

“Road Rules” for Bankers, or Optimal Financial Risk Regulation Framework as an Alternative to Basel Accords

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Abstract

Current banking regulation seems to be mostly a set of responses to newly identified complexities of financial markets and products or to recently happened defaults and crises. It does not reach the core policy objective of assuring financial stability that is particularly sensitive in the world of low interest-rates that foster gambling as a means to offset losses in profits and decrease in profit margins. After the Great Recession of 2007-2009 academicians², regulators³, and politicians⁴ mostly unanimously proclaim that only tighter regulation and specifically higher capital requirements are a core solution to current financial system’s problems. Such steps seem obvious and appealing, but they are wrong.

Traffic flow regulation dates back centuries ago; but it was never taken as a benchmark for banking risk regulation, though banks were sometimes compared to cars. To do it properly one has to compare banks to traffic flows and transactions to cars. Then he may find that SIFIs and microfinance entities have to be taken out of the supervision scope; banking support (including deposit insurance) for most institutions should be abandoned; regulation should be simplified and shift back to recommendations, not requirements; one should avoid international unification; piloting has to be introduced instead of surveying.

Mere tightening of regulation is not a remedy; responsibility for risk-taking should be taken away from regulators and put back to banks. To slow credit boom and assure financial stability one has to abolish, not strengthen regulation (remember traffic in India).

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² e.g. Financial Times. Nov. 09, 2010. Healthy Banking System is the Goal, not Profitable Banks [Letter signed by 20 economists]. URL: <https://www.gsb.stanford.edu/faculty-research/excessive-leverage/healthy-banking-system-goal>

³ e.g. EBA proposal on MREL and FSB proposal on TLAC issued both in 2015.

⁴ e.g. Mr. Jeb Hensarling, Chairman of the U.S. Financial Services Committee; The Economist, 25 June 2016: Regulating Banks. Capital Hill. URL: <http://www.economist.com/news/finance-and-economics/21701149-republicans-offer-alternative-americas-convoluted-bank-regulations-capital>

Regulation will never be ahead of innovation.

Bill Peduto,

Mayor of Pittsburg where self-driving

cars were tested in Sep. 2016

Introduction

During the first quarter of 2016 the world standards-setter for banking regulation, i.e. the Basel Committee on Banking Supervision (BCBS), published the fundamental revision of approaches to market and operational risk measurement. By end 2016 BCBS finalized review of Basel capital and liquidity standards implementation in member jurisdictions. It has also stated that the use of internal models for credit risk should be constrained when applied to low default portfolios (e.g. financial institutions, sovereigns). These novelties form in fact a separate prudential accord of Basel IV. Though having not received that official name, it is already referred so in newspapers.⁵ Nicely, even Basel V is awkwardly been mentioned.⁶

Same time the year of 2016 began with world financial markets' turmoil provoked by inter alia expectations of Chinese economy growth slowdown and another plunge of oil prices past the mid-2014 when the peak of USD 100 per barrel was abandoned. Many financial institutions (particularly the U.S. hedge funds) experienced losses.⁷ Another turbulence occurred mid-2016 after Brexit vote. There were losses experienced by hedge funds right after the event and even half year later.⁸

Thus one may challenge whether banking risk regulation is efficient as the accords of Basel I, II, III were in place before 2016 and aimed at assuring the financial stability, but turmoils still occurred. When one seems likely to provide negative answer to the posed question, i.e. to conclude that regulation is inefficient, he may wish to construct an alternative, i.e. an optimal financial risk regulation framework.

⁵ Global Risk Regulator, 02 June 2016. The Economist. Jan. 07, 2017. The three Rs behind global banks' recovery. URL: <http://www.economist.com/node/21713856/print>

⁶ The Economist. Nov. 26, 2016. Basel Bust-Up. URL: <http://www.economist.com/node/21710808/print>

⁷ Financial Times, 14 February 2016. URL: <https://www.ft.com/content/4b75945c-d1c2-11e5-986a-62c79fcbcead>

⁸ Wall Street Journal, 27 July 2016 (URL: <http://www.wsj.com/articles/hedge-fund-reveals-losses-after-u-k-vote-to-leave-eu-1469628486>); Independent, 7 January 2017 (URL: <http://www.independent.co.uk/news/business/news/brexit-latest-news-leave-backer-crispin-odey-hedge-fund-billionaire-record-losses-uk-stock-market-a7512671.html>).

Academic books published by Blinder, 2013, Admati, Hellwig 2013, Chang 2014; Aliber and Kindleberger, 2015; and Davis et al. 2016, also agree that current regulation has to be changed. Everyone supports recent trend of tightening regulation and wish it to continue, particularly via increasing capital requirements. For example, Blinder considers current state of banking regulation to be too lax.⁹ Aliber and Kindleberger do not see any harm in the Dodd-Frank act.¹⁰ As a parallel, Chang compares financial system with traffic flow and suggests tighter regulation is needed because cars (read - financial institutions) are too large and heavy and their paths (read - products) are too complicated.

Before proceeding with the paper layout it is important to explain why the paper has no data-related or data-simulation section. Ideally when proposing alternative institute to existing one, it is desirable to evaluate the consequences of its implementation. Unfortunately in our case such cost-benefit analysis is either unavailable, or unreliable. If one uses conventional mathematical models (simple or DSGE-type ones), mere exclusion of constraints (e.g. capital and liquidity ones) would lead to higher lending and higher economic growth (e.g. Tovar C., 2008; Gertler, Karadi 2009; Martynova 2015). But this is not correct. Inter-linkages of prudential constraints and decision-making (including risk-taking) are more complex. It would be shown that absence of prudential constraints dampens, not accelerates growth.

Current relationship between risk-taking behavior and financial performance is not and perhaps cannot be calibrated; as dependences are non-linear and relevant data is not collected. Unfortunately there is no central bank to be willing to run the experiment of regulation elimination or relaxation in its own jurisdiction. Thus the proposal is to rely on the general logic presented in the paper to be 'approximately right and not precisely wrong' as John Maynard Keynes would have said it.

The objective of the paper is to suggest optimal design of the financial risk regulation framework by investigating traffic flow regulation experience, i.e. to define optimal "road rules" for bankers. To elaborate on the topic the paper has the following structure. First, several facts are given that describe

⁹ Blinder, 2013, p. 463: "...it's true that regulation can go overboard. But, frankly, after the debacle we all witnessed, I'm more worried about it going *underboard* [italics by Blinder]. Dodd-Frank's 2,319 pages surely did not get everything exactly right. In a less dysfunctional political system, Congress would by now [by 2013] have passed a technical corrections act..."

Aliber, Kindleberger, 2015, p. 238: "A strong case [after banks having preferred to shift capital-intensive balance sheet activities to off-balance] can be made for stricter regulations and supervision of banks to forestall lending in euphoric periods that may morph into a banking crisis."

¹⁰ Aliber, Kindleberger, 2015, p. 240: "Now, it may be that there would have been many more crises if there had not been these [bank] regulations, but the inference from the historic record is that the likelihood that the Dodd-Frank regulations will forestall the next systemic crisis is small [interestingly, that authors did not take the responsibility to claim that the Dodd-Frank Act cannot definitely imply the next crisis]."

the burdensome nature of current risk regulation. Those inter alia include the volume of regulatory documents. Second, the rationale to rely on traffic flow regulation is presented when prototyping optimal financial risk regulation framework. Automobile traffic is of interest as everyone deals with it in different roles as a driver, a passenger or a pedestrian and may better grasp the parallels, then with other areas (e.g. pollution regulation). To easily proceed, key terms of both subject matter fields are mapped to one another. Third, traffic flow regulation experience is analyzed resulting in prior recommendations for risk regulation. This includes discussing policy objective, pre- and post-accident measures, mode of implementation. Fourth, the regulation outcome is discussed. Observed changes in agents' behavior, competition and responsibility issues are covered. Fifth, paper presents the preliminary list of recommendations for optimal financial risk regulation framework design within the paradigm of modern traffic flow theory. Sixth, evidence on why banking risk regulation is to soften as a result of 'positive collaboration' is given. Seventh, recent trends and probable events are touched. Section eight concludes.

Section 1. Current State of Banking Risk Regulation Burden.

BCBS is considered to be the world standards-setter for financial risk regulation. Being established in 1974, it was a sort of best practice consolidator in the domain of risk management and risk regulation. It is only in 2012 when the committee policy changed and it officially proclaimed the target not to limit oneself to publishing recommendations, but also to control its implementation. That activity is called regulatory consistency assessment program (RCAP). Within RCAP committee-member countries are inspected with respect to the mode of Basel III liquidity and Basel II capital regulation implementation. By 09 December 2016 BCBS finalized review of all its member jurisdictions. European Union was considered the only materially non-compliant jurisdiction.¹¹

One dimension of existing regulatory burden is the overall number of documents produced by the Basel Committee. In its 43 years of history BCBS published 600 items with page volume equal to 20'088 as was investigated by Penikas and updated afterwards by including 53 speeches available since 2006.¹² Please, see Figure 1 below.

¹¹ For more research on RCAP evaluation scores and the discussion why countries with different economic profiles should have different, not equal regulation, please, refer to Ermolova, Penikas 2017.

¹² Penikas 2015. Values updated by author as of April 04, 2017. Data available at basel.io/analytics.

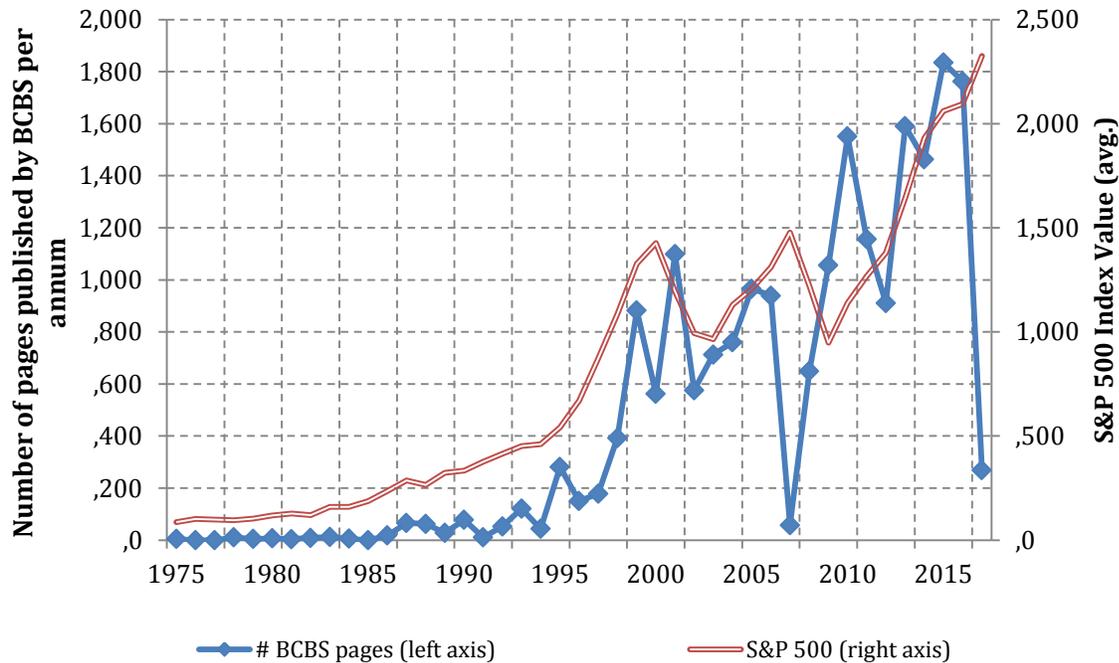


Figure 1. Codependence of the BCBS Publication Activity and the US Stock Market Performance.

Though numerous the amount of produced regulation is, it does not seem to reach the objective of fostering financial stability. For instance, Basel I did not prevent Asian and Russian crises of 1997 and 1998, Basel II did not save neither from Great Recession of 2007-2009, nor from a Madoff financial pyramid creation in ca. 1987 and collapse in 2009, nor from “Flash Crash” of 2010 consequences; Basel III was not a remedy neither for ‘Lending Club’ (a fintech start-up) loss (or fraud) in May 2015, nor for January and June 2016 turbulence. Inversely, there are hypotheses (though not unilaterally proven, nor officially accepted) that Basel I might have worsened the 1991-1992 crisis in the United States; Basel II has procyclical effects embedded into one that might have exacerbated the effect of Great Recession of 2007-2009. Of course, one cannot argue that Basel regulation is definitely inefficient as one is unfamiliar to how many cases of bank failures were prevented due to Basel I-III introduction.

Another dimension of regulatory burden is the direct costs incurred by banks. Though rich data is unavailable for systematic analysis, the practice of the EU regulator (EBA) that allocates supervision fees on to banks allows to estimate a benchmark. Based on 2014 financial year data, the supervision

fees accounted for ca. 0.002% of GDP.¹³ Same time in addition to supervisory fees, there should be people to react to newcoming regulation. For example, Citibank has 26k compliance staff (ca. 14% of total staff number) out of 170k as of 2015. The respective compliance staff cost is ca. USD 1 bn or ca. 6% of annual net profit.¹⁴ 25% of South African banks' efforts are devoted to comply with regulation.¹⁵

The above mentioned facts about Basel regulation show how burdensome it is. And this is still till Basel III is not implemented in full (targeted to be fully in place starting 2019). Right here is the place to refer to shipping analogy introduced by the Chairman of the Basel Committee himself in November 2015. He reminded that in XVIth century a large warship Vasa was build. It consumed 40 acres of timber and required three years to be constructed. Disregarding immense resources invested, it has sailed ca. one mile and sank.¹⁶ The BCBS Chairman compares only Basel II to Vasa and hopes Basel III to have another destiny. We would revert to this issue when discussing whether deregulation may lead to financial crises (see Section 4).

One may conclude that the current risk regulation framework, or the rules of the financial game introduced by the Basel Committee, is inefficient as it does not reach its objective of assuring financial stability and creates extra costs for the agents that are subject to obeying those rules. Then the natural question arises whether there is an optimal design of financial risk regulation or not. The core statement of the paper is that such a framework can be found. To achieve it one has to learn from experience of regulating consumption of comparable goods.

Section 2. Public Good Regulation Experience.

Conventional approach to risk-management and risk regulation previews risk as being private good. From one side, the fundamental models underlying credit and market risk estimation consider deal-wise exposures (e.g. Vasicek and Black-Scholes ones, respectively).

¹³ Supervision fees equaled EUR 326 m; EU GDP was USD 18.51 tr; USDEUR exchange rate was 0.82 EUR per USD end of period.

¹⁴ URL: <https://www.regtechevent.com>

¹⁵ Statement by a representative of the Central Bank of South Africa at "Data Amplified" conference (Singapore; 09 November, 2016).

¹⁶ Ingves, Stefan. From Vasa to the Basel Framework: The Dangers of Instability. 2 November 2015. URL: <http://www.bis.org/speeches/sp151102.htm>

From another side, there are three origins of current risk regulation development. First, the past crisis becomes a trigger for activating particular risk regulation. For example, leverage and liquidity (liquidity coverage ratio, LCR) regulation was discussed during the initiation of the Basel Committee in 1972-1974, but was immediately adopted in 2010 after Lehman Brothers' default in September 2008. Second, market participants propose to legitimize their current practices. This was a case of market risk internal models' permission in 1996 as amendment to Basel I. Third, regulator try to onboard public opinion when thinking of potential risk regulation framework that no one knows how it should be done. This is the case with the recent modifications and revisions to operational risk regulation when gross income-based benchmark of 2004 (Basic Indicator Approach, BIA) was substituted by assets and revenue-based proxy of 2014 (Business Indicator, BI) followed by the latter amended in 2016 with the data on internal losses.

Though all three routes for regulation development are possible, one approach to risk regulation framework design is still missing, i.e. learning from the peer-industry. Given high frequency of financial flows, traffic flow regulation seems to be the best benchmark to learn from. Both areas have decision-making at risk in its grounding. When a banker offers a loan, he risks not getting it back. When one is to change the car track at highway, he risks getting into the forward or behind going car if he moves too fast or too slow, respectively.

One has to consider the thresholds of risk being public good (bad) when applied to traffic and banking regulation (for details refer to Selmier et al. 2014). When one car goes off the road, it is a private bad; when a car crashes at some racing competition impacting a limited set of cars (other race participants), it is a club bad (common pool resource); but when other unknown (unforeseen) road participants are affected whether in accident or in congestion, traffic issues take public good (bad) forms. Similarly, with financial risk when a minor loss is incurred by an agent, risk is a private bad; when depositors of a bank suffer losses, it is of a club bad (common pool resource) type; but when the whole economy is trembling affecting unforeseen list of stakeholders (including real economy), financial risk becomes a public bad. The paper is to proceed focusing on public good features of both traffic and banking risk regulation as traffic regulation touches every person and thus should be clearer for majority of readers.¹⁷

¹⁷ There are other candidate peer-industries regulating public goods to learn from. Those include pollutions' and natural monopolies' regulation. Brief rationale is the following. As for former, one may remember Stiglitz 2008, p. 4 referring in October 2008 to Wall-Street that latter has polluted the economy with toxic assets, and has to pay for the cleanup. Whereas

Hereafter most of parallels would be discussed based on automotive traffic regulation, though particular cases are to come from shipping, train, airplane traffic cases (latter have less density in general, that is why are less interesting from regulation perspective except for cases with high traffic concentration, e.g. loose spots or channels).

Let's start with the following mapping of key terms used in both regulatory spheres (traffic and financial risk ones; for extended list, please, refer to Annex 1). Definitions' mapping is very important as different parallels may cause right opposite conclusions. Thus Chang 2014 compares banks with cars, not with traffic flow. As would be shown, Chang wrongly shows that because of cars becoming heavy, tighter regulation is required whereas exactly when becoming large enough banks have to be less regulated. Having mapped key terms, let us proceed to other regulatory features' comparison.

First, it is important to explain why banks should be compared to traffic flow, not a car. A bank is a set of transactions as well as the traffic flow is a set of cars. Each element of the flow may move at a different speed embedding different risk and different probable consequences of crashes and injuries for others (consider contagion effects for interrelated economic agents, particularly borrowers). One should compare a bank to a traffic flow as this enables to embark upon the following analogy. The traffic regulator may choose which car to let go first (that might be an emergency car). Similarly bank management may decide which loan to offer and which one to reject. When one compares a bank to a car, such treatment as well as below parallels would be unapplicable.

Second, both risk and traffic regulations have an objective to assure security, i.e. to minimize risk, and same time to minimize congestion (increase smoothness and speed of traffic and of transactions). Security breaches (risk realizations) are called accidents, crashes when speaking about traffic and defaults, losses when talking about financial risk.

Third, both areas of financial risk and traffic regulation have the objective to minimize the possibility of an accident or probability of default and reduce injury in the event of crash or loss given default, respectively.

for the latter, one may think of systemically important financial institutions having monopoly for a sort of 'natural resource' being the systemic risk.

Fourth, there are pre- and post-accident measures to minimize risk in both areas. Pre-accident measures for traffic regulation include infrastructure design (road junction type, traffic lights allocation, rules of road junction passing and moving in general etc.), safety features for vehicles (safety belts, airbags, anti-blockage system (ABS), trajectory stabilization program (TSP), line-keeping, automated breakage, GPS-navigation), flow parameters regulation (i.e. speed-checking cameras). Post-accident measures include third-party liability insurance use and measures taken in accident.

Financial risk regulation also has these three types of elements for pre- and two for post-accident cases. Infrastructure for banks means proportionality criteria that are applicable when deciding upon internal capital adequacy assessment process (ICAAP), i.e. different supervisory treatment applies to banks of different sizes and business strategies (tighter supervision is done for the largest and the most complicated institutions); capital buffers are assigned according to the category of systemic importance. Safety features for risk include collateral treatment and generally the use of internal models for risk measurement. Capital and risk-weighting floors and caps are the equivalents of flow parameters regulation. Deposit insurance and 'living wills' (recovery and resolution plans) are financial risk examples of post-accident treatment.

The idea of the paper is to discuss below the experience of traffic flow regulation in terms of pre- and post-accident issues, regulation outcome and implications to derive recommendations for the optimal design of the financial risk regulation framework, i.e. the optimal “road rules” for bankers.

Section 3. Regulation Rules.

Pre-accident issues contain infrastructure design, internal (i.e. internal with respect to the vehicle) and external (i.e. implemented outside the vehicle) safety features, mode of regulation implementation. Each aspect would be discussed in stepwise fashion.

Sub-section 3.1. Infrastructure Design.

First, modern road traffic infrastructure has several types of road junction: simple junction with no traffic lights (uncontrolled junction and priority intersection following definitions from Bird 2009); roundabout; junction with traffic lights (or signal-controlled one); multi-level junction (or grade-separated one). Generally when the traffic flow increases the junction type evolves from the simplest

one to the most complicated. The objective and need for evolution is twofold: to enable high speed of crossing the junction, i.e. to avoid congestion (or to have less queues and jams possible) and to minimize the risk of accidents when diverse flows are to intersect.

The mentioned junction types differ in complexity to create, e.g. simple junctions come into being mostly naturally whereas grade-separated ones need significant investments to plan and erect. The simpler the junction is, the more weight is attributed to rules that define the priority of crossing the road; the more complicated the junction is, the lesser role is played by rules to define the priority to cross or pass the road. Junctions with traffic lights are interim solutions.

When reviewing the mentioned junction types, one may easily notice that in fact regulation is needed only for junctions with traffic lights. For the simplest junction types once established simple rules are enough to guide drivers when meeting at the junction. For grade-separated ones regulation does not matter as the junction design guides the drivers.

Similar trends may be observed with the infrastructure of pedestrian crossings. Very starting type is occasional crossings. When the pedestrian traffic intensifies (unfortunately often accompanied with the rise in accidents involving pedestrians), the crossing lines (“zebra”) is painted on the road. Next traffic intensity level corresponds to the need to put a traffic light. The last intensity stage of pedestrian traffic required building over- or under-the-ground passing way for pedestrians with the ability to eliminate regulation by traffic lights.

From accident point of few the majority of crashes also happens at the junctions with traffic lights as at the simplest ones traffic intensity is small and at the most advanced (grade-separated) ones the design prevents from crashes. Even the appearance of “zebra” leads to accidents as some pedestrians think that every driver is able to immediately stop disregarding one’s speed when the pedestrian intends to cross the road. Key takeaway from investigation of junction types is that regulation may be required for mid-sized agents whereas it is redundant for the smallest and the largest. From financial risk perspective it means that global systemically important financial institutions being the largest agents and regional banks, microfinance entities being the smallest ones need not be regulated. As size may be manipulated, one has to balance such a step with a system of incentives that will be described in sections 3, 4. But when size it to become regulatory criteria, it is prone to manipulation. That is why other sort of incentives is required to have banks reveal themselves as not being in need of regulation.

Having suggested eliminating centralized supervision from the largest financial actors one has to also think of air traffic regulation. Air flow regulation starts when the flow gets very tense, i.e. in the nearby area of the airports. The role of the airport traffic regulator is to arrange the landing queue, i.e. to coordinate (coordination role of the regulator would be also discussed later). That is why following Buthe 2010 there might appear private regulators for largest financial entities that do not need to be centrally coordinated.

Sub-section 3.2. Internal Safety Features.

Second, traffic participants (automotive vehicles) have safety features on-board to also either prevent crashes, or minimize injuries in case of accidents. Historically those features evolved from belts to airbags and to modern systems. Latter include ABS, TSP systems, lane-keeping, automatic breakage etc. Disputes around the efficiency of those features seem to be permanent. Technologically all of them indeed solve the immediate task they are created for. The mostly unforeseen effect is the change in drivers' behavior. When safety features are in place, drivers tend to take on more risk. They over-rely on the safety features assuming latter may offset more aggressive or more accident-prone driving. That trend is particularly obvious in the developing countries with the absent or undeveloped driving culture as noted by Blinkin and Reshetova 2013. Thus the developing countries have higher rate of accidents with modern cars equipped with advanced safety features compared to developed countries all other things being equal.

Modern financial institutions have an equivalent of internal safety features. Those are internal risk assessment models. Namely, market risk ones introduced by the amendment to Basel I in 1996 (Value-at-Risk, or Internal Models Method, IMM) and by Basel 3.5 (Expected Shortfall); credit and operational risk ones introduced by Basel II in 2004 (Internal Ratings-Based, IRB, and Advanced Measurement Approach, AMA, respectively). The key difference of these internal models to standard risk supervision is that former (internal models) allow to differentiate risk assessment per counterparty, deal etc. whereas latter one (standardized approach) prescribes using rather unified and rough risk estimates for the purpose of capital adequacy computation.

Current risk-management and risk regulation practice requires the mentioned internal models to be preliminary approved by the regulator to enable using those for capital adequacy measurement purpose.

Banks in developing countries when allowed tend to also switch from standardized approach to internal models for capital adequacy estimation purpose, inter alia in search for capital release from lower risk-weights on average resulting from internal models usage. Lower risk-weights of internal models were calibrated in a way to incentivize banks' investments into risk-management systems and procedures upgrade, but low internal risk weights were assigned for low risk (high credit rating) borrowers.

Those internal models can be considered as car internal safety features equivalent because the bank default (crash at the junction) depends strongly on how accurately it evaluates the risk of its transactions (speed of cars). According to author's expectations (as not familiar to any research of the kind), allowing banks in developing countries to use internal risk assessment models like allowing using modern cars results in more accidents, i.e. more bank defaults. When the financial system is underdeveloped (low level of drivers' culture equivalent), the banks might over-rely on those safety features (on internal models) ending with less financial stability overall. For visibility imagine that you are allowed to drive extra 10 km per hour in addition to the general speed limit if your car is equipped with ABS, TSP, GPS etc. Just think of operational difficulties originating from the need to define the presence and adequacy of such a system at a given car (remember the notoriously known case of Volkswagen emission manipulation).¹⁸

Key takeaway here is that allowing using advanced risk models should be possible when the banking system of the country has reached certain level of development (at least, the level of the countries at the time when those started using Basel II internal models for bank supervision purpose, i.e. ca. G10 countries level in 2006). Even then there is a need to prepare the system transformation by creating transitory (interim) institutes (for more discussion, please, refer to Polterovich 2012).

Discussing the issue of internal risk assessment models use within financial institutions, one should also think of the recent trend in car development, i.e. self-driving cars. The idea of making those cars moving is to align navigation, movement and speed control systems. Generally such systems have to account for all traffic parameters, i.e. road type, weather, vehicle power, other traffic participants' actions to define optimal speed and route parameters. In case of poor road, bad weather, small-sized car, or populated road the system should decrease the speed. In case the parameters take opposite values the speed may rise. Then the natural implication is that no speed limit should be in place if a car

¹⁸ BBC. Hotten R. December 10, 2015. Volkswagen: The scandal explained. URL: <http://www.bbc.com/news/business-34324772>

safety (speed and navigation) system is well calibrated. Proper calibration is a separate issue to be out of current paper scope.

When one gets back to financial system, he may see that when a bank's internal risk management systems are well calibrated, such banks should not be regulated. Currently risk supervision practice needs model approval resulting in much more active bank supervision afterwards. Key takeaway here is that supervision practice should in fact be opposite. When the models are approved, the banks should no more be regulated. One may argue that banks may take excessive risk when not supervised. This issue of banks incentives would be addressed later in Section 4.

Another internal safety feature worth noting is the bumper (damper). It is used to absorb first accident energy preventing from the whole car crash. Bumper is often done of the lighter material to be cheap to substitute and to decrease damage for other traffic participants. Now is the time to refer to railway traffic rule. It prescribes that high-speed train when on the way should not stop when noticing a living-being on the way as sudden stop might hurt more passengers inside the train than a sole one that happened to be an obstacle. Though obvious for cars and trains, bank regulators do not wish banks to have bumpers (i.e. to treat prudential ratios as such).¹⁹

The fundamental international financial risk regulation can be said to have started from the introduction of capital adequacy measure in 1988 Basel I Accord when the amount of equity, subordinated debt and alike instruments is divided over risk-weighted assets. It took mostly 8 years according to Goodhart 2011 to agree on measure type (e.g. to use risk-weighting or not). Later in 2010 Basel III introduced capital buffers two of which (for systemic importance and for counter-cyclicality) have to be always met. Nevertheless, it was Peter Cooke in 1980s who raised the doubt whether the introduced capital measure should be minimum or a target according to Goodhart. In fact capital ratio and its buffers are expected to be a loss bumper in traffic definitions. Then it should be allowed for banks to utilize one in crisis times. Remembering railroad parallel banks must be allowed to incur losses when those are unavoidable for the sake of the financial stability. Artificially introduced limits imply needs to use taxpayers money for bailouts.

¹⁹ Out of three Basel III new buffers, two of three – capital conservation and countercyclical – have bumper feature, but not in full as it still requires stopping dividend payments when breached. It is worth mentioning that bumper-buffers were added as such as keeping non-bumper minimal requirements still in place. This is like an assumption that ca. 40 years prior to Basel III banks drove without bumpers and Basel III suggested adding those.

Key takeaway is that banks capital adequacy measure and other prudential ratios (leverage, LCR etc.) should be a target, not a minimum. Like for simple junction there should be a rule how to cross it when two drivers meet. After rule is in place, it is the responsibility of the drivers to follow or to violate it. Similarly central banks issue recommendations, not minimum standards. More generally those can even be not central banks.

There is another case for consideration justifying why large institutions should be out of regulation and supervision scope. Experienced drivers or racers would easily adjust traffic parameters in average situations requiring no external regulation as they by experience take into consideration all the determinants mentioned in the start of the paper (vehicle and road type, weather conditions; other participants' actions). Average drivers are prone to accidents. Safety features might help them in general situations or light accidents. Thus financial risk regulation may be of use for non-mature institutions. Whereas for experienced drivers, presence of safety features might inversely limit their ability to recover from or escape an accident. Thus most experienced drivers tend to switch off TSP systems. Latter are programmed to decrease power two third when a car starts making circles (drift, over-steering) when it is exactly the extra power and speed that helps experienced drivers to stabilize the path with fast driving wheel rotation counter the drift direction. Thus regulation may even be harmful for large institutions.

Sub-section 3.3. External Safety Features.

Third, there are external features used to provide traffic flow safety. Those primarily include safety cameras used to check the speed. Using speed cameras is far largely debated topic, than using internal safety features. A lot of evidence is accumulated in Wells 2012. She starts from describing the fundamental question why there should be a punishment for when no crash has occurred, i.e. if no accident happened, why speed limit violation is a crime. Rationale for punishment is not the actual accident, but the probability of its occurrence. Then one should consider that the probability of accident at high speed might be negligible at an empty country road, than at small speed near the kindergarten (thus two speed types are introduced: excessive, in excess of a limit; and inappropriate, inadequate with respect to environment; one type does not necessarily imply another). She also notes that speed camera installment had its effect at first implementation. There was a one third decline in the number of accidents in the UK in 2003-2006. Nevertheless, further expansion of cameras did not end in

proportionate decline as drivers adapted by lowering speed when approaching cameras. That is why country-wide national program was stopped in 2009.

Similarly to traffic speed regulation, financial system has the practice of financial institutions supervision. Central Banks often introduce their representatives to the Boards of the largest institutions in addition to regular on-site visits and inspections. The experience with introduction of safety cameras for traffic control says that supervision may take place and sometimes may bring fruits. Nevertheless, supervision expansion is inefficient when trying to have absolute coverage. That is why Admati, Hellwig are wrong when they think that everyone can be supervised,²⁰ or in their words police may expand and patrol main street and all side-streets. Such supervision is costly and inefficient. At some point every citizen might be assigned a would-be criminal status to merely justify such huge police staff number.

Chang 2014 argued that regulation should be tightened. Nevertheless, perfect abeyance might be achieved only if and only if no traffic (flow of transactions) takes place. Thus the proposal to tighten regulation is similar to concept of speed-camera universal proliferation. That is why financial regulation should be limited, and not at all tightened further more. Key takeaway is to limit supervision and supervisors' representations within financial institutions (particularly within the smallest and largest ones as earlier discussed). Some other thoughts on external regulation are presented below.

One of the probable solutions to control speed is measuring mean, not point-wise speed. From one side, that approach is more expensive as requires roughly twice higher investments (to monitor traffic at the start and at the end of the journey). From another side, it may also be overridden in case a high-speed driver makes proportionate coffee-pauses to keep the needed mean speed. Another more efficient solution is the introduction of the on-board computer to register the speed along the whole journey. The approach is used for many TIR international truck drivers. Its greatest limitation is the utter inability to cover all cars possible. Even in case that objective might be reached, computer data correctness needs strong verification as manipulation might take place (e.g. accident-unrelated ecological pollution computer monitoring tended to be subject to automobile producers manipulation as Volkswagen case

²⁰ Admati, Hellwig, 2014, p. 225: "The argument that we should not have regulation because banks might evade regulation is somewhat perverse. It turns the failure to enforce regulation into an argument against having no regulation at all. To see the fallacy, imagine a situation that we should not outlaw robbery because, with police patrolling well-lit streets, would-be robbers would move to back alleys where they would be even more difficult to control. With regard to robbery and other crimes of violence, we do not accept such arguments; instead we ask police to patrol the back alleys as well as the well-lit streets... Effective law enforcement may require courage and energy, but it improves people's lives."

has shown in 2015; much more manipulation may be expected when computer systems are related to accidents and are subject to direct fines).

From generality perspective one should consider over-acceleration to cause numerous light accidents and jams, rather than mere high speed. But acceleration control may only be done using on-board computer with all the above mentioned limitations. To separately mention digitization and the use of computers both in vehicles and in banks requires more focus to be attributed to cyber-crimes. External penetration by hackers resulted both in traffic accidents and financial losses. Key takeaway here is that regulators' efforts should rather switch from direct agents' regulation to cyber-crime prevention in future.

Having analyzed the pre-accident issues of traffic flow regulation, one may conclude that supervision coverage has to decrease; the largest and smallest banks should not be supervised; simple rules (an indication or a target) might be enough for the smallest and no regulation is required when banks internal models are approved; later can be done only for banks within the developed financial systems. Let us move on to the post-accident issues discussion. Those contain insurance usage and the actions in case of accident.

Sub-section 3.4. Insurance Usage.

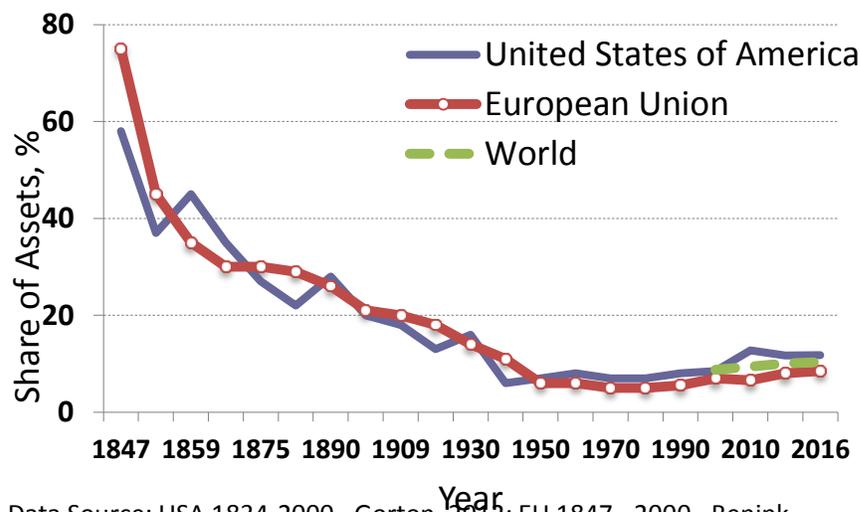
Mandatory third-party liability insurance was introduced to form a pool of funds to compensate losses of innocent traffic accident participants. Similar to internal safety features introduction, third-party liability insurance incentivized drivers to take on more risk as they knew that minor expenses in case of non-catastrophic accidents would be covered.

Financial institutions also have that sort of third-party liability insurance that might have had similar implications. That is deposit insurance. From one side, depositors would receive their funds (often up to a limit) in case a bank goes bust that increases clients trust for banks. From another side, banks began taking more risk as they are no more liable for offsetting all liabilities. Key takeaway is that deposit insurance has to be abandoned to make banks responsible for risk-taking. As was discussed in Section 3.1, there is need how to select (reveal) banks that may get regulation and which ones should not. Deposit insurance is the exact trigger to enable decision-making. Banks opting for deposit

insurance have to continue being regulated with probable increase in capital and liquidity requirements as politicians suggest.

When one thinks of implementing the proposed measure, i.e. to abandon deposit insurance, he has to remember the already mentioned concept of transitory institutes introduced by Polterovich 2012. This means that there is a target of zero deposit amount insured at non-supervised banks at some future date. Currently the deposit amount insured is non-zero. Then a ladder-approach may be offered where the insured amount decreases by 20% annually to avoid drastic changes in bank clients' behavior, i.e. to avoid policy-driven bank runs (particular amounts have to be calibrated with respect to the concrete banking system level of development and respective deposit maturity profile within the system).

Thus one may expect that with no regulation or no deposit insurance banks would decrease the proportion of their capital implying perhaps higher probability of banks' defaults. This is why academicians like Admati, Hellwig; Chang; Davis et al. 2016 may think that having more capital may be a solution. They may have grounded their proposals by Figure 2 that shows how banks' capital to asset ratio has historically decreased from ca. 60-80% to 9-10% in last 175 years.²¹



Data Source: USA 1834-2000 - Gorton, 2012; EU 1847 - 2000 - Benink, Benston, 2005; USA, EU, World 2000-2016 - World Bank Data.

Figure 2. Historical Evolution of Capital to Asset Ratio in the United States, European Union and the World.

²¹ For instance, Goodhart 2011, p. 200 for 1961-73; Cameron, Bovykin 1992, p. 52 – 1870-1910; Breckenridge 1910, p. 85 – for 1841-1867. European banks' data for 1841-2005 is given by Benink and Benston, 2005, p. 296; US banks' data for 1834-2010 is cited by Gorton, 2012, p. 161.

However, one has also think of the reasons that drove the capital to assets ratio down in a century and a half. First, the project risks went down due to technological progress. Second, the number of investment opportunities has risen to diversify idiosyncratic risk. Third, the banks grew in absolute terms including interbank merges. According to J.A. Schumpeter merges help to deal with global uncertainty, i.e. to diversify systemic risk. Fourth, regulators support, including deposit insurance, allowed having smaller buffers against crisis times as support is mostly warranted even if explicitly rejected. That is why looking back to the past and trying to by any means increase banks capital (e.g. consider recent proposal by the European Banking Authority (EBA) on minimum requirements for eligible liabilities, MREL, dated 03 July 2015 and the one by the Financial Stability Board (FSB) on total loss-absorbing capacity, TLAC, dated 09 November 2015 later implying the need for global banks to raise USD 1.2 tr of extra capital)²² to prior levels would be an obsession, rather than a solution as it refers to different (less advanced) economic and technological times. That is why the mentioned academicians' proposals to raise capital are appealing, but wrong.

Some people note that similar to deposit insurance, CDS creation produced equivalent shift towards more risk-taking. There came an illusory perception of lowering risk. In fact one risk type was substituted by another, e.g. credit risk against counterparty A was changed to counterparty credit risk against counterparty B. Any way from the financial system perspective risk did not evaporate from the entire system. Risk still resides within the system, though appealing obsession of its absence at the level of a solo institution may be produced. Disregarding the same negative consequences of CDS, there is no need to try and restrict such contracts. If there is demand, bankers would find new forms if the current one is restricted. Deposit insurance, on the opposite, depends on the government and may be managed (including the decision to abandon one) by the government, not by a bank.

Sub-section 3.5. Accident Processing.

When a traffic accident has already happened, there is a general rule to call on emergency team. Those are supposed to be ready to act in any sort of accidents. Same time no driver tries to replicate an accident and to act as if it occurred as it may be either too artificial, or in case of crash being material so that one cannot use the car afterwards.

²² Wall Street Journal, 9 November 2015. URL: <https://www.wsj.com/articles/fsb-tlac-buffer-for-systemically-important-banks-of-16-by-january-2019-1447057802>

Opposite to traffic control experience, as a follow-up of the Great Recession of 2007-2009 large financial institutions were required to elaborate plans of actions when huge losses occur, i.e. to develop recovery and resolution plans (RRP). Some parts of such plans can be and are in fact tested, e.g. Bank of England make mock-cyber attacks to test banks sustainability against cybercrimes.²³ If banks' IT-systems fail to protect from mock-attacks, banks might be requested to hold extra capital against losses from similar attacks. However, other parts of recovery and resolution plans are difficult to test or even imagine. For example, fire sale of securities by a global bank may initiate a new turbulence or even world crisis disregarding the possible communication campaigns of it being a trial. Then an issue arises whether banks are to be compensated for losses incurred during those tests or not. Obviously, banks should not consume taxpayers funds for such trials, but then later would be always only imaginary and no one is to undertake those. Key takeaway here is that recovery plan should not be asked from banks, it should reside within the central bank.

The finding from traffic flow post-accident measures research suggest that financial risk regulation framework has to abandon deposit insurance system (at least for largest and smallest institutions that are to be excluded from supervision scope) and to leave recovery and resolution planning to central banks, taking that burden away from commercial banks as system-wide effects have to be considered (latter may be properly observed by a central bank as it has granular confidential information about banks).

Having discussed pre- and post-accident issues, the next step is to investigate traffic regulation implementation experience. Latter consists of mode of approbation (steps done prior to final introduction of regulation) and the approach to rules unification.

Sub-section 3.6. Mode of Approbation.

When new traffic concepts are to be put in place, they are preliminary piloted. For instance, prior to country-wide speed camera introduction in the U.K. piloting was done in eight out of 40 plus districts; only when piloting has shown decrease in accidents to one third, country-wide introduction of speed cameras has followed according to Wells 2012. Financial risk regulation does not utilize the same approach.

²³ The Economist, 26 May 2016. Heist finance. URL: <http://www.economist.com/news/finance-and-economics/21699458-recent-hacks-highlight-vulnerability-cross-border-payments-system-heist>

One may object that there are Quantitative Impact Studies (QIS) when banks are surveyed (mostly – once; but sometimes - several times, e.g. like with the introduction of Basel II internal-ratings based models and of Basel 3.5 fundamental review of trading book). QIS is done to obtain precise new policy effect estimates. Nevertheless, QIS is biased, though this cannot be proven formally as data of that sort is unavailable. When banks fill in the questionnaires for QIS, they do it roughly as it does not touch directly their strategy. They may consider possible changes, but at best they take those estimates probabilistically, i.e. as not ones to definitely change the regulatory environment and consequently their strategy. As a result, banks do not change their behavior when filling in QIS surveys. On the opposite, when traffic flow regulation is piloted, it directly impacts and changes the drivers’ behavior. Thus traffic flow innovations’ piloting results are more trusted than theoretical QIS estimates. Key takeaway here is that for financial risk regulation to be efficient, it has to be piloted, not just surveyed.

There might be objections that piloting would shift competitive landscape as some banks would be effected (those subject to piloting) and others would not. This is exactly where the responsibility of the regulator lies. If it wishes to have manageable outcome of its novelties, it has to directly change the mode of operations and strategy of agents, so that they are to take changes not probabilistically at best, but certainly, i.e. with 100% probability of occurrence. Otherwise when making a theoretical survey an informational asymmetry problem would also bias the outcome. Just think of a banker’s psychology. If one responds that new regulation is not too burdensome, the regulator would introduce it as is. In strive to have new regulation less burdensome, the banker is prone to overestimate the consequences. Central Banker, from his side, may wish to have room for maneuver, i.e. to smooth new regulatory parameters if burdensome effect is obtained when surveying. That is why central banker may exaggerate (increase) requirements. Bankers then would double over-estimate the regulatory outcome. Ultimately the theoretical estimate having taken much effort, would be of no representativity.

Another point to consider is the timing of QIS. Banks tend to disclose information two and three months past the reporting date within the year and end of the year, respectively, according to IFRS. QIS conventionally collects data ca. six to nine months past the reporting date.²⁴ In the “Flash Crash” era with stock index falling 9.2% within couple of hours and the recent digitization trends, getting data nine months later makes that data interesting only from historical point of view, but definitely not for

²⁴ Please, analyze the difference between the publication date of a BCBS report (April or September) for a reporting date of (June and December). URL: <http://www.bis.org/bcbs/qis/>

policy making with respect to highly volatile financial risks domain. Key takeaway here is that the simpler the regulation is, the faster the data can be collected and the more timely policy decision can be done.

Sub-section 3.7. Approach to Unification.

When implementing a rule of a game, one wants it to suit most of agents, i.e. to have least portion of disagreeing ones. Considering more opinions enables to account for details initially unforeseen by the developers. Still when in search for consensus, one should not strive for absolute agreement.

Traffic flow regulation here provides a vivid example. During centuries two distinct driving traditions have evolved arising from technical and cultural origins of countries and regions, i.e. left- and right-side driving. There is an ongoing debate about the pros and cons of each style of traffic arrangement. Nevertheless, no one strives to agree on the single possible solution, not developing other areas of traffic flow regulation till agreement is reached.

According to Kincaid 1986, traffic accidents' statistics showed that since 1938 till 1961 left-side driving resulted in fact in less number of accidents all other things being equal. Still Kincaid gives extraordinary example of Antarctica where many countries are represented. Each country's territory inherit its national rule of the road. Same time zero accidents occurred because drivers simply were well informed which side to drive at particular country's spot (of course, another component of zero accidents is low density of traffic).

Financial risk regulation seems to follow another path. Cases of key risk metrics (capital adequacy and liquidity measurement) show that it took eight and mostly thirty six years, respectively, to reach world-wide consensus on those measures. Each time trigger for consolidation and agreement was certain bank crisis or default. For instance according to Goodhart 2011, capital adequacy prudential ratio started being discussed ca. in 1980s and only in 1988 it was formulated as the corner-stone of Basel I Accord. It was likely to be forced inter alia by a deposit crisis in the U.S. The discussion took so long time because there were countries with different approaches to capital regulation. There were risk-weighted, risk-unweighted ratios; ratios of capital to assets and capital to liabilities etc. Liquidity regulation and introduction of liquidity coverage ratio (LCR) passed a similar track. It was on the Basel Committee agenda since 1970s. There were ratios of assets to liabilities per maturity buckets and ratios of cash

inflows to outflows. Because of that existing variations, only Lehman Brothers' default in 2008 triggered consolidation and decision to agree on mid-point, i.e. to compare liquid assets to net outflows.

Though nice to have a consolidated decision, the mentioned cases seem to be outdated as being adopted past the time when they were needed, solely responding, not preventing particular crisis. When one reverts to traffic flow regulation, he may get to the point that dispute on unification may be endless. Such dispute is actually out of consideration and does not harm when some rules are in place. Thus key takeaway here is that it is better to have some (let it be simple) rules and put efforts to its polishing, rather than losing efforts and precious time for agreeing on the best rules. Speaking about the financial risk regulation, latter – i.e. best (optimal) rules of the financial game – tend to be overcomplicated as they were adopted conditional on considering all the wishes of the involved parties.

Proper example is given by Canada. Calomiris and Haber 2014 point out that historical paths of democratic societies' development may quite well predefine the absence of banking crises disregarding the presence or absence of these or that Basel Accords in a given country. Thus authors refer to the Canada example that experienced no banking crises in its entire history; interestingly, it is the very same Canada that is referred to as the most regulated country with multiple supervisors and small number of supervised agents.²⁵ Canada did not suffer from subprime crisis of 2007-09 as it did not have legislation (read infrastructure) for such market. As a result, there were no CDO available for public trading.

It is right the place to remember about Esperanto language proposal at the end of XVIIIth century. It was supposed to amalgamate all existing European languages and serve a common means of communications. But by taking elements of many languages, it fitted to no particular nation. As a result it was not taken onboard by any. Current trend with risk regulation unification is similar to creating another Risk Esperanto that ultimately suits no user (no particular country or banking system). This is the reason to tailor risk regulation (if any is indeed required) to concrete economic environment to be efficient and to dampen procyclical effects.

One may note that perhaps the world is now moving to at least two options of financial risk regulation (left- and right-sided driving equivalents) with European Banking Authority (EBA) being created after

²⁵ The Economist, 16 July 2016, Payouts for whistleblowers. Whistle while you work. "Canada is... "Wild West" in terms of the degree to which financial rules and regulations are enforced".

Great Recession of 2007-2009. EBA may become an alternative risk regulator to Basel Committee as latter regularly assesses European Union risk regulation as materially incompliant in its regulatory consistency assessment program (RCAP) reports. This is similar to left-side drivers regularly pointing out the deficiencies of right-side driving where in fact each one taken separately may move without accidents and jams. Though the world may be on the way to distinctly have at least two global financial risk regulatory frameworks, each of those still needs lots of simplification as mentioned above.

There is also an important implication of unification (standardization) trend. This is a resonance problem. It is observed with soldiers crossing the bridge at same pace. It happens to GPS navigation and also to risk regulation. When thinking of GPS, the regulator's role here may be to eliminate overconcentration, i.e. congestion, when everyone follows the same system guidance. A sort of central planner may soon appear to avoid GPS guiding everyone to the same way and producing jams; regulator has also to coordinate modeling and actions in crisis situations when cascade within-system effects cannot be predicted by linear models. Consider the following cases for resonance origination in financial risk regulation.

Basel II was criticized for being procyclical accelerating from boom and deepening crises as risk estimates improve in boom, more lending can be done; and inversely, risk estimates worsen in crisis, this requires to limit lending (e.g. Illing, Paulin 2005). When one wants all banks give similar estimates at microeconomic level and countries have similar regulatory standards at macroeconomic level (those two are the objectives for RCAP activity of BCBS), any world-scale financial shock would be multiplied by the number of affected jurisdictions with no possibility to dampen the effect due to different effects in magnitude and sometimes in direction if no unification takes place.

An interesting point here is whether regulator should promote credit bureaus as sharing information also reduces information asymmetry, i.e. promotes resonance, though decreasing dead-weight loss (DWL) from different-data-based decisions on interest rates. In author's opinion, credit bureaus should be supported, but modelers should not be limited in data sample and modeling approaches used as then varying interest rates would be still guaranteed.

Having discussed the regulation rules, let us proceed to regulation outcome discussion.

Section 4. Regulation Outcome.

When analyzing regulation outcome, one should consider psychology of agents, including the impact of remuneration regulation practices; cost of implementation and support; intersection of regulation and competition; the ultimate responsibility for the risk level within a system.

First, Wells 2012 describes that one of speed camera inefficiency or limitation in its outcome came from drivers' adaptation, i.e. drivers slow down before the spot of cameras and speed up to cover the loss of time. Recent financial risk regulation has a rule to regulate remuneration that has in essence similar (though not discussed or publicly expected) consequences. Bank staff has to be differentiated into risk-managers (risk-controllers) and risk-underwriters (risk-takers). It is required that former have less part of variable remuneration and latter have a larger one. Thus it is expected that risk-managers are to become more independent in risk evaluation. Both categories of regulated staff need to have deferral of their payments, but in contrast to some internal investment banks practices where the bonus pool is constantly accumulated to retain staff, risk regulation framework requires to write-off part of remuneration in case losses were incurred on underlying transaction during the deferral period.

From one side, similar to drivers' behavior bankers would first try to offset any losses in remuneration incurred during crises times when their bonus was written-off (with no obligation to pay it back later). Bankers would do so by taking more risk thus exacerbating the economic boom, i.e. producing procyclicality effect. From another side, bankers would start to gamble even more during bad times also. To trace that effect one has to consider the agent type of risk-underwriters in terms of risk perception. If risk-managers are predominantly risk-averse ones, risk-underwriters are mostly risk-lovers. When one offers to gamble or to receive fixed payment to a risk-lover (this is exactly the case when the remuneration is deferred because now there are odds to lose part of bonus), he chooses to gamble.

Key takeaway here is that financial risk remuneration rules have to be inversely changed to destimulate excessive risk-taking by not writing off the deferred payment and by not limiting risk-managers variable remuneration part.

One should consider another traffic analogy when thinking about who is allowed to drive. It is not only the knowledge of driving rules, car, geography etc., but also the fact of being psychologically appropriate to drive. This is exactly the cause for a large debate on to what extent drinking is allowed

when driving. The underlying idea is that drunk drivers are less attentive, more aggressive and result in larger number of accidents. Now it is time to remember the above discussion of risk perception by bank managers. Currently bank managers pass the qualification exams with respect to knowledge of rules. However, such qualifying criteria should include limitations on risk perception to manage a bank in parallel to limitation on drinking when driving.

Second, Wells 2012 describes that national speed camera program was stopped when drivers have adapted to cameras. The regulation business model was balancing the costs of new camera installation and existing camera maintenance with the inflows from fines. The implication is that regulation has economically justified limitation.

Financial risk regulation also has its cost as was discussed in section 2. The Basel Committee stated that Basel III impact is expected to be positive for world economy as extra capital burden is to be offset by the decrease in probability of next global crisis. Nevertheless, neither methodology, nor computations are made available to public and no explicit mention is done with respect to how much new regulation is to cost.

The probability of next global crisis is quite disputable concept and mostly impossible to verify (one should remember that though popular term of systemic risk is, it is no less artificial and non-verifiable as potential (long-run) GDP is). Here comes the contradiction. The Basel Committee itself has suggested rejecting the use of default probability models for low-default portfolios; global crisis is the lowest default portfolio when modeled. Same time extra supervision costs (allocated to banks directly like in EBA case) or indirectly (through taxes etc.) request banks to cover extra expenses and to once again take more risk in order to deliver the return promised to or requested by shareholders.

Third, when traffic flow or vehicles regulation becomes tighter either transport is abandoned or manipulation arises (consider Volkswagen 2015 case with pollution measurement). Similarly increase of financial risk regulation and supervision of traditional banks shifts the competitive landscape by giving preferences to new financial intermediaries that fall out of supervision. Latter include quasi-banks that reside on wholesale funding and infrastructure of traditional banks, payment substitutes by cell-phone operators, peer-to-peer lenders etc. In addition to quasi-banks case, regulators tend to differentiate capital buffers, particularly that by ICAAP. Unintentionally or deliberately they undertake a financial protectionism policy using Young 2014 terms through asymmetrically applied regulation.

Key takeaway here is to decrease regulatory scope and simplify rules to equalize competitive landscape.

Forth, when one thinks of traffic flow regulation, any accident is mostly taken as the responsibility of the agents' mistakes or rules' violations. When one considers recent financial risk regulation, it may seem that the responsibility for accidents (defaults) is being switched to regulators. The Basel Committee therefore becomes a sort of last resort regulator bearing the ultimate responsibility for banking crisis prevention.

There are two ways to validate the statement. First, one may try to search for a bank that does not target merely meeting the prudential ratios. One may recall ICAAP. By convention ICAAP estimates for large banks do not drastically differ from prudential ratios (though justification may be well complicated using diversification benefits, increased set of risks etc.). To author's perception, banks have lost the capability to think in the situation when the regulator is absent; when there are no prudential ratios (as an industrial company that chooses optimal debt-to-equity ratio). Even advanced peer-to-peer lenders tend to target banking capital ratios to be able to obtain valuation of its business.

Second, Penikas 2015 and Arndorfer, Minto 2015 describe the existing system of five and four lines of defense, respectively, where all authors put the Central Bank as the fourth line of defense. Though banks blame the regulators for excessive regulation, banks wish regulators to find remedies from next crisis and to prevent it. Banks started thinking that everything suggested by regulators would work, e.g. recovery plan as it was requested by regulator (though it cannot be tested); other novelties as banks themselves participated in QIS (though they inputted rough figures, not adjusting their strategy to those changes). Regulators and the Basel Committee in particular try to justify that expectation by issuing more and more new and complicated regulation (as you remember, by today it is already 20k pages of regulatory documents produced). The least the new regulation is understood and manageable, the more banks think the regulator must be sure that the proposal is to work. The more crises happen, the more regulation is issued to excuse for having allowed the crisis to happen. Thus a vicious cycle is created. This is exactly the case described by Buthe 2010 when speaking of the role of private regulators. When Robinson Crusoe has tied Friday to himself not to allow latter leave him, Friday gained some power from Robinson. This means that regulators nowadays have tied banks to themselves that much, that regulators have lost part of their power in the expense of banks gaining it.

There is another parallel to be taken. There are some African tribes that promote using a set of necklaces for women. The number of necklace is such that it mostly substitutes the neck power and keep the head. When such necklace is put away, the person may die merely because of undeveloped (or more precisely atrophied) neck muscles. Currently regulator has tightened banks that strongly that they indeed may become dysfunctional with no support in terms of regulation. This is exactly why we need to start training our financial system and banks not by strengthening regulation, but by relaxing one.

Traffic flow observation suggests that the rules “must be simple as possible, but not simpler” as would Albert Einstein said, but the responsibility is to reside not with traffic police or traffic guardians, but with traffic participants. Key takeaway here is that the best of risk regulation should be taken from the history of the Basel Committee. It should stop producing new regulation, and rather focus on how to simplify regulation as it is never able to keep the pace with banks faster finding options for regulatory arbitrage. This is also noted by Mr. Hensarling when saying that banks would always find a way to game complicated rules, so simple ones are preferable.²⁶

Analysis of the regulation outcome shows that to design optimal financial risk regulation framework one has to change incentive schemes (abandon current regulatory practice); decrease the supervision coverage both to result in lesser risk-taking by banks; and finally to arrange switching of responsibility to the agents, not to the principal, i.e. take it from regulator and put back to banks with the regulator (including the Basel Committee) playing the advisory and coordination roles.

Section 5. Modern Traffic Flow Theory.

One of approaches to modern traffic flow theory according to Kerner 2009 suggests the decomposition of unregulated (highway) traffic into three stages: freeway, synchronized flow, moving jam. With the increase of number of traffic participants (i.e. the network), traffic type switches from freeway to highway where the speed does not decrease significantly, but there are no more options to significantly accelerate compared to other road participants. When an accident (or traffic interruption because of ramps) happens synchronized flow changes to moving jam with the speed drastically decreasing with the increase of probability of consequential accidents as the slowed participants become nervous and

²⁶ The Economist, 25 June 2016: Regulating Banks. Capital Hill. URL: <http://www.economist.com/news/finance-and-economics/21701149-republicans-offer-alternative-americas-convoluted-bank-regulations-capital>

want to offset loss of time by taking on more risk and starting to drive more aggressively. This stage breakdown is of high applicability to financial risk regulation framework because of the following.

Banking and shipping coexisted for centuries providing each other with mutual synergies. Bankers were taking risk of new shipping projects; ship owners were taking loans to fund ship building and commerce travel. That era might be called as the freeway period in traffic flow theory terms. Shift to synchronized flow occurred in 1970s. By that time the network has significantly grown (both of bankers and shippers); amount and types of travels (transactions) grew and became more complicated. There came a need to agree on common international rules to avoid accidents. Thus in 1972 “The International Regulations for Preventing Collisions at Sea” (Colregs) was adopted. One of its ideas is that in case of probable collision both vessels have to act in their best possible effort to avoid collision, signaling that there is no guaranteed right of way for any vessel. In 1967 international standards on shipping container sizes were also introduced indicating the world-wide trend of global unification.

Coincidentally in 1972 *Groupe de contact* was established as the predecessor of the Basel Committee that was to unify financial risk regulation according to Goodhart 2011. After that time marine navigation continued operating in synchronized flow style, whether banking is likely to have transited to moving jam stage with the number of accidents (defaults) and congestion rising. New regulatory rules seem to become new financial traffic obstacles causing financial jams. Thus for the development of the global economy banking and its regulation has to move back to synchronized flow stage.

To undertake the described financial risk regulation change from moving jam to a synchronized flow one has to consider risk being a public good and the need to respectively change the approach to its regulation from current state to an optimal one. Before describing optimal “road rules” for bankers, one has to recall the origins (justification) for regulation, i.e. why there is regulation for banks and not for other (e.g. industrial) companies. Inter alia one may refer to the statement by the BCBS Secretary General who explained the need for financial system regulation by the fact that consumers cannot evaluate the bank sustainability, similar to airplane passengers who cannot evaluate the reliability of the airline.²⁷ Key difference between airlines and banks is the fact that in aircrash no one can restore passenger live, whereas with banks people expect that money (deposits) can be somehow restored. This underlines the importance of responsibility issue for clients, not bankers or regulators. This is because

²⁷ Byres, Wayne. 2012. Regulatory reforms - incentives matter (can we make bankers more like pilots?). URL: <http://www.bis.org/speeches/sp121024.htm>

passengers may die, they are more responsible in choosing the airline. For financial stability people have to similarly take the responsibility from regulator. This is feasible only when there is no deposit insurance in place.

First, number of banks is much smaller, than that of commercial entities. Regulators think that all banks can be well supervised. But nowadays as fintech start-ups grow in a pace that regulation and supervision lacks a lot, soon they will be unsupervisable.

Second, market failures are often claimed to justify the need for regulation. But mirror effects exists, i.e. government failures. Just remember parallels from traffic flow regulation, when all other things being equal more accidents occur when the traffic scheme (junction, regulation etc.) is poorly designed.

Third, governments have promised to pay on the deposits in case of bank failure. This is why governments feel themselves responsible to assure banks are not taking excessive risks and there is negligible probability of a bailout or a deposit insurance funding to be utilized; no one in fact requested governments to insure deposit, it was just a nice think to have. Diamon, Dybvig 1983 (hereafter – DD) is often referred to as a rationale for stricter regulation (this is the official statement for Nobel Prize award) and increased deposit insurance. Detailed discussion of DD paper shortcomings fall out of scope of current paper. However, key ones may be briefly listed. Primarily, DD assume risk-averse investors, though those whose are more prone to bank running are gamblers. They wish to benefit from high interest rates and deposit insurance same time to get the reward and minimize risk. Secondly, DD paper rejects suspension of deposits though it is inadequate according to Selgin 1996, p. 18.

That is why the optimal design of the financial risk regulation framework would have the following features. The format of supervision has to be modified to focus on the regulation simplification and very general rules proposal; decrease of supervision coverage (exclusion of the largest and the smallest from the supervision) revealed by the fact of bank self-selection of those who are able to abandon deposit insurance and those who wish to stay regulated and insured. Promoting diverse, not common risk measurement has to be targeted to avoid resonance effects. Regulator should not aim model parameter unification.

Developing countries should not allow advanced risk-modeling usage till they are mature and developed enough. Transitory institutes are needed to arrange the shift to more advanced risk

measurement techniques and its regulation if needed. Only simple rules should be suggested to enable easier and faster monitoring. When those are finally chosen, they have to be piloted, not theoretically surveyed. The role of the supervisor and the Basel Committee in particular has to change. Responsibility has to be brought back to banks. Such financial risk regulation framework would thus result in higher financial stability world-wide. Regulator may only coordinate banks' actions when banks may not see the whole system. Another forthcoming challenge when regulator may get involved is securing from cyber-attacks making centralized search for hackers like steering away from dangerous drivers in traffic terms.

Current discussion about financial risk regulation has globally challenged the need for its revision as well as raised the question about the necessity of speed limits for self-driving cars. Yes, there are market failures and externalities when dealing with public goods. This is common rationale for regulator to step in. Nevertheless, ultimate responsibility should perhaps be shifted even further from bankers to bank clients.

As a rationale consider the analogy from traffic flow analysis. Experienced drivers (racers) surpass any safety systems and features in average situations compared to an average driver. Experienced ones may even be harmed by those systems. Same time experienced drivers may get to excessive speed in extreme cases (races included) when they set challenging objectives that average drivers do not dare to target. Average drivers would mostly never get or desire to get to those traffic parameters as they recognize their limitations. Though there might be some average drivers that may merely rely on luck to survive at high speeds.

That is why it should be bank clients (drivers) to decide which traffic flow and possibly which junction they want to follow, i.e. an average financial institution or a mature and large financial institution. Former are framed by regulation (equipped with safety features), but may actually also dare to take on extra risk, but definitely has no grounding to withstand its poor consequences except luck. Latter can easily surpass average accidents without supervision (even without special equipment), but may deliberately take on more risk that may lead to large-scale, but rare defaults (e.g. long-term capital management, LTCM, in 1998).

One has to think of bank clients' financial literacy and its world-wide low levels. Intents to promote it are unsuccessful because everyone knows that there is some third party (e.g. BCBS or the local

regulator) to ensure the financial system is sound and healthy. This is exactly why one has to abandon deposit insurance. When people know there is no one person or commercial entity and no prudential body to rely on, they naturally become more financially literate.

Similar reasoning is applicable to whether regulators should prevent fraud. If a government does not have to pay on deposits in a failed bank, there is less concern whether a bank is anyhow engaged in fraud activities. Many people wish financial pyramids not to exist. Nevertheless, it is not easy to stop such activity as often they are not institutionalized (have no legal entity form at all). Ultimately, those should exactly be bank clients and counterparts to decide whether to transact with a bank or not. When no 'last resort regulator' is in place, people would be financially literate enough either to accept risks associated with or to avoid dealing with a strange bank.

Section 6. Positive Collaboration.

Key takeaway of the current paper is that to achieve the objective of increased financial stability and of dampening credit boom one should relax regulation, not strengthen one. The very same idea can be found in Alan Greenspan's speech dating August 2015.²⁸ He mentioned the link that the higher capital is in place, less regulation is needed. As explained in the current paper, right the opposite series of steps is needed. When regulation and support for banks is abolished, bank management would by itself increase capital and liquidity cushions if it knows that no 'last resort rescue' is available neither for depositors, nor for shareholders.

This phenomenon was even noticed, but was not properly elaborated by Gorton, 2012, p. 161-162 (Figure 11.5). He witnessed that in 1881-1911 countries without capital requirements were having ca. 10 percentage points higher capital-to-assets ratios (it was ca. 34% in 1881; 18% in 1911 for countries without capital requirements and ca. 22% in 1881; 11% in 1911 for countries with the ones). It seems that after the First World War, countries having no capital requirements have fallen into dangerous obsession thinking that regulation existence and particularly higher capital requirements lead to higher financial stability. As a result capital ratios have fallen since then as everyone relied on regulators.

²⁸ Financial Times, 15 August 2015. Alan Greenspan said that '[A]n important collateral pay-off for higher equity in the years ahead could be a significant reduction in bank supervision and regulation'. URL: <https://www.ft.com/content/4d55622a-44c8-11e5-af2f-4d6e0e5eda22>

Same time the trend of reducing regulation is natural in institutional economics (consider for simplicity the reduction in punishment severity for being debtor, or approach to competition (antitrust) regulation). That trend is called ‘positive collaboration’ as introduced by Polterovich 2016. It takes places when society matures the prosperity increases. Thus it is more typical and observed in developed economies, rather than in developing ones.

When thinking about positive collaboration, one should remember that people always thought that punishment or regulation would be as strict forever, it could not be relaxed. Recall last parallel with transport that is relevant here. First trains had toothed wheels (wheels with cogs). The reason was an expectation that steel wheel would slide over steel rail track. But after a sequence of trials engineers notices that teeth fell away as redundant. Trains started going smoother and faster without teeth wheels. To remember teeth wheels were not fully abandoned. They are used nowadays at funiculars where angle is significantly different from plain horizontal level. This implies that people should change the mode of thinking and have to get that banking and financial system may well survive and prosper without regulation. Regulation is worth reverting to at times of crisis when the angle of track, or that of financial markets volatility, is material).

Section 7. Concluding Thoughts. 2017 and Onwards: Another Seven Fat or Thin Years?

The year of 2016 was marked by plunging of bank equity quotes by mid-year. The consequent soaring due to banks being able to pay their fines to US regulator on probable manipulations with derivatives trading in 2007-09 and being able to mostly three-fold increase their capital. There are expectations that regulation has already reached its peak and some parts of it (notably Dodd-Frank Act) may be substituted by mere increase in capital requirements.²⁹ Potential leap in interest rates is likely to increase interest margins leading to higher profits for banks.

Though all the mentioned trends seem favourable, one should pay attention to four points. First, it was exactly in 2007 when Basel committee so to say stopped its publication activity. Every financial actor expected regulation to reach its peak. But because of bankers’ adaptation (remember epigraph saying that innovation always surpasses regulation), financial bubble might probably got busted. That is why regulation peak may signal approach of another crisis and give carte blanche for producing somewhat

²⁹ The Economist. Jan. 07, 2017. The three Rs behind global banks’ recovery.
URL: <http://www.economist.com/node/21713856/print>

new regulation. This does neither justify increase in regulation to promote financial stability, nor proclaim that deregulation causes financial crises. Still the arguments that deregulation is counter-stabilizing can be often found (e.g. for the case of “Great Recession” in the United States in 2007-09, please, refer to Krugman, 2009;³⁰ Goodwin et al, 2013, p. 346; for cases in the United States, Japan, Norway, Denmark, Spain, Sweden, Germany prior to 2000s, please, refer to the BCBS Working Paper No. 13 by v. Westernhagen et al., 2004).³¹

Figure 3 below compares the Basel committee publication activity with 74 largest bank defaults in 43 years that total to ca. USD 235 bn (at time of default, non-adjusted to inflation).³² Indeed, when one gazes at the Figure 3 below, he may wish to agree that deregulation causes crisis based on two vivid hikes in solid red line.

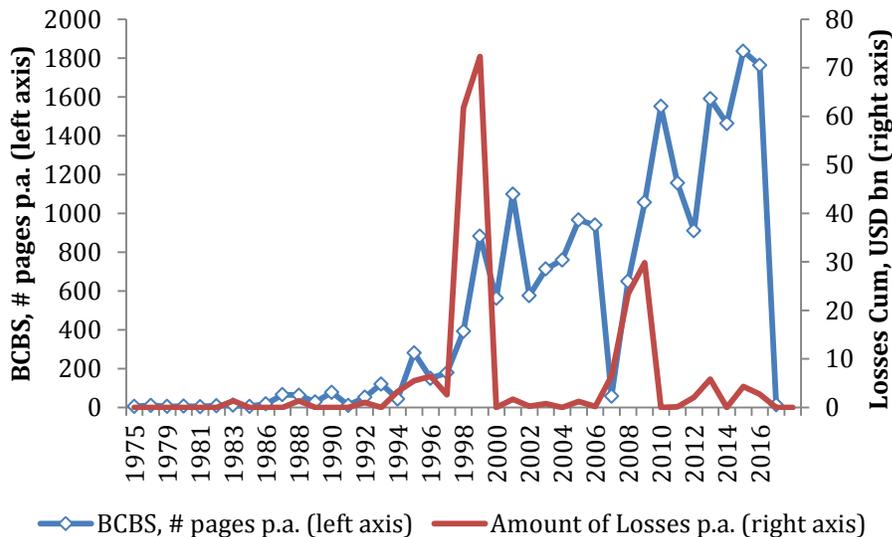


Figure 3. BCBS Publication Activity and the Annual Total Global Defaulted Amounts Incurred.

First hike corresponds to large losses (ca. USD 140 bn equivalent) occurred in Japan during the Asian crisis of 1997-98. v. Westernhagen et al., 2004 argue that it was caused by continued financial deregulation in Japan. That was exactly the timing when Basel I implementation was finished (for credit risk in 1988 and for market risk in 1996). Thus when regulatory activity ended banks might have become more relaxed being able to adapt to new rules.

³⁰ Krugman, Paul. Moral Decay? Or Deregulation? New York Times. September 30, 2009. URL:

<https://krugman.blogs.nytimes.com/2009/09/30/moral-decay-or-deregulation/>

³¹ “Financial liberalisation (deregulation) was a common feature of major banking crises” (v. Westernhagen et al., 2004, p. 66).

³² The historical defaults do not account for bail out amounts that may be subject of separate research.

Second hike of ca. USD 50 bn corresponds to defaulted amounts during “Great Recession” of 2007-09 around the world. Similarly to the first hike in 1997-98, the losses were revealed right after the Basel Committee stopped its publication activity on Basel II. Here again when bankers adopted to new complex rules, they were perhaps able to gamble knowing they are well protected by deposit insurance agencies accompanied with government support.

That is why financial deregulation may lead to financial crises if it is not accompanied with the abandonment of full support, i.e. with the abolishment of deposit insurance.

During then start of 2017 it was proposed in the United States to eliminate government support for bankers, forget complicated long-page rules of Dodd-Frank Act, but require more capital. No one announced stopping deposit insurance same time. That is why bankers are requested to have higher tangible regulatory burden (before the burden was of intangible nature being in need to comply with thousands of pages of Basel –equivalent documentations). Thus the burden does not decrease. Deposit insurance is in place. This means that formally the banks may default, top-managers would not receive high bonuses, but the US government would be still in need to use taxpayers money to compensate the depositors.

Second, banks were able to pay all fines on derivatives to US regulators (ca. USD 180 bn per TOP-10 banks, see Annex 2 for details). Those fines had the background of abusing taxpayers in times of bailouts. Then being logical having collected all the fines, one has to redistribute those to taxpayers. However, no one did it. Thus taxpayers seem to be twice skipped. The rationale for preserving accumulated funds is the compensation of the US budget deficit. If the problem is that severe, then the crisis is looming, i.e. thin, not fat years are to come.

Third, another interesting trend is mere arithmetics of banking. If banks have increased their capital base ca. three-fold in 2010-2017 and were able to pay fines to US regulator, how they were able to form expectations of non-plunging returns on the increased equity. The only reason to deliver high returns is the creation of a new form of shadow banking, e.g. fintech startups, that may be in fact funded by large systemically important banks. As one may remember, it was in March 2009 that IMF was concerned that even at that times shadow banking was close to non-shadow one in asset size and

equaled to ca. USD 10 trln.³³ The problem would be not less severe than it was in 2007-09, when there are contagion collapses of Lending Club-equivalent cases.³⁴

Last, increasing interest rates may result in higher profit margins, but one should project the transition path. Negative rates originated from quantitative easing (QE) stimulus programs introduced by the Central Banks. Latter were supposed to be the *temporary* crisis recovery measure. Nevertheless, to increase rates one has to stop QE program. When one stops it, stock quotes would plunge either on the sale of earlier purchased securities, or based on expectations that no grounding for keeping quotes high is in place. That is why to arrive at the state of high interest rates, the economy is first to pass a crash period followed by a 2009-style post-crisis rapid recovery. The longer one delays to stop QE and to start market sanitation, the deeper fall is to take place.

Section 8. Conclusion.

To conclude let us once again reconstruct the research logic. Regulation is often introduced to prevent from two problems related to public goods: overconsumption of public goods or overproduction of public bads.

Therefore, traffic flow regulation is close to financial risk regulation as both are related to risk-taking. Both target smoothness (absence of congestion; capital controls etc.) and safety, or stability (absence of crashes, losses). Particularly traffic flow regulation analysis shows that to arrive at optimal production of public bad (riskiness of traffic), absence of regulation is preferred in certain cases. Wrong or exorbitant regulation may lead to worsening of riskiness.

That is why to arrive at the financially stable world with least losses one has first to drop off regulation to a maximum extent and exclude capital requirements, as well as the deposit insurance. This echoes the concept of free-banking defended by Selgin 1996.³⁵ That step may be accompanied with the announcement that QE is stopped and rates are increased.

³³ The Economist. Mar. 06, 2009. What went wrong. The IMF blames inadequate regulation, rather than global imbalances, for the financial crisis. URL: <http://www.economist.com/node/13251429/print>.

³⁴ Wall-Street Journal. May 09, 2016. Lending Club CEO Fired Over Faulty Loans. Renaud Laplanche's ouster is likely to intensify the scrutiny of the online-lending industry. URL: <https://www.wsj.com/articles/lendingclub-ceo-resigns-over-sales-review-1462795070>

³⁵ Selgin, 1996, p. 9: "...most people are much better at imagining catastrophic banking failures than they are at imagining how such failures might be avoided by an open, diverse, and non-hierarchical banking industry".

Though strengthening regulation might appeal to many stakeholders as a simple and robust solution, it is wrong as would be shown later. Requirements to raise capital imply right the inverse, i.e. deterioration in financial stability. It is a vivid example of a ‘cobra-effect’ introduced by Siebert 2001 when right opposite policy goal is reached.³⁶

Please, remember the two cases of (a) India traffic with no regulation and no accidents, from driver’s perspective, and (b) Gorton 2012 observation of no capital requirements and higher capital ratios, from banker’s perspective. Those should be targeted. If one wishes to have comfortable driving, he should choose well-developed infrastructure of traffic or financial flows that is not burdened with the regulatory pressure.

The very general takeaway of the paper is that regulation softening would result in credit boom reduction to much greater degree rather than an appealing proposal of tightening regulation and particularly of increasing capital requirements.

Just remember the case of traffic in India when no one dares to cross the unregulated square at high speed, as he knows that there is neither a regulator or a traffic policeman to guide and take responsibility for who is to cross first, nor there is a person or body to restore or cover him the car cost in case of accident.

³⁶ That was during East-India campaign when British officers wished to decrease the number of cobras in India. They promised paying for each killed cobra. Locals started breeding cobras to kill and sell to British officers. As a results cobra population grew several folds. Similar policy measures are called to have ‘cobra-effect’ when right the opposite outcome is achieved compared to the targeted one (cobra population grew though it was wanted to decrease).

Annex 1. Terms' Mapping.

	Traffic Flow Area	Banking Area
Regulatory Objectives		
1.	Minimize the number of accidents	Minimize the number of bank defaults
2.	Minimize consequences of an accident	Minimize expenses given bank default
3.	Minimize congestion	Minimize out-of-operation periods
4.	Maximize possible speed	Maximize the speed of a transaction
System elements		
5.	Traffic flow	Bank
6.	Car	Transaction
7.	Road	Product
8.	Driver	Bank client (counterparty)
9.	Weather	Economy
10.	Other traffic participants	Other financial entities, stakeholders
11.	Obstacles	Regulatory limitations
12.	Crash, accident	Default, crisis, loss
13.	Probability of crash	Probability of default
14.	Injury in event of crash	Loss given default
15.	Congestion	Stop of transactions flow
16.	Infrastructure (junction)	Flow size, proportionality criteria within Internal capital adequacy assessment process (ICAAP)
17.	Internal Safety Features	Internal Risk Assessment Models
18.	External Speed Cameras	Supervision tools
19.	Third party liability insurance	Deposit insurance; CDS contracts
20.	Trial actions at crash	Recovery and resolution planning (RRP)
21.	Bumper	(capital, liquidity) Buffer
22.	Side of road	Approach to computation
23.	Speed limit	Risk-weight flour
24.	Traffic lights	(credit) deal acceptance criteria

Annex 2. Settlements By Largest Banks.

Bank Name	#	USD bn	USD bn / one settlement
Bank of America	34	77,1	2,3
JPMorgan Chase	26	40,1	1,5
Citigroup	18	18,4	1,0
Wells Fargo	10	10,2	1,0
BNP Paribas	1	8,9	8,9
UBS	8	6,5	0,8
Deutsche Bank	4	5,5	1,4
Morgan Stanley	7	4,8	0,7
Barclays	7	4,2	0,6
Credit Suisse	4	3,7	0,9
Total	119	179,6	1,5

Source: CNBC, cited by Kiat, Kai. The Missing Regtech Startups in Singapore and Hong Kong. Sep. 16, 2016.
URL: <http://fintechnews.sg/5443/fintech/the-missing-regtech-startups-in-singapore-hong-kong/>

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