CSCanada
International Business and Management
Vol. 16, No. 2, 2018, pp. 1-6
DOI:10.3968/10591

ISSN 1923-841X [Print]
ISSN 1923-8428 [Online]
www.cscanada.net
www.cscanada.org

E-Finance: An Emerging Risk and a Possible Cause for Future Financial Crises

Chua Xing En Earnie[a],*

[a]S. Rajaratnam School of International Studies, Nanyang Technology University, Singapore.
*Corresponding author.

Received 19 September 2018; accepted 21 November 2018
Published online 26 December 2018

Abstract

Technological innovation has reshaped the way people interact with one another. In the distance past, people had to communicate face-to-face and had to be physically present for activities such as trade to occur. In the contemporary era, technology and internet has made it possible for economic activities to process without the need of individuals to be physically present. Not only has advanced technology reformed the function of economic activities but also financial interaction. The introduction to electronic finance (hereafter e- finance) rearranged the way financial system function. As defined by Allen, James and Strahan (2002), e-finance is "the provision of financial services and markets using electronic communication and computation". Unlike traditional transaction which uses physical money as a mean of exchange, e-transaction replaced money with digital money (also known as e-money). Moreover, with the rapid technological development, debit and credit cards has been replaced by smartphones. In combination of both smartphones and e-money, payments are done through apps like Apple Pay, Samsung Pay, Android Pay and Alipay (Zhi Fu Bao). These payment methods are not only efficient but also convenient for consumers and financial system. Specifically, financial transactions can be easily tracked (hence more transparency) and faster processing time in contrast to having to queue at banks to make deposits or withdrawal (Shahrokhi, 2008). Regardless of the positive impact that technological innovations have on financial system, limited information on the potential negative impacts, particularly financial crises, is still absent.

Key words: E-finance; Liquidity risk; Regulation; Deregulation; Monetisation; Asset-price bubble; Excess liquidity; Financial Crisis

Chua, X. E. E. (2018). E-Finance: An Emerging Risk and a Possible Cause for Future Financial Crises. *International Business and Management, 16*(2), 1-6. Available from: http://www.cscanada.net/index.php/ibm/article/view/10591
DOI: http://dx.doi.org/10.3968/10591

INTRODUCTION

Technological innovation has reshaped the way people interact with one another. In the distance past, people had to communicate face-to-face and had to be physically present for activities such as trade to occur. In the contemporary era, technology and internet has made it possible for economic activities to process without the need of individuals to be physically present. Not only has advanced technology reformed the function of economic activities but also financial interaction. The introduction to electronic finance (hereafter e- finance) rearranged the way financial system function. As defined by Allen, James and Strahan (2002), e-finance is "the provision of financial services and markets using electronic communication and computation". In other words, e-finance uses technology as its primary tool to conduct financial activities such as electronic transactions (e-transaction). Unlike traditional transaction which uses physical money as a mean of exchange, e-transaction replaced money with digital money (also known as e-money). Moreover, with the rapid technological development, debit and credit cards has been replaced by smartphones. In combination of both smartphones and e-money, payments are done through apps like Apple Pay, Samsung Pay, Android Pay and Alipay (*Zhi Fu Bao*). These payment methods are not only efficient but also convenient for consumers and financial system. Specifically, financial transactions can be easily

tracked (hence more transparency) and faster processing time in contrast to having to queue at banks to make deposits or withdrawal (Shahrokhi, 2008). Regardless of the positive impact that technological innovations have on financial system, limited information on the potential negative impacts, particularly financial crises, is still absent. Hence, the research question of this paper asks: how does the use of e-finance as a mean to facilitate economic growth generates a more vulnerable financial environment which in turn promotes financial crises? To answer this research questions, the following of the paper focus on three aspects in terms of financial regulation, internet security and illegal criminal acts, and monetisation.

1. EFFICIENCY OF E-FINANCE

E-finance has generated a more efficient and rapid economic growth by targeting major contributors to growth. Scholars (Jungmittag, 2004; Sassi & Goaied, 2013) with different regional focus have commonly argued that financial and technological developments have promoted economic growth overtime. Specifically, in the case of the MENA (Middle East and North America) countries, statistical result has demonstrated that when countries reaches a certain development threshold in terms of finance and technology, economic growth would occur (Sassi & Goaied, 2013). Therefore, it is evident that there is a positive relationship in the sense that financial development promotes economic growth. However, before we proceed to the list of positive impacts that e-finance has on economic growth, it is important to understand what constitute to growth itself. Economic growth is often measured in terms of gross domestic product (GDP) which includes an economy's total income, expenditure and the "output of goods and services" (Mankiw, 2011, p.532). Furthermore, growth is determined by the additional increase in GDP of current year in contrast to previous years. For instance, if country A has 12% more GDP in contrast to the previous year, it is perceived as economic growth. In general, economic growth is driven by economic outcomes which is facilitated through production (including production cost, productivity and many more).

Knowing that production plays as one of the major contributors to economic growth, e- finance disguise itself to enhance production in various ways. Firstly, e-finance reduces communication cost which in turn decrease asymmetric information and marginal cost of production (Allen, McAndrews, & Strahan, 2002; Meijers, 2014). Greater production of goods and services in terms of quantity are achieved through the low levels of marginal cost. That said, when lowering the marginal cost of production, this would result in greater profits and more production. In turn, fuels economic growth to a certain extent. Secondly, e-finance minimizes transaction processing time and provide greater access to global financial market. On one hand, limiting transaction process time improves the speed and volume of information being transferred across borders. On the other hand, easier access to global financial market allows countries, especially developing ones, to gain access to capital. As argued by Shahrokhi (2008), access to capital does not only bring about financial opportunities but also uses the opportunities as a source to further improve and enhance domestic financial institutions and system. Since capital is an essential source of input in production (especially capital-intensive goods), the ability to transfer capital across with lower time constrain, increases productivity. Thus, greater productivity equivalents to a more efficient production hence spur economic growth. Lastly, e-finance has fostered a limited regulation financial environment that has led to the lowering of entry barriers. Competitive market is often associated with low entry barrier because there are greater participant such as firms and individuals (Zekos, 2004; Semaan & Drake, 2011). Since firms are profit maximizers, they would compete with one another and eventually, under a perfect competition market, an equilibrium will be met. Such competition is essential in keeping the market healthy. More importantly, competition is a key driving source for innovations, productivity and economic growth (Godfrey, 2008). Hence, e-finance indirectly promotes economic growth via facilitating a competitive market which results in productivity and growth.

Benefits and advantages of e-finance are noteworthy however, underlying potential threats and risks should also gain equal or even greater attention. In the following, this paper would provide an overall understanding of the unforeseen potential threats and risks on global finance. More importantly, in-depth analyses on the ways these threats or risks would evolve into financial crises bubbles and triggers. Specifically, the area of focus would surround financial regulation (or deregulation), financial crimes and monetization.

2. REGULATION (OR DEREGULATION) OF E-FINANCE

Regulating financial institution and intermediary (especially banks) has been prominently essential throughout history. Even though, e-finance has proven that deregulation is beneficial as it stimulates a competitive market. However, the lack of regulation does not ensure a risk-free financial environment. Contradictory arguments have pointed out the strengths and weaknesses of financial regulation. On one hand, some scholars (Shay and Lawrence 1986; Shahrokhi, 2008) argued that financial regulation is exceptionally crucial for financial stability. Particularly, financial regulation plays the role of a guardian that assist institutions in dealing with financial and banking risks. More importantly,

financial regulation maintains financial stability through supervising and preventing financial intermediaries from being too exposed to asymmetric information (Claus, Jacobsen, & Jera, 2004). On the other hand, financial regulation in particular prudential financial regulation, has proven itself to be relatively fragmented and weak in light of post-1970s financial crises (Helleiner, Pagliari, & Zimmermann, 2009). Even though weaknesses do exist within the regulatory system itself but evidences showed that some regulation is still required. The primary reason for regulating financial intermediates can be understood through three issues: consumer protection, systemic risk and moral hazard that arise from the "security" of the government (Cecchetti, 1999).

As noted above, instead of enhancing regulations, the nature of e-finance has increase financial regulators' challenge in monitoring and regulating the financial system. This is problematic because the purpose of regulation was to deal with a series of risks that can easily result in causing or triggering the collapse of the financial system. As a result, entering of another global financial crisis. Amongst countless triggering risks, the most important one is systemic risk. As defined by Allen, Babus and Carletti (2010), systemic risk is "a situation where many (if not all) financial institutions fail as a result of a common shock or a contagion process". Even though, the main purpose of having financial regulation was to prevent systemic risk but measures to counter it are targeted towards the sub-risks that overtime forms systemic risk bubble. As identified by Allen and Carletti (2013), systemic risks encompass four sub-risks and one of those risks is banking panics. Banking panics can be understood as a contagion effect, is an event when one bank experience a bank run which triggers other banks (insolvent and even solvent ones) to experience the same situation. Such event is often the result of "a large increase in asymmetric information in financial market" (Buckle & Beccalli, 2011, p.54). Though, it is true that e-finance has reduce asymmetric information by increasing transparency (easier access to information) but it does not guarantee that parties have absolute information in regards to their trading partners. It is unpreventable that false information will be surfacing in the environment (Shahrokhi, 2008).

This is empirically proven when looking at the case of Sweden's bank run. In the year 2008, a twitter rumor started spreading, claiming that Swedbank and Skandinaviska Enskilda Banken (SEB) were in "unhealthy" condition. This led to depositors panicking and have forced them to withdraw their money (Greve, Kim, & The, 2016). Neighbouring countries were greatly affected especially Latvia. Latvians were quick to withdraw their money from Swedbank which resulted in sudden bank run. Knowing that sudden bank run is very unhealthy for banks and the economy, Latvian regulators responded and claimed that the banks were not in bad conditions and people should not be too worried. Regulators were able to settle the rumor and panics of its people before the situation worsen (n.a. 2011). From Swedbank's case, it is evident that without the regulators providing accurate information, the on-going bank run could have resulted in bank panic which would lead to the increase in systemic risk (Mishkin, 1992; Buckle & Beccalli, 2011; Greve, Kim, & The, 2016). In turn, the worsening of systemic risk will eventually lead to the collapse of the financial system and hence, economic downturn and another global financial crisis.

Another reason that explains the need for financial regulation is the rise of moral hazard, driven by government guarantees. Initially, government guarantees mainly served the purpose of protecting consumer and to reduce systemic risk. In particular, guarantee was made in the form of deposit insurance where financial intermediates would provide a certain amount of capital to the central bank. If the bank fails to pay its debt, which affects its depositors, the central bank would then use the capital that was set aside to pay back to those affected depositors (Cecchetti, 1999; Buckle & Beccalli, 2011). In other words, guarantee act as a safety net that protects the financial system and economy when facing bank failures. Yet, due to the sense that the safety net would to some extent "protect" the depositors and banks, those actors are more likely to place their money in higher returns of interest rates. Higher interest rate returns tend to be associated with riskier banks that consist of risk-taking managers (Cecchetti, 1999). Those risk-taking managers are more likely to take on risky projects or investments. Thus, regulators need to carefully monitor the actions of those insured institution. Monitoring and regulating these institutions is easier said than done. Banks tend to try and avoid being monitored and regulated. The use of e-finance, or the internet, made it exceptionally easier for banks to avoid being monitored and regulated (Nsouli & Schaechter, 2002). Furthermore, the availability of cross-border activities allows banks to shift their activities abroad. Hence, increases the difficulty for regulators to monitor the banks and institutions. In sum, e-finance makes it harder for regulators to prevent detrimental effects (which can result in financial system breakdown that translate into a financial crisis) caused by systemic risks and moral hazard. The nature of e-finance does not only make it harder to regulate financial institutions but also attracts more "electronic risks" that directly or indirectly threatens the financial system.

3. INTERNET SECURITY, ILLEGAL AND CRIMINAL ACTS

Rapid growth of technology brought along more criminal activities that threatens the privacy and security of individuals and firms. The integration of e-finance as a core-acting system have also lured hackers and frauds into committing financial crimes. The fact that, by

2005, online banking took up 50% of the total banking transactions in industrial countries and 10% in emerging markets demonstrated the strong reliance on e-finance (McNevin, Kellermann, & Glaessner, 2004). With the use of internet and computer, e-finance was able to provide a more efficient financial service throughout the world. It is obvious that internet and computer have been an effective channeling tool for e-finance however, the underlying risks associated with this channel can also threatens the reputation of e-finance. That said, the challenges faced by e-finance are electronic related risks. Since internet provides mainly "open networks", anyone can use the system to gain access and cause disruption to institutional websites and databases such as government, hospitals and financial systems (McNevin, Kellermann, & Glaessner, 2004). Disruption is one of the common act performed by hackers. A much serious crime, namely cybercrime, by hackers and frauds is the stealing of financial capitals from financial institutions, individuals or even businesses. It has been estimated that in 2002, United States' financial losses caused by cybercrime was worth about US$265 million (Zekos, 2004). In addition, amongst the US$265 million, the financial losses by international banks was US$47,000 and of which 60% were due to retail banking (McNevin, Kellermann, & Glaessner, 2004). Financial losses in relations to e-finance and e-commerce continued to occur over a range of periods and countries. The significance of these losses can be detrimental to the financial system. More importantly, the interconnectedness brought by e- finance's channel (the internet) makes finance more vulnerable towards being exposed to spillover risks or worse, more prone in formulating a global financial crisis. In the following, we will be exploring the electronic risks that are potentially threat towards the finance.

One of the key risk that is associated with internet security and criminal crimes was operational risk. As defined, Operational risk is the "risk of loss resulting from the inadequate or failed internal processes, people and systems or from external events" (BCBS, 2005, p.140). In other words, operational risk is the failure of the system, internally or externally. Internal causal-factors, obviously, arises from within an organisation or institution. Thus, size and impact of an operational risk is predetermined by the complexity and magnitude of the financial institution's organisation or business (RSA, 2013). As for external causal-factors, it would be beyond-system disruptions such as hacking, theft and forgery. In the context of e-finance, hacking activity on financial system is predominately active and often causes serious system disruptions. In the case of Canadian banking system, the fragility of its payment system can lead to severe shortfalls on its liquidity. Specifically, any disruption or dislocation within the payment system would trigger liquidity risk in Canada's financial institutions (McPhail, 2003). Indeed, this case is considered as slightly more severe case however, it is due to the weakness of the system itself. In general, hacking of financial system would only trigger a less severe operational risk or to a lesser extent, would only cause slight disruption. More importantly, majority of external factors are detected by organisation and firm's security software such as firewall. Of course, hacking is not the only external factor that is easily driven by the nature of e-finance. Generally, any information technology (also known as IT) disruptions would also lead to serious impact on the institution or even the financial system. In the case of MasterCard computer virus, one of its computer got attacked by a virus. This led to the loss of customers' data which were eventually used to operate fraudulent activities (Jongh et al. 2013).

Unlike external factors, internal ones have greater and much more severe impact on the organisation or business which has a higher chance of causing financial instability or worse, a financial crisis. There are many internal factors which includes fraud, impersonation, embezzlement and insider's trade. At times, hacker(s) would collaborate with company staff(s) in committing fraud. As mentioned previously, external fraud (through hacking) has a limited impact in fueling operational risk. However, in combination with internal fraud, the impact can be much more severe. E-finance with internal behind-the-scene operation makes it harder to identify fraud or other financial crimes within the organization. Enron Corporation's case perfectly demonstrated the severity of the internal and external fraud that resulted in bankruptcy of the company. The lack of supervision, ignorance and collaboration, led to the theft that worth up to US$600 million (Jongh et al., 2013). Throughout the operation process, fabricated income was used to fund high-risk and unprofitable deals under a scheme. With the use of the scheme as a channeling tool, the risk was hidden from its bondholders and investors (Jongh et al., 2013). This resulted a cross-border spillover effect. Investment banks which have invested in Enron suffered from great capital loss. For example, J P Morgan Chase and Alliance Capital Management Holding LLP loss $1.1 billion and $282 million respectively (Gup and Meeting, 2004). Not only United States investment firms were affect but also four of Australia's biggest banks. In addition, Enron being one of the biggest energy companies, its bankruptcy impact transferred into a minor crisis in California's energy market (Gup and Meeting, 2004). Nonetheless, the lessons from Enron Corporation, MasterCard computer virus and Canadian banking system teaches us that operational risk can indirectly affect (to a certain extent) similar industries across countries. The spillover effect of operational risk within similar industries can lead to a minor crisis within the industry. However, if operational risk arises from a financial institution (like in the case of Canadian banking system), the spillover effect would be more detrimental, especially with the use of e-finance which allows a quicker spread of the risk due to interconnectedness. In sum, internet and related crimes can fuel operational risk

within a firm and can spread the risk over to other firms via e-finance's connectivity. Hence, worse case scenario, leading to financial instability or minor crises.

4. MONETISATION

E-finance did not only improved and increase financial transaction quantity but also monetize assets into liquidity. As discussed above, greater quantity of transactions at a lower cost which resulted a greater market participation. Market participation often coincides with a competitive economy. That is, when a certain level of participation has been reach. Economically speaking, when an economy is competitive, supply and demand would be close to its equilibrium point. Thus, greater market participation that was promoted by e-finance would be beneficial for the health of an economy. However, greater transactions also meant a rapid increase of liquidity in the financial system (Allen, McAndrews, & Strahan, 2002; Zekos, 2004). Along with that, e-finance by itself also monetize assets into liquids at a rapid speed which further increase the quantity of liquidity in the financial system (Ögren, 2009). Consequently, in combination from both factors, chances of excess liquidity would arise which can be a serious concern for the health of the financial system. Indeed, throughout historical financial events, one of the key triggering element was liquidity risk or the incapability of banks in transferring liquid assets to physical money in response to market demand (Buckle & Beccalli, 2011). Thus, one may conclude that e-finance lowers the probability of liquidity risk due to its capability in generating liquidity. Yet, at the speed of which e-finance in monetizing assets into liquidity, over-boiling with liquidity can also create asset-price bubble.

Connection between excess liquidity and asset-price bubble has been drawn as an uprising key factor that triggered recent financial crises. That said, as argued by Adrian and Shin (2008), when the quantity of liquidity increases, this would impose an upward pressure on asset prices. Moreover, when the asset-price increases, this would result in the expansion of asset-price bubble. At the national level, relatively large asset-price bubble can lead to both economic and financial instability or even worse, the breakdown of the domestic financial system when the bubble burst. However, in the context of e-finance, the interconnectedness of the financial system (globally) can result in spillover effect (BCBS 2011). Once the spillover effect occurs, the impact of the bust would no longer apply to a national financial system but a global one. In turn, the world would experience a regional or global financial crisis. This process of excess liquidity, upward pressure and bust of asset-price bubble could be seen in the recent global financial crisis. In the case of 2007-8 global financial crisis, the main causal factor was the burst of United States housing asset-price bubble. Indeed, the burst of U.S. asset-price bubble was triggered by default borrowers which were traced back to credit rating agency. However, the intermediate process of securitization (transforming illiquid assets into liquidity) was done through the characteristics of e-finance (BCBS, 2011). Through this, it is obvious that monetization via e-finance do cause excess liquidity. More importantly, the interconnectedness generates global excess liquidity and a higher possibility of spillover effect. Furthermore, the excess liquidity produced by e-finance, rapidly inflates asset-price bubbles which makes the financial system even more prone to financial crisis. Nonetheless, in the context of monetization, e-finance do foster a more vulnerable financial environment which in turn, making the financial system more prone to crises.

CONCLUSION

E-finance, as discussed throughout the paper, has proved to be beneficial for the financial system at the surface level. However, the underlying risks of those benefits have also raised serious concerns about the financial stability. Firstly, the increase in difficulty for regulators to monitor financial institutions. Financial regulation, throughout financial history, played an important role in preventing moral hazard, systemic risk and asymmetric information. Secondly, the openness provided by the internet promotes financial crimes. Since the core channel of e-finance is the internet, security or first-line of defense is needed to protect every transaction. However, the openness of internet attracts cybercrimes such as hacking which causes disruption in transaction process and financial system. There are also internal and external fraud which can trigger the rise of operational risk. Lastly, the spillover effect of excess liquidity which rapidly inflates asset-price bubbles. Here, e-finance does have a direct affect in facilitating vulnerability through the creation of liquidity and monetization of illiquid assets. More importantly, e-finance generated excess liquidity in the recent times was considered as one of the contributing causes of 2007-8 global financial crisis. Even though, the direct or indirect effects of these factors varies but the result was the same. That is to say, all of the factors had led to financial instability or even a crisis. In sum, e-finance does foster a vulnerable financial environment which in turn, promotes financial crises.

REFERENCES

Anonymous. (2011). Latvia's Largest Bank Is Fighting Off A Bank Run After Rumors Of Collapse. *Business Insider*. December 12. http://www.businessinsider.com/latvias-largest-bank- is-fighting-off-a-bank-run-after-rumors-of-collapse-2011-12.

Basel Committee on Banking Supervision. (2005). *International convergence of capital measurement and capital standards: A revised framework*. Basel, Switzerland: Bank for International Settlements, Press and Communications.

Buckle, M., & E. Beccalli. (2011). *Principles of banking and finance*. University of London.

Cecchetti, S. G. (1999). Future of financial intermediation and regulation: An overview, *5*(8). https://papers.ssrn.com/abstract=996699.

CGFS Papers. (2011). *Global liquidity-concept, measurement and policy implications*. http://www.bis.org/publ/cgfs45.htm.

Claus, I., Veronica, J., & Brock, J. (2004). *Financial systems and economic growth: An evaluation framework for policy*. Treasury Working Paper Series 04/17. New Zealand Treasury. https://ideas.repec.org/p/nzt/nztwps/04-17.html.

de Erika, J., de Jongh, R., de Jongh., D., & van Vuuren, G., (2013). A review of operational risk in banks and its role in the financial crisis. *South African Journal of Economic and Management Sciences, 16*(4), 364-82.

Franklin, A., & Carletti, E. (2013). What is systemic risk? *Journal of Money, Credit and Banking, 45*(1), 121-27.

Franklin, A., Babus, A., & Carletti, E. (2010). *Financial connections and systemic risk* (Working Paper 16177). National Bureau of Economic Research. http://www.nber.org/papers/w16177.

Franklin, A., McAndrews, J., & Strahan, P. (2002). E-Finance: An introduction. *Journal of Financial Services Research, 22*(1-2), 5-27.

Godfrey, N. (2008). *Why is competition important for growth and poverty reduction?* OECD Global Forum on International Investment. http://www.oecd.org/investment/globalforum/40315399.pdf.

Greve, H. R., Kim, J. Y., & Daphne, T. (2016). Ripples of fear: The diffusion of a bank panic. *American Sociological Review, 81*(2), 396-420.

Gup, B. E., & Financial Management Association International Meeting. (2004). *Too big to fail: Policies and practices in government bailouts*. Greenwood Publishing Group.

Helleiner, E., Stefano, P., & Hubert, Z. (2009). *Global finance in crisis: The politics of international regulatory change*. Abingdon, UK: Routledge. http://www.routledge.com/.

Jungmittag, Andre. (2004). Innovations, technological specialisation and economic growth in the EU. *International Economics and Economic Policy,* 1(2–3), 247–73.

Mankiw, N. G. (2011). *Principles of economics* (6th ed.). Mason, OH: Cengage Learning.

McNevin, V., Kellermann, T., & Glaessner, C. T. (2004). *Electronic safety and soundness: Securing finance in a new age*. 28405. The World Bank. http://documents.worldbank.org/curated/en/756761468778791728/Electronic-safety-and-soundness-Securing-finance-in-a-new-age.

McPhail, K. (2003). Managing operational risk in payment, clearing, and settlement systems. *Bank of Canada,* Working Paper 2003-2 (February).

Meijers, H. (2014). Does the internet generate economic growth, international trade, or both? *International Economics and Economic Policy, 11*(1-2), 137-63.

Mishkin, F. (1992). Anatomy of a financial crisis. *Journal of Evolutionary Economics,* 2(2), 115-30.

Nsouli, S. M., & Schaechter, A. (2002, September). Challenges of the "E-Banking Revolution". *Finance and Development F&D*, http://www.imf.org/external/pubs/ft/fandd/2002/09/nsouli.htm.

Ögren, A. (2009). Financial revolution and economic modernisation in Sweden. *Financial History Review, 16*(1), 47-71.

RSA. (2013). *Financial Institutions: Managing Operational Risk with RSA® Archer®. RSA*. November 1. https://www.rsa.com/en-us/resources/financial-institutions-managing-operational-risk-with-rsa-archer.

Sassi, S., & Mohamed, G. (2013). Financial development, ICT diffusion and economic growth: Lessons from MENA region. *Telecommunications Policy, 37*(4-5), 252-61.

Semaan, Elias, and Pamela Peterson Drake. 2011. 'Deregulation and Risk'. *Financial Management* 40(2), 295-329.

Shahrokhi, M. (2008). E-Finance: Status, Innovations, Resources and Future Challenges. *Managerial Finance* 34(6), 365-98.

Shay, R. P., & Colin, L. (Eds.). (1986). *Technological innovation, regulation, and the monetary economy*. Cambridge, Mass: Ballinger Pub. Co.

Tobias, A., & Shin, H. S. (2008). Liquidity, monetary policy, and financial cycles. *Current Issues in Economics and Finance, 14*(1). http://econpapers.repec.org/article/fipfednci/y_3a2008_3ai_3ajan_3an_3av.14no.1.ht m.

Zekos, G. I. (2004). Cyberspace and e-finance. *Hertfordshire Law Journal, 2*(1), 31-44.

