

The Influence of Capital Market Intermediaries on The Innovation of The Asean Countries

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Abstract:

The aim of the paper is to analyze the influence of capital market intermediaries on the innovation of the ASEAN countries. For this purpose, data were collected from the World Bank Indicators (WBI) and STATA was employed to test the hypothesis through generalize movement methods (GMM). The outcomes shows that capital market intermediaries such as retail investors, investment banks, venture capitalists, portfolio managers and underwrites have positive nexus with the innovation of the ASEAN countries. These findings guided to the policy makers that they should enhance their focus on the capital market intermediaries such as retail investors, investment banks, venture capitalists, portfolio managers and underwrites that enhance the innovation in the company.

Keywords: Capital Market Intermediaries, Retail Investors, Investment Banks, Venture Capitalists, Portfolio Managers, Innovation

I. Introduction

Thriving concurrence shows that operation fiscal market places engage a core role in driving growth of the economic over their capability to goose hi-tech innovation (Haseeb, Kot, Hussain, & Jermisittiparsert, 2019). It is believed in another way that fiscal market places to perform same role is by designating capital to organizations with ultimate potential of enforcing fresh procedures and to commercializing it (Roca, 2018). Financial Support from External sources has been watched throughout the history where innovations took place under the umbrella of innovation programs and specific research or "out of the box". For penetrating markets, economic and socio-political conditions devoted to defy innovation conditions. Most promising projects are backed by

capital markets due to this idea, harks financing to in agreement with Schumpeter (1912) feeling of "creative destruction" and over several decades sincerely investigated in situation of entrepreneurs' financing constraints and institutional amendments impact could be more favorable for adequate financial markets (Thesmar, Schoar, & Bertrand, 2008). There is another viable avenue where technological developments might be impacted by financial markets, however, itself by financing innovation (Hall, 2010). While, promising ideas are more focused on it commercialization and implementation with substantial financial academic literature, there has been less focus so far whether and how nature of R&D might actively mold by financial markets which is embarked upon, and how firms in which

shaping of ideas are developed may impact growth and technological innovation (Akcigit, 2012; Fongtanakit, Somjai, Prasitdumrong, & Jernsittiparsert, 2019).

In this paper, we review firm level innovation which is being impacted by the role of financial intermediaries and capital markets which are flourishing writings that has strived to discourse this gap (Rethel, 2019). We enlarged theoretical contributions with respect to Research and development projects financings therefore distinct from other channels and projects which are financed through which capital markets with financial intermediaries' impact innovation (Phung, Vermeulen, Knoblen, & Tran, 2018). In discussion of mature firms and the sort of empirical exertion on innovation, while the literature on nature and amount of innovation that firms undertake have impact by capital and ownership structure (Beaverstock, 2018; Puangyanee, Yaowapanee, Duangsawang, & Jernsittiparsert, 2019). At early stage, young firms are focused about effect of expanding literature in various stages of innovation. Lastly, discusses the significance of promising area outlines and research for future work. Several significant aspects of the paradox that were covered in considerable depth by Hall (2010) skipped over in our review (Shahbaz, Nasir, & Roubaud, 2018). Our intelligence innovation regarding the finance has grown a lot for last few years, but focal point that the current studies will endure powerfully for some time creating new puzzles and long-standing wisdom while suggesting this era of work (Haq, Nawaz, Mahtab, & Cheema, 2012). While focusing reviews on financial innovations and skipping many lasting aspects for innovation; such as the intellectual property role (Williams, 2013). The factors in relation to demand side such as market size (Acemoglu & Linn, 2003). The Chain of Talented Engineers and Scientists (Kerr & Lincoln, 2010). Overflowing

across organizations (Bloom, Schankerman, & Van Reenen, 2013). Latest reviews provided by Nicholas (2011).

Additionally, quit the literature of revolutions regarding the technology impact on financial markets of the globe (Pástor & Veronesi, 2009). The interrelated to assess pricing instead of the substantial influences of corporate financing choices (Gulzar & Nasution). In order to cut across section boundaries, we focused recent stuff for the innovation regarding the finance. Debt financing role is associated with innovation which is documented by growing body of work. The use of debt for innovation is perhaps more ubiquitous and reasonable than anticipated while reviewing the astonishing given old properties of collateral. It is generally recognized that innovation is an essential wellspring of maintainable fiscal improvement and comprehensive development, not just through efficiency enhancements in organizations, enterprises, and full scale economies, yet in addition through the extension of utilization, venture, and fares animated by advancement. This acknowledgment of the adequacy of advancement has, presumably, been winning in created nations, yet there still is by all accounts some incredulity in creating nations (Fagerberg, Srholec, & Verspagen, 2010). That is, 'Is development a huge factor for financial improvement of creating nations?' or 'Is it gainful to consider development as a significant arrangement focus for creating nations?' Such questions are as often as possible addressed adversely in the light of the fact that cutting edge firms and enterprises would rise just in well-propelled economies (Alekan et al., 2018). Table 1 given below show the capacity of innovation by the all countries belongs to ASEAN. The chances of innovation from 2004 to 2008 increase from the 286 to 5768 in different ASEAN countries. Figure 1 also shows the statistics of innovation capacity of different ASEAN countries around the globe.

Table 1: Capacity of Innovation

Sr.	Country	2004	2005	2006	2007	2008
1	Brunei	286	-	-	-	-
2	Cambodia.	-	-	-	-	-
3	Indonesia.	-	-	-	-	-
4	Lao	-	-	-	-	-
5	Malaysia.	500	-	369	-	601
6	Myanmar	-	-	-	-	-
7	Philippine	-	80	-	78	-
8	Singapore	4881	5291	5424	5768	5740
9	Thailand	-	311	-	3224	-
10	Vat Nam	-	-	-	-	-
11	China	713	856	932	863	903
12	India	-	135	-	-	-
13	Japan Korea	3301	3777	4175	4603	4867

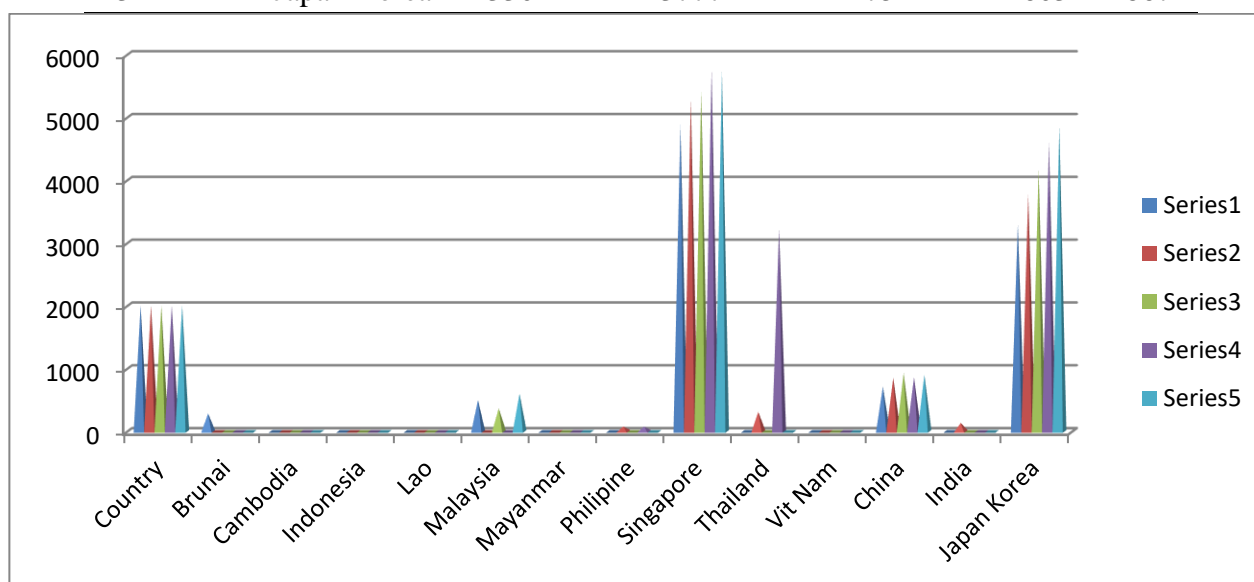


Figure 1: Investment on Innovation

In the above given chart we can conclude that those ASEAN recognized nations who are paying special attentions by investing in this specific area are strengthen their economy with the passage of time there is some inverse situation with other countries like Myanmar etc. ASEAM must accelerate their efforts to support such economies for their prosperous future. In this chapter, we review firm level innovation which is being impacted by the role of financial intermediaries and capital markets which are flourishing works that has strived to discourse this

gap. We enlarged theoretical contributions with respect to Research and development projects financings therefore distinct from other channels and projects which are financed through which capital markets with financial intermediaries' impact innovation. In discussion of mature firms and the sort of empirical exertion on innovation, while the works on nature and amount of innovation that firms undertake have impact by capital and ownership structure(Robiyanto, 2018). At early stage, young firms are focused about effect of expanding literature in various stagesof

innovation. Lastly, discusses the significance of promising area outlines and research for future work(Pradhan et al., 2018).

II. Literature Review

Following is the literature review regarding understudy variables and their relationships with each other.

Capital Market Intermediaries and Innovation

The imperative role of innovation by miniature firms were cited as early as, Polzin, von Flotow, and Klerkx (2016) who viewed at the preface of new items, services and processes and construct that small firms materialize superfluous share. Similarly Lin, Zeng, Liu, and Li (2018) enumerated empirical and theoretical evidence for the priority of small firms in expedition of Research and Development, with larger firms concentrating a giant share of their struggle on domestic innovations that frame surplus on existing commodities. Advancement frameworks are exceptionally unique: they change continually and frequently in unusual manners. It is fascinating that the most creative nations by a long shot are Switzerland and Singapore. Why? Regardless of whether it is in industry, science, instruction, state or society, Switzerland is driving the path as it was the main nation to accomplish a high incentive in sub-regions. Quality is the information and innovation move: in Switzerland, the interfaces among science and industry function admirably; Considerably, the four Scandinavian nations of Finland, Sweden, Denmark and Norway, just as the USA, the United Kingdom and Australia, the Netherlands, Switzerland and Israel. In particular, Finland drives the digitalization zone of Research/Technology, Norway drives the Society zone, and Israel is ahead in the Industry segment, the USA is top in Infrastructure/State and the Netherlands stand apart with creative plans of action.

When associations have approach to the same innovative potential, firm's size governs choices of investment for surplus maximization instead of differences, indeed the small and large firms distinction can even arise in this valuable part of model(Asif & Akhter, 2019). Relatively in "New" industry, differences rise in degree to which large occupants in startups and clean energy enlists in exploitation and exploration itemized by Fleming, Younger and Nanda, Younge, and Fleming (2014). At first, there is an inherent uncertainty of innovation process, although risk is essentially different from uncertainty as emphasized by Hussain, Mosa, and Omran (2017). Not only the probable conclusion is not clear but though anticipations linked with outcomes are also unknown. Secondly, the task of accomplishing investments in the aspect of uncertain height is amalgamated by the fact that the reward from process of innovation is excessively slanted (Scherer & Harhoff, 2000). Thirdly, although in often times it is unknown to the financier about project rather than the innovator that project bear true potential or not. While the process of innovation to measure inputs accurately is impossible (Holmstrom, 1989). Even when it is unknown about the outputs might be, one cannot give contracts state-contingent and complete(Levine, 2005). Exhaustive analysis about the startups of Innovative financing contemplate VC venture given in bulk of empirical work as provided by Cumming and Johan (2013) and Puri, Hellmann, and Da Rin, Hellmann, and Puri (2013), and Hall (2010) same evidence about that.

A significant early commitment in this field was by Hussain, Musa, and Omran (2019), who archived the causal impact of VC on development utilizing an arrangement prompted more prominent portion of annuity subsidize money to VC firms. Kortum and Lerner archive that increments in funding movement prompted more prominent protecting rates and may have

represented 8% of the modern developments during their time of study. Ensuing work by Samila and Sorenson (2011) additionally measures how VC speculation empowers financial development in neighborhoods. Thriving concurrence shows that operation fiscal marketplaces engage a core role in driving growth of the economic over their capability to goose hi-tech innovation. It is believed in another way that fiscal marketplaces to perform same role is by designating capital to organizations with ultimate potential of enforcing fresh procedures and to commercializing it (Kerr, (2014)). Startup licensing is supported by two mediator venture bunches when contrasting just funding manages. One instrument through which VC financial specialists sway startup development is through their job in checking, recommending the significant job of administration in this unique circumstance. When associations have approach to the same innovative potential, firm's size governs choices of investment for surplus maximization instead of differences, indeed the small and large firms distinction can even arise in this valuable part of model. Relatively in "New" industry, differences rise in degree to which big occupants in startups and clean energy enlists in exploitation and exploration itemized.

This is reliable with crafted by Gompers (1995), who report the significant job that VC speculation approaches and agreements play in conquering organization issues through arranged financing, observing, board portrayal, and supplanting authors with proficient CEOs on account of failing to meet expectations adventures (Wasserman, 2003). Kerr, Nanda, and Rhodes-Kropf (2014) record the outrageous trouble, in any event, for proficient speculators like VCs, to pass judgment on the potential achievement of imaginative new companies at a beginning period of their venture. Without a doubt, given the outrageous vulnerability related with these speculations ex risk, and the inequality in ex post returns where a

couple of ventures represent most by far of the VC portfolio restores, the experimentation worldview assumes a focal job in VC speculators' way to deal with the financing of creative new companies. VC financing as a progression of genuine alternatives with an ideal halting point, archiving how various highlights related with VC contracts speak to reactions and dynamic learning notwithstanding office concerns. Their model is not quite the same as Hussain, Mosa, and Omran (2018) model in that there is no sheltered way to seek after if the business visionary and speculator discover that the undertaking isn't reasonable. This appears to be progressively fitting to the VC setting, "new to the world" as opposed to "new to the firm", and subsequently there is no footing regarding the task.

In particular, Finland drives the digitalization zone of Research/Technology, Norway drives the Society zone, and Israel is ahead in the Industry segment, the USA is top in Infrastructure/State and the Netherlands stand apart with creative plans of action. When associations have approach to the same innovative potential, firm's size governs choices of investment for surplus maximization instead of differences, indeed the small and large firms distinction can even arise in this valuable part of model. The genuine alternatives system gives a few other helpful experiences with regards to VC. For instance, Nanda et al. (2014) record the confound among VC and certain ventures, for example, clean vitality, where the speculation time span required to find out about the reasonability of an undertaking is high to the point that creative activities with extraordinary possible are not financed without the help of state. Howell (2015) shows the significant job that administration sponsorships can play in diminishing introductory financing limitations in such cases. Additionally, Kerr et al. (2014) report how the falling expense of finding out about feasibility in the beginning periods of an innovation can profoundly affect experimentation by earlystage financial

specialists. While these progressions are generally clear with regards to enterprise in programming and shopper confronting web new companies, where distributed computing and item arranged programming have brought down the expense of beginning organizations significantly, there have been sensational falls in the expense related with reenactment advances, fast prototyping and bio-informatics, additionally prompting a flood in speculator enthusiasm for subsidizing development in these divisions.

In reality, the planning of the emotional ascent in quickening agents (beginning in 2005) to enable unpracticed business people to scale organizations, first in programming and all the more as of late in equipment and genomics-based new companies, appears to be steady with the way that the greatest recipients of the falling expense in experimentation have been youthful, unpracticed business people. Financing hazard is generally remarkable for ventures that need return to the capital markets commonly, and in this way the undertakings that are most noticeably awful hit are frequently trial new advancements (Ibrahim, Sulaiman, Kahtani, & Abu-Jarad, 2012). Actually, a potential ramifications of this work is that the most creative activities in the economy may require times of low financing danger ("hot monetary markets") to drive their underlying commercialization, an end associated with the job of securities exchanges in financing development (Brown, Fazzari, & Petersen, 2009). Such as "business opportunity for thoughts" is considerably less produced for clean vitality, and as an outcome business visionaries and financial specialists who are thinking about an examination around there face extra continuation dangers (Nanda et al., 2014).

The structure for enduring early disappointment and remunerating long haul achievement has additionally been concentrated with regards to establishments that may advance entrenchment or

shield workers from being terminated. For instance, it has been contended that enemy of takeover laws may invigorate radical development since they advance entrenchment, that indulgent laws may advance more investigation, and terminate workers may prompt progressively novel developments. Be that as it may, both the hypothesis and the observational outcomes here are increasingly equivocal, because of the perplexing impacts of choice and treatment. Hussain, Musa, and Omran (2018) depicts the ideal agreement under various sorts of undertaking qualities and thus, for instance, would recommend an alternate law relying upon whether the goal was investigation or misuse (Ederer & Manso, 2011). Essentially, how much business security or hostile to takeover arrangements are useful or unsafe for advancement rely upon the idea of development that is being looked for. There is all by accounts developing proof that bank fund is a significant wellspring of capital, in any event, for firms occupied with advancement (Hussain et al., 2012). There is additionally developing proof that the open value markets have their very own types of organization costs and that subsequent administrative nearsightedness Dutt et al. (2016) can smother advancement. A significant part of the early writing on fund and development looked to archive the specific difficulties related with financing R&D and to measure how much creative firms confronted financing limitations (Brown, Martinsson, & Petersen, 2012).

A significant work in this arena is Brown et al. (2009), who give proof that youthful, cutting edge, traded on open market organizations money their R&D speculation as a rule through interior income and outside value markets. First in programming and all the more as of late in equipment and genomics-based new companies, appears to be steady with the way that the greatest recipients of the falling expense in experimentation have been youthful, unpracticed

business people. Financing hazard is generally remarkable for ventures that need return to the capital markets commonly, and in this way the undertakings that are most noticeably awful hit are frequently trial new advancements. Actually, a potential ramifications of this work is that the most creative activities in the economy may require times of low financing danger ("hot monetary markets") to drive their underlying commercialization, an end associated with the job of securities exchanges in financing development. They contend that "data issues, slanted and exceptionally dubious returns, and absence of insurance esteem likely make obligation of a poor substitute for account value". From the above discussion we are able to develop hypothesis.

Hypothesis: There is a positive association between capital market intermediaries and innovation of the ASEAN countries.

III. Research Methods

The aim of the paper is to analyze the influence of capital market intermediaries such as retail investors, investment banks, venture capitalists, portfolio managers and underwrites on the innovation of the ASEAN countries. For this purpose, data were collected from the World Bank Indicators (WBI) from 2000 to 2016 and STATA was employed to test the hypothesis through

generalize movement methods (GMM). The innovation is measured as the average of number of citation and the number of patent applications while the capital market intermediaries such as retail investors (RI), investment banks (IB), venture capitalists (VC), portfolio managers (PM) and underwrites (UW) are measured by the amount of capital invested by the intermediaries in the institution.

$$Innovation_{it} = \beta_0 + \beta_1 RI_{it} + \beta_2 IB_{it} + \beta_3 VC_{it} + \beta_4 PM_{it} + \beta_5 UW_{it} + e_{it}$$

IV. Findings

The outcomes included the descriptive analysis that describe the characteristics of whole data, correlation matrix that describe the multicollinearity and correlation among the variables, all the assumptions of OLS such as multicollinearity, homoscedasticity, normality and auto correlation, fixed and random models, Hausman test and GMM estimator. The descriptive statistics given below shows the minimum and maximum values and shows the mean and standard deviation of the variables. Table 2 given as under highlighted the descriptive analysis.

Table 2: Descriptive Analysis

Variable	Orbs	Mean	Std. Dev.	Min	Max
Innovation	170	1.618	.567	-.179	3.437
RI	170	1.191	.205	.021	1.771
IB	170	.249	.256	0	.846
VC	170	.158	.214	0	.983
PM	170	4.974	.841	2.862	6.399
UW	170	10.541	.214	201.212	321.025

The correlation matrix highlighted the multicollinearity and correlation among the understudy variables. The statistics exposed that

no multicollinearity exist in the data and variables are correlated. Table 3 given as under highlighted the correlation matrix.

Table 3: Correlation Matrix

Variables	Innovation	RI	IB	VC	PM	UW
Innovation	1.000					
RI	-0.173	1.000				
IB	0.099	0.241	1.000			
VC	-0.054	0.005	0.064	1.000		
PM	0.013	0.179	0.161	-0.106	1.000	
UW	0.249	0.137	-0.405	-0.363	-0.090	1.000

The first assumption of multicollinearity is verified by taking the variance inflation factor (VIF) and statistics exposed that no multicollinearity exist because the VIF values are less 5 and tolerance values are less than 10. Table 4 given as under highlighted the VIF.

Table 4: Variance Inflation Factor (VIF)

	VIF	1/VIF
RI	1.579	.633
IB	1.241	.806
VC	1.217	.822

PM	1.169	.855
UW	1.096	.912
Mean VIF	1.26	.

The second assumption is verified by employed the Skewness and Kurtosis and the figures highlighted that abnormality issues are exists in the data because the probabilities values of all the constructs are less than 0.05 that reject the null hypothesis of data has normally distributed. Table 5 given as under highlighted the Skewness and Kurtosis.

Table 5: Skewness and Kurtosis Test

Variable	Orbs	Pr(Skewness)	Pr(Kurtosis)	adj_chi2(2)	Prob>chi2
Innovation	170	0.311	0.036	5.420	0.066
RI	170	0.208	0.000	27.660	0.000
IB	170	0.000	0.002	26.130	0.000
VC	170	0.000	0.000	64.410	0.000
PM	170	0.000	0.003	20.610	0.000
UW	170	0.000	0.000	.	0.000

The third and final assumption regarding the autocorrelation and homoscedasticity is verified by employed the Wooldridge and Breusch-Pagan test respectively. The figures of the tests shown that autocorrelation and heteroscedasticity issues are exist in the model and can be fixed by using the GMM estimator.

The both models of random and fixed has been employed to check the appropriate model for the study. The models include the beta for the direction of relationship and t and p values for the significant relationship among the variables. Table 6 given as under highlighted the model of fixed effect.

Table 6: Fixed Effect Model

Innovation	Coef.	S.E.	t-value	p-value	L.L.	U.L.	Sig
RI	1.037	.201	5.16	.000	.641	1.433	***
IB	-.138	.337	-0.41	.683	-.801	.526	
VC	.951	.251	3.80	.000	.458	1.445	***
PM	-.368	.095	-3.87	.000	-.555	-.18	***

UW	.014	.002	7.65	.000	.01	.018	***
Constant	1.909	.547	3.49	.001	.832	2.987	***
R-squared	0.460			Prob > F	0.000		

*** $p < .01$, ** $p < .05$, * $p < .1$

The both models of random and fixed has been employed to check the appropriate model for the study. The models include the beta for the direction of relationship and t and p values for the

significant relationship among the variables. Table 7 given as under highlighted the model of random effect.

Table 7: Random Effect Model

Innovation	Coef.	S.E.	t-value	p-value	L.L.	U.L.	Sig
RI	.95	.188	5.06	.000	.582	1.319	***
IB	-.039	.201	-0.19	.846	-.433	.355	
VC	.597	.197	3.03	.002	.211	.983	***
PM	-.032	.062	-0.51	.611	-.154	.091	
UW	.015	.002	8.50	.000	.012	.019	***
Constant	.357	.436	0.82	.413	-.498	1.212	
Overall r-squared	0.312	Prob > chi2			0.000		

*** $p < .01$, ** $p < .05$, * $p < .1$

To check the appropriate method among the models of fixed and random effect, the Hausman test employed. The figures of the test showed that fixed effect is appropriate because probability value is less than 0.05 that reject the null hypothesis regarding the random effect is appropriate. Table 8 given as under highlighted the Hausman test.

Table 8: Hausman Test

	Coef.
Chi-square test value	11.743
P-value	.038

The path analysis shows the relationships among the understudy variables. The figures highlighted that positive nexus among the capital market intermediates such as retail investors (RI), investment banks (IB), venture capitalists (VC), portfolio managers (PM), underwrites (UW) and innovation in the ASEAN countries around the globe because positive sign exits with beta values. In addition, the links among the capital market intermediates such as retail investors (RI), investment banks (IB), venture capitalists (VC), portfolio managers (PM), underwrites (UW) and innovation are significant because of p and t values the meet the standard criteria. Table 9 given as under highlighted the fixed effect regression model.

Table 9: Regression Analysis Fixed Effect Model

Innovation	Coef.	S.E.	t-values	P>t	L.L.	U.L.
RI	1.037	0.128	8.070	0.000	0.754	1.320
IB	0.438	0.231	1.900	0.031	0.647	0.372
VC	0.951	0.210	4.540	0.001	0.490	1.413
PM	0.668	0.217	3.078	0.002	0.844	0.109

UW	0.014	0.003	4.530	0.001	0.007	0.021
_cons	1.909	0.922	2.070	0.039	0.340	4.159

Discussions

The aim of the paper is to analyze the influence of capital market intermediaries such as retail investors, investment banks, venture capitalists, portfolio managers and underwrites on the innovation of the ASEAN countries. For this purpose, data were collected from the World Bank Indicators (WBI) and STATA was employed to test the hypothesis through generalize movement methods (GMM). The outcomes shows that capital market intermediaries such as retail investors, investment banks, venture capitalists, portfolio managers and underwrites have positive nexus with the innovation of the ASEAN countries. The results revealed that if the financial intermediaries such as retail investors, investment banks, venture capitalists, portfolio managers and underwrites increase the capital in the organization then the firm is able to bring the innovation in the organization.

V. Policy Recommendations

These findings guided to the police makers that they should enhance their focus on the capital market intermediaries such as retail investors, investment banks, venture capitalists, portfolio managers and underwrites that enhance the innovation in the company.

VI. Conclusion

Hence, the study reach to the conclusion that if the financial intermediaries such as retail investors, investment banks, venture capitalists, portfolio managers and underwrites increase the capital in the organization then the firm is able to bring the innovation in the organization.

VII. Limitations and Future Directions

Finally, the current study has few limitations for instance the current study take only the ASEAN

countries and further study may add more countries. In addition, the current study investigate the only five financial intermediaries such as retail investors, investment banks, venture capitalists, portfolio managers and underwrites, but many other financial intermediaries are exist in the market and further study may incorporate that financial intermediaries in their analysis.

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