

POST-CRISIS BANKING REGULATION:

THE TWIN PEAKS MODEL

By

Vyshnevskiy Iegor

THESIS

Submitted to

KDI School of Public Policy and Management

in partial fulfillment of the requirements

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MASTER OF PUBLIC POLICY

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ABSTRACT

“Post-crisis banking regulation: the Twin Peaks model”

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An undeniable benefit of the recent global financial crisis is that it has shown us not only some weak points of the current finance system but also it has drawn our attention to some problems which should be solved in order to prevent such failures in the future. Among all discussed issues regarding some reformation in the financial sector, the problem of banking regulation is the most debated. Although the importance of the banking regulation structure is indisputable at this stage, yet the matter “which model of regulation to choose?” is unclear.

The main purpose of this thesis is to study the effectiveness of the “Twin Peaks” regulation model within the banking sector scope across the world. Although the model itself cannot guarantee a high quality regulation, as it is just a tool, I believe that using the most effective tool improves the standards of banking regulation and supervision across the world. In my paper I have done an empirical analysis of the relationship between the banking regulation quality and the banking supervision architecture. In particular, I have studied the impact of the use of the “Twin Peaks” model on the banking supervision performance. For the sake of measuring supervision performance I used (not unique but still) a rather useful approach of measuring by aggregate indexes.

Although this research partly continues the studies of Čihák and Podpiera (2006, 2007, 2008), Kremers and Schoenmaker (2003, 2010), Masciandaro (2006) and others; the examined issue of the paper is studied in a different way than it was before. In addition, the data of 143 countries, considerably expanded dataset compared to existing studies, has been analyzed.

What is the practical implication of the “Twin Peaks” model? How effective is the model? I have found that on average using of the model is associated with the higher quality of the banking regulation only partly though the particular practice of the model in Australia and the Netherlands is positive. The results of the study show that the only two measures of banking regulation quality have economically significant relationship with the model. This result contradicts my expectations and other scholars’ findings. Furthermore, I have found that some other factors, in addition to the supervision structure, have a significant impact on the quality of banking regulation. Such factors are needed to be studied further.

In such a case, before launching any kind of policy regarding banking regulation structure, in my opinion, this issue should be studied further and examined by using additional (as precise as possible) factors as explanatory measures of the banking regulation quality.

KEYWORDS: (Global Financial Crisis, Banking regulation, the Twin Peaks model)

Dedicated To My Parents

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I. INTRODUCTION

“Statement of the problem”

"Banks have done more injury to the religion, morality, tranquility, prosperity, and even wealth of the nation than they can have done or ever will do good."¹ - John Adams

A wise person differs from an ordinary one by the ability to learn from mistakes. Taking into account past economic turbulence, an obvious question arises: “Are the people responsible for the soundness and wisdom of the global economy, wise?,” or to be more precise, “Are they wise enough to take lessons from recent mistakes occurred in the global economy?” The answer to that question, as well as to the other ones related to economic issues, has to be given by economists –the ones responsible for analyzing the past economic performance, estimating the influence of some processes on the economy and making predictions about the future behavior of the economy. In order to fulfill all their duties (for instance, to help us to understand what is happening, to explain to us what is crucial in the global economy) economists need to be wise. The question now appears to be whether economists are wise enough to admit their own mistakes, and what is more important, prevent their future repetition. In similar vein, we can ask economists another question, in particular, whether they will prefer to keep following blindly the economic postulates of their seniors without understanding that a fast-changing character of the economy demands some regular changes in the practice of the economics profession. And the truth is that the last economic downturn has only enlarged the number of questions the society is willing to pose to economists. A long time ago Thomas Carlyle, a historian, criticized Thomas Malthus for his gloomy prediction of starvation level, increasing due to fast population growth exceeding the growth of the food supply. Carlyle

¹John Adams, (1735-1826) Founding Father, 2nd US President, *John Adams letter to John Taylor, Of Caroline, Quincy, 12 March, 1819* <http://books.google.com/books?id=EFkSAAAAYAAJ&lpg=PA375&ots=xh-6ooA5Mu&pg=PA375#v=onepage&q&f=false>

called economics “the dismal science.”² Probably since that time economics has gone to an extreme side and has become “the bright science.” In fact, now world society needs economics finally to be “the balanced science.”

An undeniable benefit of the recent global financial crisis is that it has shown us not only some weak points of the current finance system but also it has drawn our attention to some problems which should be solved in order to prevent such failures in the future. Different scholars, due to their specialization, see such problems in a different way. For instance, some of them focus on the problem of underestimating the impact of financial intermediates/agents on the economy.³ In their opinions, currently governments and central banks are using macroeconomics models, known as ‘dynamic stochastic general equilibrium’ (DSGE) models, which do not include either banks or other financial agents. They actually do not include financial systems as such at all. So, there is a question -- how can the impact of a thing which does not exist be forecast and controlled? Paul Krugman identified a complex of problems that arose due to financial liberalization. At the same time he admitted the failure of economists to predict the coming crisis due to the fact that in their economy models,

They turned a blind eye to the limitations of human rationality that often lead to bubbles and busts; to the problems of institutions that run amok; to the imperfections of markets — especially financial markets — that can cause the economy’s operating system to undergo sudden, unpredictable crashes; and to the dangers created when regulators don’t believe in regulation.⁴

²“Dismal Science Definition | Investopedia.” *Investopedia - Educating the world about finance*. N.p., n.d. Web. 21 July 2013. <<http://www.investopedia.com/terms/d/dismalscience.asp>>.

³“New model army,” *The Economist*, January 19, 2013 <http://www.economist.com/news/finance-and-economics/21569752-efforts-are-under-way-improve-macroeconomic-models-new-model-army>.

⁴Paul Kraugman, “How Did Economists Get It So Wrong?,” *The New York Times*, September, 2009, http://www.nytimes.com/2009/09/06/magazine/06Economic-t.html?pagewanted=all&_r=0.

In addition, the crisis has brought up talks about corruption in the financial sector to a new level. For example, the authors of the documentary movie *Inside Job*⁵ have studied the problem of the strong lobbying of financial sector interests by policymakers. As a result we have a financial liberalization and deregulation. Moreover, as it appeared, financial institutions were promoting theoretical ideas profitable for them, through some economists, of the necessity of the financial sector's deregulation in order to have a theoretical proof of easing of economic regulation and supervision. In fact, it is not nearly the whole list of problems which were discovered during the crisis. And in such a way economists not only discredited themselves and lost credibility for their profession, they misled the entire financial system by having given the wrong theoretical implications of the events which were taking place. In this context, the failure of regulators to prevent and to overcome the crisis is not that terrible (which, by no means, can excuse them). How could they effectively fight against the crisis relying on the wrong theoretical base?

Thus, while the process of reframing the place of finance in economic theory is going on we should remember more practical issues that are essential these days. As it was stressed in the 2009 report, "Financial reform: a framework for financial stability" by G-30⁶ (the working group on Finance Reform of Group of Thirty), one should focus on the way to arrange the financial system's structure in post-crisis time to achieve soundness and stability.⁷ Although the crisis outcome and the main causes have not been overcome yet, the world financial authorities have taken this issue seriously by starting full-scale reforms of the financial sector. Financial regulatory agencies have appeared at the forefront of those changes, partly due to their

⁵"Inside Job is a documentary movie directed by Charles H. Ferguson. The film is described by Ferguson as being about "the systemic corruption of the United States by the financial services industry and the consequences of that systemic corruption," taken from Charles Ferguson's interview with Charlie Rose, *YouTube*.<http://www.youtube.com/watch?v=vS0hj4kiqsA>.

⁶«The Group of Thirty is a private, nonprofit, international body composed of very senior representatives of the private and public sectors and academia.» taken from G-30 official website: <http://www.group30.org/>.

⁷Working Group on Financial Reform of Group of Thirty, Financial reform: a framework for financial stability, 2009.http://www.group30.org/images/PDF/Financial_Reform-A_Framework_for_Financial_Stability.pdf.

failures during the crisis and partly because during those days their structural models actually did not help get through the crisis. In fact, there is a process that started worldwide in 1995 in the UK that focuses on finding the most suitable model to face the current challenges of the financial system and at the same time provides a path to sustainable economic growth in the future.

In addition, G-30 has studied “various national supervisory and regulatory approaches” which “... set out to look at the changes evident in the financial markets and the evolution of the national supervisory architecture at[the] time when central banks and supervisory agencies [had been seeking] to improve their supervisory processes in light of blurring of lines between different financial sectors and businesses.”⁸ According to the research of 2008, the “Twin Peaks” regulatory and supervisory model was emphasized as “the optimal means of ensuring [that] issues of transparency, market integrity, and consumer protection receive sufficient priority,”⁹ i.e., as one of the most effective models to manage financial systems’ risks in the world. Such an approach, “...a form of [financial] regulation by objective, is one in which there is a separation of regulatory functions between two regulators [i.e. two agencies]: one that performs the safety and soundness supervision function and the other that focuses on conduct-of-business regulation.”¹⁰ Moreover, it is known that countries such as Australia, the Netherlands with this supervisory model “in use” were least affected by the global financial crisis. In addition, the UK authority has already implemented the model; South Africa is going to set it up.

“Main claim”

⁸Working Group on Financial Supervision of Group of Thirty, *The Structure of Financial Supervision: Approaches and Challenges in a Global Marketplace*, 2008.

<http://www.group30.org/images/PDF/The%20Structure%20of%20Financial%20Supervision.pdf>

⁹ Mike Taylor, “Twin Peaks regulatory model a winner”, *Super Review*, 2008,

<http://www.superreview.com.au/news/regulation/twin-peaks-regulatory-model-a-winner>.

¹⁰Working Group on Financial Supervision, *The Structure of Financial Supervision*, 13.

Discussions of the “Twin Peaks” regulatory model have been going on since 1995 after Michael Taylor theoretically systematized its main points in his paper.¹¹ Since that time the model has been implemented in several countries and its results only prove its high effectiveness. Additionally, some countries, confident that the model works, decided to apply it into their financial systems regulation. And although it is worthy to mention that nowadays the “Twin Peaks” model is known as the most effective way of managing financial system, only deep theoretical and practical analysis of the model’s performance will answer the question *whether or not this system is the best response to the current challenges in the financial system.*

Of course, some will probably disagree with the above assertion. While it is true that functions of two agencies may overlap or the expenses of the supervision are relatively higher, however, it does not necessary mean that the “Twin Peaks” model is not effective. In fact, I believe that the result of my study will prove the opposite.

“Sub-claims” and “Research questions”

Theoretically, separating supervision functions by consumer protection and prudential regulation approaches (i.e. by objectives) under two separate institutions allows managing almost all kinds of risks in a financial system more effectively than combining these two functions within one regulatory institution¹². The Australian Prudential Regulation Authority and the Australian Securities and Investments Commission are examples of such an approach. My research thus asks,

- What is the theoretical implication of the “Twin Peaks” model?
- What advantages/disadvantages does the model have in theory?

¹¹Michael Taylor, *Twin Peaks: A Regulatory Structure for the New Century*, London: Centre for the Study of Financial Innovation, 1995.

¹² *Ibid.*,4

Practically, countries with a functional “Twin Peaks” model were least affected by the global financial crisis or overcame the crisis faster. For instance, the Netherlands faced problems with its own banking system due to the high integration of the Dutch banks into the world financial market. Nevertheless, Dutch financial authorities managed to solve those problems, to some extent, owing to the “Twin Peaks” model. This suggests a need to investigate such questions as,

- What is the practical implication of the “Twin Peaks” model?
- What is the role of the model in getting through the crisis?
- How effective is the model?

“A statement of significance”:

This research is a response to the recent global financial crisis which has forced a fundamental reconsideration of the banking regulation as a whole and the banking supervision architecture in particular. Generally, the result of this study, in my opinion, can make a significant contribution to the theoretical field of banking regulation as well as to the practical one. To be more precise, the discovery of the research will allow understanding whether or not the “Twin Peaks” regulation and supervision model is really an effective approach to banking regulation. The point here is that the theoretical and practical study of the “Twin Peaks” model should interest those who want to know about one of the main modern trends in the financial regulation field, and also to understand the nature of this trend and see its further development. In addition, results of such analysis could be used by policymakers in the field of financial regulation and supervision. The application of the research outputs both in theory and practice will enhance the further studying of the model. Beyond this limited audience, however, in an ideal world, this study should be useful to anyone who is interested in a larger issue of achieving financial stability through the banking regulation reform.

“Research hypothesis”

It is hypothesized that there is a positive statistically and economically significant relationship between the model of banking regulation, namely the “Twin Peaks” model, and the quality of banking supervision (measured by four indexes). For the sake of either accepting or rejecting the hypothesis, I will analyze the theoretical aspects of the model and investigate results of the model in several countries in order to estimate its real effectiveness.

II. LITERATURE REVIEW

For quite a long period of time until the late fifteenth century,¹³ economy and finance were considered as a single concept. At that time finance was fulfilling its main function to provide funds for economic entities, in the purest form. As history has shown, that way did not last forever. At the turn of seventeenth and eighteenth centuries in the UK, the recently formed middle class as well as rich people, driven by rising standards of living, demanded some products (vehicles) to further enrich their wealth. The financial sector together with the legislative system managed to meet their needs. In its turn, such a large level of demand together with an unprecedented capital flow to the sector caused a financial revolution. It was the start of changes of the face of finance, equal in significance to the first division of labor process. And although economy and finance remained and still remain closely related to each other, the character of their relationship has changed. The role of finance has risen significantly. At the same time the size of the financial system has been growing rapidly. According to John Carswell, such deep changes, backed up by in short followed financial market failures, for instance the South Sea bubble,¹⁴ turned closer attention to financial sector from an authority. The response of UK authority resulted in forming a special committee in the House of Commons in 1720 to investigate the bubble issue.¹⁵ Later, in June 1720, based mostly on the committee's suggestions, the Bubble Act was passed. According to this act, a kind of mechanism to protect against bubble anomalies was launched. Until 1825, the time when the Act was repealed, no company in the UK could issue stocks without royal charter permission. Generally speaking, that stock market crisis only assured that the financial system as well as

¹³ Geoffrey Poitras and Franck Jovanovic in their article "Pioneers of Financial Economics: Das Adam Smith Irrelevanzproblem?" state that the early history of financial economics as a separate part of economic science has started in the fifteenth century.

¹⁴A bubble on the UK stock market caused by manipulation with the South Sea company stocks (1719-1720).

¹⁵ John Carswell, *The South Sea bubble*, Stanford, Calif.: Stanford University Press, 1960.

its operation on it should be supervised and monitored. As a result, the system of financial supervision was deepened and improved. From that point all changes in the finance sector sooner or later have been accompanied by relative changes in financial supervision. Usually such changes in regulation are being made later as a response to some markets' changes (failures).

In fact, launching of particularly banking regulation and supervisions happened a bit later than banking, as a separate type of financial business, had obtained its modern characteristics. Banks, since their creation in the fifteenth century, as private commercial institutions, were ruled by general sets of laws, norms and principles applicable to any other commercial firms¹⁶. Even after almost all countries created their own banks, in order to supply domestic currencies and be as financial agents of Governments, that time national banks did not perform as regulators until the moment when banks started to be considered as specific kind of commercial companies what require a unique norms of regulation. It was caused more by the overall development of society than by importance of banks' role. Such development led to the understanding that every kind of commercial activity should be specified by law and regulated by norms and principles applied to its specific characters. But as it occurred, the way of banking regulation by general law could not assure the *well-behave* of banks and safeness& soundness of the banking system as well. Frequent banking crisis happened in the USA and the UK since the eighteenth until early twentieth centuries has shown the need of setting specific rules to regulate banks' activity. Starting from thirties years of the twentieth century banking sector became one of the most heavily regulated industry of the economy, and at the same time banks are one of the most regulated financial institutions.¹⁷

¹⁶*The ascent of money*, directed by Niall Ferguson, London: Chimerica Media Ltd, 2009.

¹⁷Frederic S. Mishkin, *The economics of money, banking, and financial markets*,9th ed.,Boston: Pearson, 2010.

Almost simultaneously financial as a whole and particularly banking regulation and supervision have become an object of ongoing research and studies. Debates regarding financial regulation in general and forms of financial supervision and its severity in particular have never really ended. After every crisis such discussions flare up with renewed vigor. One of those who set the tone of contemporary talks about financial regulation and supervision is Dr. Charles Goodhart. According to his work, *How should we regulate the financial sector?*, financial regulation has always been characterized by its a-theoretical, highly practical responses of authority on urgent problems to avoid their repeating in future.¹⁸ In fact, the structure/model of the regulation system, which establishes some norms, principles and requirements, is strongly dependent on understanding what supervision should accomplish. For a long time the individual risk of institutions has been understood as potentially the biggest danger to the stability of the financial system. Consequently, the past system was built in a way to minimize that kind of risk. But as practice has shown, the focus of the supervision on the individual risk of institutions, rather than on systemic risk, has caused further system failure. Goodhart argues that in such a way past financial supervision was badly designed and showed its inability to guarantee the soundness of the financial system. Contemporary supervision, in his opinion, should mainly pay attention to systemic externalities and to consumer protection. Moreover, I found significant that Goodhart has posited the idea of “paradigm shift,”¹⁹ i.e. the needs of fundamental changes in authorities’ understanding the purpose of financial supervision. Hence, such reconsideration of financial supervision goals will cause changes in the regulation tools, i.e. it will transform financial regulation structure/model. It is true to say that related Goodhart’s work makes a great contribution to the study of financial supervision though it is a bit theoretical, and requires some empirical evidence.

¹⁸ Adair Turner and others (2010), *The Future of Finance: The LSE Report*, Chapter 5, How should we regulate the financial sector?, London School of Economics and Political Science.

¹⁹ *Ibid.*,179.

It is interesting to mention that according to Donato Masciandaro and Marc Quintyn the changes in banking regulation architecture were happening often, as responses to financial markets' failures or structural changes on markets. They empirically analyzed the evolution of different countries' regulation systems during 1998 – 2008 years in the paper *After the Big Bang and Before the Next One? Reforming the Financial Supervision Architecture and the Role of the Central Bank. A Review of Worldwide Trends, Causes and Effects (1998-2008)*. Scholars concluded that there was a trend of structural changes in banking regulation and supervision. Particularly it was a start of shifting from the sectoral model of regulation to the unified (integrated) model. As an outcome of that wave of reform there was the supervision landscape which was diversified to such an extent as never before. Although the main push to widespread reforms worldwide came from the UK, where in 1998 the Financial Services Authority was established, this country was not the first one to set up new model. According to the paper, the Scandinavian countries, Norway, Iceland, Denmark and Sweden performed changes in their banking regulation and supervision models in the late eighties – early nineties of twentieth century. In addition, Masciandaro and Quintyn mentioned that due to recent global financial crisis the reforms in banking regulation and supervision structure would keep going with shifts to models which would be able to provide regulators with exhaustive and up-to-date market information.

The high importance of the regulation system structure was considered by the whole world society. Scholars, international organizations and policy makers have been wondering about the role of an appropriate supervisory structure in assuring soundness of the financial system. Among other outstanding research, a great role in studying this issue has been played by the World Bank's conferences, researches and papers. Based on the results of the World Bank conference "*Aligning Financial Supervisory Structures with Country Needs*" December 4-5, 2003 (with more than 70 participants from 52 countries) the eponymously-named book was

edited by Jeffrey Carmichael, Alexander Fleming and David T. Llewellyn.²⁰ Authors, summing up the information presented at the conference, conclude that the majority of countries consider the structure of supervision and regulation as the main aspect of their efficiency and effectiveness. Another important issue mentioned in the book is the fact that although there is no structural model which suits every country perfectly, two polar approaches to build the supervision structure were indicated. On the one hand is a traditional sector-by-sector supervision; on the other hand, a full sectoral integration approach. In fact, developed countries have tended to have integrated supervision. Meanwhile developing countries favor sectoral financial regulation. There is a need to point out that the structure of the regulation, as authors observed, also highly depends on the cultural and legal heritage of a country. Besides, there is room for some hardly predicted factors which at the end could have some impact on financial regulation models, as authors point out (for instance the wish of authority to minimize the expenses on financial regulation structure).

One of the reviewers of a “*Aligning Financial Supervisory Structures with Country Needs*” book’s manuscript, Michael Taylor, is also a well-known scholar in the supervision structure field. He was one of the first ones to study the issue of the banking regulation and supervision structure modernization. In 1995 he wrote a report about the “Twin Peaks” regulation model where he outlined the main theoretical aspects of the model, and offered how it could be used in practice in the UK. He also predicted the future of financial supervision.²¹ In addition, Taylor forecasted the ineffectiveness of combining prudential and consumer protection regulation under one institution’s roof. Eventually this report became a must-read book and a common source for references. Recent global financial crises together with high attention to the issue

²⁰ Jeffrey Carmichael et al., *Aligning financial supervisory structures with country needs*, Washington, D.C.: World Bank Institute, 2004.

²¹ Michael Taylor, *Twin Peaks: A Regulatory Structure for the New Century*, London: Centre for the Study of Financial Innovation, 1995.

of financial supervision structures have made Taylor join the debate about an optimal financial supervision structure.²² Taylor's main observation, which has become a well-respected principle, is that the supervision structure should fully reflect the processes going on within the financial sector. He argues that traditional sectoral supervision is no longer effective enough to regulate the financial sector because of the integration of the securities, banking and insurance markets. Taylor suggests regulation by "objectives." For this purpose, in his opinion, the "Twin Peaks" model works best. He considers two main objectives of the model, regardless of the part of financial sector. The first one is to guarantee the soundness and stability of the whole financial system. The second one is to protect the customers. Special attention, according to Taylor, should be turned to the "too big to fail" (hereafter TBTF) institutions and to the large and complex financial institutions (hereafter LCFIs).²³ He sees the solution of this matter in imposing a special systematic risk tax on such TBTF and LCFI firms. At the same time, the main capital requirements for such institutions should be higher than for others. In addition, he argues that LCFI institutions should be supervised by slightly different prudential norms than other firms. Although Taylor has done quite a full theoretical analysis of the model, he has used no empirical (quantitative) evidence to prove his point of view. In fact, it makes his research incomplete, in my opinion.

Among all sources, the *Structure of financial supervision: Approaches and challenges in a global market place* report of G-30 should be emphasized. This report is dedicated to the study of some national supervisory and regulatory approaches. Starting the review in July 2007, G-30 wanted to see into evolution of national's regulation structures. The Group ob-

²² Michael Taylor, *Twin Peaks Revisited: A Second Chance for Regulatory Reform*, London: Centre for the Study of Financial Innovation, September 2009.

²³ TBTF is a colloquium name for financial institutions, which bankruptcy can cause a crash of whole financial system, due to their sizes, "Too Big To Fail Definition | Investopedia." Investopedia - Educating the world about finance. <http://www.investopedia.com/terms/t/too-big-to-fail.asp> (accessed July 22, 2013). LCFI are financial institutions which, due to consolidation of financial sectors, have transcended national boundaries. Thus, their activity and conditions can influence not only the domestic market. Appearance of such institutions was mentioned in the *Report on consolidation in the financial sector*, Group of Ten, 2001.

served that although supervision systems in different countries were dealing with similar issues their approaches were different. It was caused by historical, political, cultural, economical and financial dissimilarities of every country.

The study separates four models of financial regulation using across the globe, namely institutional functional, integrated and “Twin Peaks” approaches.²⁴ According to the report, the interest in the “Twin Peaks” approach is growing fast. In fact, such kind of regulation includes a lot of benefits over other approaches. The report mentioned that “The Twin Peaks approach may also be the optimal means of ensuring that issues of transparency, market integrity, and consumer protection receive sufficient priority.”²⁵ The model bases on a principle of objective supervising. The regulatory functions are separated between two institutions; one is in charge of safety and soundness supervision and another one is responsible for performing conduct-of-business regulation. In addition, retail and wholesale activity are separated. Moreover, retail activity is regulated by conduct-of-business supervisor.

Australia was the first country to implement the “Twin Peaks” model. Since 1997 the country has split conduct-of-business and prudential regulations. In such a way, the Australian Prudential Regulatory Authority (hereafter APRA) regulates the activity of deposit-taking institutions. It focuses on safety and soundness of regulated entities. Besides, APRA does not depend in its activity on the central bank. The business conduct supervisor in Australia is Australian Security and Investment Commission (hereafter - ASIC). It is in charge of consumer protection and market integrity across Australian financial system. In this supervision system, the central bank of Australia, Australian Reserve Bank, is responsible for financial stability, payment systems and interest rates. In fact, the Australian financial regulation model is known as the most appropriate example of practical using the “Twin Peaks” model.

²⁴Group of Thirty, The Structure of Financial Supervision,18

²⁵ibid., 38.

Furthermore, the OECD report, *The financial crisis. Reform and exit strategies*, is supporting the above assertion of G-20 that after the crisis many countries' authorities decided to reform their banking regulation architecture to the "Twin Peaks" model. In accordance with the organization view – the model became a benchmark for a wise and rational banking regulation and supervision structure.

The keen interest to the issue of the financial supervision has caused the increase of numbers of qualitative studies. Many scholars try to answer the question, *Which model to chose?*, by using quantitative methods. The first ones to research the financial supervision topic, to be more precise, integrated financial supervision, were Martin Čihak and Richard Podpiera. While working for the International Monetary Fund, they managed, together with World Bank, to create a unique data on the quality of regulation around the globe. According to Čihak and Podpiera research *Integrated financial supervision: which model?*, the "Twin Peaks" model's impact on the quality of supervision in securities and insurance sectors is quite similar to the impacts of other financial regulation approaches. Meanwhile, the level of supervisory quality in the banking sector on average is higher with the model "in use." The scholars concluded that it is caused by better regulatory practices and rather higher standards of prudential supervision under the "Twin Peaks" principles.

It is worth mentioning that Martin Čihak has not rest on his oars and together with Alexander Tieman has researched the quality of financial sector regulation and supervision around the world.²⁶ Like in case of Čihak previous studies, it is used the unique dataset of countries' compliance with international standards which includes both theoretical information and detailed assessments of the practical implementation of the commonly accepted international principles and standards for financial sector regulation and supervision in each country. The

²⁶ Sylvester C. W. Eijffinger and others, *Handbook of central banking, financial regulation and supervision: after the financial crisis*, Chapter 15, Quality of financial sector regulation and supervision around the world Cheltenham, Glos, UK: Edward Elgar, 2011.

interesting finding is that on average the countries' regulatory frameworks fulfill the international standards for financial sector regulation and supervision to the extent of 75 percent. Also scholars found that there were serious differences in the quality of financial supervision and regulation across countries. It could be explained by the level of economic development. In fact, quality of financial supervision systems of economies with high- income is higher than in low- or medium-income countries though financial regulators in high- income countries usually have more challenges as their financial systems are more complex.

As the reviewed literature shows, since the time when financial system emerged as a single system, the questions on how to supervise it and what is the most efficient way to do it, have generated a considerable interest. Society is united in understanding that there is no ideal supervision concept/model, but at the same time, different countries by different ways come to rather similar regulation models. The financial crisis that began in 2007 demonstrated some weak points of the banking regulation structure/model. In such a way, the search for a new regulation model started; a more appropriate one to the current realities. And today, finding the most effective financial supervision model is a high priority task not only for scholars and policymakers but for the whole society.

III. THEORY AND PRACTISE BEHIND THE TWIN PEAKS

MODEL

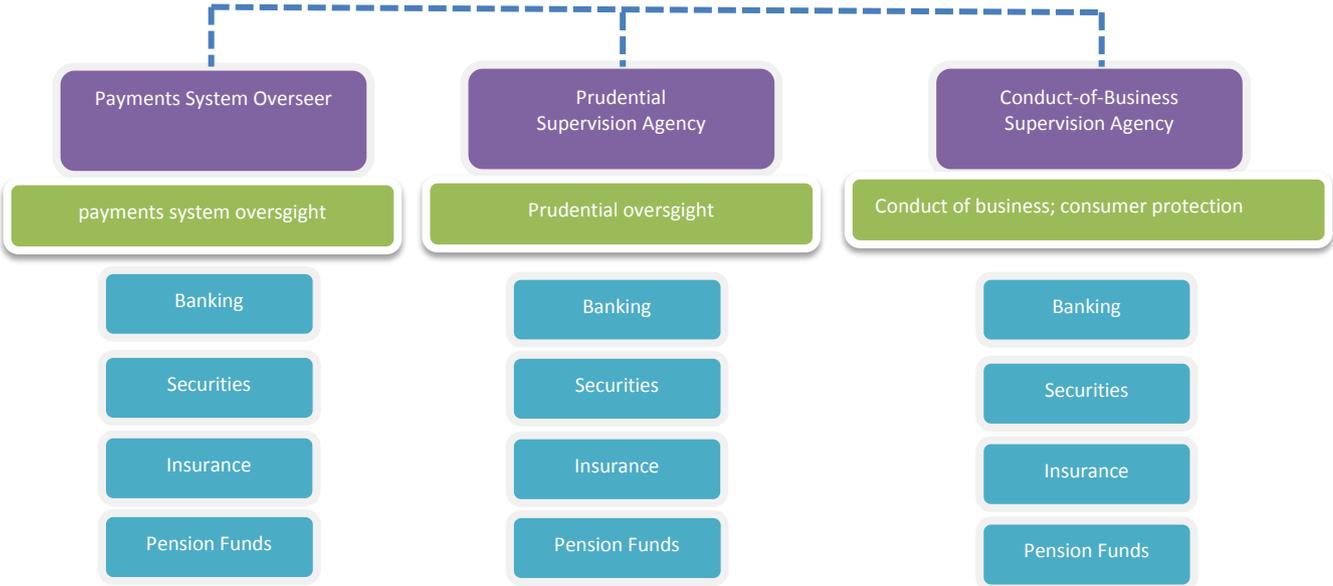
A theory of the “Twin Peaks” model:

As it was mentioned previously in the literature review, the first theoretical overview of the “Twin Peaks” model was done in 1995 by Michael Taylor. This approach appeared as a response to financial market developments. As the borders between banking, insurance business and securities disappeared what made the traditional sectoral model of regulation useless. At that this model was a try to deal with some problems in regulatory system caused not only due to the creation of large financial holdings, but also because of the appearance of new types of financial securities/instruments and the bundling and unbundling of various kinds of services/products previously offered by institutionally different types of companies.²⁷

Although some scholars classify the model as a functional approach of financial regulation and supervision (for instance Dirk Schoenmaker and Eddy Wymeersch), the majority thinks that “Twin Peaks” is a form of regulation by objective (i.e. by the type of market failure the regulation is obliged to correct). The main point of objective oriented regulation is to focus on a desired outcome or objective through having a suitable regulation structure (see the summarized model of supervision by objectives in Table 1). It gives a measure of flexibility to a regulator to reach that goal in the best way it seems to be. Thus, this approach is better to response to changes on the market. Moreover, the regulation by objectives can provide a synergy effect in financial regulation by consolidating regulatory responsibility in areas and can guarantee the higher level of market discipline.

²⁷Heidi M. Schooner and Michael Taylor. *Regulation of global banking, principles and policies*. Burlington, MA: Academic Press, 2010.

Table 4 Model of financial service supervision by objectives (source: OECD)



Originally, the “Twin Peaks” approach is based on separation of regulation objectives between safety and soundness of the financial system and conduct-of-business/sales practice (i.e. consumer protection). In reality, it is true to say that the number of objectives can be far more than two. Some scholars identified four or six goals of financial regulation. But for the sake of reducing regulation costs such objectives were separated in two above mentioned groups. In order to perform the above goals Taylor offered to appoint two agencies, independent from the central bank. Having the objectives in separate regulatory institutions can minimize the conflict between the contrasting fields. Because it may happen that prudential mandate conflict with the conduct matters, and the authority may give priority to safety and soundness issue as these are closely associated with the stability of the financial sector. However, even such separation would not let avoid tensions completely, especially when the prudential issues remains to be in priority to consumer protection matters.

According to Taylor, even when such model is launched the role of central bank remains vital though its focus shifts from the soundness of individual institutions to maintaining the stability of functioning of sectors of financial market and their interconnections. First of all, the central bank keeps fulfilling his function as a main monetary policy authority. At the same time the bank starts to behave as a crisis manager if needed. Its second main duty is to do the macroprudential regulation and supervision (i.e. to deal with systemic risk, overall financial structure, the interest rate, payment systems, etc.) and to coordinate the activity of all regulation agencies.

It is known that the “Twin Peaks” approach is more specialized than other regulation model. Separation of regulation objectives between two agencies allows them to hire employees with relevant competence for their specific functions.²⁸ For instance, prudential regulator is able to hire staff with particular business and financial expertise while conduct-of-business regulator focuses on employing enforcement-oriented personal. That would improve the overall quality of regulation and supervision.

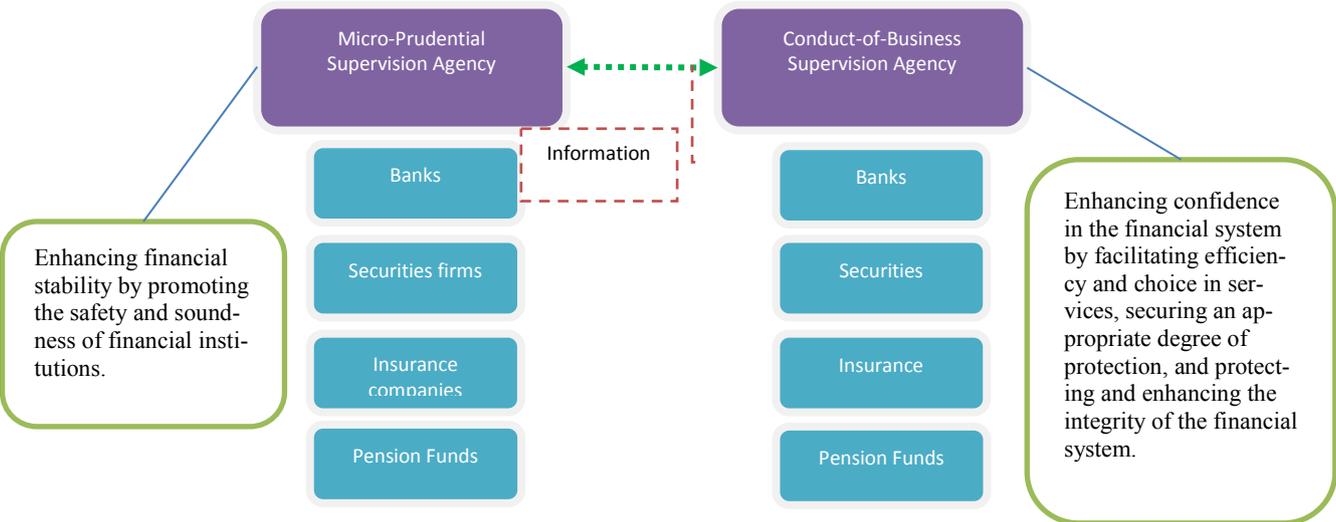
As it is implicated in the model – one agency should be responsible for prudential, to be more precise microprudential, regulation. It implies the continual financial wellbeings of individually regulated financial companies. In particular such agency has two main functions. First – to promote the safety and soundness of insurers, banks and other financial institutions by ensuring that the way financial companies carry out their activity on the market does not affect or threaten the stability of whole financial system. Second – to minimize an effect of some company’s failure on that stability, if happens.

In terms of the agency which is in charge of conduct matters –its main goals are to secure the protection of the consumers on the financial market (i.e. to deal with the problem of in-

²⁸Group of Thirty, The Structure of Financial Supervision, 38

formation asymmetry between financial services consumers and financial companies). In addition, such agency must promote effective and fair competition, and enhance the integrity of the financial system. Also the agency should foster the confidence in overall financial system (see the summarized model of “classical Twin peaks” approach in Table 2).

Table 25The«classical Twin Peaks» model's architecture (source: KPMG)



In fact the effectiveness of the model highly depends on the appropriate governance architecture where all functions, duties, power and obligations of all regulation agencies should be clearly set out. At the same time to utilize the model advantages fully - the communication and interaction between agencies and central bank should be permanent and intermutual.

Bearing in mind the above information about the theoretical base of the model it is possible now to sum up the advantages of the model. Firstly, as G-20 indicated in its report, the “Twin Peaks” model can ensure the fast and free flow of information between the respective agencies and the central bank as well as the access to the information for the general public (i.e. transparency issue).²⁹ Second, the model allows limiting opportunity for regulatory arbitrage between similar financial services by implementing the straight and logical norm and rules for comparable businesses. Third, owing to the model financial authority can get the real and

²⁹ibid., 38.

timely information about the risk arising from the regulated companies. Fourth, such regulation framework implies the clear and understandable objectives of financial regulation and supervision (it means that financial authority realizes what objectives of regulation are). Fifth, the “Twin Peaks” will enable the regulators better identify the risky activity and put such activities to appropriate and proportional to the risk level regulation and supervision norms. Sixth, the approach will allow regulators to find the emerging risk to consumers and financial stability as early as possible and to eliminate that risk. And last but not least, seventh, “Twin Peaks” approach is going in line with all common international principles of financial regulation and supervision.

Since its appearance the model has experienced several changes and improvements. For instance the concept of separation prudential supervision into macro- and micro- was introduced to the model after the Asian financial crisis in 1997-1998 because before that time the idea of macroprudential surveillance had not had any kind of currency.³⁰ Also after 2002 when Dutch financial authorities launched their own hybrid modification of the “Twin Peaks” model it became clear that the model was enough flexible to any structural reconsideration and remained to perform well. The main improvement to the model was made after the global financial crisis 2007-2008. Theoretical and empirical reframing of the role of large financial holdings, namely TBTF and LCFI, in crisis made Taylor improve the model. In addition to setting up the special tax (you may read about this in the literature review) he offered to establish a special commission to regulate businesses of TBTF and LCFI. This commission could be as a subsidiary to the central bank. At that, such large companies would become to be at least triple-regulated. Moreover Taylor mentioned that some financial companies could be free of prudential regulation depending on its size.

³⁰Michael Taylor, *Welcome to Twin Peaks*, *Central Banking Journal*, August 17, 2010.
<http://www.centralbanking.com/central-banking-journal/feature/2042899/welcome-twin-peaks>

A practice of the “Twin Peaks” model (the Dutch case):

Although the most popular, successful, well-known and most cited example of implementation of the model is the Australian case, for my research I used, as the practical example, the case of Netherland financial regulation architecture implemented since 2002. In fact, the Dutch financial system is more integrated in the global financial market than Australian one, what additionally presses the regulation and supervision system. Moreover in the Netherland the “Twin Peaks” model passed the examination by the crisis.

Up to launching the model in 2002 the Dutch regulation and supervision structure was traditional sectoral-based with a separate supervisor for banking (Netherlands Central Bank), insurance and pensions (Pensions and Insurance Supervisor), and securities (Securities Supervisor which was in charge of conduct-of-business regulation regarding the securities market activities) businesses. For the purpose of coordinating of conduct-of-business regulation and micro-prudential regulation between the sector-based supervisory agencies in 1999 was specially established the Council of Financial Supervisors (a kind of cross-sectoral element). Due to softening of borders between financial companies, between sectors of the financial market and between financial products and services, the capability of such regulation approach fell down. The three regulators began to lose their effectiveness.³¹ During that processes among Dutch politicians emerged a consensus that the fundamental reform of the financial regulation and supervision structure was necessary. Since that time the core principle of the Netherland financial regulation and supervision is that the development of the financial market should be reflected by the relevant changes in the regulation and supervision structure as much as possible.

³¹Jeroen Kremers and Dirk Schoenmaker, *Twin Peaks: Experiences in the Netherlands*, LSE financial markets group. November 2010. <http://www.lse.ac.uk/fmg/workingPapers/specialPapers/PDF/SP196.pdf>.

Thus, the reform with simple objective-based setup was launched (its full implementation was finished in 2007). The logic way of transformation was the following. At the beginning, Dutch financial authority had some preferences for unified prudential supervision. It was caused by the changes in the Dutch financial industry structure. Following the worldwide tendency, large financial holdings were doing their businesses in different sectors of the financial market and offering the complex financial services and products that went far beyond the traditional sectors' borders. In that case, bringing the prudential regulation and supervision of banks, pension funds, insurers and securities companies under one regulation institution seemed to be the only right choice. In addition, this approach also minimized the regulatory arbitrage. Such desire to set the objective-based regulation (with separation of prudential and conduct-of-business regulation) approach led Dutch public and financial authorities to the “Twin Peaks” model.³² At the same time they decided to locate the prudential regulation within Netherlands Central Bank. By doing that, Dutch expected to reach synergies by combining prudential regulation and monetary policy. Besides, there is a close association between macroeconomic stability and financial stability. And as the recent global financial crisis has shown, the location of the prudential oversight within Netherlands Central Bank enabled to have a view on systemic issues across the whole financial market, and react rapidly against the crisis.

Above logic can be explained by two main beliefs of Dutch public and financial authorities. First, they were certain that prudential and conduct-of-business were strongly different objectives which required some different set of skills, and different institutional allocation. Second, they were certain that financial system stability had to be closely associated with the safeness and soundness of individual firms, and also with monetary policy. (Taking into account the

³²International Monetary Fund, Country Report No. 11/208, *Kingdom of the Netherlands-Netherlands: Publication of Financial Sector Assessment Program Documentation—Technical Note on Financial Sector Supervision: The Twin Peaks Model*, Washington, July 2011

above mentioned the overall architecture model of the Dutch regulation and supervision system is summarized in the following Table 3).

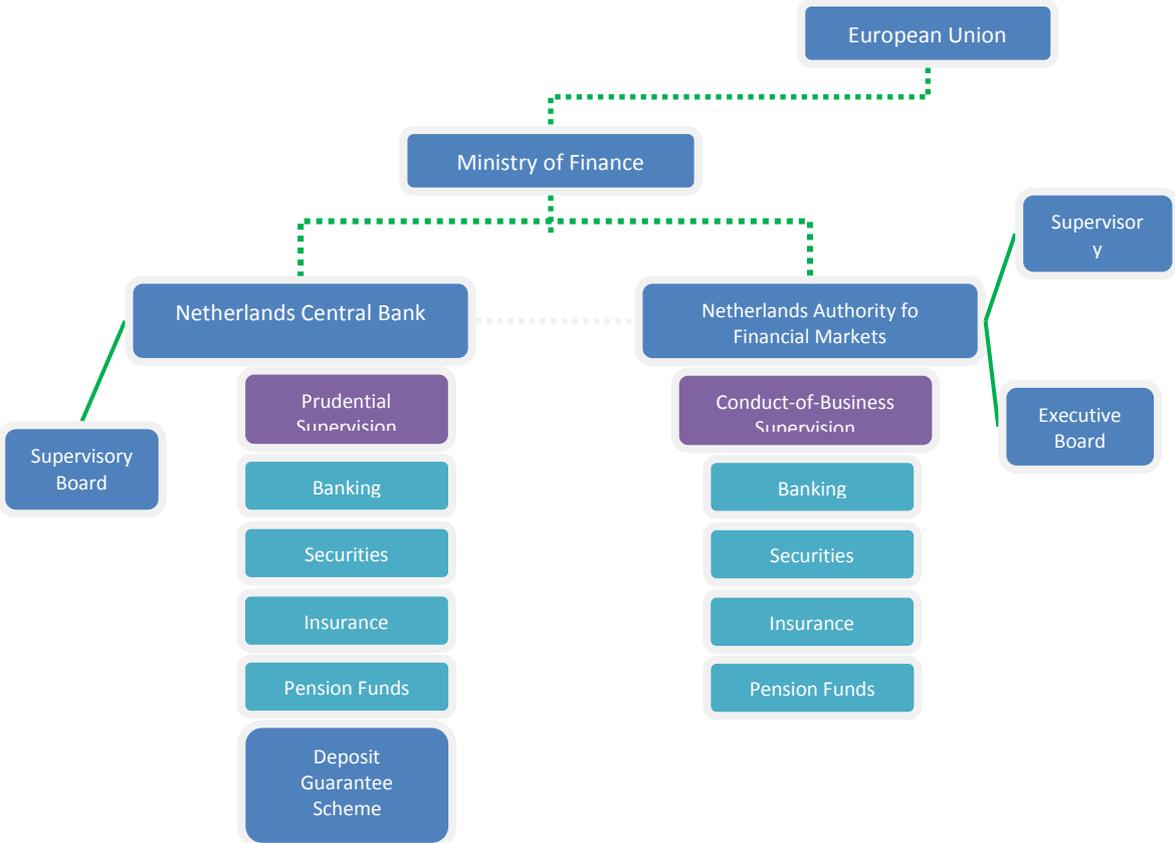


Table 3 The Dutch financial regulation and supervision model (Source - IMF)

The main differences of Dutch “Twin Peaks” model from the classical one is that the functions of prudential (both macro- and micro-) regulation and supervision are performed by the Netherlands Central Bank. And a new settled supervisor, the Authority for Financial Markets, is in charge of conduct-of-business supervision of all financial institutes on the market. Another specific characteristic of the Dutch model is that the central bank and the Authority for Financial Markets have quite limited rule-making rights because most norms and principles were already indicated in the Act for Financial Supervision (2007). In case there is a need to

make some changes in legislation framework – it can be done only by the Decrees of the Ministry of Finance.³³

In practice, the information flow and coordination of activities between Netherlands Central Bank and the Authority for Financial Markets are regulated by the “Covenant” which provides a clear framework for regulators responsibilities, consultation and cooperation between them. There was also indicated the role of the Netherlands Central Bank as the leading agency responsible for overall regulation of financial institutions and the Authority for Financial Markets as the lead regulatory institute for securities companies. In addition, it was agreed that the lead supervisor would take into account the position of another supervisor (which also has a veto right).

Jeroen Kremers and Dirk Schoenmaker, the main architects of the Dutch financial regulation and supervision structure, outlined two key improvements/achievements to the quality of financial regulation and supervision, as a result of the reform. First, owing to the tough separation of supervision objectives between regulators, when each institution got its own clearly declared objectives, all strengths of these regulators were spent more effectively and focused only on their fields in charge respectively. Second, because of setting the prudential regulation within Netherlands Central Bank of financial stability issue got more attention from the regulator. Also it allowed the central bank to be more effective in doing its monetary policy because the feedback from the market came faster.

The sustainability of the “Twin Peaks” model in the Netherlands was only approved by the recent crisis. International Monetary Fund in its report about the Dutch financial regulation and supervision architecture mentioned that the model was working well during the period of global downturn in the world finance. It was achieved owing to the timely decisions making

³³ibid.

and partly because of providing information sharing between the agencies. Under the rule of the Ministry of Finance, which coordinated the activity of agencies during the crisis, the crisis management group was set up with a daily based meeting schedule. It included the representatives from all financial regulation agencies. Wherein, owing to the clear agencies responsibilities distribution, the high and effective level of activity coordination was achieved.

Nonetheless, the crisis has revealed several issues within the model which should be solved in order to fully utilize all benefits of the “Twin Peaks”. In part, some weak points in the model might occur because of the fact that the transition process to the “Twin Peaks” finished only in 2007 (i.e. lack of time for learning processes). First, the prudential regulator relied on using “moral suasion” during the crisis which made it less effective compare to those who used enforcement powers to the full. Second, the crisis showed the lack of prudential regulation of TBTF and LCFI such as ING Group and Fortis. The numbers of tools to manage them were limited. And the main pitfall of the model was demonstrated by the situation with ABN Amro in 2010. That time both agencies were asked whether the bank chief and former Finance Minister Gerrit Zalm was appropriate for the position. The central bank concluded that he was but the Authority for Financial Markets had an opposite thought. And the problem was that the Dutch “Twin Peaks” had no mechanism to deal with the situation when both financial regulators could not reach an agreement about an issue. For solving that particular case the Ministry of Finance had to set a commission in order to solve the issue. The Dutch public and financial authorities admitted that there was a problem and to deal with it they had incorporated the system of the leading supervisor in certain areas. However, the need for an agreement between the regulators still remains. In addition, the 2011 report of Dutch Institute for Public Expenditure Studies concluded that in fields where it’s not clear which supervisor had a lead role, there was a risk of overlap when both regulators act. Also it could happen that something would not be covered as each supervisor might think that other would deal with it.

In practice, the Dutch public and financial authorities are working now on improving the financial regulation and supervision model. For instance, the central bank has taken the proactive and conclusive way of regulation (by establishing an enforcement policy department within the bank). Also, the macroprudential line of the model has been straightened by the creation of the department of macroprudential supervision within the Financial Stability Division of the Netherlands Central Bank. At the same time the range of macroprudential regulation tools has been expended. In addition, the extension of the regulation frameworks has eliminated the arbitrage between banks and non-banks (i.e. the regulation of shadow banking has been straightened). Moreover, the “Covenant” agreement has been improved for the sake of reducing the possibility of the conflict between the regulators and enhancing the cooperation and information sharing.

Thus, the Netherland experience shows that separating prudential and conduct-of-business regulations makes sense and can work well in practice. At the same time, the combination of micro- and macroprudential supervision could improve the overall level of prudential supervision. Also such kind of agency could be better in crisis management. In addition, “Twin Peaks” allows in practice to avoid a situation when one agency overpowers another one. And lastly, the recent crisis showed in practice the strengths of the model.

Summing up the theoretical overview of the model several conclusions can be made. First, theoretically, on the paper, the “Twin Peaks” model seems to be an effective tool to manage the current challenges on the financial market. Second, having appeared in the mid nineties of twenty century, the model keeps developing and evolving to fit the contemporary requirements to financial regulation and supervision. Third, the model is flexible and may be adopted to some particular realities or used partly.

From the look at practice using of the model in the Netherland some outputs can be derived. First, the practical solvency of the model was proved by the recent financial crisis. Second, it is possible on practice to clearly distribute the duties, the power and the responsibilities of the regulation agencies. Third, the communication and cooperation between agencies have an important role in the full utilization of the model benefits.

It is worth mentioning that there is a real both theoretical and practical design challenge at these days. The question is how to link micro-prudential supervision with macro-prudential and with monetary policy. This issue is more in policy field and requires a kind of policy innovation.

IV. DATA AND METHODOLOGY

I have data on the banking regulation quality as well as on the structure of the banking supervision for 143 countries during the period from 2004 till 2011 (see Appendix A). All the relevant quantitative data I have taken from the World Bank database. My empirical approach consists of regression analysis in order to explain the quality of banking supervision as a function of the regulatory architecture, controlling for other explanatory variables, in the case of my study, the level of economic development (GDP per capita).

As the concept of banking regulation quality is quite broad, in order to cover it fully I have incorporated into my research four measures of the regulation quality as proxies, using the World Bank classification: *Financial institutions efficiency*; *Financial institution stability*; *Credit depth of information* and *Strength of legal right* (see Table 4).

Regulation and supervision of the banking system have a direct influence on the efficiency of the financial institutions it is assumed.³⁴ Thus, the Index of Financial institutions efficiency can be used as a proxy of the quality of banking regulation with respect to financial institutions efficiency and as consequently to overall financial market efficiency.

One of the main goals of banking regulation and supervision is to take care about financial institutions stability (i.e. safeness and soundness). At that, the Index of Financial institutions stability is used as a proxy to measure the quality of banking regulation with respect to ensure the stability of financial institutions and as consequently to overall financial market stability.

Another important goal of banking regulation is to struggle with the matters of information asymmetry and transparency on the financial market. In order to measure the quality of banking regulation in the field, the Index of Credit depth of information is used as a proxy to show

³⁴Fotios Pasiouras, Sailesh Tanna, and Constantin Zopounidis. "The Impact Of Banking Regulations On Banks' Cost And Profit Efficiency: Cross-country Evidence." *International Review of Financial Analysis* 18, no. 5 (2009): 294-302, 2009.

how regulation deals with the issues of the scope, accessibility, and quality of information on the credit market.

Lastly, in order to determine the banking regulation and supervision quality in the field of the protection of the rights of borrowers and lenders and thus facilitate lending (i.e. consumer protection) the Index of Strength of legal right is used as a proxy measurement.

In order to measure *Financial institutions efficiency* and *Financial institution stability* I calculated aggregate indexes across countries and explanatory indicators, based on relevant data from World Bank database “Global financial development.” Although that database is quite informative, some countries do not have data on some explanatory indicators. In such cases I had to use aggregate regional indicators. The level of each explanatory indicator is transformed into a numerical value from 10 (the best case) to 1 (the worse case) and an aggregate index is calculated as a simple average of equally weighted explanatory principles included in a given component. All indexes are calculated in line with the OECD methodology.³⁵ It is worth mentioning that generally speaking my job was only to convert data to one 1-10 scale using the internationally accepted benchmark measurements (for instance Basel core principles, aggregate numbers for developed countries, etc.) for each explanatory variable and then to calculate equally weighted indexes.

For *Credit depth of information* and *Strength of legal right* I use indexes calculated by World Bank from its database “World development indicators.” Table 4 shows the indicators used to calculate indexes and their short description in terms of the study.

Table 4 Banking regulation and its four main quality indexes

Four main indexes³⁶	Explanatory indicators	Description	Source
<i>Financial institutions efficiency</i>	Cost to income ratio; Credit to government and state-owned enterprises to GDP; Lending-deposit spread; Net interest margin; Non-interest income to total income; Over-	To measure the banking regulation through the efficiency of the financial institutions	Global financial development database, World Bank

³⁵ *Handbook on Constructing Composite Indicators: Methodology and User Guide*. Paris: OECD Publishing, 2008.

³⁶ In its turns all of them are indicated and classified by World bank, and are taken from the World bank databases

	head costs to total assets		
<i>Financial institution stability</i>	Bank Z-score; Bank capital to total assets; Bank credit to bank deposits; Bank non-performing loans to gross loans; Liquid assets to deposits and short term funding; Provisions to non-performing loans; Regulatory capital to risk-weighted assets	To measure the banking regulation through the soundness of the financial institutions	Global financial development database, World Bank
<i>Credit depth of information</i>	Aggregated by World Bank	To measure the banking regulation in the field of the scope, accessibility, and quality of information on the credit market	World development indicators database, World Bank
<i>Strength of legal right</i>	Aggregated by World Bank	To measure the banking regulation in the field of the protection the rights of borrowers and lenders and thus facilitate lending	World development indicators, World Bank

In order to examine the impact of the use of the “Twin Peaks” model on the quality of banking regulation I have introduced a “Twin Peaks dummy” that takes a value of “1” for countries with this model in use for each observed year (as shown in Appendix A) and “0” for all other banking supervision models. To find some particular countries with the model “in use” I use theoretical and empirical studies of Čihák and Podpiera (2006, 2007, 2008), Kremers and Schoenmaker (2003, 2010), Masciandaro (2006) and others; reports and papers of G-30 (2008, 2009) and IMF (2011), and other sources (see Appendix B).

Taking into account the above mentioned, the used variables for the empirical study is summarized in the following table.

Table 5 Used Variables

Variable	Observation	Mean	Standard deviation	Min	Max
Country	0				
Year	1144	2007.5	2.29229	2004	2011
<i>Financial institutions efficiency index</i>	1144	6.658173	1.30277	2.3333	9.6667
<i>Financial institution stability index</i>	1144	6.54237	0.7575241	3.5714	8.4286
<i>Credit depth of information index</i>	1144	5.602364	3.249155	1	10
<i>Strength of legal right index</i>	1144	5.571004	2.439443	1	10
<i>GDP per capita</i>	1144	13249.61	18376.48	138.3676	114231.8
<i>Twin Peaks dummy</i>	1144	0.0480769	0.2140224	0	1
<i>Log GDP per capita</i>	1144	8.46939	1.562756	4.929914	11.64598
<i>Country1</i>	1144	72	41.29759	1	143

In such a way, with a purpose of getting some numerical evidence to prove my hypothesis, and in order to find the relationship between the quality of the banking regulation and banking supervision structure I used the quantitative methods, namely the method of regression analysis. As I have data for several time periods and for different countries, the type of my data is panel data.

The methodology: simple/multiple regression models ($Y = \alpha + \beta X_1 + \varepsilon$)

In order to estimate the relation between banking supervision quality and the “Twin Peaks” model:

– **A regulation quality index_{it} = $\alpha + \beta(\text{Twin Peaks dummy}_{it}) + \varepsilon$;**

For the sake of controlling my dummy variable I incorporated a log of GDP per capita to my regression model. The respective data of countries GDP (most recent) were taken from World Bank database. There were no data available for some countries. In that case the average amounts were calculated.

– **A regulation quality index_{it} = $\alpha + \beta_1 (\text{Twin Peaks dummy}_{it}) + \beta_2 (\text{log of GDP per capita}_{it}) + \varepsilon$;**

Such a methodological approach is used for each of the components. Thus, I have two regressions model for each of four components.

It is important to mention that the technique of assessment and conversion, which were used in the study, are not scientifically exact. So, some obvious limitation appears. For instance, doing best to be as objective as possible in converting and assessing data there is still room for subjectivity depending on the used tools, techniques and researcher’s experience, etc. Other limitation is in the nature of regulation quality itself, as there are some elements that are difficult to quantify. Also using proxy variables we need to bear in mind that they may not fully reflect main variables.

V. EMPIRICAL RESULTS

The outputs of the regressions show that generally on average the using of the “Twin Peaks” model has an economical and statistical significant positive relationship with the overall level of the banking regulation and supervision quality only partly. It means that the quality of the banking regulation and supervision does not depend only on the architecture of the regulation system. In additional, using of the “Twin Peaks” model itself cannot ensure the high quality of financial regulation and supervision.

Table 6 Summarized regressions outputs

Banking regulation quality Index	Constant	Twin Peaks Dummy	Log GDP Per cap.	No of Observ.	R²	P>F=
	6.52** (0.01)	0.39** (0.14)	-	1144	0.02	0.006
<i>Financial institution stability</i>	3.12** (0.47)	0.36** (0.14)	0.40** (0.05)	1144	0.1	0.000
	6.62** (0.01)	0.60** (0.16)	-	1144	0.04	0.000
<i>Financial institutions efficiency</i>	1.97** (0.54)	0.55** (0.16)	0.54** (0.06)	1144	0.3	0.000
	5.59* (0.04)	0.05 (0.42)	-	1144	0.04	0.880
<i>Credit depth of information</i>	-17.4* (1.19)	-0.17 (0.35)	2.72* (0.14)	1144	0.24	0.000
	5.55* (0.02)	0.25 (0.19)	-	1144	0.01	0.195
<i>Strength of legal right</i>	-1.28* (0.62)	0.18 (0.18)	0.80** (0.07)	1144	0.09	0.000

Notes: **/* denotes significance level of 1/5 %. Standard errors in parentheses. Fixed effects.

In particular, I was able to observe the only two both statistically and economically significant, positive relations. At first, the relation between the model and the quality of banking supervision, measured by the index of Financial institutions efficiency, has positive, strong

economically and statistically significant character (see the Table 6). This results hold even after controlling by the level of economic development (see the Table 6).

At second, the quality of banking regulation and supervision with respect to stability of the system, measured by the index of Financial institutions stability, is positively and highly statistically and economically significant with the particular model of financial regulation and supervision. This result hold even after taking into account (adjusting) the cross-country differences in the economic development level, indicated by per capita GDP (see the Table 6)

In terms of the relations between the model and the banking regulation quality measured by Credit depth of information index and Strength of legal right index respectively, my study shows that there is no economically or statistically significant connection between dependent and independent variables at all (see the Table 6).

The results of my analysis are correct when the impact of the “Twin peaks” model on the quality of the banking supervision is compared with the impact of other supervisory models: all the dummy variables identifying the “Twin Peaks” model in a simple regression on the four components of the banking regulation (as defined in Section 3).

In addition, regressions’ outputs show that there are some other factors, except the regulation structure, which have a large impact on the quality of the banking supervision. This is confirmed by the large value of the alpha coefficient of each regression’s output.

Thus, my hypothesis about the existence of positive statistically significant relationship between the model of banking regulation, namely the “Twin Peaks” model, and the quality of banking supervision can be accepted to some extent.

VI. CONCLUSIONS

My empirical results suggest several conclusions to discuss:

- The “Twin Peaks” model has a partial impact on the overall banking regulation quality compare to other types of supervisory structures, with regards to the used measures of the banking supervision performance;
- Only in case of financial institutions efficiency and financial institutions soundness, as respective and separate measures of the quality of the banking regulation,- the model tends to be characterized by a better quality of banking regulation than other models, even after adjusting for cross-country difference in GDP per capita;
- There are some other factors which have a large impact on the quality of the banking supervision;
- In order to study such an issue it is better to use some specific measures of banking supervision quality (for instance Basel Core Principles compliance) rather than proxy indicators which cannot fully explain the performance of banking regulation;

However, we should look at the above analysis interpretation through the prism of some limitations in the models, namely – the first limitation is the sample size, which does not allow us to make a certain conclusion about the whole world tendency as there is still room for some quantity changes; the second one is the lack of some countries’ data which made me apply the regional average data; the third one is the possibility of missing some important factors which might have had huge impacts on the current result.

To this end, we can conclude that our research analysis shows the result of the partly statistically significant relation between the quality of the banking regulation and using of the

“Twin Peaks” supervision model, which, however, needs to be made more precise by adding some other explanatory factors.

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Appendix A. List of countries includes in the empirical estimation

Country Name	TP model	Country Name	TP model	Country Name	TP model	Country Name	TP model
1 Albania		38 Estonia		75 Lithuania		112 Serbia	
2 Algeria		39 Ethiopia		76 Luxembourg		113 Seychelles	
3 Angola		40 Finland		77 Macedonia, FYR		114 Sierra Leone	
4 Argentina		41 France	X	78 Madagascar		115 Singapore	
5 Armenia		42 Gabon		79 Malawi		116 Slovak Republic	
6 Australia	X	43 Gambia, The		80 Malaysia		117 Slovenia	
7 Austria		44 Georgia		81 Mali		118 South Africa	X*
8 Azerbaijan		45 Germany	X*	82 Malta		119 Spain	X
9 Bahrain		46 Ghana		83 Mauritania		120 Sri Lanka	
10 Bangladesh		47 Greece		84 Mauritius		121 Suriname	
11 Belarus		48 Grenada		85 Mexico		122 Swaziland	
12 Belgium	X	49 Guatemala		86 Moldova		123 Sweden	
13 Belize		50 Guinea		87 Mongolia		124 Switzerland	
14 Bhutan		51 Guyana		88 Morocco		125 Syrian Arab Republic	
15 Bolivia		52 Haiti		89 Mozambique		126 Tajikistan	
16 Bosnia and Herzegovina		53 Honduras		90 Namibia		127 Tanzania	
17 Botswana		54 Hong Kong SAR, China		91 Nepal		128 Thailand	
18 Brazil		55 Hungary		92 Netherlands	X	129 Togo	
19 Brunei Darussalam		56 Iceland		93 New Zealand		130 Trinidad and Tobago	
20 Bulgaria		57 India		94 Nicaragua		131 Tunisia	
21 Cambodia		58 Indonesia		95 Nigeria		132 Turkey	
22 Cameroon		59 Ireland		96 Norway		133 Uganda	
23 Canada	X*	60 Israel		97 Oman		134 Ukraine	
24 Central African Republic		61 Italy	X	98 Pakistan		United Arab Emirates	
25 Chile		62 Jamaica		99 Panama		United Kingdom	X*
26 China		63 Japan		100 Papua New Guinea		137 United States	X*
27 Colombia		64 Jordan		101 Paraguay		138 Uruguay	
28 Costa Rica		65 Kazakhstan		102 Peru		139 Uzbekistan	
29 Cote d'Ivoire		66 Kenya		103 Philippines		140 Venezuela, RB	
30 Croatia		67 Korea, Rep.		104 Poland		141 Vietnam	
31 Cyprus		68 Kuwait		105 Portugal	X	142 Yemen, Rep.	
32 Czech Republic		69 Kyrgyz Republic		106 Qatar		143 Zambia	
33 Denmark		70 Lao PDR		107 Romania			
34 Dominica		71 Latvia		108 Russian Federation			
35 Dominican Republic		72 Lebanon		109 Rwanda			
36 Ecuador		73 Lesotho		110 Saudi Arabia			
37 Egypt, Arab Rep.		74 Libya		111 Senegal			

**The model is used partly and mainly after Global financial crisis, 2007*

Appendix B. List of countries with the launched «Twin Peaks» model

Country	Year	Source
Australia	1998	Bakir, Caner. “The governance of financial regulatory reform: the Australian experience.” Public Administration Vol. 87, No. 4, 2009 (910–922).
Belgium	2010	Belgian Prime News No. 51 March 2011
Canada	1987	Wymeersch, Eddy. The Structure of Financial Supervision in Europe: About single, twin peaks and multiple financial supervisors. Ghent University - Financial Law Institute; ECGI, 2006.
France	2010	Organization for Economic Co-operation and Development. The Financial Crisis, reform and exit strategies.2009
Germany	2010	Vletter-van Dort, Hélène M. “Some Challenges Facing European Central Banks as Supervising Authority.” European Company and Financial Law Review. Volume 9, Issue 2, Pages 131–155, July 2012.
Italy	1999	Wymeersch, Eddy. The Structure of Financial Supervision in Europe: About single, twin peaks and multiple financial supervisors. Ghent University - Financial Law Institute; ECGI, 2006.
Netherland	2002	Kremers, Jeroen and Dirk Schoenmaker. Twin Peaks: Experiences in the Netherlands. LSE financial markets group. November, 2010.
Portugal	2000	Wymeersch, Eddy. The Structure of Financial Supervision in Europe: About single, twin peaks and multiple financial supervisors. Ghent University - Financial Law Institute; ECGI, 2006.
South Africa	2011	Implementing twin peaks regulation in South Africa South Africa Government information
Spain	2010	Organization for Economic Co-operation and Development. The Financial Crisis, reform and exit strategies.2009
United Kingdom	2011	The Financial Services Bill (the Bill), which was published in draft form in June 2011
United States	2010	Wymeersch, Eddy. The Structure of Financial Supervision in Europe: About single, twin peaks and multiple financial supervisors. Ghent University - Financial Law Institute; ECGI, 2006.