.49969	0.18217	-0.15876
2020	1.34973	0.0561	0.702915
2021	1.5015	0.03086	0.76618
2022	1.59858	-1.25348	0.17255

Note "PCA1 and PCA2 is obtain from two component factor"
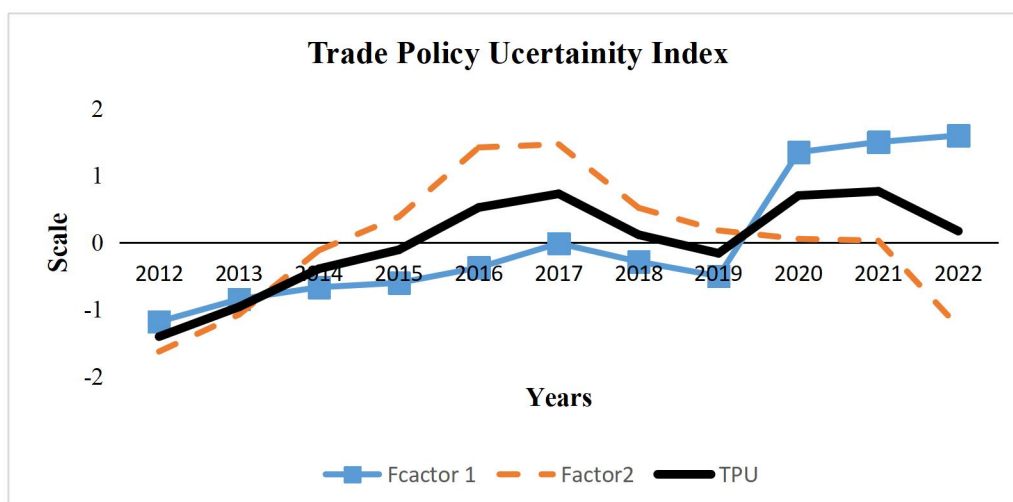
Figure 6. 2: Trade Policy Uncertainty(TPU) of Pakistan

Interpretation

Negative values: Negative index values indicate a lower level of trade policy uncertainty suggesting more predictability and stability in trade policies.

Positive values: Positive index values indicate a higher level of trade policy uncertainty suggesting a greater degree of unpredictability and potential fluctuations in trade policies.

In the case of Pakistan, the positive index values of 0.52 in 2016, 0.72 in 2017, 0.11 in 2018, 0.70 in 2020, 0.76 in 2021, and 0.17in 2022. suggest relatively higher policy uncertainty in those

years. The negative index values of -1.40 in 2012, -0.95 in 2013, -0.38 in 2014, -0.10 in 2015, and -0.15 in 2019 suggest relatively lower uncertainty surrounding trade policies during those years.

6.4 Similarity to the Economic Policy Uncertainty (EPU) Index

The economic policy uncertainty index is a measure that quantifies the level of indecision surrounding economic policies within a country or region. It aims to capture the degree of unpredictability or ambiguity in economic policy decisions and their potential impact on the economy. Here is the economic policy uncertainty (EPU-2) index of Pakistan based on two newspapers. This index is developed by (Chuhdary, 2020) using the (Baker, Bloom, & Davis, 2016) methodology of the EPU index. This is a monthly index developed through web-scraping by identifying the term related to economics, policy, and uncertainty in the newspapers.
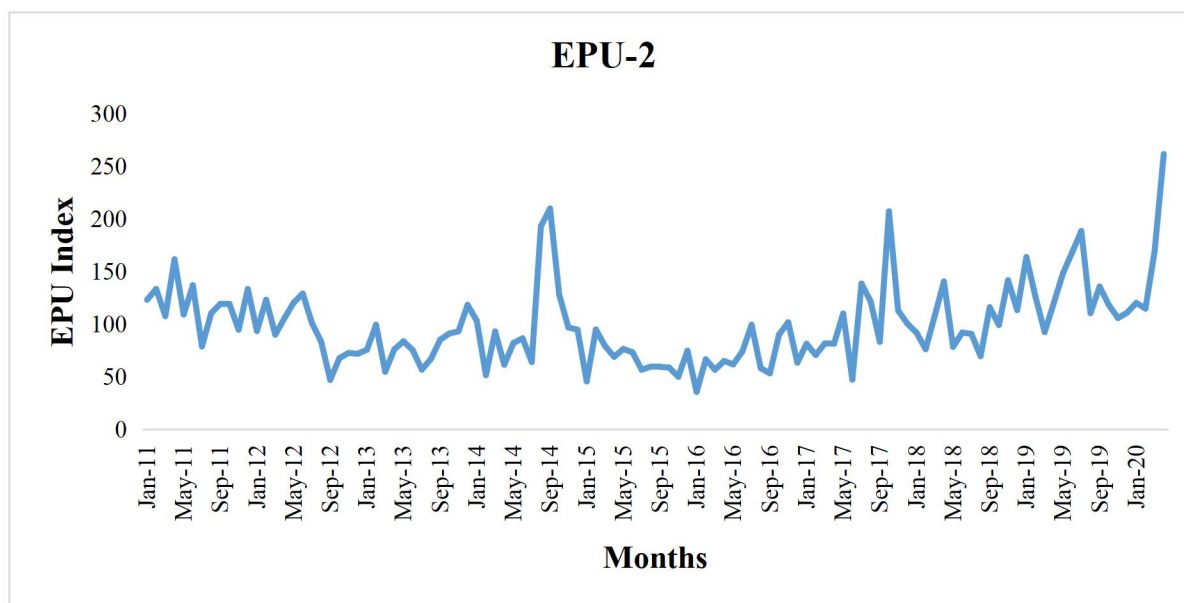
Figure 6. 3: Monthly Economic Policy Uncertainty(EPU) Index of Pakistan

Source: State Bank

To enhance the reliability of the TPU index this study also checks its pattern with the EPU index of Pakistan. The Trade Policy Uncertainty Index developed in this study is through principal component analysis (PCA). This index shows a moving average trend line over the period of 2012- 2022.
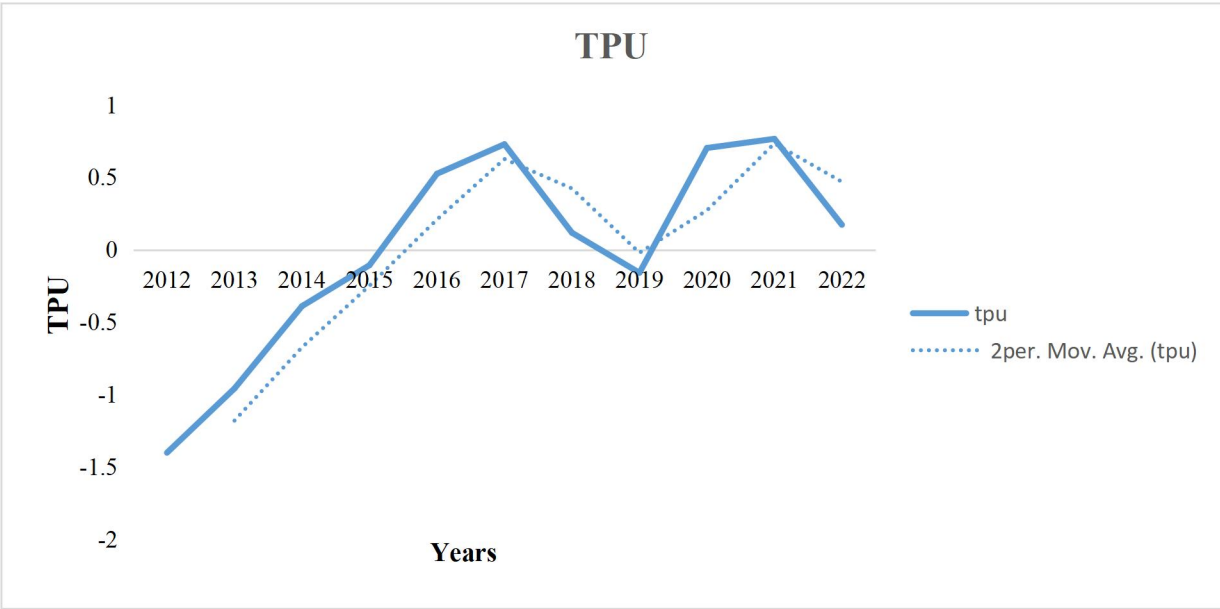
Figure 6. 4: Trade Policy Uncertainty Index (2012 to 2022)

The monthly index of the EPU of Pakistan is converted into the yearly Index through a weighted average. This EPU index also follows the moving average trend lines over the period. However, the data available for the Economic Policy uncertainty index is only from 2012-2020.
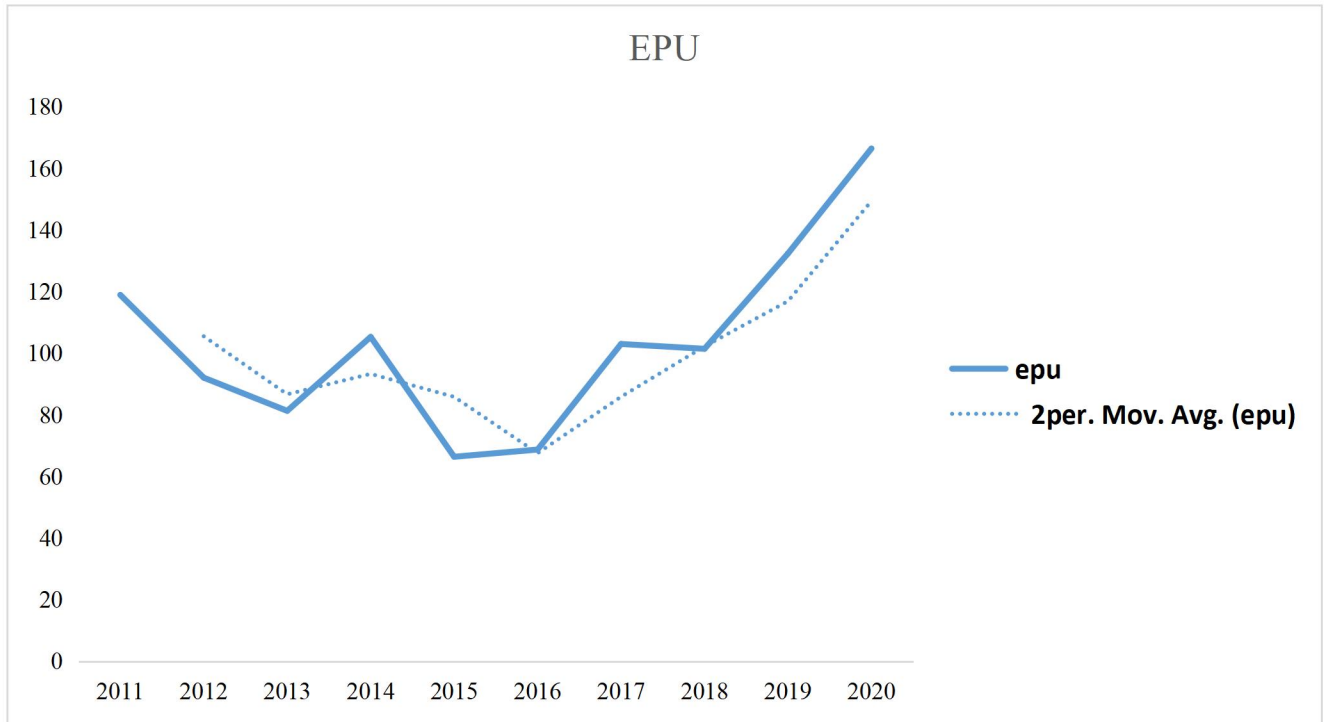
Figure 6. 5: Yearly Economic Policy Uncertainty(EPU) Index of Pakistan

6.5 Major Events in the Index Period
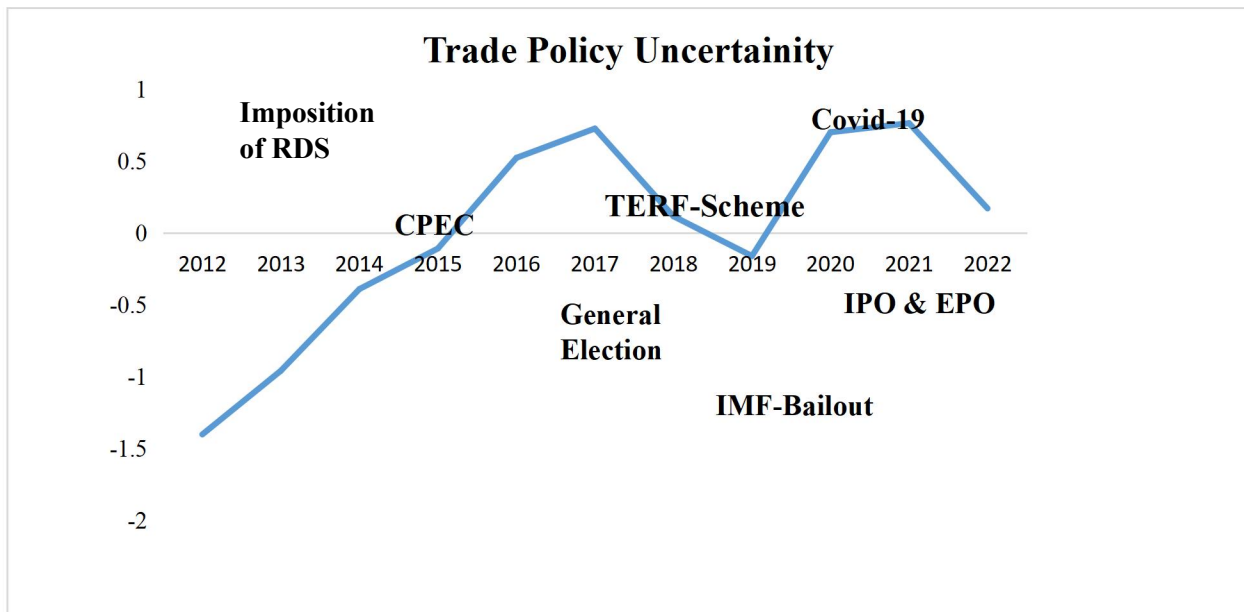
Figure 6. 6: Major Events in TPU Index of Pakistan

GSP-Plus Status: In 2014 Pakistan was granted a generalized system of preference(GSP) plus status by the EU. This GSP plus help the exporters of Pakistan to get preferred access to the

market of the EU without the restriction of tariff. This status increases the confidence of businesses and get stability in trade and reduces TPU in Pakistan.

General Elections: In 2018 general election was held in the country. This means a new government taking charge of the country. The change in the leadership in the country causes the uncertainty in business environment as well as changes in the major trade policy according to their aims. As the new government revises the existing policies according to their priorities and political agenda These revisions can introduce uncertainties as businesses and traders adapt to new frameworks, regulations, and trade agreements.

Covid-19: In 2019 there were a lot of changes in trade policies worldwide because of covid-19 pandemic. The pandemic also occurs in Pakistan which cause a change in the major trade policies which followed the uncertainty in trade policy in 2020 and 2021 in Pakistan. As due to health and safety issues this pandemic resulted in restrictions on import and export policies, supply chain distraction, changes in trade priorities, etc. So, all these collectively contribute to the rise of TPU Pakistan.

IMF Bailout (July 2019): In 2019 Pakistan also signed an agreement of bailout with the IMF to handle the economic trials in return the IMF impose some conditions on Pakistan such as changes in the structural reform of Pakistan which resulted to increase TPU.

Temporary Economic Refinance Facility: Temporary Economic Refinance Facility (TERF) is a special program that provides affordable financing options to encourage investments in various sectors, including new projects, expansions, and upgrading of existing facilities. It is available through banks and development financial institutions (DFIs) and is open to all sectors except for the power sector, which already has a separate refinance facility for renewable energy projects. In simple terms, TERF offers financial support to businesses to help them grow and improve, except in the power sector where a different program exists for renewable energy projects.

Import and Export Policy order (IPO, EPO): Import and export policy orders can affect trade policy uncertainty in Pakistan by influencing tariff structures, non-tariff measures, trade agreements, export incentives, market access initiatives, and regulatory requirements. Businesses need to closely monitor and adapt to changes in these policy orders to navigate the evolving trade landscape and make informed decisions regarding imports and exports

Section II

Effect of trade policy uncertainty (TPU) on firm risk-taking(FRT)

Section II of this chapter achieves the second objective of the study. It investigates the relationship between trade policy uncertainty and firm risk-taking. Here are some pre-estimation tests then the final estimation result of the fixed panel effect modeling is estimated for the general model then it is tested for the specific model with all statistically significant coefficients. This section also tested the relationship between TPU and FRT by two different methods to calculate the FRT and show the results for both FRT1 and FRT2.

6.6 Descriptive Statistics

The descriptive statistics of the variables are important to calculate before doing the final estimation. As descriptive diagnosis helps to check the characteristics of variables used for the research.

Table 6. 5: Descriptive Statistics

Variables	Mean	Max	Min	STD	N
ROA	4.16	319.5	-164.31	16.87	1700
FRT1	2.35	15.97	0.035	1.77	1700
TPU	-0.017	0.766	-1.401	0.704	1700
SIZE	2.63	30.00	16.78	1.74	1700
LEV	3.35	663.5	0.03	35.85	1700
BSIZE	2.04	2.89	1.38	0.177	1700
INDEP	0.18	6	0	0.27	1700
FIRST	54.24	99	0	25.27	1700
STATE	0.78	1	0	0.41	1700
SA	3.85	15.08	-1.70	2.25	1700
IHP	39.61	99	0	32.01	1700
FRT2	0.34	1.77	0	0.27	1700
MB	1.00	137.10	-843	24.4	1700
SC	4.16	77.42	0.11	7.05	1700

Note "minimum maximum, mean and standard deviation value is calculated through descriptive analyses on e-views"

Table 6.5 provides descriptive statistics information about the data set which includes a total of 1700 observations. The table includes information about central tendency, range of data, and standard deviation which show the variation in data and size of variables. The return on assets of firms lies between -164.31 to 319.5 with a standard deviation of 16.87. The mean value of ROA is 4.16 which means on average the ROA of the firm is 4.16%. The range of risk-taking of the firm is 0.035 to 15.97. The high range and standard deviation suggest that there is a huge difference among firm's risk levels of different firms used in our analyses.

The mean value of FRT is 2.35 which suggests that on average the firm risk-taking willingness is 2.35 % from all the firms. The maximum value of 15.97 suggests that maximum a firm can take a risk of 15.97%. The range of the trade policy uncertainty index is -0.76 to 1.40 with small dispersion of 0.704 in data. The size of the firm is a logarithm of total assets which lies between 30 to 16.78. The mean size is 2.63 this means on average the natural logarithm of the total assets of the firm is 2.63. A firm's leverage ratio represents high dispersion with a standard deviation of 35.85. The maximum value of the leverage ratio is 663.5 showing a highly debated firm. This indicates that 663.5 assets of the firm are financed through debt. The BSIZE is showing the directors and its range is between 1.38 to 2.89. The mean BSIZE is 2.04 which suggests on the average natural logarithm of total directors is 2.04.

The INDEP is an independent director ratio range between 0 to 6. The zero INDEP suggests no independent director in some firms. The mean value of 0.18 suggests that on average the ratio of an independent director to total directors is 0.18. FIRST represent the controlling shareholder ratio and its range is between 99 to 0 percent. The 99% means the 99% shareholder has more than 5% of the share. STATE is the dummy variable to represent that whether the firm is private or public. SA is a financing concentrate index and its value ranges between -1.7 to 15.08. The market-to-book ratio range between -843 to 137. The positive MB ratio means the market value of the firm is higher than the book value and the negative value means the market value of the firm is lower than the book value. The high level of difference in the MB ratio suggests that there is a lot of variation among the firm's market values. The FRT2 is risk taking measure through stock return its range is between 0 to 1.77. The zero FRT2 means stock prices remain the same over the years. These dispersions in data suggest that the sample include a huge range of firm including all type of firm having different characteristics.

6.7 Correlation

Correlation is one of the statistical tools used to check the association between variables. The negative sign of FRT1 with TPU and FRT2 with TPU suggests there is a negative relationship between these two variables. This also supports hypothesis(a) of this study that TPU and FRT are inversely related to each other. The negative sign of FRT with INDEP (independent director) STATE (private or public firm) and FRT2 with SIZE (Total assets), BSIZE(board size of firm), STATE(private or public firm), IHP(institutional investor), MB(market to book ratio), SC(ownership concentration) also suggest that firm risk-taking of Pakistan have an inverse relation with all of these characteristics of firms. The result of the correlation suggests that FRT has an almost negative relation with most of the characteristics of firms.

Table 6. 6: Correlations of all Variables

COR	ROA	FRT1	TPU	SIZE	LEV	BSIZE	INDEP	First	State	SA	IHP	FRT2	MB	SC
ROA	1													
FRT1	0.09	1												
TPU	-0.04	**-0.02**	1											
Size	0.09	0.03	0.09	1										
LEV	-0.04	0.01	0.01	-0.05	1									
BSIZE	0.11	0.05	0.06	0.19	0.02	1								
INDEP	0.02	-0.01	0.1	0.04	0	-0	1							
First	-0.06	0.05	-0	-0.01	0.03	-0.1	0.04	1						
State	0.04	-0.04	0.01	0.11	0.04	0.08	0.03	-0.06	1					
SA	0.07	0.02	0.04	0.95	-0.06	0.13	0.01	-0.03	0.11	1				
IHP	0.13	0.04	-0	0.38	0.05	0.13	0.14	0.14	0.06	0.29	1			
FRT2	0.03	0.11	**-0.32**	-0.06	0.04	-0.12	0.02	0.02	-0.08	-0.01	-0.1	1		
MB	0.03	0.02	-0.01	0.02	-0	0.05	0.02	0.06	-0.01	0.02	0.05	-0.01	1	
SC	0.07	-0.07	-0.01	0.18	-0.03	0.02	-0	0.23	-0.02	0.14	0.34	-0.06	0.03	1

Note "positive value show direct correlation, negative value show inverse correlation

6.8 General Panel Regression Model

As the general form of the model includes both lagged and current period terms of the independent variables, this model accounts for the potential short-term and long-term effects of the independent variables on the dependent variable, while also considering the within-individual and within-time variations. it represents a dynamic panel data model with autoregressive terms. This type of model is commonly referred to as an autoregressive distributed lag (ARDL) model with panel data.

General Model

As moving from a general to a specific model this study first estimates the result with a general model and identifies the relationship between trade policy uncertainty and firm risk-taking without considering the level of significance and insignificance of the variable. The second objective of this study will meet by testing this hypothesis.

Hypothesis(a)

Ho: Ceteris paribus, Trade policy uncertainty (TPU) positively affects Firm risk-taking (FRT)

H1: Ceteris paribus, Trade policy uncertainty (TPU) negatively affects Firm risk-taking (FRT)

Hausman Test

The Hausman test is a statistical test used in econometrics to determine the appropriate model specification when there is a choice between two or more competing models. As in this study, the two appropriate models for panel data are the random effect model and the fixed effect model.

Before applying the estimation on the general model of hypothesis (a) of this study tested the Hausman test to choose between two regression models by evaluating the statistical significance of the differences in their estimated coefficients. It helps to address the issue of endogeneity and select the most appropriate model specification for the analysis. The result of the Hausman test is given below in the table

Hausman Test	
Chi^2	43.671
Prob $< Chi^2$	0.0017

Note: P< 0.05, P< 0.01, P< 0.1

The result of the Hausman test shows that the probability of chi-square statistics is 0.0017 which is less than 0.05 at a 5% significant level. Therefore, the null hypothesis of the random effect model is rejected and the fixed panel model will be tested.

Fixed Panel Effect Model

Table 6. 7: General fixed effect model for effect of TPU on FRT

Variables	FRT	Cont.	Cont.
TPU_{t-1}	-0.170* (0.05)	ROA	0.013*** (0.00)
TPU	-0.295** (0.03)	SA_{t-1}	-3.946*** (0.0003)
IHP_{t-1}	-0.0098* (0.066)	SA	1.881* (0.079)
IHP	0.00226 (0.6858)	$SIZE_{t-1}$	4.796*** (0.0001)
$INDEP_{t-1}$	0.124 (0.6345)	SIZE	-2.03* (0.09)
INDEP	0.055 (0.8412)	$STATE_{t-1}$	1.425 (0.33)
LEV_{t-1}	0.0079 (0.379)	STATE	-2.75* (0.07)
LEV	-0.0041 (0.55)	$BSIZE_{t-1}$	0.437 (0.47)
MB_{t-1}	-8.45E-06 (0.995)	BSIZE	-0.367 (0.57)
MB	0.00105 (0.503)	CONS	-51.05*** (0.000)
ROA_{t-1}	0.058** (0.015)		

Mean of DV= 2.369	STD of DV= 1.836

$R^2 = 0.52$	No of observations= 1530
F-statistics = 7.716	Prob(F-stat) = 0.000

Note: * , ** and *** indicate significance levels of 10%, 5%, and 1% respectively

As this study holds three hypotheses, the first hypotheses hold that the relationship between TPU and FRT is negative. The table 6.7 shows the result of hypothesis(a) by testing the relationship

between FRT with TPU and TPU_{t-1}. The finding rejects the null hypothesis and accepts the alternative hypothesis. The negative sign with TPU_{t-1} and TPU with FRT1 show that TPU has an inverse relation with FRT in the current period as well as the past period effect of TPU. This implies that firms invest less in high-risk projects, even though their reward is high in periods of high trade policy uncertainty. The one scale increase in the TPU and TPU_{t-1} decrease FRT by 0.17 and 0.295 percent. This value of the negative relation of TPU with FRT is statistically significant at a 5% and 1% level of significance. These results are consistent with the risk aversion theory which suggest to avoid the risk in a period of uncertainty firms prefer to hold capital instead of doing investment.

The TPU, TPU_{t-1}, IHP_{t-1}, ROA, ROA_{t-1}, SA, SA_{t-1}, SIZE, $SIZE_{t-1}$ and STATE are significant in the original model at 1%, 5% and 10% level of significance. The ROA and ROA_{t-1} are highly positive and significant indicating the risk ability of a firm is high when they have a high ROA. The SA is significantly positively related to FRT indicating that in a current period, firms with higher financing concentration have the willingness to take risk but SA_{t-1} is significantly negative indicating that the firm past period financing constraint has a significantly negative relationship with the current period ability of FRT. This negative relation of SA_{t-1} with FRT is consistent with the financing constraint theory of finance which suggest that when there is uncertainty firm retained earnings are uncertain so the firm investment plan will be uncertain due to financing constraint. The positive relation of SA with FRT is against theory as in Pakistan there is not an ideal situation. The firms in Pakistan usually suffer from financing constraints so the current period of financing constraint may increase the firm performance. This result is consistent with the existing literature. As (Yao & Feng, 2022) investigated the more financing constraint firm face more carefully, managers will handle the funds, improve their scientific management strategies and improve the performance of firms. The other reason is that the SA of this year have more significant effect on FRT of next year.

The coefficient $SIZE_{t-1}$ has a significantly positive relation with FRT indicating firms with large sizes have a high willingness to take the risk. This result is consistent with those (Zadeh & Eskandari , 2012) who review the theory and literature and suggests that the higher the firm size higher will be the risk-taking of current year. However, the theory of diversification justifies the negative relation between firm risk and SIZE. The coefficient of SIZE (-2.03) have negative

relation with FRT. As the larger have more operations they can diversify their risk. Moreover, the larger size firm has better access to the market so they can get financing at a low cost. The difference in the current period and lag period effect of variables is due to the dynamic effect. As the current period variable capture the short-term effect of variation but the lag period variable capture the longer period effect so their relations to the dependent can be different. The STATE has a significant negative effect on the firm risk at a 1% level of significance. The negative sign with the STATE suggests that private firms face relatively less risk than public firms. The 2.75 indicates that public firms face 2.75 units less risk than private firms.

6.9: Specific Panel Regression Model

The final result for a specific model of fixed panel regression model for the relationship between firm risk-taking and trade policy uncertainty is given below in Table 6.8.

Table 6. 8: Specific fixed effect model for TPU on FRT

Variables	FRT1
TPU_{t-1}	-0.17*
	(0.053)
TPU	-0.29**
	(0.003)
IHP	-0.008**
	(0.004)
ROA_{t-1}	-0.005***
	(0.001)
ROA	0.013***
	(0.001)
SA_{t-1}	-4.007***
	(0.0002)
SA	1.82*
	(0.08)
$SIZE_{t-1}$	4.86***
	(0.001)
SIZE	-1.96*
	(0.099)
STATE	-1.58*
	(0.098)
CONS	-53.1***
	(0.000)
R^2	0.51
Mean of DV	2.369
STD of DV	1.836
F-Statistics	8.16
Prob(F-stat)	0.000

Note: * , ** and *** indicate significance levels of 10%, 5%, and 1% respectively

The specific model includes the result for the statistically significant variable. All the variables in the specific model are statistically significant at 1%, 5%, and 10% levels of significance. These are the final result for the hypotheses(a). In order to avoid the problem of insignificance and multicollinearity the specified model selected from the general model is shown in the table above. The final result of the specified model again supports hypothesis(a) of the negative relation of FRT and TPU. These results finally reject the null hypothesis and accept the alternative hypothesis. The justification for the coefficient sign and effect of the dependent variable of a specific model is the same as for the general model. The F-stat value of the model is greater than the p-value means it is statistically significant. The F-stat is used to test the overall significance

of the model. This value suggests that in a specific model most of the variation in the dependent variable FRT I explained by the explanatory variables used in the model.

6.9.1 The Effect of Trade Policy Uncertainty on FRT2

To test the reliability of the result this study calculated the FRT again with the standard deviation of stock returns of the firm called FRT2. The result Hausman test again supports the fixed panel effect model. First, the general model is tested and the result for the specific model for the effect of TPU on FRT2 is given below in the table 6.9.

Table 6. 9: Effect of TPU on FRT2

Variable	FRT2
TPU_{t-1}	-0.133***
	(0.00)
TPU	0.035**
	(0.04)
LEV_{t-1}	0.0016**
	(0.04)
ROA	-0.001***
	(0.0002)
SA_{t-1}	-0.67
	(0.0003)
SA	0.898***
	(0.000)
$SIZE_{t-1}$	0.757***
	(0.003)
SIZE	-0.932***
	(0.000)
BSIZE	-0.224***
	(0.007)
CONS	3.87**
	(0.046)
R^2	0.28
Mean of DV	0.317
STD of DV	0.258
F-Statistics	3.07
Prob(F-stat)	0.000

Note: * , ** and *** indicate significance levels of 10%, 5%, and 1% respectively

The table shows the result of hypothesis(a) by testing the relationship between FRT2 with TPU and TPU_{t-1}. The findings support hypotheses(a). The negative sign with TPU_{t-1} and with FRT2 show that TPU has an inverse relation with FRT2 in the period t. These findings again support the inverse relation between trade policy uncertainty and firm risk-taking. These result again implies that exporting firm of PSX invest less in high-risk projects, even though their

reward is high in periods of high trade policy uncertainty. The one-unit increase in TPU decreases the FRT by 0.13% at a 1% level of significance. This result is collinear with the risk aversion theory which suggests to evade the risk in a period of ambiguity firms choose to hold capital instead of undertaking investment. However, some factors may contribute to the positive relationship between FRT and TPU. The results in the table with positive signs also suggest the chance of a positive relationship between FRT and TPU. The one scale increase in the TPU the FRT will increase by 0.03%. These results are collinear with the risk lover theory of firms. Firms with a higher appetite for risk may be more inclined to engage in risk-taking behavior, irrespective of external factors such as trade policy uncertainty. Firms that embrace risk-taking behavior in the face of trade policy uncertainty may gain a competitive advantage so they prefer to take risks. The other reason for this positive relation is that TPU of this year have more significant effect on firm risk taking of next year.

The TPU_{t-1}, TPU, ROA, LEV_{t-1}, SA_{t-1}, SA, SIZE, $SIZE_{t-1,}$ and BSIZE are statistically significant at 1%, 5% and 10% level of significance. The ROA is highly positive and significant indicating the risk ability of a firm is high when they have high ROA. The one-unit increase in the ROA of the firm decreases the 0.0001% FRT. These results are against the theory of risk lovers. As Pakistan is not in an ideal situation that the reason that some firms in Pakistan based on risk aversion theory avoid taking the risk even there ROA increases because of uncertainties in economic conditions. Also the ROA of this year will increase the FRT of next year.

The SA is significantly positively related to FRT indicating that one scale increase in the financing constraint index of a firm increase the FRT by 0.89 unit in a current period, firms with higher financing concentration have the willingness to take risk but SA_{t-1} is significantly negative indicating that the firm past period financing constraint has a significantly negative relationship with the current period ability of FRT. The one-unit increase in the SA_{t-1} decreases the FRT by 0.67 units at a 1% level of significance. This negative relation of SA_{t-1} with FRT is consistent with the financing constraint theory of finance which suggests that when there is uncertainty firm retained earnings are uncertain so the firm investment plan will be uncertain due to financing constraint. The positive relation of SA with FRT is against theory as in Pakistan there is not an ideal situation. The firms in Pakistan usually suffer from financing constraints so the current period of financing constraint may increase the firm performance. This result is

consistent with the existing literature. As (Yao & Feng, 2022) investigated the more financing constraint firm faces more careful managers will handle the funds, improve their scientific management strategies and improve the performance of firms. Again the financing constraint of this year will more significantly effect the FRT of next year.

The coefficient $SIZE_{t-1}$ has a significantly positive relation with FRT indicating one unit increase in the size of the firm increase FRT behavior by 0.757 unit. This result is consistent with those (Zadeh & Eskandari , 2012) who review the theory and literature and suggest that the higher the firm size higher will be the risk. The coefficient of SIZE has negative relation with FRT indicating a one-unit increase in SIZE FRT by 0.93 units. This result is justified by the theory of diversification. Also the current size of firm increases the FRT of next year. The coefficient of $INDEP_{t-1}$ significantly negative indicating firms with large independent directors in the past period has less willing to take risks in periods of high trade policy uncertainty. The one-unit increase in the independent director decreases the firm risk by 0.224 units at a 1% level of significance. These results are consistent with (Lewellen, 2006) who investigated that if the manager is risk averse they don't take risk and make financing decisions to avoid risk. This F-stat shows the overall model is significant most of the variation in the dependent variable is explained by the independent variable.

6.9.2 Effect of TPU on FRT without any control variables

Table 6. 10: Effect of TPU on FRT1 and FRT2 without control variables

Variables	FRT1	FRT2
TPU	-0.204**	0.01
	(0.04)	(0.247)
TPU_{t-1}	0.041	-0.13***
	(0.695)	(0.000)
Cons	2.40***	0.30***
	(0.000)	(0.000)
R^2	0.49	0.127
Mean of DV	2.36	0.31
STD of DV	1.836	0.256
F-Statistics	7.80	2.740
Pro(F-Stat)	0.00	0.000

Note: * , ** and *** indicate significance levels of 10%, 5%, and 1% respectively

The table 6.10 provides the most specified form of the model to test the hypotheses(a) of the study. Column 2 shows the result for the TPU effect on FRT1 and column 3 shows the result for the TPU effect on FRT. According to the results provided above this study reject the null hypothesis and accept the alternative hypotheses that holding other thing constant trade policy uncertainty harm firm risk-taking. The coefficient of TPU with FRT1 shows negative and statistically negative effects of FRT1 at a 5% level of significance. The coefficient *shows* a positive but insignificant effect on FRT1. This means in actuality TPU hurts FRT1. Similarly, the coefficient of TPU shows a positive but insignificant impact on FRT2. So actually it also proves the negative relation of TPU with FRT2. The coefficient of TPU_{t-1} with FRT2 shows a negative and significant impact on FRT2 at a 1% level of significance. So the conclusion of this specific model also supports that holding another thing constant there is a negative relationship between TPU and FRT. So again these findings reject the null hypotheses and accept the alternative hypotheses. According to the results provided above in all models, this study rejects the null hypotheses and accepts the alternative hypotheses that holding other things constant trade policy uncertainty has a negative impact on firm risk-taking.

Section III

Result for Influencing and moderating effect on the Relationship of TPU and FRT

Preamble

This section includes the estimation results for influencing mechanism TPU*SA on the relationship of TPU. The section also takes account of the estimation result for moderating the effect of the leverage ratio and ownership concentration on the relationship of TPU on FRT. Hypotheses b and c are being tested in this section.

6.10 Results of influencing mechanisms

To test the influencing mechanism, we add the interaction term of TPU*SA and $TPU_{t-1} * SA_{t-1}$ to model (1).

Hausman Test

The result of the Hausman test shows that the probability of chi-square statistics is 0.06 which is less than 13.76. Therefore, the null hypothesis of the random effect model is rejected and the alternative hypothesis of the fixed panel effect model is accepted.

Hausman Test

Chi^2	13.76
Prob $< Chi^2$	0.065

Note: P<0.05, P<0.01, P<0.1

Effect of Influencing Mechanism

Table 6. 11: Results for Influencing Mechanism

Variables	FRT
TPU*SA	-0.04**
	(0.03)
$TPU_{t-1} * SA_{t-1}$	0.0021
	(0.906)
IHP_{t-1}	0.0089**
	(0.028)
ROA	0.009***
	(0.0002)
ROA_{t-1}	0.006**
	(0.01)
STATE	-1.48*
	(0.12)
SA	0.32***
	(0.001)
CONS	2.57**
	(0.003)
R^2	0.50
Mean of DV	2.369
STD of DV	1.836
No of observations	5130

Note: * , ** and *** indicate significance levels of 10%, 5%, and 1% respectively

The final result of the effect of TPU on FRT with the interacting term of TPU*SA and $TPU_{t-1} * SA_{t-1}$ is shown in the table 6.11. The result of the influencing mechanism TPU*SA suggests that the negative impact of TPU on firm risk-taking is more pronounced in the firm with higher financing constraints This result is related to the financial theory of risk-averse firms. A firm with higher financing constraints needs to bear the greater financial risk when deciding on high-risk high-return projects. So to avoid this risk the risk-averse firm will reject the high-return project to avoid this risk. The one-scale increase in the financing constraint increases the negative impact of TPU on FRT by 0.04 units at a 5% level of significance. The results of the influencing term of $TPU_{t-1} * SA_{t-1}$ are positive but insignificant.

6.11: The moderating effect of the Leverage ratio on the Relationship of Trade Policy Uncertainty with Firm Risk Taking

Hypothesis(b)

Ho: The debt ratio does not reinforce the influence of TPU on FRT

H1: The debt ratio reinforces the influence of TPU on

Hypotheses(b) of this study hold that the effect of trade policy uncertainty on firm risk-taking is more pronounced with a firm with a higher leverage ratio. For testing this hypothesis this study introduced an interacting term of TPU*LEV and $TPU_{t-1} * LEV_{t-1}$

Husaman Test

The result of the Hausman test shows that the probability of chi-square statistics is 0.037 which is less than 0.05 at a 5% significant level. Also, the Probability value is less than Chi^2 Therefore, the null hypothesis of the random effect model is rejected. The appropriate model is the fixed effect model.

Hausman Test	
Chi^2	17.815
Prob $< Chi^2$	0.037

Note: P<0.05, P<0.01, P<0.1

Fixed Panel Effect Model

Table 6. 12: Results for leverage ratio effect on the relationship between TPU and FRT

Variable	FRT
$TPU_{t-1} * LEV_{t-1}$	0.11 (-0.003)*
TPU*LEV	0.964 (-7.64E-05)
TPU	0.0008 (-0.22)***
IHP_{t-1}	0.02 (-0.009)**
LEV	0.136 (0.0078)*
ROA	0.0002 (0.0089)***
ROA_{t-1}	0.01 (0.006)**
SIZE	0.0001 (0.417)***
STATE	0.12 (-1.489)*
Cons	0.02 (-5.69)**
R^2	0.51
Mean of DV	2.369
STD of DV	1.836
No of Observation	1530
F- Statistics	7.92
Prob(F-stat)	0.000

Note: * , ** and *** indicate significance levels of 10%, 5%, and 1% respectively

As the above results in section II prove that there is a negative association between trade policy uncertainty and firm risk-taking. The table above provides the results that how the firm leverage ratio work as a moderating effect on this relation of TPU and FRT. The coefficient of $TPU_{t-1} *$ LEV_{t-1} negative (-0.003) suggests that a higher leverage ratio results in a higher negative correlation between trade policy uncertainty and firm risk-taking. The one-unit increase in leverage strengthens the negative impact of TPU on FRT by 0.003 units at a 1 % level of significance. As firms with higher debt are already facing operational risk. So when such a firm faces an increase in TPU their FRT level will be reduced and they decrease investment in their project even if they offer high returns in response. Risky firms typically have to pay higher

interest rates on debt due to their higher perceived credit risk. This means that any debt they take on will come with higher interest expenses, which can eat into their already limited profitability. These higher interest costs can exacerbate their financial challenges and potentially push them closer to insolvency. As if the debt ratio of firm is high this mean that in order to get more debt investor demand higher return from them in compensation to avoid the associated risk.The coefficient value of TPU*LEV is negative but has an insignificant impact. So this study tends to reject the null hypotheses and accept the alternative hypotheses. The other control variable used in this specific model is statistically significant at 5% 1% and 10% level of significance. The value of F statistics is significant which means that most of the variation in the dependent variable is explained by the independent variable.

6.12 The moderating effect of ownership concentration on the relationship of trade policy uncertainty and firm risk-taking.

Hypothesis(c)

Ho: Ownership concentration does not strengthen the effect of TPU on FRT

H1: Ownership concentration strengthens the effect of TPU on FRT

Hypothesis (c) of this study holds that the effect of trade policy uncertainty on firm risk-taking is more pronounced with a firm with higher ownership concentration. For testing this hypothesis this study introduced an interacting term of TPU*SC and $TPU_{t-1} * SC_{t-1}$.

Hausman Test

The result of the Hausman test shows that the probability of chi-square statistics is 0.001 which is less than 0.05 at a 5% significant level. Also, the probability value is less than Chi^2 Therefore, the null hypothesis of the random effect model is rejected. The appropriate model is the fixed-effect model

Hausman Test	
Chi^2	29.06
Prob<Chi^2	0.001

Note: P<0.05, P<0.01, P<0.1

Fixed Panel Effect Model

Table 6. 13: Results for ownership concentration effect on the relationship of TPU on FRT

Variables	FRT
$TPU_{t-1} * SC_{t-1}$	-0.001
	(0.90)
TPU*SC	0.01*
	(0.15)
TPU	-0.45***
	(0.000)
IHP_{t-1}	-0.009**
	(0.021)
ROA	0.01***
	(0.0001)
ROA_{t-1}	0.006**
	(0.01)
SA	-1.49**
	(0.002)
SIZE	1.644**
	(0.004)
$SIZE_{t-1}$	0.446*
	(0.05)
STATE	1.53*
	(0.11)
Cons	-37.66***
	(0.000)
R^2	0.51
Mean of DV	2.36
STD of DV	1.83
No of Observation	1530
F- Statistics	8.03
Prob(F-stat)	0.000

Note: * , ** and *** indicate significance levels of 10%, 5%, and 1% respectively

The table 6.13 provides the results that how firm ownership concentration work as a moderating effect on this relation of TPU and FRT. The coefficient of TPU*SC is positive (0.01) which

suggests that the firm with highly concentrated ownership decline the negative impact of trade policy uncertainty on firm risk-taking. The coefficient value suggests that a one-unit increase in the ownership concentration reduce the negative impact of TPU on FRT by 0.01 unit. As in a highly concentrated firm, few shareholders have all the controlling rights over the firm decision. The suggestion from small shareholders is being neglected only a few shareholders make the most of the decisions. In this case, these controlling shareholders may have the power and influence to navigate and mitigate the impact of trade policy uncertainty on the firm. They can make strategic decisions and implement risk management measures to counterbalance the negative effects of uncertain trade policies. The coefficient of $TPU_{t-1} * SC_{t-1}$ is positive but insignificant. So based on the significant results this study accepts the null hypotheses that ownership concentration does not strengthen the negative impact of TPU on FRT and rejects alternative hypotheses.

CHAPTER 7

POLICY REVIEW

7.1 Preamble

This chapter highlights some existing trade policies issued by Ministry of Commerce. This chapter highlights the objective description and goals of policies imposed. Along with this the issues with previous policies is also highlighted. There are three policies are reviewed in this chapter Strategic trade policy framework of Pakistan (STPF) 2020-2025, Trade-related investment policy framework 2015-2023 and National tariff policy (NTP) 2019-2024.

Policy Review: 1

7.2 Strategic Trade Policy Framework of Pakistan (STPF) 2020-2025

A strategic trade policy framework is a set of policies and measures that a country's government puts in place to support its trade objectives. The primary goal of such a framework is to improve the country's competitiveness in international markets and promote economic growth.

The first STPF in Pakistan was implemented in 2009 and it lasted from 2009-2012. The second STPF of Pakistan was implemented in 2012 and it lasted from 2012-2015 then the third STPF 2015-2018 was formulated. These all-policy frameworks proved unsuccessful in reducing the trade deficit of Pakistan and resulting in trade imbalances. The main reason for the historical trade deficit of Pakistan is low export growth in Pakistan. Pakistan's exports ranged between US $ 20 to $25 billion in the last 10 years. So, the main objective of STPF 2020-2025 is to address the problem of low and stagnant export growth in Pakistan.

7.2.1 Weakness of previous STPF of Pakistan (2009 till 2018)

The previous policies fail to alter the exports due to weak long-term systematic and structural reforms.

Previously MOC formulates the annual trade policies (ATPs) but due to weak long-term systematic and structural reforms in that policy, the 3-year STPF was initiated from 2009 onward to 2018. However, these STPF failed due to the following reasons.

1) Lack of proper monetization policies. There is no proper check and balance on policy implementation and periodic review is not ensured.

2) Absence of coordination between Government officials to implement the policies successfully such as inadequate distribution of funds. The budget allocated for STPF 2015-2018 is 20 PKR billion but only 1 PKR billion is released during the entire policy period.

3) These policies mostly focused on only export of textile sectors of Pakistan the other sectors are being neglected. They focused on the concentration of primary and intermediate goods exports. The major export partner which is focused on policy is America and China's. However exports to other emerging markets are not focused on these policy frameworks.

7.2.2 Objective of STPF (2020-2025)

This is the first five-year trade policy framework formulated in Pakistan's history. The key objective of this framework is to reduce the manufacturing cost of products through tariff streamlining, achieve product and geographical variety encourage preferential trade and free trade agreements across boundaries to upgrade market access. This STPF 2020-2025 highlights the importance of trade diversification rather than relying on customary trade sectors such as relying only on textiles and sports etc for export growth. They focused on geographical diversity by refining the regional connectivity of Pakistan with other states. To overcome the problem of shortage of financing the total budget allocated to this framework is RS.45 billion.

The export projection for 2020-2025 was constructed by using GDP, real effective exchange rate, and domestic and foreign prices as explanatory variables under three different scenarios.

Table7. 1: Export Projections of STPF for 2020 to 2025(USD-Billions)

Year	Senerio1	Scenario 2	Scenario 3	Export Target
2020-21	21.51	23.90	24.64	25.30 (Achieved)
2021-22	23.08	27.15	29.10	31.20 (Achieved)
2022-23	25.21	30.19	32.98	37.88
2023-24	26.70	32.55	36.26	45.81
2024-25	28.57	35.46	40.27	57.03

Source: Ministry of Commerce (MOC)

Assumptions

Senerio1: Government intervention will be minimal. They predicted growth rate of prices is 10.8% in FY21, followed by 8% growth in FY22 and onward (Pessimists)

Scenario 2: The domestic price growth is reduced due to government intervention. The predicted growth is 8% in FY21, followed by 6.5% growth in FY22 and onward.

Senerio3: The predicted price growth is 7.2% in FY21, followed by 5.5% in FY22 and onward. (optimistic).

The whole framework of Pakistan's strategic trade policy for 2020-2025 is discussed in the figure 7.1. The policy is organized in three sections first is to identify the majority sector, second is to ensure its implementation and third is to focus on the funding source for STPF to ensure its working.
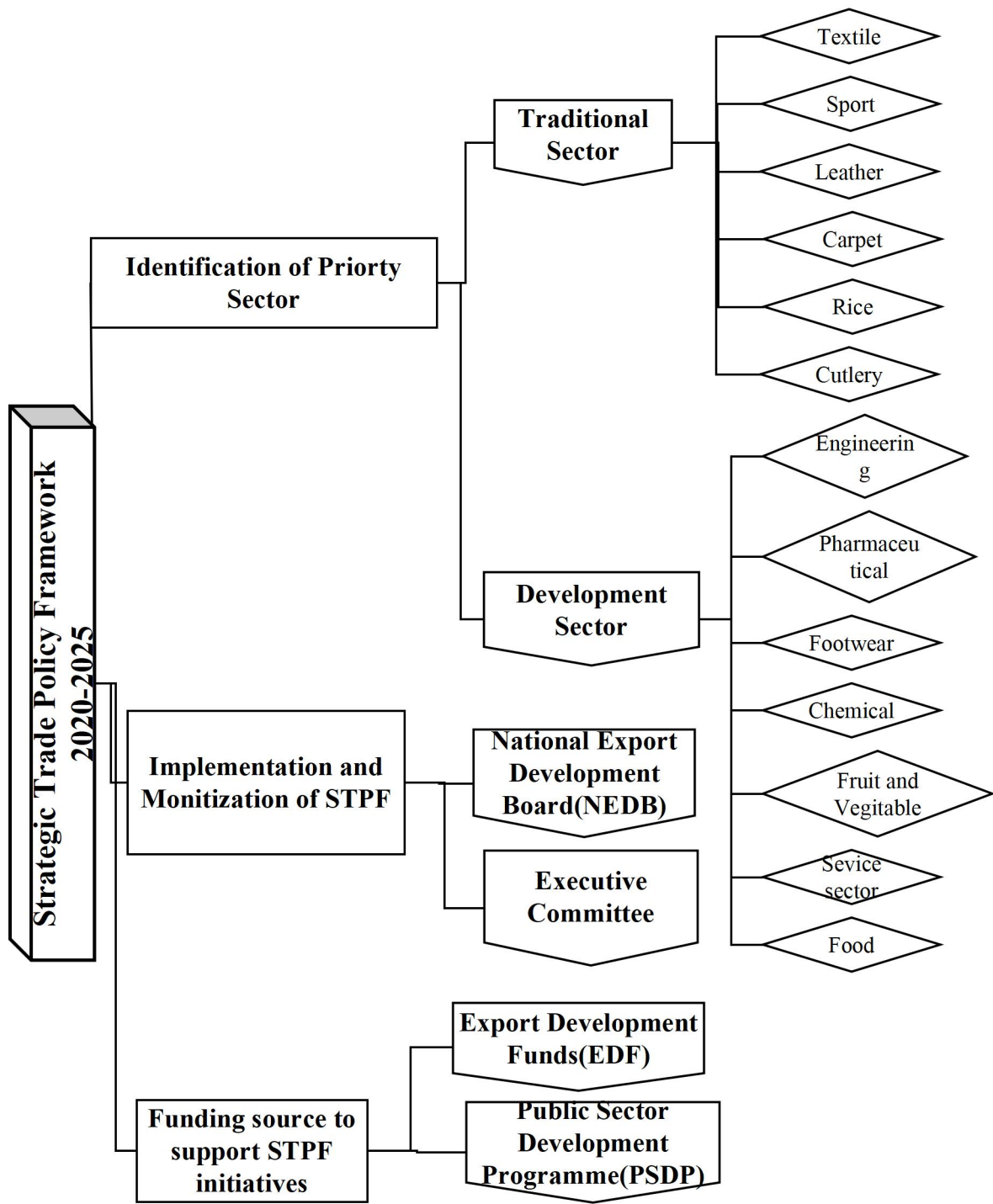
Figure7. 1: Strategic Trade Policy Frameworks (STPF) of Pakistan

Source: Author

7.2.3 Identification of Critical Enablers(CE) of Policies

The assessment of previous policies helps to identify the critical enablers (CE). These CE from policies helps to achieve the objective of STPF (2020-2025). This CE is briefly discussed below in the framework.

• Enhance product quality • Reducig cost of doing business • Trade ratialization	**CE1: Competition Enhancement**
• Colaboration with Board of Investment • Leveraging CPEC for regional Integration • Trade facilitation • Focus on Transshipment	**CE2: Trade Related Investmet**
• Development of Economic cooridor • **Institutioal Strengthing** • a) Restructuring Ministry Of Commerce • b) Establishment of trade portal • c) Creation of sector specific council	**CE3: Export Ecosystem**
• Branding • Enhance Market access • Export Diversification	**CE4: Integration into Global Value Chain**

Figure7. 2: Identification of Critical Enablers of STPF

Source: Author

Policy Review: 2

7.3 Trade-related Investment Policy Framework 2015-2023

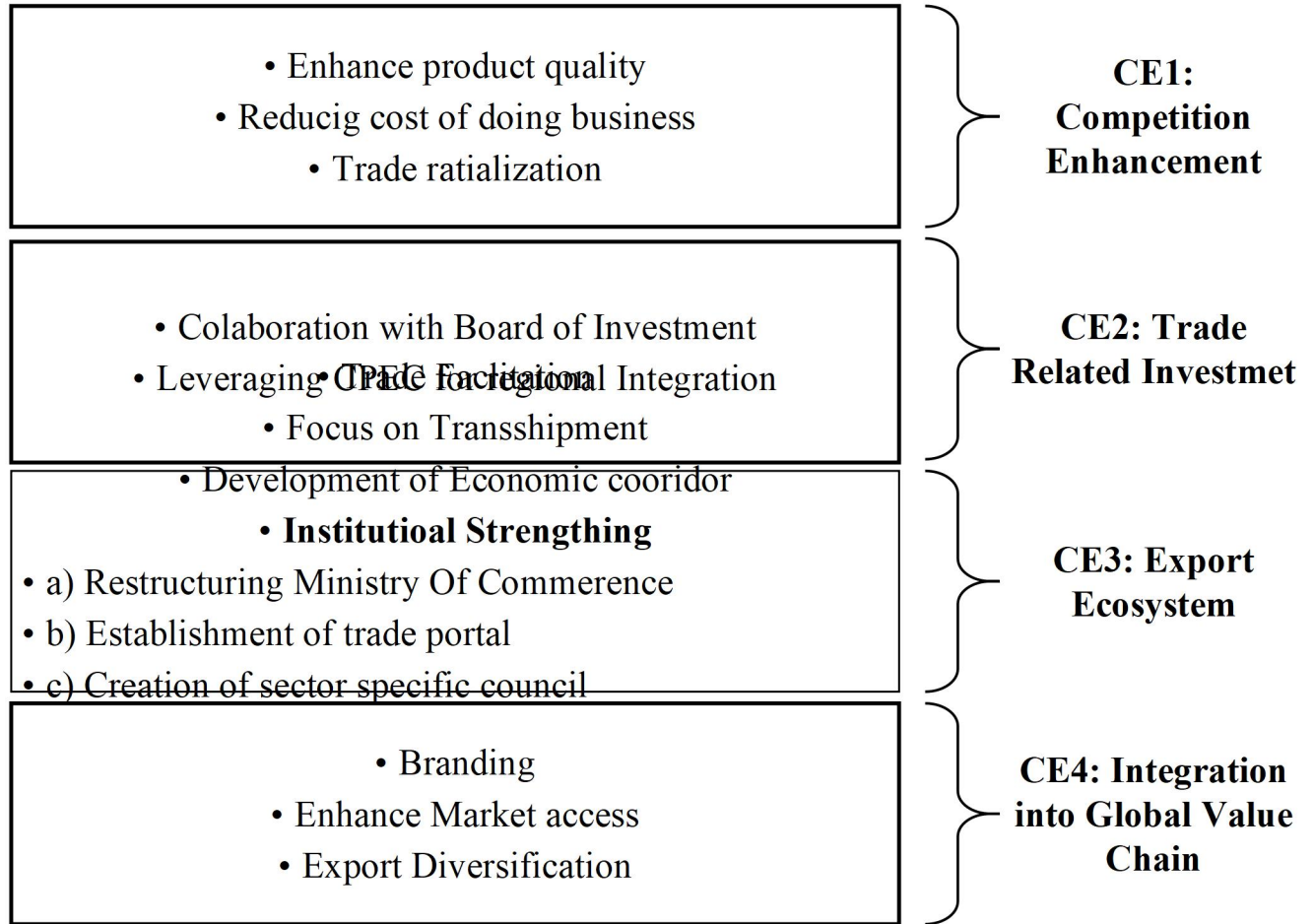Investment and trade have two-way relations. More specifically investment in export-oriented sectors is an important factor for export-led growth strategy. Over the year Pakistan is facing low investment and low saving trap. In 1960 Pakistan's saving as a percent of GDP is 10% in 2000 it increases to 15% and in 2021 it reduces again to 13.5% as a percent of GDP. This saving rate of Pakistan is still very low compared to the global average rate of 24.5%.
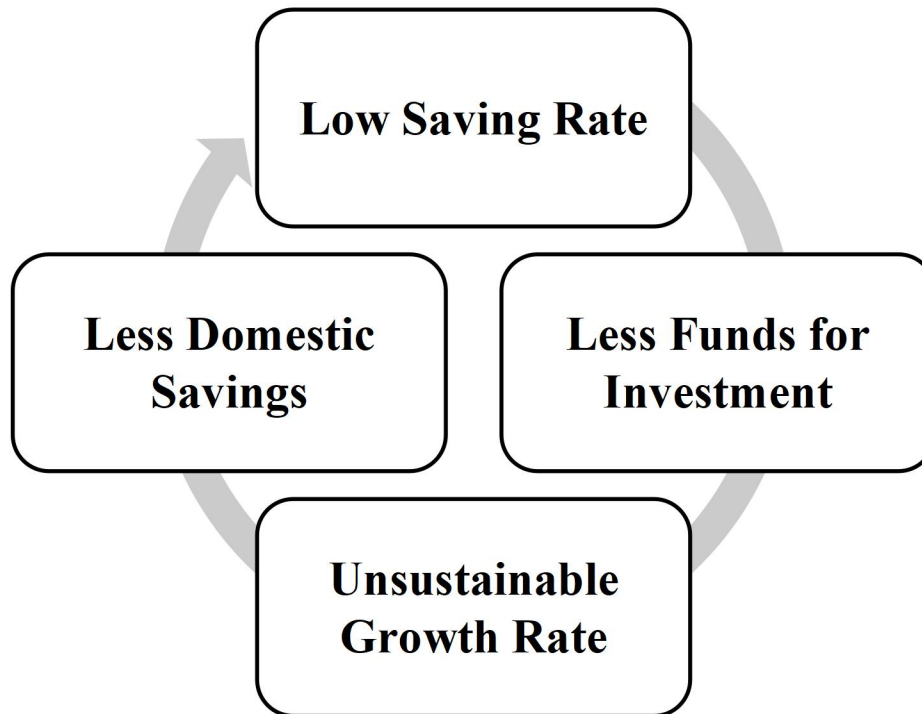
Figure7. 3: Investments Saving Trap

Source: Author

This policy suggests foreign direct investment as a deriving agent to fill this investment saving gap. This policy further highlights the importance of investment in the manufacturing sector to reduce this gap. In the past five years, the inflow of cumulative FDI in Pakistan was US$10 billion out of which 81% of investment goes to non-manufacturing sectors. However, the manufacturing sectors have a 13.5% share of GDP and bear 58% of the tax burden.

Foreign investment in Pakistan has been protected and promoted by the following legal and policy instruments:

i.   "Foreign Private Investment Act" of 1976

ii. "Protection of Economic Reforms Act" of 1992

iii. "Investment Policy" of 2013

iv. : FDI Strategy" of 2013-17

Advantages of Investment Climates of Pakistan

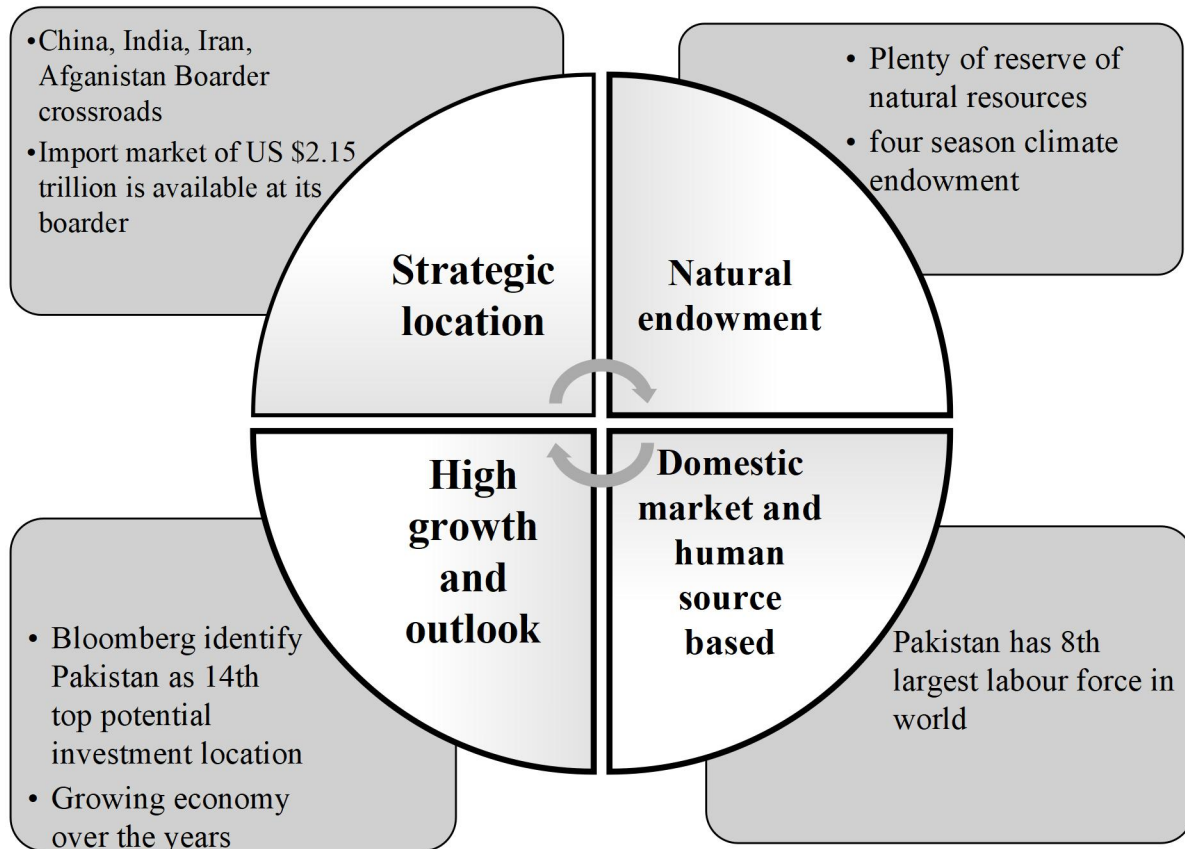The policy highlights the advantages of investment in Pakistan.

Figure7. 4: Advantages of Investment Climates of Pakistan

7.3.1 Framework

The policy framework focuses on structurally transforming Pakistan's production base into high-value-added sectors integrated to the international market and at the same time meeting domestic demand of the country. The whole policy framework focuses on five issues.

i.   The framework identifies priority sectors based on indicators such as ease of diversification, economic complexity of products, and the size of domestic and global markets. The identified priority sectors include labor-intensive sectors like footwear, bags, etc. The resource-intensive sectors like copper cathodes, foils, aluminum sheets etc. The import substitution sectors like oil refinery, petrochemicals, data processing etc and integration into global value chains in sectors like consumer electronics, automotive electronics, electrical equipment, and chromium bromide batteries.

ii. The measure is proposed to enhance competitiveness, including tariff rationalization to reduce import tariffs, provision of land and duty-free import of machinery and raw materials for investors, improvement of access to energy by reducing electricity tariffs, providing aggregated gas costs, and faster industrial connections. The policy also aims to make labor costs competitive through productivity improvements, skill development, and differentiated wages based on the cost of living.

iii. This policy also highlighted the efforts to improve the investment. The main target is to improve the ranking of Pakistan in global competitiveness and also create ease of doing business in Pakistan.

iv. The policy ensures that investment in priority sectors enjoys the same privileges and tax holidays as special economic zones.

v.   Sector-wise policies will be formulated and issued within 90 days for each of the priority sectors by the Board of Investment (BOI)

Overall, the policy framework aims to enhance Pakistan's competitiveness, attract export-oriented investment, and improve the investment ecosystem to support economic growth and job creation.

Policy Review: 3

7.4 National Tariff Policy (NTP) 2019-2024

7.4.1 Background

Over the last two decades, Asia, particularly Pakistan's neighboring countries, China, India, Iran, and Afghanistan (CIIA), have experienced significant growth in the global market share. In contrast, Pakistan's share has declined. This is primarily due to anti-export bias in Pakistan's economic policies, with high tariffs on imported inputs being a major factor.

7.4.2 Tariff regime

Pakistan's tariff regime has seen some liberalization over the years, but there have also been occasional increases in tariffs. Currently, there are four duty slabs ranging from 3% to 20%, with additional duties on certain tariff lines.

Issues with previous policy

There are several issues with current tariff regime

- Using import tariffs as a revenue tool has caused distortions and increased input costs for the manufacturing sector, especially export-oriented industries.
- High tariff protection has resulted in inefficiencies in the manufacturing sector, impacting its competitiveness in both domestic and global markets.
- The high tariffs have created an anti-export bias, making domestic markets more attractive than export markets, burdening consumers with higher prices.
- The tariff structure is complex, with multiple duty slabs, concessions, and regulatory duties, making it difficult to navigate.
- High tariffs have increased incentives for smuggling and mis-declaration of goods.

7.4.3 Objective of NTP
National tariff policy aims to have following four objective

- Increase competitiveness
- Enhance competitiveness
- Improve consumer Welfare
- Remove anomalies in the tariff structure

7.4.4 Policy overview

The new National Tariff Policy aims to use tariffs as a trade policy tool rather than just for revenue generation. It will simplify the tariff structure by reducing exemptions and concessions. The principle of cascading tariffs will be maintained, where tariffs on inputs are lower than or equal to tariffs on finished products, but with reduced steepness in escalation. Domestic industries will receive strategic protection against foreign competition during their early stages, with the protection gradually phased out to become globally competitive. The policy will also leverage the domestic market to develop competitive import substitution industries, providing time-bound protection and eventually making them competitive for export-oriented production.

7.5 Conclusion

As the three policies reviewed discuss the three different aspect of trade. The STPF goal is to improve the country's competitiveness in international markets and promote economic growth. The Trade-related Investment Policy Framework 2015-2023 highlighted the issue of investment saving gap of Pakistan and importance of FDI to cover this gap. The third policy NTP highlighted the tariff related issues of Pakistan trade. As the uncertainty in the policies created the risk for investor returns. The STPF 2020-2025 is the fourth trade policy framework before this 3 policy framework were introduced but does not work well. These uncertainties of polices is due to weakness of policy maker to implement policy in proper way. In the same way NTP 2019-2024 also highlighted the issues and uncertainty of previous tariff policies. These uncertainties in trade related policies reduce the investor confidence as well as reduce the firm risk taking.

CHAPTER 8

QUALITATIVE RESEARCH

This chapter is based on qualitative research methods. The qualitative analyses of this study involve first selecting the indicators for the measurement of the trade policy uncertainty index and then conducting interviews to discuss its effect on the economy and firm characteristics. At the last all the respondents are asked for any policy recommendation on this topic. To select the indicators for trade policy uncertainty general discussion is done with trade policy experts of the Ministry of Commerce. The indicators of TPU index is selected through existing literature as well as the discussion with the trade experts. So all the respondents are asked what are the key factors that contributes in trade policy uncertainty. After the estimation is done interviews are again conducted with some economists and advisors from the Ministry of Commerce(MOC), National Tariff Commission(NTC), World Bank, and Ministry of Finance, and some professors from universities who are experts in trade economics on our estimation results and their views about the trade policy uncertainty and its effect on the economy and firm risk-taking. To take the firm perspective on this, we also approached some firms and collected their opinion as well. The total respondent for this study is 18. The eight respondents are from the Ministry of Commerce, two respondents are from National Tariff Commission, one respondent is from World Bank, two respondents are from the Ministry of Finance, and three respondents are from PIDE.

8.1 Trade Policy Uncertainty

To conduct the interviews a questionnaire was prepared to get their opinions on trade policy uncertainty of Pakistan. The first question is about "How do you define trade policy uncertainty?" One respondent from the NTC considers trade policy uncertainty as the inability of agents to predict what will be the next trade policy. One respondent from the world bank explained in detail that trade policy uncertainty can be defined more broadly as a situation in which the frequent changes in trade policy parameters make it difficult for agents to predict their trajectory. He gives examples of policy parameters such as regulatory duties, additional customs duties, customs duties, and many other non-tariff policy instruments, etc. One respondent explains it as the unpredictability of the trade relationship between countries. However, the

common definition given by all respondents is trade policy uncertainty is a risk of change in the trade policies of the country.

8.2 Effect of Trade Policy Uncertainty on the Economy

The second question is the sub-question of the first question. The second question I asked the respondent is about the effect of trade policy uncertainty on the economy.

Trade policy uncertainty has a significant impact on a country's economy. All the respondents explain the effect of TPU on different sides of the economy. One respondent said that TPU affects the economy as it will reduce investment by businesses. Companies may delay or scale back their investment plans due to the risk of sudden policy changes. Similarly, one respondent said that trade policy uncertainty can disrupt global supply chains, which are essential for many industries. In the same way, one respondent explains that uncertainty in trade policies can lead to fluctuations in trade volumes. Businesses may alter their import and export activities in response to changing tariffs, quotas, or other trade barriers. Reduced trade volumes can result in lower revenues for businesses, decreased economic activity, and potentially slower GDP growth. However, all respondents explain the different sides of the economy but all the respondents collectively agreed that TPU has a significant negative effect on economic growth. Similarly Caldara, Iacoviello, & Molligo (2019) highlighted in their research that uncertain changes in tariff and higher expected tariff decrease the investment oppertunities of economy.

8.3 Effect of Trade Policy Uncertainty on Firm Risk-Taking

The next question I asked the respondent is about the effect of trade policy uncertainty on firm risk-taking. All the respondents agree that the trade policies of Pakistan are highly uncertain. They considered that it has a significant negative impact on the country's economy. One respondent from National Tariff Commission (NTC) said that not just the trade policies but the other policies of the country are more uncertain such as inflation interest rates etc. All these policies do not even have short-term predictability. So these policy uncertainties affect the firm risk-taking more. One respondent explains this with an example. If a firm makes the plan to invest 2 million on a project but due to uncertainty of inflation there cost increases to 2 to 3

million so it will delay the investment plan. The covid-19 period created huge uncertainty. One respondent from the PIDE said that the after-impact of covid-19 has created more uncertainty in policies. He further explains that trade policy uncertainty of the current year has a more negative effect on firm risk-taking of next year. One respondent from the world bank said even if the firm is risk neutral, its output decisions are bound to be negatively affected by uncertainty. In existing literature highlighted that TPU increase the operational and financial risk of firm in this way it has negative effect on FRT (Wang, Shen, Tang, Wu, & Ma, 2021).

8.4 Key Factor Contributing to Trade Policy Uncertainty

To identify the major reason behind TPU all the respondents are asked for the key factor contributing to TPU. The first reason that they give is financing constraints. As due to fiscal deficit govt does not deliver what they have promised to deliver for the completion of any policy. They also mentioned the case of the previous STPF which failed due to financing constraints. The other factor mentioned is political instability. In Pakistan, the leader can't sustain more than 3 years as one political party comes and make policy then the next party comes. The priority of the political leader is to work on their political term so in this way, the economic terms of the country are neglected. One respondent gives the example electric car. He said Govt announces a policy of electric car investment Toyota takes responsibility to built it. The first govt agrees to give the subsidy and allow for duty-free trade. After they make all the investment plans the govt suddenly backed out. So this kind of policy uncertainty increases the risk of return of firms So firms hesitate to make further investments. The common factor given to most of the respondents is the political dispute and uncertainty and financing constraint is the main factor contributing to the Trade policy uncertainty of Pakistan.

8.5 Recent Trend in Trade Policy Uncertainty of Pakistan

The trade policies of Pakistan are frequently changing over the years. Pakistan has been exploring opportunities to enhance trade relations with neighboring countries like China, Iran, and Afghanistan through enterprises such as the China-Pakistan Economic Corridor (CPEC) and the expansion of border trade zones. However, the covid-19 pandemic has created huge uncertainty in trade policies not just in Pakistan but all over the world it creates the uncertainty. One respondent also considers the change in the leadership of the country as in the general

election of 2018. There are also changes in policies of many trade instruments in 2018 and onward the next year as well.

8.6 Effect of Firm Debt Ratio and Ownership Concentration

All the respondents said that a firm debt ratio increases the risk for investors to invest in that firm. They said as none of the firms is working at full equity they need debt for financing so their financing cost increases. That firm becomes uncompetitive due to this debt ratio and increases in TPU. They also highlight that as we have a high-interest rate so debt ratio becomes riskier so when investors don't have the assurance of return due to risk so investor don't invest in such industries. One respondent from PIDE said that when a firm has high debt, it becomes riskier for the investor to invest in such firms. AS when a firm already has high debt than in TPU, the firm becomes even more riskier. So the investor demand extra returns in the face of this extra risk. The policy uncertainty also effects the allocation of debt within business group. Similarly the economic policy uncertainty plays very significant role in decision right allocation within the same business group group (Cao, Li, & Li, 2022).

In the case of ownership concentration, the respondent agrees that they have a positive impact on lowering the impact of TPU on firm risk taking. They considered that highly ownership-concentrated firms just focus on profit-making projects even if they are risky because they are themselves, owners, they make the decision to take risks to get high returns. Also, they think that in a period of TPU, they face less risk. Also, they highlighted the point that there is no true corporate culture. One respondent said that companies with single owners are disasters they don't even know what are they doing. The company with multiple owners the multinational companies are well managed and organized. They mostly do cost-benefit analyses while investing while single-owner companies mostly take the risk and do investment. One respondent from NTC said that it also depends on whether it is a public limited company or private limited company if it is private we can't force the firm to keep on how much of ownership is distributed to one person. Also according to competition law ownership concentration doesn't have a negative effect. As if I have most of the share of my firm I don't want to get in loss even if the condition is not normal I will try to get maximum profit even in the period of uncertainty. The EPU of also effect the corporate structure of firm. (Zhang, Han, & Pan, 2015) highlighted that increase in EPU forces firms to lower their debt. However, the state-owned firm and firm with

low marketization or their bank-firm relationship are prior will mitigate the negative effect of EPU.

8.7 Recommendations and Strategies to Reduce Trade Policy Uncertainty

At last, I asked all the respondents for suggestions that how to reduce policy uncertainty in Pakistan I asked them "What strategy govt should adopt to mitigate trade policy uncertainties and create a more stable and predictable trade environment?"

As all the policymakers are working in their compartment so all the ministries related to trade and policies should have a lot of coordination. As if the Ministry of Finance make one policy to increase tax to increase revenue when this comes to the Ministry of Industry they said that this tax will destroy the whole industry. As we don't have any industry policy. As a result, industry groups with larger lobbies can influence FBR ad Finance and make policies according to their way. So this has more impact on the small business and smaller firms. As you can see most of the countries get progress through the value chain of small firms to produce things together and by increasing employment. One thing is to make the trade policies for a longer period and also restrict the relevant departments to implement them. Also, there is a need to look at to identify what are our potential export sectors. So focus on those sectors. One respondent also mentioned that there is a need to look for high-potential sectors first and then make policies accordingly. As we are only focusing on the textile sector but now we are not much competition in the textile sector so we need to look at the competitor sector We need to look at the high technology sector and should focus on high technology exports. There is a need to provide a business environment to firms. One respondent said that there is a need to consult with firms and academia before making any policy. These policy uncertainties have a higher effect on small firms. If you make a policy after discussion with academia and firms, then that policy will be more sustainable and stable. We don't have any firm-level survey there should be a firm-level survey to address the firm problems.

8.8 Conclusion

The conclusion drawn after the interview from all the respondent is that trade policy uncertainty is a serious issue in Pakistan that need to be addressed. They considered not just the trade policy

uncertainty but the uncertainty in other economic policies as well. These all uncertainty collectively have a negative impact on the country's economy. These policy uncertainties also have a negative effect on firm risk taking behavior as well. This negative relation between TPU and FRT is also proved in the quantitative section of this study. So this increases the reliability of results. All the respondents considered that the debt ratio increases risk and makes the relationship between trade policy uncertainty and FRT more negative However the ownership-concentrated firm may do the investment even in a period of uncertainty to get the extra return. This finding is also collinear with the findings of the third and fourth objectives of this study. All the experts suggest there is a need for strong coordination between trade expert firms, the finance ministry, and all other relevant ministries while making policies. So that there will be less chance of failure of policy and ultimately the policy uncertainty will reduce.

CHAPTER 9

CONCLUSION AND POLICY RECOMMENDATION

9.1 Preamble

Chapter 8 is subdivided into two sections. First part of this chapter gives the summary of the results and conclusion of the study. The second part presents the policy recommendation drawn from the results.

9.2 Summary and Conclusion

The main target of this research is first to develop the Trade Policy Uncertainty (TPU) index of Pakistan and then to analyse the relationship between FRT and the TPU of Pakistan. The theories that are most related to this study are the financial constraint theory which highlights the effect of financing constraints on a firm's operation, the financial theory of risk aversion, and the theory of risk lover investor. These theories provide the base behind the relationship between TPU and FRT. To test this relationship, the targeted sample used in this study is the exporting listed firms of PSX. A total of 170 exporting firms are chosen for the analyses. The period of 2012 to 2021 is selected for the analyses. However, the TPU index of Pakistan is constructed from 2012 to 2022. The reason for choosing this period is to include both periods of stability as well as periods of uncertainty in trade policies.

As this study holds four objectives. The first objective of the study is to develop a trade policy uncertainty index for Pakistan. To achieve this objective 8 indicators are chosen. The four indicators are representative of export radar and the remaining four indicators are chosen based on existing literature on Pakistan and by concerting the trade experts from the Ministry of Commerce. The econometric technique of Principal Component Analysis (PCA) is used to develop the index. The second objective is to test the relationship between firm risk-taking and trade policy uncertainty. The FRT is measured in two ways. FRT1 uses the standard deviation of ROA and FRT2 uses the standard deviation of stock returns of firms. To analyse this relationship this study uses the general-to-specific model approach. First, the general model is estimated on both lag and current period variables then by removing the insignificant variable we move to a specific model. The appropriate model used for the analyses is selected through the Hausman test. The Hausman test supports the fixed panel effect model as the appropriate model of study. The

results of both general and specific models investigated that there is a negative relationship between firm risk-taking and TPU. The result of FRT2 also represents the same relationship for TPU_{t-1} but not for TPU. At last, the second object is again tested by removing the effect of all control variables. This is done by regressing the most specified model by using only dependent and independent variables. The results again prove the negative effect of TPU on FRT. In this way, the second objective is achieved. The effect of the influencing mechanism on this relationship is also tested using the financing constraint index. The results of financing concentrate show that financial constraint increases the negative effect of TPU on FRT. This finding is consistent with the financing constraint theory.

The third objective of the study is to analyse the effect of the leverage ratio of the firm on the negative impact of TPU on FRT. For this firm debt ratio is used with the TPU to introduce an integration term in the model. The results show that the leverage ratio of a firm strengthens the negative relationship between TPU and firm risk-taking. These findings are coherent with the risk-averse theory. This is how the third objective is achieved. The fourth objective is to test the effect of firm ownership concentration. To achieve this objective, the same procedure as objective three is followed but by using the variable of ownership concentration. The finding of objective four suggests that the ownership concentration reduce the negative relationship of trade policy uncertainty and firm risk-taking. As in a highly concentrated firm, few shareholders have all the controlling rights over the firm's decision. They can make strategic decisions and implement risk management measures to counterbalance the negative effects of uncertain trade policies.

9.2 Policy Recommendation

This study suggests some policy recommendations which are drawn from the findings of the study. These policy recommendations will help businesses, and policymakers as well as it will be helpful to increase the firm's performance.

i.   First, the transparency of trade policies should be enhanced. The government should have the responsibility to provide timely and clear information about the changes in any policies such as administrative measure tariff nationalization regulation, tariff rates, etc.

So that the firm timely make the decisions to address the risk associated with the changes in policies.

ii. Secondly, the government of Pakistan should focus on long-term policy frameworks with the coordination action of all the relevant ministries, trade experts, policy think tank as well as researchers. The one example is STPF 2020-25. There is a need for proper networking. So that investors built confidence and continue their operation even in policy uncertainty and take part in risk-taking operations to get high returns.

iii. Thirdly, as some firms continue to work even in the period of uncertainty. As their motive is to avoid competition. So, in the period of policy uncertainty risk management programs should be enforced. As the motive of NTP is to enhance competitiveness. So this will increase the competition among them. These risk management programs include offering workshops, training program, and advisory services to firms to deal with the risk of policy uncertainty. There should be a provision of financial support instruments such as trade insurance which would help the firm to reduce the effect of TPU.

iv. Fourth, the firm should be facilitated with easy access to finance, especially for those who are facing the risk of uncertainty. In this way, the firms debt ratio will not encourage the negative effect of TPU. On the backhand government should provide instruments to mitigate risk such as export credit guarantees.

v. As one of the weakness of previous policies as in STPF there is lack of monetization. Policymakers should conduct comprehensive impact assessments of proposed trade policies. These assessments should evaluate how changes in trade policy may affect firms, industries, and the overall economy, including their impact on risk-taking behavior.

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APPENDIX

Computation of Covariance Matrices

The rationale of this step is to check whether there is any relationship between the variables. These matrices will be the symmetric matrices of $P \times Q$. As the p is showing the number of dimensions.

The correlation of 8 indicators that are used for making trade policy uncertainty index is as follows

Correlation	CCI	EIR	MPI	LI	HI	FDI Inflow	FDI Outflow	PSI
CCI	1.000	.718	-.347	-.499	-.334	.715	-.536	-.299
EIR	.718	1.000	-.233	-.523	-.260	.454	-.337	-.530
MP	-.347	-.233	1.000	-.407	-.455	-.641	-.125	-.554
LI	-.499	-.523	-.407	1.000	.858	-.029	.402	.896
HI	-.334	-.260	-.455	.858	1.000	.041	.542	.850
FDI Inflow	.715	.454	-.641	-.029	.041	1.000	-.426	.144
FDI Outflow	-.536	-.337	-.125	.402	.542	-.426	1.000	.471
PSI	-.299	-.530	-.554	.896	.850	.144	.471	1.000

The positive sign show that the two variables are directly related to each other.

The negative sign show that the two variables are inversely related to each other.

Scree Plot
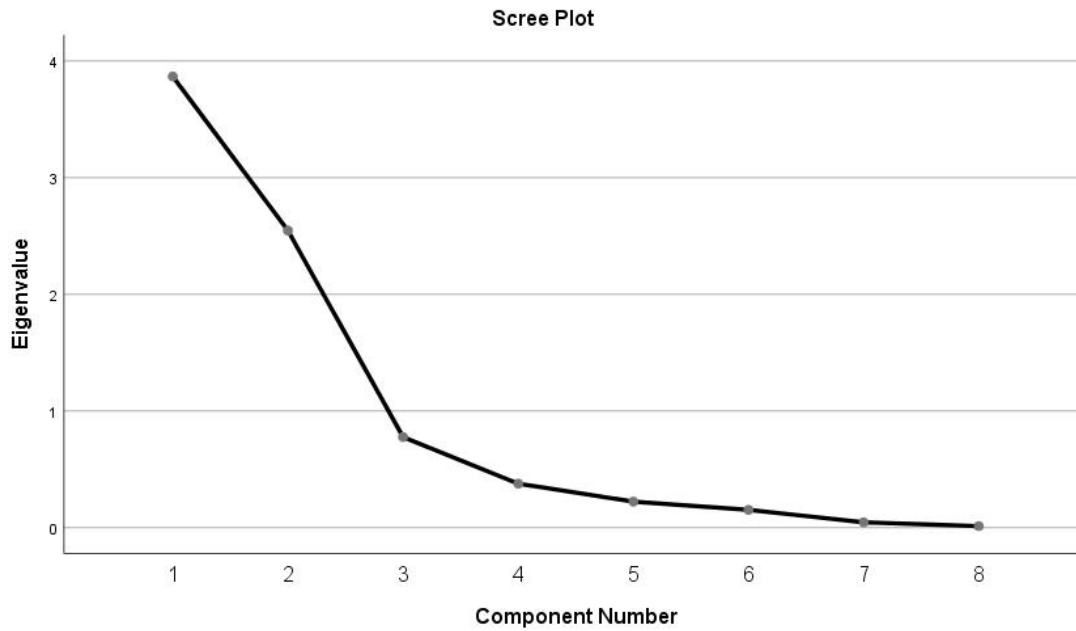
The scree plot of the components also shows that the first two components are explaining the maximum variation of the data set. As their eigenvalues are above 1.

Questions for Interview

1. How would you define trade policy uncertainties in Pakistan and their impact on the country's economy?

2. What are the key factors contributing to trade policy uncertainties in Pakistan? What are impact of TPU on firm risk taking?

3. Have there been any notable changes or trends in Pakistan's trade policy in recent years that have increased uncertainties? If yes, what are they?

4. How do trade policy uncertainties impact the competitiveness of Pakistani industries in the global market?

5. Does the influence of firm debt ratio strengthen the effect of trade policy uncertainty on firm risk-taking?

6. How does the influence of ownership concentration of firms reinforce the effect of trade policy uncertainty and firm risk-taking?

7. What are some potential strategies that the Pakistani government can adopt to mitigate trade policy uncertainties and create a more stable and predictable trade environment?

8. How do trade policy uncertainties in Pakistan compare to those in other countries or regions? Are there any lessons that can be learned from other countries experiences in managing trade policy uncertainties?