ISSN: 2281-1346

Department of Economics & Management

DEM Working Paper Series

History of the World Largest Financial Losses in 1972-2018

Henry I. Penikas
(International Laboratory of Decision Choice and Analysis)

Mikhail A. Surkov
(International Laboratory of Decision Choice and Analysis)

 # 166 (10-18)

Via San Felice, 5
I-27100 Pavia

economiaweb.unipv.it

October 2018

History of the World Largest Financial Losses in 1972-2018

Henry I. Penikas[1], Mikhail A. Surkov[2]

This version: **38** dated **12 October 2018**

A B S T R A C T

Deregulation is often claimed to be the cause for financial distress. Thus it has to lead to financial defaults and losses. However, exact dependence is not clear. To verify it we tried to investigate the roots of world largest financial losses. As we found no source to extensively and completely cover those, we decided to prepare a data set of our own. By choosing a round threshold of USD 100m equivalent of loss amount as of announcement date, we arrived at the set of 117 defaults with total loss of USD 914bn in 46 years. Our key purpose is to make comprehend data set of largest losses.

Keywords: Bankruptcy; bank default; failure; loss-to-assets; risk; market risk.

JEL codes: G10, G20, G21.

[1] Assistant professor, Department of Applied Economics; senior research fellow, International Laboratory of Decision Choice and Analysis (DeCAn Lab); the National Research University Higher School of Economics; senior research fellow, Laboratory of Mathematical Modeling of Complex Systems of P.N. Lebedev Physical Institute. Contact email: Penikas@hse.ru

[2] Researcher, International Laboratory of Decision Choice and Analysis (DeCAn Lab); the National Research University Higher School of Economics.

The paper was prepared within the framework of the Basic Research Program at the National Research University Higher School of Economics (HSE) and supported within the framework of a subsidy by the Russian Academic Excellence Project `5-100'.

1. INTRODUCTION

In recent decade one may often hear the statements that financial deregulation leads to financial crisis and to large defaults and losses. Henceforth regulators use it as a justification for further regulation tightening. As a result new prudential requirements are permanently developed. Costs for compliance increase. Though it seems to be a logical sequence of events to increase financial stability, it does right the opposite. Such regulation enhancements and particularly increasing capital requirements imply that banking profits are preserved more and potential dividend pay-outs are dampened. It incentivises banks to take on more risks to compensate these extra costs and capital burden. This is to destabilize financial environment. So what is the true dependence? Does deregulation or regulation tightening imply financial fragility?

The objective of the paper is to make comprehend data set of largest losses. Latter are considered the ones if they brought losses in excess of USD 100m using the exchange rate as of default announcement date. We claim to have covered complete set of cases as tried to find those via the all available resources and search engines. As a result we carefully processed 117 cases since the origin of international banking regulation, i.e. since the creation of the Basel Committee on Banking Supervision in 1970s. Qualitative analysis of cases was chosen to discover the origins of the losses, not to be driven by statistical considerations.

We have found out that there are no too big, too old or too other something to fail. All other things being equal smaller entities suffered losses more often. Younger banks experience more losses within our set than the longer-standing ones. However, smaller and younger entities are generally larger in number than the old behemoths. Geographically no continent is immune to financial losses.

Our principal finding is that there was no linkage of bank deregulation and consecutive bank failures. When it was believed that this was the case (e.g., in Japan 1994-2002), it was always greed. It drove banks to apply less conservative underwriting policies (particularly, overestimating the reliability of real estate collateral at sky-high prices). Greediness dominated in decision-making because state deposit insurance systems were in place. Latter served a guarantor in case of an unprofitable gamble. As profits from a profitable one are not shared with the insurance system, banks do their best and bet. Same time one should remember that handing supervision and state insurance do cost money. That is why regulation and state deposit insurance has to be abandoned to dissimulate excessive risk-taking and avoid soliciting taxpayers' funds in case of bailing-out failed institutions.

To provide details of the above mentioned findings the following paper is structured as follows. Section 2 presents literature review. It summarizes academic papers that dealt with default cases analysis. Section 3 gives the research methodology. It discusses how we searched for the cases of failures and what the selection criteria were. Section 4 incorporate stylized facts about the collected cases on aggregate. Section 5 concludes. Annex 1 collects the description of case-wise defaults in concise manner. Suggestions on steps needed to prevent the default are included. Annex 2 has quantitative information per defaults. It served as a basis to formulate stylized facts. Annex 3 lists the entire set of references per cases including URLs for e-publications. Annexes 2 and 3 are available upon request or online.

2. METHODOLOGY

There are papers dealing with bank default probability modelling (e.g. (Fungacova & Weill, 2013)), but they apply statistical tools disregarding the uniqueness of particular cases. That is why we wished to focus on case-study analysis of bank failures.

Collecting data set became our primary purpose, so we find working paper (Valencia & Laeven, 2012), in which authors summarize data of banking crises. This work describes individual effects of each crisis, while we try to get information about cases of banking defaults.

Banks started to fail when they appeared. Initially they experienced problems from over issuance of banknotes. They were not collateralized by the coins brought to banks (Hildreth 1837). For instance, that was one of default causes for Ayr Bank in Ireland in 1772 (Kosmetatos 2014). Later when the banknote turnover was limited to the amount of coins deposited within a bank, bank failures resulted from crashes in projects they financed, i.e., from credit risk. However, when there appeared stock exchanges and banks started investing their money in securities, those created new risks for banks, i.e., market risk. Fraud activity, including robbery, was called operational risk. Central banks in many countries had their own approaches to supervise risks taken by banks, but only since 1974 with the establishment of the Basel Committee such approaches became more unified internationally. The predecessor of the Basel Committee was a Brussels-based *Groupe de Contact* created in 1972 (Goodhart, 2011). That is why we decided to focus on analysing default cases since 1972.

We have chosen a round figure of USD 100 m as a threshold to select default cases. We found a public list of trading losses that also announces the threshold of USD 100m. As of 27 May 2018 the list included 50 cases; one case more than on 26 December 2016 when we started data collection. However, it inter alia includes case of United California Bank of Basel that is said to have lost USD 40m in 1970 on cocoa futures. This is below the announced criteria. For instance, it mentions Franklin National Bank to have lost USD 40m (also less than a threshold) on FX trading whereas it does not mention the bank loss of USD 1.3bn on speculative bet on lending by leveraging dear state funding. There is also no guarantee of the public list being correct and exhaustive. That is why we undertook own research to make that list complete, correct and to dig

deep into the roots of financial losses, not limited to trading ones. An-other shortcoming of the public list is that it does not differentiate causes for trading loss. For example, for Barings, Daiwa and Sumitomo in 1995; for Societe Generale in 2007 those were frauds when bookkeeping was manipulated; whereas for Hypo Alpe-Adria it was mere excessive, but still authorized risk-taking. In comparison to public registry, we made cases classification per various attributes, added commonalities in-between the lists and added hints on actions most demanded at the time to avoid loss. Still we used non-financial company cases from the public list as consider those to be worth learning about[i] The amount was computed at nominal exchange rate for the loss amount as of announcement date. No adjustment for inflation was done. As a result, we did not include in our database notorious, but not that large default cases related to the financial domain in particular countries. Latter may include the 2008 default by RBC; and 2016 fraud at Lending Club. By 2008 a Russian mass media company RBC owed at least USD 45m to Barclays Capital, Troika Dialog (now Sberbank CIB), Alfa-Bank etc. by having bet on Ruble appreciation and having sold USD futures. When 2008 devaluation by ca. 30% occurred, RBC was unable to pay on its debt. This was a vivid case of unjustified market risk as the company did not have that amounts of USD revenue to hedge it by selling USD. Source: Infox.ru News e-Agency. 31 December 2018.[ii] In 2016 the online creditor Lending Club has sold a USD 22m pack of loans of which there were USD 3m loans for which the loan application date was manually changed to meet the requirements needed for the sale to take place. This should be considered an operational risk loss case as there was internal fraud of data manipulation[iii] When measuring the loss amount fines were added. Latter were imposed upon a bank later with the reference to loss event (for instance, with respect to subprime mortgage crisis in the United States)[iv].

As the number of cases was large, we limited the set by other criteria. The entity total assets should be no less than USD 400 m as of closest reporting date. The research was focused on

banks, though non-banks were also considered if the loss amount was significant and it was often referred to in risk-management practices.

The actual search was twofold. We looked at academic papers and used electronic resources to ensure the completeness of our research. We looked for both default mechanics and the default values. We did not challenge the figures announced in mass media as it is hard without having as granular information as regulators had during their inspections and during resolution sessions.

First, (BCBS, 2004) and (Sinkey, 1979) were the departing points for us. Former describes default cases in large developed economies, namely, the United Kingdom, the United States, Spain, Switzerland, Germany, Norway, Sweden, and Japan. (Sinkey, 1979) focuses on earlier cases that took place in the United States, e.g., United States National Bank of San Diego and Franklin National Bank of New York (see cases 1 and 3). (Steignum, 2003) and (Sandal, 2004) cover defaults in Norway. Latter also mentions Swedish defaults. Germany and Japanese cases are discussed in (Mourlon-Druol, 2015) and (Harada, et al., 2010), respectively.

Second, we browsed academic databases of EBSCO, JSTOR and search engines of Google, Yandex, Bing for the following key words: bank default, bank failure, banks losses, banks defaults, banks crisis. We also checked rankings (leagues tables) of largest either losses or lost market capitalisation (e.g., The Economist, Fortune and CNN)[v] [vi] [vii]. Thus we arrived at 93 different types of sources and 406 unique references. When we found discussion of similar cases with non-financial entities, we added those to the list. Thus we arrived at the ultimate set of world-larRisgest financial defaults with loss in excess of USD 100m. It comprises of 117 cases with overall loss amount of USD 914bn. It comprises often non-financial entities of which nine are industrial ones and one is a municipality, Orange county that defaulted in 1994. That is why we will most often say banks meaning the entities within our dataset.

When assigning geographical attribute to the country, we focused on the headquarters location, not that of the loss origin location. Thus losses for both the Baring Bank in 1995 and the China Aviation Company in 2004 occurred in Singapore, but we marked those as the United Kingdom and China, respectively. Similarly, Daiwa loss of 1995 originates for New York (the United States), whereas bank headquarter is located in Japan. Let us briefly describe the stylized facts corresponding to our dataset.

3. LITERATURE REVIEW

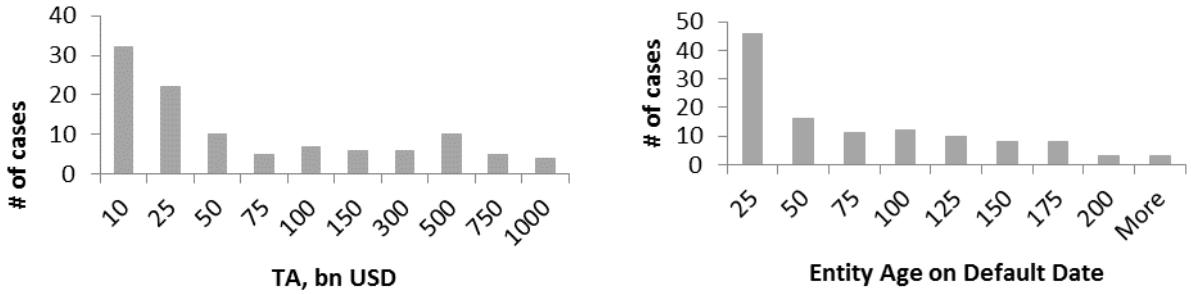
The first statement that liberalisation implies financial stress may be found in (Steignum, 2003). Liberalisation means that all other things being equal bank may be able to undertake more activity, e.g., offer more loans given the same amount of capital as was in Norway prior to 1988 (BCBS, 2004). Later in 2004 the Basel Committee on Banking Supervision (Basel Committee, BCBS) also claimed that crises are predominantly driven by financial deregulation (BCBS, 2004, p. 66). The rhetoric is continued both by (Krugman 2009)[viii] and (Goodwin, et al., 2013, p. 346). Whereas Basel Committee and Steignum refer to Norway in 1988-1993, (Krugman 2009) and (Goodwin et al. 2013) refer to the subprime mortgage crisis in the United States in 2007-09. The BCBS working paper also covers the United States, but with respect to earlier defaults starting 1982 and particularly subprime mortgage crisis of 1998-2000. When thinking that deregulation implies crisis, from one side, one should also remember that the limitation was also artificially established some time before. If there was no limitation beforehand, deregulation was not needed. Thus there would have been no change in financial actors' preferences and strategies. From another side, it would be obvious that in most cases the deregulation cases were associated with housing market boom and consecutive bust. Thus it is not fair to claim that it is more deregulation, not the housing bubble burst that led to crisis.

Let us take a closer look at regulation evolution, Basel I and II had preferential treatment of mortgage lending and might be called regulation liberalisation. On opposite, Basel III had tight-

ened regulation overall (Penikas, 2015). Nevertheless, losses occurred both post deregulation (at times of Basel I, II) and post regulation tightening. That is why one cannot argue that it is only deregulation that drives to crisis. (Calomiris, 2014) also says that mere presence of rules is not a guarantor that a crisis cannot take place. (Selgin, 1996, p. 6) points to an inverse case that people cannot imagine how resilient banking system without regulation is. To remind in all times since 1933 state deposit insurance system was in place and was the one that enabled to dare taking more risks by bankers and scoring huge losses, but that was not purely deregulation. To prove this one has to dig deeper into the roots of bank defaults.

4. STYLIZED FACTS ABOUT LARGEST LOSSES

There are four categories of stylized facts. First, we describe banks by size and by age. Size is measured as the amount of total assets in USD bn as of closest to default reporting dates. Age is the number of years between the default date and entity creation one. Second, we consider the geography of losses. Third, we describe losses by size. Latter is illustrated in absolute and relative forms. Absolute amount is measured in USD bn. Relative size is the ratio of loss to total assets ('loss-to-assets' ratio). Fourth, we speak about the types of risk that brought to the largest losses. Fifth, we analyze the auditors being in place when large losses occurred.



(a) (b)

Figure 1. Smaller and Younger Banks Tend to Incur Large Losses.

Note: TA – total assets.

Figure 1 and Table 1 present the facts about banks within the selected set. There are no banks that are immune to losses. Both small and large banks, young and old ones may experience loss-

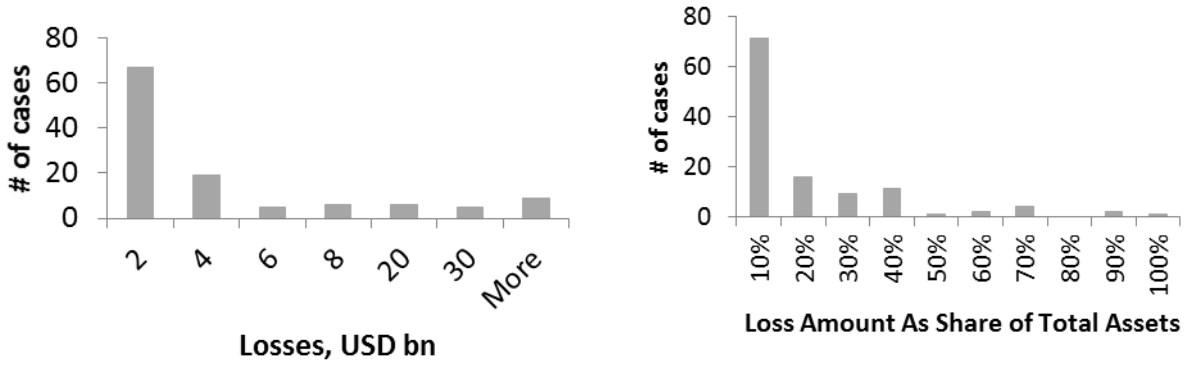
es. Nevertheless, when we speak about the world-largest losses, smaller and younger banks dominate the set.

Table 1. Descriptive Statistics for Bank Size and Age.

(a) TA, $ bn	America	Europe (w/o UK)	Asia	United Kingdom	TOTAL
#	47	37	15	10	**109**
MIN	0.4	0.5	11.3	1.5	**0**
AVG	192.6	207.3	165.2	759.9	**246**
MAX	1 938.0	2 015.1	575.1	3 587.2	**3 587**

(b) Age, Years	America	Europe (w/o UK)	Asia	United Kingdom	TOTAL
#	47	37	15	10	**109**
MIN	1.0	3.0	8.0	7.0	**1.0**
AVG	66.2	60.5	72.9	95.7	**67.9**
MAX	196.0	190.0	211.0	281.0	**281.0**

The youngest financial entity to experience a large loss of USD 140m one year after its creation is MF Global from the United States in 2008. The eldest is the Royal Bank of Scotland from the United Kingdom that lost USD 114bn in 2008, i.e., 281 year after its establishment. It is also the largest entity in the sample with USD 3.6 trln in total assets as of default date. Its loss is same time the largest in the whole dataset in absolute terms. The smallest entity in the set is Manhattan Investment Fund from the United States that lost USD 400m in 1996.



(a) **(b)**

Figure 2. There Are More Smaller Losses Both In Absolute and Relative Terms.

Worth mentioning is that there are financial companies that entered our list more than once. Those are Merrill Lynch (1987; 2008), UBS (1998; 2008; 2011); AIG (2000; 2009), Hypo Alpe-Adria Bank International (2004; 2015); Punjab National bank (2016; 2018). One of two cases for

each of the companies was operational risk and another in-between credit risk and increase in market risk. Credit risk was in 2008 for the Merrill and UBS. 2008 crisis consequences led to ultimate failure of Hypo Alpe-Adria in 2015. Let us briefly compare the nature of subprime mortgage losses in 1987 and 2007. Both times plunge in real estate prices triggered defaults and losses. Same time in 2007 the real estate price was artificially higher than compared to 1987. The volume of transactions was also much higher in 2007 compared to 1987. In addition to that, there were collateralized debt obligations (CDOs) in 2007. Though CDOs contained mortgage bonds of BB and BBB credit rating, CDOs themselves were rated at AAA. Thus overall credit grade was artificially heightened as by comporting no high grade than BBB, it could be at best only BBB. Thus banks had on their balances assets with no proper collateral as they were deemed more creditworthy than they really were. Given the same amount of initially offered mortgage loans CDOs enabled to enlarge credit exposure. This led to extra profits in good times and extra risks and losses in bad ones.

Figure 4 and Table 2 present the features of losses within the collected set. The average loss is USD 7.5bn, or ca. 15 per cent of total assets. As one remembers that recent Basel IV threshold is an increase of CAR from 12 per cent to 18 per cent. Of course, RWA do not necessarily equal to total assets, but may be equalized as first proxy. Thus we cannot reject the hypothesis that there was an idea to raise minimum CAR to be in excess of an average large loss, i.e., 18 per cent for CAR to exceed 15 per cent for average loss-to-assets value.

The total amount of largest losses in excess of USD 100m equal to USD 814bn of which the losses for the United States stand for USD 353bn (42 defaults). To compare the counter-crisis support (TARP bail-out) program there post-2007 amounted to USD 426 bn with overall recovery of USD 442bn [ix].It is nice that the funds were recovered, but still the possibility of state

funds' injection acts as the presence of state deposit insurance scheme. It incentivizes to try and to take more risks.

Interesting to note that the United Kingdom has the largest and the oldest banks that experienced huge losses. On opposite, Asian banks are generally smaller with lower relative losses expressed as per cent of total assets.

We also made decomposition by the outcome of loss event. As section 'c' of Table 2 shows, in slightly more than half of cases by count (63 per cent) and by amount (68 per cent) large loss implies bankruptcy. However, we were expecting the share to be much closer to 100 per cent. This is in fact observed in Asia. Judging by amount, most of cases (88 per cent) resulted in bankruptcy. However, from count perspective those equalled to only a third (27 per cent).

Table 2. Descriptive Statistics for Loss Amounts.

(a) Losses, $ bn	America	Europe (w/o UK)	Asia	United Kingdom	TOTAL
#	48	44	16	9	**117**
MIN	0,1	0,1	0,0	0,1	**0,0**
AVG	8,2	4,4	9,2	21,0	**7,9**
MAX	99,0	51,4	53,0	114,1	**114,1**
TOT	392,2	193,9	147,7	188,8	**922,6**

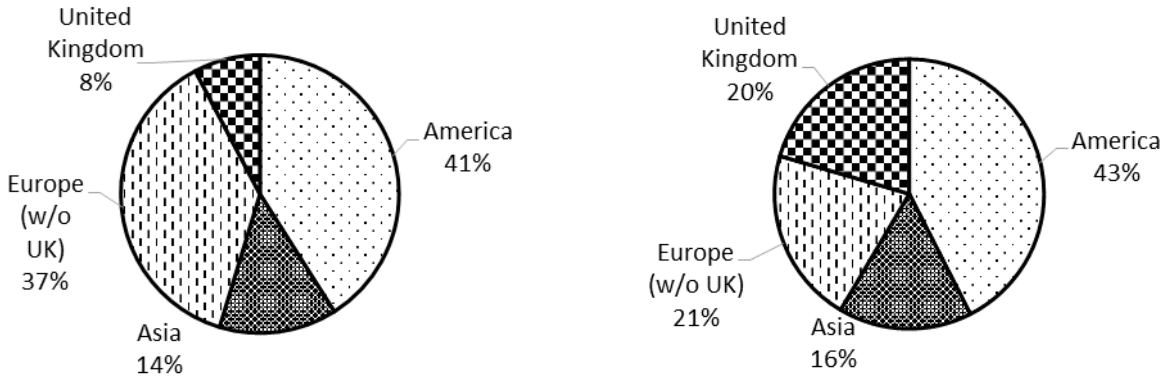
(b) Loss-to-Assets	America	Europe (w/o UK)	Asia	United Kingdom	TOTAL
#	48	44	16	9	**117**
MIN	0,1%	0,1%	0,1%	0,3%	**0,0%**
AVG	15,6%	15,6%	7,4%	20,6%	**14,8%**
MAX	93,9%	86,2%	30,1%	69,6%	**93,9%**

(c) Loss Event Follow-Up	America	Europe (w/o UK)	Asia	United Kingdom	TOTAL
Bankrupt					
#	36	28	4	5	**73**
AVG	9,3	3,8	32,4	13,6	**8,8**
TOT	335,7	105,8	129,6	68,0	**639,2**
Survive					
#	12	16	12	4	**44**
AVG	4,7	5,5	1,5	30,2	**6,4**
TOT	56,5	88,1	18,0	120,8	**283,3**

Bankrupt, % of total (Bankrupt + Survived)					
#	75%	64%	25%	56%	**62%**
AVG	66%	41%	96%	31%	**58%**
TOT	86%	55%	88%	36%	**69%**

We have identified several cases that illustrate the contagion effect, i.e., the loss proliferation from one institution to another. This often happen because of high risk concentration. For instance, Continental Illinois National Bank and Trust defaulted in 1984 as defaulted the bank-originator for the purchased loans Penn Square Bank; UBS experience large loss in 1998 because its main asset LTCM also went bust in 1998; Washington Mutual defaulted in 2008 because Lehman Brothers, its largest depositor, defaulted first in 2008; Colonial Bank defaulted in 2009 because it invested much in Taylor Bean than defaulted after before.

Figure 3 presents additional information on cases' breakdown by geography. Two distinct countries that dominate the geographical distribution are the United States and the United Kingdom. Those are countries with largest banking systems and thus having by construction higher a priori probability of scoring losses.



(a) By Count (b) By Amount

Figure 3. Total Losses Breakdown By Geography.

Asian losses mostly relate to 1990s mortgage and Thai crises, whereas American cases correspond mostly to the 'Great Recession' of 2007-09 (see Figure 4). The global map of cumulative losses per country may be seen from Map 1 .

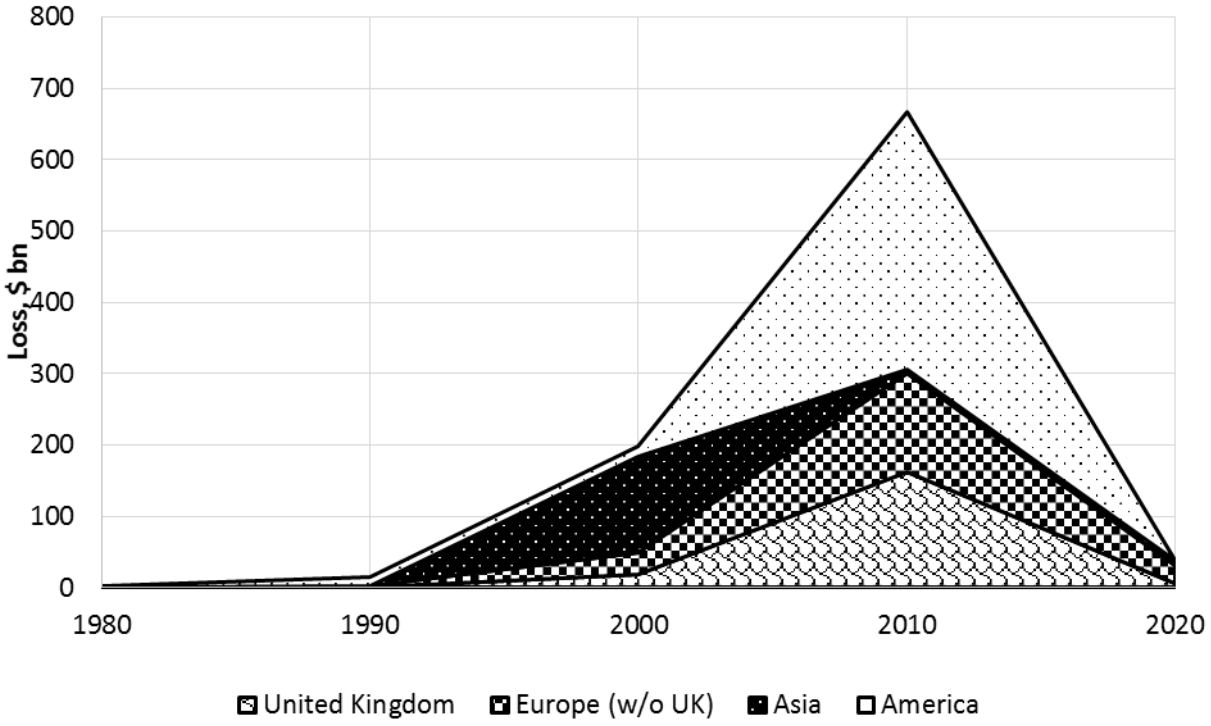
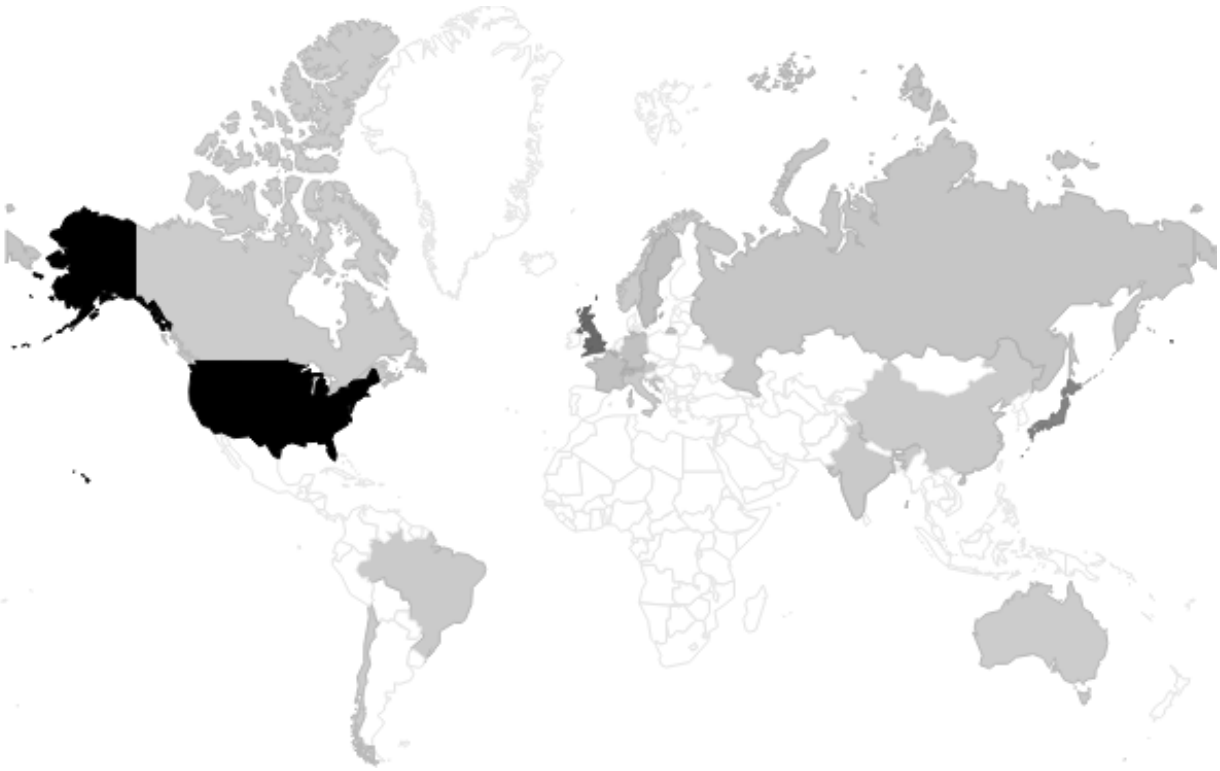


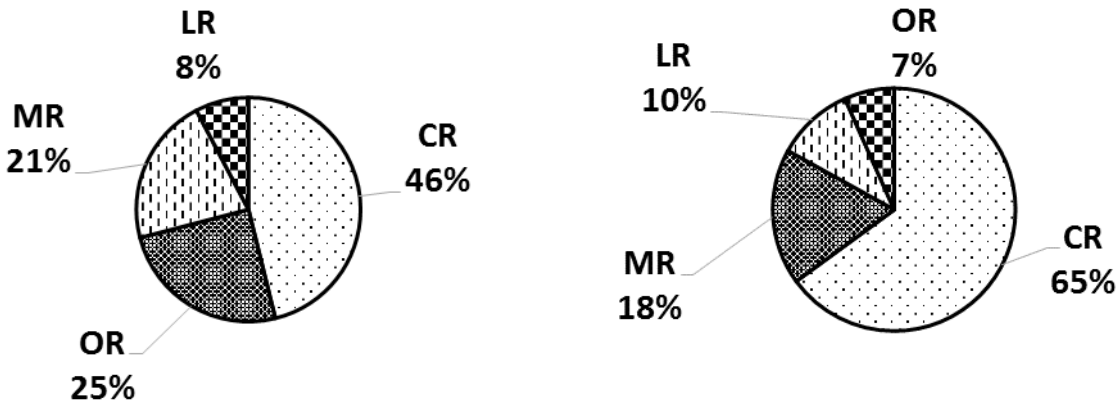
Figure 4. Asian Lead in 1998 Losses Was Overcome by America in 2007-09.

When reviewing the geography of losses, we found that there seems to be no country on earth immune to large losses except countries or regions with small banking systems (e.g. African countries). Even for Canada there was a case with Bank of Montreal loss in 2007. This is disregarding the fact that Canada was the only country that bailed out no bank in 2007-09. As (Calomiris and Haber 2014) argue this is due to the organisation of political institutions, and not the regulation framework design. Interestingly we found no large losses related to Chinese state banks, though several of those sit within world TOP-10 banks by banking assets. There seems to be restructuring to hide actual loss as financial behemoths by probability theory should have at least experienced a loss in excess of USD 100m. Another reason for our failure to find such cases might be information unavailability in English, as well as information filtering when publishing abroad and statements related to the Chinese banking sector. Let us move to analysis of our dataset breakdown by risk types.



Map 1. Countries with Small Banking Systems Tend to be Immune of Large Losses

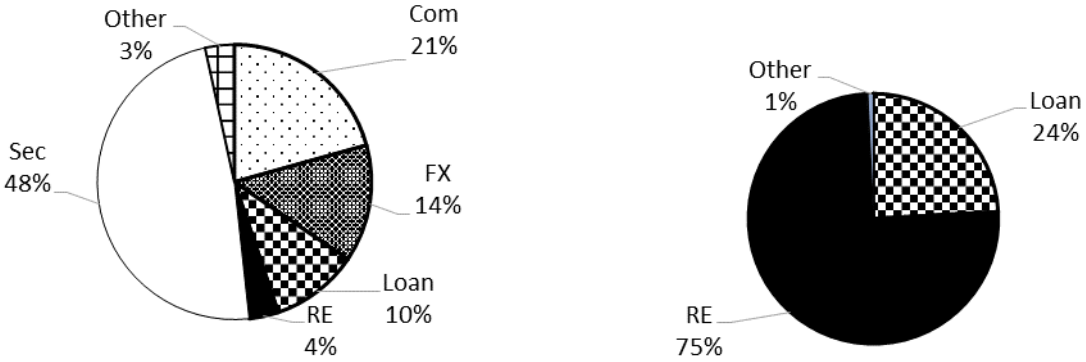
All losses were classified by risk types. If the losses resulted in not-paying for loan, it was called ‘credit risk’ (CR). When there was any kind of fraud, it was marked as ‘operational risk’ (OR). When a bank wishes to bet on some expected path or change in market indicator we called it ‘market risk’ (MR). Conventionally, those risks are called market ones. However, we identified that there was no unexpected move in market indicators. There was a pure business strategy to gamble and bet on certain outcome. Thus we consider it improper to call such situation a realisation of market risk. It is a casino. That is why it should be understand as ‘risk-appetite’, or increase in it. As Figure 5 shows, the set is dominated by credit risk cases in terms of both count and amount. Fraud cases form a quarter of all ones, but contribute to only 6 per cent in volume terms.



(a) By Count (b) By Amount

Figure 5. Total Losses By Risk Types.

When considering operational risk, the majority of fraud cases both in terms of count and amount related to securities transactions (see Figure 6). It is also interesting to note that there were found two cases when operational risk (fraud) was announced mostly same time as the loss on mortgage portfolio was revealed. This was typical for Yamaichi Securities Company in 1997; Societe Generale in 2007; and potentially to Punjab National Bank in 2016, 2018. Coincidence of announcements implies the hypothesis that most loss might have been attributed to mortgage or more generally to credit loss. However, to park part of the loss as an extraordinary (one-off) event fraud activities might have been mentioned.

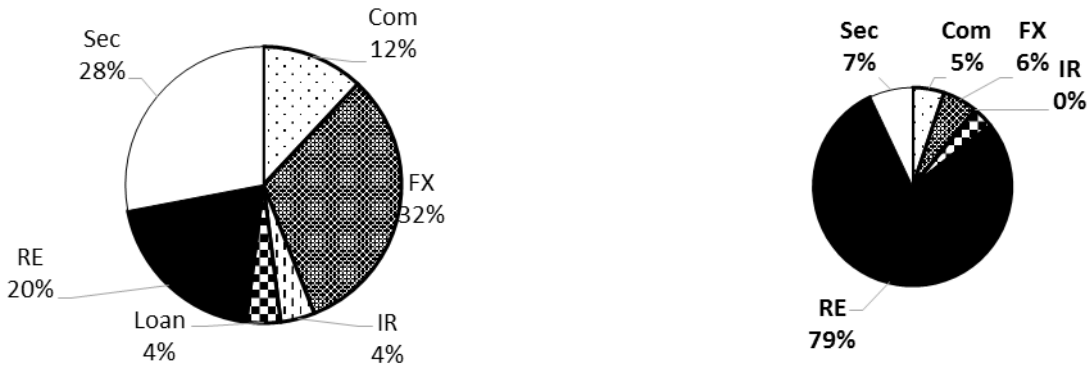


(a) By Count (b) By Amount

Figure 6. Operational Risk Decomposition By Underlying Asset.

Disregarding the inclusion of non-financial (industrial) companies in the set, the portion of commodity-related fraud attributes to banks as well. For instance, copper was the underlying for the loss of Codelco in 1993 and Sumitomo Mitsui in 1996; gas brought losses to Amarath Advisors in 2006 and Bank of Montreal in 2007. Oil was the underlying for losses of Metallgesellschaft in 1993 and China Aviation Oil (Singapore) in 2004, though latter two cases refer to increased market risl, not operational risk. Others had their activity related to the underlying asset: energy for Enron in 2001; telecommunication for WorldCom in 2002; wheat for MF Global in 2008.

Most cases for excessive risk-taking relate to securities and foreign exchange transactions. Nevertheless, those result in tiny portions of total losses in amount terms (see Figure 7).



(a) By Count (b) By Amount

Figure 7. Market risk (Increase) Cases Decomposition By Underlying Asset.

We would like to additionally focus on who audited the bank that suffered would largest losses. Table 3 shows losses decomposition by auditor firms' categories and by largest auditors. Global category stands for Big-4(5) list of PwC, Deloitte, EY (Ernst and Young), KPMG, BDO and sometimes Grand Thornton or Arthur Andersen (later till 2001). We found that several banks used more than one auditor. Those were the following. Manhattan Investment Fund used Deloitte and EY and went bust in 2000; Calyon to lose in 2007 used PwC and EY; Fortis solicited audit services from KPMG and PwC, but lost in 2008. We may observe from Table 3 that the least

number of the largest losses both by count and amount relate to EY; the most in amount related to KPMG and Deloitte, where KPMG leads by number of the largest loss cases.

Due to the fact that there were missing positions in the data set according to the name of the auditor, it was necessary to make a comparison with independent data. As example, AuditAnalyics data was taken. Their comparison with the author's data is presented in Table 4. It can be seen from them that for most auditors the distribution results are the same as in control data set: KPMG, PwC, Deloitte have similar percentages with the submitted report. The only significant difference was the company EY, according to their share differs significantly, by more than 10%. Perhaps this discrepancy is because in 42 cases we have not find the information about failed banks' auditors.

Table 3. Losses Decomposition by Auditors.

(a) Losses By Auditor Category

Loss, $ bn	Global	Local	N/F	TOTAL
#	65	10	42	**117**
MIN	0	0	0	**0**
AVG	11	7	4	**8**
MAX	114	53	42	**114**
TOTAL	702	70	151	**923**

(b) Losses Per Global Auditor

Loss, $ bn	Arthur Andersen	BDO	Deloitte	EY	KPMG	PwC	TOTAL
#	1	1	16	8	25	16	**67**
MIN	1,0	2,3	0,2	0,0	0,1	0,1	**0,0**
AVG	1,0	2,3	14,9	8,5	9,0	9,7	**10,3**
MAX	1,0	2,3	114,1	32,8	47,4	99,0	**114,1**
TOTAL	1,0	2,3	238,8	67,8	225,3	155,7	**691,0**

Table 4. Market Share by Auditors.

Auditor Name	Percent by Authors calculations	Percent by AuditAnalyics calculations[x]
KPMG	21%	16,0%
Deloitte	14%	15,5%
PwC	14%	16,8%

EY	7%	22,8%
Others	9%	28,9%
N/F	36%	16,0%

5. CONCLUSION

To make a data set of largest losses we analyzed 117 world-largest defaults that occurred since 1972. The date corresponds to the creation of the Basel Committee predecessor. The loss threshold was chosen as USD 100m. We analyzed more than 90 sources and found more than 406 unique references to identify exact reasons for the defaults. We were additionally motivated to prepare such an overview of the history of world largest defaults because we found no exhaustive and complete description of such cases. Mostly often there is cherry-picking of certain cases relating to particular risk realisation, e.g., subprime crisis, bank run issue or operational risk.

As a result we may argue that the default mechanics in most case was driven not by deregulation, but by greed (by increase in market risk). That was possible because the ‘cushion’ was in place. It was either state deposit insurance system or bailout program.

Annex 1. Case-wise Description

No	Year, Entity (Country); Loss in $bn	Description
1	1973, United States National Bank of San Diego (United States); 0.16	The bank president Conrad Arnold Smith approved lending to affiliated entities. Federal Deposit Insurance Company (FDIC) ran first inspection of the bank during 26 June – 12 September 1972. As a result the amount of classified loans (highly unlikely to be repaid ones) equaled to 371% of equity and liability-side provisions. Later in 1973 second inspection was initiated. It resulted in transferring the classified loans to past due and lost category. If the FDIC launched external management right after the first inspection, there might be no default or the lost amount might have been less.
2	1974, Herstatt Bank (Germany); 0.18	There were daily limits for open currency position (OCP). It was DM 25m (USD 9.6 m). The bank regularly breached it implying the cumulative loss above 89% of capital by 1974. Regulators were concerned of the situation since 1971. They approached bank management to reconfirm whether they were aware of the critical case. Each time they received affirmative response that everything was as planned and under control. This repeated till 26 June 1974 when Herstatt did not have enough funds to pay to its US counterparts. A special meeting was scheduled for the second half of the day to decide upon bank default and sanation. There were regulators, representatives of Herstatt and other large German banks. Latter were seen as potential sanators. By the time the meeting started trading session started in the United States. American counterparts transferred due Deutsch marks to Herstatt. However, Herstatt was unable to counter-transfer USD. After the DM transfer was received, Herstatt was deemed bankrupt. There are at least two lessons to learn from the case. First, regulators should not blindly rely on bank management affirmation of solid performance in case they have foundation for doubt. Thus earlier inspection (e.g. in-between 1971-1974) might have underscored problems and prevented from making last fatal deal of USD-DM exchange. Second, the decision upon bankruptcy should have been approved prior to start of trading session in the United States, so that the American banks did not transfer DM to Herstatt as Herstatt was unable to offset the transfer in USD. Thus American banks did not bear losses, and there was no need to resolve cross-border default. Remember, the case served the basis for reorganizing Groupe de Contact into the Basel Committee. Just imagine that have the meeting ended prior to start of the US business day, the whole history of world banking regulation might have been different.

3	1974, Franklin National Bank of New York (United States); 1.3	Bank followed conventional business model of short-term borrowing and long-term lending with one exception. One sixth of bank liabilities consisted of high-yielding amount from Fed-funds market. That is why bank strategy was to lend to risky corporate borrowers to be able to justify high interest rate. Latter was needed to gain profit above high rate on its liabilities. 1973-74 oil crisis led to defaults of bank borrowers and to the failure of the whole bank. In case bank had limited its market risk and had not borrowed at high rates from Fed-funds market, it had not needed to lend to risky borrowers, and it could have survived.
4	1975, Security National Bank of Long Island (United States); 0.11	Bank actively offered loans to building and construction firms. Crisis at real-estate market led to defaults of the borrowers and the bank. In case bank had followed more conservative credit policy, it could have escaped default.
5	1976, Hamilton National Bank of Chattanooga (United States); 0.15	From its establishment in 1889, the bank ran conservative credit policy. However, in 1970s it decided to make a switch and lend to rapidly progressing construction firms. In contrast to the Security National Bank of Long Island, there was a subsidiary building entity that received loans. As a result of real estate market crisis, the bank had failed. If it had followed initially conservative strategy, it could have survived.
6	1982, Banco Ambrosiano (Italy); 1.4	The bank director Robert Calvi was lending to Panama-based companies. Those loans past due payment dates. There came rumors of bank's fragility. To prevent deposit withdrawal Vatican even promised to depositors that all their funds would be paid back in full. Nevertheless, the loans occurred to be lost and bank failed. In case regulator had introduced concentration limits or limits on lending to such offshores as Panama is, losses might have avoided.
7	1984, Continental Illinois National Bank And Trust (United States); 2.7	The Bank has purchased USD 1 bn speculative loans from Penn Square Bank. Those loans related to energy sector. They were granted during the times of oil and gas prices rise of 1970s. However, Penn Square Bank defaulted, and Continental Illinois got past due loans. To offset loses Continental Illinois tried to lend to high-yielding, but highly risky borrowers. This did not pay off. In addition there appeared rumors on bank poor sustainability. There became a bank run in 1984. As a result, bank failed. If a bank followed more conservative business strategy, it might have survived.

8	1984, American Savings and Loan (United States); 3.3	In 1970-80s the bank was actively offering mortgage loans. When housing price fell as a result of real estate crisis, borrowers stopped paying on their mortgages. As a result, the bank failed. In case it followed more conservative strategy or requested for extra collateral, losses could have been smaller.
9	1987, Soros Fund (United Kingdom); 0.8	The George Soros US investment fund Quantum had bet against Japanese economy for the US one. So there was long position for the US stock index, but October 1987 crash brought losses to the fund. Disregarding losses bared, in 1992 Soros accumulated a pool worth USD 10 bn to buy DM and sell GBP. As a result, it gained USD 1 bn. To consider both events jointly since 1987 to 1992, the fund total gain was USD 200m, or 0.4% compound annual return rate on the pool of USD 10bn.
10	1987, Merrill Lynch (United States); 0.28	Real-estate prices grew for last five consecutive years since 1982. Thus, in April 1987 the bank bought bonds of the State National Mortgage Association for USD 935m to profit from the expected continued growth in prices. However, there followed a plunge in real-estate prices. Bank management decided to sell securities being unaware of another purchase deal. It was trader Howard Rubin who made an unauthorized deal to buy same bonds for USD 500m. In case traders were monitored more tightly, there seems to be less loss. However, the case is mostly mirrored thirty years later in 2007 by Societe Generale. In contrary to Merrill Lynch, Societe Generale first announced fraud by a trader, and only then followed a disclosure of losses on mortgage portfolio.
11	1988, First Republic Bank (United States); 3.86	The bank was active in mortgage lending. After a collapse in real-estate prices, borrowers, as well as the bank itself defaulted. In case bank followed more conservative strategy, it could have survived.
12	1989, Mcorp (United States); 2.7	The bank specialized in mortgage lending and lending to electricity companies. It suffered losses twice. First, from plunge in real-estate prices. Second, from dive of oil and gas prices starting in 1985. If there were more collateral requested, losses could have been smaller.
13	1989, Gibraltar Savings (United States); 0.25	The Bank had also failed from over-focus on mortgages and respective fall in real-estate prices. More diversified lending could have helped to stay alive.

14	1989, City Federal Savings (United States); 0.22	Since 1984 bank has mostly tripled its mortgage loan portfolio. It was possible due to abandoning of credit lending limits. When the savings and loan crisis of 1980-90s occurred, the bank collapsed. If there was not that significant credit expansion or more collateral was required against loans, the losses might have been smaller. Similar scenario was observed in Japan during 1996-1998 (see cases of Hokkaido Takushoku, 1997; Yamaichi Securities Company, 1997; Nippon Credit Bank, 1998; Long Term Credit bank of Japan, 1998).
15	1991, Bank of New England (United States); 6.3	The bank had focused on building and construction companies, as well as on mortgage lending. Former provided ca. 50% of the loan book, whereas latter stood for ca. 20%. As a result of real-estate boom bust, home prices plunged. To avoid going bankrupt the bank has offered two options. First, it suggested for a regulatory approval the plan to sell its companies on Man and Rod Islands. The proposal was rejected by the local Boston Federal Reserve. Second, the bank wanted to convert its debt instruments to equity. Almost twenty years later in Basel III this option became a prerequisite for an instrument to be treated as a capital component for CAR purpose. At 1991 debt-holders rejected the novelty. Thus to avoid crisis, from one side, the bank should have had a more diversified loan portfolio; from another side, regulator should have proposed an alternative resolution plan if it rejected the bank proposal.
16	1991, Christiania Bank og Kreditkasse (Norway); 0.73	Bank specialized on retail mortgages. There was a home price boom. Bankers credited population to buy flats and houses. Demand for housing rose. Therefore, rose housing price. Building societies increased housing offer. Banks tended to lend mortgages more tolerantly as the collateral price was rising decreasing credit risk estimates. That was a conventional housing bubble spiral that took place till the economic recession came it. Latter was caused by oil price fall ca. by 20% in 1991. Housing prices started reverse movement. Thus bank was left with non-serviceable loans. To avoid bankruptcy the bank should have been more conservative and required more collateral.
17	1991, Fokus Bank ASA (Norway); 0.17	The bank replicated the destiny of Christiania Bank og Kreditkasse. By specialising on mortgage lending it became vulnerable to housing bubble burst. Being more conservative and having diversified its activities, could have led to lower losses.
18	1991, Goldome (United States); 1.5	Goldome followed the path of City Federal Savings. It focused on mortgage lending and lending to building and construction firms. The housing bubble burst hit the bank standing. There were two reasons. Borrowers' incomes decreased, they were unable to pay on due time. Housing prices dropped leading to undercollateralized lending. Losses were exarcerbated by the change in prudential accounting. Goodwill was derecognised as part of capital leading to decrease of bank cushion by USD 530m. In case the bank followed more conservative lending policy and had diversified its loan book, thre was a chance to avoid that large problems.

19	1991, Den norske Bank (Norway); 0.54	The bank topped the country ranking for largest losses having shared the first place with christiania bank og Kreditkasse and Fokus Bank ASA. Den norske Bank also focused on retail mortgages. It went bust when the housing bubble burst.
20	1991, Spar + Leihkasse Thun (Switzerland); 0.15	Though from another country than Goldome or Den norske, it faced the same problems from having largely focused on mortgage lending. Housing bubble burst led to deterioration in borrowers creditworthiness and diminishing of collateral base. As a result the bank suffered losses.
21	1991, Bank of Credit and Commerce International (BCCI) (United Kingdom); 16	PwC revealed on 5 July 1991 that there were common cases of false loans and unaccounted deposits in BCCI. Situation is similar to Herstatt case of 1974 in that in both cases prudential limits were breached. In BCCI case the limit of USD 1bn on investments was exceeded by USD 10bn. As with Herstatt, regulators should have acted more promptly having noticed strange signals not being calmed down by assurings of bank top-management.
22	1991, Southeastern Bank (United States); 0.5	Bank focused on mortgage lending. As in Norway and Switzerland, it was hit by a housing bubble burst. Disregarding the bank met all prudential requirements, regualtor decided to liquidate it because there were toxic mortgage assets on its balance sheet. More conservative and devirsified lending policy could have led to smaller losses.
23	1992, Sparbanken Sverige (Sweden); 6.53	Swedish bank focused on mortgage lending. As was in Norway, Switzerland, the United States, the fall in housing market prices led to borrowers defaults and to ultimate bank insolvency. In Sweden the bubble burst was triggered by economic slowdown (there was a decrease in GDP) and by the policy of the Central Bank that increased short-term interest rate. In case the bank followed more conservative lending policy, losses could have been smaller.
24	1992, Skandinaviska Enskilda Banken (Sweden); 6.26	Situation is similar to that observed with Sparbankern Sverige. Focus on retail mortgage lending market was the cause for the bank failure after the prices plunged.

25	1993, Metallgesellschaft (Germany); 1.59	German industrial company bet on oil prices growth by buying futures. However, the non-OPEC (oil producing and exporting countries) increased oil extraction and further oil sale, market price dropped to its minimal level since 1990. As a result company registered losses and decided to close its position. In case the position was not that speculative (i.e., not that large), company could have kept the futures and with time have had recovered the losses.
26	1993, Showa Shell Sekiyu (Japan); 1.49	Japan oil company was buying USD for JPY. It was expecting USD to strengthen, so that it could repurchase more JPY. However, it turned inverse and implied losses to a company. If the position was not speculative, exchange rate volatility would have been hedged by cashflows from principal activity.
27	1993, Codelco (Chile); 0.21	Codelco specialises on producing copper in Chile. Juan Pablo Davil was an FX trader. He said he wished to sell copper futures, but in fact it was registered a purchase of copper futures. To eliminate the potential loss he sold additionally oils for gold and silver. On opposite, this only increased the loss amount. Having more robust IT limit systems for trading and better arrange corporate governance aroung deal approaval process could have helped to avoid such losses.
28	1993, Nordbanken (Sweden); 4.06	Bank focused on retail mortgage lending and followed the list of bankrupt banks after the failures of Sparbanken Sverige and Skandinaviska Enskilda Banken.
29	1993, Gota Bank (Sweden); 5.52	Case was similar to the mortgage lending banks of Sweden line Sparbanker Sverige, Skandinaviska Enskilda Banken and Nordbanken.
30	1994, Orange County (United States); 1.7	The fund used short-term borrowing to purchase state bonds. Inverse floaters were used for the fund strategy. Inverse floaters are the debt instruments with the interest rate inversely related to market benchmark, e.g., -LIBOR+3bp (whereas conventional floating bond would be +LIBOR+3bp). Fund was expecting that the interest rate would stay unchanged at least or was to go south. Henceforth, the differential of short-term and long-term rates would be large. However, there was a spike in demand for long-term borrowing (bond price rose and rate fell) and decrease in the short-term one (price fell, interest rose). As a result rate differential substantially decreased. Fund strategy did not pay off. More diversified and moderate investment policy could have helped to survive.

31	1994, Kashima Oil (Japan); 0.02	Kashima oil followed the path of Showa Shell Sekiyu. Both bet for JPY appreciation against USD when buying USD futures, though Kashima claimed having used it for hedging purposes. There happened a Kuwait war conflict that led to inverse dynamics. USD strengthened and company had to pay more than it did for selling futures. If the position was for hedging, loss on futures would have been offset by profit from core activity. As this was not the case, the position should be deemed speculative. Avoiding speculation and using financial products for hedging purposes could have helped the company to prosper.
32	1994, Askin Capital Management (United States); 0.6	American investment company has formed a portfolio of two security types: collateralized mortgage obligations (CMO) and government bonds. CMO are special in that their price rises with the increase in interest (key) rate, whereas that of government bonds falls. Thus having both secuties in a portfolio was a way for Askin to have mostly risk-free arbitrage profit disregarding any change in interest rates. However, in 1994 interest rates rose, but there was no demand for CMO. As a result government bonds decrease in price (because of rate hike), but CMOs also fell in value because of lack of demand. Thus the whole portfolio lost in value. Company risk-management should have accounted for market liquidity risk that took place with CMOs or just have terminated positions earlier.
33	1994, Kidder Peabody (United States); 0.35	Company suffered from a Joseph Jett manipulation. He was trading with Treasury bills. When making a purchase, he went to register it in a system. The accounting was done in a way that profit was registered as if the bonds were sold, i.e., against market price. However, there was no profit in fact. Trader Jett was scoring sort of immediate profit. To hide missing of real profit, he was augmenting the amount of transactions. When the scheme was disclosed, large loss was accumulated. In case there was transactions repricing done till the moment the security goes away from the balance sheet, the correct financial performance would have been available earlier.
34	1994, Procter & Gamble (United States); 0.16	Company was buying interest rate derivatives by using leveraged funding. There was a bet that rates in the future are to decrease. When the Federal Reserve announced that short-term rates would be on opposite risen, the company got losses. Anyway it had to pay on the borrowed funds. Thus it had to sell derivatives at a lower price than the purchase one. In case there was no gamble and the derivatives were used to hedge the cash-flows, no loss was to be obtained (neither could they gain profit). Particularly, there was no need to borrow for such a speculation as it was not needed for the core production activity of the company.

35	1995, Daiwa Bank (Japan); 1.1	The loss was brought by the vice-president of the New York branch Toshihide Iguchi. He undertook unauthorised bond trading. In 1984 he made his first loss having bet that interest rates are to fall. As latter rose, he got a loss of ca. USD 50-200k, or 0.01% of total assets under management. As he used non-proper (clients') securities, he had to falsify registry of deals made. During 11 forthcoming years he was transacting with larger and larger volumes of clients bonds. Eventually his cumulative loss exceeded USD 1bn. In case there was a transparent securities custody with transactions and financial result collected throughout the whole banking group, the loss-making transactions could have been noticed much earlier, otherwise it was not unofficially approved by some more senior executives.
36	1995, Barings Bank (United Kingdom); 2.2	Trader of the singaporean branch Nick Leeson was making a combination of trades. He was buying Nikkey 225 futures. Same time there were short positions for japanese state bonds and short volatility for the Nikkey index. He was expecting Nikkey to rise; government bonds to fall in price and volatility to be stable, i.e., a dynamics of favourable economic environment (of economic growth with moderate inflation). Japan was unable to restart its economy. Deflation dominated. In addition since mid-january Nikkey has fallen as a result of an erthquake (Nikkey fell by 5.6% a day). Government has dampened interest rates to recover economic activity. Latter led to rise in goverment bond prices. In the end Leason accumulated a loss of USD 1.3bn. In case there were control procedures enabling to have a group-wide trading portfolio, the risky bet could have been revealed earlier.
37	1996, Sumitomo Corporation (Japan); 2.62	Yasuo Hamanaka was a copper trader at Sumitomo. Since 1985 he was increasing volume of his trades to recover loss on previous transactions. The behavior was similar to that of Toshihide Iguchi Iguchi from Daiwa who brought his bank a death loss year in advance having also started manipulation in 1984. Thus 11-year increasing trading volumes of Hamanaka impacted the world copper price. He had to continue buying in order not to allow prices to fall. However, Asian crisis dampened the demand for copper. This triggered fall in prices. Overall cumulative loss of Hamanaka exceeded USD 1.8 bn. In case trading and respective financial results were more often challenged, the loss could have been earlier noticed.
38	1996, Handelsbanken (Sweden); 3.32	This is the latest case of bank failure after the housing bubble burst in Sweden. Having overfocused on retail mortgage lending, the bank did not survive.

39	1997, Morgan Grenfell (United Kingdom); 0.65	Peter Young was the asset manager of the Morgan Grenfell fund. He was purchasing equities in larger quantiites than authorized. From one side, he invested into more than 10% of purchased company stock. From another side, those equities were often out of fund limits, i.e., there were no limits for those equities. To anyway acquire it Mr. Young was mirroring his investments. He deposited funds within the authorised companies, so that the latter purchased equities he wished. Thus both fund limitations were avaided. The scheme was revealed after the SEC and FBI got interested in purchasing Solv-Ex company stock. Morgan Grenfell initiated own investigation and found Young had three times exceeded company limits. In case more control over traders was in place and the ultimate holdings were accounted for, manipulation could have been revealed earlier.
40	1997, NatWest (United Kingdom); 0.15	Bank losses were attributed to two traders' activity, those of Kyriacos Papouis and Nil Dojston. Mr. Papouis was buying call options for DM. Since March 1995 to February 1996 trader got his first losses. He was falsifying the option values and started to make intrabank transfers to hide losses. He continued buying overpriced options till he quited the fund in December 1996. Nil Dojston was doing similar transactions. He bought overvalued call options for GBP. Instead of mark-to-marking his positions he was adjusting valuation inversely as not to demonstrate the loss. Both fraud activities were revealed during the internal inspection held in February 1997. In case more automated mark-to-market revaluation was done, losses could be less significant.
41	1997, Hokkaido Takushoku Bank (Japan); 7.5	The bank focused on mortgage lending. After the housing bubble burst, it incurred huge losses. More moderate and diversified lending policy, could have helped to diminish losses.
42	1997, Yamaichi Securities Company (Japan); 53	Bank focused on retail mortage lending. It was also investing in stocks. During boom times mortgage collateral and equity valuation grew. During the bubble burst losses came from deliquency in mortgage loans and negative revaluation of equity positions. Same time the bank announced that it has revealed fraud activity of a group of traders that were using client accounts to hide own losses. This case is somewhat similar to what took place 10 years later with Societe Generale in 2007. At that time the bank also disclosed fraud activity and losses from mortgage loans mostly same time. As for Yamaichi, more conservative and diversified approach to lending and investment might have helped to survive.

43	1998, Long Term Capital Management (LTCM) (United States); 4.6	LTCM had Robert Merton, Nobel Prize winner in economics, as one of its founders. Initially the hedge-fund focused on arbitrage transactions. However, by start of 1997 such arbitrage opportunities largerly disappeared. That is why the fund invested into risky assets, particularly in emerging markets' bonds. Its first loss was brought after purchasing Japanese government bonds. The bet was to have spread narrowing in-between old and new 30-year bonds. But this did not happen. Even inverse dynamics occurred bringing losses. Disregarding the positive reputation of Professor Merton, fund clientele started claiming paying back deposited funds. Same time the fund was making risky bets to short long-run put options for (i.e. buy) stock indexes of S&P500 and CAC40 that turned out to be out-of-the-money. When indexes fell, it brought another losses to the fund. LTCM had also invested much in short-term Russian government bonds (GKO). Russian default of 1998 mostly ruined the fund as it was unable to extract invested funds. Contagion from LTCM default led to material losses of UBS in 1998. To rescue funds' clientele there was a need to the United States Federal Reserve to bail-in. In case the investment strategy was more diversified and more conservative such losses could have been avoided.
44	1998, Union Bank of Switzerland (UBS) (Switzerland); 0.43	Bank strategy was to buy fixed income securities and call options for japanese stocks. Since 1997 latter became volatile in price changes. The position was difficult to hedge. When first losses came, UBS started selling japanese stock. The selling volumes were so large that it became the largest seller on the market driving quotes even more to the south. In parallel UBS started to sell Nikkei 225 futures, but lost. Disregarding certain japanses stocks fell in price, Nikkey was rising from time to time. The bank seems to have had problems with option pricing. Limiting bank's market risk could have led to smaller losses.
45	1998, Nippon Credit Bank (Japan); 27	The bank was one of the most long-resisting against housing bubble bust. However, the large share of mortgage lending and respective borrowers' defaults led to bankruptcy. If there were no Asian crisis of 1997, the bank might have survived even with cumulative loss on mortgage portfolio. More moderate and diversified lending policy could have softened the failure.
46	1998, Long Term Credit Bank of Japan (LTCB) (Japan); 42.15	Bank focused on lending to building and construction societies and on retail mortgage. Whereas it prospered during the housing bubble boom, it suffered loss and went bankrupt during its bust. In case the bank was more conservative in lending, losses could have been milder.

47	2000, American International Group (AIG) (United States); 1.32	The company standing was poor. That is why its CEO Hank Greenberg used state funding of USD 180bn to extend company living. To make more business it also engaged in fraudulent transactions. For instance, it helped to enhance one of its client's balance sheet by contracting artificial insurance policies. Because of SEC requirements AIG finan-cials were restated bringing significant loss to a company.
48	2000, BAWAG (Austria); 1.52	American hedge-fund Belforte Group was one of the bank's principal borrowers. It was found by Volfgang Flettel, the son of the head of the bank. During the first years it was registering solid profits. It specialized on investing into developping markets' bonds. First problems with the bank started early in 1994. At that time the Austrian Central Bank identified that USD 2bn of loans were granted to Carebean entities. Latter were also managed by Mr. Flettel. Supervisor required to redeem those credit lines and asked the head of the bank to quit from the management role. The newcoming bank president continued to grant uncollaterilized loans to the fund. When 1998 crisis struck, the fund experienced losses and was unable to repay its credits. The scheme was revealed only in 2005 when the investigation touched one of the companies that were used to stock losses. In case there was collateral when offering loans, the losses could be less significant.
49	2000, Manhattan Investment Fund (United States); 0.4	Michael Berger was the fund manager at the time. IT companies were overvalued. That is why the fund focused on opening short positions against tech companies. There was expectation that prices should soon fall down. Nevertheless, the prices sky-rocketed even till March 2000. That was the reason for the fund to close its positions at the end of 1999 and register loss. However, the fund management still wished to show its attractiveness to investors. As a result accounting data was falsified to demonstrate the annualized return of 27% instead of 12%. Bookkeeping manipulation was revealed after one of Bear Steans traders approaches SEC asking to investigate fund activity. It case the fund did not have much appetite for risk, it would be able to hold short position for longer and eventually score profit from dotcom bubble.
50	2001, Enron (United States); 1.01	Company was deemed a leader in American energy business. However, it occurred that it was a mere financial pyramid that was booking unearned profits. This led to rise in investors' interest for the company. Its valuation rose incen-tivizing repeating the cycle of creative accounting. When the dotcom bubble burst and the company stock market in-vestments brought losses, the whole pyramid started ruining. The auditor of fraud financials was the Arthur Andersen company. It ceased its operations after Enron bankruptcy. The company financial director tried to explain that he was not aware of the reports underlying data when was signing those. This led to the inaction of Sarbanes-Oxley (SOX) Act in 2002. It required financial director to bear responsibility for the financial reports being signed by them. This is a case of operational risk and of internal fraud in particular.

51	2002, AIB/Allfirst (United States); 0.69	John Rusnak was a trader. He bet for yena appreciation by selling its futures. However, this did not happen for three years from 1997 to 2001. Yena even depreciated exacerbating trader's losses. Rasnak decided to hide its losses via options' trading. He was making two types of deals per day. He sold put options for yena with one day maturity. He then bought call options for it for longer maturity.Both options had the same stike price, premiums and were in the money. Thus trader was registering profit from having sold put contract. He then added future profit from call option that was expected to exceed premium for purchasing the contract. He arrived at accounting profit. He also made transactions with put options that were in the money. Strike prices for those contracts exceeded market spot prices. There was high probability that options could have been exercised leading to losses of the trader. But in the short-run he registered profit. He used it to replicate deals once again. Occasionally his procedure was revealed when two tickets for deals were not confirmed by himself. On investigation started overall twelve non-confirmed deals were found and the whole sequence was also identified. To avoid large losses there should have been a verification of profit per trader, not limiting to checking the cashflows only.
52	2002, Riječka banka (Croatia); 0.1	Eduard Nodilo was a currency trader. He was buying and selling USD same time for EUR. Those were highly risky transactions as were a combination of several buy-sell legs of a deal. All of that were intraday deals and had to be closed by end of the day. Trader's expectations did not verify and he was making losses. Instead of closing the position end of the day, he wanted to multiply the position to cover losses in case of good luck. To undertake position increase he was registering non-existing deposits within foreign banks. Those were bank assets on the balance sheet. Increase in asset amount means profit. He used it for increasing the position. The position itself was closed, and right afterwards a new follow-up position was opened. He also tried to register trades at wrong dates to suffer less from exchange rate unfavourbale dynamics when estimating financial result of the trades. More tight control over traders could have helped to minimize losses.
53	2002, WorldCom (United States); 3.3	WorldCom was the largest American telecom operator. However, it chose the very same strategy of falsifying its ac-counting profits as Enron did. The dotcom crisis led to the ruin of illusionary solidity of the company. The financials restatement led to that significant loss that the company went bankrupt. This is an operational risk case. The more the company had been challenged during its booming performance, the less might have been the lost amount.

54	2004, China Aviation Oil (Singapore) (China); 0.55	By last quarter of 2004 company traders were long in oil. They were same time buying call options and selling put ones. This corresponded to their expectation of future oil price growth. Starting 2004 company trader Chen Jiuling opened short position in oil. On opposite to previous trades, he was buying put options and selling call ones. Nevertheless, oil prices were rising still. Short position was bringing losses. Finally, the company decided to close the position and fix the loss. In case the company had less market risk and used derivatives solely for hedging, loss could have been avoided.
55	2004, Hypo Alpe-Adria-Bank International (Austria); 0.28	Christian Rausher was a bank trader. He was betting that interest rate is to rise and EUR is to appreciate against USD and JPY. However, during the period of three weeks since 20 September 2004 to 5 October 2004 macroeconomics demonstrated inverse dynamics. Interest rate fell from 2.25% to 2.17%. USDEUR exchange rate has fallen from EUR 0.82 to EUR 0.80 per one USD and JPYEUR one fell from EUR 7.5 to EUR 7.3 per one thousand JPY, i.e., EUR depreciated against USD and JPY ca. by 3%. To have lost EUR 300m the trader's position must have equaled to ca. EUR 10bn, that is roughly half of bank's total assets. However, the bank existed with a set of mergers till 2015 when it ceased its operations. In case the bank was monitoring the limits for the gross trading position, the loss might have been avoided.
56	2004, National Australia Bank (Australia); 0.31	Bank's losses started being accumulated since 2003. At that time traders bet on USD appreciation against AUD. However, in September 2003 inverse happened and USD depreciated. To hide losses traders exploited the deficiency in bank IT system for transactions registering. The system was reflecting transactions only next day. That is why traders were inputting fraudulent transactions by end of the day. It appeared as if they have closed the position during morning reporting. But next day from 8:00 to 9:00 am they cancelled those artificial transactions having the position opened. The fraud scheme was revealed when one member of the traders' team infromed head of the trading department on the significant losses already accumulated. The whole department investigation was launched afterwards. In case the bank had invested in the system to properly trace the deals inputs, loss could have been identified earlier.
57	2006, Amaranth Advisors (United States); 6.5	The fund made a bet on rise in prices of two different dates' contracts. They combined march and April 2006 natural gas futures. However, the price differential on opposite fell from USD 2.5 to USD 0.75. In case the fund followed a more conservative position and had smaller trading limits, that loss could have been avoided.

58	2007, WestLB (Germany); 0.82	Bank suffered from two loss factors. One of its was the echo of subprime mortgage crisis of 2007. it led to fall in collateral value and in clients creditworthiness. Another factor was the company bet on the stock market that was related to fraudulent trading. Investment strategy was to short ordinary shares of Volkswagen and Bayerishe Motoren Werke (BMW) and to buy long its previlieged stock. Latter was done from affiliated companies at artificial prices. As preferred stock was much less liquid, it was expected that they price is prone to easier manipulation. Traders were not in need to have direct positive cashflow, all they needed was to register accounting profit. Thus WestLB traders' positions were daily mark-to-market in accounting given preferred stock quotes were subject to manipulation. In the start of 2007 Porsche decided to increase its stake in Volkswagen. Ordinary shares rose in price. This led to loss on short positions. Preferred ones stayed untouched as Prosche did not wish to wish more of them. Thus traders could not benefit from earlier registered accounting profits on long position as within a group it did not exist. As a result the bank suffered loss. In case group-wide risk-management had proper view on consolidated position and the bank was moderate in its market risk, that loss might have been less.
59	2007, Bank of Montreal (Canada); 0.64	David Lee was a bank trader. He was another person to the author of the paper that promoted copula models for use use in CDO pricing [Li, 1999]. Starting 2003 he was artificially inflating the value of its positions to receive bonus payments. This was done by benchmarking quotes to the ones from other banks or funds. In 2004 he changed the pricing verification mechanism. He started suggesting price levels to Kevin Cassidy, at the time the executive director of the bank. Mr. Cassidy approved the prices. Loss was found by the bank itself. By result of internal investigation the bank turned to FBI to undertake additional check. In case the quotes were more often and deeper challenged, the loss might have been avoided.
60	2007, Calyon (France); 0.35	Richard Bierbaum was the US trader for market index derivatives. Once he increased position in securities by using transaction from his own account thus leveraging long position during the upcoming market slowdown. Because of high index volatility the trader's operation was not noticed fast. Only two weeks later he was called to revert the position to the size prior to his deal. Tighter control over trades and having consolidated trading book available online might have enables to identify the fraud earlier.

61	2007, Northen Rock (United Kingdom); 20	Bank is considered as the landmark for the start of the Great Recession of 2007-09. It was using interbank funding to lend retail mortgages. It was selling its loand via collateralized debt obligations (CDOs). When prices on CDOs has fallen in the United States, it suffered first blow of losses. When banks reduced interbanking lending by closing limits on each other, interbank rates went up making the second blow to the bank. Final blow was made by bank depositors who ran on a bank to early withdraw deposits upon rumors of bank poor standing. In case bank had diversified both its loan book and funding, it might have survived.
62	2007, Countrywide (United States); 1.2	The Countrywide financial corporation was focusing on retail mortgage lending. In addition it had mortgage-backed securities (MBS) on its balance sheet. When the subprime mortgage crisis started in the United States, borrowers' creditworthiness worsened; collateral and MBS fell in value. As a reaction to crisis, the corporation decided to materially limit its lending program. In case more conservative policy was adopted earlier on, the losses could have been escaped. However, the material loss led to selling of corporation to Bank of America in 2009.
63	2007, Sachsen LB (Germany); 2.46	Bank suffered from subprime mortgage crisis thought it laimed to have no mortgage-related assets on its books. Still he used over-the-counter Ormond Quay instrument that was earning profit for the bank during the mortgage market expansion and accelarated collapse when housing market in the United States and in Europe burst. As a result it was purchased by Landesbank baden-Wuerttemberg for EUR 2.75bn, ca. three times more than the loss it faced. More conservative use of derivatives could have helped to minimize losses.
64	2007, Bear Stearns (United States); 1.6	The investment bank focused on issuance and purchase of CDOs and MBS. When housing bubble burst in the United States, all related financial instruments were priced close to zero. Though the bank met prudential requirements, particularly that of Basel II, according to (Kobrak, Troege, 2015), it failed. More diversified and conservative risk appetite might have enable the bank to survive. This case was a trigger to significantly tighter securitisation regulation in the United States.
65	2007, Société Générale (France); 19	A bank trader Jerome Kervel was betting for the rise in European stock market indexes. He was buying futures. To pass bank limit system he inputted false reverse transactions to demonstrate close to zero net position. Because world markets plummeted as a result of subprime mortgage crisis, the bank experienced losses of ca. EUR 5bn (USD 7bn). It was said that the fraud was revealed by means of an ordinary inspection. In case the bank would have introduced limit to the gross position, such loss could have been avoided. However, two weeks later the bank had disclosed losses on its mortgage portfolio equal to another EUR 8bn (USD 11bn). Thus the overall loss for December 2017 was ca. USD 19bn. The case mimics that of Yamaichi Securities that lost USD 53bn in 1997. At that time it was also announced that two risk factors were in place. It was loss on mortgage portfolio and traders' fraud.

66	2008, Aracruz (Brazil); 2.52	Brazil pupl and paper producer decided to bet on FX rate changes. During four years preceding 2008 the exchange rate of national currency appreciated from BRL 3.2 in mid-2004 to BRL 1.7 at the start of 2008 per one USD. To remember that was the period og global prosperity and rising oil prices. The expectation was the trend to continue. That is why the company had a one-year forward contracts to buy USD and sell BRL. But as a result of global financial fragility the exchanged rate sky-rocketed to BRL 2.5 per one USD at the start of 2009, i.e., depreciated ca. by a third. As a result the company failed. Similar loss scenario was experienced by another Brazil company Sadia in 2008. Instead the company limited speculative bets, it could have survived.
67	2008, Merrill Lynch (United States); 24	Bank experienced losses because of expanding subprime mortgage crisis. It was actively lending retail mortgages and securitized those by selling mortgage-backed securities (MBS). When floating interest rates were repriced in 2007, mortgage borrowers started defaulting on their loans. This led to plunge of MBS prices and eventually to bank material losses. More conservative policy could have helped the bank as well as better remembering of the similar loss path experienced by the bank in 1987. By the result of 2008 losses the bank was merged with Bank of America in 2009 to form Bank of America Merrill Lynch. Due to Bank of America own losses as well as to support sanation of Merrill Lynch and Countrywide the US Treasury offered TARP bailout funds of USD 45bn that were duely repaid by the bank by 2016. However, in 2016 the US Department of Justice issued 34 fines in total for USD 77,1bn for the Bank of America for manipulation with mortgage securities in 2007-09.
68	2008, The Royal Bank of Scotland Group (RBS) (United Kingdom); 114.06	The bank experienced losses from the expansion of subprime mortgage crisis. When housing bubble burst, borrowers stopped paying and collateral fell in value. To rescue bank the government made an injection of GBP 21bn (ca. USD 40bn). To the surprise of regulators, bank management used GBP 1bn (ca. USD 2bn) for reward payments on the ground that its was a promised payment disregarding the incurred losses. More conservative and diversified lending policy, as well as tighther link of remuneration to loan book value could have led to lower losses.
69	2008, Citigroup (United States); 37.12	The bank suffered from indebtedness on retail mortgages it was directly offering and from purchasing mortgage bonds on its balance sheet. Overall credit loss equalled to USD 18.7bn. The US Treasury bailout the bank for USD 45bn. The bank duely repaid the amount by 2016. However, in 2016 the US Department of Justice imposed 18 fines for a total of USD 18.4bn for manipulation in mortgage securities issuance. Prior to the US subprime mortgage crisis the bank was considered to be the world largest by market capitalisation. It exceeded USD 1trln with share price around USD 550. However, large losses resulted in eight-times drop of capitalisation to USD 175bn and to share price of USD 70. More prudent and diversified lending policy could have helped to minimize losses.

70	2008, Wachovia (United States); 23.9	One of top American investment banks had overfocused on mortgage exposure. It was not only granting retail mortgage loans, but sold insurance protection against mortgage lenders default. In fact it was leveraging credit risk that hit the bank when the housing market bubble burst. The bank should have had more moderate risk appetite and have tighter controlled limits per risk by combining on-balance and off-balance exposures.
71	2008, Wells Fargo (United States); 47.4	Bank lost because of subrime mortgage crisis. When borrowers defaulted on their debts to the bank, it had to wind up approximately a third of its capital (USD 37.2bn). To support a bank the US Treasury granted a bailout funding of USD 25 bn that was duely repaid by the bank. However, in 2016 it received 10 fines for USD 10.2bn from the US Department of Justice for manipulation with mortgage securities. More conservative and diversified lending policy could have helped to minimize the loss.
72	2008, Fortis (Belgium); 37	Generally bank suffered from mortgage defaults. The situation was aggravated by the purchase of a competing bank ABN AMRO. It issued share to finance the acquisition. It reissued stock to fund crisis losses. However, loss write-down was that significant that CAR significantly decreased and their came rumors about bank solv-ability resulting in share price drop and consequtive bank bankruptcy. Less expansionist policy could have helped the bank to survive.
73	2008, Norinchukin Bank (Japan); 2.69	The losses of the Japanese bank were related to the mortgage crisis in the USA in 2007-09. The active pur-chase of mortgage-backed securities (MBS) was first associated with minimal risk. However, after the floating rates repreiced, borrowers turned to default. This led to bank losses. If the bank diversified its loan portfolio, problems could have been avoided.
74	2008, Halifax Bank of Scotland (HBOS) (United Kingdom); 29.15	The bank experienced losses from both deterioration it credit quality of its mortgage portfolio and increase in funding costs. For instance, one-day USD LIBOR rose from 5.5% to 6.8% in September 2008. As a result the bank tried to communicate with client to pursuade them in bank's solvability. The case is similar to Banco Ambrosiano default in 1982 when Vatican was assuring of bank's proper standing. In both cases it did not work. More prudent lending policy and asset-liability risk management could have minimized losses.
75	2008, Dresdner Bank (Germany); 1.88	The bank's losses were a consequence of the mortgage crisis in the USA in the period of 2007-09. Losses were brought by an increase in the amount of nonperforming loans. It passed similar loss scenario to Hypo Real Estate in 2008. Having chosen more conservative and diversified lending policy could have led to smaller losses.

76	2008, Credit Suisse (Switzerland); 10.82	Bank had purchased mortgage-backed securities (MBS) for ca. CHF 11bn (USD 10bn), or 1.5% of its total assets. When suprime mortgage crisis started, the price of MBS fell mostly to zero. This led to a credit loss of USD 7.1 bn. In 2016 it was required by the US Department of Justice to pay 4 fines for USD 3.7 bn because of manipulation with mortgage securities. Bank should have followed more conservative policy for asset allocation to avoid losses.
77	2008, CITIC Pacific (China); 1.89	Chinese company based in Hong Kong focused on extracting magnetite iron ore in Australia. The company dought forwards for AUD and EUR for USD at AUD 1 = USD 0.87 and EUR 1 = USD 1.44. As a result of 2007 financial crisis both AUD and EUR depreciated against USD to AUD 1 = USD 0.61 and EUR 1 = USD 1.24. This brought losses to the company. It could have targeted using deals for hedging purposes, but then it should not have resulted with the loss. That is why lower market risk could have helped to avoid losses.
78	2008, Deutsche Bank (Germany); 7.3	Deutsche Bank was underwriting CDOs and MBS. It was also selling CDS protection against mortgage bond defaults. Thus it accumulated significant concentrated credit exposure for housing market-related risks. When the housing market collapsed, it led to bank losses of USD 1.8bn. In 2016 the bank received 4 fines from the US Department of Justice to pay USD 14bn because of speculation and inproper issuance of synthetic mortgage bonds. Though the bank management was able to reduce the bill to USD 7.2bn, its market capitalisation fell mostly 10 times since its peak in 2007. It was ca. USD 240bn with share price of USD 145. Ten years later its quotes continue falling to historical laws with market capitalisation of USD 25 bn and share price of USD 12 (even in worth crisis period of 2009 its share price did not fell lower than USD 25 per share).
79	2008, Hypo Real Estate (Germany); 3.9	The losses of the bank were related to the crisis that occurred in the USA in the period 2007-2009. The contagion proliferated from America to Europe. Having overconcentrated mortgage credit risk exposure, the bank suffered much from housing market bubble burst. Hypo Real Estate experience on eof the largest losses in Europe during subprime mortgage crisis together with Dresdner and Bayerische Landesbank in 2008. In case the bank diversified its loan portfolio or increased collateral claims, problems could have been avoided.

80	2008, Lehman Brothers (United States); 3.9	The bank invested heavily in the expected risk-free mortgage bonds. The collapse of housing bubble led to high credit loss. The situation was worsened by the requirements of JP Morgan Chase and Citigroup to provide more margin funding against their customers' investment positions. As Lehman Borthers was short of liquidity, it had to go bust. Lehman case is considered to be the trigger for activation of international prudential activity on unification of requirements to regulate liquidity risk. As a result Basel III got the proposals for banks to compute liquidity coverage ratio (LCR) for one month expected duration and net stable funding ratio (NSFR) for in excess on one year cashflows. However, one has to recall the coincidence of facts that preceded Lehman default. During the boom years Henry Paulson, at the time CEO of the Goldman Sachs, issued an offer to purchase the competing bank of Lehman Brothers. Latter rejected the bid. When Henry Paulson became the head of the US Treasury, he was responsible for allocating TARP bail-out funding. Several banks received the support (Citigroup obtained USD 45bn; JP Morgan Chase had USD 25bn; Goldman got USD 10bn), except Lehman. Lehman then defaulted whereas other fund-recipients got fines from the US Department of Justice for improper transactions with mortgage-based securities (JP Morgan Chase had to pay USD 40,1bn for 26 fines; Citigroup - USD 18,4bn for 18 fines; Goldman Sachs - only USD 5,1bn for 5 fines).
81	2008, Washington Mutual (WaMu) (United States); 67	The bank was actively granting mortgage loans in California since 2005 when housing prices started to skyrocket. When the housing bubble burst, it suffered loss on the asset side of the balance sheet. Same time it experienced significant cash outflow when funds were withdrawn upon the default of Lehman Brothers, banks largest depositor. This is a typical case of contagion proliferation. In case the bank had diversified its asset and funding bases, it could have survived.
82	2008, Groupe Caisse d'Epargne (France); 1.1	French bank was netting on the European stock market growth. However, because the subprime mortgage crisis affected investor perceptions world-wide, both the US and European stocks retrieted significantly. For instance, French benchmark CAC40 lost 22% in one week. This led to significant loss for an institution. More moderate market risk could have enabled to avoid large losses.
83	2008, Sadia (Brazil); 1.09	Brazil food producer wanted to bet for local currency appreciation as did Aracruz. Because of world financial crisis, the trend inversed to much extent because of funds outflow from the emerging economies. The company thus suffered loss similar to Aracruz loss of 2008. Avoiding speculative deal might have helped avoid large loss.

84	2008, MF Global (United States); 0.14	Evan Dooley was trading wheat futures in the fund. He bet that wheat price is to go down. He sold 16k futures contracts. Because of reversing trend and wheat appreciation, he scored the loss for the company. The cause was that the deal was unauthorized and exceeded trading limits.
85	2008, Morgan Stanley (United States); 13.92	Bank was issuing and buying for proprietory position mortgage-backed securities. When the US housing bubble burst, it suffered loss of USD 9.1bn. To recover the US Treasure offered TARP bail-out funding of USD 10bn. The bank repaid it by 2016. Then the US Department of Justice issued 7 fines for USD 4.8bn for bank's manipualtion with underwritting of mortgage securities. In case the bank did not have that concentrated credit exposure, the loss could have been minimized.
86	2008, IndyMac Bank (United States); 10.7	The bank focused on mortgage lending. Large loss was brought by 2007 subprime mortgage crisis when there was an upward repricing of interest rates on mortgage loans. More diversified lending policy could have enable the bank to survive.
87	2008, Union Bank of Switzerland (UBS) (Switzerland); 32.77	UBS actively transacted with the US banks. When the subprime mortgage crisis hit American counterparts, bank experienced contagion effect. Most of its mortgage securities had to be written down bringing a loss of CHF 21bn (USD 18bn). After the crisis in 2016 the US Department of Justice sued the bank for improper transactions with mortgage securities. It issued 8 fines for USD 6.5bn. In case the bank ran more diversified and conservative lending policy it could have avoided large losses.
88	2008, Globex Bank (Russia); 0.23	Bank has focused on lending to duilding and construction entities as well as to retailers. Those were the two primarily sectors hit by the crisis. Rumors of bank's problems led to bank run. To withstand the bank significantly raised commission fees for funds withdrawal and even declared suspension of deposit payments. As a result it still defaulted being bought by the Vnesheconombank. In case it had a more diversified lending portfolio and could have in advance informed of possible counter-crisis measures for deposits, it might have prevented bank run and default.
89	2008, Russian Development Bank (Russia); 0.11	Bank awas actively crediting building and construction firms. When latter faced problems with paying back on its loans, the bank experiences liquidity shortages. It was sanated by the Otrytyie (Open) Bank that in its turn defaulted in 2017. The scenario mimics that of Hypo Alpe-Adria default in Austria in 2004 and 2015. This implies that non-performing debts may be transfered to another entity, but this does not make them performant, but may instead provoke a failure of the sanating bank later.

90	2008, Downey Savings and Loan Association (United States); 0.55	Bank focused on mortgage lending. To actively expand it changed business strategy from using intermediaries when offering loans to direct lending. When the housing bubble burst, the bank experienced losses. More conservative and diversified lending could have helped the bank to minimize losses.
91	2008, Russian Capital Bank (Russia); 0.68	When the interbank market was reduced because of decreased lending limits during financial crisis, the bank has experienced problems with liquidity. As a result the Bank of Russia provided funding to National Reserve Corporation to sanate it by purchasing 87.89% of voting stock. More diversified funding base, could have enabled the bank to survive.
92	2008, Bayerische Landesbank (Germany); 3.78	As with the losses of Hypo Alpe Real Estate, losses were related to the mortgage crisis in the USA in the period 2007-2009. Bayerische Landesbank invested in mortgage-backed securities (MBS) in the US market. After real estate market prices fell, there was a decrease in MBS quotes. This led to bank losses. If the bank diversified its books, the problems could have been avoided.
93	2009, American International Group (AIG) (United States); 99	As an insurer, the company was searching for investment opportunities how to allocate collected insurance premiums. Since 2005 mortgage securities seems to be an attractive asset. To hedge against credit risk, it was buying CDS together with mortgage securities to benefit from risk-free arbitrage profit. However, it was same time selling CDS protection to divesify its credit exposure. In 2006 it already stopped purchasing mortgage securities as it doubted it the credit quality and performance of the latter. The problem came from the fact that it has underwritten (sold) CDS much in excess of its balance sheet leading to almost full erosion of its capital base. More moderate investment strategy to support its core activity and not to gamble, could have prevented the company default.
94	2009, Bank United (United States); 4.9	Bank followed a common path of institutions with over-concentrated mortgage lending portfolios. It failed when the housing crisis worsened. More diversified and conservative lending policy could have led to smaller losses.

95	2009, United Commercial Bank (United States); 1.4	Bank failed from subprime mortgage crisis. It had mortgage-related assets on its balance sheet. Thus it suffered from contagion effect when interest rates repriced to higher levels in 2007 and borrowers stopped paying. Special feature of the bank bankruptcy was that is first received state support in the form of USD 300m of TARP funds. But it occurred insufficient to resist the crisis shock. In case the bank followed more conservative lending policy, losses could have been avoided.
96	2009, Guaranty Bank (United States); 3	The bank passed the path of narrow-specialized mortgage lendors. It scored losses when housing bubble burst. More conservative and diversified lending policy might have helped to survive.
97	2009, Colonial Bank (United States); 1.7	Bank had significantly expanded since its establishment in 1981. It had USD 190m at the start. Twenty years later it had already USD 25.5bn. Most of it were retail mortgages and loans to counstruction and building societies. From one side, the bank was impacted by the overall market deterioration. When floating rates on retail mortgages were repriced in 2007, they brought first clients' defaults and losses. From another side, there was a fraud component in its loss. One of bank's largest borrowers was Taylor Bean & Whitaker Mortgage Corporation. It has used credit lines of the Colonial too much. To at some part offset the credit risk, it offered mortgage bonds as a collateral. The deficiency was that those bonds were in fact already sold to other investors leaving Colonial with no actual collateral. Thus when Taylor Bean filed for bankruptcy, Colonial followed soon afterwards. The case was recalled in 2018 when the new round of discussion about the role of external auditor came to public. PwC at the time auditor of the Colonial was balmed for having missed the fraud scheme. Disregarding the auditor contribution, bank should have diversified its loan book and have been more conservative to stay alive.
98	2009, AmTrust Bank (United States); 2	The bank experienced problems similar to the consequences of housing market crash of 1990s in the United States with losses of Gibraltar Savings, City Federal Savings of 1989; Goldome and Southeastern Bank in 1991. Having focused on retail mortageg lending, the bank suffered from deterioration in clients creditworthiness because of fall in their revenues. there was also a shrinkage of collateral base. The situation was worsened by the bank run. More liquidity cushion and more conservative lending standards could have helped the bank to survive.

99	2010, HQ Bank (Sweden); 0.16	Bank had overvalued its derivatives trading portfolio. This meant the reporting was not reflecting actual situation with the bank standing. There were accounting manipulations to artificially inflate bank capital as since December 2008 it lacked capital to cover the losses incurred during 2007-09 subprime mortgage crisis. The post-failure investigation revealed that there were no adequate date to use for trading position revaluation and proper decision-making by the bank management. Enhancements to corporate governance, internal control and audit might have helped to earlier reveal and solve the problems.
100	2011, Union Bank of Switzerland (UBS) (Switzerland); 2	The securities futures trader Kweku Adoboli exploited the bank IT system deficiency. He was acting within the established limits, but was able to largely expand its position by enregistering false reverse transactions leading to small net positions. The situation is similar to the scenario of Societe Generale fraud-related loss in 2007. Asfor UBS, the fraud was revealed by the trader himself when he was responding to questions from the internal control team. Limits for gross position could have enabled to limit risk taken by the bank.
101	2011, Troika Dialog (Russia); 0	One of Russian leading investment bank suffered loss from three sources. Its securities portfolio was overvalued. Then the overall returns for stock market fell. In addition bank run took place leading to liquidity shortages. In case the bank had larger cushion of liquid funds, it could have survived. As a result the bank was sold to Sberbank to form a separate unit of Sberbank Corporate and Investment Banking (CIB).
102	2012, JPMorgan Chase (United Kingdom); 5.8	A bank trader Bruno Iksil specialized on CDS deals. He purchased more than USD 100bn in notional of CDS by 2012. Starting 2012 he started decreasing position making a bet for certain companies' financial recovery. In additional he actively sold CDS to bank clients. When in April CDS quotes rose, the bank scored losses. In case the credit exposure was not enlarger via transactions with clients, losses could be smaller.
103	2014, Transneft (Russia); 2.01	Transneft was buying put options and was selling call options for USD against RUB. In 2013 the contract amount was USD 4.2bn in notional equiavalent, in 2014 it was USD 2.7bn. Thus it was shorting USD. All contracts had their expiry in the sceond half of 2014 when the ruble started being gradually devalued from RUB 40 to RUB 60 per USD, ca. by 30%. As a result the company got indebted to its counterparty Sberbank, Russian largest state bank. Legal lawsuits continued for three years as Transneft was using arguments that Sberbank did not properly inform on the potential consequences of the deal. Finally Sberbank was approved to have right for the revaluation and Transneft has to pay. If the derivatives were used to hedge company cashflows from core activity, there was no loss. that is why more moderate market risk could have led to smaller losses.

104	2014, Trust National Bank (Russia); 1.24	Bank focused on building and construction lending, as well as on subprime lending. Latter comprised of clients that were rejected by other banks. In addition to having taking much credit risk, it had risky asset-liability structure as it used long-term funding for short-term lending. Thus when there appeared rumors of bank insolvency and a bank run took place, the bank defaulted. More conservative lending and diversified funding could have helped the bank to survive.
105	2014, Baltiysky Bank (Russia); 0.88	Bank has chosen a low-margin strategy of attracting dear retail deposits and offering low return loans to legal entities. Starting 2014 bank got 12.4% of retail deposits withdrawn. Bank of Russia limited bank from raising more of those. Thus the bank was unable to pay on its debts and defaulted. It was sanated by the Russian largest private bank Alfa-Bank.
106	2014, Rost Bank (Russia); 0.18	Reputational risk led to significant withdrawal of deposited funds. It equalled to ca. RUB 10bn, or 9.5% of total banking assets. In case the bank had more liquid funds in its disposal, bank run could have been rapidly stopped.
107	2015, Hypo Alpe-Adria-Bank International (Austria); 12.28	The bank was reorganized after a sequence of sale deals to Heta bank in 2014. It was meant to act as a toxic asset container for the loan book created during the 2007-09. As the loans were completely deliquent, there were no any material chances of recovery. To attract funding the bank was proud to say it had guarantees from local government of Carinthia for EUR 11bn. When the halt of payment was inacted, local government said it would need granular review of bank activity to decide upon payment on its announced guarantee line. As a result most bank debts were under question to be paid to bank creditors. More conservative lending policy could have helped bank to survive.
108	2015, Svyaznoy Bank (Russia); 0.11	The bank default was triggered by a breach of prudential CAR ratio. It plunged below 2%. Bank did not have neither liquid funds (securities), nor any sort of collateral. It focused on consumer collateral-free lending. Thus the loan book of RUB 15.6bn (ca. USD 0.3bn) comprised of RUb 9.3bn (USD 0.2bn) of past due loans. More conservative and diversified lending policy associated with collaterilized lending ould have helped avoid bankruptcy.
109	2015, Probusiness Bank (Russia); 0.63	Bank was lending to highly risky borrowers. As a result most of it became deliquient. More conservative lending policy could have helped the bank to survive.

110	2015, Bank Russian Standart (Russia); 0.34	Bank of Russia inspectors required the bank to increase the provisions by RUB 6.2bn (ca. USD 0.1bn). From one side, the bank was descaling its core activity of consumer lending. From another side, it was purchasing securities. Latter could have been a step to diversify risks in case those securities could be either bought back by a Central Bank, or used a collateral for REPO transactions with it. Additionally the bank increase rate on deposits to attract more retail funds. But all of this did not prevent from default. More conservative and difer-sivied from consumer lending only could have helped the bank to survive.
111	2016, Punjab National Bank (India); 0.78	The bank attributes the loss to the fraud activity of its traders. It is said that funds were transferred out of the bank by means of purchasing stock of affiliated Indian companies. Soon after the purchase those equities were devalued to mostly zero scoring loss for the bank. More stringent control over investments and affiliated com-panies' structure could have led to smaller losses. However, consider the local environment. There were also Bank of India, State Bank of India losses in 2016. This resembles situation with Yamaichi Securities in Japan in 1997 and Societe Generale in France in 2007 when credit loss might have had been substituted by a fraud.
112	2016, Bank of India (India); 0.91	Bank of India is one of largest Indian banks. Disregarding its name it is not a central bank. It was nationalised 63 years after its establishment in 1969. Bank lost on its credit portfolio. Most probable reason is mild loan underwritting policy used to attract customer base within the government targets of enhancing financial inclu-sion. More conservative lending standards could have led to smaller losses.
113	2017, State Bank of India (India); 3.6	Similar to Bank of India loss in 2016, the bank suffered from deterioration in borrowers creditworthiness. In fact initial loan underwritting standards were too relaxed. That is why tighter borrower selection, request for more collateral could have helped to avoid losses.
114	2017, Bank Ugra (Russia); 2.27	Bank activity was under suspision from a Bank of Russia couple of years prior to default. Since 2015 the bank was forbidden from taking private clients' deposits. The bank proposed fund raising via share issuance when ordinary people were granted right for a set of ordinary shares that did not correspond to market value of a bank. Dividends per such shares equalled to deposit interest rate. Thus a quasi-deposit was introduced. At-tracted funds were often used to fund affiliated companies similar to Banco Ambrosiano case of 1982. On the eve of default the bank even offered a deposit scheme when interest payment is made right when the funds are deposited. Eventually the bank defaulted and got its banking licence withdrawn. More transparent and con-servative lending policy, as well as more stringent corporate governance procedures could have helped the bank to survive.

115	2017, FC Otkrytiye (Open Bank) (Russia); 6	Open Bank was actively collecting failed financial institutions from Russia having started absorbing Russian Development Bank in 2008; then followed a merger with Khanty-Mansyisky Bank and Nomos Bank. All the acquired target banks focused on building and construction lending thus enhancing concentration for housing market related credit risk. It had also won a bid for a local fintech company of Rocket Bank for RUB 4bn (USD 0.7bn). However, like with Hypo Alpe Adria losses in 2004 and default in 2015, toxic assets were not cured keeping the flavour of accumulated loss. To offset latter Open Bank has purchased more than 74% of the government bonds issue Russia-30 maturing in 2030. This was said to have enabled the bank to manipulate its prices and to score profit on its balance sheet. Ultimately it got under Bank of Russia affiliated management company to manage problem assets. More diversified lending and less aggressive expansion strategy could have helped the bank to survive.
116	2017, Promsvyazbank (Russia); 2.55	From one side, the bank was said to have accumulated own subordinated debt on its balance sheet. It should have been netted with the liability side of the balance sheet. Otherwise, unless identified it led to self-financing of the bank's capital base thus increasing CAR above the prudential limits. From another side, the bank was claimed to have under-provisioned for credit loss. Thus during Bank of Russia inspection it was required to increase the provision from existing RUB 104bn (ca. USD 1.7bn) by another RUB 200bn (ca. USD 3.3bn). In case the lending policy would have been more conservative, the loss might have been less.
117	2018, Punjab National Bank (India); 2	One of bank top executives Nirav Modi was writing out false guarantee letters for other entities to be able to receive loans at other banks. The idea was that others would accept Punjab as a guarantor. Though he is not a relative to the country prime-minister Narendra Modi, he had the same last name that might have helped to create illusion of trustworthiness by authority. Central Bureau of Investigation revealed at least another two people to be engaged in letters' preparation with Mr. Modi. Further, Mr. Modi cashed these funds through captive ('one-day') companies affiliated with his relatives. If the bank would have strengthened its internal audit to verify top management actions, the fraud might have been earlier detected. Case might be similar to bank own history loss in 2016. In both cases, fraud might have been named to hide credit losses.

Annex 2. Quantitative Data per Cases

No	Loss Year	Company	Country	Age, years	Risk Type	Underlying Asset	Total Assets, USD bn	Loss USD Eq., bn	Loss-Assets	Survive?	Auditor Name
1	1973	United States National Bank of San Diego	United States	60	OR	Sec	1,14	0,16	14,38%	0	N/F
2	1974	Herstatt Bank	Germany	18	MR	FX	0,80	0,18	22,71%	0	Karoli Wirtschaftspru¨fung GmBH
3	1974	Franklin National Bank of New York	United States	48	CR	Loan	5,00	1,30	26,00%	0	N/F
4	1975	Security National Bank of Long Island	United States	72	CR	RE	1,80	0,11	5,83%	0	N/F
5	1976	Hamilton National Bank of Chattanooga	United States	87	CR	RE	0,46	0,15	33,38%	0	N/F
6	1982	Banco Ambrosiano	Italy	4	OR	Loan	18,70	1,40	7,49%	0	N/F
7	1984	Continental Illinois National Bank And Trust	United States	74	LR	Loan	40,00	2,70	6,75%	0	N/F
8	1984	American Savings and Loan	United States	62	CR	RE	30,00	3,30	11,00%	0	N/F
9	1987	Soros Fund	United Kingdom	18	MR	Sec	1,50	0,80	53,33%	1	N/F
10	1987	Merrill Lynch	United States	73	OR	Sec	220,00	0,28	0,13%	1	N/F

11	1988	First Republic Bank	United States	68	CR	RE	25,45	3,86	15,17%	0	N/F
12	1989	Mcorp	United States	5	CR	RE	20,00	2,70	13,50%	0	N/F
13	1989	Gibraltar Savings	United States	68	CR	RE	15,10	0,25	1,66%	0	N/F
14	1989	City Federal Savings	United States	79	CR	RE	9,80	0,22	2,29%	0	N/F
15	1991	Bank of New England	United States	6	CR	RE	23,04	6,30	27,34%	0	PwC
16	1991	Christiania Bank og Kreditkasse	Norway	143	CR	RE	26,41	0,73	2,76%	0	N/F
17	1991	Fokus Bank ASA	Norway	132	CR	RE	6,51	0,17	2,66%	0	N/F
18	1991	Goldome	United States	8	CR	RE	9,90	1,50	15,15%	0	KPMG
19	1991	Den norske Bank	Norway	169	CR	RE	22,81	0,54	2,37%	0	N/F
20	1991	Spar + Leihkasse Thun	Switzerland	125	CR	RE	0,76	0,15	20,00%	0	N/F
21	1991	Bank of Credit and Commerce Interna-tional (BCCI)	United Kingdom	19	OR	Loan	23,00	16,00	69,57%	0	PwC
22	1991	Southeastern Bank	United States	89	CR	RE	16,00	0,50	3,13%	0	Deloitte
23	1992	Sparbanken Sverige	Sweden	50	CR	RE	84,48	6,53	7,73%	0	Folke Elborg
24	1992	Skandinaviska Enskilda Banken	Sweden	20	CR	RE	81,64	6,26	7,66%	0	N/F

25	1993	Metall-gesellschaft	Germany	112	MR	Com	4,00	1,59	39,75%	1	C&L Treuarbeit Deutche Revision
26	1993	Showa Shell Sekiyu	Japan	8	MR	FX	11,29	1,49	13,24%	1	N/F
27	1993	Codelco	Chile	17	OR	Com	4,33	0,21	4,85%	1	N/F
28	1993	Nordbanken	Sweden	7	CR	RE	34,26	4,06	11,84%	0	N/F
29	1993	Gota Bank	Sweden	3	CR	RE	186,00	5,52	2,97%	0	N/F
30	1994	Orange County	United States	19	MR	Sec	7,50	1,70	22,67%	0	KPMG
31	1994	Kashima Oil	Japan	27	MR	FX	12,25	0,02	0,13%	1	N/F
32	1994	Askin Capital Management	United States	60	MR	Sec	2,00	0,60	30,00%	0	N/F
33	1994	Kidder Peabody	United States	129	OR	Sec	90,00	0,35	0,39%	0	GE Corporate Audit Staff
34	1994	Procter & Gamble	United States	157	MR	IR	25,00	0,16	0,64%	1	Deloitte
35	1995	Daiwa Bank	Japan	77	OR	Sec	304,00	1,10	0,36%	1	EY
36	1995	Barings Bank	United Kingdom	233	OR	Sec	5,90	2,20	37,29%	0	Deloitte
37	1996	Sumitomo Corporation	Japan	77	OR	Com	50,00	2,62	5,24%	1	N/F
38	1996	Handelsbanken	Sweden	125	CR	RE	128,09	3,32	2,59%	0	N/F
39	1997	Morgan Grenfell	United Kingdom	159	OR	Sec	87,97	0,65	0,74%	0	KPMG
40	1997	NatWest	United Kingdom	29	OR	FX	32,00	0,15	0,46%	1	KPMG
41	1997	Hokkaido Takushoku Bank	Japan	98	CR	RE	66,00	7,50	11,36%	0	N/F

42	1997	Yamaichi Securities Company	Japan	10	CR	RE	176,00	53,00	30,11%	0	ChuoAoyama
43	1998	Long Term Capital Management (LTCM)	United States	4	MR	Sec	126,00	4,60	3,65%	0	N/F
44	1998	Union Bank of Switzerland (UBS)	Switzerland	136	MR	Sec	1,36	0,43	31,83%	1	N/F
45	1998	Nippon Credit Bank	Japan	41	CR	RE	106,00	27,00	25,47%	0	N/F
46	1998	Long Term Credit Bank of Japan (LTCB)	Japan	46	CR	RE	243,00	42,15	17,34%	0	N/F
47	2000	American International Group (AIG)	United States	81	OR	Other	306,58	1,32	0,43%	1	PwC
48	2000	BAWAG	Austria	78	OR	Loan	24,38	1,52	6,22%	1	KPMG
49	2000	Manhattan Investment Fund	United States	4	OR	Sec	0,43	0,40	93,90%	0	Deloitte
50	2001	Enron	United States	16	OR	Com	65,60	1,01	1,54%	0	Arthur Andersen
51	2002	AIB/Allfirst	United States	36	OR	FX	17,90	0,69	3,85%	1	KPMG
52	2002	Riječka banka	Croatia	48	OR	FX	103,64	0,10	0,10%	1	KPMG
53	2002	WorldCom	United States	19	OR	Com	107,00	3,30	3,08%	0	N/F
54	2004	China Aviation Oil (Singapore)	China	13	MR	Com	310,03	0,55	0,18%	1	N/F
55	2004	Hypo Alpe-Adria-Bank International	Austria	108	MR	FX	20,09	0,28	1,40%	1	N/F
56	2004	National Australia Bank	Australia	111	OR	FX	302,84	0,31	0,10%	1	PwC

57	2006	Amaranth Advisors	United States	6	MR	Com	7,40	6,50	87,84%	0	N/F
58	2007	WestLB	Germany	38	OR	Loan	419,41	0,82	0,20%	1	PwC
59	2007	Bank of Montreal	Canada	190	OR	Com	536,55	0,64	0,12%	1	KPMG
60	2007	Calyon	France	3	OR	Sec	0,86	0,35	40,65%	1	PwC
61	2007	Northen Rock	United Kingdom	42	LR	Loan	153,86	20,00	13,00%	0	PwC
62	2007	Countrywide	United States	38	CR	Loan	211,73	1,20	0,57%	0	KPMG
63	2007	Sachsen LB	Germany	15	MR	Sec	46,92	2,46	5,25%	0	KPMG
64	2007	Bear Stearns	United States	84	CR	RE	395,40	1,60	0,40%	0	Deloitte
65	2007	Société Générale	France	143	OR	Sec	1567,84	19,00	1,21%	1	EY
66	2008	Aracruz	Brazil	36	MR	FX	4,62	2,52	54,51%	0	Deloitte
67	2008	Merrill Lynch	United States	94	CR	RE	61,85	24,00	38,80%	0	Deloitte
68	2008	The Royal Bank of Scotland Group (RBS)	United Kingdom	281	CR	RE	3587,24	114,06	3,18%	1	Deloitte
69	2008	Citigroup	United States	196	CR	RE	1938,00	37,12	1,92%	1	KPMG
70	2008	Wachovia	United States	129	MR	RE	812,40	23,90	2,94%	0	KPMG
71	2008	Wells Fargo	United States	156	CR	RE	1309,64	47,40	3,62%	0	KPMG
72	2008	Fortis	Belgium	18	CR	RE	92,87	37,00	39,84%	0	KPMG
73	2008	Norinchukin Bank	Japan	85	MR	RE	569,64	2,69	0,47%	1	N/F

74	2008	Halifax Bank of Scotland (HBOS)	United Kingdom	7	CR	RE	389,83	29,15	7,48%	0	KPMG
75	2008	Dresdner Bank	Germany	136	MR	RE	329,70	1,88	0,57%	0	KPMG
76	2008	Credit Suisse	Switzerland	152	CR	RE	1173,69	10,82	0,92%	1	KPMG
77	2008	CITIC Pacific	China	18	MR	FX	20,08	1,89	9,40%	1	PwC
78	2008	Deutsche Bank	Germany	138	CR	RE	3105,92	7,30	0,24%	1	KPMG
79	2008	Hypo Real Estate	Germany	5	CR	RE	503,44	3,90	0,77%	1	KPMG
80	2008	Lehman Brothers	United States	158	LR	RE	691,06	3,90	0,56%	0	EY
81	2008	Washington Mutual (WaMu)	United States	119	LR	RE	307,02	67,00	21,82%	0	Deloitte
82	2008	Groupe Caisse d'Epargne	France	190	MR	Sec	916,54	1,10	0,12%	1	PwC
83	2008	Sadia	Brazil	64	MR	FX	14,28	1,09	7,64%	1	KPMG
84	2008	MF Global	United States	1	OR	Com	51,67	0,14	0,27%	1	PwC
85	2008	Morgan Stanley	United States	73	CR	RE	987,40	13,92	1,41%	1	Deloitte
86	2008	IndyMac Bank	United States	23	CR	RE	32,00	10,70	33,44%	0	EY
87	2008	Union Bank of Switzerland (UBS)	Switzerland	154	CR	RE	2015,10	32,77	1,63%	1	EY
88	2008	Globex Bank	Russia	16	LR	RE	2,50	0,23	9,10%	0	EY
89	2008	Russian Development Bank	Russia	9	LR	RE	1,04	0,11	10,72%	0	EY
90	2008	Downey Savings and Loan Association	United States	51	CR	RE	12,78	0,55	4,28%	1	KPMG

91	2008	Russian Capital Bank	Russia	15	LR	Other	0,79	0,68	86,18%	0	N/F
92	2008	Bayerische Landesbank	Germany	36	MR	RE	415,57	3,78	0,91%	1	PwC
93	2009	American International Group (AIG)	United States	90	MR	RE	860,42	99,00	11,51%	0	PwC
94	2009	Bank United	United States	25	CR	RE	12,80	4,90	38,28%	0	N/F
95	2009	United Commercial Bank	United States	35	CR	RE	11,20	1,40	12,50%	0	N/F
96	2009	Guaranty Bank	United States	21	CR	RE	13,00	3,00	23,08%	0	N/F
97	2009	Colonial Bank	United States	28	OR	RE	25,50	1,70	6,67%	0	PwC
98	2009	AmTrust Bank	United States	120	CR	RE	12,00	2,00	16,67%	0	N/F
99	2010	HQ Bank	Sweden	20	OR	Sec	4,19	0,16	3,77%	0	KPMG
100	2011	Union Bank of Switzerland (UBS)	Switzerland	157	OR	Sec	1141,03	2,00	0,18%	1	Deloitte
101	2011	Troika Dialog	Russia	20	LR	Sec	5,75	0,00	0,07%	0	EY
102	2012	JPMorgan Chase	United Kingdom	12	MR	Loan	2265,79	5,80	0,26%	1	Deloitte
103	2014	Transneft	Russia	21	MR	FX	63,48	2,01	3,17%	0	KPMG
104	2014	Trust National Bank	Russia	19	CR	RE	4,14	1,24	30,05%	0	Deloitte
105	2014	Baltiysky Bank	Russia	25	CR	Loan	2,24	0,88	39,51%	0	Intercom-Audit of BKR
106	2014	Rost Bank	Russia	21	LR	Loan	1,89	0,18	9,41%	0	KPMG

107	2015	Hypo Alpe-Adria-Bank International	Austria	119	CR	Loan	20,09	12,28	61,11%	0	KPMG
108	2015	Svyaznoy Bank	Russia	5	CR	Loan	0,49	0,11	22,09%	0	PwC
109	2015	Probusiness Bank	Russia	22	CR	Loan	1,00	0,63	63,28%	0	Deloitte
110	2015	Bank Russian Standart	Russia	22	CR	Loan	7,19	0,34	4,68%	0	PwC
111	2016	Punjab National Bank	India	122	OR	Sec	98,29	0,78	0,79%	1	Deloitte
112	2016	Bank of India	India	110	CR	Loan	91,56	0,91	0,99%	1	N/F
113	2017	State Bank of India	India	211	CR	Loan	575,09	3,60	0,63%	1	M/s Manubhai & Shah LLP
114	2017	Bank Ugra	Russia	27	CR	Loan	3,31	2,27	68,46%	0	BDO
115	2017	FC Otkrytiye (Open Bank)	Russia	3	CR	RE	2702,00	6,00	0,22%	1	Development of Business Systems
116	2017	Promsvyazbank	Russia	22	CR	Loan	20,83	2,55	12,25%	1	PwC
117	2018	Punjab National Bank	India	124	OR	Sec	110,49	2,00	1,81%	1	Deloitte

References

BCBS, 2004. *Bank Failures in Mature Economies.* Working Paper 13 ed. s.l.:Basel Committee on Banking Supervision.

Calomiris, C. W. a. H. H., 2014. By Design. The Political Origins of Banking Crises and Scarce Credit.. *Princeton University Press.*

Fungacova, Z. & Weill, L., 2013. Does Competition Influence Bank Failures? Evidence from Russia.. *Economics of Transition,* 21(2), pp. 301-322.

Goodhart, C., 2011. *The Basel Committee on Banking Supervision. A History of the Early.* s.l.:Cambridge University Press.

Goodwin, N. et al., 2013. Chapter 15. The Financial Crisis and the Great Recession.. In: *In Macroeconomics in Context.* s.l.:Routledge.

Harada, K., Ito, T. & Takahashi, S., 2010. Is the distance to default a good measure in predicting bank failures? Case studies. *NATIONAL BUREAU OF ECONOMIC RESEARCH,* Issue WP 16182.

Hildreth, R., 1837. *The History of Banks: To Which Is Added, a Demonstration of the Ad-vantages and Necessity of Free Competition In the Business of Banking..* Boston: Milliard, Gray & Company..

Mourlon-Druol, E., 2015. 'Trust is good, control is better': The 1974 Herstatt Bank Crisis and its Implications for International Regulatory Reform. *Business History,* Volume 57, pp. 311-334.

Penikas, H. I., 2015. History of banking regulation as developed by the Basel Committee on banking supervision in 1974 – 2014 (brief overview). *Financial Stability Journal,* 28(5), pp. 9-47.

Sandal, K., 2004. The Nordic banking crises in the early 1990's - Resolution methods and fiscal costs », in the Norwegian Banking crises. 1.pp. 77-115.

Selgin, G., 1996. *Bank Deregulation and Monetary Order.* London and New York: Routledge.

Sinkey, J., 1979. *Problem and Failed Institutions in the Commercial Banking Industry.* s.l.:Jai Pr.

Steignum, E., 2003. *Financial deregulation with a fixed exchange rate: Lessons from Norway's boom-bust cycle and banking crisis.* s.l.:Handelshøyskolen BI, Centre for Monetary Economics (CME).

Valencia, F. & Laeven, L., 2012. Systemic Banking Crises Database : An Update. *IMF WORKING PAPERS,* pp. 1-33.

Footnotes

[i] URL: https://en.wikipedia.org/wiki/List_of_trading_losses

[ii] URL: https://d.infox.ru/news/61/economy/finance/6083-sp-naznacilo-rbk-vyborocnyj-defolt

[iii] Wall-Street Journal. 9 May 2016. URL: https://www.wsj.com/articles/lendingclub-ceo-resigns-over-sales-review-1462795070?ns=prod/accounts-wsj

[iv] Figures on fines are mostly obtained from CNBC, cited by Kiat, Kai. The Missing Regtech Startups in Singapore and Hong Kong. 16 September 2016. URL: http://fintechnews.sg/5443/fintech/the-missing-regtech-startups-in-singapore-hong-kong/

[v] URL: http://www.economist.com/node/13919511

[vi] URL: http://archive.fortune.com/galleries/2010/fortune/1002/gallery.biggest_losers.fortune/index.html

[vii] URL: http://money.cnn.com/gallery/news/2015/10/14/biggest-corporate-scandals/index.html

[viii] 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/

[ix] Wall-Street Journal. 19 December 2014. Bank Bailouts Approach a Final Reckoning. Treasury Sells Remaining Stake in Ally, Last Major Holding in Financial-Crisis Bailout Program. URL: https://www.wsj.com/articles/ally-financial-exits-tarp-as-treasury-sells-remaining-stake-1419000430

Figures on TARP (Troubled Asset Relief Program) were obtained from the U.S. Department of Treasury.

URL: https://www.treasury.gov/initiatives/financial-stability/TARP-Programs/bank-investment-programs/Pages/default.aspx

[x] URL: https://www.auditanalytics.com/blog/the-global-six-and-auditor-alliance-market-share/