

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 the bond prices. Italy’s unification was a long lasting process. The analysis shows that prior to the unification in 1862, the bonds issued by the future parts of the kingdom reacted in an idiosyncratic way. Around the sovereign debt integration, the paper highlights a large risk increase for low-yields bonds. Using a break point analysis and a Bayesian Dynamic Factor Model, the paper proves that until 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

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Introduction

Sovereign bonds have singular characteristics (Eaton and Fernandez, 1995; Shleifer, 2003). On 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 scrutinized. For instance, the effects on bond prices differ between democracies and autocracies (McGillivray and Smith, 2003; Dhillon and Sjostrom, 2009). As defaults might be linked with the 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 later 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 disturb sovereign bond markets: state unification. This paper focuses on the implications for state bonds of a country which faces a unification “risk”. The sovereign debts of the old entities are likely to be integrated. The 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 importance of the amounts involved, there has been little investigation on 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 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. Up till the middle of the 19th century Italy was made up of different independent nations. Moreover, since the unification of Italy was carried out gradually, 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 paper 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 draw parallels with the European sovereign debt issues.

I. On the road to Italy

The individual sovereign debts of the pre-Italian bonds are linked to their respective entity events. The international context and the unification history of Italy are keys to understand the Italian sovereign bond integration.

In 1815, the Vienna treaty 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 attributed to 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 existing among the entities (Foreman-Peck, 2005). Italy remained only "a geographical expression" (Von Metternich, 1847). Indeed, Italy would need three independence wars to become unified

The 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 took place in 1859 and lasted until 1861. After the second independence war, 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 independence war (1866 – 1871). Venetia was attached to Italy on the 21th 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 freedom will 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 were ruling the region. In August 1848, he entered Milan with his troops but had to leave the place a few days later to the Austrians led by the marshal Radetzky (Lubiensky, E., 1852, pp 197-198). Charles Albert's attacks lasted until the battle of Novare where he experienced a severe defeat on 23th 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 millions franc as war indemnity (Zeller, 1853, p511). Pius IX was constrained 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). Garibaldi was a liberal very implicated in the Italian unification. After his failure to defend the new Roman Republic against the French troops, he had to flee Italy in June 1849 but would come back during the second independence war.

The first revolution subdued, all the former nobles again took possession of their territory and severely repressed the insurrections (executions, constitutions cancelled, acceptance of a compulsory 300 million loan by Milan) (Zeller, 1853, p506). Piedmont-Sardinia was the only region to remain independent but a war against Austria was no longer feasible as Novare's defeat was still in minds and the war indemnity had weakened its finances (Zeller, 1853, pp511-512; Vimercati, C., 1863, pp 17-18). End 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, Cavour presented a project loan 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 independence war broke out and after two

important 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	N	01-Jan-47	15-Jan-64	Paris
			Piedmont 1849 Loan	June 1849	45.0	100	5%, 1st January and July	buyback at market price	-	Y	09-Nov-49	02-Jan-63	Paris
			Sardinia 1849 Loan								02-Nov-49	28-Dec-60	Antwerp
			English Piedmont	1851	4.5	various	5%, 1st June and December	lottery	-	N	02-Jan-52	09-Jan-63	Paris
			Sardinia 36Fr Bonds	1844	0.1	36	0%, 1st May and December	lottery	1869	N	Not enough data		
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*	-										
The duchy of Tuscany	4.20	1.66	Tuscan Loan 5%	1849	0.8	840	5%, 30th June and December	payback at 924fr	1874	N	Not enough data		
			Italy's Center Bonds	1852	2.5	840	3%, 1st January and July	buyback at market price	-	Y			
			Tuscan Loan 3%										
The Papal States	-	-	Rome Bond Anvers	1831-1857	-	various	5%, 1st June and December	buyback at market price	-	N	01-Jan-47	03-Jan-73	Antwerp
			Rome Bond Paris								01-Jan-47	03-Jan-73	Paris
			Rome Certificate								N	01-Jan-47	03-Jan-73

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

On the 1st of January 1863, the Italian debt only included a few funds due to the conversion of old funds from the various States annexed to the new Italy's kingdom 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 in 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 market.

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 It is about Piedmont-Sardinia (1834, 1844, March 1849, 1850, 1851 known as English Piedmont Certificate, 1855, 1859, 1860)

⁵ It is about Tuscany (1847, 1849, 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-Neapolitean Bonds”), the Piedmont-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”).

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

⁷ Amount 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
Italy	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	-	<i>Not enough data</i>		
	Italian Line Bonds	1861	various	3%, 1st April and October	-	<i>Not enough data</i>		
	Italy tobacco Bonds	1868	175	-	lottery	01-Jan-69	03-Jan-73	Paris
	Italy-Venetian Bonds					21-Feb-68	03-Jan-73	Antwerp
	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
The Papal States	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					01-Jan-47	03-Jan-73	Paris
	Rome Certificate					01-Jan-47	03-Jan-73	Antwerp
	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

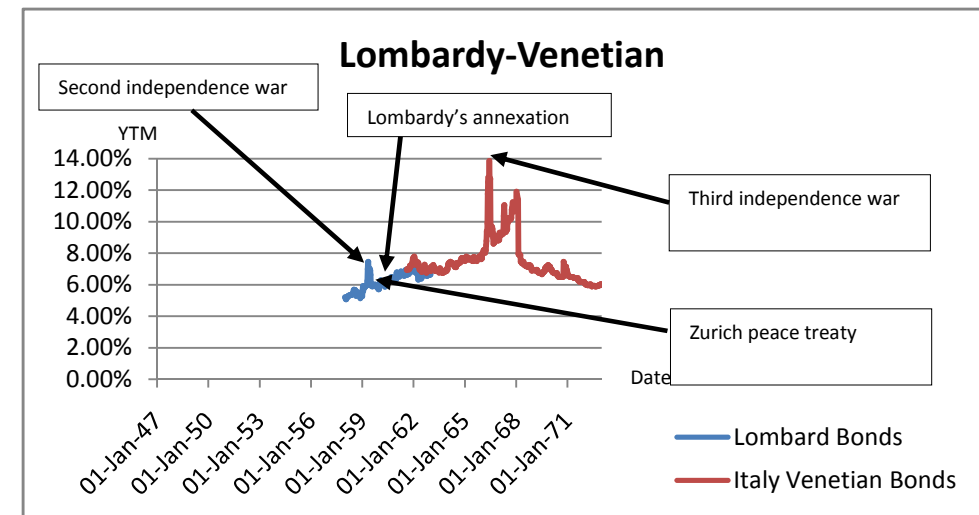
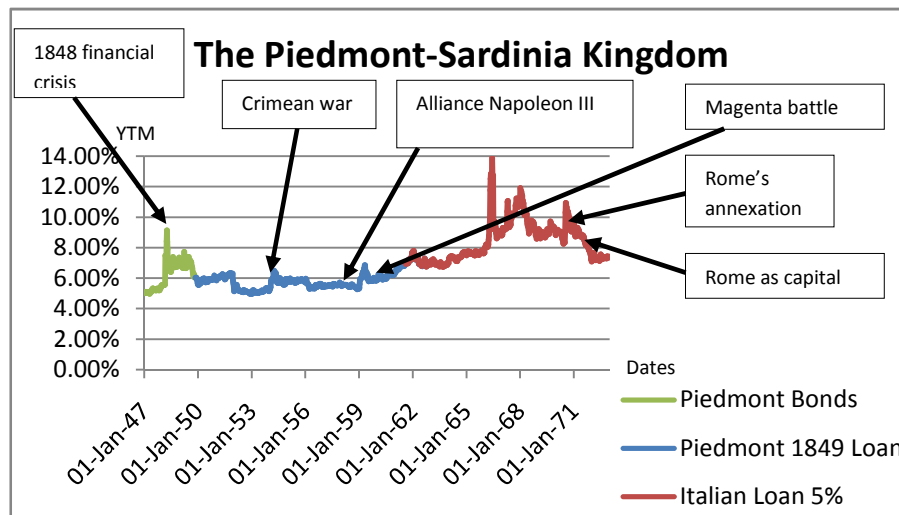
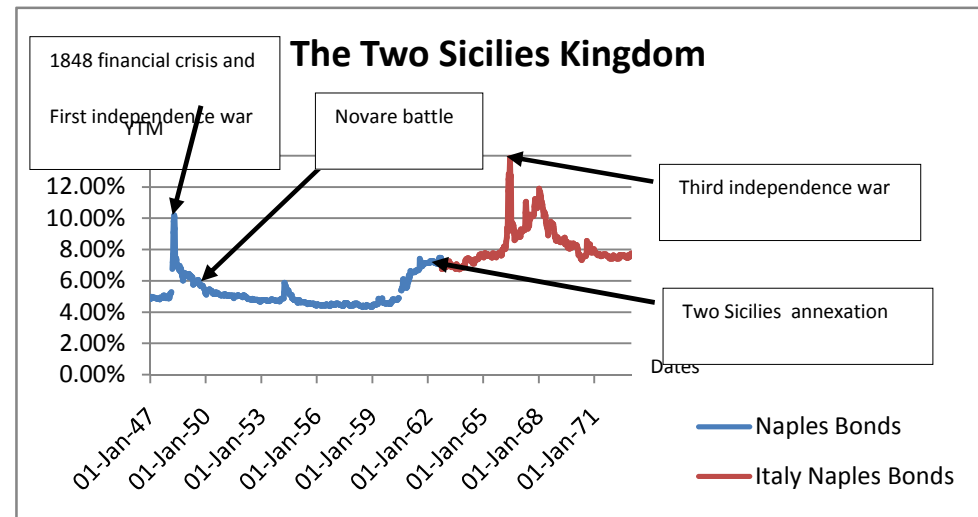
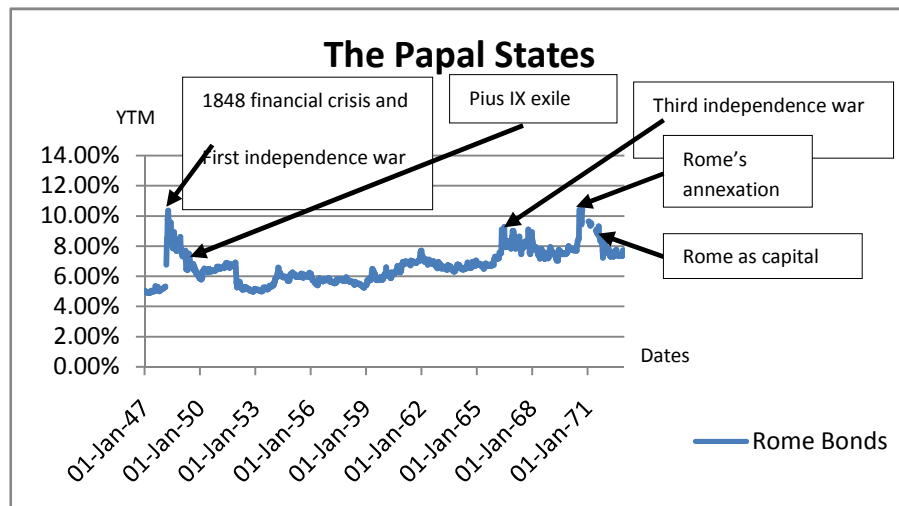
The sovereign debt prices of the various Italian entities were collected manually from the archives and are an original database. The data consist of weekly prices stretching from 1st January 1847 to 3rd January 1873. The Conte et al. (2003) database, by contrast, starts only in 1862 because they focus on the monetary unification once Italy was unified. The paper assembled a 26 year long database coming from two markets: the Paris market through the archives of *Bourse de Paris Cours Authentique seul officiel* and the market of Antwerp via *Bourse d'Anvers Cours Officiel* archives. Those values are true trading prices.

Overall, 27 different Italian sovereign bonds were traded on those two markets during the period (see table 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 to focus on more long-term anticipation changes. Those sovereign debt yields will be investigated to identify the large and lasting yield shifts.

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 to capture events as well as beliefs at that time. Anticipation might have resulted in an "event" which later happened but might also stay a belief 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.

⁹ Except the Antwerp and Paris market closing.

Figure 1: the four sovereign bond series



The break points 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.

First, 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 β_1, \dots, β_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.

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

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 maximizes 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

¹⁰ This is based on the Akaike information criterion.

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 characterized 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 λ_i' is the factor loadings. The latent factor captures the common dynamics of the dataset. 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 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 independence war on the financial market. These wars affected the bonds of the entity which was the most implicated. For example, the second independence war 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). Further, 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 has 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 provoked 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 opposite way (see break point 9) to the alliances.

Table 3: break dates

N°	Break Dates	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 independence 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 entered the alliance between English and French--> Strengthening of Piedmont-Sardinia position. It has new powerful allies.
6	21/9/1855	-	9											
7	11/7/1856											+	4	
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 independence 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 which didn't please other regions.				
15	18/10/1861	-	168							Sicily and Naples vote for their annexation 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.

Table 4: intuitive yield

Bonds	Pre 1861 YTM	proportion	intuitive yield of 5.35%	End 1862 YTM	1870 YTM	Post 1871 YTM
Piedmont	5.70%	44%		6.90%	8.90%	7.50%
Lombardy	5.90%	2%		6.80%		
Two Siciles	4.30%	25%		6.90%		
Rome	5.70%	29%		6.90%	7.80%	7.50%

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 independent war) suggest 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%.

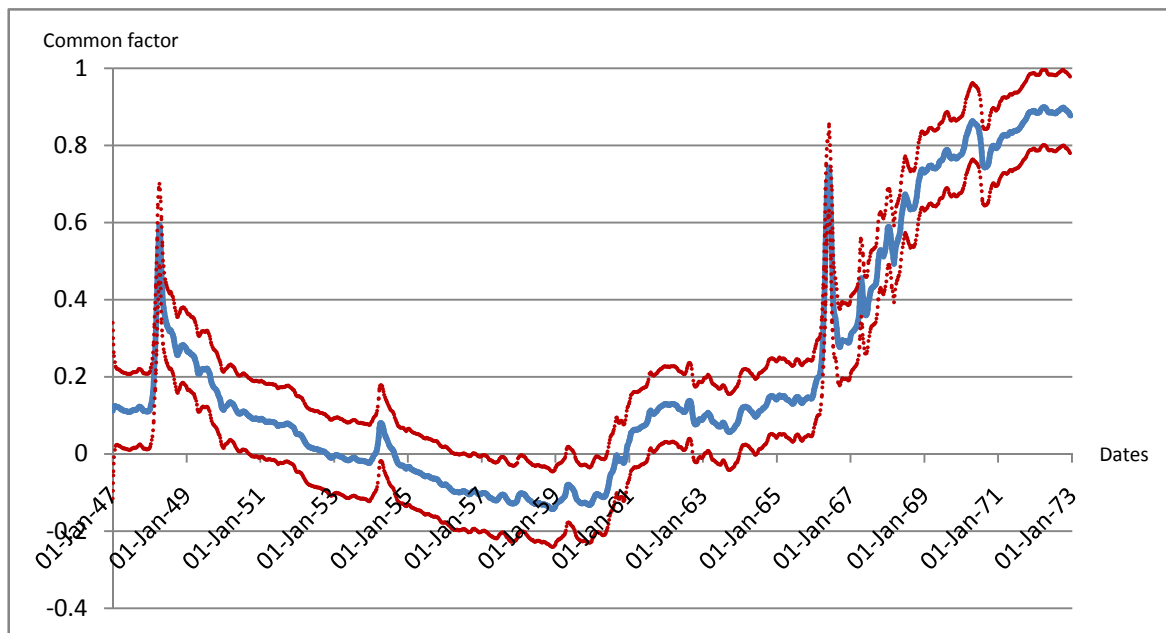
The reactions of financial markets to a possible unification provoked the largest breaks in the series. When a region opted for its annexation to the Kingdom of Italy, its sovereign debts were impacted. This led to a large lasting break (see break points 15, 16 and 23). Naples, which had the lowest yield 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 independence wars strong co-movement in the series resulted in a sudden increase of the common factor. The striking result is that the financial markets did

¹¹ Indeed, 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 late in the 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 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 nation history. Even close to the sovereign debt integration, the individual sovereign debts did not react homogeneously. 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 blue bonds is regularly discussed. 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 about the possibility if a Euro bond could solve the European sovereign debt crisis (for instance see Reuters and Bloomberg, 13 Sept 2011). This Euro bond is also called euro-zone bonds, E-bonds or blue bonds. The underlying idea is to issue a sovereign debt jointly underwritten by all 17 countries in the euro-zone. Next to the blue bonds, countries can 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 a key to judge 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 one hand, supporters of 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 13Sept 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. Indeed, 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 the debts 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 push even further the crises rather than saving it. This would mean that Germany would lose its 'good' rating if such bonds were introduced. It should no more underwrite weaker, more risky member states.

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 bail out in the euro zone? Investor might believe that there would be a bail out up to a point. That point would be 60%. Bruegel, whose research frequently informs EU policy, put forward such a proposal last year. The sovereign bonds would be separated in 'red' and 'blue' bonds. In this framework, euro zone bonds or blue bonds would be issued jointly and collectively up to the value of 60 percent of each euro zone member state's GDP. If an individual state wants borrowing beyond that level, it has to issue red bonds without the collective guarantee of the euro zone. The market is likely to charge a higher yield to reflect the additional risk induced.

Raising taxes separately and then putting them in common pot was done in Turin during the Italian sovereign debt integration in 1865. Piedmont was considered as more effective to raise 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 capital, had full control on the finance of all members. As a result, taxation question should be raised up towards common standard and one control on finance. The emergence of a single insured bond for the euro zone would be facilitated if there was fiscal and financial convergences between euro zone economies.

Conclusion

Sovereign debt and default risk have always been considered as an important part of financial markets but, recently, they have been put even more under the spotlight. This raises the need to study what history can bring to current financial problems and tackle the question: What's already known in history about sovereign debt risk and what's new?

Euro bonds or blue bonds, which would be sovereign debts underwritten by seventeen Euro zone members, is often evoked in European debates. This is sometimes even perceived as the solution to resolve the region's debt crisis. The Euro bonds are a specific type of sovereign debt integration. 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 of Italy provides historical clues to answer questions on contemporary sovereign debt integration.

The paper consists of an empirical study of sovereign debt integration. It scrutinizes 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. In such a situation, the sovereign debts of the old entities are likely to be integrated. The financial impact of a state's unification has been little investigated despite the amount of debt involved. Moreover, this topic has a contemporary echo and is regularly discussed in European debt debates.

This paper has studied the Italian unification in the 19th century to analyse the sovereign debts reactions to the progressive unification of the states (1848-1870) and sovereign debt integration (1862-1863). Italy resulted from the gradual unification of seven entities which have their own bond premium and own history with events unrelated to the other entities. Italy's unification is outstanding because it integrated all the individual sovereign debts. In addition, Italian unification allows highlighting the financial impact of sovereign debt integration. The paper relies 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 are used. The bonds issued by the future parts of the

kingdom reacted in an idiosyncratic way prior to the unification in 1862. The analysis puts forward that the financial market did not believe in Italy's Unification until the late 1860's. Italy's unification was a long-lasting process as, according to the Dynamic Factor Model, investors only start to believe in the unification when Venetia and Rome joined. This paper highlights that even in the case of a complete unification, market discriminates bonds on basis of their former origin even years after the unification. As a conclusion, hopes to see an integrated market for euro zone sovereign bonds seem remote.

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Annex

The seven nations



Source: Zeller 1853