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EXCHANGE RATE MOVEMENTS AND STOCK PRICES: A REVIEW OF EMPIRICAL LITERATURE

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Abstract:
Exchange rate and stock prices has grabbed the attention of researchers and had been a subject of empirical research for some decades now especially in the wake of events like Asian financial crisis and global recession. Exchange rates are said to effect stock prices, while a few argue that stock prices in turn effect exchange rates, this disagreement among the researchers has left the question open for research. This article attempts to review the existing empirical literature available on the subject and separating it into two (1) studies based on causality and Cointegration (2) studies based on volatility spillover. This article also tries to offer brief summary of each study for convenient understanding of researchers. Lastly, new direction for future research has been provided.

Key words: Exchange rate movements, stock prices, volatility spillover and global recession

JEL classification: B22

INTRODUCTION

Of late with the emergence of financial globalization, integration of world stock markets, progress in information & technology and Adaptation of floating exchange rate system, the interaction between exchange rate and stock prices has become an area of existing interest for Researchers, investors and policy makers across the globe. For investors interrelationship between the two markets not only assists in crafting a lucrative hedging strategy but also to predict the future trends of each other. Policy makers can use a weak currency to boost their exports. The interaction between the said variables are explained in two classical theories namely flow oriented or goods market approach pioneered by (Dornbusch and Fischer1980) and stock oriented or portfolio balance approach postulated by (e.g. Frankel and Branson 1983). Goods market approach states that exchange rate affects stock prices i.e. Depreciation of local currency (rise in exchange rate) will lower the prices of goods in international market which will eventually lead to spike in demand. Hence, increase their sales, higher sales leads to increased profits and eventually more profits increases stock price of a firm. Therefore, depreciation of local currency will increase the stock prices. On the contrary to it, stock orient model states that stock prices affect exchange rate i.e. rising stock market will increase the price of shares and value of firms, which will increase demand for domestic currency both at local and foreign level. Higher demand will attract high capital from abroad and push interest rates up. Therefore rising stock market will appreciate the demand for local currency.

LITERATURE REVIEW

Earlier studies conducted were purely grounded on correlation & regression analysis; Aggarwal (1981) for USA from 1974 to 1978 found that positive relationship exists between the two variables i.e. depreciation of dollar will bring down the stock prices and vice versa. While Soenen and Hennigar (1988) who investigated the relationship for seven industrial sectors found that negative relationship exists between the two variables i.e. depreciation of dollar will increase the stock prices. Various approaches and perspectives have been used to explore this area of

research which can be broadly categorized into two ways: studies based on Cointegration and causality & volatility spillovers.

COINTEGRATION AND CAUSALITY:

Bahmani-Oskooee and Sohrabian (1992) was the first who used causality and Cointegration analysis to test the relationship between exchange rate and stock prices for the period ranging from July 1973 to December 1988 in US. The study found a bidirectional causality between the two variables but no Cointegration or long run relationship was found. Issam S.A.Abdalla & victor murinde (1997) revisited the question of causality for four emerging financial markets including India, Pakistan, Korea and Philippines for the period from 1985 to 1994. They found a unidirectional causality running from exchange rate to stock prices for India, Pakistan and Korea while for Philippines causality from stock prices to exchange rate was found. Richard A. Ajayi, Joseph Friedman and Seyed M. Mehdian (1998) made an attempt to investigate further the issue of causality for a more representative sample including 7 advanced markets and 8 emerging economies from December 1987 to September 1991. The study found statistically significant unidirectional causality from stock market to changes in exchange rate for all the advanced economies (Canada, Germany, France, Italy, Japan UK and USA) while in case of emerging economies 3 out of 8 economies witness statistically significant causal relationship, for Indonesia and Philippines it runs from stock market to currency market and for Korea it runs from stock market to currency market. No statistically significant causal relationship exists in (Hong Kong, Singapore, Thailand and Malaysia) and bi-directional casual exists in Taiwan. The Asian financial crisis (1997) rejuvenated the interest in investigating the relationship between two financial variables CliveW. J. Granger, Bwo-Nung Huang and Chin Wei Yang (2000) made an attempt to analyze relationship for Asian economies including Hong Kong, Indonesia, Japan, South Korea, Malaysia, Philippines, Singapore, Thailand and Taiwan for the period ranging from January 3, 1986 to November 14, 1997 . This study concluded mixed results varied across countries. Exchange rates impacts stock prices positively for Japan and Thailand while stock prices affect the exchange rates negatively for Taiwan. Moreover, a strong bidirectional causality was found for Indonesia, Korea, Malaysia, and the Philippines but no significant relationship was found in Singapore. Chien-Chung Nieh and Cheng-Few Lee (2001) tried to explain the relationship by investigating it in the group of G-7 countries (Canada, France, Germany, Italy, Japan, UK and the US) for the period From October 1, 1993 to February 15, 1996. The study found that there exists no long run relationship between the two financial variables. Thus, confirming its results with Bahmani-Oskooee and Sohrabian (1992). But the results further indicated that short term significant relationship lasted for only one day. R. smyth and M. Nandha (2003) extended this area of research further to south Asian economies including India, Pakistan, Srilanka and Bangladesh for the period of fifteen years beginning from 2 January 1995 to 23 November 2001 using the Daily data. The results of both the Cointegration tests have indicated that there is no significant long run relationship for any of the four countries between the two financial variables. But, a causality running from exchange rate to stock prices was observed in India and Srilanka therefore confirming the traditional model of flow oriented exchange rate theory but no such relationship was found in Pakistan and Bangladesh. Further, in the backdrop of Asian financial crisis, Mohammad Tahir Farooq and Wong Wing Keung (2004) made an attempt to investigate the relationship exclusively for Pakistan for the period from January 1994 to December 2003 using the daily data for Karachi stock exchange. The study found no Cointegration i.e., long run relationship between exchange rate and stock prices but in short run a unidirectional causality running from general index to exchange rate was found and a causation running from exchange rate to service sector index. Daniel STAVÁREK (2005) compared the old & new EU members on the exposure of relationship between exchange rate and stock prices. The member countries include Austria, France, Germany, UK, USA, Poland, Hungary, Czech Republic and Slovakia for the period from 1970 to 2003 and divided the sample between into two sub-periods 1970–1992.and 1993 to 2003. The study found no indication of long run association in the prior period analyses but the post period analyses showed relationship in 4 old economies out of 9 sample

countries Further, REER (Real effective exchange rate) as mode of exchange rate expression was found to be more productive than NEER (Nominal effective exchange rate). Kate Phylaktis and Fabiola Ravazzolo (2005) investigated the short and long term relationship between the two financial variables and to examine whether the underlying relationship gets affected by foreign exchange controls and Asian financial crisis. The study was conducted in Hong Kong, Malaysia, Singapore, Thailand and Philippines & the sample period varied across countries based on the availability of data. The study has found positive relationship between real exchange rate and stock prices. Further, contrary to the previous studies US market has been found an important channel which establishes the relationship between the two financial variables in the sample countries but no such evidence was observed for foreign exchange controls in establishing their relationship. Ming-Shiun Pan, Robert Chi-Wing Fok, & Y. Angela (2007) investigated this dynamic relationship between exchange rate and stock prices for East Asian economies which includes Hong Kong, Japan, Korea, Malaysia, Singapore, Taiwan, and Thailand for the period from January 1988 to October 1998 using daily prices. The study has found that a significant causality running from exchange rate to stock prices confirming the stock oriented model of exchange rate was found in Hong Kong, Japan, Malaysia, and Thailand before the crisis whereas, casual relationship running from stock prices to exchange rate confirming the flow oriented model of exchange rate was found in Hong Kong, Korea, and Singapore. But no significant relationship was found from stock prices to exchange rate for any country during crisis although causality from exchange rate to stock prices was witnessed for all countries except Malaysia. Noel Dilrukshan Richards & John Simpson (2009) examined the interaction between exchange rate and stock prices for Australian market for the period of three years starting from 2 January 2003 to 30 June 2006 using the daily stock price. The empirical results showed a positive long run or Cointegration relationship between exchange rate and stock prices. And on the causality side a unidirectional causality running from stock price to exchange rate confirming its results with Portfolio balance model of exchange rate. Gopalan Kutty (2010) investigated the relationship for Mexico market from first week of January 1989 to the last week of December 2006 using the weekly Data. The study found no long run relationship between the two financial variables. While the results of causality found a unidirectional causality running from stock price to exchange rate. Paul Alagidede, Theodore Panagiotidis and Xu Zhang (2011) investigated the nature of casual relationship between exchange rate and stock prices for Australia, Canada, japan, UK and Switzerland from January 1992 to December 2005. The empirical results depicted non-existence of long run relationship between the two financial variables in the sample countries. The study employed three versions of causality tests which indicated a causality running from exchange rate to stock prices. To check the robustness in results. The study examined the non-linear version of causality which showed a weak causality running from exchange rate to stock prices for Switzerland and from stock prices to exchange rate for japan. The outbreak of global financial crisis 2008 renewed the interest of researchers in exploring the dynamics of this relationship. Chien-Hsiu Lin (2012) attempted to explore the nature of relationship between exchange rate and stock prices during crisis events for the period from January 1986 to December 2010 using Monthly data covering both Asian financial crisis and global financial crisis for India, Indonesia, Korea, the Philippines, Taiwan and Thailand. The study didn't find any long run relationship for whole sample period but when investigated for sub-samples strong interaction was found during crisis period. Therefore, crisis periods strengths the relationship between the two. The results of causality analysis further indicated strong causality in crisis events then in normal period. Varied results were found for different countries but mostly causality was found running from stock prices to exchange rate. Further the results of industry analysis showed no strong relationship in export driven industries, manifesting the fact that relationship is driven more by capital account rather than trade. On the similar lines with line (2012), Esin cakan and demissew E ejara (2013) attempted a long period study good enough to cover the both Asian and financial crisis for Brazil, India, Indonesia, Korea, Mexico, Philippines, Poland, Russia, Singapore, Taiwan, Thailand and Turkey from May 31, 1994 to April 7, 2010. The results found no Cointegration between stock prices or exchange rates for the sample countries except Brazil, Russia and turkey. Further the study

found that by applying linear granger causality most countries have shown bi-directional except for India where the causality runs stock prices to exchange rate and for Korea, Mexico and Taiwan whereas the causality runs from exchange rate to stock prices. Moreover, in case of non-linear granger causality 9 out of 12 sample countries have shown bi-directional casualty while for taiwan there exists no significant causality and for brazil and poland a unidirectional causality running from stock prices to exchange rate was witnessed. Zheng Yang, Anthony H. Tu & Yong Zeng (2014) brought about a change in the methodology of conducting or exploring the relationship between two financial variables. The study attempted to explore then relationship in Quantiles for India, Indonesia, Japan, South Korea, Malaysia, the Philippines, Singapore, Taiwan and Thailand for the period of three years starting from January 1st 1997 to August 16th 2010. The study established that by exploring the relationship the quantiles a significant bidirectional causality is observed which is otherwise not possible by using conventional methods of OLS. Usman M. Umer, Güven Sevil and Serap Kamişli (2015) analyzed the relationship between stock prices and exchange rates From January 1998 to May 2014 using monthly data for Brazil, Czech Republic, Hungary, Malaysia, Mexico, Poland, South Africa, Taiwan and Turkey. The study found no significant long run relationship between the variables but when investigated for sub-periods, varied results across countries were witnessed during crisis and normal period. Further, the results of causality analysis have found that for normal period causality runs from stock prices to exchange rate and for crisis period it runs from exchange rate to stock prices. Parham Parsvaa and Chor Foon Tang (2016) explored the relationship for 4 Middle East economies Iran, Kuwait, Oman and Saudi Arabia from January 2004 to December 2011. The study found a significant bi-directional causality for Iran, Saudi Arabia, Oman and no significant interaction or causality was found for Kuwait. D. Bhuvaneshwari and K. Ramya (2017) studied the relationship exclusively for India for the period from 2006 to 2015. The study found absence of long run relationship between the two variables but both variables were found to granger cause each other. Most of the existing work have assumed that the relationship between variables in linear. In order to confirm this fact Gozde Yildirim and Zafar Adali (2018) used both linear and non-linear version of causality to explore this dynamic relationship. For turkey from January 2005 to august 2017. The results of all three tests of causality have indicated that there is casual relationship between real exchange rate and stock prices & and casual relationship runs from stock prices to exchange rates. Mira Nurmakhanova (2019) explored the interaction between exchange rate and stock prices from 1st October 2007 to 31st December 2017 for Kazakhstan using monthly data. The study found absence of Cointegration in bivariate (between exchange rate & stock prices) relationship and a significant long term relationship in multivariate case (exchange rate, stock prices, reserves and money supply). But a bidirectional causality was found in both the cases.

SUMMARY OF STUDIES BASED ON CAUSALITY AND COINTEGRATION:

Author	Sample country	Sample period	Findings
Bahmani-Oskooee and Sohrabian (1992)	USA	from July 1973-December 1988	The study found a bidirectional causality between the two variables but no Cointegration or long run relationship was found
Issam S.A.Abdalla & victor murinde (1997)	India, Pakistan, Korea and Philippines	from 1985 to 1994	The study found a unidirectional causality running from exchange rate to stock prices for India, Pakistan and Korea while for Philippines causality from stock prices to exchange rate was found.
Richard A. Ajayi, Joseph Friedman and Seyed M.	including 7 advanced markets and 8 emerging	From December 1987 to	The study found that a statistically significant unidirectional causality from stock market to changes in

Mehdian (1998)	economies	September 1991	exchange rate for all the advanced economies and varied results for emerging economies.
CliveW. J. Granger, Bwo-Nung Huang and Chin Wei Yang (2000)	Hong Kong , Indonesia , Japan ,SouthKorea , Malaysia , Philippines ,Singapore, Thailand and Taiwan	from January 3, 1986 to November 14, 1997	The study has concluded mixed results varied across countries. Some countries witnessed causality from exchange rate to stock prices and vice versa for some.
Chien-Chung Nieh and Cheng-Few Lee (2001)	G7 member countries	From October 1, 1993 to February 15, 1996.	The study found that there exists no long run relationship between the two financial variables
R. smyth and M. Nandha (2003)	India, Pakistan, srilanka and Bangladesh	from 2 January 1995 to 23 November 2001	The study found no long run relationship for any of the sample countries. Also, varied results in causality were found across countries.
Mohammad Tahir Farooq and Wong Wing Keung (2004)	Pakistan	January 1994 to December 2003	They study didn't find any long run relationship between the two variables.
Daniel STAVÁREK (2005)	old & new EU members	from 1970 to 2003	The study found no indication of long run association in the prior period analyses but the post period analyses showed relationship in 4 old economies out of 9 sample countries.
Kate Phylaktis and Fabiola Ravazzolo (2005)	Hong Kong, Malaysia, Singapore, Thailand and Philippines	varied across countries based on the availability of data	The study has found positive relationship between real exchange rate and stock prices.
Ming-Shiun Pan, Robert Chi-Wing Fok, & Y. Angela (2007)	East Asian economies	from January 1988 to October 1998	The study found mixed results of causality across countries.
Noel Dilrukshan Richards & John Simpson (2009)	Australia	from 2 January 2003 to 30 June 2006	The study found positive long run or Cointegration relationship between exchange rate and stock prices. And on the causality side a unidirectional causality running from stock price to exchange rate.
Gopalan Kutty (2010)	Mexico	From January 1989 to December 2006	the study found no long run relationship between the two financial variables. While the results of causality found a unidirectional causality running from stock price to exchange rate.
Paul Alagidede,	Australia, Canada,	from January	The study found no long run

Theodore Panagiotidis and Xu Zhang (2011)	japan, UK and Switzerland	1992 to December 2005	relationship. and mixed results of causality were observed across countries.
Chien-Hsiu Lin (2012)	Six Asian emerging markets	From January 1986 to December 2010	The study found no long run relationship but observed crisis periods strengths the relationship between the two
Esin cakan and demissew E ejara (2013)	Twelve emerging economies	from May 31, 1994 to April 7, 2010	The study found no Cointegration between stock prices or exchange rates for the sample countries except Brazil, Russia and turkey.
Zheng Yang, Anthony H. Tu & Yong Zeng (2014)	Nine emerging economies	From 1 January 1997 to 16 August 2010	The study found that by exploring the relationship in quantiles a significant bidirectional causality is observed which is otherwise not possible by using conventional methods of OLS.
Usman M. Umer, Güven Sevil and Serap Kamişli (2015)	Nine emerging economies	From January 1998 to May 2014	. The study found no significant long run relationship between the variables but when investigated for sub-periods, varied results across countries were witnessed during crisis and normal period
Parham Parsvaa and Chor Foon Tang (2016)	Iran, Kuwait, Oman and Saudi Arabia	From January 2004 to December 2011.	The study found a significant bi-directional causality for Iran, Saudi Arabia, Oman and no significant interaction or causality was found for Kuwait.
Bhuvaneshwari and K. Ramya (2017)	India	from 2006 to 2015	The study found absence of long run relationship between the two variables but both variables were found to granger cause each other
Gozde Yildirim and Zafar Adali (2018)	Turkey	From January 2005 to August 2017.	The results of all three tests of causality have indicated that there is casual relationship between real exchange rate and stock prices & and casual relationship runs from stock prices to exchange rates
Mira Nurmakhanova (2019)	Kazakhstan	From ist October 2007 to 31st December 2017	The study found absence of Cointegration in bivariate (between exchange rate & stock prices) relationship relationship and a significant long term relationship in multivariate case (exchange rate, stock prices, reserves and money supply). But a bidirectional causality was found in both the cases.

VOLATILITY SPILLOVER:

Angelo Kanas (2000) investigated the volatility spillover between exchange rate and stock return for period of twelve ranging from 1st January 1986 to 28th February 1998 for six industrial economies, US, UK, Japan, Canada, and Germany and France. The study found that volatility

spillovers from stock returns to exchange rates is significant for all countries except Germany especially after the crash of 1987 perhaps markets become more integrated. While the spillover from exchange rate to stock returns is insignificant for every country. Asian financial crisis interested the researchers to explore the nature of relationship in second order moment. Prakash G Apte (2001) analyzed the inter -relationship between the volatilities between exchange rate and stock market in India and to know whether the spillover effect is asymmetric i.e. good or bad news from exchange rate to stock market or vice versa has differential impact for India from January 2nd 1991 to April 24th, 2000 using the daily stock price. The study used two indices Sensex and nifty against bilateral exchange rate of INR/USD and found similar results for both. The empirical results showed the existence of long run relationship between the two variables. The study found that conditional variance of stock returns are affected by the innovations from exchange rate and volatility spillovers from exchange rate to stock returns are also asymmetric in nature. Also, conditional variance of exchange rates are also affected by the innovations from stock market and volatility spillovers from stock returns to exchange rate are also asymmetric in nature. Alok Mishra, Niranjan swain and Dk Malhotra (2007) investigated the relationship and volatility between foreign exchange market and stock market for the period from January 1993 to December 2003 using data prices for India. The study found existence of long run and a bidirectional spillover relationship between the two markets. Chaker Alou (2007) investigate the mean, variance and causality transmission between forex market and stock market for the period from 1990 to 2005 for USA and Five European economies. For the first moment (mean) the study found strong price spillovers moving from exchange rate to stock prices in post euro period for Belgium, France and Germany & for France and Germany in the pre-euro period while for the second moment (volatility spillover) it was found that in pre-euro period no volatility spillover existed from exchange rate to stock prices while volatility from stock prices to exchange rate was found statistically significant only for France, Belgium and Italy. Moreover in the post-euro period volatility spillover from stock prices to exchange rate was statistically significant only for France, Belgium, Italy and Spain while from exchange rate to stock prices its statistically significant Belgium, France and Germany. Further the results of volatility persistence showed that for stock market and exchange rate in the pre-euro period volatility persisted for 19 and 18 days while in the post-euro period it was 9 and 7 days. Mary O'Donnell and Lucia Morales (2009) investigated the nature spillover relationship between exchange rate and stock returns for the period from 1999 to 2006 for four eastern European countries including: Czech Republic, Hungary, Poland and Slovakia. The results exhibited existence of no volatility spillover neither from exchange rate to stock return and nor from stock returns to exchange rate. The study also found lack of variability in volatility of stock return and exchange rate changes. Paresh Kumar Narayan (2009) analyzes the role of depreciation of exchange rate in returns and its volatility from January 1, 1992 to September 18, 2006 for India using daily stock prices. The study found impact of appreciation of rupee has positively contributed to mean returns while depreciation has reduced the returns. Further, depreciation has increased the volatility and appreciation has reduced the volatility. The outbreak of global financial crisis attracted the researchers to revisit the question of volatility spillover again. Hua Zhao (2010) conducted a study explores the dynamic relationship between stock prices and real effective exchange rate exclusively for china From January 1991 to June 2009. The results depicted that no long run significant relationship between the two financial variables. Also no mean spillover relationship was found but the bidirectional volatility spillover between the two markets has shown that past innovations in foreign exchange market have greater effect in stock market volatility and vice versa. Walid Chkili (2012) analyzed the dynamic relationship between exchange rate changes and stock market returns for eight emerging economies for the period from 1994 to 2009 using weekly data. The study found that the coefficient of exchange rate in conditional mean equation is statistically significant for all countries except Indonesia indicating that exchange rates depend on their past observations. Moreover, a statistically significant bidirectional price spillover relationship was found for Singapore, Korea, Indonesia, Brazil and Mexico while a unidirectional price spillover relationship running from stock market to exchange rate was found for Hong Kong and Malaysia, except for

Argentina were a no spillover relationship was observed. Further, the coefficient of conditional variance equation is near unit speaking volumes of high degree of volatility of emerging economies. Moreover, a statistically significant bi-directional shock transmission and was found for Hong Kong, Malaysia, Korea & Indonesia and volatility transmission for Malaysia, Korea, Indonesia and Brazil while a unidirectional volatility and shock transformation running from stock market to exchange rate was found for Singapore & emerging Latin American countries. Manish Kumar (2013) to investigate the nature of returns and volatility spillovers between stock prices and exchange rate in IBSA countries (India, Brazil and South Africa) from 2000 to 2011. For all the IBSA nations stock markets and exchange rates were not co-integrated. It was found that both exchange rate and stock indices are affected by their own observations. Results of ARCH model showed that bidirectional interaction between stock indices of IBSA and foreign exchange market indicating that a shock originating in stock market will have an influence in foreign exchange market and vice versa. Further a Bi-directional volatility spillover was observed between stock market and foreign exchange market. Also, it could be observed that results of return and volatility spillover from stock market to exchange rate were larger than the results from exchange rate to stock market which is explained by (morals 2008) may be due to positive exchange rate volatility on stock returns for some firms offsetting negative exchange rate volatility on stock returns for other firms to give a weak effect overall. Sudarsana Sahoo, Harendra Behera and Pushpa Trivedi (2017) investigate the price and volatility spillovers between Indian forex and stock market for India from April 2005 to March 2017. In conditional mean equations auto regressive coefficients were statistically significant meaning that returns of stock returns and exchange returns are mostly determined by their past values. Further it was found that price spillover effects move from stock market to foreign exchange market but not vice versa. Moreover, the results of conditional variance equation indicate that volatility in stock market and forex market is driven by past shocks. Volatility spillover from forex market to stock market was found only during second sample period mainly because heavy export oriented companies who are sensitive to exchange rate movements, no shock or volatility was observed overall sample period. Similarly, no volatility spillover was found running from stock market to exchange rate when considered for full sample but same was observed for second & fourth sample periods. Therefore, unlike price spillover which was a common phenomenon volatility spillover is a specific phenomenon found only during fluctuation in exchange rate. Hock Tsen Wong (2018) investigated the volatility spillover between real exchange rate return of us dollar and Japanese yen with real stock prices of shariah complaint funds of Malaysia from October 2000 to March 2017. The study found strong correlation in long run between real exchange rate USD/YEN and real stock prices than in the short run meaning thereby fundamental factors are more important in determining the relationship between the said variables. Moreover, the impact of real RM/USD on real stock prices is more powerful than the impact of real RM/yen on real stock prices. Also, the study found a strong link in volatility spillover when observed for permanent component between exchange rate and stock prices compared to relationship in transitory component.

SUMMARY OF STUDIES BASED ON VOLATILITY SPILLOVER:

Author	Sample country	Sample period	Findings
Angelo Kanas (2000)	6 industrial economies	from 1 January 1986 to 28 February 1998	The study found that volatility spillovers from stock returns to exchange rates is significant for all countries except Germany

Prakash G Apte (2001)	India	from January 2 1991 to April 24, 2000	The study found volatility spillovers from exchange rate to stock returns ,also asymmetric in nature
Alok Mishra, Niranjan swain and Dk Malhotra (2007)	India	from January 1993 to December 2003	The study found existence of long run and a bidirectional spillover relationship between the two markets.
Chaker Alou (2007)	USA and five European economies	from 1990 to 2005	The study found varied results of price and volatility spillover across countries.
Mary O'Donnell and Lucia Morales (2009)	Four eastern European economies	From 1999 to 2006	They study found absence of volatility spillover between the two financial variables.
Paresh Kumar Narayan (2009)	India	From 1992 to 2006	The study found that Depreciation has increased the volatility and appreciation has reduced the volatility.
Hua Zhao (2010)	China	From January 1991 to June 2009	The study found absence of long run and mean spillover relationship
Walid Chkili (2012)	Eight emerging economies	from 1994 to 2009	The study has found varied results of spillover in conditional mean and variance equation.
Manish Kumar (2013)	ISBA nations	from 2000 to 2011	The study found varied results of return and volatility spillover across countries.
Sudarsana Sahoo, Harendra Behera and Pushpa Trivedi (2017)	India	April 2005 to March 2017.	The study found varied results of price spillover across countries.
Hock Tsen Wong (2018)	Malaysia	From October 2000 to March 2017, Malaysia.	The study found a strong link in volatility spillover when observed for permanent component between exchange rate and stock prices compared to relationship in transitory component.

DIRECTION FOR FUTURE RESEARCH

Most of the empirical papers have assumed that causal relationship between the two financial variables is linear in nature and also measured causality by conventional methods. Zheng Yanga, Anthony H. Tub, and Yong Zen (2014) found that when causality is tested in quantiles, more bidirectional causal relationships had been observed. Therefore, future studies should not only use different versions of causality but also conduct causality analysis in quintiles also.
Further, the existing literature is inconclusive about weather crisis events like Asian financial crisis and global financial recession does strength the relationship between the two markets or not. Future researchers should address this question.

CONCLUSION

After reviewing the literature mixed results across countries were confirmed, period of time, type of exchange rate used (nominal vs. real) and also type of methodology used. Therefore, the relationship between exchange rate and stock price is sensitive to research design. Most of empirical work has shown the presence of causality while some studies have found strong causality from exchange rate to stock prices and some has depicted causality from stock prices to exchange rate. The general agreement of no long run relationship has been found in most empirical papers. It is further concluded that there are varied results of price and volatility spillover across countries.

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