Determinants, financial risk management, and derivative usages affecting international trade: Evidence of Thai companies

Silani Hungkij
Email: a.nopthong@hotmail.com
Neungruthai Pecharat
Email: neungruthai.pe@spu.ac.th
Joseph M. Mula
Email: joseph.mula@gmail.com

Abstract

The paper investigates external factors, financial risk management, and derivative usages affecting financial performance of Thai importers and exporters. Prior motivation for undertaking this study was driven by the growing concerns of Thai importers and exporters facing financial risks when trading internationally. Financial management policies, external factors, and use of appropriate derivatives by Thai importers and exporters were primary motivators for this study to contribute to practice. A set of questions was created to collect data from 400 importers and exporters in Thailand. Correlation analysis methods were considered appropriate for this study to analyse data. The results reveal that financial management policies of an international trader were associated with external factors including inflation, interest rates, economic performance of a country and political stability. Use of derivatives (Forward, Futures, Swap, and Option) in risk mitigation was also correlated with the external factors including inflation, interest rates, economic performance of a country and political stability. External factors (e.g. inflation, interest rates, economic performance of a country and political stability), financial risk management policy, and use of derivatives significantly affected financial performance of import and export firms.

Keywords: financial risk management, derivative usage, foreign exchange rates, international trade, financial performance

Introduction

The effects of currency fluctuation on international trade have played a vital role in improving financial performance of import and export firms in a country's trade. The relative valuations of currencies and their volatilities also have a direct impact on international trading business (Nicita, 2013). This directly affects the balance of payments and overall financial performance (Leemukkadach, 2013). The currency fluctuation can be uncontrollably caused by internal and external factors (Patel, Patel, & Patel, 2014). Importers and exporters therefore need to find ways to mitigate against financial risk, risk assessment and minimisation of risk, currency fluctuations, and to select appropriate derivatives (Guay & Kothari, 2003; Kanokkanjanarat, 2013). Import and export firms are facing difficulties in using appropriate derivatives for improvement in financial performance from international trade (Bartrama, Brownb, & Mintonc, 2010). Firms can also use derivatives to hedge business operations (Bartrama et al., 2010; Leemukkadach, 2013). However, use of derivatives has a significant impact on fluctuations of securities' prices, interest rates, exchange rates (external factors) (Chareonjaitkorn, 2010).

In Thailand, the government has set the international free trade policy supporting and encouraging importers and exporters to trade freely in global markets (Leemukkadach, 2013). The policy helps the import and export industry to enhance efficiency and competitiveness and compete in the international trade environment (Leemukkadach, 2013). However, due to changes in the exchange rates of the Thai baht, the currency has fluctuated externally uncontrollably as a result of factors such as economic development level and political instability. This results in inflating rates of the Thai Baht increasing dramatically causing prices of goods and services to increase (Bank of Thailand, 2015). Consequently this has led to more instability causing problems for the Thai economy and the Thai baht has depreciated. Furthermore, the interest rate, one external factor, has a direct impact on the dynamics of exchange rates creating changes in currency rates which have depreciated (Intravised, 2000). The economic performance of the country's trade can also reflect increases in interest rates (Kar & Swain, 2014) and directly results in inflation. It attracts inflows of foreign investment placing a higher demand on money value (Bartrama et al., 2010). Another external factor such political stability, including protests and other unexpected events relating to changes in political issues, can be an important factor affecting gradually depreciated money value (Baht) (Bank of Thailand, 2015). Other than that, use of derivatives (e.g. Forward, Futures, Swap, and Options) helps importers and exporters to deal with repercussions on international trade. Appropriate derivatives hedge financial risks and manage financial contracts with regard to the balance of payments and overall economic (financial) performance (Guay & Kothari, 2003; Hull, 2006). Therefore, this study examines: (1) financial management policies of import and export firms affecting external factors from international trade; (2) the derivative usages (Forward, Futures, Swaps, Option) influencing external factors from international trade; and (3) external factors (e.g. interest rate, inflation, economic development level, and political stability), financial risk management policies, and derivative usages having significant repercussions on international trade. To provide a background for the study, relevant literature is reviewed first.

Financial risk management of import and export firms

Import and export corporates are mainly dealing with international trade transactions while facing financial risks from currency fluctuations including cash flows and foreign currencies. The exchange rate is a key factor determining the price of a domestic currency in terms of another, known as a foreign currency. It creates financial risk, which means uncertainty of future earnings from financial activities from international trade (Bank of Thailand, 2011). Import and export firms have set policy to manage risks and reduce negative impacts from international transactions. International transactions mainly fluctuate from changes in currency from a country's trading (Nicita, 2013). Importers and exporters need to manage risks arising from financial markets' volatilities. Risk management policies create value for import and export firms (Prevost, Rose, & Miller, 2003). In order to deal with financial risks, firms need to understand limitations, obligations, conditions and details of derivative categories in order to be able to manage reductions vulnerabilities (Gregory, 2004). This allows firms to set risk management policies in order to plan and manage the use of appropriate derivatives thus reducing financial risks to acceptable levels (Bartrama et al., 2010). Financial risk management policies can provide a way for import and export firms to cope with financial risks from international trade thus avoiding risks from currency fluctuations (Prevost et al., 2003). There are three types of hedges including (1) fair value hedges, where a company can recognize income in the income statement, (2) hedges or cash flow forecast, and (3) hedging of net investments in foreign entities (Chareonjaitkorn, 2010; Guay & Kothari, 2003). Changes in currency rates affect cost of sales and prices of goods and services thus resulting in financial risks arising from fluctuations in exchange rates (Bank of Thailand, 2011, 2015). Additionally, external factors also affect import and export businesses through currency fluctuations.

External factors affecting fluctuations in exchange rates

External factors refer to unexpected situations including interest rates, inflation, economic development level and political stability as they affect a country's trade (Patel et al., 2014). These factors are uncontrollable as well as affecting currency fluctuations for international trading. External factors also create difficulties for importers and exporters in hedging against risks from currency fluctuations (Patel et al., 2014). Patel et al., (2014) claimed that inflation is a key factor that has a direct impact on the direction of exchange rates. Inflation is positively correlated with changes in exchange rates, that is, when there is inflation in a country contributes to current deterioration in trade (depreciate) (Patel et al., 2014). As a result, inflation in a country's trade becomes higher than an inflation rate of a partner country. Changes in interest rates of a country's trade have a direct impact on exchange rates thus resulting in the currency of a depreciating (Intravised, 2000). In addition, differentials in interest rates can also exert influences on inflation and exchange rates thus having impacts on inflation and currency values (Sánchez, 2005). Consequently, economic performance of a country's trade is enormously important and constitutes depreciation in or vulnerability to the turnover of current foreign exchange rates (Patel et al., 2014). The instability

caused by political protesting as external factor is known to have unexpected consequences. This factor directly affects exchange rates with Thai Baht deprecating immediately. As a result, political stability affects the volatility of foreign exchange rates and creates difficulties for importers and exporters in finding ways to cope with financial risks from international trade (Leemukkadach, 2013). In Thailand, economic development level of a country's trade is mainly relevant to the exchange rate and the proportion between inflows and outflows of capital (Kanokkanjanarat, 2013). All of these factors have important repercussions on volatility of exchange rates when improving financial performance from international trades. Thus, use of appropriate derivatives (e.g. Forwards, Futures, Swaps, and Options) is essential.

Derivatives usage– Forward, Futures, Swaps, Option – in risk prevention

Use of derivatives in international trade is allows importers and exporters to receive market information about products, prices and payment conditions from a foreign trading partner. Derivative usage can be a management tool for diversification (hedging), which can lead to a more efficient allocation of resources. Buyers and sellers have to agree to trade based on terms of trade for all transactions. Product delivery and settlement are based on a predetermined time in the future (Chaipat, 2014). International trade agreements and transactions are in the form of obligations for both buyers and sellers granting rights to each party to buy or sell an asset (Hull, 2006). This agreement aims to define the relationship between future price and current price of products or assets (Jongsombutpaiboon, Phosuwan, & Payakphong, 2013). The quantity and quality of products including price and delivery are indicated in the agreement that both buyers and sellers agree to trade during negotiations (Intravised, 2000). A derivative transaction in the form of a trade agreement helps an international trader in buying and/or selling assets in a derivatives segment. This is called a "futures agreement", which includes forward, futures and swaps (Hull, 2006). Derivatives are indicated as agreement transactions where sellers of derivatives give the "right" to derivative holders. In order to buy or sell products, bond of the issuer derivative is a derivative of the option contract (Chareonjaitkorn, 2010). As a result, a derivative usage is determined endogenously with financial performance and international operated hedging (Bartram, Brown, & Fehle, 2009). In Thailand, derivatives usage have been established and defined in the financial master plan since 1995. A derivative has been used as a financial instrument to help manage fluctuations of securities' prices, interest rates, exchange rates (Chareonjaitkorn, 2010). It aimed to build a marketing mechanism for the money and capital markets (Chareonjaitkorn, 2010). Chaipat (2014) claimed that derivative usage was starting to play a role in business sectors in Thailand quite dramatically. The trend of derivative use for international trade in Thailand is increased continuously. Thai importers and exporters have used derivatives along with other foreign exchange mechanism such forward contracts (Chaipat, 2014). Such contracts allow buyers or sellers to forecast exchange rates in the future. Thus, use of appropriate derivatives helps importers and exporters to evaluate income and expenses in Baht currency effectively while avoiding financial risks from

currency fluctuations. The selection of derivatives to use for international trade based on business types or industry characteristics can protect against financial risks while improving financial performance.

Financial performance of international trading firms

Previous studies (e.g. Beck, 2002; Nicita, 2013) found that financial performance has had a causal impact on international trade of both exports and trade balance. While the level of financial development does not have an impact on the structure of the trade balance, firms need financial risk management polices to help hedge against risks from international trading (Bartrama et al., 2010; Nicita, 2013). Firms need to provide financial risk management policies for exchange rates of a country's trade and other countries affecting currency misalignments of international trade (Nicita, 2013). This not only enables import and export firms to manage risks from currency fluctuations (Prevost et al., 2003) but also having the ability to improve financial performance. Changes in currency rates have a significant impact on financial performance of international trading business. Feltes (1988) found that international trading strategy choice was associated with the financial performance affected by external factors of industry characteristics. Interest rates as external factors are more volatile for international trade. The importance of interest rate futures and interest rate swaps is to reduce risk from international trade in order to achieve acceptable financial performance (Brewer, Jackson, & Moser, 1996). Political stability and economic performance of a country's trade create better confidence in importers and exporters when trading internationally (Kar & Swain, 2014). Stable government and strong economic performance of a country's trade create confidence in foreign investors to trade while affecting economic growth and improving financial performance of firms (Patel et al., 2014). Other than that, efficiency and effectiveness in managing financial stability prevent business risks from fluctuations in foreign exchange rates. By using an appropriate derivative it is capable to offset changes in fair values or cash flows that pose risks to the business in order to mitigate against financial risk for international trade. Use of derivatives helps international trade agreements and transactions to hedge and manage fluctuations of securities' prices, interest rates, exchange rates (Chareonjaitkorn, 2010) thus improving financial performance of import and export firms (Hull, 2006). As a result, derivative usage plays an important role in financial markets when creating financial performance from global trading. Based on the factors identified that affect the performance of international trading firms, a theoretical framework is postulated.

Research model and hypotheses

This study seeks to examine a financial risk management policy having an influence on financial performance of international trade. The policy enables importer and exporter firms to manage risks from currency fluctuations (Prevost et al., 2003). It also allows firms to plan and manage use of appropriate derivatives (Bartrama et al., 2010) thus improving financial performance (Nicita, 2013) from balance of payments (Leemukkadach, 2013). External factors (e.g. interest rate, inflation, economic and political stability) are uncontrollable and affects currency fluctuation (Patel et al., 2014). External factors create difficulties for importers and

exporters in hedging risks from currency fluctuations (Patel et al., 2014) thus having impacts on financial performance of import and export firms. Use of appropriate derivatives (e.g. Forward, Futures, Swap, and Options) help importers and exporters dealing with, and managing financial contracts for international trade (Hull, 2006). This helps importers and exporters analysing and forecasting the situation that causes the value of the baht to depreciate based on market mechanisms. Having a financial risk management policy with the ability to handle external factors and selecting appropriate derivatives, this leads to improved financial performance. The review of the literature underlies the research model. To validate the model, hypothesises are formulated as shown in Figure1.

H1: *Financial risk management policy of an international trader has an influence on external factors including inflation, interest rates, economic performance of a country and political stability*

H2: *Use of derivatives (Forward, Futures, Swap, and Option) in risk mitigation has an impact on external factors including inflation, interest rates, economic performance of a country and political stability*

H3: *External factors (e.g. inflation, interest rates, economic performance of a country and political stability), financial risk management policy, and use of derivatives affect financial performance of international traders*

Research methodology

Approach: This study employed quantitative research methods of survey and analysis to examine financial risk management, external factors and derivative usage affecting financial performance of international trade of Thai companies. A set of survey questions was created to investigate a sample group selected from import and export firms. Questions in the survey were divided into two sections. First section asked about a company's and participants' backgrounds. Questions provided in the second section asked about financial risk management, external factors, and derivative usage

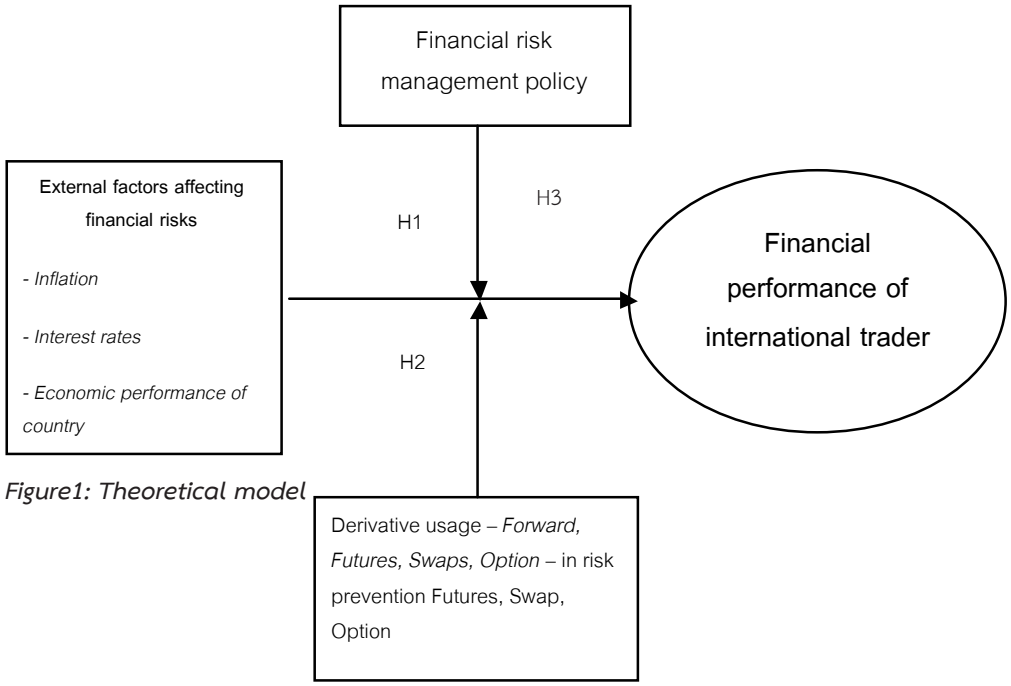

Figure1: Theoretical model

affecting financial performance of import and export firms.

Sample and data collection: A random purposive sampling method helped select a sample group from a total of population of 400. Participants from import and export firms involved in using derivatives for international trade in Bangkok and metropolitan areas were targeted for investigation. This included owners (4) of import and export businesses, managers (5) of import and export companies, management staff (148) of import and export firms, directors (243) dealing with use of derivatives for importers and exporters. The selection of the sample from international trading firms gave clearer results (Guay & Kothari, 2003; Kanokkanjanarat, 2013) where the study sought to examine financial risk management, external factors and use of derivatives affecting financial performance (Bartrama et al., 2010).

Data analysis: This study employed multiple regression methods to test hypothesises using an extension of simple linear regression. Multiple regressions examined whether independent variables (e.g. financial risk management, external factors, and derivative usage) could be predicted based on financial performance of international trading (dependent variable). Correlation analysis methods were considered appropriate for this study to analyse a large sampling group (400) when the research problem involves one dependent variable presumed to be related to two or more independent variables (Hair, Black, Babin, & Anderson, 2010). It helps to predict if financial risk management, external factors and derivative usage have significant impacts on improving financial performance of Thai importers and exporters. Results from the study are discussed next.

Results from the study

The results from the analysis reveal that there is a significant relationship between financial risk management policy and external factors (e.g. inflation, interest rates, economic performance of a country and political stability) at statistically significant 0.01, with a correlation factor of .448 (Table 1). Financial risk management policy

Table 1: Results from correlation analysis Correlations

		Financial risk management	External factors	Derivative usages
Financial risk management	Pearson Correlation	1		
	Sig. (2-tailed)	-		
	N	400		
External factors	Pearson Correlation	0.448**	1	
	Sig. (2-tailed)	0.000	-	
	N	400	400	
Derivative usages	Pearson Correlation	0.378**	0.590**	1
	Sig. (2-tailed)	0.000	0.000	-
	N	400	400	400

**. Correlation is significant at the 0.01 level (2-tailed).

significantly influences external factors when trading internationally. Thus, H1, Financial risk management policy of an international trader has an influence on external factors including inflation, interest rates, economic performance of a country and political stability is answered.

Table 1 also shows that use of derivatives (Forward, Futures, Swap, and Option) in risk mitigation is associated with external factors including inflation, interest rates, economic performance of a country and political stability for international traders in Thailand, at statistically significant 0.01, with a correlation factor of 0.590. The selection of derivatives to use for international trade and protect against financial risks has an influence on external factors when trading internationally. As a result, H2, Use of derivatives (Forward, Futures, Swap, and Option) in risk mitigation has an impact on external factors including inflation, interest rates, economic performance of a country and political stability is accepted.

In addition, external factors have a significant impact on risk management policy and the selection of derivatives for international trading businesses. Financial risk management was correlated with external factors and use of derivatives at statistical significance of 0.01, with a correlation of 0.448 and 0.378 respectively (Table2). The external factors having significant influence on risk management policy and use of derivatives were correlated with financial performance of international trading businesses at a statistically significant 0.01, with a correlation factor of 0.590. It can be seen that these variables were related to each other at a

Table 2: Results from correlation analysis Correlations

Correlations					
		Risk management Policy	External Factors	Derivative Usage	Financial Performance
Risk Management Policy	Pearson Correlation	1			
	Sig. (2-tailed)				
	N	400			
External Factors	Pearson Correlation	.448**	1		
	Sig. (2-tailed)	.000			
	N	400	400		
Derivative Usage	Pearson Correlation	.378**	.590**	1	
	Sig. (2-tailed)	.000	.000		
	N	400	400	400	
Financial Performance	Pearson Correlation	.423**	.571**	.685**	1
	Sig. (2-tailed)	.000	.000	.000	
	N	400	400	400	400

**. Correlation is significant at the 0.01 level (2-tailed).

medium level while having a significant influence on financial performance of international trading firms. Thus, H3, External factors (e.g. inflation, interest rates, economic performance of a country and political stability), financial risk management policy, and use of derivatives affect financial performance of international traders is accepted.

Discussion of results

Exchange rate is a key factor in making payment transactions for international trade. It results in the value of goods and/or services becoming mainly concerns for making investment decisions for international trade. The fluctuations in exchange rates also create difficulties for importers and exporters in improving financial performance. Several factors help importers and exporters to improve international trade transactions in order to create financial performance. Based on the results, financial risk management policies of international trading firms can be a way to improve financial performance. The policy of a company in a country's trade has a significant impact on external factors including inflation, interest rates, economic performance of a country and political stability when tracking rates of currency fluctuations and changes in exchange rates. In this regard, firms need to have better knowledge about terms of derivatives before planning to place orders for products/goods. Importers and exporters need to evaluate and consider use of derivatives where they are appropriate in contributing to foreign exchange and earnings from international trading. At this point, importers and exporters need to understand all information and conditions of various derivatives as such financial instruments. By having a financial risk management policy, it allows importers and exporters to be able to select appropriate derivatives in order to hedge against changes in currency rates (Guay & Kothari, 2003).

Furthermore, based on the results, use of derivatives (Forward, Futures, Swap, and Option) in risk mitigation has an impact on external factors including inflation, interest rates, economic performance of a country and political stability. Participant indicated that financial planning in using derivatives facilitated importers and exporters with a way to forecast movements or directions of money values while dealing with external factors affecting international trades. So import and export firms should hedge contracts or use derivatives to enable predictable revenue and costs effectively. The hypothesis testing found that use of appropriate derivatives for international trade not only protected against financial risks but created financial performance and turnover or profitability at the same time. This finding is consistent with the study of Bartrama et al., (2010) that use of hedging instruments for exchange rates such FX Swaps created financial liquidity for import and export firms. The selection of currency swaps helps manage financial risks and make greater profits from internal trades. Whilst currency options can prevent and hedge risks from currency fluctuations while giving rights based on exercise price identified in the contract or the market price (Bartrama et al., 2010).

The results also confirmed that external factors (e.g. inflation, interest rates, economic performance of a country and political stability) associated with financial risk management policies and derivative usage (e.g. Forward, Futures, Swaps and Option) have a significant impact on financial performance of international traders. External

factors including inflation, interest rates, economic development level of a country's trade and political stability create difficulties for importers and exporters in making profit from international trade. Participants confirmed that external factors had a significant impact on business performance from exchange volatility. Ignoring any external factors affecting currency fluctuations could be reckless for importers and exporters and creates currency fluctuation risks systematically and uncontrollably. The trend of changes in currency rates was determined by the rate of inflation between countries' trading. Participants indicated that inflation was one main issue affecting financial performance of international trade. If the inflation level of a country's trade was higher than partner countries or competitors, this could make the Thai baht depreciate (Chaipat, 2014). The interest rate is one external factor affecting fluctuations of exchange rate. Participants confirmed that business loans from countries with lower interest rates resulting in a profit margin from the balance of foreign exchange could also be low. This is consistent with the study of Kar & Swain (need year here) that interest rates move in the opposite direction to changes in currency rates (2014). Political stability of the country was also confirmed by participants as it had a significant impact on exchange rates, which economics considers as a psychological factor of confidence. It affected the changes relating to appreciation and deprecation of the currency. Political stability is difficult and complex to forecast in order to deal with difficult situations when importing and exporting products. This affected import and export businesses differently as systematic risks. It resulted in forecasting financial situations becoming more difficult (Patel et al., 2014). All these factors affected currency fluctuations thus having an influence on financial performance of international traders.

Moreover, a risks management system allows management of an import and export company to manage financial data used to support decision-making when trading internationally. Thus, the importance of selecting appropriate derivatives – Forward, Futures, Swaps, and Option – for international trading helps firms to protect financial risks from fluctuations of exchange rates. Use of derivatives can be financial instruments and hedging credit risks, interest rate and the investment period (Chareonjaitkorn, 2010). Participants agreed that the importance of selection of derivatives not only helps reduce financial risks but also has the ability to improve financial performance at the same time. Importers and exporters had to anticipate the direction of movement of money value. In order to forecast valuation gains or losses, selection of appropriate types of derivatives provided importers and exporters with a way to minimize investment risks and reduce costs when paying for goods and services in advance. As exchange rates are unstable, importers and exporters need to learn how to predict changes in order to seek opportunities where it is possible to make profits from trading (optimal forecast). Although it is only a prediction of what might happen in the future, it can help create forecasts with data that support credible and feasible scenarios. Chaipat (2014) claimed that import and export businesses have difficulties and encountering complications in trading internationally due to fluctuation of currency rates. It is hard to know or predict what will happen in the future. Companies need to find ways to prevent or minimise losses occurring in the future. So a

financial risk management strategy for exchange rates can help effectively manage financial risks from international trading (Bank for International Settlements (BIS), 2013). Thus, when signing contracts for enhancement of liquidity, importers and exporters need to have financial planning for international trade, particularly firms that are not specialising in predicting movements in money values.

Contributions of study

Contribution(s) to literature

The results contribute to the literature that financial risk management policies of import and export businesses had a significant influence on external factors including inflation, interest rates, economic performance of a country and political stability. The policy provides import and export firms with a way to manage financial risks from international trade in order to avoid risks from currency fluctuations (Gregory, 2004; Prevost et al., 2003). External factors such political instability created difficulties for importers and exporters to cope with volatility of foreign exchange (Kanokkanjanarat, 2013; Leemukkadach, 2013). Thus, the financial risk management policies provide international traders with the right way to cope with financial risks from international trade (Kanokkanjanarat, 2013; Leemukkadach, 2013). In this relation, the selection of derivatives (Forward, Futures, Swap, and Option) in risk mitigation can be a financial instrument to manage fluctuations of securities' prices, interest rates, and exchange rates (external factors) (Chareonjaitkorn, 2010; Intravised, 2000; Sánchez, 2005). The results also indicated that external factors (e.g. inflation, interest rates, economic performance of a country and political stability) had a significant impact on financial risk management policy and use of derivatives while improving financial performance of international traders. When selling or buying products of international trades, derivative usage can be an option contract (Chareonjaitkorn, 2010) that is determined endogenously with financial performance and international operated hedging (Bartram et al., 2009). Cost of sales and prices of goods and services can be affected by the changes in currency rates while creating financial risks arising from fluctuations in exchange rates (Bank of Thailand, 2011, 2015). Thus, risk management policy and use of derivatives associated with external factors create significant impacts on financial performance of international traders significantly based on the results of this study.

Contributions to practice

The results also contribute to practice that financial risk management within import and export firms can be a business tool dealing with currency fluctuations and monitoring risks from international trading. This helps mitigate financial risks and reduce negative impacts from international transactions thus managing risks arising from financial markets and volatility. In addition, external factors (e.g. inflation, interest rates, economic development level and political stability of a country) affect currency movements and valuations of foreign exchange rates. Importers and exporters need to closely manage and evaluate external factors in order to improve positive impacts on financial performance of firms. In relation to this, selection of appropriate derivative usage (e.g. Forward, Futures, Swaps, and Option) helps importers and exporters to reduce cash flow variations thus improving financial performance at the same time.

Limitation and suggestion for future research

This study is limited to the analysis of financial risk management policies, external factors and use of derivatives affecting financial performance of import and export firms. Future research should focus on other external factors affecting currency derivatives for international trade. In-depth interviews should be considered for a future study to ask management dealing with financial risk prevention, external factors affecting valuable growth and derivative usage of import and export firms, their views on impacts. This would be more helpful to importers and exporters by gaining a deeper understanding of hedging risks from fluctuations in exchange rates.

Acknowledgements

I am Silani Houngkij, and would like to thank Dr.Nickie Petcharat and Associate Professor Dr. Joseph M. Mula for her and his discussions and suggestions. I also would like to thank all participants providing me the rich information in the survey for completion of my study, and special thankful to the Graduate School of Sripatum University for the supports, encouragement, and good facility.

References

Bank for International Settlements (BIS). (2013), **"Triennial central bank survey foreign exchange turnover in April 2013: preliminary global results"**, available at: http://www.bis.org/publ/rpfx13fx.pdf (accessed).

Bank of Thailand. (2011), **"Foreign exchange risk management",** available at: https://www.bot.or.th/Thai/ResearchAndPublications/DocLib_/article24_10_13.pdf (accessed).

Bank of Thailand. (2015), **"Historical foreign exchange rates",** available at: https://www.bot.or.th/english/statistics/financialmarkets/exchangerate/_layouts/Application/ExchangeRate/ExchangeRateAgo.aspx# (accessed).

Bartram, S. M., Brown, G. W. and Fehle, F. R. (2009), **"International Evidence on Financial Derivatives Usage",** Financial Management, Vol. 38 No. 1, pp. 185–206.

Bartrama, S. M., Brownb, G. W. and Mintonc, B. A. (2010), **"Resolving the exposure puzzle: the many facets of exchange rage exposure"**, Journal of Financial Economics, Vol. 95 No. 2, pp. 148–173.

Beck, T. (2002), **"Financial development and international trade: Is there a link?"**, Journal of International Economics, Vol. 57 No. 1, pp. 107-131.

Brewer, E., Jackson, W. E. and Moser, J. T. (1996), **"Alligators in the Swamp: The Impact of Derivatives on the Financial Performance of Depository Institutions"**, Journal of Money, Credit and Banking, Vol. 28 No. 3, pp. 482-497.

Chaipat, C. (2014), **"Derivative: Risk Management in Export and Import Business"**, Panyapiwat, Vol. 5 No. 2, pp. 223-235.

Chareonjaitkorn, P. (2010), **"Derivatives and Accounting Practices"**, Academic Journal of University of University of the Thai Chamber of Commerce, Vol. 30 No. 1, pp. 117-133.

Feltes, P. M. (1988), **"An empirical investigation into the effect of international trading strategy choice on financial performance"**, The University of Nebraska - Lincoln, ProQuest Dissertations Publishing.

Gregory, P. C. (2004), **Financial Management: A Practical Guide to Value Creation**, Unified Business Technologies Press.

Guay, W. and Kothari, S. P. (2003), **"How much do firms hedge with derivatives?"**, Journal of Financial Economics, Vol. 70 No. 3, pp. 423–461.

Hair, J. F., Black, W. C., Babin, B. J. and Anderson, R. (2010), Multivaraite data analysis Pearson Prentise Hall.

Hull, J. C. (2006), **Fundamental of Futures and Options market**, Pearson Education Inc, New Jersey.

Intravised, N. (2000), **"The model of efficiency of exchange rates"**, Kasetsard University Bangkok.

Jongsombutpaiboon, S., Phosuwan, V. and Payakphong, P. (2013), **"Analysis of the relationship between futures prices and spot contract's index of 50 stocks in the derivatives market"**, Veridian E-Journal Vol. 6 No. 2, pp. 884-898.

Kanokkanjanarat, T. (2013), "**Compass SME: How to manage risk when currency is fluctuated**", available at: http://www.thairath.co.th/content/379513 (accessed 15 January, 2016).

Kar, A. K. and Swain, R. B. (2014), **"Interest Rates and Financial Performance of Microfinance Institutions: Recent Global Evidence"**, European Journal of Development Research Vol. 26, pp. 87-106.

Leemukkadach, A. (2013), **The investment and hedging with derivatives**, The Stock Exchange of Thailand, Bangkok, Thailand.

Nicita, A. (2013), **"Exchange rates, International trade, and Trade policies"**, Policy Issues in Internatinal Trade and Commodities Study Series Vol. 56.

Patel, P. J., Patel, N. J. and Patel, A. R. (2014), **"Factors affecting Currency Exchange Rate, Economical Formulas and Prediction Models"**, International Journal of Application or Innovation in Engineering & Management (IJAIEM), Vol. 3 No. 3, pp. 53-56.

Prevost, A. K., Rose, L. C. and Miller, G. (2003), **"Derivatives Usage and Financial Risk Management in Large and Small Economies: A Comparative Analysis"**, Journal of Business Finance & Accounting, Vol. 27 No. 5-6, pp. 733–759.

Sánchez, M. (2005), **"The link between interest rates and exchange rates do contractionary depreciations make a difference?"**, in Working paper series European Central Bank, Frankfurt, Germany. ◆