Empirical Foundations of the Iron Law of Financial Regulation

Roberta Romano

Yale Law School, NBER and ECGI

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Motivation

- In prior work I developed what I term the “iron law of financial regulation,” that following financial crises, Congress invariably enacts legislation that markedly increases financial regulation, resulting in a regulatory ratchet in which new statutes are layered on top of existing laws and new regulations are grafted onto existing ones, creating an increasingly complex and opaque regulatory regime
  - I contended that unintended consequences of the iron law could be mitigated by sunsetting crisis-driven financial legislation and its implementing regulation
- Question explored in this paper is whether there are empirical foundations for the iron law?
  - A key contention of the iron law is that the shock to the economic system from a financial crisis results in legislation that has a greater regulatory impact than legislation enacted in non-crisis times
- That contention contains two empirical propositions that are investigated:
  - Whether there is an association between financial crises and legislation
  - Whether the regulatory impact of financial crises and legislation enacted in the wake of crises differs significantly from that enacted in noncrisis times
- Findings indicate the answer is yes to both queries

Iron Law of US Financial Regulation

- Radical and dynamic uncertainty in environment in which financial institutions operate renders regulation difficult in best of times
- Human nature as we know it: in the wake of a crisis, legislators enact legislation that invariably increases regulation despite being in the dark (at an information disadvantage) regarding what to do
- Errors inevitable but financial legislation and regulation are sticky
- Result: Piling of statutes on top of statutes, layering regulations upon regulations, creates a regulatory ratchet producing cumulatively, an opaque and cumbersome regulatory apparatus that prevents nimble responses to changing circumstances and creates heightened legal uncertainty along with what can be costly unintended consequences

Does Congress enact major financial legislation after crises? Step 1: Identify financial crises

- Time frame begins after establishment of the Fed in 1914
  - A central bank transforms the banking environment as the lender of last resort that can mitigate or reduce banking panics (and indeed, far fewer panics after 1914); first federal regulations of banks issued by Fed in 1915
- Sources: Six studies identified in literature reviews of Sufi & Taylor (2021); Metrick & Schmelzing (2021)
  - Narrative approach is defined variously by presence of bank runs, losses, closures, mergers, takeovers, liquidations, resulting in significant government intervention/large-scale assistance to important financial institutions
- Consensus identification of three crises: Great Depression (GD), 1929-33; Savings & Loan (S&L) Crisis,1984-91; Global Financial Crisis (GFC), 2007-10

Does Congress enact major financial legislation after crises? Step 2: Identify major legislation

- Analysis includes 25 statutes (10 crisis, 15 noncrisis)
  - Source: FDIC 2021 website, “Important Banking Statutes” which are the “most important laws that have affected the banking industry in the US”
  - Selection criteria: enacted after creation of Fed; filtered for Policy Agendas Project codes related to banking regulation
  - Crisis-driven: enacted during or within 2 years of crisis end date
    - Allows for impact of election changing party control and congressional term of 2 years (political science literature indicates most legislation is enacted in second session)
  - All crises associated with multiple statutes: GD: 2 (1933, 1935); S&L: 6 (1987, 1989, 1990, 1991, 1992, 1993); GFC: 2 (2007, 2010)
- Is there an association between crises and enactment of major financial legislation?
  - Runs test for enactment of crisis-driven statutes is statistically significant (z stat: -4.0564) at < 1% but insignificant (z stat: 0.6486) for non-crisis-driven ones
  - Logit regression of probability of a statute’s enactment on indicator variable for a year in a crisis period: probability of enactment is significantly positively related to crisis years (z-statistic for indicator of 2.49, probability .013)
  - Results consistent with the iron law’s intuition that crises are an accelerator for major financial legislation

Do financial crises and resulting legislation result in a regulatory rachet?

- Changes in text-based measures to proxy for changes in regulation
  - Restrictive words – thought to impose binding constraints on firms (Al-Ubaydli and McLaughlin 2017)
    - A measure of regulation = expenditures on employees in compliance positions (Simkovic and Zhang; available only for recent years) is statistically significantly positively correlated with restrictive word counts
  - Complexity - derived from computer software programming idea of conditionality (requires more decisions); and compared to Senate drafting manual (Li, et al. 2015)
  - Complexity (Senate) – Senate drafting manual preferred conditional words (subset)
    - Sources: Title 12 of Code of Federal Regulations (Heinonline editions 1938-2016); regulations 1915-1937 found in documents in St. Louis Fed. Fraser archive and Heinonline (OCC, Fed, FDIC, only title 12 agencies until after WW II)
- Caveat: Text counts can miss deregulation by lax enforcement
  - Counts can also miss increased regulation by enforcement (relation between text and enforcement strategy is ambiguous)
  - No consensus enforcement measure in literature, those used (e.g. enforcement actions) not feasible to construct for 80+ years and numerous agencies relevant to this inquiry

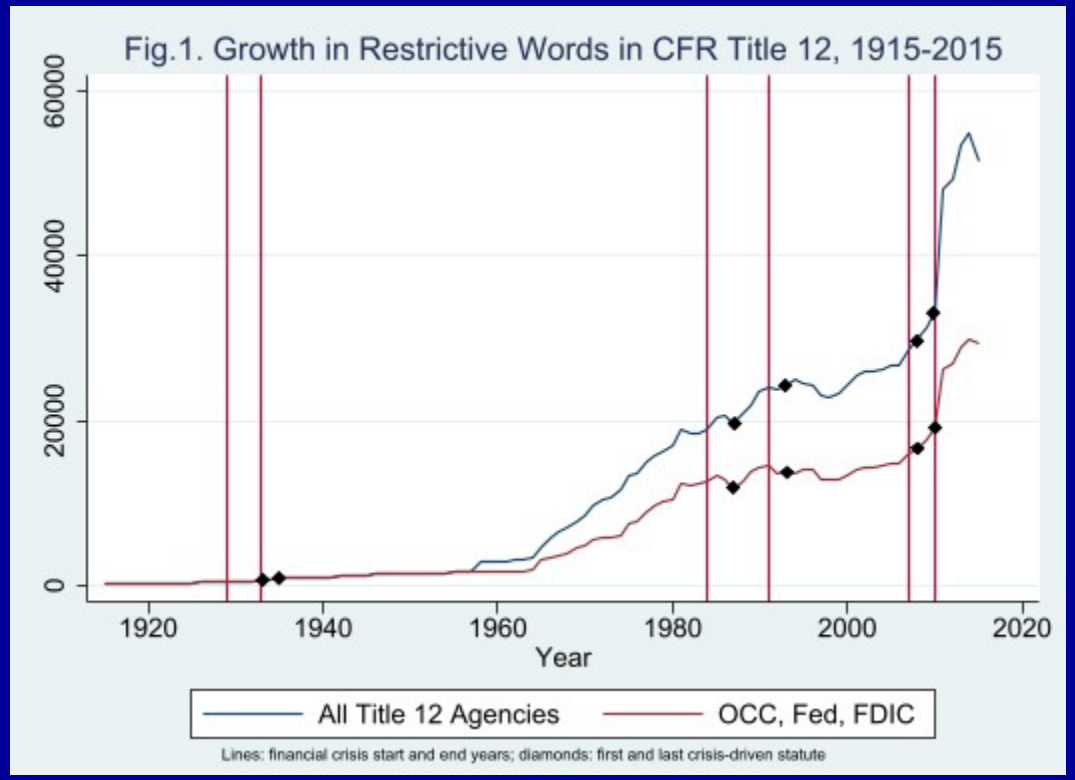
Fig.1. Growth in Restrictive Words in CFR Title 12, 1915-2015
60000
40000
20000
0
1920
1940
1960
1980
2000
2020
Year
All Title 12 Agencies
OCC, Fed, FDIC
Lines: financial crisis start and end years; diamonds: first and last crisis-driven statute

Remarks on Pattern of Growth in Regulation

- Pattern of regulatory growth (whatever the measure) consistent with Iron Law: a persistent regulatory ratchet, with sizeable increases related to financial crises
  - Especially sharp increase following GFC and 2010 enactment of Dodd-Frank statute
  - Not principally due to increasing # of agencies (same pattern for only OCC, Fed & FDIC)
  - Sizeable increase starting in 1960s, period identified in literature as “Era of Rulemaking” and “Long Great Society” (LGS), a trend associated with President Johnson’s initiatives
  - But log plots show upward trajectory begins well before 1960s, and steep increase during GD and aftermath
- Upward trajectory not materially altered by a few short-lived dips
  - E.g., largest count decrease in late1990s (following 1994 statutory deregulatory initiatives) rapidly overwhelmed by growth, surpassing prior peak by early 2000s

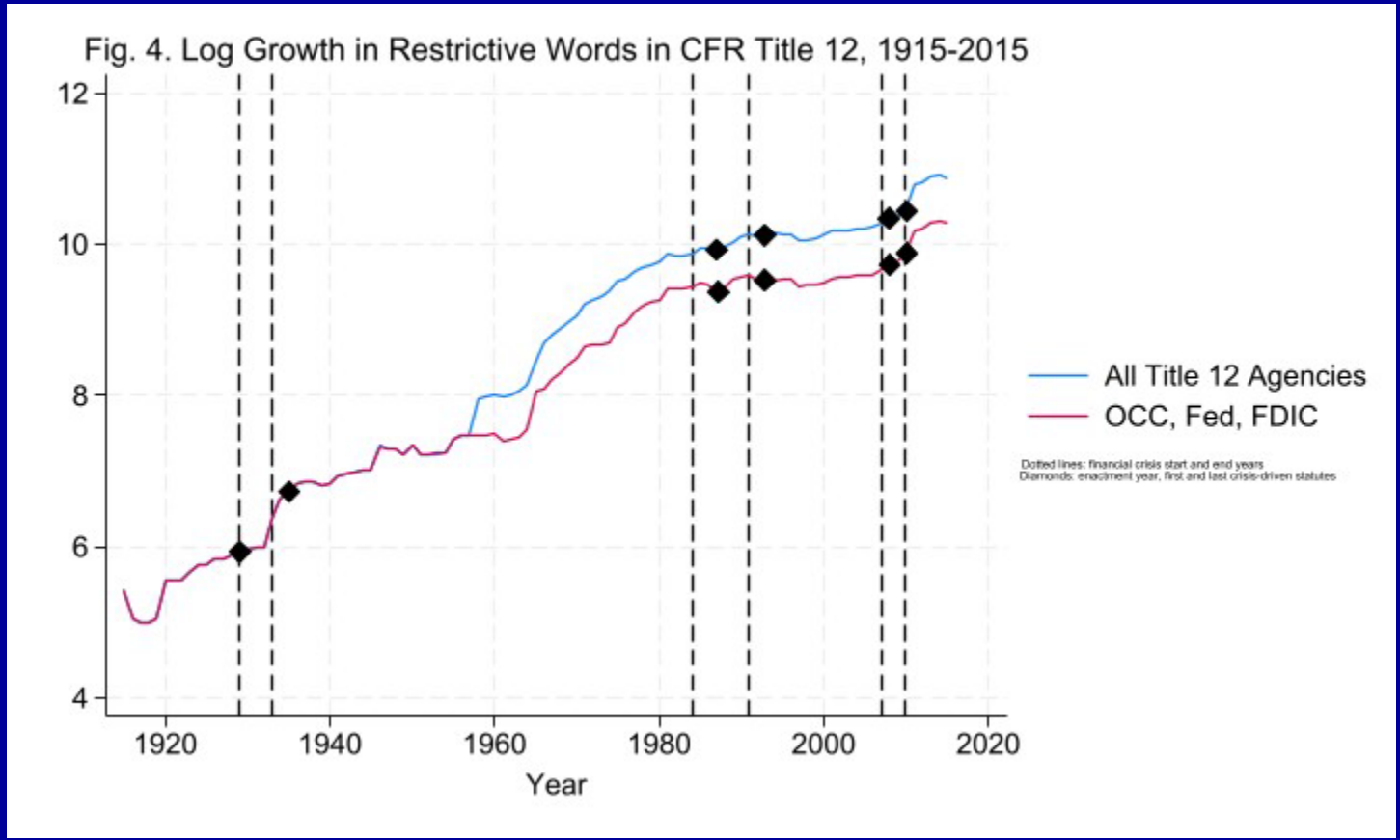
Fig. 4. Log Growth in Restrictive Words in CFR Title 12, 1915-2015
12
10
8
6
4
1920
1940
1960
1980
2000
2020
Year
All Title 12 Agencies
OCC, Fed, FDIC
Dotted lines: financial crisis start and end years
Diamonds: enactment year, first and last crisis-driven statutes

Rate of Growth in Regulations in CFR Title 12 over Time (continuously compounded rate of growth in parentheses)

Time interval	Rest. words-all	Complexity-all	Senate comp-all	Rest. Words-3	Complexity-3	Senate comp-3
Fed-pre GD (1915-28)	.6062 (.0365)	1.2 (.0607)	1.4375 (.0685)	.6062 (.0365)	1.2 (.0607)	1.4375 (.0685)
GD - last stat+2 (1929-37)	***1.6061 (.1197)***	***1.5085 (.1150)***	***1.5299 (.1160)***	***1.6061 (.1197)***	***1.5085 (.1150)***	***1.5299 (.1160)***
Prewar (1938-41)	.0900 (.0287)	.2452 (.0731)	.2915 (.0853)	.0900 (.0287)	.2452 (.0731)	.2915 (.0853)
WW2 (1942-45)	.0506 (.0165)	.0680 (.0219)	.0447 (.0146)	.0506 (.0165)	.0680 (.0219)	.0447 (.0146)
Postwar (1946-60)	.9572 (.0480)	1.0920 (.0527)	1.050 (.0513)	.1785 (.0117)	.4720 (.0276)	.5942 (.0333)
Long Great Soc. (1961-76)	3.6537 (.1025)	4.9776 (.1192)	5.3937 (.1237)	3.7039 (.1032)	4.1277 (.1090)	5.2308 (.1220)
1977-83	.2248 (.0338)	.2447 (.0365)	.3645 (.0518)	.3737 (.0529)	.4187 (.0583)	.5143 (.0692)
S&L-last stat+2	***.2986 (.0238)***	***.3209 (.0253)***	***.4934 (.0365)***	***.1164 (.0100)***	***.2561 (.0207)***	***.3287 (.0258)***
1996-2006	.0989 (.0094)	.1735 (.0160)	.1946 (.0178)	.0505 (.0049)	.1046 (.0099)	.0924 (.0088)
GFC (2007-12)	***.7166 (.1081)***	***.6918 (.1052)***	***.7429 (.1111)***	***.6860 (.1045)***	***.5532 (.0881)***	***.5297 (.0850)***
1st stat to last+2 (1927-2012)	141.05 (.0583)	203.99 (.0626)	277.31 (.0662)	76.31 (.0512)	109.90 (.0554)	153.0 (.0593)

Remarks on Regulatory Growth Rates over Time

- Crisis intervals identified as first year of crisis through two years after enactment of last crisis-driven statute to capture impact of regulations promulgated in response to the statutes while minimizing potential confounding effect from issuance related to earlier statutes
- Substantial increase in regulation in wake of GD (not observable in figure given low base)
- Regulatory impact of crises differs: far lower effect of S&L crisis on growth of regulation (all measures)
  - Possible explanations: more regional than national effect (but more failures than GFC and was more costly to the fisc and Congress didn't treat it as such --more statutes enacted); unified government control by Democrats
- Interesting finding: LGS has higher growth than all other periods, but also far longer interval; not higher when growth rate is continuously compounded, hence comparable across intervals of varying length
  - E.g.: All agencies, restrictive words: GD: 12%; GFC: 11%; LGS: 10%, S&L 2%
- Is high rate of regulatory growth over crisis intervals due to time trend of increasing regulation and not crises?
  - Regressions including time trend, crisis interval and LGS indicators: time, crises significantly positive (S&L not always for complexity measures); LGS significantly negative

Effect of Crises on Banking Regulation Over Time (1927-2012)

Dependent variable: Restrictive words, s.e. in parentheses

Regressor	All Title 12 Agencies	All Title 12 Agencies	OCC, Fed, FDIC	OCC, Fed, FDIC
Year	421.34** (19.77)	424.51** (18.32)	228.43** (11.37)	230.59**
GD	5545.95** (1327.58	4755.75** (1246.36)	2786.07** (763.21)	2248.25** (689.91)
S&L	3434.57** (1107.61)	2465.43* (1056.43)	2643.67** (636.76)	1984.06** (584.78)
GFC	9425.71** (1609.36)	8393.22* (1514.28)	5090.76** (925.21)	4388.04** (838.22)
LGS		-3310.15** (868.74)		-2252.91** (480.89)
Constant	-819378.5** (38890.12)	-824719.2** (36028.95)	-443715.5** (22357.51)	-447344.3** (19943.59)
Adj. R-squared	.9274	.9378	.9220	.9380

Attributing regulatory change to statutes: do the regulatory consequences differ across crisis-driven and noncrisis-driven statutes?

- Same text-based measures of regulation and sources
- Use proximity to enactment to link regulatory changes to statutes
  - Best available proxy because not feasible to connect regulatory changes to specific statutes for entire dataset given limited information in CFR
- No standard interval to identify regulations implementing a statute
  - Note: using long intervals will result in overlaps of statutes, confounding attribution to individual statutes
- Examine regulatory growth 1-2 years post-enactment (include statute only if no overlap with another statute in the two post-enactment years)
  - Maximizes number of statutes that can be compared (17 over 1 year; 16 over 2 years) and proximity to enactment plausible for attribution purposes
- Expand the data set: examine incremental change in regression format
  - Indicator variables for growth post-crisis and noncrisis driven statutes; no time variable because no discernible time trend in plots of annual incremental changes

Growth in Regulation in CFR Title 12 over One- and Two-Years Post-enactment of Important Banking Laws

Variable	All Statutes (no.)	Crisis-driven Statutes (no.)	Non-crisis-driven Statutes (no.)	t-statistic for difference in means, 1-tailed test (probability)
Restrictive words (one year)	.0781 (17)	.1734 (6)	.0315 (11)	-2.1119* (.0381)
Restrictive words (two years)	.1503 (16)	.2552 (5)	.1027 (11)	-1.4759+ (.0811)
Complexity (one year)	.0813 (17)	.1673 (6)	.0344 (11)	-2.3696* (.0158)
Complexity (two years)	.1184 (16)	.2634 (5)	.0524 (11)	-3.0911** (.0040)
Complexity (Senate) (one year)	.0803 (17)	.1555 (6)	.0393 (11)	-1.7554* (.0498)
Complexity (Senate) (two years)	.1279 (16)	.2728 (5)	.0621 (11)	-2.7138** (.0084)

Incremental Change in Regulation One Year after Enactment of Important Banking Laws over Time, 1927-2012

(OLS regressions, s.e. in parentheses)

	Restrictive Words	Complexity	Complexity (Senate)
1 year post-crisis statute enactment	1709.32** (541.04)	1995.36** (629.04)	1194.05** (351.48)
1 year post-noncrisis statute enactment	6.27 (500.53)	314.31 (581.94)	263.33 (325.16)
Constant	369.48+ (198.91)	398.44+ (231.24)	188.75 (129.21)
Adjusted R-squared	.0879	.0867	.1019

Incremental Change in Regulation Two Years after Enactment of Important Banking Laws over Time, 1927-2012

(OLS regressions, s.e. in parentheses)

	Restrictive Words	Complexity	Complexity (Senate)
2 years post-crisis statute enactment	1189.29* (460.67)	1443.21** (534.54)	929.61** (296.72)
2 years post-noncrisis statute enactment	-37.15 (399.67)	128.18 (464.02)	147.44 (257.91)
Constant	358.22 (233.71)	371.90 (271.35)	150.24 (150.82)
Adjusted R-squared	.0573	.0587	.0841

Remarks on Regulatory Growth following Statute Enactment

- There is significantly higher growth in banking regulation measured by restrictive constraints and complexity after the enactment of crisis-driven statutes than noncrisis-driven ones, as intuited by the iron law
  - Difference in growth rate ranges between 2.5 to 6.7 times greater following crisis-driven statutes than noncrisis-driven ones
  - Regression results parallel difference in means comparison tests: post-crisis enactment year(s) indicator is significant while post-noncrisis enactment year(s) indicator is not
- Analyses of growth in regulation and regulatory complexity following statutes' enactment provide compelling information regarding the iron law because they relate as best as possible changes in regulation to specific laws
  - Note: Incremental changes not significant in means comparison tests while growth rates not significant in regression analysis; potential plausible explanation for difference across means comparison tests and regressions (fewer observations, especially of crisis-driven statutes), but puzzling that results differ when change in regulation is measured somewhat differently
  - Nevertheless, the statistically significant results are credible because they are corroborated by the paper's other statistical analyses (runs test, means comparison tests of statutes, regressions showing strong association between crises and increased regulations controlling for time)

Conclusion

- Iron Law of financial regulation that in the wake of financial crises Congress enacts legislation that produces a regulatory ratchet has a solid empirical foundation
- In a hierarchy of relative importance, crisis-driven statutes are more consequential for regulation than noncrisis ones
  - Simple runs test of plausibility indicates enactment of crisis-driven statutes is a non-random event in contrast to statutes enacted in noncrisis times and parallel analysis indicates a strong correlation between years of financial crisis and probability of enactment of important banking laws
  - Using proxies for measures of increased regulation related to textual restrictions and complexity, crisis-driven legislation has significantly greater regulatory content and is followed by significantly higher levels of regulation than noncrisis-driven legislation
  - Multivariate analysis shows financial crises have had greater regulatory effect than all noncrisis intervals, including LGS, controlling for increasing regulation over time
  - But extent of regulatory impact differs across crises
  - Deregulatory initiatives which occur episodically in noncrisis times are short-lived, as subsequent legislation generates regulations that quickly swamp any decline from the initiatives
- The significant differential regulatory impact of crisis-driven financial legislations suggests there might be value added to consider mechanisms in the legislative toolkit that focus on periodic reassessment to mitigate potential adverse effects