A unified Italy? Sovereign debt and investor scepticism *

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Abstract

This paper provides an empirical study of sovereign debt integration and analyses the evolution of sovereign debt prices when several countries merge to become a "unified country", or when the probability of such an event exists. Based on an original database of pre-Italian Bonds, this paper shows the impact of Italy's unification on bond prices. Italy's unification was a long lasting process. The analysis shows that prior to unification in 1862, the bonds issued by the future parts of the kingdom reacted in an idiosyncratic way. Around the sovereign debt integration, this paper highlights a significant increase in risk for low-yield bonds. Using a break point analysis and a Bayesian Dynamic Factor Model, the paper proves that until the late 1860s the financial market did not believe in Italy's Unification.

JEL Codes: F34, G12, G15, N23

Keywords: State Succession, Unification, Financial History, Sovereign debt, Italy

^{*}I sincerely thank Kim Oosterlinck for his supervision and engagement. I also thank Frans Buelens for his help and availability, especially to collect the data. I am grateful to the University of Antwerp's SCOB center and the Centre des Archives Economiques et Financières (CAEF) for the collection of the data. I appreciate the comments of the participants of the 2010 EHES Summer School and their Eurocommonfactor Training Module by Martin Uebele, Samad Sarferaz and Ulrich Woitek. I appreciate the comments and suggestions of Marc Flandreau, Anne Murphy, Albrecht Ritschl, Peter Sims, Robert Vermeulen, the participants of the London School of Economics PhD workshop, the participants of the 2010 Economic History Society Postgraduate Training, the participants of the 2011 Economic History Society Annual Conference, the participants of the 2011 Spring Meeting of Young Economists, the participants of the 2011 Economic History Annual Conference andthe participants of the 2011 European Historical Economics Society Conference. The FNRS (Fonds National de Recherches Scientifiques) and Le Fonds Marie-Christine Adam provided useful financial support.

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Introduction

Sovereign bonds have singular characteristics (Eaton and Fernandez, 1995; Shleifer, 2003). On the one hand, given the official nature of the issuer, sovereign obligations are often considered as risk free assets. Indeed, the State, being entitled to raise taxes and to issue currency, cannot, in theory, go bankrupt. On the other hand, the real capacity of investors to force reimbursement is extremely limited. A sovereign State can unilaterally decide not to repay its debt, leaving the investors without any legal recourse. Understanding the implications of this paradoxical situation represents one of the main challenges of this topic (Eaton and Fernandez, 1995). Regarding the State's capacity to repay, the literature has tried to identify the macro-economic (Manasse et al., 2003), the historical (Eichengreen et al., 2003; Reinhart et al., 2003) and the institutional and political causes of default (Kohlscheen, 2004; Van Rijckhegem and Weder, 2004). Academic literature has further investigated the motivations of the States to repay (Bulow and Rogoff, 1989; Mitchener and Weidenmier, 2004 and 2005; Tomz, 2007).

Recent papers have attempted to determine the impact of certain events on sovereign bonds' expected rates of return. The well-known example of an event which disturbs the course of government bonds is war. Indeed, when a war breaks out, bond prices often experience sharp changes. The impact of various war-related events has been analysed for the American Civil War (Willard et al., 1996; Weidenmier, 2002; Oosterlinck and Weidenmier, 2007), for the Second World War (Frey and Kucher, 2000; Waldenström and Frey, 2004) and for the Russian revolution (Landon-Lane and Oosterlinck, 2006). For more peaceful periods, the reactions of bond prices following political changes have also been scrutinised. For instance, the effects on bond prices differ between democracies and autocracies (McGillivray and Smith, 2003; Dhillonand Sjostrom, 2009). As defaults might be linked with political turnover (Saiegh, 2004; Bordo and Oosterlinck, 2005; Saiegh, 2005), political changes can impact sovereign bond prices. The reaction of financial markets in the case of an annexation has been investigated for the Texan (Burdekin, 2006) and Hawaiian (Burdekin and Laney, 2008) debts. The latter paper finds a turning point in Hawaii's debt related to its annexation one week after the annexation vote in the Senate.

Similar to annexation, another event can disrupt sovereign bond markets: State unification. This paper focuses on the implications for State bonds in a country which faces the probability of

unification. The sovereign debts of the old entities are likely to be integrated. This study will detail the evolution of sovereign debt prices when a country unifies (or when such a probability exists) and investigates the sovereign debt integration. Puzzlingly, in spite of the significance of the amounts involved, there has been little investigation into the financial impact of a State's unification. Since international law requires continuity of rights and obligations, sovereign bonds would normally be carried over to the new country. However, exceptions such as war debt exist. The impact of State unification and sovereign debt integration has a contemporary echo and is regularly evoked in European debt debates.

This paper investigates Italy's unification in the 19th century in order to study how the sovereign debts reacted to the progressive unification of the States (1848-1870) and sovereign debt integration (1862-1863). The choice of Italy is based on its unique unification history. Italy resulted from the unification of seven entities which took place gradually. Conte et al. (2003) also selected Italy to analyse the monetary unification (1862-1905) arising after the sovereign debt integration by focusing on prices of the integrated sovereign debt across regional stock exchanges. Italy's unification is outstanding for academic purposes because each entity has its own bond premium and own history with events unrelated to the other entities. Until the middle of the 19th century Italy was made up of different independent nations. The unification of Italy was carried out gradually, therefore, only the debts of the territory about to be attached were impacted. Italian unification integrated all those individual sovereign debts. This offers an opportunity to investigate the financial impact of sovereign debt integration.

The rest of the chapter is organised as follows. Section 1 outlines a brief historical context leading to Italian unification and the associated pre-Italy sovereign debt. Section 2 focuses on the sovereign debt integration leading to the first Italian sovereign debt. Section 3 presents the data and the econometric methodology while Section 4 provides the main results and concludes. Section 5 draws parallels with the European sovereign debt issues.

I. On the road to Italy

To understand the Italian sovereign debt integration, an outline of the historical context leading to unification is needed. In parallel, this section is devoted to pre-Italy sovereign debt, issued by the seven States prior to unification. Events occuring to the individual pre-Italy States are linked to the respective sovereign debt. The different levels of yield in the different entities provide the requirement by investors according to the State. In this way, States with a high debt/population ratio such as Piedmont had a higher yield on their bonds. Next to the general level of the bond yields of each State, movements linked to events can be spotted in the evolution of the yields. Before unification, a war in Piedmont would have increased the yields on Piedmontese bonds, but no negative impact would have been percieved in the Kingdom of the Two Sicilies. The international context and the unification history of Italy are keys to understanding Italian sovereign bond integration.

In 1815, the Treaty of Vienna was signed and Austrian domination was restored in the northern part of Italy. According to this treaty, Italy was to be divided into different territories (see Appendix 1): the Kingdom of Piedmont-Sardinia, Lombardy-Venetia, the Papal States, the Two Sicilies, the Duchy of Parma, the Duchy of Modena and the Duchy of Tuscany. Most of them were controlled by other nations. The Duchies were controlled by monarchs (Killinger, C.L., 2002, p 9). Lombardy-Venetia was under Austrian rule. The Kingdom of Piedmont-Sardinia was under the leadership of the House of Savoy. The Papal States were controlled by Pius IX and the Bourbons directed the Two Sicilies. At this time, Italy's unification was unlikely in view of the huge heterogeneity that existed among the entities (Foreman-Peck, 2005). Italy remained only "a geographical expression" (Metternich, 1847). Indeed, Italy would need three wars of independence to become unified.

Italian unification, also called the Risorgimento, was instigated initially by the Kingdom of Piedmont-Sardinia. The first initiative took place during 1848-1849 but failed. The second tentative initiative took place in 1859 and lasted until 1861. After the Second War of Independence, Italy was nearly united. On the 17th of March 1861, Italy was proclaimed a kingdom by Victor Emmanuel II, the new king of Italy. Only Venetia and Roma were not attached to Italy as Rome was still a Papal possession and Venetia belonged to Austria. Italian unity was completed by the Third War of Independence (1866 – 1871). Venetia was attached to Italy on the 21st of October 1866 after the

Austrian defeat during the Seven Weeks' War (24.06.1866 – 23.08.1866). Italian unification was eventually achieved when the French withdrew from Rome in September 1870. The next two paragraphs highlight key facts and historical events impacting the pre-Italian sovereign bond yields data used in the empirical analysis (see Figure 1).

The revolution of 1848 took place separately in the various Italian areas (Perrens, F.T., 1857, p II). It was preceded at the beginning of 1848 by the emergence of new constitutions in Naples, in the Duchy of Tuscany, in the Kingdom of Piedmont-Sardinia and in the Papal States (Zeller, 1853, p475). This gave rise to a spirit of freedom all over Italy. The insurrections started in Milan in March 1848 and from there quickly spread to Florence, Modena, Parma, Naples and Sicily. On the 23rd of March 1848, Charles Albert, King of Piedmont-Sardinia, decided to support Lombardy in its attempt to become independent by attacking the Austrians who ruled the region. In August 1848, he entered Milan with his troops but had to leave a few days later due to the Austrians, led by Marshal Radetzky (Lubiensky, E., 1852, pp 197-198). Charles Albert's attacks lasted until the battle of Novara where he experienced a severe defeat on 23rd March 1849 due to the withdrawal of the Papal and Neapolitan troops. As a consequence, Charles Albert had to abdicate in favour of his son Victor Emmanuel II (Perrens, F.T., 1857, pp 182-215; Lubiensky, E., 1852, pp 330-331) who accepted the Austrian peace conditions, in particular paying 75 Million francs as a war indemnity (Zeller, 1853, p511). Pius IX was consigned to exile on the 25th of November 1848. He asked for the assistance of the Christian powers in order to recover his "throne". France intervened and restored him in April 1850 (Perrens, F.T., 1857, pp 75-126).

The first revolution subdued, all the former nobles again took possession of their territory and severely repressed the insurrections. This led to executions, the cancellation of the constitutions and the acceptation of a compulsory 300 million loan by Milan. (Zeller, 1853, p506). Garibaldi was a liberal very much involved in the First and Second Wars of Independence. His failure in unifying Italy during the First War of Independence and in particular his failure to defend the new Roman Republic against the French troops forced him to flee Italy in June 1849. Garibaldi came back during the Second War of Independence. Piedmont-Sardinia was the only region to remain independent but a war against Austria was no longer feasible as the defeat at Novara was still fresh in their minds and the war indemnity had weakened its finances (Zeller, 1853, pp511-512; Vimercati, C., 1863, pp 17-18). At the end of 1852, Cavour became Prime Minister of Piedmont-Sardinia (Duggan,

C., 1984, p 123). He played an important role in Italian unification by entering into the French-British alliance during the Crimean War in return for their protection to ensure the independence of Piedmont-Sardinia. This allowed him to restore the image of King Charles Albert after the victory at the Battle of the Tchernaya and to speak about the Italian situation and the threats coming from Austria, the Papal States and the King of Naples. In 1859, Camillo Benso Cavour presented a loan project aimed at defending Piedmont-Sardinia. A disarmament ultimatum was sent but Cavour refused it and convinced Napoleon III to help Piedmont-Sardinia to expel the Austrians from Lombardy-Venetia. His strategy was successful. On the 27th of April 1859, the Second War of Independence broke out and after two significant battles (Magenta and Solferino), the Austrians were defeated and left Lombardy. At the same time, the Austrian monarchs who controlled the duchies also fled.

In July 1859, the French Emperor Napoleon III offered peace to the Austrian Emperor Franz Joseph, a peace which was signed in Zurich. Garibaldi made an alliance with Victor Emmanuel II to bring together an army of volunteers which was called the 'Thousands'to achieve Italian unification. They began by freeing Lombardy (June 1859), then Sicily (June 1860) and finally Naples (September 1860). Afterwards, Cavour asked to annex the Papal States and the Two Sicilies, as was the will of the people (Zeller, 1853, pp526-527). In March 1860, Lombardy was transferred by Napoleon III to Victor Emmanuel II and France in return received the province of Savoy and Nice. All regions of Northern Italy were reattached to the Kingdom of Piedmont-Sardinia. The United Kingdom of Italy was proclaimed in March 1861 (Killinger, C.L., 2002, p117) with Turin as capital until 1865 when it was replaced by Florence.

Table 1: Pre 1863 Italian Bonds

Entities	Converted Amount (million)	Unconverted Amount (million)	Debts on Anvers and Paris Market	Issue Date	Amount (million)	Nominal Value (fr)	Interest	Payback End Date		Conversion	Data Start Date	Data End Date	Market
The Two Sicilies Kingdom	32.80	0	Naples Bonds	1806	25.6	114	5%, 1st January and July	payback at 114fr	-	Y	01-Jan-47 19-Sep-62		Paris
The Piedmont- Sardinia Kingdom	55.29	8.55	Piedmont Bonds	1834, March 1849,1850	1.8	1000	4%, 1st January and July	lottery	1870, 1885, 1886	Ν	01-Jan-47	15-Jan-64	Paris
			Piedmont 1849 Loan	luno 1940	45.0	100	5%, 1st January and July	buyback at market price	-	Y	09-Nov-49	02-Jan-63	Paris
			Sardinia 1849 Loan	Julie 1849	45.0	100					02-Nov-49	28-Dec-60	Antwerp
			English Piedmont	1851	4.5	various	5%, 1st June and December	lottery	-	Ν	02-Jan-52	09-Jan-63	Paris
			Sardinia 36Fr Bonds	1844	4 0.1 36 0%, 1st May and December 1869 N Not enou				Not enough dat	a			
Lombardy- Venetie	7.53	0*	Lombard Bonds	1850	2.0	various	5%, 1st January and July	buyback at market price	-	Y	01-Jan-58	02-Jan-63	Paris
The duchy of Parma	0.56	0*	-										
The duchy of Modène	0.76	0*	-										
			Tuscan Loan 5%	1849	0.8	840	5%, 30th June and December	payback at 924fr	1874	Ν			
The duchy of Tuscany	4.20	1.66	Italy's Center Bonds	1050	2.5	840	3%, 1st January and July	buyback at market price	-	Y	Not enough data		
			Tuscan Loan 3%	1052									
The Papal States	-	-	Rome Bond Anvers	1001 1057	31-1857 -	various	5%, 1st June and December	buyback at market price	-	N	01-Jan-47	03-Jan-73	Antwerp
			Rome Bond Paris	1031-102/							01-Jan-47	03-Jan-73	Paris
			Rome Certificate							N	01-Jan-47	03-Jan-73	Antwerp

Sources : Bourse de Paris Cours Authentique seul officiel ; Bourse d'Anvers Cours Officiel ; Compagnies des agents de change 1880, 1881, 1882 ; Courtois 1863, 1878, 1883, Vitu 1864 and Gille 1965.

II. Sovereign debt integration

Unification of different States very often implies a common image of those States. Italy had the will to be seen as one country and not a geographical expression as before. Having a common image forced the different sovereign debts to merge in one common debt. This was the case for Italy. On the 1st of January 1863, Italian debt only included a few funds due to the conversion of old funds from the various States annexed to the new Italian kingdom's funds (Courtois 1863, p41-48). New Italian debts of 5% and 3% were emitted in July 1861. These loans could be partly exchanged against debts of annexed countries until October 1862. As a result, the majority² of the annexed States' funds were converted in equitable³ proportion into a new Italian unified debt. Detailed information on these individual bonds are listed in Table 1. The converted amount represents the total amount of the debts converted in 1863 in the first Italian sovereign debt. The Paris and Antwerp markets permit one to identify a main part of those individual sovereign debts. For example the Naples bonds represented 25.6 million francs out of the 32.8 million francs sovereign debt of the Kingdom of the Two Sicilies. The 25.6 million value is an overall value for all the markets issuing Naples bonds. The conversion column shows if the sovereign debt was converted or not. The unconverted amount and the underlying reasons are studied in this paper.

While Antwerp kept the trades related to the various Italian nations separated, the Paris market reported trades on overall Italian debt. Detailed information on the post 1863 bonds on the Paris and Antwerp markets is provided in Table 2. Nevertheless, 15%⁴ of the Piedmont-Sardinia debt and 40%⁵ of the Tuscan debt were not converted (Vitu 1864, p220-227). For example, the English Piedmont Certificate, also called Piedmont-Sardinia 1851, was not converted. A Lombard loan related to notarial guarantees as well as two loans of Modena and Parma were also not converted. Except for Piedmont-Sardinia 1844, 1849, 1850 and 1851, the other loans disappeared from circulation on the Antwerp and Paris markets.

² Piedmont-Sardinia (1819, 1831 ,1838,1841, 1848, June 1849, 1853), Naples and Sicily (all emission dates), Tuscany (1852, 1859.1860), Lombardy (all emission dates), Modena (1818, 1825,1852, 1859), Parma (1827, 1849, 1859)

³ The differences resulting from the different times of coupons payment are compensated in cash. Neapolitan foreign exchange rate is fixed at 4.25 the ducat and the Lombard-Venetian is fixed at the exchange of 86 C. 41/100 Austrian pound

⁴ This refers to the following Piedmont-Sardinia bond issues : 1834, 1844, March 1849, 1850, 1851 known as English Piedmont Certificate, 1855, 1859 and 1860

⁵ This refers to the following Tuscany bond issues : 1847, 1849 and 1851

Three reasons might be advanced to refuse converting some of the loans.⁶ Firstly some debt represented negligible⁷ amounts. A second reason for non-conversion was a close⁸ completion date. Most of the unconverted debt combined those two first characteristics and quickly disappeared from bond markets. Finally, bonds with lottery features were often left as they were. The Piedmont-Sardinia Loan of 1844 provides an example of such a loan. This loan of 36fr paid back 41fr plus a premium dependent on the lottery. In 1863, this loan was quoted 55.5fr given the lottery premiums. In the same way, Piedmont-Sardinia 1849, 1850 and 1851 were lottery based loans. This type of loan was strongly influenced by the lottery outcomes and would therefore continue to be traded separately.

Lottery debts were excluded from the sample because of their unique features. Also taking the insufficient data series out, four data series emerge (see Figure 1): the Two Sicilies series ("Naples Bonds" and "Italy-Neapolitan Bonds"), thePiedmont-Sardinia series ("Piedmont bonds", "Piedmont 1849 Loan" and "Italy 5%"), the Lombardy-Venetia series ("Lombard bonds" and "Italy-Venetian bonds") and the Rome series ("Rome bonds").

⁶Based on Companies des agents de change 1880-1882, Courtois 1863-1883, Vitu 1864 and Gille 1965.

⁷Amount lower than 100,000 francs.

⁸ Completion date before 1/1/1865

Table 2: post 1863 Italian Bonds

Entities	Debts on Anvers and Paris Market	Issue Date	Nominal Value	Interest	Payback	Data Start Date	Data End Date	Market
	Italian Loan 5%	1861	various	5%, 1st January and July	-	09-Aug-61	03-Jan-73	Paris
	Italian Loan 3%	1861	various 3%, 1st April and - October -			Not enough data		
	Italian Line Bonds	1861	various	3%, 1st April and October	-	Not enough data		h data
	Italy tobacco Bonds	1868	175	-	lottery	01-Jan-69	03-Jan-73	Paris
Italy	Italy-Venetian Bonds					21-Feb-68	03-Jan-73	Antwerp
itary	Italy-Lombard Bonds					21-Feb-68	03-Jan-73	Antwerp
	Lombard Lines Bonds	1866	500	-	lottery	27-Jul-66	03-Jan-73	Paris
	Italy-Neapolitan Bonds					04-Dec-68	03-Jan-73	Antwerp
	Victor-Emmanuel Loan guaranteed by Italy	1863	500	3%, 1st April and October	lottery	02-Jan-63	03-Jan-73	Paris
	Victor-Emmanuel Loan	1864	500	3%, 1st April and October	lottery	03-Jun-64	11-Feb-70	Paris
	Rome Bonds Anvers	1831-1857	various	5%, 1st June and December	buyback at market price	01-Jan-47	03-Jan-73	Antwerp
	Rome Bonds Paris	1031-1037				01-Jan-47	03-Jan-73	Paris
	Rome Certificate					01-Jan-47	03-Jan-73	Antwerp
The Papal States	Rome Loan	1862	500	3%, 1st January and July	lottery	03-Jan-62	03-Jan-73	Paris
	Pontifical Loan 1860	1860	100	5%, 1st April and October	payback at 100fr	21-Feb-68	03-Jan-73	before 1872 : Antwerp from 1872: Paris
	Pontifical Loan 1866	1866	100	5%, 1st April and October	buyback at market price	30-Apr-69	03-Jan-73	before 1872 : Antwerp from 1872: Paris

Sources : Bourse de Paris Cours Authentique seul officiel ; Bourse d'Anvers Cours Officiel ; Companies des agents de change 1880, 1881, 1882 ; Courtois 1863, 1878,1883, Vitu 1864 and Gille 1965.

III. Data series and methodology

The sovereign debt prices of the various Italian entities were collected manually from the archives and are an original database. The data consist of weekly prices stretching from 1st January 1847 to 3rd January 1873. The Conte et al. (2003) database, by contrast, only starts in 1862 because they focus on monetary unification once Italy was unified. This paper assembles a 26 year long database coming from two markets: the Paris market through the archives of *Bourse de Paris Cours Authentique seul official* and the market of Antwerp via *Bourse d'Anvers Cours Officiel* archives. Those values are true trading prices. After 1863, Antwerp kept the trades related to the various Italian nations separated. The origin of the debt was mentioned which permits the construction of the four series separately even after the sovereign debt integration. For instance, the *Cours Officiel* mentioned "Italy-Neapolitean".

Overall, 27 different Italian sovereign bonds were traded on those two markets during the period (see Tables 1 and 2). Four data series were constructed (see Figure 1) representing the four biggest pre-Italy nations: the Two Sicilies, Piedmont-Sardinia, Lombardy-Venetia and Papal States. Even though some values were missing, they are complete during the war and the annexation periods⁹. The peace periods with some missing values seem to indicate low trading levels. As the methodology requires continuous data, the last trading price is then applied. The pre-Italian and Italian sovereign bond prices have all been converted into yield to maturity given their characteristics. Using yields permits this paper to focus on more long-term anticipation changes. Those sovereign debt yields will be investigated to identify the large and lasting yield shifts.

⁹Except the Antwerp and Paris market closing.

Figure 1: The four sovereign bond series



The aim is to investigate how people perceived Italy's unification and sovereign debt integration. Using an empirical analysis on the sovereign bond market permits the capturing of events as well as beliefs at that time. Anticipation might have resulted in an "event" which later happened, but might also reflect a belief in an event which did not occur, unobservable to historians. Therefore, to assess the perception at that time, this paper's methodology is based on a combination of break points in the sovereign debt yield and a Dynamic Factor Model.

The break point methodology (Bai and Perron, 1998 and 2003) supposes that the time series follows an autoregressive process. A break occurs when the intercept of the autoregressive process suddenly changes. This sudden shift in mean value represents a change in investors' perception at that time. The identification of those shifts is done in two steps.

Firstly, a succession of rolling regressions on 140-day data series windows was computed. The regression analysis is based on autoregressive process with five¹⁰ lags of the dependent variable.

$$Y_t = \beta_0 + \sum_{q=1}^5 \beta_q Y_{t-q} + \varepsilon_t$$

Where Y_t is the yield of the bond on day t, ε_t is the white noise error and $\beta_{1,...,\beta_5}$ are the parameters to be estimated by the regression. The process is repeated for the entire period: 1/1/1847 - 3/1/1873. This first step permits to highlight windows where turning points are more likely to happen.

Second, the equations were then re-estimated in these windows adding a week dummy variable in the equation.

$$Y_t = \beta_0 + \sum_{q=1}^5 \beta_q Y_{t-q} + \gamma_s D_{st} + \varepsilon_t$$

¹⁰ This is based on the Akaike information criterion.

Where D_{st} is the dummy variable with value 1 on and after the day s and zero before. β and γ_s are the parameters estimated by the regression. For each window, the F-statistic associated with a Wald Test on γ_s is computed and the date that maximises the statistic provides a potential turning point. Finally, this methodology is repeated for each pre-Italian bond.

After the identification of the shifts, the Dynamic Factor Model (DFM) extracts the common component factor from the four series (Geweke, 1977; Arminger and Muthen, 1998). This has been done using a Bayesian Approach (Press, 1979 and 2003; Zellner, 1985) via the Gibbs sampling method (Gelfand and Smith, 1990). DFM represents the processes' dynamics driven by movements of latent variable, called the factor. The data series are then characterised by a latent common component that captures their co-movements and a series-specific idiosyncratic component:

$$Y_{i,t} = \lambda_i f_t + u_{i,t}$$

Where $Y_{i,t}$ is the data series, f_t is the latent factor matrix, $u_{i,t}$ is the idiosyncratic component which is series-specific and $\lambda_i^{'}$ is the factor loadings. The latent factor captures the common dynamics of the data set. As a result, the latent common component factor is Italy's unification measurement.

For f_t and $u_{i,t}$ an autoregressive (AR) process is assumed having the same characteristics as the AR process used for the break point analysis:

$$f_t = \sum_{q=1}^5 \phi_q f_{t-q} + v_t$$
$$u_{i,t} = \theta^i u_{i,t-1} + \psi_{i,t}$$

This supposes a stable form of the AR process. As a result the model restarts the dynamic factor analysis at each breakpoint found previously. In this way, the DFM provides through the factor loading a measurement of Italy's unification by extracting the common component of the four Italian data series.

IV. Results: State unification and investor scepticism

The break dates found for the Two Sicilies, Piedmont-Sardinia, Lombardy-Venetia and Rome series are listed in Table 3. The sign, the magnitude (in basis points) as well as the possible explanations are also provided. Well-known historical events are present among the explanation such as wars or the proclamation of Italy as a Kingdom. However, some breaks are not associated with an event and less prominent historical events turn out to be break points. The marriage of Prince Napoleon and Victor Emmanuel's daughter is one example.

The table demonstrates the impact of each war of independence on the financial market. These wars affected the bonds of the entity which was the most involved. For example, the Second War of Independence started in the Piedmont-Sardinia Kingdom. It results in a break of large magnitude (see break points 8 and 10). Afterwards, it affects the Naples bonds through the Zurich Treaty as it reinforced the Piedmont-Sardinia position and weakened Naples' power (see break point 11). Furthermore, the table highlights the impact of the resulting annexation (see break points 12).

As each entity is successively added in order to create Italy, the entities' sovereign debts are individually affected by their own historical events, separate from the other entities. As a result, most pre-1863 breaks are "individual" breaks as the bonds reacted in an idiosyncratic way. For example, when Cavour entered into two alliances, one with England and one with France, only the Piedmont loan had a positive break point (see break points 5 and 7). Those alliances with two new powerful allies strengthened Piedmont-Sardinia's position. At the same time, this increase in Piedmont-Sardinia's power caused a negative break point in the Naples bond as it was seen as a threat (see break point 6). The alliance between France and Piedmont was sealed even further when Prince Napoleon asked to marry Victor Emmanuel's daughter. This resulted in a change of attitude between France and Austria (Zeller, J., 1853, pp 516-517). Here again, Naples reacted in an opposing way (see break point 9) to the alliances.

Table 3: break dates

N°	Break Dates	ates Naples Bonds		Lombardy Bonds		Piedmont Loan		Rome Bonds		Potential Explanation
1	8/6/1849	-	4					+ 19		French seized Rome and Garibaldi had to flee with his troops.
2	3/8/1849	-	7							Venetia capitulation. This marks the end of the first independance war.
3	14/11/1851							-	8	Unknown
4	23/7/1852					+	1			Cavour became prime minister.
5	26/1/1855					+	2			End of the Crimean war where Cavour played an important role. Piedmont-Sardinia
6	21/9/1855	-	9							entered the alliance between English and French> Strengthening of Piedmont-
7	11/7/1856					+	4			Sardinia position. It has new powerful allies.
8	14/11/1856					-	58			The predicament of Piedmont against Austria
9	23/9/1858	-	3							On the 23rd of September 1858, the Prince Napoleon asked to marry Victor Emmanuel's daughter. The alliance between France and Piedmont is sealed.
10	22/7/1859					+	125			In July 1859, the Emperor Napoleon offered peace to the Emperor François Joseph, Austrian Emperor from 1848 until 1916, which was signed in Zurich.
11	25/11/1859	+	126							Zurich Treaty marks the end of the second independance war. This treaty stipulates the transfer of lombardy to Napoleon III and then to Victor Emmanuel II. Austria is weakened.
12	16/12/1859			+	0.3					After the Zurich Treaty, strengthening position of Piedmont-Sardinia. Lombardy is attached to it.
13	24/2/1860	+	7					+	8	François II represses an insurrection in Sicily. Moreover, annexation of the region of Nice and Savoy to France.
14	14/6/1861 - 12/7/1861			-	1			-	64	Cavour death. His successor, Ricasoli,established a centralized administration dominated by the Piedmontese wich didn't please other regions.
15	18/10/1861	-	168							Sicily and Naples yets for their approvation to the kingdom of Italy
16	8/11/1861	-	189							
17	1/8/1862	-	12	-	1.6	-	1.4			Victor Emmanuel II refused the conquest of Rome by the Thousands
18	9/7/1864							-	8	Unknown
19	19/10/1866							+	17	Unknown
20	21/8/1868	-	7	-	7	-	7			Unknown
21	8/1/1869	-	12	-	12	-	12			Unknown
22	19/2/1869	+	7	+	7	+	7			Unknown
23	15/4/1870							-	127	Rome is attached to Italy.
24	10/3/1871	+	4	+	4	+	4			The Kingdom of Italy is proclaimed.
25	28/7/1871	+	7	+	7	+	7	+	91	Rome became the capital of the Kingdom of Italy.

The sign refers to effect on bond prices while the amplitude measures the shift in basis point. For example, a negative break is found in April 1870 and represents an yield increase of 127 bp.

Bonds	Pre 1861 YTM	proportion	ē	End 1862 YTM	1870 YTM	Post 1871 YTM
Piedmont	5.70%	44%	yie 5%	6.90%	8.90%	7.50%
Lombardy	5.90%	2%	ive 5.3	6.80%		
Two Siciles	4.30%	25%	o tri	6.90%	_	
Rome	5.70%	29%	Ë.	6.90%	7.80%	7.50%

Table 4: intuitive yield

Around the unification in 1861, yield increases are observed for all bonds. The fact that those risk premiums persist over time (i.e. after the War of Independence) suggests that they are not linked to the war but rather to the unification. This puts forward the importance of the quality of the integrated sovereign debt for investors. An intuitive level of the new Italian yield bond based on the four series used with their pre-1861 yields and the amount they represent in the integrated debt suggests a yield of 5.35% (see Table 4) instead of the observed 6.9%.

The reactions of financial markets to a possible unification provoked the largest breaks in the series. When a region opted for its annexation to the Kingdom of Italy, its sovereign debts were impacted. This led to a large lasting break (see break points 15, 16 and 23). Naples, which had the lowest yield bond, turned out to be the most heavily impacted by the possible sovereign debt integration. At that time, Naples bonds had better ratings than the other sovereign debts due to the city's importance¹¹. Once the annexation occurred, a major break followed. This break results from a risk increase which can directly be linked to sovereign debt integration. The risk of the debt as part of the new large Italian sovereign debt was seen as more risky. On the other hand, Lombard bonds were less affected as their yield was higher. The anticipation adjustment is low between the individual Lombard bonds and those bonds in a unified Italy.

The Dynamic Factor model provides the common "Italy" factor of the series. Figure 2 gives the result of the DFM analysis with the error bounds. Unsurprisingly, during the 1848 financial crisis and the wars of independence strong co-movement in the series resulted in a sudden increase of the common factor. The striking result is that the financial markets did

¹¹Indeed, at that time, Naples was economically more important than any other city in Italy, even compared to Rome.

not believe in Italy's unification until the late 1860s. The rivalry between the different nations made the common factor decline after 1848. The proclamation of Italy in 1861 created a shift in the Italy common factor. However, it only returns to the 1847 level. The Italy common component crosses the 0.8 level when Rome is attached. The highest common factor corresponds to Rome becoming Italy's capital. The results suggest that investors did not believe in the Italy case until Venetia and Rome were added to the unification.



Figure 2: the Italy Common Factor

The analysis identifies reaction phases on the financial markets using break point analysis and a Dynamic Factor Model. In a first phase, prior to the 1862 unification, the seven nations' bond prices reacted in an idiosyncratic way. Each data series had major shifts at different times linked to their own national history. Even close to the sovereign debt integration, the individual sovereign debts did not react homogenously. Around the sovereign debt integration, large risk increases for low yields bonds are highlighted in the bond prices. Consequently, in this second phase, it appears that individual sovereign debts were impacted by the unification and reacted according to their date of unification. Little evidence is found on financial market reactions from other nations joining in. Finally, this paper proves that only from the late '60s, in a third phase, did the financial market start to consider Italy as unified.

V. Parallels with the current European sovereign debt crisis

The current European sovereign debt crisis is a hot topic. It is crucial to use past cases to build knowledge in order to better deal with current events and provide a better response to the crisis. In Europe, the possibility of issuing a joint sovereign bond called Euro bonds or blue bonds is being discussed regularly. The emission of blue bonds would represent a partial sovereign debt integration. It seems legitimate to ask whether an integration of sovereign debts would not cause an increase in risk premiums demanded by investors and the market. Though this proposal is heavily discussed in general, other cases of sovereign debt integration are not taken into account in this discussion.

Investors wonder whether an integrated Euro bond could solve the European sovereign debt crisis (for instance see Reuters and Bloomberg, 13th Sept 2011). This Euro bond is also called eurozone bonds, E-bonds or bluebonds. The underlying idea is to issue a sovereign debt jointly underwritten by all 17 countries in the eurozone. Next to the blue bonds, countries could still underwrite bonds for their own country which would then be called red bonds. The proposal of a Euro-bond can be viewed as a type of sovereign debt integration. Italy is the closest example in history of such sovereign debt integration and therefore key to judging the blue bond proposal.

Comparing Europe with Italy before the sovereign debt integration and the few years after this integration provides an essential analysis. Both combine heterogeneous States, who differ in their wealth and the size of their economies, raise taxes separately and speak different languages. In addition, in both cases the sovereign debt integration is seen as bringing forward political integration.

On the one hand, those who support issuing a joint sovereign bond "believe such a step could help resolve the region's debt crisis, but little flesh has so far been put on the bones of the idea" (Reuters 13th Sept 2011). On the other hand, critics argue that without more and deeper reforms, blue bonds will just be an artifact.

We can draw a comparison between Naples and Germany. Similar to Naples in the time before the sovereign debt integration, Germany is the eurozone's most powerful economy and enjoys the lowest sovereign borrowing costs. Naples experienced a large increase in borrowing costs shortly before debt integration. In the Italian case study, the large increase experienced in the low yield bonds tends to highlight an increase of risk premium. Given the current sovereign debt crisis, a risk premium increase would exacerbate the crisis rather than solve it. This would mean that Germany would lose its 'good' rating if such bonds were introduced.

But note that Italian yields went down over time. As a result, the question of "beliefs" should be put forward. Do investors believe in Europe as one bloc? In other words, do investors believe that there is a real bailout in the eurozone? Investors might believe that there would be a bailout, up to a point; 60%. Bruegel, whose research frequently informs EU policy, put forward such a proposal last year. The sovereign bonds would be separated into 'red' and 'blue' bonds. In this framework, eurozone bonds or blue bonds would be issued jointly and collectively up to the value of 60 percent of each eurozone member state's GDP. If an individual state wants to borrow beyond that level, it has to issue red bonds without the collective guarantee of the eurozone. The market is likely to charge a higher yield to reflect the additional risk induced.

Raising taxes separately but putting them in a common pot was done in Turin during the Italian sovereign debt integration in 1865. Piedmont was considered more effective at raising taxes, but it took years before this effectiveness was transmitted to the other members of the newly formed Italy, and Florence, which replaced Turin as the capital, had full control over the finance of all members. As a result, the question of taxation should be raised, towards creating common taxation and finance control. The emergence of a single insured bond for the eurozone would be facilitated by fiscal and financial convergence among the eurozone economies.

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Conclusion

Sovereign debt and its default risk have always been considered as an important part of financial markets. The recent sovereign debt crisis has put even more focus on them. This raises the need to study this sovereign debt risk in a historical perspective. What can history bring to current financial problems? What is already known in history about sovereign debt risk and what is new?

Recent European debates often evoked Euro bonds or blue bonds, which would be sovereign debts underwritten by seventeen eurozone members. The blue bonds issue is sometimes even perceived as the solution to resolving the region's debt crisis. This issue by various sovereign nations would represent a specific type of sovereign debt integration. This paper tackles the sovereign debt integration question using the closest historical example, Italy. Italy was the result of the gradual unification of seven entities which had their own bond premium and own history with events unrelated to the other entities. Therefore, Italy's unification in 1861 represents the closest case related to sovereign debt integration and is outstanding to examine the evolution of bond prices during a State's unification. The unification. Therefore, this chapter investigated the impact of Italy's unification on bonds. Historically, what happened to sovereign bonds undergoing integration?

The paper consists of an empirical study of sovereign debt integration using pre-Italy and Italy sovereign bond prices. It scrutinises the evolution of sovereign bond prices when many countries merge to become a unified country or when there is a possibility that it may happen. The sovereign debts of the old entities are likely to be integrated when the entities are unifying. Despite the amount of debt involved in such cases, the financial impact of a State's unification has been little investigated. This topic has a contemporary echo and is regularly discussed in European debt debates.

This paper has studied Italian unification in the 19th century in order to analyse the reactions of sovereign debts to the progressive unification of the States (1848-1870) and sovereign

debt integration (1862-1863). The paper has relied on an original database made of pre-Italian and Italian bonds to highlight the impact of Italy's unification on the bonds. To reach this objective, a breakpoint analysis and a Dynamic Factor Model have been used.

Italy's unification is outstanding because it integrated all the individual sovereign debts into Italian debt 3% and Italian debt 5%. However, the bonds still mentioned their origin. Those new Italian bonds were traded in Antwerp still referring to the origin of the bonds. This specificity led to the construction of different data series for each State. The co-movement, measured by the Dynamic Factor Model, between the series provides the degree to which the integration according to investors occurred. Therefore, Italian unification allows the financial impact of sovereign debt integration to be highlighted.

The bonds issued by the future parts of the kingdom reacted in an idiosyncratic way prior to the unification in 1862. At annexation dates the breakpoint analysis gave rise to turning points and a yield increase in the bonds is observed especially for the low yield bonds. The analysis puts forward that the financial market did not believe in Italy's Unification until the late 1860's. Indeed, a very strong co-movement is only seen around 1868. According to the Dynamic Factor Model, investors only started to believe in the unification when Venetia and Rome joined. This paper highlights that even in the case of complete unification, the market discriminates bonds on the basis of their former origin even years after the unification. As a conclusion, hopes to see an integrated market for eurozone sovereign bonds in the short term seem remote.

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Annex

The seven entities



Source: Zeller 1853