

# EFFECTS OF ECONOMIC FREEDOM ON BANK EFFICIENCY, OUTPUT REALLOCATION AND PROFIT CONVERGENCE IN THE ASEAN-5 BANKING SECTOR

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Thesis Submitted to the School of Graduate Studies, University Putra Malaysia in Fulfilment of the Requirement for the Degree of Doctor of Philosophy.

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Abstract of thesis presented to the Senate of Universiti Putra Malaysia in fulfilment of the requirement for the degree of Doctor of Philosophy

### EFFECTS OF ECONOMIC FREEDOM ON BANK EFFICIENCY, OUTPUT REALLOCATION AND PROFIT CONVERGENCE IN THE ASEAN-5 BANKING SECTOR

By

# YAP WOON KAN



This thesis consists of three stand-alone, yet inter-related studies that delve into the underlying dynamics concerning economic freedom, bank efficiency, output reallocation and profitability convergence. Notably, these studies look into the impacts that different sources of economic freedom have on the banking sector from various perspectives. The empirical analyses of these studies are carried out by employing an identical sample, which comprises 135 banks operating in the ASEAN-5 countries from 2010 to 2015.

The first study examines the impacts of economic freedom on bank cost efficiency, thereafter, the manners in which these freedom-induced impacts are conditioned by the prevailing rule of law, are duly ascertained. To this end, the rule of law is found to have important threshold effects on the impact of economic freedom on bank cost efficiency. A smaller sized-government is uncovered to reduce bank cost efficiency unless a certain level of the rule of law is observed. This indicates that a contraction of fiscal spending to reduce the government size, is generally found to impair bank cost efficiency. However, the reduction in cost efficiency is mitigated when there is sufficient protection of creditors' rights and debt recovery process, measured by the rule of law.

Similarly, the positive effects that a liberalised credit market has on bank cost efficiency is not apparent until a certain level of the rule of law is observed. This suggests that deregulation without sufficient regulatory forces is expected to bring about issues on moral hazard and excessive risk-taking, which subsequently lead to lower bank cost efficiency unless the rule of law is observed to a certain degree. As a result, reforms to promote a greater level of economic freedom should be preceded by policies that foster the rule of law.

The second study extends the first study's objective by ascertaining how economic freedom, through the moderation of cost inefficiency, eventually affects allocative efficiency of the ASEAN-5 banking sectors as exemplified by the reallocation of banking outputs or the factors of production. Firstly, the findings of this study affirm the prevalence of an efficient output reallocation mechanism that is underlying the ASEAN-5 banking sectors. Such a conclusion is made when the reallocative effects instigated by competitive pressure, are found to be proportional to bank cost inefficiency.

Therefore, upon coalescing the findings of the first and second study, conclusions can be drawn about the effects of economic freedom on the reallocation of banking outputs. Once the rule of law has been observed to a certain degree, a higher level of freedom in the credit markets does not only improve bank cost efficiency as revealed in the first study but it also eases the competitive pressure that saddles the incumbent banks. This suggests that relaxing the restrictions on banking activities is expected to enlarge the bankable segment. As a result, the need for banks to compete among themselves abates. On the other hand, despite the reduced bank cost efficiency following a reduction in government size as uncovered in the first study, the underlying efficient output reallocation mechanism will ensure that the least cost efficient banks are the first ones to be displaced. Hence, this eventually increases the overall stability of the banking sectors in the long-run.

Lastly, the third study of this thesis examines how economic freedom facilitates the betaconvergence of bank profitability to the industry's long-run equilibrium, which is the level that all incumbent banks tend to, upon behaving competitively. This arguably constitutes an alternate approach to the second study that evaluates the contribution of economic freedom towards fostering allocative efficiency in the banking sector. While the second study deems the banking sector allocatively efficient when banking outputs are optimally reallocated, the third study embodies the neo-classical prediction that allocative efficiency only transpires when banks' performances equalise.

The results yielded from this study show that the ASEAN-5 banking sectors are generally competitive as both bank profits and the ROAA are found to beta-converge to a competitive level. Although there is no evidence that the pace of convergence is significantly determined by the prevailing level of economic freedom, there are certain thresholds for both the extent of freedom in the credit markets and the size of government, to satisfy, in order for bank profitability to beta-converge significantly.

Incidentally, the findings yielded from all of the empirical studies encapsulated in this thesis stand up to the tests for robustness, which include: 1) varying the estimation strategies used; 2) censoring the sample and 3) altering the proxies used for the variables of interest. Therefore, the conclusions generated from the findings of this thesis are robust.

Abstrak tesis yang dikemukakan kepada Senat Universiti Putra Malaysia untuk memenuhi keperluan untuk Ijazah Doktor Falsafah

### KESAN KEBEBASAN EKONOMI TERHADAP KECEKAPAN BANK, PENGAGIHAN SEMULA OUTPUT DAN PENUMPUAN KEUNTUNGAN DI SEKTOR PERBANKAN ASEAN-5

Oleh

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### Pengerusi : Law Siong Hook, PhD Fakulti : Ekonomi dan Pengurusan

Tesis ini terdiri daripada tiga kajian penyelidikan yang tersendiri, namun berhubung kait tentang asas kebebasan ekonomi, kecekapan bank, pengagihan semula output dan penumpuan keuntungan. Tumpuan utama kajian ini adalah untuk menganalisa kesan kebebasan ekonomi terhadap prestasi bank dan struktur pasaran perbankan daripada perspektif yang berbeza. Analisis empirikal kajian-kajian ini dijalankan dengan menggunakan sampel yang terdiri daripada 135 bank yang beroperasi di negara-negara ASEAN-5 pada tahun 2010 hingga 2015.

Objektif pertama kajian ini adalah untuk menganalisis kesan kebebasan ekonomi terhadap kecekapan kos bank; dan seterusnya menentukan bagaimana impak dari kebebasan tersebut dikuatkuasakan oleh kedaulatan undang-undang. Setakat ini, kesan kebebasan ekonomi terhadap ketidakcekapan kos bank didapati dipengaruhi oleh kedaulatan undang-undang di mana bank di negara yang bersaiz kecil lebih cenderung untuk mengalami peningkatan terhadap ketidakcekapan kos melainkan jika terdapat pemantauan peraturan undang-undang pada tahap tertentu. Hal ni menunjukkan bahawa penguncupan perbelanjaan *fiscal* yang dilaksanakan kerajaan bagi proses pengurangan saiz kerajaan, secara amnya didapati meningkatkan ketidakcekapan kos bank. Walau bagaimanpun, peningkatan ketidakcekapan kos ini akan dikurangkan apabila terdapat perlindungan yang mencukupi terhadap hak pemiutang dan proses pemulihan hutang yang diukur oleh kedaulatan undang-undang.

Selain daripada itu, kesan positif daripada liberalisasi pasaran kredit terhadap kos bank adalah tidak jelas melainkan jika terdapat pemantauan peraturan undang-undang pada tahap yang tertentu. Ini menunjukkan bahawa deregulasi tanpa kuasa pengawalseliaan yang mencukupi dijangka memberi risiko yang tinggi oleh bank-bank yang mengurangkan kecekapan kos. Akibatnya, reformasi untuk menggalakkan tahap kebebasan ekonomi yang lebih tinggi harus didahului oleh dasar-dasar yang memupuk kedaulatan undang-undang.

Objektif kedua kajian ini adalah untuk memperluaskan objektif kajian pertama, iaitu untuk menentukan bagaimana kebebasan ekonomi melalui pengantaraan ketidakcekapan kos, akhirnya mempengaruhi kecekapan alokasi sektor perbankan ASEAN-5 seperti yang ditunjukkan oleh pengagihan semula hasil bank ataupun faktor produksi. Keputusan daripada objektif ini menunjukkan bahawa sektor perbankan ASEAN-5 mempunyai mekanisme pengagihan semula yang cekap ke atas hasil bank ataupun faktor produksi kerana kesan reallokatif yang ditentukan oleh tekanan persaingan adalah berkadar dengan ketidakcekapan kos bank.

Oleh itu, hasil daripada kajian pertama dan kajian kedua membolehkan kesimpulan terhadap kesan kebebasan ekonomi melalui pengagihan semula hasil bank atau faktor produksi dilakukan. Apabila kedaulatan undang-undang telah dikuatkuasakan sehingga tahap tertentu, tahap kebebasan yang lebih tinggi dalam pasaran kredit bukan sahaja mampu mengurangkan ketidakcekapan kos bank (seperti yang ditunjukkan dalam kajian pertama), tetapi ia juga dapat mengurangkan tekanan persaingan. Hal ini menunjukkan bahawa kelonggaran terhadap sekatan bagi aktiviti perbankan dijangka membesarkan segmen bank dan akibatnya, keperluan bagi bank-bank untuk bersaing di antara mereka menurun. Sebaliknya, walaupun peningkatan ketidakcekapan kos bank berikutan pengurangan saiz kerajaan (seperti yang diperolehi dalam kajian pertama), mekanisme pengagihan semula hasil bank yang cekap akan memastikan bahawa bank yang paling tidak cekap dalam kos pengurusan adalah yang pertama akan digantikan. Akhirnya, ini akan membantu memupuk kestabilan keseluruhan sektor perbankan dalam jangka panjang.

Kajian ketiga pula membincangkan bagaimana kebebasan ekonomi memudahcarakan keuntungan bank untuk keseimbangan jangka panjang industri di mana tahap keuntungan semua bank cenderung untuk bertindak secara kompetitif. Ini merupakan pendekatan alternatif kepada kajian kedua dalam menilai sumbangan kebebasan ekonomi kepada kecekapan peruntukan dalam sektor perbankan. Walau bagaimanapun, kajian ketiga berbeza dengan kajian kedua yang mana, dalam kajian kedua, kecekapan peruntukan ditentukan apabila output perbankan dioptimumkan manakala kajian ketiga pula merangkumi ramalan *neo-classical* yang menyimpulkan bahawa kecekapan peruntukan hanya berlaku apabila prestasi bank menyamai kedudukannya.

Keputusan yang diperoleh daripada kajian ini menunjukkan bahawa sektor perbankan ASEAN-5 secara amnya adalah berdaya bersaing atau kompetitif kerana keuntungan dan *Return On Average Asset (ROAA)* bank didapati tertumpu ke tahap yang kompetitif. Walaupun kesan kebebasan ekonomi terhadap penumpuan keuntungan dan *ROAA* bank didapati samar, namun terdapat ambang tertentu yang perlu dipenuhi bagi kedua-dua tahap kebebasan dalam pasaran kredit dan saiz kerajaan dalam memastikan keuntungan yang diperolehi bank adalah sigifikan dengan beta-convergence.

Hasil penemuan dari semua kajian empirikal dalam tesis ini juga boleh bertahan dengan ujian sensitiviti yang merangkumi: 1) mengubah strategi anggaran dan penganggar yang digunakan; 2) penapisan sampel dan 3) mengubah proksi yang digunakan untuk pembolehubah kepentingan. Oleh itu, segala kesimpulan daripada penemuan tesis ini adalah mantap dan bertepatan.

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This thesis was submitted to the Senate of Universiti Putra Malaysia and has been accepted as fulfilment of the requirement for the degree of Doctor of Philosophy. The members of the Supervisory Committee were as follows:

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# LIST OF ABBREVIATIONS

ASEAN	Association of Southeast Asian Nations
AEC	ASEAN Economic Community
ABIF	ASEAN Banking Integration Framework
CMRI	Credit Market Regulation Index
DEA	Data Envelopment Analysis
EFW	Economic Freedom of the World
ES	Efficient Structure
FOD	Forward Orthogonal Deviation
GMM	Generalized Method of Moments
NEIO	New Empirical Industrial Organisation
QAB	Qualified ASEAN Banks
RMP	Relative Market Power
SFA	Stochastic Frontier Analysis
SOG	Size of Government
TFP	Total Factor Productivity
2SLS	Two-stage Least Square

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### **CHAPTER 1**

### **INTRODUCTION**

### 1.1 Introduction

This chapter intends to be introductory in nature to outline the research topics that have been undertaken in this thesis. To this end, this chapter consists of five sections. The first section presents the motivation behind these studies in the context of the ASEAN-5 countries (Indonesia, Malaysia, the Philippines, Singapore and Thailand) before mooting the problem statements in the second section. Thereafter, the research objectives are outlined in the third section, while the significance and contributions of these studies are expounded in the fourth. Lastly, the structure and organisation of this thesis are presented in the fifth section.

### 1.2 Background to the Studies

Economic freedom is the foremost quality that characterises the free market system. It is defined as the extent of liberties that empower the agents of an economy to pursue economic activities that further their interests. When a lack of freedom prevails in an economy, the exploitation of resources for the benefit of an exclusive few but not for the common good of all is often observed, as uncovered by Liu et al. (2018). They found that politically-connected Chinese listed firms tend to enjoy positive abnormal profits for a prolonged period of time. Intriguingly, Gropper et al. (2013 and 2015) proved that excessive rent accrued to political connections does not only transpire in the Chinese economy but even in the banking sector of an advanced economy like the United States (US). Hence, economic freedom constitutes the very foundation of economics as it directly addresses the predicament of such misallocation of resources.

By definition, a free economy requires the abstinence of state coercion or the involvement of the state in the economy beyond that which is necessary. However, what constitutes 'as necessary' is often discretionary. As a result, governments of the ASEAN countries have traditionally been playing relatively dominant and active roles in steering their economies to achieve, at least, sufficient short-run growth in order to ensure electoral success. The extent of intervention by government is partly determined by their political regime, development and history. A more detailed exposition on the nexus between economic freedom and political milieu of each member state is presented in Chapter 2.

Three forms of intervention have often been employed by these governments to influence their economies: 1) through the regulatory framework; 2) direct ownership of commercial firms and 3) fiscal spending. Regardless, given the habitual dependency of an economy on state intervention, the sudden annulation of state planning can often be unsettling to the economy, in general, and to the financial sector, in particular. Although the shock is anticipated to be transitory, the damaging effect could be long-lasting if it is not managed appropriately. While a shock to the banking sector is foreseen as economic freedom turns up a notch, a freer economy is deemed inevitable upon considering the two recent events that took place. Firstly, having aspired for greater economic integration, members of the Association of Southeast Asian Countries (ASEAN) have called for the removal of entry barriers and the implementation of a more cohesive financial regulatory framework across the region. Therefore, protectionism, through state regulation, is likely to be removed in due time. Secondly, the unsustainability of state-driven investments indicates that the economics of large-sized government have become a thing of the past. Instead, the autonomy and liberty of individuals and households have ascended to be the key economic drivers for quality and sustainable growth.

### 1.2.1 Working towards ASEAN Integration

Regional integration has been a talking point among the ASEAN members for some time. Over the years, it has faithfully remained in its current form – merely a talking piece. Nonetheless, the setting up of the ASEAN Economic Community (AEC) on the 31<sup>st</sup> December 2015 unleashed a more resolute drive for regional collaboration among the ASEAN members driven by the AEC Blueprint 2025, which was put forward to further advocate financial and economic regionalisation. Petri et al. (2012) estimated that the effort of integration by the AEC has the potential of yielding immense gains of a 5.3% increment in real income. Incidentally, regionalization does not only involve liberalisation of capital accounts at the macro level, but it also requires assimilation of capital markets and harmonisation of regulatory structure (see Dell'Ariccia and Marquez, 2006) that leads to the integration of banking systems at the micro level.

Since the financial systems of many ASEAN members are bank-dominated, the integration of national economies naturally comes at the heels of the integration of banking systems. This explains the inauguration of the ASEAN Banking Integration Framework (ABIF) in December 2014, even before the AEC was created. The ABIF undertakes to accelerate the integration of ASEAN banking sectors by paving the way for participating members to enter into reciprocal agreements that allow the unhindered entry of the Qualified ASEAN Banks (QAB) into the host member's domestic economy. This allows them to compete with the domestic banks on an equal footing. Generally, the ABIF is built on three pillars: equal environment, equal access and equal treatment, which jointly confer the QABs with unrestricted access into any member states' banking markets under a harmonised regulatory framework across the region. This simply connotes that the QABs are subjected to the same regulatory supervision as the host country's domestic banks.

Intuitively, regional integration envisioned by the ABIF is necessarily preceded by the prevalence of freedom in the members' banking sectors. For a more integrated banking system to materialise in the ASEAN region, policymakers are required to rein in any attempts to protect their domestic banking sectors to allow for the harmonisation of cross-nation regulatory frameworks as suggested by Dell'Ariccia and Marquez (2006). Secondly, given that financial sector integration will expose the domestic banks to foreign competition, the absence of regulatory advantages following regional harmonisation will compel those traditionally state-protected yet inefficient banks to operate more efficiently or risk being put out of business. In short, the rescinding of state

coercion is necessary so that efficiency is fostered among the domestic banks in order to withstand the looming foreign competition that arises due to financial liberalisation. Thirdly, the AEC was conceived based on the underlying principle of openness, as stated in its first blueprint of 2015. This explains the underlying predisposition of the ASEAN members to deepen their linkage to the global banking system, which inevitably requires the gradual but definite liberalisation of their national banking systems.

### 1.2.2 Unsustainability and Quality of Growth through State Intervention

Thus far, our discussion revolves around the proliferation of freedom in the regulatory framework of the ASEAN banking sectors. However, the state's clutches on the economy are more ubiquitous than just being constrained to one particular sector. Although at present all ASEAN members are branded as market economies, the extent of the laissez-faire principles being inculcated by each member in its domestic economy varies widely. More often than not, state participation in the economy is often seen to span across wide-ranging sectors that include utilities, real estate, banking, telecommunications and even food. The states' extensive involvement in the economy is often facilitated by their explicit ownership of state-owned enterprises (SOE) and joint-stock companies (JSC). By design, these government-linked enterprises are usually given access to the state's coffers in return for carrying out the state's interests in the economy.

To give some statistics, Gomez and De Micheaux (2017) documented that 42% of Bursa Malaysia's (Malaysia's stock exchange) total market capitalisation was under the control of government-linked investment companies (GLIC) as at 2015, while Sim et al. (2014) reported that, on average, Singapore's listed government-linked companies (GLCs) accounted for 37% of the total market capitalisation from 2008 to 2013. With regards to Indonesia, its listed GLCs hold 30% of the total market capitalisation, as provided by Abubakar (2010). These are astounding figures that epitomise the extreme concentration of state power, which brings about three adversities on state budgets: 1) Given that these GLCs have governments as their backstop, the soft budget constraint syndrome is likely to prevail, which precipitates the wastage of resources and the incentive for moral hazards; 2) Saddled with such slacks of the GLCs, their respective governments are required to pick up the bill of these wastages by paying out of national coffers; and 3) On top of accommodating these losses incurred by the GLCs due to inefficiencies, the governments also have to guarantee all their liabilities . Consequently, the size of the ASEAN governments has grown larger.

Although state patronage is one way to grow the economy, excessive state-directed expenditure can be pernicious. It hinders the market forces from working optimally as they tend to crowd out private investments, besides being frequently associated with wastages and inefficiency. Even if the government deficit is financed by external borrowing in order to avoid the crowding out of the domestic private sector, it will still bring about other forms of repercussions. The IS-LM-BP general equilibrium model predicts that disequilibrium caused by excessive external borrowings will yield a correctional path that requires a large deficit in the current account. Such a self-adjustment mechanism in the balance of payments (BOP) is appropriately termed as the twin deficit hypothesis (TDH). Hence, excessive government spending is simply not sustainable based on the IS-LM-BP model.

In summary, the socialist-akin type of economic system tends to inflate the state budget and put its economic sustainability at risk. For this reason, the original five members of ASEAN (the ASEAN-5) are striving to at least contain, if not to close the deficit gap. Figure 1.1 illustrates the government budget trends from 2010 until 2015. It reveals that, other than Singapore, the rest of the ASEAN-5 members have been in deficit for the entire 6-year period, which means that they have been living beyond their means and off of debt.



**Figure 1.1: Budget deficits as percentage to GDP.** (Source: www.tradingeconomics.com)

Notably, a consistent effort was observed in both Malaysia and the Philippines to narrow their deficit gaps until 2014, after which, the Philippines' efforts waned, while Malaysia persisted on. As for Thailand and Indonesia, at the very least, they have also shown fair attempts to maintain their fiscal position, if not to improve it, as the budget deficits of these countries have been hovering between 2.2% to 2.7% of their GDP from 2014 to 2017 and improved thereafter. This shows that conscious and good efforts are meted out by these member states to rebalance their economics away from the state investment-led growth towards growth catalysed by household consumption. However, the latter requires the propagation of private sector economic activities, which is only possible with a greater amount of freedom to be accorded to the private individuals and households. Resultantly, the size of government is expected to diminish among the ASEAN-5 members as the private sector takes on a larger slice of the economic pie.

In short, the ASEAN economies are not only expected to be freer. In particular, the freedom is anticipated to be arising from more liberalized banking sectors especially in relation to credit operation and smaller governments with contractions on fiscal spending. Thus, governmental interventions are expected to abate in these two aspects of an economy. As a result, this thesis only considers economic freedom arising from a reduction in the size of government and liberalisation of domestic credit markets.

### **1.3** Statements of Research Problems

Since the role of the financial sector is to intermediate resources for gross capital formation, the development of the financial sector often precedes economic growth. However, Rajan and Zingales (1998) and Tadesse (2002) showed that depending on the stage of development, certain types of financing are more appropriate than others. Notably, bank-based finance plays a more pivotal role than market-based finance to foster growth in those developing economies that are saddled with a nascent capital market. Since most of the ASEAN members, including the ASEAN-5 (excluding Singapore) have capital markets that are relatively under-developed, banks have, thus, become the primary financing outlets in these countries.

In other words, bank credit constitutes the most important form of financing to support economic activities in the real sector of these economies. Hence, it is conjectural that if any shock or uncertainty were to transpire during the course of liberalising these ASEAN economies, the banking sectors will likely take the hit first because the loan assets are bound to turn toxic before further systemically implicating the whole economy. Since the ASEAN banking sectors are deeply intertwined with the real sectors, it is not surprising that the ASEAN Economic Committee (AEC) has put a lot of emphasis on the performance of the banking sectors while penning the framework for regional integration. Given the higher amount of economic freedom that is expected to prevail in the region and little is known, with certainty, about the impact of economic freedom on bank performance, it is important to examine its effects especially on the banking sectors of the ASEAN-5 members, which together consistently comprise more than 80% of the total GDP in the ASEAN region. In particular, this thesis examines the effects of economic freedom on the ASEAN-5 banking sectors from three aspects, which include: 1) individual bank performance as measured by bank cost efficiency; 2) allocative efficiency through the rivalry process as represented by the output reallocation effects; and 3) the level of integration among the ASEAN-5 banks as proxied by the betaconvergence of bank profitability.

### 1.3.1 Bank Cost Efficiency and Economic Freedom

When economic freedom proliferates through freer credit markets and smaller governments, the banking sector performance is bound to be disrupted simply because of the changes in the way of doing businesses. Given the legacy of state capitalism, most of the domestic banks in the ASEAN region have traditionally been benefiting from state patronage, which drains most of the competitive forces out of the market so that domestic banks can grow in the absence of foreign competition. However, in conformance to the neo-classical economic theory, this undermines the inherent maximising behaviour of the domestic banks. As a result, they largely lead a quiet life under the state protection and become inefficient.

Thus, studies that have examined the relationship between bank efficiency and financial freedom, such as Chortareas et al. (2013 and 2016), Mamatzakis et al. (2013) and Chan and Karim (2016), have commonly uncovered a positive relationship between the two. In other words, a higher level of freedom is expected to improve the efficiency of individual banks. This is intuitive. Without any protection by the state, these inefficient

domestic banks are compelled to improve their performances by becoming more productive and efficient.

On the other hand, some other studies, such as Sufian and Habibullah (2011 and 2014) and Luo et al. (2016) have, instead, revealed a negative relationship between bank efficiency and economic freedom. As regularity reform takes place to allow for a higher level of freedom to prevail in the banking sector, banks are resultantly saddled with a higher level of competitive pressure that drives up their acquisition costs (at least in the short-run) and drives down their revenue, too. This explains the uncovered negative relationship between bank efficiency and economic freedom. Besides, when confronted by intense competition, bank managers are likely to take on excessive risk to achieve higher short-term gains at the expense of long-term stability. Although such a strategy may be deemed inferior, this could be the compelling last resort when the inefficient banks helplessly see their charter values fall as competition could destabilize the banking sector, at least in the short-run.

Apart from reforms in the banking regulatory framework, reduced government size also poses shocks to the domestic banking sectors through two channels. Firstly, it is known in the ASEAN region that the financing of state-driven commercial projects makes up a large share of the banks' portfolio. Hence, a smaller number of these projects means lesser business opportunities for banks. Secondly, as banks are the main financing outlets for the real sector activities, stalled economic growth following fiscal contraction will likely disrupt the banking sector's performance. One of the sources of such disruption is a surge of default loans as borrowers find it hard to meet their scheduled repayments as the economy tumbles when injections in the form of government spending quells.

Although the effects of economic freedom on bank efficiency are uncovered to be ambiguous in the literature, the disparate findings of these studies suggest that these economic freedom effects are not only non-constant but they are also determined by a moderating variable. Indeed, studies such as Kose et al. (2011), Demirguc-Kunt and Detragiache (1998) and Anayiotos and Toroyan (2009) have asserted that good governance is a necessary condition to realise the benefits of financial liberalisation because any instability brought about by a higher level of economic freedom through regulatory reform can be mitigated by the proper governance of national institutions.

Specifically, an effective governance structure concerns the manner in which how authority is amassed and exercised by the state institutions. Therefore, governance is duly observed and assessed from the aspects of regulatory quality, the rule of law, the state of violence, the voice and accountability of citizens and the control of corruption (Kaufmann et al., 2009). Out of these few aspects of a good governance structure, this thesis particularly focuses on the rule of law, which delves into the formulation and enforcement of laws that safeguard individual and property rights. Thus, it measures not only the effectiveness of the judicial system but also the commitments and efficiency of all law enforcing agencies to maintain social order in a fair and just manner.

As a result, the rule of law is deemed as an important attribute that promotes a conducive environment for businesses to flourish. Thus, instead of just focusing on the effects of freedom, proper governance especially on the rule of law is expected to complement freedom to ensure all economic resources are efficiently allocated to facilitate growth. Therefore, it is conjectural that when considering the effects of economic freedom on bank efficiency, it is also necessary to account for the role that the rule of law plays. However, extant literature offers no insights on how the effects of economic freedom would have altered when the level of the rule of law changes.

### 1.3.2 Output Reallocation Effects and Economic Freedom

Banking regulatory reform, as one of the many approaches to rid government coercions off the financial sector, is expected to shape up the domestic banking system for long-term gain, despite the expected short-term disruptions or pain. Specifically, unhindered market forces arising from regulatory reform are expected to bolster the overall productivity and cost efficiency of the banking sector in the long-run, which eventually leads to allocative efficiency in the sector.

For allocative efficiency to transpire, the market mechanism must be free from any form of state protection to allow for the displacement of inefficient banks through the rivalry process. By way of that, banking outputs along with the production factors can, then, be reallocated to those banks that are more efficient. This is consistent with the Efficient Structure Hypothesis proposed by Demsetz (1973), which suggested that as rivalry intensifies, efficient firms will outpace the inefficient ones, leaving the market structure to be more concentrated, albeit, with efficient firms. In the context of the banking sector, if the reallocation of outputs from the inefficient banks to the efficient ones is rigorous, then the banking sector will consequently become more stable as the banking resources are put into the most productive use possible.

Although studies that include Stiroh (2000), Stiroh and Strahan (2003), Cetorelli and Strahan (2006), Bos et al. (2009) and Inklaar et al. (2015), have, in one way or another, corroborated the prevalence of a mechanism that allows for efficient allocation of banking resources in developed economies following deregulation, such studies have not been conducted on the banking sectors of developing economies. Ironically, similar studies are much needed for these economies so that the authorities are motivated to embark on appropriate deregulations to allow for more freedom to prevail in the banking sector or even, the economy.

### 1.3.3 Bank Profit Convergence and Economic Freedom

As the banking sector becomes concentrated with efficient banks through the displacement of those banks that are inefficient, it is conjectural that the performance of the individual banks will converge. In other words, each bank is expected to be equally good, otherwise, they would have been displaced. The tendency for the bank performances to converge is likely to increase as the banking sector or economy becomes freer as more room is given for the rivalry process to displace the least efficient banks

among them. Such rivalry also eliminates any possibility for rent-seeking activities to take place in the absence of state protection.

In addition, the convergence of bank profitability is also found to be a necessary condition to precede the regional integration of banking systems (see Evans, Hasan and Lozano-Vivas, 2008 and Goddard, Liu, Molyneux and Wilson, 2013). This is particularly relevant to this thesis as integration of the regional banking sectors is, after all, what the ABIF sets out to do in the first place.

Intriguingly, most of the extant studies, which include include Gugler and Peev (2018), Amidu and Harvey (2016), Sinha and Sharma (2016) Pervan et al. (2015) Agostino et al. (2005), Goddard et al. (2011) and Berger et al. (2000), are fixated to examine the persistence, instead of the convergence of bank profitability. Although persistence is construed as the antithesis of convergence, the latter is deemed more consistent to explain the neo-classical's prediction on the prevalence of normal profits in a competitive market in the long-run.

While there are studies that delve into the convergence of bank profitability, which include Evans et al. (2008), Goddard et al. (2013) and Olson and Doubi (2017), none of them has empirically investigated the determinants of convergence. This is despite the fact that economic or financial freedom are theoretically understood to cause convergence as freer banking sectors will allow all banks to compete on a level playing field.

### 1.4 Research Objectives

To address the problem statements stipulated in subsection 1.3, three research objectives are devised, and expounded below:

- 1. To examine the effects of economic freedom on the cost efficiency of ASEAN-5 banks while ascertaining how these freedom-induced effects are conditioned by the rule of law.
- 2. To uncover the impact of a higher level of economic freedom on the reallocation of banking outputs in the ASEAN-5 banking systems through the moderation of bank cost inefficiency.
- 3. To examine whether economic freedom aids or hinders the convergence of bank profitability in the ASEAN-5 region, which is a necessary precedent of economic integration.

Although each of the research objectives is a stand-alone topic, they share a common theme, which is to examine the impacts of economic freedom on the banking sector from different aspects. The first objective of this present study undertakes to corroborate the classical theorist's prediction that freedom accorded to incumbent banks will allow them to pursue courses of action that maximise profits through improved productivity and efficiency. Hence, the first objective, in general, undertakes to draw a linkage between economic freedom and cost efficiency of individual banks. Specifically, it delves into the optimal level of freedom arising from credit market liberalisation and government size reduction, upon moderated by the rule of law. Hence, it strives to establish a balanced position between liberalisation and governance.

Thereafter, the second objective of this study illustrates the role of freedom-accounted bank cost efficiency in determining the reallocation of banking outputs along with the corresponding production factors, which is driven by competition in the banking sector. In juxtaposition to the first objective, which is concerned about the impact of economic freedom on individual banks, the second objective looks at a bigger picture by delving into the same freedom-related impact but on the scale of the overall banking sector. Specifically, the theoretical assumption that relates the second and first objective postulates that freedom leads to a greater level of outputs being reallocated to banks that are relatively more efficient in a competitive market, having displaced the inefficient ones. In this way, not only are efficient banks duly rewarded, but the overall banking sector also becomes more stable as banking outputs along with the resources to produce them are optimally allocated.

Lastly, the third objective of this thesis undertakes to uncover evidence that supports uniformity in the distribution of bank profits, which is a predicted outcome of a competitive market that brings forth allocative efficiency. Therefore, the third objective undertakes to ascertain allocative efficiency in a competitive banking sector, just like the second objective, albeit, in an alternate way. If the distribution of bank profits tends towards a competitive level in the long-run, it then indicates that the banking resources are efficiently allocated.

### 1.5 Significance and Contributions of this Research

Since a greater degree of integration among the ASEAN-5 banking sectors is desired following the implementation of the ABIF, further reforms on the banking regulatory framework is anticipated for greater amount of freedom to prevail. Moreover, the unsustainability of state-directed spending among the ASEAN-5 members indicates that the size of these governments is likely to shrink so that the distribution of output can then fall back on the market mechanism.

As discussed in the prior section, such prevalence of freedom whether from the aspect of regulatory or state budgetary, is likely to precipitate shocks to the ASEAN-5 banking sectors, at least in the short-run. Thus, knowledge assimilated from the studies of this thesis will first provide a thorough understanding to policymakers about the effects of economic freedom on: 1) bank cost efficiency under the varying degree of the rule of law observed, 2) output reallocation mechanism driven by competition and 3) competitive market structure characterised by convergence of bank profitability. Only then, policymakers are equipped with sufficient insights to sequence economic reforms in an effective and orderly manner to reap the maximum benefits from the accorded freedom.

Apart from that, it is worthy to note that no other studies have ever done what has been done in the first study of this thesis (as far as we are concerned), which is to reveal the synergistic effects between economic freedom and the rule of law on bank cost efficiency. This constitutes a valuable contribution to the literature as it markedly departs from extant studies that only look into the issue from a single vantage point, which is to merely consider bank performance under the varying degree of economic freedom. (see Yap and Sufian, 2018; Chortareas et al., 2013 and 2016; Chan and Karim, 2016; Mamatzakis et al., 2013; Sufian and Habibullah, 2011 and 2014; Lin et al., 2016 and Luo et al., 2016)

Besides assisting in policymaking, each of the research objectives encapsulated in this thesis contributes to the literature either through methodological innovations or the making use of the most appropriate and robust methods available to fill in empirical gaps. For the purpose of operationalising the first objective of this thesis, the Stochastic Frontier Analysis (SFA) approach, which was concurrently but separately conceived by Aigner et al. (1977) and Meeusen and Van den Broeck (1977), is employed to estimate the bank cost efficiency scores of the first study. Specifically, the bank cost inefficiency is modelled by using the Battese and Coelli (1995)'s technical inefficiency effect (TIE) model for a panel dataset, which allows the time-variant inefficiencies to be explained by a vector of exogenous regressors.

Although the TIE model is flexible and offers many benefits, the model is deemed to be doubly heteroscedastic by Hadri (1999) as it does not account for the specific-effects of a panel dataset. However, the issue of heteroscedastic cost frontiers has not been given due consideration in the empirical literature. This is especially unnerving as efficiency scores estimated by a heteroscedastic frontier are deemed to be inconsistent by Hadri (1999). In response to this, the first study of this thesis is one of the few that have used the heteroscedastic-specification proposed by Hadri (1999) and Hadri et al. (2003a & b) to account for the non-constant variance of the double-sided error terms of the estimated stochastic cost frontiers.

Apart from that, the estimation model employed in the second study of this thesis constitutes an innovation from a few aspects. Firstly, it enhances the conventional Boone indicator, which constitutes the second-generation measure of competition under the new empirical industrial organization (NEIO) framework. The Boone indicator, proposed by Boone et al. (2007) and Boone (2008), assumes that firms are inherent cost minimisers. In other words, they are expected to not only achieve scale efficiency but also strive to produce at the minimum cost for any scale that they operate on. Upon drawing reference to Leibenstein (1966, 1975 and 1978)'s X-inefficiency, which challenges the cost minimisation axiom of the neo-classical framework, such an assumption is deemed more idealistic than realistic. Therefore, we have pioneered an innovative adjustment that corrects the conventional Boone indicators for any slacks in cost minimisation while measuring the forces of competition.

Secondly, the estimation model of the second study also constitutes a new and innovative method that corroborates Demsetz (1973)'s Efficient Structure (ES) hypothesis by accounting for the individual banks' level of cost inefficiency in measuring the prevailing level of competition. The ES hypothesis maintains that firms with higher efficiency are expected to gain market share at the expense of the inefficient ones. Resultantly, outputs are reallocated from inefficient firms to the efficient ones. Hence, the ES hypothesis is justified if efficient banks are found to have significantly lower loss of profits attributable

to rivalry among incumbent banks, while inefficient banks are rightly penalised with higher loss. This eventually leads to the concentration of efficient banks in the banking market in accordance to the ES hypothesis.

In addition to contributing to the scarce literature of resource re/allocation, the second study also constitutes the first-of-its kind that attempts to ascertain the impact of economic freedom on output reallocation in the banking sector through the moderation of cost efficiency. To all intents and purposes, the ascertained effects will present a strong case to policymakers on the efficacy of economic freedom in fostering allocative efficiency in the banking sector over the long-run.

The proposed third objective of this thesis is intended to close a critical and discernible gap in the literature. Extant studies on the dynamics of bank profitability mainly test for bank profits persistence to examine the persistence of profits hypothesis put forth by Mueller (1977). In contrast, only two studies are found to have evaluated the convergence of bank profitability, i.e., Evans et al. (2008) and Goddard et al. (2013)<sup>1</sup>. The notion of convergence was initiated and popularised by the growth literature of the neo-classical school, which has been expounded extensively by Barro and Sala-i-martin (1992). It predicts that no matter how disparate the countries' endowments are initially, in the long run, they tend towards a common steady state due to the diminishing marginal productivity of capital. On the contrary, the convergence of bank profits is explained by the neo-classical prediction that firms' profits are ordered to a long-run competitive level by market forces, as the perfection of competition takes place.

While persistence and convergence are dichotomously related, the latter, which is studied in this thesis, is deemed more conceptually associated with the notion of long-run competitive profit level hailed by the neo-classical theorists. In addition, other studies, whether of the convergence or persistence edifice, have commonly examined the dynamics of profitability indexes such as the return on average assets. In contrast, this study delves into the dynamics of the profit level in order to be consistent with the neoclassical prediction about normal profit, yet to ensure the estimated results are robust, we also consider the convergence of the banks' return on average asset and compare the results.

Lastly, since the ASEAN secretariat has been working tirelessly to foster greater integration among the members' banking sectors, the findings of the third objective are expected to contribute in this aspect. Specifically, the findings will reveal the effects of different sources of economic freedom on the convergence of bank profitability, which is an important milestone of banking sector integration. Hence, the knowledge created through this study is anticipated to aid the policymakers in planning for a seamless integration.

<sup>&</sup>lt;sup>1</sup> Both studies measure the convergence of profitability indices such as the return on average assets (ROAA), the return on equity (ROE) and the net interest margin (NIM) instead of the absolute profits.

### 1.6 Organisation of the Thesis

Although the three proposed research objectives are interrelated to form a comprehensive analysis in regard to the implications of economic freedom on the ASEAN-5 banking systems, each of the research objectives can stand on its own as an individual study. Thus, the structure of this thesis is organised as below:

*Chapter 2: The ASEAN-5: Political Regime, Economic Freedom and Banking Sectors* This chapter is divided into two sections. The first section provides a brief discourse on the political climate that envelopes the ASEAN-5 members. Specifically, it seeks to establish a nexus between the political systems of the ASEAN-5 members and the prevalence of freedom in their economies. The second section depicts the banking landscape of these countries by providing the necessary statistics and descriptions.

### Chapter 3: Review of the empirical literature

This chapter offers an overarching review of the relevant scholarly work that has been carried out on each of the causal relationships that we seek to examine in this present study. Besides, other empirical studies that are insightful and relevant to our analyses are also included in this review. By way of reviewing these studies, we seek to first identify their contributions to the body of knowledge as well as gaps that have not been well addressed.

# Chapters 4: Effects of economic freedom on bank cost efficiency upon being conditioned by national governance.

Chapter 4 constitutes the first empirical study of this thesis, in relation to the first objective, which delves into the effects of economic freedom on bank cost efficiency moderated by the quality of national governance. This chapter, as well as the following two, are self-contained, which include introduction, theoretical framework, the method of estimation, a discussion on the empirical results and conclusion.

# Chapter 5: Impact of credit market freedom on the dynamics of output reallocation through the moderation of cost inefficiency

Chapter 5, like Chapter 4, is a self-contained empirical study that examines the impact of credit market freedom on the output reallocation mechanism through the moderation of cost inefficiency. Essentially, it undertakes to provide a theoretical linkage mapping cost efficiency of individual banks to the overall allocative efficiency of the banking sectors.

### Chapter 6: Effects of economic freedom on bank profits convergence

This chapter constitutes the last empirical chapter that delves into the impact of two types of economic freedom on the convergence of bank profits, which is a necessary attribute of a competitive banking market.

### Chapter 7: Concluding remarks

The last chapter first provides an executive summary of the preceding three chapters by reiterating the motivations that underlie the studies and recapitulating the key findings. Thereafter, this chapter draws a collective conclusion based on the findings yielded before discussing their policy implications.



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