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## Regulation in Swiss Cantons: Data for one Century

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# Regulation in Swiss Cantons: Data for one Century

## Abstract

We present and illustrate novel data on more than a century of regulation in Switzerland. We provide quantitative measures for Swiss cantons on the annual stock of legally binding rules from 2006-2013 and on regulatory activity as reflected in the annual changes to such regulation from 1908-2013. We measure the stock of regulation by the number of enactments and characters, and the regulatory activity by the number of changed enactments and pages. We break down the measures by the level in the hierarchy of legal norms and by the issuing authority. The data reveal substantial cantonal heterogeneity in the stock of regulation and the extent and development of regulatory activity. Regulatory activity generally increased over the century, though in a non-monotonic and volatile manner. Quantitatively, regulation at the level of decrees and regulation by the executive dominate. We also construct our measures for the federal level from 2006-2013 (stock) and 1848-2013 (activity).

JEL-Codes: H100, H700, K200, Y100.

Keywords: regulation, regulatory activity.

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## 1. Introduction

Political commentators regularly assert a surge in regulation. Explanations range from an increase in economic and social complexity, institutional changes and special interest politics.<sup>1</sup> An often cited and prominent example of regulatory zeal is the U.S. Dodd-Frank Act, with 848 pages.<sup>2</sup> Given the disagreement about the causes, it comes as no surprise that there is no agreement about the consequences. While some deem it to be an adequate response to economic and social developments, others fret about a decrease in the quality of legislation and legal certainty. So far, this debate has been based mostly on anecdotal evidence. However, a rigorous analysis of the causes and consequences requires systematic and comparable data. We present unique data, along with the major facts and trends, for one century of regulation in Swiss cantons (equivalent to U.S. states), and for the sake of completeness, at the Swiss federal level. Looking at the Swiss subnational level is particularly interesting as the 26 cantons all share a common national institutional environment, but have considerable autonomy and feature great institutional variation.

Our measures capture the amount of regulation, differentiated by the authorities issuing the regulation and the hierarchy of legal norms. In the spirit of the seminal contributions of Moser (1952), Linder et al. (1985) and Mulligan and Shleifer (2005), we quantify regulation by the number of enactments, pages, and characters. Thereby, we distinguish between the legislature, the executive, and other authorities, as well as between the constitutional, statutory, and other levels in the hierarchy of legal norms.

A few other papers use similar measures of regulation. In the Swiss context, there are earlier data series for two individual cantons and the federal level. These are data series for Berne 1894-1951 (Moser 1952), Vaud 1948-1982 (Linder et al. 1985), and for the federal level 1948-2007 (Linder et al. 1985, 2009) and 1960-2013 (Buomberger 2014).<sup>3</sup>

In the international context, similar measures have been used to address a large range of questions. Mulligan and Shleifer (2005) show that, in a cross-section of U.S. states, the amount of regulation measured in kilobytes increases with population size. This is consistent with the notion of the fixed costs of the regulatory process. Alesina et al. (2005) analyze the scale and scope of European Union legislation by counting the number of enactments in

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<sup>1</sup> Economist, "In love with regulation," July 31, 1997; Economist, "United States' economy. Over-regulated America," February 18, 2012; Neue Zürcher Zeitung, "Qualität der Gesetzgebung im Sinkflug," February 8, 2013; Neue Zürcher Zeitung, "Für jedes neue Problem ein neues Gesetz," November 9, 2011.

<sup>2</sup> Economist, "The Dodd-Frank act. Too big not to fail," February 18, 2012.

<sup>3</sup> In the Appendix we discuss and illustrate how our data compare to these data series.

different regulatory areas. In a time-series model at the U.S. federal level, Dawson and Seater (2013) analyze the effect of the number of pages of federal regulation on private sector output and total factor productivity. Dal Bó and Rossi (2011) and Braendle and Stutzer (2012) use, among other measures, the numbers of bills proposed or ratified and the number of interpellations to investigate legislative activity.

In contrast to these overall measures, papers using measures of specific regulatory content abound (e.g., Djankov et al. 2002; Botero et al. 2004). Acknowledging the obvious advantages of content measures, they do not allow researchers to capture overall regulatory activity and often require somewhat arbitrary decisions about the considered components, the impacts of specific laws, the aggregation procedure, and weights. Hence, overall and content measures are complementary.

In what follows, Section 2 introduces the measurement methodology and sources, Section 3 illustrates the data at the cantonal level, Section 4 presents the data at the federal level, Section 5 concludes.

## **2. Data: Measures and sources**

The amount of regulation can be quantified with two conceptually distinct measures, i.e., stock and activity. The stock captures all legally binding rules at a particular point in time (e.g., Linder et al. 1985, Mulligan and Shleifer 2005). In contrast, activity refers to new enactments, amendments, and repeals occurring during a particular time interval (e.g., Moser 1952, Dal Bó and Rossi 2011). Importantly, the activity measure is not identical to a change in stock, since it sums all changes. The measures of stock and activity allow different questions of interest to be answered.

Practically, we count the number of enactments (in the case of both the stock and activity measures), the pages (in the case of activity measures), and the characters (in the case of stock measures). The number of enactments is straightforward to count, but provides no information on the extent of regulation. Therefore, we supplement this measure with the number of characters or pages. However, the number of pages is potentially noisy because of differences in publication practices.

We always distinguish the hierarchy of legal norms and the authority issuing the regulation. We distinguish four levels of the hierarchy of norms: Constitution, statutes, decrees (decrees, ordinances, resolutions), and inter-jurisdictional treaties. Overall, the main authorities are the

legislature and the executive. Typically, changes to the Constitution or to statutes originate in the legislature. Popular initiatives in all cantons and citizen assemblies in some complement the legislature as a source of new legislation. For decrees, the main sources are the legislature and the executive. Sometimes, the legislature and the executive issue a decree jointly, or the issuing authority could not be identified. Inter-jurisdictional treaties form a separate group. They contain any treaties and agreements between cantons or regions, including regions in other countries. For the federal level, we organize international treaties in a separate category. Finally, we lump together third parties issuing decrees, such as courts and special councils.

### *Stock*

We collect the stock measures from so-called “systematic” law collections containing the currently applicable rules. They are published in binders so that the collections can be continually updated. Collections for earlier years exist only in rare cases. Since 2006, the project LexFind (<http://www.lexfind.ch/>) hosted by the Zentrum für Rechtsinformation (hereafter ZRI) has digitally stored the collections. We commissioned an algorithm to extract the number of enactments and characters for every year.

### *Activity*

To gather the activity measures, we rely on so-called “chronological” law collections or official journals, which are generally available in libraries or cantonal archives back to 1908 and online in later years. They comprise all regulatory changes, i.e., new enactments, amendments, and repeals, made in a given time interval. For practical reasons, we assign enactments to years according to the year of publication. In rare cases, precise information on the publication date is not available and we have to use the enactment date. For example, Graubünden in 1935-1950 published three-year volumes without additional information on the publication date. However, publication usually immediately follows enactment.

After test-runs to define the coding framework, research assistants manually recorded the following information from each relevant entry of the cantonal law collections and journals: publication year, enactment type, and the page numbers or start and end pages. For the enactment type, research assistants could choose from pre-defined canton-specific lists or record the exact title in case the enactment assignment was unclear. Our legal expert, Dr. Marius Roth of the ZRI, assigned enactment types to the legal hierarchy and the issuing authority. Denominations of enactment types differ vastly across cantons and time. As some cantonal law collections also contain other information, Dr. Roth defined a comparable core

of generally binding rules. Specifically, we exclude re-printed federal laws, electoral results, collective labor agreements, cantonal budgets, codes on the internal organization of public entities, various announcements, etc.

Depending on the structure of the cantonal law collection, research assistants either coded the start and end pages of enactments or manually counted page numbers. As a general rule, every enactment counts at least one page, even if a canton published more than one enactment on one page. Similarly, every started page is fully counted. We do not account for layout differences across cantons and time, except in one very pronounced case. Jura publishes its journal in a format that is almost twice the normal size, but is structured in two columns per page. Therefore, we count the number of columns, instead of pages. Moreover, it is not possible to account for discrepancies in publication practices across cantons and over time. For example, there might be differences in the extent to which unchanged passages are published alongside amendments.

To ensure data quality, we checked all extreme values (zeroes and visible spikes) and a random sample of 2-10% of canton-years per research assistant. We discarded and recollected the data if the error rate was above 3%. Specific issues that we had to take into account: Publication practices differ between cantons with respect to the publication of laws that have to pass a popular referendum. No danger of miscounting emerges if cantons only publish legal texts that were approved in the referendum. Corrections were required in two cases: Some cantons publish the referendum text in their official journal before the new legal text passes the referendum, while others publish the texts before and after the referendum if they pass. The following cantons employ one of the latter publication strategies during at least some periods: Appenzell Ausserrhoden, Jura, Nidwalden, Obwalden, Thurgau, and Uri. In order to avoid miscounting, we had to go through all referendums and eliminate laws that were not accepted in a subsequent referendum or that have been published twice. A further challenge was to avoid double counting due to the practice of some cantons of first publishing the text, and as a second step, publishing the activation of the regulation (Appenzell Ausserrhoden, Schaffhausen, and Uri).

In 22 out of 25 cantons (Jura was only founded in 1979), the information is systematically available from 1908 onwards. For some cantons we found law collections that reach even further back in time: Aargau (1885), Bern (1882), Luzern (1906), Schaffhausen (1884), Uri (1901), Valais (1897), and Zurich (1907). The law collections of the federal level date back to the founding year in 1848. In a few cantons sources are available only after 1908. No law

collections are available for Appenzell Ausserrhoden 1908-1914 and Glarus 1908-1923. To date, Appenzell Innerrhoden does not officially publish legal changes. However, a collection of legal changes has been kept in the cantonal archive, or in later years, the cantonal library. Publications of enactments in the years 1908-1973 are haphazardly stored in boxes in the cantonal archive and coding the respective years would have been prohibitively costly. Below, we work with an unbalanced panel from 1908-2013.

**Table 1. Overview of categories.**

All observations: 200,292 recorded entries						
654,081 recorded pages						
Core: 189,938 recorded enactments (94.8% w.r.t. all observations)						
620,438 recorded pages (94.9%)						
Core 1908-2013: 188,355 recorded enactments (99.2% w.r.t. total observations in the core)						
611,771 recorded pages (98.6%)						
	Issuing authority					
Hierarchy of legal norms	Legislature	Executive	Joint	3 <sup>rd</sup> parties	Unknown	Total
Constitution, enactments	732 (0.4%)					732 (0.4%)
Constitution, pages	2281 (0.4%)					2281 (0.4%)
Statues, enactments	28,124 (14.9%)					28,124 (15.0%)
Statues, pages	137,215 (22.4%)					137,215 (22.4%)
Decrees, enactments	34,822 (18.5%)	98,648 (52.4%)	12,516 (6.6%)	1165 (0.6%)		147,151 (78.1%)
Decrees, pages	81,738 (13.4%)	292,234 (47.8%)	53,342 (8.7%)	4988 (0.8%)		432,302 (70.7%)
Treaties, enactments			5509 (2.9%)			5509 (2.9%)
Treaties, pages			20,615 (3.4%)			20,615 (3.4%)
Other, enactments					6839 (3.6%)	6839 (3.6%)
Other, pages					19,358 (3.2%)	19,358 (3.2%)
Total, enactments	63,678 (33.8%)	98,648 (52.4%)	18,025 (9.6%)	1165 (0.6%)	6839 (3.6%)	188,355 (100.0%)
Total, pages	221,234 (36.2%)	292,234 (47.8%)	73,957 (12.1%)	4988 (0.8%)	19,358 (3.2%)	611,771 (100.0%)

Table 1 provides an overview of the cantonal data. The respective information for the federal level is discussed in Section 4. Overall, we coded 200,292 entries running over 654,081 pages. Defining the core of legally binding rules eliminates 10,354 irrelevant entries and 33,643 pages, leaving us with 189,938 enactments (94.8% of all enactments) and 620,438 pages (94.9%). When further restricting to the period 1908-2013, we keep 188,355 entries (99.2% of the core) and 611,771 pages (98.6%).

Table 1 breaks down the total numbers of enactments and pages according to the different categories in the hierarchy of legal norms and the issuing authorities. With 52.4% of all enactments and 47.8% of all pages, the executive is the most active authority. This translates into a high share of regulation issued at the level of decrees, amounting to 78.1% of all enactments and 70.7% of all pages.

### 3. Illustration of cantonal data

Table 2 presents summary statistics for the stock and activity measures. Panel A contains the stock measures for 2006-2013 and Panel B the activity measures for 1908-2013. Separate summary statistics are provided for the number of enactments and the number of either characters (stock) or pages (activity) by the different levels in the hierarchy of legal norms.

**Table 2. Summary statistics, cantons, part 1**

<b>Panel A. Stock, 2006-2013</b>				
	Mean	Std. dev.	Min	Max
Number of enactments				
Constitution	1	0	1	1
Statutes	121	52	52	294
Decrees	297	113	102	524
Treaties	83	39	33	211
Other	161	135	19	651
Total	663	224	333	1279
Number of characters				
Constitution	55,314	18,206	27,123	135,516
Statutes	2,785,712	1,716,115	936,849	13,828,645
Decrees	3,496,524	1,945,956	916,562	12,093,478
Treaties	795,871	310,928	283,100	1,658,089
Other	902,945	629,160	96,303	2,604,409
Total	8,036,366	3,899,613	3,224,635	29,122,198

*To be continued.*



**Table 2. Summary statistics, cantons, part 2**

<b>Panel B. Activity, 1908-2013</b>				
	Mean	Std. dev.	Min	Max
Number of enactments				
Constitution	0	1	0	10
Statutes	11	21	0	243
Decrees	57	47	0	322
Treaties	2	4	0	47
Other	3	14	0	220
Total	73	65	1	409
Number of pages				
Constitution	1	4	0	54
Statutes	53	74	0	837
Decrees	167	147	0	3061
Treaties	8	15	0	327
Other	7	29	0	460
Total	236	206	1	3260

Notes: N = 208 in Panel A; N = 2591 in Panel B.

On average, the cantonal stock of regulation in 2006-2013 was covered in 663 enactments with a total of 8,036,366 characters (or roughly twice the number of characters in the Bible<sup>4</sup>). Decrees are the most prevalent type of legal norm, with an average share of around 43.5% (characters) to 44.8% (enactments). Even more pronounced are the differences across cantons. The number of enactments and characters differ by factors of 3.8 and 9, respectively, between the briefest and most wordy bodies of rules. Over all cantons and the years 1908-2013, the changes to cantonal bodies of rules reached 73 enactments or 236 pages per year on average.

### *Stock*

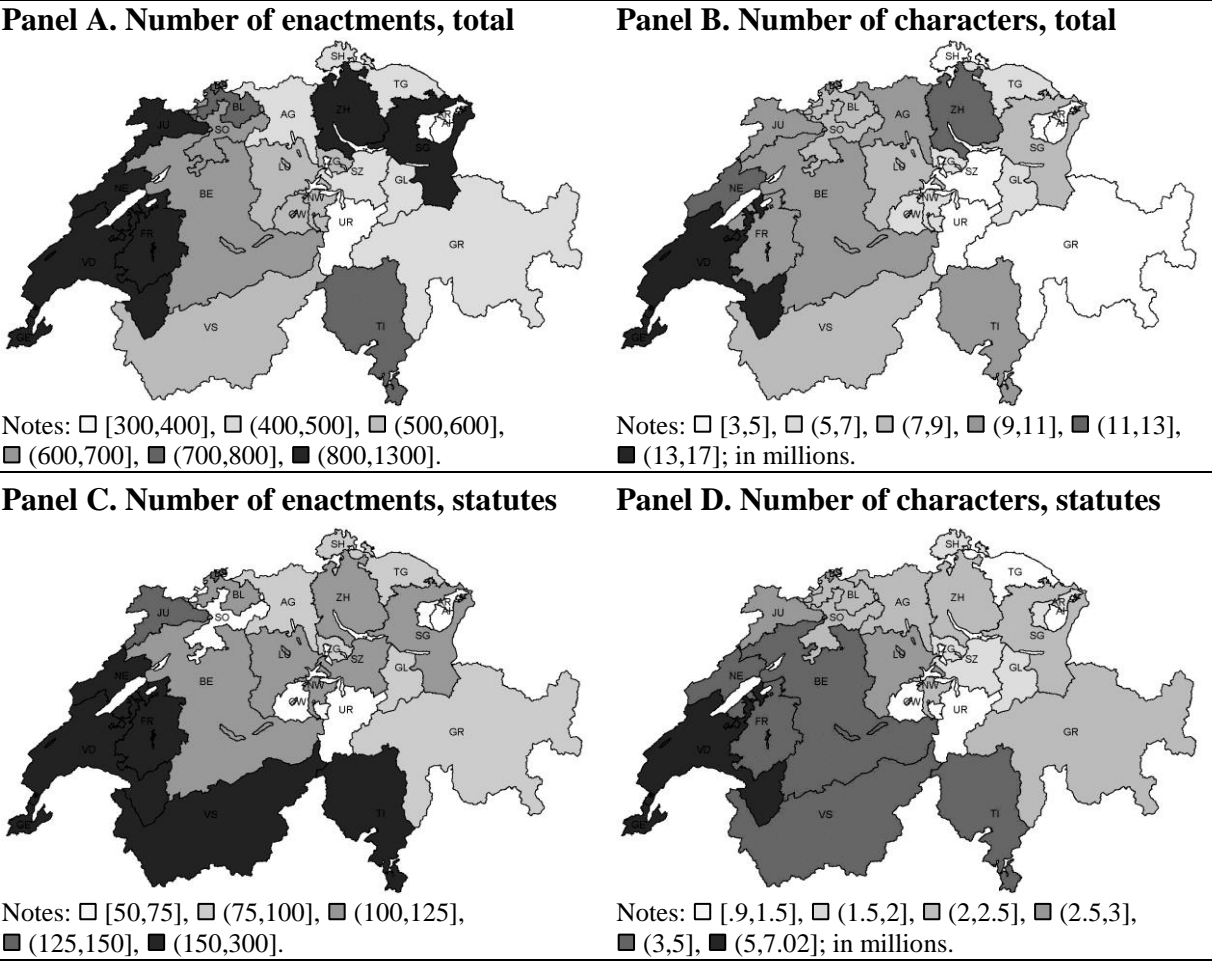
Figure 1 shows the cantonal heterogeneity in the stock of regulation. Panels A and B contain the measures with totals over all enactment categories, while Panels C and D contain the measures with respect to statutes only.

A clear pattern emerges: The stock of regulation is higher in the mainly French or Italian speaking cantons, i.e., Geneva (GE), Fribourg (FR), Jura (JU), Neuchâtel (NE), Ticino (TI), Valais (VS), and Vaud (VD), and in more urban cantons, i.e., Basel (BS), Geneva (GE), Vaud (VD), and Zurich (ZH). At the other end of the spectrum are the small, rural, and German-speaking cantons of Appenzell Ausserrhoden (AR), Appenzell Innerrhoden (AI), Uri (UR), and others. There are some deviations from this general pattern: For example, Valais (VS) is

<sup>4</sup> According to the following website, the Bible has 4,017,010 characters: [http://www.madore.org/~david/misc/orders\\_mag.html](http://www.madore.org/~david/misc/orders_mag.html); accessed: October 23, 2015.

not a top-regulator in terms of overall enactments, but in terms of statutes. For Zurich (ZH), the opposite is true. Also, Bern (BE) is among the extensively regulated cantons in terms of characters, but not enactments.

**Figure 1. Stock, 2013**

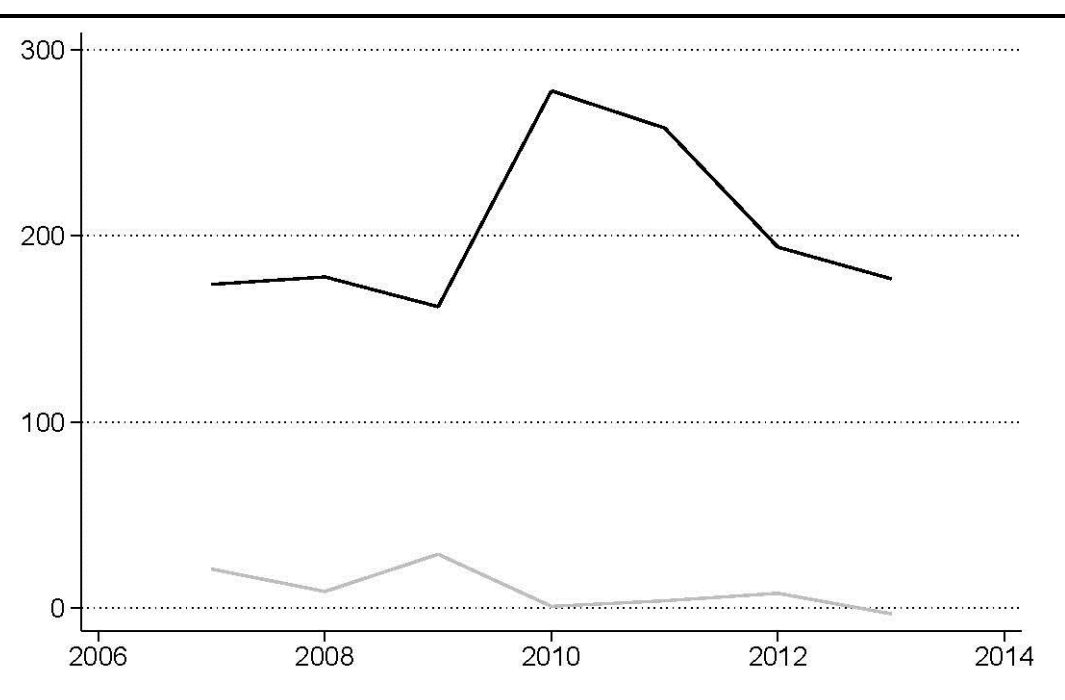


The observed patterns across language regions are not due to linguistic differences. Comparing the number of characters of identical regulation in French, Italian, Rumantsch, and German at the federal level and/or in multilingual cantons, we find that German uses 98.3% of the characters of the French and 99.8% of the Italian version, on average, at the federal level, and 96.4% (French), 96.1% (Italian), and 91.6% (Rumantsch) at the cantonal level.

*From stock to activity*

The relationship between the stock and activity measures is shown in Figure 2. Importantly, the change in the stock from one year to another is not equivalent to the activity measure because the activity measure captures the number of changed enactments and sums new enactments, amendments, and repeals.

**Figure 2. Changes in stock versus activity, canton of Zurich, 2007-2013**

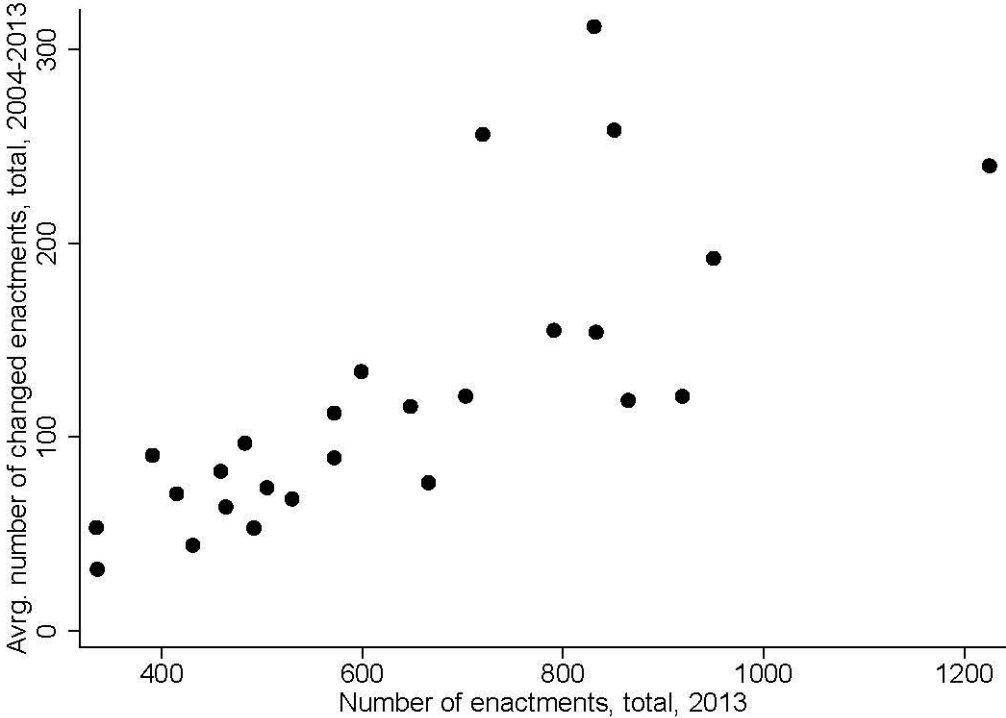


Notes: Number of changed enactments (—) and changes in number of enactments (---).

Figure 2 illustrates the two measures for Zurich. The changes in the overall stock of regulation are trending downwards and are much lower than the activity measure. In 2010, the activity measure peaks with slightly less than 300 adjustments, while the change in the stock is close to zero. In 2013, the (negative) change in the stock measure indicates that the overall number of legally binding regulations actually decreased, whereas more than 200 adjustments have been made. These examples illustrate the complementarity of the two measures. On the one hand, the activity measure captures the idea that – even without changes in the overall stock – individuals and firms might have to adjust their behavior due to changes in the regulatory environment. On the other hand, the stock approximates the overall regulatory environment or regulatory density for a particular year.

Despite the conceptual differences between the two measures, Figure 3 reveals a high positive cross-sectional correlation: Cantons with a large stock also tend to be the more active ones.

**Figure 3. Number of changed enactments, avrg. 2004-2013, versus number of enactments, 2013**



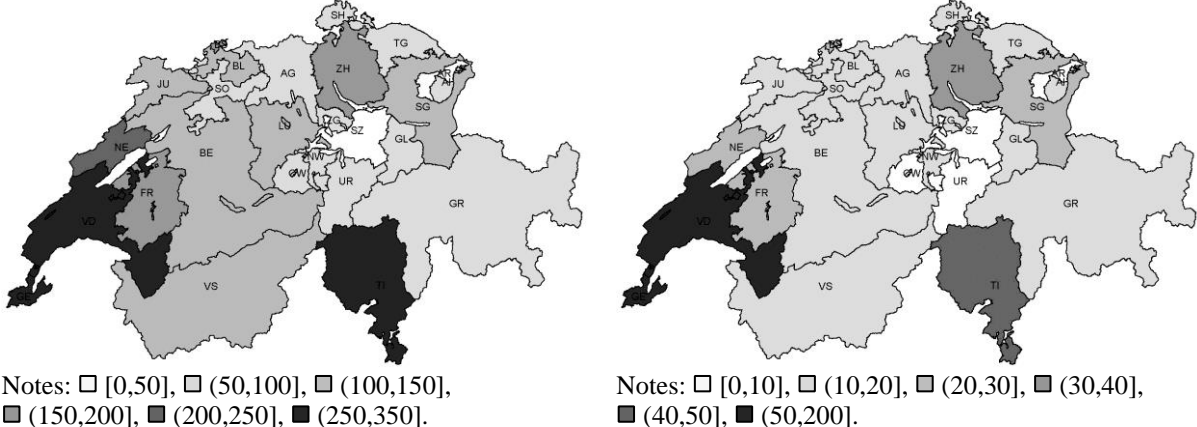
*Activity*

As with the stock, there is also large heterogeneity in regulatory activity across the cantons. Panel A of Figure 4 shows the number of changes to all categories of enactments, while Panel B focuses on statutes only. In order not to be overly repetitive, the illustrations focusing on the number of pages are omitted. The overall patterns, however, are similar.

**Figure 4. Activity, avrg. 2004-2013**

**Panel A. Number of enactments, total**

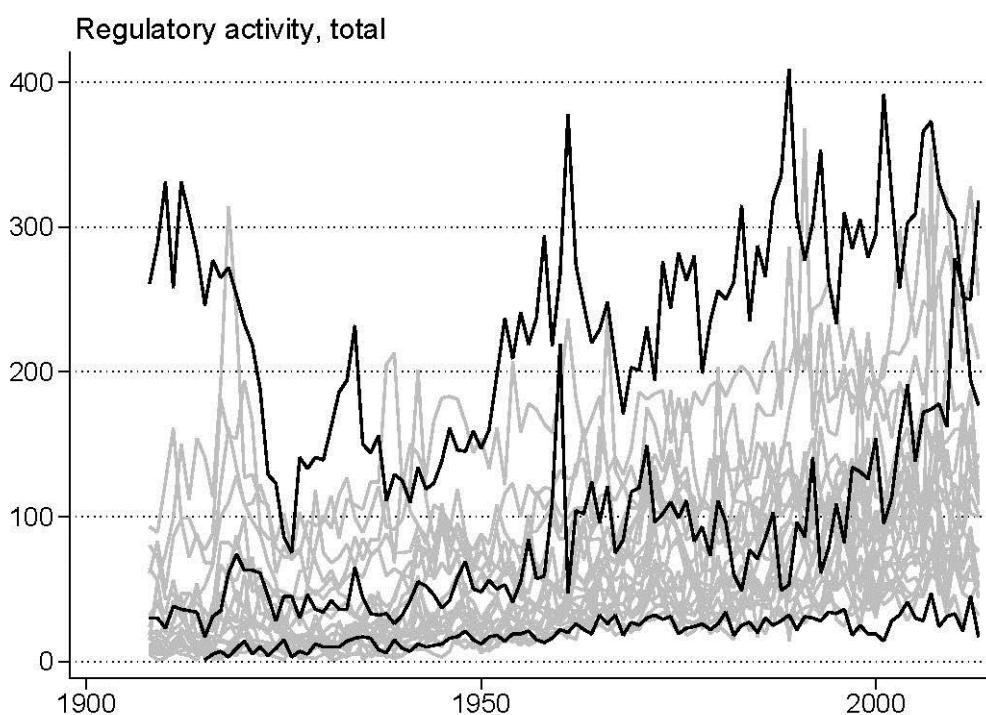
**Panel B. Number of enactments, statutes**



The high correlation between stock and activity measures shown in Figure 3 also manifests itself in the similarity of the choropleth map for stock and activity. Again, the most regulatorily active cantons are the urban, and the mainly French or Italian speaking cantons, the least active are the rural, German-speaking cantons. Two noticeable differences to the corresponding figures for the stock are the relatively high level of activity in Appenzell Innerrhoden (AI) and the comparatively low amount of changes to statutes in Valais (VS).

The true potency of our regulatory activity measure lies in its capacity to unveil more than a century of regulatory development. Figure 5 depicts the time series for the 26 cantons. Those for Appenzell Ausserrhoden (lower), Zurich (middle), and Geneva (upper) are highlighted.

**Figure 5. Regulatory activity, total, all cantons, 1908-2013**

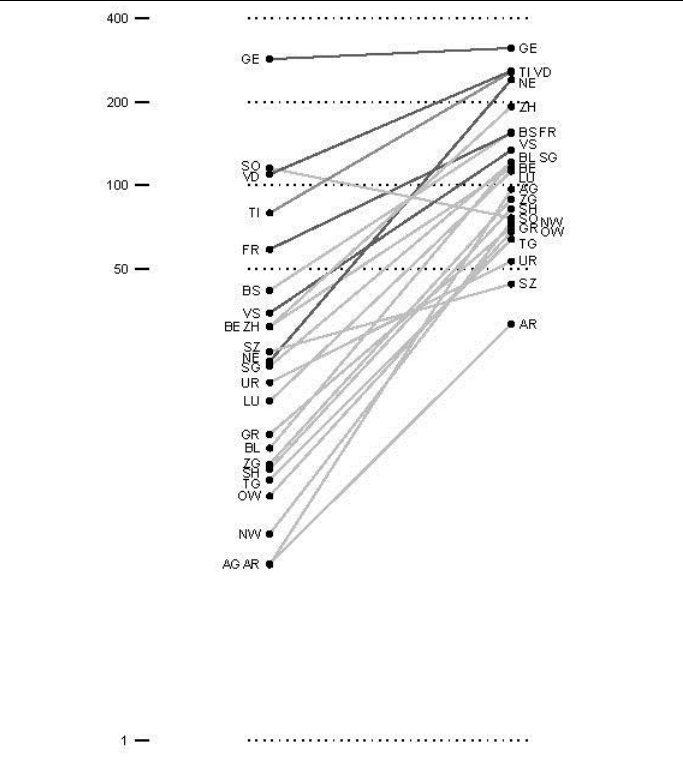


Notes: The black lines represent the cantons Appenzell Ausserrhoden (lower), Zurich (middle), and Geneva (upper).

The most striking properties are the secular rise, the nonlinearity, and the strong volatility of regulatory activity. The great heterogeneity across cantons that we encountered at the end of the period in previous illustrations is a stable feature and is already present at the beginning. This cantonal heterogeneity at both the beginning and the end of the period, as well as the general increase in regulatory activity, are also apparent in Figures 6 and 7. The new

observation that emerges from these figures is the large heterogeneity in the growth of regulatory activity across cantons.

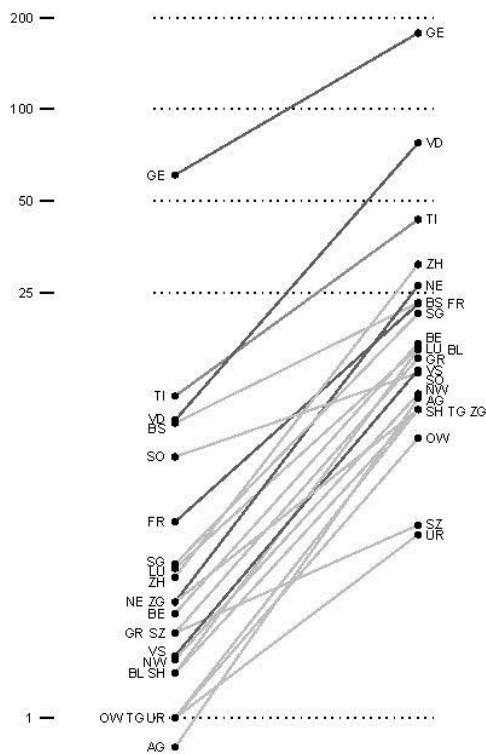
**Figure 6. Heterogeneity in cantonal developments of regulatory activity, total**



Notes: 1) Avrg. number of changed enactments, total, 1908-1917 and 2004-2013. 2) Logarithmic scale. 3) Without AI, GL, and JU due to missing data in first period. 4) Dark lines for French and Italian speaking cantons.

Figure 6 presents the average number of changed enactments per canton for 1908-1917 and 2004-2013 on a logarithmic scale. The slopes of the connecting lines reflect the percentage changes in regulatory activity. Although all cantons except Solothurn (SO) experienced an increase in activity, growth was typically more pronounced in cantons starting at a low level (e.g., Appenzell Ausserrhoden, AR) than in cantons starting at a high level (e.g., Geneva, GE). Such a base effect is to be expected, still the heterogeneity in the cantonal growth experience is noticeable. Of the cantons with positive growth rates, regulatory activity grew the slowest in Geneva (GE) and Schwyz (SZ) and the fastest in Nidwalden (NW) and Aargau (AG). The median growth rate is close to the growth rates experienced in Graubünden (GR) and Zurich (ZH). Again, Figure 6 shows that the mainly French and Italian speaking cantons of Geneva (GE), Fribourg (FR), Neuchâtel (NE), Valais (VS), Vaud (VD), and Ticino (TI) (darker connecting lines) are more active than the mainly German speaking cantons.

**Figure 7. Heterogeneity in cantonal developments of regulatory activity, statutes**



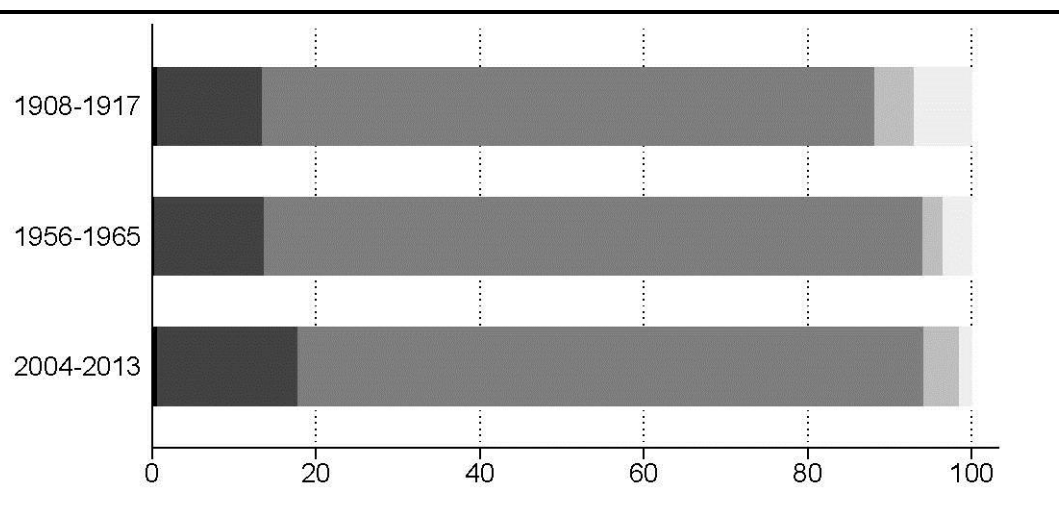
Notes: 1) Avrg. number of changed enactments, statutes, 1908-1917 and 2004-2013. 2) Logarithmic scale. 3) Without AI, GL, and JU due to missing data in first period, without AR due to missing data in some years and zero changes in other years of the first period. 4) Dark lines for French and Italian speaking cantons.

Figure 7 for statutes provides a similar picture. We consistently find strong cantonal heterogeneity at the beginning and the end of the period, as well as considerable heterogeneity in the growth of regulatory activity. This time, however, the differences between language regions are somewhat less pronounced.

Turning to the composition of our regulatory activity measure with respect to the hierarchy of legal norms, Figure 8 shows the average shares of regulation at the level of the Constitution, statutes, decrees, treaties, and other regulation in three time periods. Overall, the share of regulation at the level of decrees is by far the largest. If we compare the composition over time, we observe a slight increase in the share of decrees from 74.7% in the initial period (1908-1917) to 80.3% in the intermediate period (1956-1965), and a slight decrease to 76.4% in the last period (2004-2013). The share of statutes is roughly stable between the initial and intermediate period with 12.8% and 13.4%, respectively, before slightly increasing to 17.1% in the final period. The share of changes to the Constitution is always well below 1%. The share of other regulation decreases over time, which might be due to higher coding

uncertainties in the early years, where the categorization of some enactments was no longer possible and had to be coded as “other”.

**Figure 8. Regulatory activity by hierarchy of legal norms**

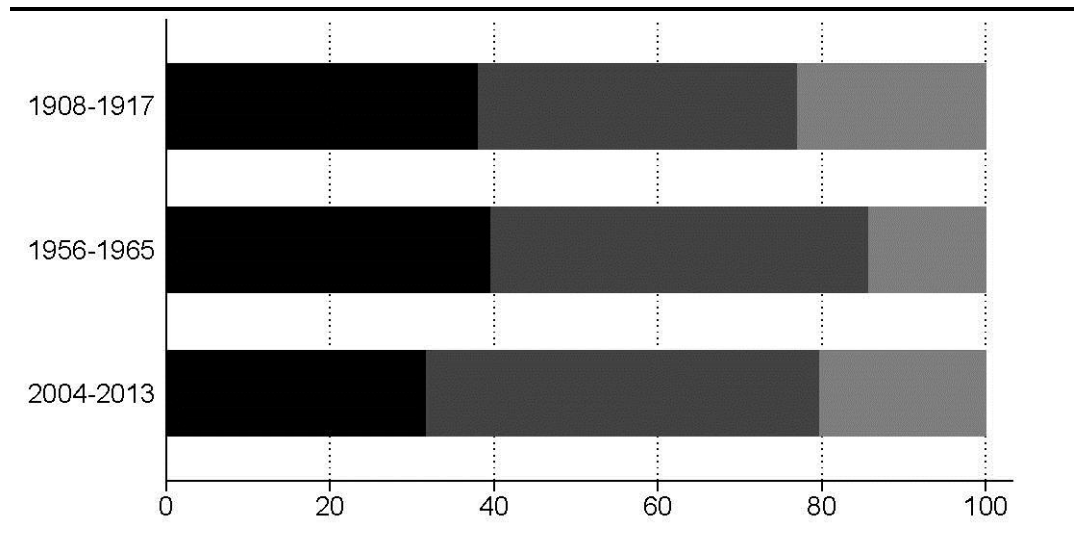


Notes: 1) Percentage of ten-year averages of the number of changed enactments at the level of ■ Constitution, ■ statutes, ■ decrees, ■ treaties, and □ other. 2) Unweighted average of all available cantonal percentages of ten-year averages.

Figure 9 presents the composition with respect to the issuing authority, i.e., the legislature, the executive, and other authorities. This last category includes third parties (such as courts and special councils) and enactments where the legislature and the executive are jointly involved (e.g., inter-jurisdictional treaties). In all three periods, the executive holds the highest share. In the initial period, the share of the executive of 39.0% is close to the share of the legislature of 38.0%, and the remaining 22.9% of activity is from other authorities. In the intermediate period, the share of the executive increases to 46.1%, the share of the legislature remains roughly stable at 39.6% and, thus, the share of other authorities decreases. This could also be due to the higher coding uncertainty in the early period. The last period shows a strong decrease in the share of the legislature to 31.7%, while the share of the executive is roughly unchanged at 48.0%. The category “other authorities” became increasingly important in later years, rising to 20.3%. Interestingly, the two observations of the dominance of the executive and the increase in the importance of “other authorities” (including inter-jurisdictional treaties) at the expense of the legislature in recent years are consistent with the findings in the research on the role of cantonal legislatures summarized in Vatter (2014).



**Figure 9. Regulatory activity by authority**



Notes: 1) Percentage of ten-year averages of the number of changed enactments by the ■ legislature, ■ executive, and ■ other authorities. 2) Unweighted average of all available cantonal percentages of ten-year averages.

#### **4. Illustration of federal data**

In total, we coded 50,493 entries and 265,436 pages of regulatory activity for the period 1848-2013 at the federal level. The core contains 31,072 enactments (61.5% of all entries) and 204,220 pages (76.9%). The share of the core relative to the total number of entries is substantially lower for the federal level, compared to the cantonal level. The main reason is that the federal level publishes content from a diverse range of sources. On the one hand, cantonal regulations in the form of intercantonal treaties are published again at the federal level, even though the source of regulation is the cantons and not the confederation. On the other hand, abundant international regulation and appendices of international organizations are published. We only take into account regulation by international treaties that are binding on Switzerland. Entries without direct and generally binding legal implications were coded as irrelevant. Even though important delimitations in the category of international law had to be made, international treaties account for an important share of total regulation in the core: 36.0% of enactments and 33.0% of pages in the core are related to international treaties. This is the second most important category behind decrees with a share of 55.8% (enactments) and 55.3% (pages). Statutes have a share of 6.1% of enactments and 8.7% of pages. The overall involvement of the legislature is only slightly higher, at 6.2% (enactments) and 8.8% (pages). In comparison, the share of the executive is with 55.4% (enactments) and 55.0% (pages) much more pronounced.

**Table 3. Summary statistics, federal level**

<b>Panel A. Stock, 2006-2013</b>				
	Mean	Std. dev.	Min	Max
Number of enactments				
Constitution	1	0	1	1
Statutes	310	4	303	317
Decrees	1534	64	1453	1613
Intercantonal treaties	12	1	10	13
International treaties	2655	118	2475	2800
Other	44	21	33	94
Total	4556	156	4337	4787
Number of characters				
Constitution	474,543	60,465	346,866	531,977
Statutes	12,836,735	890,394	11,449,542	14,042,896
Decrees	34,044,575	2,219,332	31,067,848	36,856,656
Intercantonal treaties	120,372	18,063	76,956	130,608
International treaties	66,456,192	4,850,169	58,842,812	72,306,544
Other	197,043	34,976	167,485	277,165
Total	114,129,459	7,979,229	102,061,189	124,032,429
<b>Panel B. Activity, 1848-2013</b>				
	Mean	Std. dev.	Min	Max
Number of enactments				
Constitution	0	0	0	3
Statutes	11	12	0	66
Decrees	102	154	1	527
Treaties	66	71	0	302
Other	4	5	0	29
Total	183	230	5	855
Number of pages				
Constitution	1	7	0	56
Statutes	106	122	0	578
Decrees	666	1008	2	4431
Treaties	399	424	0	2207
Other	35	75	0	477
Total	1206	1513	28	6607

Notes: N = 8 in Panel A; N = 166 in Panel B.

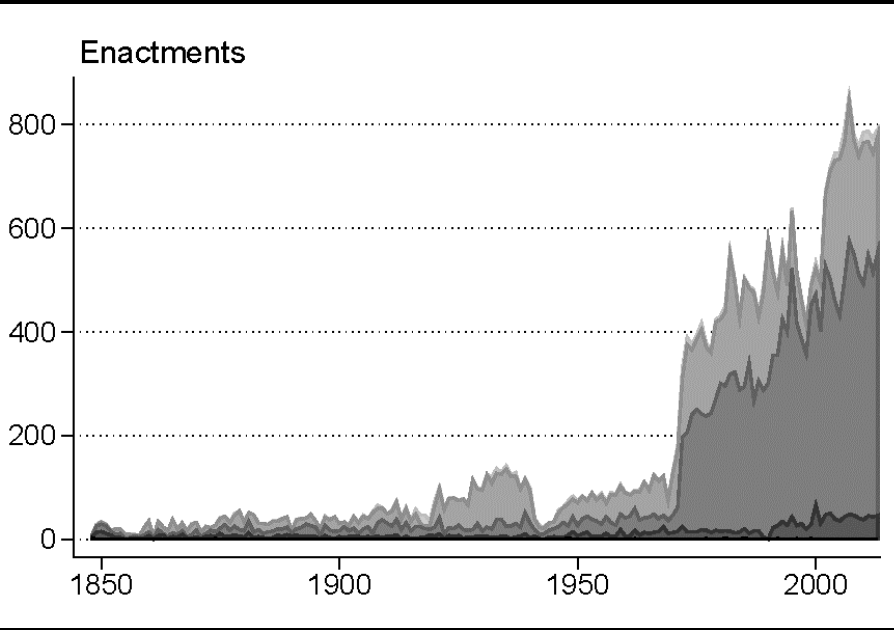
Table 3 presents summary statistics for the stock and activity measures at the federal level.<sup>5</sup> Panel A contains the stock measures for the period 2006-2013 and Panel B the activity measures for the period 1848-2013. On average, the stock of federal regulations from 2006-2013 is covered in 4556 enactments with a total of 114,129,459 characters (or roughly 28 times the number of characters in the Bible; see footnote 3). International treaties are the most prevalent type of legal norm, with a share of around 58.2% (characters) to 58.3%

<sup>5</sup> There is a slight inconsistency between our stock and activity measures at the federal level. While a small number of intercantonal treaties (12 enactments) with some relevance for the federal level are included in the stock measure, the activity measure for the federal level contains no changes to intercantonal treaties.

(enactments). Decrees are the second most important category, with 1534 enactments and 34,044,575 characters. The share of statutes in the stock of federal regulation accounts for 6.8% (enactments) and 11.3% (characters) of the total stock of regulation in the period 2006-2013.

Over the entire period 1848-2013, the changes to the federal body of rules reached an annual average of 183 enactments or 1206 pages. However, these averages mask large differences across years, with a range of 5 to 855, in the case of enactments, and of 28 to 6607 pages.

**Figure 10. Regulatory activity, federal level, 1848-2013**



Notes: Number of changed enactments at the level of ■ Constitution, ■ statutes, ■ decrees, ■ treaties, and □ other.

Figure 10 demonstrates that these differences are due to a tremendous increase in regulatory activity in the early 1970s. The two major sources of this increase of regulatory activity are changes to decrees and international treaties. While the average number of regulatory changes amounted to roughly 101 (enactments) in the 1960s, this number increased to an average of 780 in the last 10 years of the sample period. However, a word of caution is due: The increase starting in the 1970s is less pronounced with other delineations of the core (see Appendix).

**5. Conclusion**

We present novel data on more than a century of regulation in Switzerland. We measure the stock of regulation by the annual number of enactments and characters, and regulatory activity by the annual number of changed enactments and pages at the Swiss cantonal and

federal levels. The measures differentiate the hierarchy of legal norms and distinguish between the issuing authorities.

The heterogeneity in the regulatory stock and activity across cantons is large, and regulatory activity is generally increasing, though the increase is nonlinear and volatile. We find a strong positive correlation between stock and activity. Cantons that tend to have larger stocks are also the ones that tend to feature higher activity. Regulation is dominated by legal norms at the level of decrees and norms issued by the executive. The French and Italian speaking cantons tend to be more active and have larger regulatory stocks in comparison to their German speaking counterparts.

This dataset provides the foundation to address a broad range of research questions. We are interested in the determinants and the consequences of regulation. Regarding the determinants, we intend to study institutional features (e.g., legislative referenda), political factors (e.g., party compositions), and economic and demographic drivers. In addition, the data allow us to shed light on interactions in regulatory activity between jurisdictions and across categories of legal norms. Regarding the consequences, we are interested in the effects on legal certainty, fiscal policy, economic development, and welfare.

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## Appendix

As discussed in Section 1, there are prior time series on regulatory activity for individual cantons and the federal level in Switzerland. Data are publicly available for Berne 1894-1951 (Moser 1952), Vaud 1948-1982 (Linder et al. 1985), and for the federal level 1948-2007 (Linder et al. 1985, 2009). In this Appendix we briefly elaborate on how our data compare to these data series.

Generally speaking, there are three main differences between the datasets.

1. Definition of the core. All datasets are mainly based on chronological law collections that also contain information without regulatory implications. Therefore, all authors have to define a core of generally binding rules. We delineate the core by excluding all types of enactments that typically do not adhere to our definition of regulation explained in Section 2. Linder et al. (1985, 2009) address this issue by analyzing the content of the enactments and by consulting the few available systematic law collections. Moser's (1952) definition is based on content analysis and the issuing authority.

2. Treatment of repeals. Our interest lies in regulatory activity. Therefore, we only count explicit repeals requiring a regulatory act and an official publication in the chronological law collection or the official journal. In contrast, Linder et al. (1985, 2009) reconstruct the evolution in the stock of regulation. Thus, they also record implicit repeals, i.e., repeals due to (i) temporary limitations, (ii) loss of relevance of regulatory domain, and (iii) new enactments with contradictory content (Linder et al. 1985: 71). Further, if one legal act repeals several enactments at once (“Entrümpelungsgesetz”, “Bereinigungsgesetz”, “loi d'épuration”; henceforth “omnibus repeals”) our approach counts such an omnibus repeal as one act, while Linder et al. (1985, 2009) count the total number of repealed acts. The publication strategy regarding multiple repeals might differ across cantons and time, which would introduce some inconsistencies in our data.

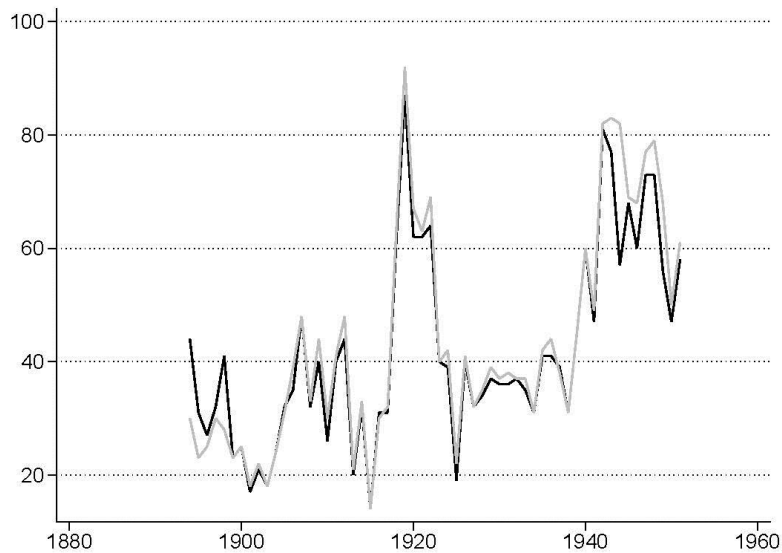
3. Omnibus bills. Sometimes one regulatory decision – published as one new legal act – may change multiple earlier enactments simultaneously (henceforth “omnibus bills”). Again, we count such an omnibus bill as one enactment, while Linder et al. (1985, 2009) count all changes separately.

In the following, we discuss how these issues affect the different time series.

### *Canton of Berne*

Moser (1952) uses the same legal sources and similar coding rules as we do. Therefore, the differences are minor (see Figure A1) and mainly due to the different definition of the core.

**Figure A1. Data comparison Berne**



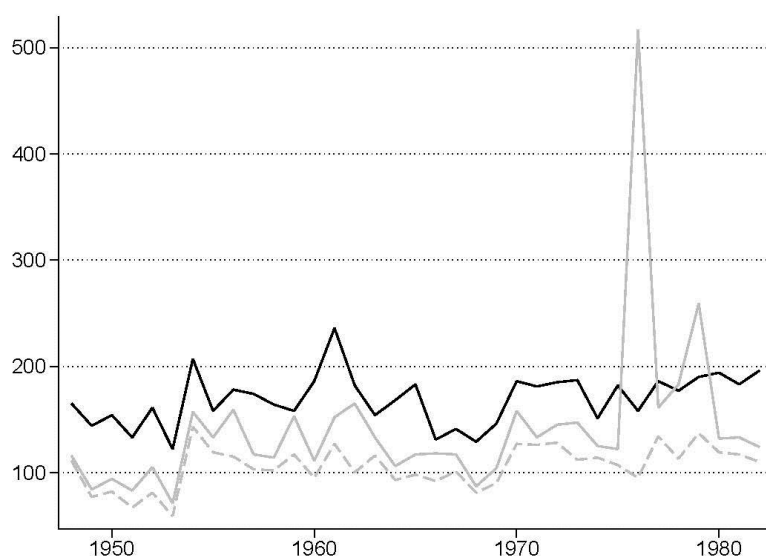
Notes: Our data (—) and data from Moser (1952) (---).

### *Canton of Vaud*

In addition to the chronological law collections, Linder et al. (1985) use systematic law collections as complementary sources. Furthermore, as discussed above, their approach differs with respect to the coding strategy and the definition of the core. When comparing our data to those collected by Linder et al. (1985), two differences become apparent (see Figure A2). First, we generally have a higher level of activity because our approach to delineate the core leads to a slightly broader definition compared to the one by Linder et al. (1985) in the case of Vaud. Second, the data of Linder et al. (1985) exhibit several visible peaks caused by omnibus repeals. If we exclude all repeals (i.e., explicit, implicit, and omnibus repeals) from their data series (see dashed line), we observe very similar patterns in our and their data.



**Figure A2. Data comparison Vaud**



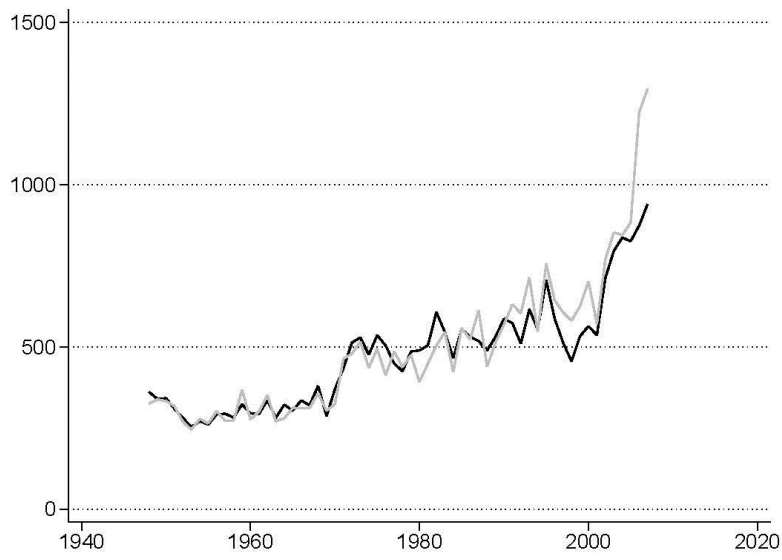
Notes: Our data (—), data from Linder et al. (1985) (---), and data from Linder et al. (1985) without repeals (· · ·)

### *Federal level*

Again, Linder et al. (1985, 2009) use additional sources (systematic law collections and a list of repeals), a different coding strategy, and a different definition of the core. Large differences between the datasets occur until the seventies. These are mostly due to a different delineation of the core. Over the entire period, we generally count lower numbers of enactments. An important factor is that we do not count implicit repeals and count omnibus repeals or omnibus bills as one enactment.

In order to assess the relevance of other potential discrepancies, we adjust the two data series for the differences in the core and the treatment of repeals as far as possible. Specifically, we abandon our definition of the core and include all enactments, while we exclude all repeals in the data series of Linder et al. (1985, 2009). Figure A3 shows that with these adjustments the two data series are similar. Thus, other discrepancies play at most a minor role. A few larger differences can still be observed though. An example is the divergence in the years 2006 and 2007, which results mostly from omnibus bills.

**Figure A3. Data comparison federal level**



Notes: Our data (—), data from Linder et al. (1985, 2009, 2011) (---)