Emerging Markets and Financial Globalization

Sovereign Bond Spreads in 1870–1913 and today

Paolo Mauro, Nathan Sussman, and Yishay Yafeh

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Preface

This book is the outcome of our long-time fascination with what Stefan Zweig called the *World of Yesterday*, a world in which people, capital, and goods could move freely from Europe to far corners of the world: "Before 1914, the earth had belonged to all. People went where they wished and stayed as long as they pleased. There were no permits, no visas, and . . . frontiers were nothing but symbolic lines" (1943 English edition, p. 311). This period of globalization, which reached a peak between the mid-nineteenth century and the outbreak of the First World War, provides a rare opportunity to look at the globalization we are experiencing today in a historical mirror. What features remain the same? What has changed? And what explains the differences? The present study focuses on financial globalization and international capital flows, and attempts to provide some answers to these questions.

We have made an effort to make the book appealing and accessible to a wide audience, consisting of both academics and others, avoiding excessively technical discussions. Economic historians will hopefully be interested in the discussion of international capital flows in 1870–1913, and in the analysis of the economic institutions of the time. Other economists might be more interested in the comparative analysis of the determinants of borrowing costs for emerging markets before the First World War and today, as well as in the study of mechanisms whereby investors sought to mitigate the consequences of the debt crises of the past. All of these issues are of major importance for academic research in international macroeconomics. We also believe that there are important lessons from the past for policy makers in governments and international organizations, and that the long-run perspective we offer will be interesting and useful for investors focusing on emerging markets.

In the spirit of globalization, work on this book was carried out in numerous institutions in different countries: the Hebrew University

of Jerusalem (Sussman and Yafeh), Université de Montreal (Yafeh), and the International Monetary Fund. We are grateful to the Guildhall Library in London for access and assistance in research on the Annual Reports and documents of the Corporation of Foreign Bondholders; to the National Library (Jerusalem, Israel) for access to microfilmed copies of the *London Times* for the historical period; and to the London Stock Exchange Project at Yale University for electronic access to the *Investors' Monthly Manual*.

The collection of historical financial data is no easy task. We would not have been able to undertake the research for this book without the invaluable help of many talented students and research assistants: Alexandre Dubé, Guy Green, Avital Gutalevich, Yosh Halberstam, Shai Harel, Priyadarshani Joshi, Priyanka Malhotra, Martin Minnoni, Tamar Nyska, Erran Oren, Omer Schwartz, Hadas Yoked, and Shalva Zonenshvili. The construction of the data set and the completion of this research project would not have been possible without the generous financial support of the Israel Science Foundation (Sussman and Yafeh, Grant No. 871/02).

Our friends and colleagues around the world have also contributed many helpful comments and suggestions. We are especially grateful to Barry Eichengreen, Niall Ferguson, Eugene Kandel, Kobi Metzer, Richard Portes, Raghuram Rajan, Zvi Sussman, Alan Taylor, Jeff Williamson, Zvi Wiener, Jeromin Zettelmeyer, and participants in the 2003 meeting of the American Economic Association and seminars at the International Monetary Fund, the New York Fed, the World Bank, Brown University, Harvard University, Hitotsubashi University, Queen's University, Rutgers University, Stanford University, Tel Aviv University, and the University of Toronto.

Finally, the views expressed in the book are those of the authors and do not necessarily represent the views of the International Monetary Fund or its policies.

Paolo Mauro (International Monetary Fund)
Nathan Sussman (The Hebrew University of Jerusalem)
Yishay Yafeh (The Hebrew University of Jerusalem and CEPR)

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1

International Capital Flows in the Previous Era of Globalization: An Overview and Outline of the Book and its Objectives

The international financial environment in which emerging markets operate today is in its infancy and shows many signs of teething pains. Capital flows toward emerging markets are large, but have been considerable only since the 1970s. International bonds, currently the main form of finance for sovereign borrowers, have only been used by emerging markets on a significant scale since the mid-1990s. And capital flows have been subject to sudden reversals, leading to crises and their disastrous consequences for borrowing countries and, occasionally, international investors. The Mexican crisis of late 1994 and early 1995, the Asian crisis of 1997, and the Russian crisis of August 1998 spread to several other emerging market countries, seemingly regardless of whether the economies they affected were fundamentally sound. The Argentinean crisis that began in 2001 and the associated default—by some measures, the largest default in history—will be long remembered by domestic residents, policy makers, and many investors.

The frequency and virulence of such recent financial crises have led to calls for reform of the current international financial architecture. Several observers have wondered whether globalization in international financial markets has gone too far. To learn more about the international financial environment we live in today, we turn to a similar, earlier era of globalization and sovereign bond finance starting around 1870 and ending with the onset of the First World War.

Not only was the pre-First World War period an era of unprecedented, and in some respects, unsurpassed globalization, characterized by large international capital flows toward "emerging markets" (a term not in use at the time), it was also a period in which international sovereign bonds were a key source of finance for emerging markets. Indeed, although today's size and form of capital flows toward emerging markets had not been observed for several decades, they would not have surprised British investors and other market participants operating before First World War. And while the large volume of sovereign bond issues by emerging markets starting in the early 1990s is a phenomenon not seen for nearly three-quarters of a century, it pales in comparison to the size of the London market during its heyday.

Globalization then, casual observation suggests, was comparable to today's. Even though financial instruments have become more sophisticated, in some respects we may yet have to match the extent of international movement of capital, goods, and labor that the world experienced around the turn of the twentieth century.[1] A vivid depiction of that era was provided by Keynes in 1919; by then, it had already become clear that globalization would cease for many years to come:

> The inhabitant of London could order by telephone, sipping his morning tea in bed, the various products of the whole earth, and in such quantity as he might see fit, and reasonably expect their early delivery upon his doorstep; he could at the same moment and by the same means adventure his wealth in the natural resources and new enterprises of any quarter of the world, and share, without exertion or even trouble, in their prospective fruits and advantages; or he could decide to couple the security of his fortunes with the good faith of the townspeople of any substantial municipality in any continent that fancy or information might recommend. He could secure forthwith, if he wished it, cheap and comfortable means of transit to any country or climate without passport or other formality, could despatch his servant to the neighboring office of a bank for such supply of the precious metals as might seem convenient, and he could then proceed abroad to foreign quarters without knowledge of their religion, language, or customs, bearing coined wealth upon his person, and would consider himself greatly aggrieved and much surprised at the least interference. But, most important of all, he regarded this state of affairs as normal, certain, and permanent, except in the direction of further

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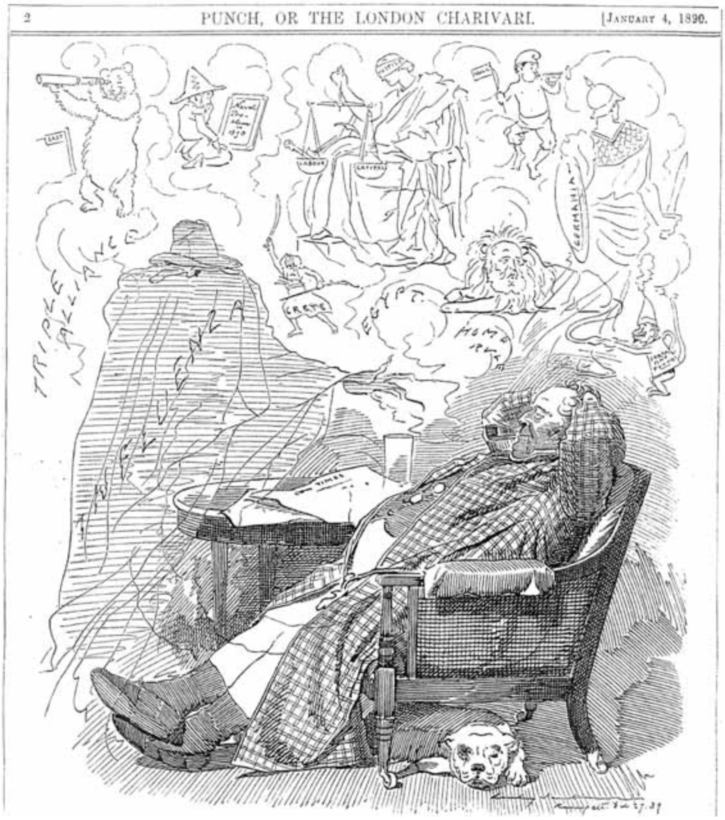
[1] Bordo, Eichengreen, and Kim (1998) describe the period between 1870 and the First World War as an era of global finance in which very large amounts of foreign securities were actively traded in England; they point out, however, that many more types of securities are traded today.

improvement, and any deviation from it as aberrant, scandalous, and avoidable. (1919, pp. 9–10, cited in Obstfeld, 1986)

The following caricature, (from *Punch*, dated January 4, 1890), illustrates, perhaps more realistically, a contemporary investor here seen reading *The Times*, and his global view of economic, political, and strategic developments in other countries (in this case including Brazil, Crete, Egypt, and Germany):



Not surprisingly, the interest in—and nostalgia for—the previous era of globalization did not end in 1919, and the turbulent 1990s have attracted renewed attention to the potential lessons to be drawn from the earlier period of globalization of 1870–1913. A growing academic literature has investigated various characteristics of the period. In particular, a number of studies of the international capital flows of the past have established that global economic integration reached a peak in the late nineteenth and early twentieth centuries, and collapsed with the world wars and the intervening great depression. Integration then gradually increased again after the collapse of the Bretton Woods system, to attain levels similar to pre-1914 only in the 1990s.[2] During the pre-First World War era, capital outflows from Britain to contemporary developing economies were extremely high, and barriers to movement of capital and labor were virtually absent (O'Rourke and Williamson, 1998). Large volumes of capital outflows were directed to countries where the productivity of capital was high—that is, countries where natural resources, fertile land, and human capital were abundant (Clemens and Williamson, 2004).[3]

The present book thus attempts to shed light on today's international financial environment by comparing it with that of 1870–1913.[4] Our focus is not only on financial globalization but more specifically on sovereign bond finance for emerging markets in the two periods. The overarching objective is to enrich the current debate on the design and reform of the international financial system and architecture by drawing on the evidence from an earlier period of globalization.[5]

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[2] Obstfeld and Taylor (2003a and 2004) examine an impressive array of measures of globalization and financial integration such as flows and stocks of foreign assets and liabilities, co-movement of real and nominal interest rates, savings–investment correlations, and the degree of persistence of current account deficits. Their estimates suggest that only in the 1990s did international financial integration return to the levels experienced in the era of the classical gold standard. A similar conclusion is reached by Sachs and Warner (1995).

[3] Several other studies (such as Edelstein, 1982; Davis and Huttenback, 1986; Offer, 1993; and Ferguson and Schularik, 2004) have analyzed the capital outflows from Britain to the Empire and elsewhere, discussed the economic cost and benefits of the Empire, and asked whether "irrational" capital flight precipitated Britain's relative decline.

[4] While most of the material we present in this book is new, and has not been published elsewhere, the issues we examine follow from our own previous research on international capital flows and emerging market sovereign debt "then" and "now." Sussman and Yafeh (1999a) examine the impact of crises on Chinese and Japanese sovereign spreads in the nineteenth century. Sussman and Yafeh (1999b) discuss the co-movement of Japanese and other sovereign bonds before and after Japan adopted the gold standard (1897). Sussman and Yafeh (2000) investigate the determinants of sharp changes in the spreads of Japanese government bonds between 1873 and 1913. Finally, Mauro, Sussman, and Yafeh (2002) compare the behavior of emerging market bond spreads in 1877–1913 and in the 1990s, and measure the extent of co-movement and the nature of crises in the two periods.

[5] Other studies have addressed issues related to sovereign bond finance and/or globalization in the two periods. Fishlow (1985), Lindert and Morton (1989), and Kelly (1998) study sovereign default and Bordo and Eichengreen (2002) examine financial crises over

AQ: Reference Bordo and Eichengreen (2002) is not provided in the references list, should it be Bordo et al. (2002)? please check the provide.

Our comparative study of the markets for international sovereign bonds issued by emerging markets "then" (1870–1913) and "now" (from the early 1990s to the present) is based on archival and financial data, some of which have been hitherto unexplored. More specifically, the present book is based on three newly constructed data sets. These include information on (nearly all of the) news articles on borrowing developing countries published in the *London Times* during a period of over 40 years (1870–1913), and a parallel data set drawn from the *Financial Times* for the modern period. The second data set consists of the monthly yields on sovereign bonds issued by several emerging markets for the historical period (collected by hand and corrected for a number of special bond features). The third relatively unexplored archival source used in this book is the Annual Reports of the Corporation of Foreign Bondholders, an association of British investors holding bonds issued by the emerging markets. The Annual Reports help us explore ways in which investors attempted to deal with sovereign defaults.

In Chapter 2, we portray the markets for sovereign debt in the pre-First World War period and in modern times. The size, liquidity, and sophistication of the market "then" leave no doubt that comparisons between then and now are warranted and potentially informative. The chapter also describes in detail the data sets used in this study and their construction.

We then turn to an in-depth investigation of three important features of the markets for sovereign debt in the historical and contemporary periods. The first feature, which we analyze in Chapters 3 through 5, relates to the determinants of the cost of borrowing for emerging market countries. Why were some countries able to borrow more cheaply than other countries? What institutional changes and policy measures made it possible for countries to reduce their borrowing costs? Throughout the book, the cost of capital is measured using sovereign bond spreads, where spreads are defined as the yield on sovereign bonds (denominated in pounds sterling in 1870–1913 and in US dollars in the modern period) issued by emerging market countries, minus the yield on sovereign bonds issued by the major core country—the United Kingdom in 1870–1913, and the United States in

time. A few studies have analyzed a variety of potential determinants of the cost of borrowing, including the gold standard, affiliation with the British Empire, and economic growth (Bordo and Rockoff, 1996; Ferguson and Schularik, 2004, 2005; Flandreau and Zumer, 2004; and Obstfeld and Taylor, 2003b).

the modern period. In particular, we gauge the importance of a number of factors that could affect spreads both before the First World War and in modern times: macroeconomic variables and policies, investor-friendly institutional changes and reforms, and political stability.

The main conclusion that emerges from the analysis is that stability and the absence of violent events are crucial factors distinguishing low risk borrowers from high risk borrowers: financial markets penalized unstable borrowing countries involved in domestic or external wars, which typically had an immediate effect on their cost of foreign debt. In contrast, for the most part, financial markets did not respond in the short run to the establishment of a variety of new institutions in many reforming countries, either because it took years for new institutions to attain the necessary credibility, or because their establishment was followed by renewed turbulence.

Chapter 3 seeks to characterize the events that caused dramatic changes in the cost of capital of borrowing countries using a case study approach. We focus on the case of Meiji Japan (1868–1912) and make some comparisons with Czarist Russia. While this period in Japan constitutes one of the most dramatic examples of institutional reform in history, broad institutional reforms were not nearly as notable in Russia. Interestingly, however, a specific but important change—the adoption of the gold standard—happened to take place in both countries in 1897, with differing consequences in the two cases. We also briefly digress from our core interest in 1870–1913 to revisit the experience of Britain in the aftermath of the major reforms that followed the Glorious Revolution of 1688, a case that received considerable attention in a number of previous influential studies.

The overall conclusion drawn from the cases discussed in this chapter is that the adoption of investor-friendly institutions did not lead to an immediate decline in the cost of capital. In contrast, variation in the cost of capital was primarily driven by the emergence and resolution of violent conflict. While we believe that institutions and the protection of property rights are helpful, we argue that the adoption of the “right” (investor friendly) institutional setup is not rewarded by foreign investors until the credibility of the institutions is established and it becomes clear that the reforms are being implemented. Only then will spreads fall, making it possible for the country to reap the ensuing benefits.

Chapters 4 and 5 reinforce these conclusions on the basis of a systematic analysis of the information derived from newspaper articles, in an attempt to replicate the perceived creditworthiness of emerging markets in the eyes of contemporary international investors. For each emerging market, we classify every article in the *London Times* for the historical period and the *Financial Times* for the modern period into one of several broad categories (such as wars and instability, investor-friendly reforms, good economic news, and so forth). We then examine the impact of articles within each category on the cost of capital of countries. Chapter 4 focuses on "sharp changes" (defined in a number of ways) in spreads and the news associated with them. Chapter 5 is based on multivariate regression analysis, whereby the effect on spreads of the number of different types of news is measured controlling for macroeconomic developments. We find that the relationship between spreads and fundamental determinants (macroeconomic variables and news indicators) is stronger in historical times than modern times. And in both periods we find that wars and instability are more closely associated with variation in the cost of capital than are other events, such as institutional changes.

Our investigation of the determinants of the cost of capital for emerging markets yields somewhat different conclusions from previous attempts to address this issue. Our results suggest that the main determinant of low borrowing costs is the absence of violence. Alternative factors emphasized by previous studies, such as links to the British Empire (Ferguson and Schularik, 2004), the gold standard as a commitment mechanism to a stable macroeconomic environment (Bordo and Rockoff, 1996; Obstfeld and Taylor, 2003b), or institutions and the protection of property rights (North and Weingast, 1989) would clearly not suffice in the presence of violent conflict or political instability.

The second feature of historical and contemporary markets for sovereign debt we address in this book is co-movement, that is, the extent to which bond spreads of different countries tend to move together, and on the extent to which crises tend to coincide. This is the focus of Chapter 6. The 1990s were characterized by an unprecedented degree of co-movement in spreads, far greater than would be expected on the basis of the co-movement of macroeconomic fundamentals. By contrast, in the previous era of globalization country-specific shocks seemed to play a much bigger role and spreads of different borrowing countries followed different paths. The experience of the period following Argentina's recent default—which did not lead to a more generalized crisis for emerging markets—points to the possibility that the

1990s might have been an unusual period, and that co-movement in the most recent years (2001–2004) may represent a return to the behavior observed during the pre-First World War period. What could explain the high co-movement of spreads in the 1990s? Potential hypotheses include differences in the technology of trade in the markets; the characteristics of market participants, predominantly individuals then (Morgan and Thomas, 1969; Michie, 1986) and large investment funds now; and today's higher degree of co-movement of fundamentals, consistent with the increased similarity in the economic structure of emerging markets today, compared with the more specialized borrowing countries of 100 years ago. Our sense is that greater co-movement of fundamentals today is likely to be only a relatively small part of the explanation. It may still be too early to tell whether the future international environment is going to resemble the pre-First World War period, or the 1990s. Nevertheless, our impression at this time is that international co-movement of asset prices beyond what can be attributed to country-specific "fundamentals" is a phenomenon that is likely to reoccur and remain topical for many years.

The third feature that we examine for bond markets in the two periods relates to the mechanisms whereby sovereign debt defaults were handled. Chapter 7 focuses on the role of a fascinating institution, the "Corporation of Foreign Bondholders" (CFB), in seeking to reduce the cost of defaults and to facilitate workouts in the pre-First World War era. The CFB, an association of British investors holding bonds of foreign countries, organized creditors for joint action vis à vis borrowing countries. Debt resolution issues are currently topical; it is therefore of great interest to examine the way the Corporation functioned and to ask whether similar institutions might help coordinate bondholders' actions in the present international financial environment.[6]

Using archival data drawn the Annual Reports of the CFB, we characterize the methods used by investors to cope with defaulting sovereign borrowers, mechanisms of coordination among British bondholders,

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[6] While a few previous studies, discussed in Chapter 7, have considered the CFB, our objective is to provide a more thorough description of the CFB's workings, and a more detailed analysis of its potential relevance in the context of the present-day policy debate. Indeed, relatively little is known about the history and operation of the CFB. Feis (1930) provides an early (and fascinating) treatment of this issue. A series of seminal related studies by Eichengreen and Portes (1986, 1988, 1989a,b, 2000) analyze sovereign debt, defaults and workouts in the interwar period (with some reference to earlier cases and to the 1980s).

and their cooperation with counterpart creditor associations on the Continent. The main conclusion that emerges from this chapter is that while the CFB helped coordinate creditors and resolve defaults, its success record was mixed and, even so, the achievements of this organization should probably be viewed as an upper limit to what coordination among investors could hope to attain today.

The concluding chapter of the book (Chapter 8) provides a concise summary of the empirical results, and offers some tentative conclusions and policy recommendations for today's international financial architecture. Even more generally, one of our objectives is to help show that a better understanding of today's international financial environment can be gained by studying both the similarities and the differences between the two eras of globalization and bond finance. We thus hope that, going beyond the results we obtain in this book, the information and data sets we provide will be of help to future researchers examining various aspects of globalization "then and now."

2

The London Market for Sovereign Debt, 1870–1913 versus Today's Markets

2.1 Introduction

This chapter describes the pre-First-World War London market for sovereign bonds issued by emerging countries, and compares it with the corresponding market today. We show that the London market was large, active, and liquid; indeed far larger than the corresponding market of today. Moreover, investors were able to rely on timely and comprehensive information regarding borrowing countries. Other financial centers such as Amsterdam, Berlin, and Paris also saw considerable activity with respect to emerging countries' bonds, but none matched the London market's size and liquidity. Having made the case that the comparison between the London market before First World War and today's is relevant, we then turn to a detailed discussion of the construction of the data sets used in this study, and to a broad analysis of the behavior of bond spreads in the historical and modern samples.

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2.2 Emerging Market Countries in the Historical Sample

Before proceeding, it may be useful to define the term *emerging market countries*. We apply a similar definition to that adopted by Bordo and Eichengreen (2000). They classify countries as emerging markets—following modern parlance—on the basis of whether they were far from the industrial core of Europe, had relatively low per capita incomes, were net recipients of capital inflows, and had relatively underdeveloped domestic financial markets. For example, we include Canada and Australia, despite their relatively high incomes, because they remained recipients of capital and their domestic financial markets did not develop as much as in other advanced countries. In contrast, we exclude the United States from the sample because by the turn of the century, the United States was no longer a net recipient of capital flows, had a fairly developed domestic financial market, and was as economically advanced as the European core. To be included in the sample, we also require borrowing in pounds sterling; some European countries—notably Spain—are excluded from the sample because they borrowed extensively in their own currencies (Flandreau and Sussman, 2004). Of course, we recognize that there is no single definition or classification of emerging market countries, and therefore we strive in our estimation and interpretation to ensure that our key results are robust to changes in the sample of countries.

Our sample consists of the following eighteen emerging market countries: Argentina, Brazil, Canada, Chile, China, Colombia, Costa Rica, Egypt, Greece, Hungary, Japan, Mexico, Portugal, Queensland,[1] Russia, Sweden, Turkey, and Uruguay.[2] This includes all the largest borrowers of the time, and represents a diverse group of countries, varying substantially with respect to geography, trade structure, macroeconomic policies, political, institutional, and economic regimes. The sample includes three major less-developed European borrowers—Hungary, Russia, and Turkey—as well as the stable but as yet underdeveloped Sweden, a smaller borrower; the European peripheral countries of Greece and Portugal, the latter a declining colonial power; all the major borrowers in Latin America (Argentina, Brazil, Chile, Mexico, and Uruguay) and the two major Asian powers (China and Japan); the two largest countries with close ties to Britain, namely, Canada and Australia (proxied by Queensland), as well as Egypt, though only before it became closely tied to Britain in 1882.

[1] Queensland was a British colony starting in 1859 and became one of the states forming the federation of Australia upon independence in 1901.

[2] This is the sample used in Mauro, Sussman, and Yafeh (2002), augmented by two small Latin American borrowers—Colombia and Costa Rica.

2.3 The London Market for Sovereign Bonds, 1870–1913

The total market value of government bonds traded in London was £3.0 billion in 1875 and £4.1 billion in 1905. To put these figures in perspective, Britain's gross domestic product (GDP) amounted to £1.4 billion in 1875 and £2.2 billion in 1905, according to Mitchell's *Historical Statistics*. Bonds issued by the emerging market countries in our sample (defined below) accounted for £0.5 billion in 1875 and £1.0 billion in 1905 (or 46 percent, and 64 percent, respectively, as a share of Britain's GDP). Table 2.1, which is compiled from the *Economist*'s *Investor's Monthly Manual* (*IMM*), reports the total market value (the market capitalization) of the outstanding stock of bonds circulating in London, by issuing country. The London market was clearly both large and geographically diversified. This is also confirmed by the sheer number of bonds reported by the *IMM* on a regular basis. In 1870, the beginning of our study, almost 220 government bonds, issued by an impressive range of sovereign nations and British colonies and dominions, were already covered by the *IMM*. By 1905, as many as 300 bonds were listed in the *IMM*, offering an unprecedented variety of government bonds.

An alternative perspective on the depth and liquidity of the London stock market can be obtained by observing capital flows (rather than stocks of outstanding debt). Figures based on Stone (1999) for selected countries in our sample for the period 1865–1914, are presented in Table 2.2.[3] On the whole, it is clear that the London Stock Exchange was the most liquid capital market of its time, serving both for new issues and as a secondary market for a large number of bonds, including several bonds issued in other European financial centers.

The aggregate borrowing figures over the entire period mask substantial within-period variation: for example, the largest borrower in 1905–9 was the Japanese government, following Japan's impressive victory over Russia (see Sussman and Yafeh, 2000, Chapter 3). As pointed out by Stone (1999), the relative popularity of investment destinations also varied by the type of investment: for example, while investments in raw materials were directed primarily to South Africa and the United States, these countries were relatively unimportant with respect to investment in foreign government securities. Railway-related

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[3] Suzuki (1994) is another source of information on government-issued bonds during this period.

Table 2.1. Market Value of All Government Bonds Traded in London, 1875 and 1905

	Total volume of debt (in millions of pounds)		In percent of total		In percent of total excluding Britain	
	1875	1905	1875	1905	1875	1905
*Argentina	16.07	70.33	0.53	1.73	0.69	2.18
*Australia[a]	43.46	227.06	1.43	5.59	1.86	7.04
Austraia	199.45	134.28	6.54	3.30	8.43	4.16
Belgium	27.27	n.a.	0.89	n.a.	1.17	n.a.
*Brazil	19.80	70.61	0.65	1.74	0.85	2.19
Britain	709.71	839.50	23.28	20.65	n.a.	n.a.
Bulgaria	n.a.	9.34	n.a.	0.23	n.a.	0.29
*Canada	21.63	50.27	0.71	1.24	0.92	1.56
Cape of Good Hope	0.93	38.74	0.03	0.95	0.04	1.20
*Chile	7.99	17.42	0.26	0.43	0.34	0.54
*China	0.50	38.71	0.02	0.95	0.02	1.20
Cuba	0.28	7.20	0.01	0.18	0.01	0.22
Denmark	1.82	7.26	0.06	0.18	0.08	0.23
Ecuador	1.82	n.a.	0.06	n.a.	0.08	n.a.
*Egypt	56.06	86.93	1.84	2.14	2.40	2.70
France	756.74	734.96	24.83	18.08	32.36	22.79
Germany	n.a.	86.47	n.a.	2.13	n.a.	2.68
*Greece	4.75	23.51	0.16	0.58	0.20	0.73
*Hungary	23.14	65.23	0.76	1.60	0.99	2.02
India	84.48	145.57	2.77	3.58	3.61	4.51
Italy	35.93	322.78	1.18	7.94	1.54	10.01
*Japan	3.05	62.38	0.10	1.53	0.13	1.93
*Mexico	27.47	46.95	0.90	1.16	1.17	1.46
Natal	0.31	19.12	0.01	0.47	0.01	0.59
Netherlands	79.79	98.02	2.62	2.41	3.41	3.04
Norway	n.a.	6.91	n.a.	0.17	n.a.	0.21
Peru	11.58	n.a.	0.38	n.a.	0.50	n.a.
*Portugal	66.15	20.79	2.17	0.51	2.83	0.64
Prussia	n.a.	246.94	n.a.	6.07	n.a.	7.66
*Russia	151.37	376.74	4.97	9.27	6.47	11.68
Spain	167.64	31.76	5.50	0.78	7.17	0.98
*Sweden	1.96	9.28	0.06	0.23	0.08	0.29
Switzerland	n.a.	13.80	n.a.	0.34	n.a.	0.43
*Turkey	147.24	57.24	4.83	1.41	6.30	1.77
United States	347.79	48.74	11.41	1.20	14.87	1.51
*Uruguay	3.21	20.56	0.11	0.51	0.14	0.64
Venezuela	6.69	6.11	0.22	0.15	0.29	0.19
Other[b]	22.23	23.48	0.73	0.58	0.95	0.73
Total emerging markets in our sample	505.66	1020.07	16.59	25.09	21.62	31.63
Total	3048.30	4065.00	100.00	100.00	n.a.	n.a.
Total excluding Britain	2338.59	3225.50	76.72	79.35	100.00	100.00

Notes: * Astelrisks denote countries included in our sample of "emerging markets" for 1870–1913.

[a] Owing to data limitations, market capitalization refers to Australia, whereas later chapters use spreads for Queensland.

[b] "Other" includes Antigua, Barbados, Bolivia, British Columbia, British Guyana, Ceylan, Colombia, Costa Rica, Danubian Principalities, Gold Coast, Grenada, Guatemala, Honduras, Hong Kong, Jamaica, Liberia, Mauritius, Moorish territories, Nicaragua, Paraguay, San Damingo, Sardinia, Serbia, Siam, Sierra Leone, and St Lucia and Trinidad

Source: *The Economist's Investor Monthly Manual.*

Table 2.2. Emerging Market Countries' Bond Issues in London, 1870–1913 Net Proceeds from Bond Issues by Large Borrowers

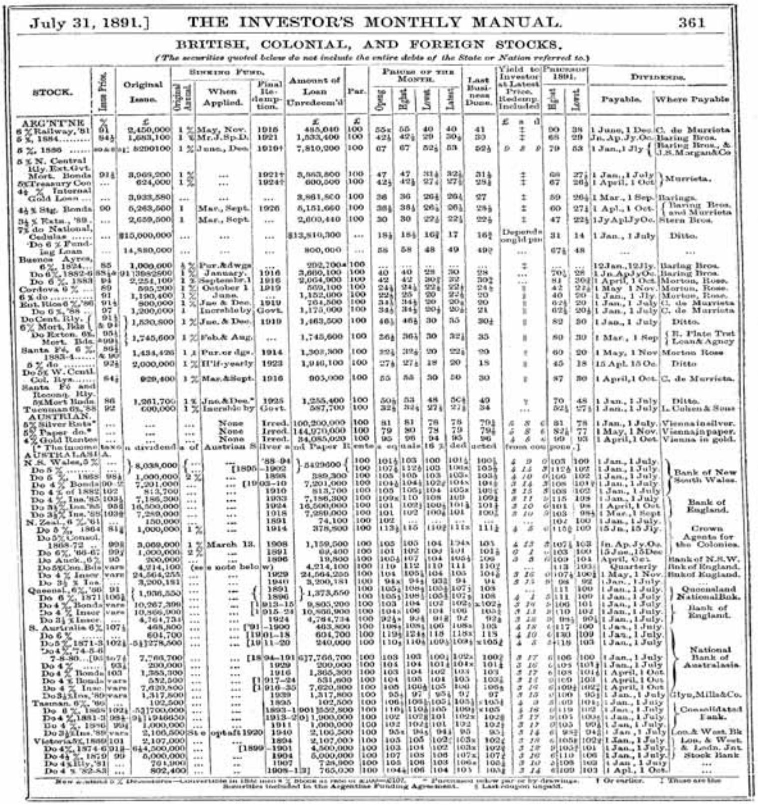
Country	In millions of pounds	Total Proceeds in percent of total net issues on the London market by all countries (excluding Britain)
Canada	116.22	8.75
Argentina	73.24	5.50
Brazil	72.81	5.48
Japan	72.62	5.47
Russia	55.60	4.19
China	47.56	3.60
Chile	26.07	1.96
Turkey	24.07	1.80
Greece	15.65	1.18
Mexico	15.19	1.14
Egypt	14.16	1.06
Uruguay	8.88	0.67
Total	542.07	40.80

Source: Stone (1999).

investment was concentrated primarily in the United States, Argentina, Canada, and India. Stone (1999) reports also that the bulk of British capital exports in 1865–1914 took the form of investments in foreign government securities (36 percent) and in foreign railway securities (32 percent).

2.4 Market Information and its Availability, 1870–1913

For markets to function effectively, information needs to be timely, frequent, and available to a broad audience of investors. Investors in 1870–1913 had access to highly detailed information on financial variables as well as macroeconomic, political, institutional developments in borrowing countries. Information on financial variables, including the yields on bonds issued by the emerging market countries of the day, was reported daily in the main newspapers, such as *The London Times*. It was also made available on a monthly basis by publications such as the *IMM*, one of the main data sources for this book. The following page, reproduced from the July 1891 issue of the *IMM*, reports a list of bonds quoted on the London Stock Exchange Note, for example, the number of Argentine bonds in default at that time—in the midst of the Baring crisis. (Bonds in default—not paying the coupon—are denoted by a special symbol, "‡.") The *IMM* provided readers with detailed information on the available bonds, their issue price, the original amount issued, the details of the sinking fund (for bond redemption), the amount of the loan unredeemed, several quotes for the price (latest, and high and low during the month) and yield (current, and high and low during the year), coupon payments dates, and bond underwriter. For example, the 5 percent bond issued by Argentina in 1886 is not in default and is traded at 50 cents on the dollar with a yield of 9*l* 8*s* 9*d* (9 pounds, 8 shillings, and 9 pence), relative to a face value of 100 pounds, that is, at a yield equivalent to about 9.4 percent.[4]



July 31, 1891.] THE INVESTOR'S MONTHLY MANUAL. 361

BRITISH, COLONIAL, AND FOREIGN STOCKS.

(The securities quoted below do not include the entire debts of the State or Nation referred to.)

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[4] Argentina was in default on other bonds at this time, such as the 4½; percent sterling bonds, trading at 28½; 100 pounds. Interestingly, these prices are not too far from those

Information on macroeconomic variables in emerging market countries was certainly harder to collect prior to First World War than it is today. In fact, some key modern macroeconomic concepts such as GDP were not even used in the historical period, and corresponding data did not exist at the time. Nevertheless, investors had sufficient information to form a well-reasoned view on the macroeconomic fundamentals that ultimately play a key role in determining countries' ability to meet their external obligations. Available macroeconomic indicators typically included external (and occasionally domestic) debt, imports and exports, fiscal revenues and expenditures, and population. Railway miles were also reported as an indication of the extent to which foreign capital was used for productive investment. Such data for all emerging market countries were widely available to British investors in easy-to-consult format in publications such as the *IMM*, though often the data were not updated and thus referred to previous years. The following page, taken from the December 1899 issue of the *IMM*, illustrates a sample of such information. Taking Queensland as an example, data were reported on population, area, debt, government revenues and expenditures, imports and exports, railway miles, profit margins of railway companies, and even information about livestock, an important staple export of the province.

AQ: Please check should 'ability' be 'abilities' in sentence 'Nevertheless . . .'

The *Annual Reports* of the Corporation of Foreign Bondholders (an organization of British investors' holding foreign bonds, described in detail in Chapter 7) provided even more detailed information on certain aspects of economic development in some borrowing countries—for example, external trade by product and partner country, or a detailed decomposition of fiscal revenues. The Reports were focused, however, on countries with payment difficulties and their coverage was somewhat haphazard.[5]

Finally, investors in the nineteenth century were well informed regarding not only economic, but also political and institutional

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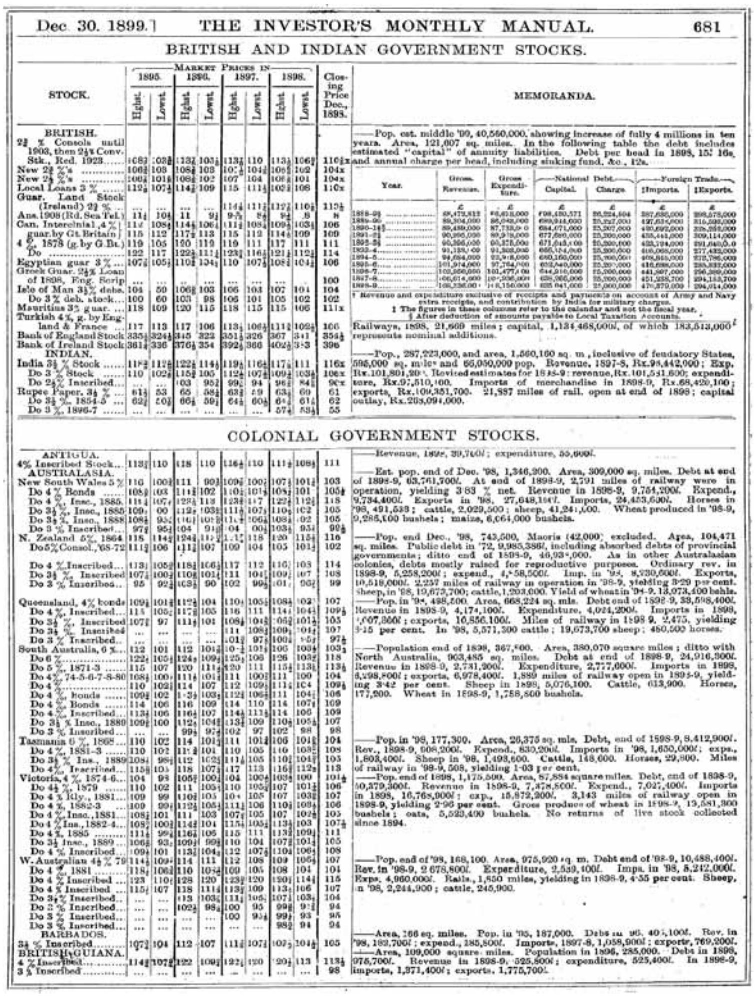
observed in the aftermath of Argentina's 2001 default. The single bond that continued to pay interest regularly was jointly underwritten by notorious banks in London (Baring) and New York (Morgan)—which may explain why Argentina chose not to default in this case.

[5] Outside Britain, Flandreau (2003a) reports that the *Credit Lyonnais*—a leading French bank and a major investor in emerging market bonds—devoted substantial staff resources to gathering and analyzing macroeconomic data and information on political developments in a number of emerging markets, in an attempt to estimate the likelihood of default and therefore the appropriate levels of bond yields. These data are one of the main sources for the empirical analysis conducted by Flandreau and Zumer (2004).



Dec. 30. 1899.] THE INVESTOR'S MONTHLY MANUAL. 681

BRITISH AND INDIAN GOVERNMENT STOCKS.

COLONIAL GOVERNMENT STOCKS.

events for the emerging market countries of the day. In fact, these events were meticulously reported in the British press, and information reached investors in the advanced countries in a timely manner: international telegraph links to the emerging market countries in our sample were introduced in the 1870s. Our impression is that the press provided such detailed information on political events partly in response to considerable demand for the same on the part of investors, for whom this was a key input in investment decisions. One of the main contributions of this book is indeed to exhibit the extent of coverage of foreign borrowers' economic and political developments and to analyze the impact they had on bond prices.

2.5 Today's Markets

How do the figures on international capital flows to developing countries in the pre-First World War period compare with the 1990s? In modern times, there was no significant active secondary market for emerging country bonds prior to the introduction of Brady bonds in the early 1990s. International financial flows to emerging market countries were essentially dormant until the early 1970s, and as late as the 1980s they still took primarily the form of bank loans. Following the wave of defaults of the 1980s by a number of emerging market countries, bank loans were eventually repackaged in the early 1990s as Brady bonds, setting the stage for secondary market trading to begin on a large scale. When they reentered international capital markets after the Brady deals, emerging countries relied on new bond issues for a substantial portion of their financing needs.[6] The change in the composition of modern emerging market sovereign debt, from bank loans to bonds, is described in Figure 2.1, where the upper panel refers to outstanding stocks, and the middle panel refers to new issues. The prevalence of bond finance in recent years is not unique to emerging market countries, and it applies to advanced countries as well (Figure 2.1, lower panel).

Despite a substantial increase since the first Brady deals, and a gradual shift away from bank loans and toward bonds, total market capitalization for bonds issued by emerging countries remains far lower today than it was before the First World War, as a share of the GDP (or the total bond market capitalization) of the core countries (Table 2.3). Total market capitalization for the countries included in J. P. Morgan's Emerging Markets Bond Index (EMBI) + index amounted

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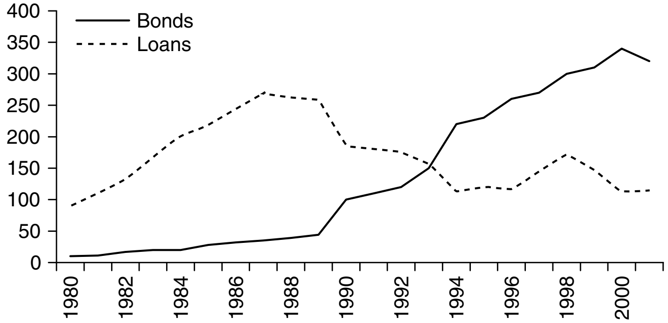
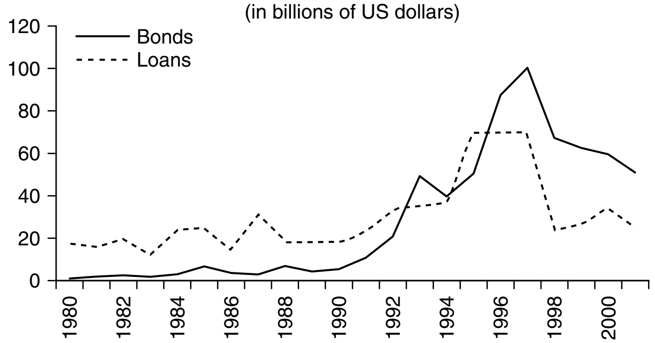
[6] Most sovereign bonds that have been issued internationally since the early 1990s carry fixed interest rates, in contrast with the floating rates (typically linked to the London Interbank Offered Rate—LIBOR) that usually characterized bank loans in the 1970s and 1980s (IMF, 2004). In this respect, too, the present environment resembles the features of the environment that prevailed in the 1870–1913 era. Further information on today's sovereign debt structures is provided in Borensztein et al. (2004).

Emerging Market countries: stocks of privately held debt
(in billions of US dollars)



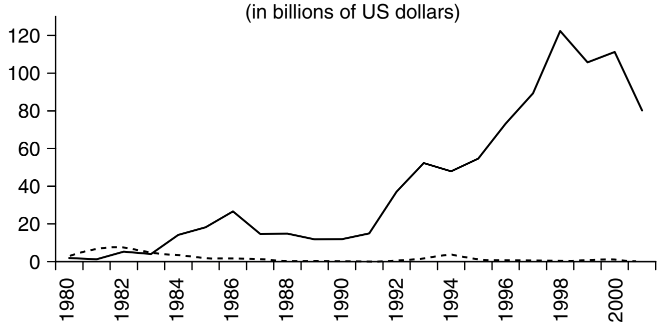
Source: Global Development Finance 2003, World Bank.

Emerging market countries: new issues
(in billions of US dollars)



Source: BEL

Advanced countries: new issues
(in billions of US dollars)



Source: Bondware and Loanware

Figure 2.1. Structure of external public debt: bonds versus loans

Table 2.3. Emerging Market Countries: Outstanding Public Bonds December 2001, Billions of US dollars

Country	Public and Publicly Issued	General Government	Central Government	Brady bonds	Total bonds	Total bonds as a percent of GDP
Argentina	54.07	53.69	49.90	6.24	60.31	22.44
Brazil	32.78	25.18	25.18	17.47	50.25	9.87
Bulgaraia	0.85	0.85	0.79	4.76	5.61	41.26
Colombia	11.25	10.83	10.73		11.25	13.77
Ecuador	0.50	0.50	0.50		0.50	2.38
Egypt	1.50	1.50	1.50		1.50	1.57
Korea	26.62	4.50	4.00		26.62	5.52
Malaysia	14.38	5.47	5.47		14.38	16.35
Mexico	39.58	30.33	30.33	7.41	47.00	7.53
Morocco	0.44	0.44	0.44		0.44	1.30
Nigeria	0.00	0.00	0.00	2.05	2.05	4.30
Panama	3.55	3.55	3.55	1.51	5.06	41.98
Peru	0.00	0.00	0.00	3.73	3.73	6.95
Philippines	10.73	8.83	8.83	1.29	12.02	16.92
Poland	21.59	21.47	21.44	4.17	25.76	13.86
Qatar	2.40	2.40	2.40		2.40	14.01
Russia	16.31	15.96	14.85		16.31	5.32
South Africa	11.32	5.30	5.30		11.32	9.91
Turkey	23.05	22.05	22.05		23.05	15.01
Ukraine	1.13	1.13	1.13		1.13	2.97
Venezuela	7.64	7.44	7.44	8.69	16.33	12.94
Total	279.69	221.39	215.82	57.32	337.01	10.08

Note: Data refer to all bonds issued on the international market. Public and publicly issued aggregates all bonds issued by the general government and all public enterprises. Total bonds is the sum of public and publicly issued bonds and Brady bonds. The countries listed are those included in J. P. Morgan's EMBI + index.

Sources: Bondware, DealLogic. Data on Brady bonds is from Global Development Finance, 2003, World Bank.

to US$337 billion at end of 2001; by comparison, nominal GDP amounted to US$10.0 trillion for the United States and US$1.4 trillion for the United Kingdom in 2001. Total market capitalization for US Treasury bonds exceeded US$3 trillion in 2002, or about 100 times the market capitalization of emerging countries' bonds.

Trading is of course active, as shown in Tables 2.4 and 2.5.[7]

Interestingly, Brady bonds were by far the most widespread and actively traded form of emerging market countries' sovereign bonds

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[7] Trading volumes are shown individually for the countries in the sample that will be used in the empirical analysis in later chapters. The sample consists of the eight countries for which EMBI data are available starting in 1994. In 2003, secondary market trading activity was substantial for the instruments of several other countries—notably, Russia (US$288 billion), South Africa (US$158 billion), Turkey (US$142 billion), and Poland (US$135 billion).

Table 2.4. Secondary Market Transactions, Emerging Market Countries, 1993–2003

	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
						(In billions of US dollars)					
All instruments	1,979	2,766	2,739	5,297	5,916	4,174	2,185	2,847	3,484	3,068	3,973
Brady bonds	1,021	1,684	1,580	2,690	2,403	1,541	771	712	573	459	456
Total Non-Brady bonds	177	165	211	568	1,335	1,021	626	936	1,255	1,063	1,485
Sovereign bonds	88	77	112	327	924	740	431	744	1,062	854	1,216
Corporate and unspecified bonds	89	88	99	241	411	281	196	192	193	209	269
Total local markets instruments	362	462	593	1,274	1,506	1,176	599	993	1,517	1,411	1,837
Local currency-denominated	207	371	461	851	977	869	460	845	1,393	1,361	1,806
US dollar-denominated	155	92	74	423	529	308	138	148	124	50	31
Loans	274	244	175	249	305	213	69	99	37	42	58
Options and warrants	57	142	179	471	365	223	119	106	102	93	138
Unspecified instruments	n.a.	12	n.a.	45	3	—	—	—	—	—	—

Source: Emerging Markets Traders Association.

[a] All emerging markets surveyed by the Emerging Markets Traders Association.

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Table 2.5. Secondary Market Transacations in Debt Instruments, Emerging Markets, 1993–2003

	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
					(In billions of US dollars)						
All EMTA countries[a]											
Total	1,979	2,766	2,739	5,297	5,916	4,174	2,185	2,847	3,484	3,068	3,973
Brady-bonds	1,021	1,684	1,580	2,690	2,403	1,541	771	712	573	459	456
Non-Brady sovereign bonds	88	77	112	327	924	740	431	744	1,062	854	1,216
Other instruments[b]	870	1,005	1,047	2,280	2,590	1,893	983	1,391	1,849	1,755	2,301
Argentina											
Total	544	590	610	1,292	1,236	612	319	366	384	38	54
Brady bonds	366	361	411	647	533	252	138	120	148	8	4
Non-Brady sovereign bonds	8	14	49	115	304	178	95	136	173	23	29
Other instruments[b]	170	216	149	531	399	182	85	110	63	7	21
Brazil											
Total	259	597	877	1,441	1,796	1,269	802	769	721	707	909
Brady bonds	141	440	583	1,020	1,102	869	420	394	308	360	363
Non-Brady sovereign bonds	14	n.a.	15	28	130	80	49	140	212	185	311
Other instruments[b]	104	157	279	394	564	320	333	235	201	162	235
Bulgaria											
Total	n.a.	n.a.	59	106	109	37	20	18	20	21	12

Mexico											
Total	465	601	510	946	980	640	313	662	1,111	949	1,304
Brady bonds	205	282	192	353	184	96	52	70	31	14	4
Non-Brady sovereign bonds	46	25	36	118	145	131	66	126	154	159	196
Other instruments[b]	214	295	282	476	650	414	195	466	926	776	1,104
Nigeria											
Total	35	54	33	23	15	8	4	3	3	2	3
Philippines											
Total	16	22	14	26	23	24	23	19	22	32	38
Poland											
Total	n.a.	n.a.	96	81	70	95	25	49	90	103	135
Venezuela											
Total	288	2	194	397	347	180	95	82	92	97	141

Source: Emerging Markets Traders Association.

[a] All emerging markets surveyed by the Emberging Markets Traders Association. Detail is provided for those countries in the main sample used for regression analysis in later chapters.

[b] Including loans, options andwarrants, corporate and unspecified bonds, and local market instruments in both domestic and foreign currencies.

in the 1990s. Although their relative importance has been declining in recent years, they accounted for more than half of sovereign debt transactions in the emerging market countries surveyed by the Emerging Market Traders Association until 2000. They also accounted for a large portion of the sovereign debt issued by each of the countries considered in our sample.

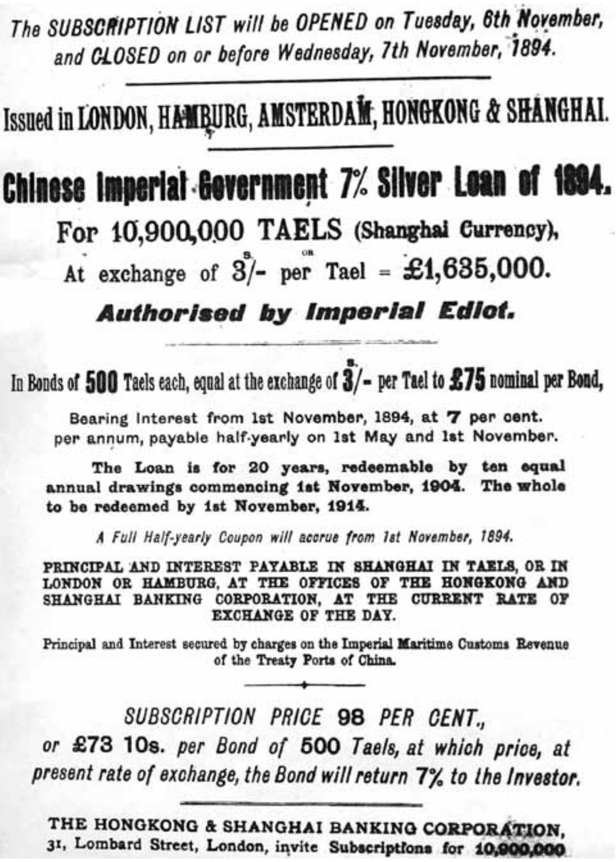
2.6 Bond Characteristics, 1870–1913 versus Today

While the premise of this book is that the two periods considered share a number of similarities, the composition of emerging market countries' external liabilities in 1870–1913 differs from that of today in a number of respects:

- Sovereign bonds in the past were often of very long maturity: by 1870 very few bonds were issued with maturity of less than 20 years and practically none was of maturity below 10 years; a few bonds (notably some issued by Russia) were issued with maturity of up to 80 years. By the early 1900s, several sovereigns, especially the more advanced countries, routinely issued non-redeemable Consols (perpetuities). In contrast, the maturity of most of the emerging market bonds in the modern period has been 5 to 10 years, and the share of bonds with maturity of over 20 years has been relatively small (Borensztein et al., 2004). Consols are essentially nonexistent today, though a few advanced countries have recently issued 50-year bonds.
- In the period 1870–1913, many bonds included a "lottery" clause, providing for the possibility of early redemption (principal repayment at par) of a prespecified amount of outstanding bonds, to be selected through a lottery. This feature, which is discussed in more detail below, effectively shortens the duration of the bond.
- Although then as now almost all of the sovereign debt was denominated in foreign currency (pounds sterling in the past and US dollars today), in the historical period a few bonds were issued in domestic currency, by countries such as China, Hungary, Japan, and Russia. Nevertheless, such bonds usually included exchange rate clauses, which enabled investors to be paid in foreign currency at a predetermined exchange rate (see Flandreau and Sussman, 2004).

- Finally, country assets, specific export revenues, and tax revenues were used as collateral far more frequently during the previous era of globalization than they are today. This became crucial in times of default, an issue which we discuss in detail in Chapter 7. In a few cases, emerging market countries issued bonds guaranteed by the British government.[8]

Some of these features are illustrated in the next page (reproduced from the *London Times*). The picture describes a Chinese 7 percent 20-year bond issued in 1894 with lottery redemption starting in 1904.



The SUBSCRIPTION LIST will be OPENED on Tuesday, 6th November, and CLOSED on or before Wednesday, 7th November, 1894.

Issued in LONDON, HAMBURG, AMSTERDAM, HONGKONG & SHANGHAI.

Chinese Imperial Government 7% Silver Loan of 1894.

For 10,900,000 TAELS (Shanghai Currency),

At exchange of $\overset{s.}{3}$/- per Tael = £1,635,000.

Authorised by Imperial Edict.

In Bonds of **500** Taels each, equal at the exchange of $\overset{s.}{3}$/- per Tael to **£75** nominal per Bond,

Bearing Interest from 1st November, 1894, at **7** per cent. per annum, payable half-yearly on 1st May and 1st November.

The Loan is for 20 years, redeemable by ten equal annual drawings commencing 1st November, 1904. The whole to be redeemed by 1st November, 1914.

A Full Half-yearly Coupon will accrue from 1st November, 1894.

PRINCIPAL AND INTEREST PAYABLE IN SHANGHAI IN TAELS, OR IN LONDON OR HAMBURG, AT THE OFFICES OF THE HONGKONG AND SHANGHAI BANKING CORPORATION, AT THE CURRENT RATE OF EXCHANGE OF THE DAY.

Principal and Interest secured by charges on the Imperial Maritime Customs Revenue of the Treaty Ports of China.

SUBSCRIPTION PRICE **98** *PER CENT., or* **£73 10s.** *per Bond of* **500** *Taels, at which price, at present rate of exchange, the Bond will return* **7%** *to the Investor.*

THE HONGKONG & SHANGHAI BANKING CORPORATION, 31, Lombard Street, London, invite **Subscriptions for 10,900,000**

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[8] We exclude these cases from our sample, to avoid low spreads that would be easily explained by such guarantees.

Note that even though the bond is denominated in taels it has a fixed exchange rate clause of 3 shillings per tael. In addition, the collateral for this bond is the customs revenues from the Treaty Ports of China.

We now turn to the construction of the data set we use to compare the two eras of bond finance.

2.7 Construction of the Data Set

Our focus is on the determinants and behavior of emerging market bonds. We therefore collect data on bond characteristics and prices, and on variables that may capture investors' perceptions of borrowing developing countries and their creditworthiness. We are interested in "country risk," defined as the interest premium a country has to offer investors in excess of the risk-free rate of return. More specifically, the analysis which follows is based on the assumption that differences in the default risk (measured in various ways) account for differences in the cost of capital of different borrowing countries.

Historical Spreads

In the historical sample, the risk premium is therefore the yield differential between the yield on emerging market bonds and British Consol yields. The data on spreads were collected by hand, carefully noting the characteristics of the bonds that affected the yields, such as varying coupons, and instances in which the coupons were changed or not paid.

For the eighteen emerging market countries in our sample, we collect end-of-month bond yields. (Details on the bonds used for each of these countries appear in Appendix 1.) In addition, our data set includes an average index of historical government bond yields for all emerging markets in the sample. Whereas previous studies used unweighted or GDP-weighted indexes of yields, this index is, for the first time, market-capitalization-weighted and thus similar in concept to the modern EMBI index. Specifically, we compute the index using 5-year variable weights based on the market capitalization reported in the *IMM*. Countries in default (where yields cannot be reliably computed) are excluded from the index during the default period.

In computing bond yields for the historical sample, we seek to stick as much as possible to the methods used by contemporaries, and to avoid the pitfalls often encountered in modern-day estimates of historical yields. In particular, as mentioned above, we note all bond details and covenants, as well as information on actual coupon values and payments, as reported in the *IMM*. This helps us generate the most accurate bond yield data currently available for 1870–1913. A thorough explanation of the methods we use in estimating yields, as well as a number of interesting methodological issues and changes that have occurred in this respect over the past 100 years or so, are provided in Annex 2.1.

Modern Spreads

The modern data used in this book are based on J. P. Morgan's EMBI. This is a standard and widely available source that reports secondary market spreads for emerging market bonds and also computes a weighted index of all the emerging market bonds covered by J. P. Morgan. Since the issue of sovereign bonds is a phenomenon of the 1990s, our sample is restricted to the years 1994–2004, and to eight countries: Argentina, Brazil, Bulgaria, Mexico, Nigeria, the Philippines, Poland, and Venezuela. These countries are among the most important in terms of market capitalization (for another important borrower, Russia, available data begin only in 1998). The modern data are drawn from a single source and computed using up-to-date financial methods.[9]

Investors' Information Set—The Historical Sample

We compile a dataset consisting of macroeconomic variables and news reports in order to generate a picture of each borrowing country's stability, economic and institutional development, and perceived credit worthiness. This data set, which is based on information from contemporary newspapers' articles, is used in subsequent chapters to relate bond prices to news items.

Two news sources are used for the historical sample. The first source, the *London Times* (and *Palmer's Index* to find news related to the countries we analyze), provides daily news reports on borrowing countries. This is our main source to reconstructing the perception of an emerging economy that a contemporary investor would have had on the

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[9] A technical explanation of the EMBI index is available at the J.P. Morgan website.

basis of daily news reports (see below). Notably, we rely on this source for the numerical indicators of news that underlie our main regressions in Chapter 5. Unfortunately, neither the *London Times* nor the *Palmer's Index* provides a practical way of identifying major news based on criteria such as the size and location of the articles. In fact, *London Times* editions of the late nineteenth century were not structured like modern newspapers, with a front page and headline news: the newspaper began with what today would be the classified section of newspaper, rather than news items.

The second historical news source is *The Economist*'s *IMM*, which provided biannual summaries (in June and December) of the key news items that "moved the markets" (referring to the London financial markets as a whole). In other words, this source identifies major news with hindsight, on the basis of the financial markets' observed behavior. Despite this drawback, we use this source, notably in a few exercises in Chapter 4, to relate events with sharp changes in the spread series, and, more importantly, to identify *the type* of news that affects the markets.

Some of the news items found in one of the biannual summaries of the *IMM* (from the December 1891 issue) are displayed on the next page. Many of the events are related to the Baring crisis. Examples include the following: news on debt negotiations with the Rothschild Committee, and news from the provinces of Cordova and Entre Rios in Argentina (first week of January); news about a civil war in Chile (second week of January); statement by the Bank of England regarding the progress of the liquidation of Baring's Bank (second week of June); and so on.

Table 2.6 compares the ranking of the countries in our sample according to the share of their debt in total market value in London in 1890 with the ranking based on their share of news articles collected from the *London Times* for the historical sample.[10] On the whole, the share of news tends to be higher for larger borrowers. Not surprisingly, however, the relationship is far from exact: the *London Times* was not a

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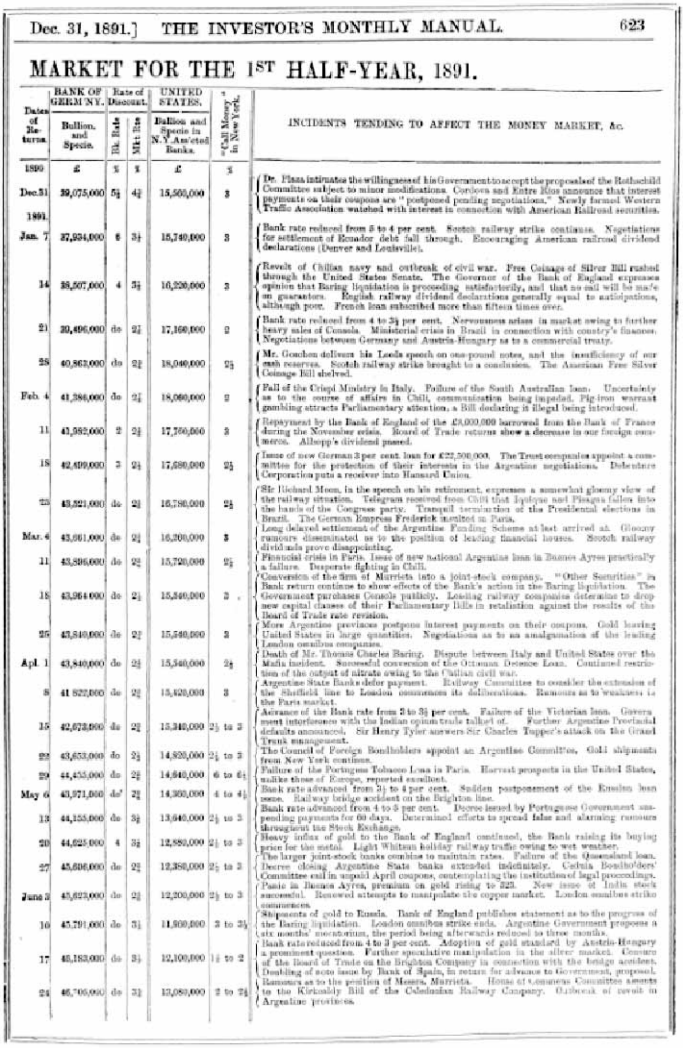
[10] We provide separate estimates for 1870–90 and 1906–10, because of a difference in the construction of Palmer's Index starting in 1906, when the number of articles indexed increased by an order of magnitude. In this table, we do not use data for 1891–1905 and 1911–13 because news articles for Turkey were not collected for these years. Egypt is excluded because of British debt guarantees after 1882. In the calculation of the weighted average index of historical government bond yields for all emerging markets in the sample, the weight of Queensland's bonds is calculated on the basis of the entire Australian debt, a figure higher than the one in table.



Dec. 31, 1891.] THE INVESTOR'S MONTHLY MANUAL. 623

MARKET FOR THE 1ST HALF-YEAR, 1891.

Dates of Returns.	BANK OF GERM'NY. Bullion, and Specie.	Rate of Discount. Bk. Rate	Rate of Discount. Mkt Rte	UNITED STATES. Bullion and Specie in N.Y. Ass'ctd Banks.	"Call Money" in New York.	INCIDENTS TENDING TO AFFECT THE MONEY MARKET, &c.
1890	£	%	%	£	%	
Dec. 31	39,075,000	5½	4½	15,560,000	3	Dr. Plaza intimates the willingness of his Government to accept the proposals of the Rothschild Committee subject to minor modifications. Cordova and Entre Rios announce that interest payments on their coupons are "postponed pending negotiations." Newly formed Western Traffic Association watched with interest in connection with American Railroad securities.
1891.						
Jan. 7	37,934,000	5	3¼	15,740,000	3	Bank rate reduced from 5 to 4 per cent. Scotch railway strike continues. Negotiations for settlement of Ecuador debt fall through. Encouraging American railroad dividend declarations (Denver and Louisville).
14	38,507,000	4	3¼	16,220,000	3	Revolt of Chilian navy and outbreak of civil war. Free Coinage of Silver Bill rushed through the United States Senate. The Governor of the Bank of England expresses opinion that Baring liquidation is proceeding satisfactorily, and that no call will be made on guarantors. English railway dividend declarations generally equal to anticipations, although poor. French loan subscribed more than fifteen times over.
21	39,496,000	do	2¾	17,160,000	2	Bank rate reduced from 4 to 3½ per cent. Nervousness arises in market owing to further heavy sales of Consols. Ministerial crisis in Brazil in connection with country's finances. Negotiations between Germany and Austria-Hungary as to a commercial treaty.
28	40,862,000	do	2¾	18,040,000	2½	Mr. Goschen delivers his Leeds speech on one-pound notes, and the insufficiency of our cash reserves. Scotch railway strike brought to a conclusion. The American Free Silver Coinage Bill shelved.
Feb. 4	41,386,000	do	2¼	18,060,000	2	Fall of the Crispi Ministry in Italy. Failure of the South Australian loan. Uncertainty as to the course of affairs in Chili, communication being impeded. Pig-iron warrant gambling attracts Parliamentary attention, a Bill declaring it illegal being introduced.
11	41,982,000	3	2¼	17,760,000	3	Repayment by the Bank of England of the £3,000,000 borrowed from the Bank of France during the November crisis. Board of Trade returns show a decrease in our foreign commerce. Allsopp's dividend passed.
18	42,499,000	3	2¼	17,680,000	2½	Issue of new German 3 per cent. loan for £22,500,000. The Trust companies appoint a committee for the protection of their interests in the Argentine negotiations. Debenture Corporation puts a receiver into Hansard Union.
25	43,321,000	do	2¼	16,780,000	2½	Sir Richard Moon, in the speech on his retirement, expresses a somewhat gloomy view of the railway situation. Telegram received from Chili that Iquique and Pisagua fallen into the hands of the Congress party. Tranquil termination of the Presidential elections in Brazil. The German Empress Frederick insulted in Paris.
Mar. 4	43,661,000	do	2¼	16,200,000	3	Long delayed settlement of the Argentine Funding Scheme at last arrived at. Gloomy rumours disseminated as to the position of leading financial houses. Scotch railway dividends prove disappointing.
11	43,896,000	do	2¾	15,720,000	2½	Financial crisis in Paris. Issue of new national Argentine loan in Buenos Ayres practically a failure. Desperate fighting in Chili.
18	43,964,000	do	2¼	15,840,000	3	Conversion of the firm of Murrieta into a joint-stock company. "Other Securities" in Bank return continue to show effects of the Bank's action in the Baring liquidation. The Government purchases Consols publicly. Leading railway companies determine to drop new capital clauses of their Parliamentary bills in retaliation against the results of the Board of Trade rate revision.
25	43,840,000	do	2¾	15,540,000	3	More Argentine provinces postpone interest payments on their coupons. Gold leaving United States in large quantities. Negotiations as to an amalgamation of the leading London omnibus companies.
Apl. 1	43,840,000	do	2¾	15,540,000	2½	Death of Mr. Thomas Charles Baring. Dispute between Italy and United States over the Mafia incident. Successful conversion of the Ottoman Defence Loan. Continued restriction of the output of nitrate owing to the Chilian civil war.
8	41,822,000	do	2¾	15,420,000	3	Argentine State Banks defer payment. Railway Committee to consider the extension of the Sheffield line to London commences its deliberations. Rumours as to weakness in the Paris market.
15	42,672,000	do	2¾	15,340,000	2½ to 3	Advance of the Bank rate from 3 to 3½ per cent. Failure of the Victorian loan. Government interference with the Indian opium trade talked of. Further Argentine Provincial defaults announced. Sir Henry Tyler answers Sir Charles Tupper's attack on the Grand Trunk management.
22	43,653,000	do	2¾	14,820,000	2½ to 3	The Council of Foreign Bondholders appoint an Argentine Committee. Gold shipments from New York continue.
29	44,455,000	do	2¾	14,840,000	6 to 6½	Failure of the Portuguese Tobacco Loan in Paris. Harvest prospects in the United States, unlike those of Europe, reported excellent.
May 6	43,971,000	do	2¾	14,360,000	4 to 4½	Bank rate advanced from 3½ to 4 per cent. Sudden postponement of the Russian loan issue. Railway bridge accident on the Brighton line.
13	44,155,000	do	3¼	13,640,000	2½ to 3	Bank rate advanced from 4 to 5 per cent. Decree issued by Portuguese Government suspending payments for 60 days. Determined efforts to spread false and alarming rumours throughout the Stock Exchange.
20	44,625,000	4	3¼	12,880,000	2½ to 3	Heavy influx of gold to the Bank of England continued, the Bank raising its buying price for the metal. Light Whitsun holiday railway traffic owing to wet weather.
27	45,606,000	do	2¾	12,380,000	2½ to 3	The larger joint-stock banks combine to maintain rates. Failure of the Queensland loan. Decree closing Argentine State banks extended indefinitely. Cedula Bondholders' Committee call in unpaid April coupons, contemplating the institution of legal proceedings.
June 3	45,623,000	do	2¾	12,200,000	2½ to 3	Panic in Buenos Ayres, premium on gold rising to 323. New issue of India stock successful. Renewed attempts to manipulate the copper market. London omnibus strike commences.
10	45,791,000	do	3¼	11,900,000	3 to 3½	Shipments of gold to Russia. Bank of England publishes statement as to the progress of the Baring liquidation. London omnibus strike ends. Argentine Government proposes a six months' moratorium, the period being afterwards reduced to three months.
17	45,183,000	do	3¼	12,100,000	1½ to 2	Bank rate reduced from 4 to 3 per cent. Adoption of gold standard by Austria-Hungary a prominent question. Further speculative manipulation in the silver market. Censure of the Board of Trade on the Brighton Company in connection with the bridge accident. Doubling of note issue by Bank of Spain, in return for advance to Government, proposed.
24	46,706,000	do	3¼	13,080,000	2 to 2½	Rumours as to the position of Messrs. Murrieta. House of Commons Committee assents to the Kirkcaldy Bill of the Caledonian Railway Company. Outbreak of revolt in Argentine provinces.

financial newspaper, and newspaper coverage was primarily determined by the countries' size and political importance. Thus, for example, news regarding Imperial China occupied a much larger share in total news than implied by China's share in market capitalization. Conversely, heavy borrowers from the periphery, such as Brazil or Argentina, received relatively little newspaper coverage.

Table 2.6. Share of Newspaper Coverage and Share in Total Market Value of Debt

Country	Share of news in 1870–90	Share in market value 1890	Country	Share of news in 1906–10	Share in market value 1910
Russia	22.3	20.8	Russia	29.3	35.5
Turkey	43.5	16.5	Japan	4.4	9.6
Argentina	1.3	8.6	Brazil	2.3	7.4
Portugal	2.7	6.6	Argentina	2.5	6.6
Canada	8.1	6.4	Hungary	1.9	5.5
Brazil	3.2	5.0	Turkey	22.1	5.3
Queensland	0.9	3.5	Mexico	1.3	3.7
Greece	6.5	2.9	Canada	18.2	3.6
Mexico	1.3	2.7	China	3.9	3.4
Uruguay	0.4	2.1	Queensland	0.8	3.1
Chile	0.8	1.3	Chile	1.3	2.6
Sweden	0.7	1.2	Uruguay	0.8	2.1
China	5.8	0.5	Greece	4.0	2.0
Hungary	2.0	0.2	Portugal	5.0	1.7
Japan	0.5	0.1	Sweden	2.1	1.0

Sources: News items from the Palmer's Index to the *London Times* and bond market capitalization from *The Economist*'s *Investor's Monthly Manual*.

For each country in our sample, we classified all news articles reported in the Palmer's index to the *London Times* into the following categories:

(i) Wars and instability: including events such as coups, assassinations, riots, and strikes; but also suppression of rebellions (relatively good news following a period of turbulence);

(ii) Bad economic news: natural disasters, poor crops, and other adverse economic developments including those reflected in statistical data releases on macroeconomic variables such as fiscal or trade deficits; excludes adverse changes in asset prices, especially bond spreads (the variables we seek to explain);

(iii) Good/neutral economic news: includes economic news that seem either positive or neutral from the viewpoint of foreign investors, such as good harvests and increased tax revenues;

(iv) Investor-friendly reforms and institutional changes, including tax reforms, adoption of the gold standard or currency boards, tariff reductions, and changes in the constitution, the legal system, the franchise, or the school system;

(v) Domestic politics: news on elections and political parties. (It would not have been possible to classify such news into good, neutral, or bad news, as perceived by contemporaries);

(vi) Foreign relations: exchange of ambassadors, diplomatic visits, peace treaties, trade agreements, and so forth;

(vii) Miscellaneous other articles.

Investors' Information Set: The Modern Sample

For 1994–2002, the news items are drawn from the *Financial Times* (*FT*), through a systematic (electronic) search of all the news items that contained the name of the country in the title or electronic subject line. Many news items were discarded as not relevant for the purpose of this research (e.g. the numerous items related to sports events such as the soccer world cup matches). We then allocated the news items among the same categories as for the historical sample, as listed above. The electronic search makes it possible to distinguish between articles that appear on the front page and articles that appear in other pages; and between articles that only appear in brief summary form on the front page and articles that appear also in other pages.

Macroeconomic Data

To complete our information set on emerging markets we compile essential macroeconomic variables that are usually associated with country risk. For the historical period, we collected annual data on government finance, exports, and population from Mitchell's *International Historical Statistics* and a host of other country-specific sources, as described in detail in Appendix 2 (the notion of GDP did not exist at the time). We supplemented a few of the missing series by using the data collected by Obstfeld and Taylor (2003b), kindly provided by Alan Taylor (and, through him, several earlier vintages of scholars). Ideally we would have preferred to use data that contemporaries had. However, the data coverage by the *IMM* has some gaps which would have rendered the econometric tests infeasible. Therefore, we opted to use the *IMM* only as a complementary source, for the countries where data from other sources were not available or seemed less reliable.

For the modern period, annual data on GDP per capita, exports, government revenues and expenditures, and the exchange rate are drawn from the International Monetary Fund's *International Financial Statistics*; data on public debt are from the World Bank's *Global Development Finance*. Quarterly data are drawn from the *International*

Financial Statistics and the International Monetary Fund's country desks.

Some of the data we work with is, of course, of uncertain quality, especially for the historical sample, and one has to recognize this in interpreting the results of our empirical analysis. As the title of a study by Platt (1989) suggests ("Mickey Mouse Numbers in World History"), one has to be careful not to base grand theories on historical data of dubious source and quality. At the same time, statistics—however imperfect—do convey useful information that allows for meaningful economic analysis. What is clear is that some of the data we use are more reliable than others. Financial variables, notably bond yields, are presumably not subject to error, although of course we are unable to take into consideration all of the detailed features of all of the bonds; in addition, there are challenges involved in computing yields appropriately in times of partial or complete default, or around changes in relevant bond features (all of these issues are discussed in Annex 2.1 at the end of this chapter). The news we rely on are drawn from the newspapers and of course there is judgment involved in classifying them in various categories. Nevertheless, generally speaking, and for our purposes, we do not think that the accuracy of the news indicators today is substantially different from that of a hundred years ago. The one type of data where we believe quality is a more serious issue, and to an even greater extent in historical times than modern times, relates to the macroeconomic variables. To some extent, this is because macroeconomic concepts were different in the pre-First World War period (see more discussion in Chapter 5); in addition, some of the variables were not systematically constructed or monitored.

2.8 Emerging Market Spreads: A First Look at the Historical and Modern Data

We begin by considering the broad patterns displayed by the emerging market spreads series in the period 1870–1913, and discussing individual country characteristics. The average (market-capitalization-weighted) spread declined from a high of 600 basis points in 1870 to a low of 75 basis points in 1913 (Figure 2.2) The decline was gradual, yet continuous, with the exception of the rise in average spreads in 1876 because of wars involving some of the largest borrowers, especially Turkey (whose weight in the average spread in that period is nearly a

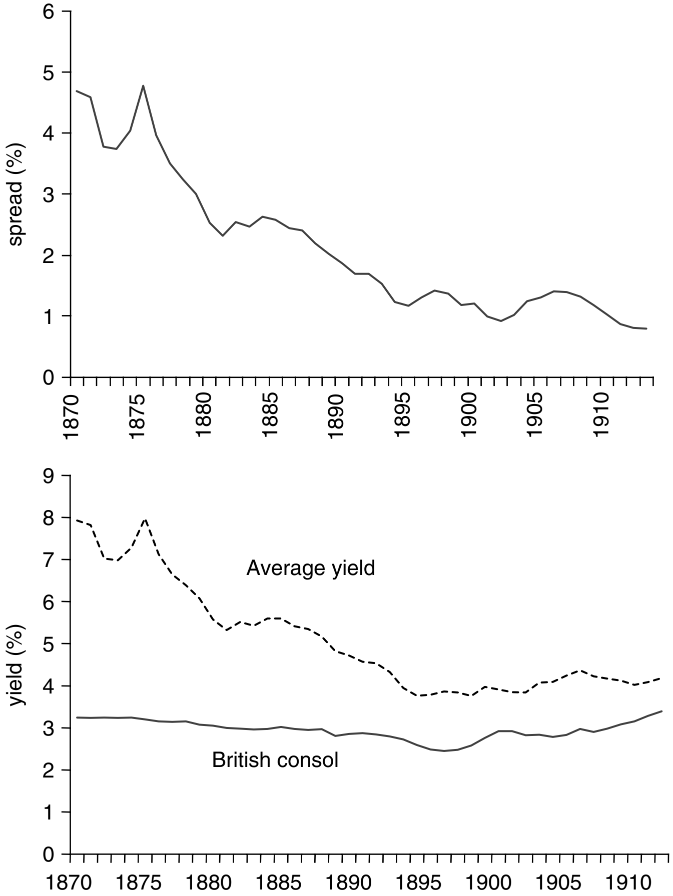


Figure 2.2. Market-capitalization-weighted average bond spreads emerging market countries, 1870–1913(excluding counties in default)

third). While several authors have offered possible explanations for this declining trend, there is no clear consensus on what caused it. Our preferred explanation is that the period 1906–13 was relatively tranquil for the countries in our sample, with fewer wars and episodes of violence reported in the press: the share of war news in total news in our sample roughly halved compared with that of 1870–1905.[11]

[11] Another, possible factor is a "supply effect," namely, the increase in the outflow of capital from the UK, which may have lowered the relative cost of borrowing for developing

The relatively smooth decline of the cross-country average spread, however, masks substantial variation in the individual country spreads, which all displayed remarkably idiosyncratic fluctuations, often caused by wars (Figure 2.3). Default periods are shaded, and events that moved the spreads in dramatic way, typically wars, are noted. Instances when bonds were redeemed by countries that introduced new bonds with significantly lower coupons are also marked.[12]

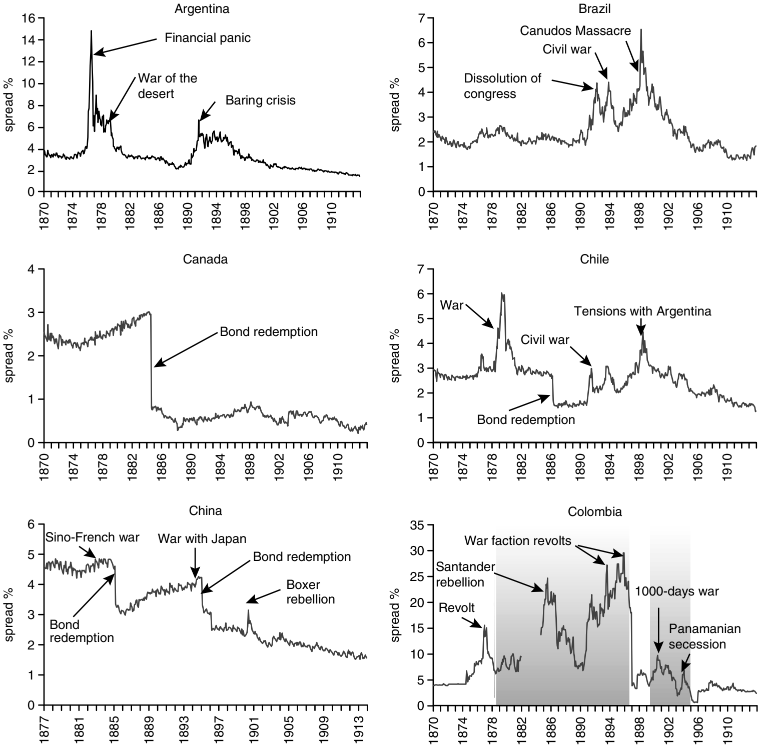


Figure 2.3. Bond spreads, emerging market countries, 1870–1913

Note: Default periods are shaded.

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countries (for a discussion of this capital flight, see, for example, Clemens and Williamson, 2004). Flandreau and Zumer (2004) attribute this decline in spreads to economic growth in borrowing countries. While this may account for the decline in the average spread up to about 1900, much of the decline in the first decade of the twentieth century is due to increasing interest rates on British Consols.

[12] Note also that there are discontinuous jumps when bonds approach maturity, because the yield calculation assumes that the bonds are perpetuities.

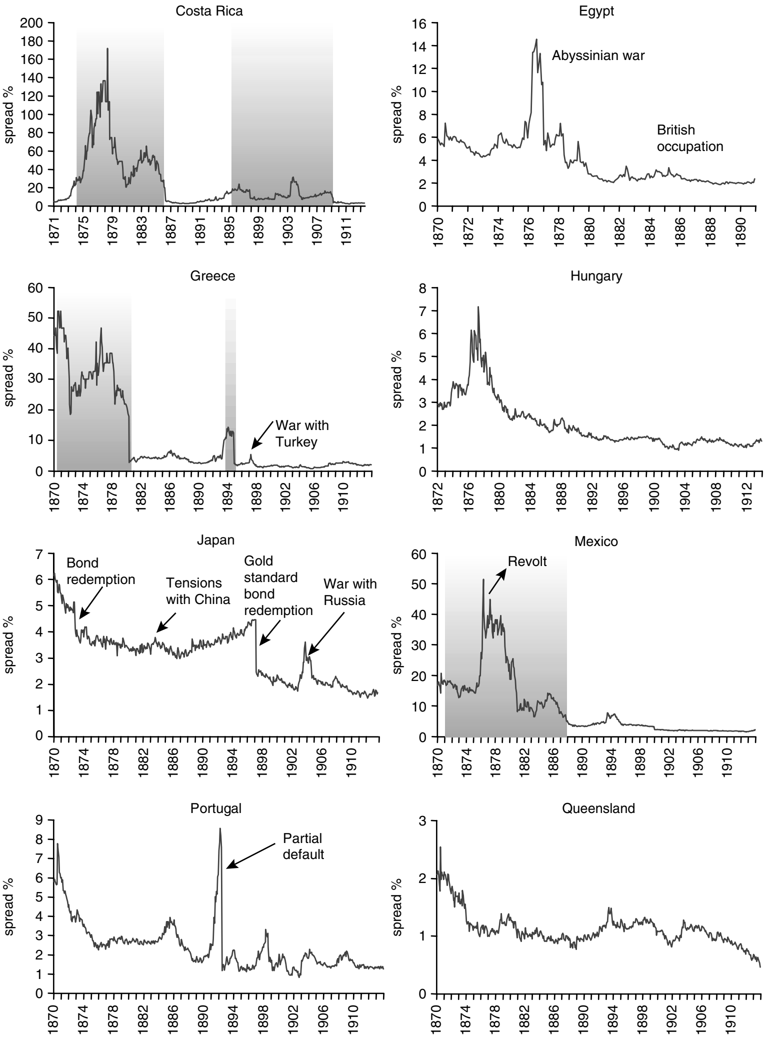

Figure 2.3. (*Continued*)

There were two major clusters of wars and revolts, one in the late 1870s and the other in the early 1890s. In the 1870s, several countries were involved in, or affected by, wars: Egypt, Greece, Hungary, Russia, and Turkey in Europe; and Argentina, Chile, Colombia, and Mexico in Latin America. The wars of the 1890s affected Brazil, Chile, and

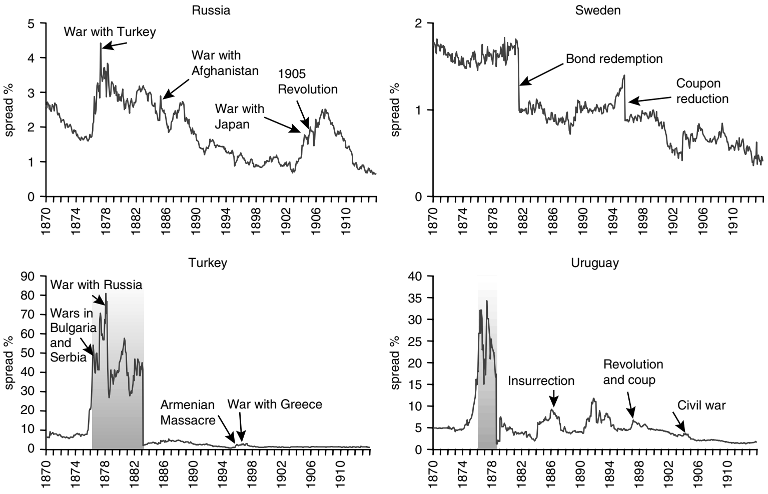

Figure 2.3. (*Continued*)

Colombia in Latin America, and China and Japan in Asia. The war between Russia and Japan in 1904–5 also had an important impact on those two countries.

In the modern sample, spreads are much higher than in the historical sample (Figure 2.4). Moreover, two major "spikes" in spreads are common to all countries in the sample, in late 1994 to early 1995 (the Mexican crisis) and August 1998 (the Russian crisis), and a smaller but similarly common spike in mid-1997 (the Asian crisis). Unlike in the past, there are fewer country-specific deviations prior to the crisis in Argentina that began in mid-2001. Differences in sharp changes and crises in the two periods are discussed in further detail in Chapter 4, and co-movement and common crises are analyzed in Chapter 6.

2.9 An Illustration of the Data on News Reports: Argentina, 1870–1913

British investors received news regarding foreign events with minimal delay (Japan, for example, was connected to a telegraph system in 1876) and ample detail. Thus, British investors were familiar with the benefits and drawbacks of the Japanese Meiji Constitution, adopted after 9 years of deliberations in 1889. They were also well aware of the

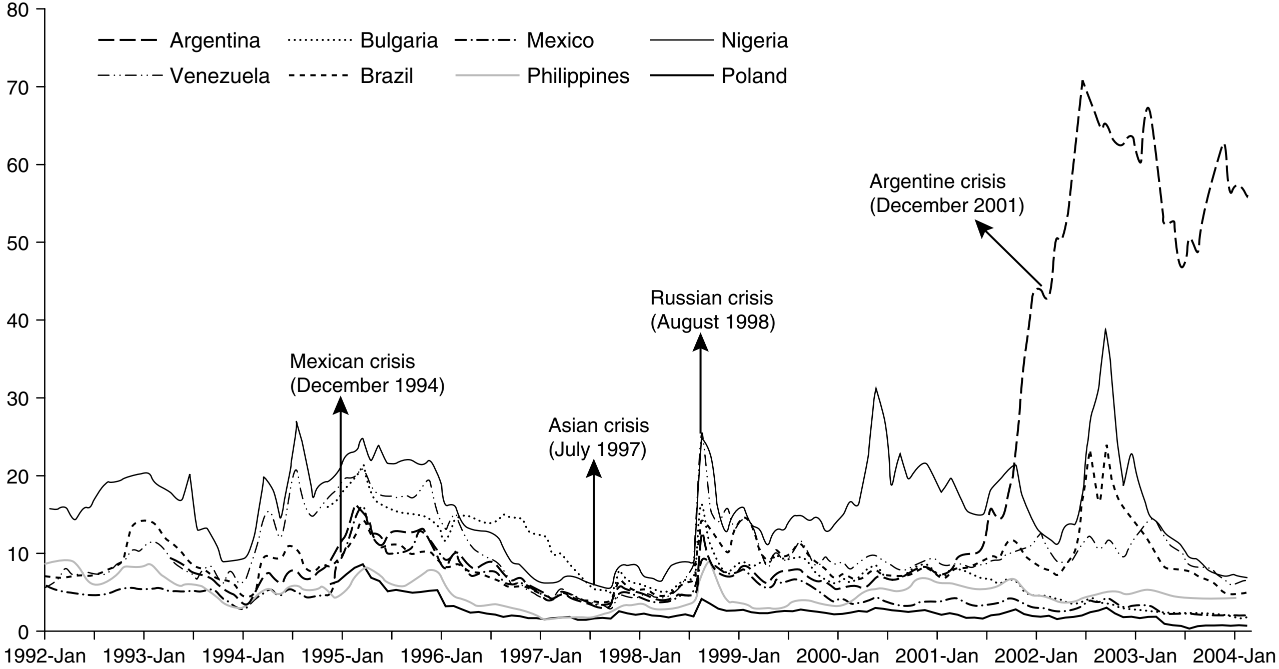

Figure 2.4. Emerging market countries' spreads, 1994–2004

Source: J. P. Morgan

Boxer Rebellion in China (1900), which was covered in dozens of news articles, the banking crisis in Portugal (early 1890s), the wars in the Balkans, and almost every other event of economic or political significance.

British investors were well aware of events in the emerging markets of the day.[13] As an example, we illustrate the information available to British investors regarding Argentina, based on the *London Times'* news articles (Table 2.7). Nearly 2,500 articles about Argentina appeared in the British press in 1870–1913, an average of 56 articles per year.

Figure 2.5 provides a first look at the kind of news that may have had an impact on the perception of Argentina by British investors. The figure portrays the spread on Argentine bonds (the interest rate differential between Argentina and Britain), together with the fraction of news reports related to wars and instability, and news reports classified as good economic news.

The impression conveyed by Figure 2.5 is that there is a relationship between Argentina's cost of capital and these two categories of news items. In the 1870s, news reports on wars and instability (the war with Paraguay in 1870, the Mitre rebellion in 1874, and Roca's War of the Desert in 1879–80) are prevalent and spreads are high. In the 1880s, when stability is restored, spreads decline. Instability, partially related to the economic crisis that led to the Baring crisis, reappears in the early 1890s, resulting in higher spreads. From 1895 onward, the share of good economic news increases dramatically reaching 90 percent of all news and spreads decline to their lowest levels ever. Naturally, the figure provides only a rough impression. In the next chapters, we investigate the relationship between news and spreads more rigorously, through in-depth case studies and systematic statistical analysis, controlling for other factors.

Annex 2.1 Calculation of Historical Yields and Spreads

Participants in modern bond markets are accustomed to evaluate bonds on the basis of their yields, which are now conveniently reported in the financial press. However, this was not always the case.

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[13] A detailed description of the rich information available to British investors about China and Japan is provided in Sussman and Yafeh (1999a; 2000).

Table 2.7. News Reports about Argentina in the *London Times*

Year	Wars and instability	Bad economic news	Good economic news	Reforms	Foreign relations	Politics	Misc.	Total
1870	1	0	4	1	3	0	6	15
1871	0	0	13	1	3	0	23	40
1872	5	0	1	0	7	0	6	19
1873	6	0	0	0	0	1	1	8
1874	26	3	2	4	1	6	2	43
1875	8	2	6	0	5	3	6	30
1876	4	4	5	0	3	1	5	22
1877	5	0	3	0	0	3	1	12
1878	2	1	1	0	5	2	1	12
1879	3	2	7	1	10	3	5	30
1880	18	3	13	3	5	19	9	67
1881	1	0	6	4	13	1	4	29
1882	0	0	5	0	11	4	2	22
1883	0	0	3	2	5	2	2	14
1884	0	1	2	0	3	1	4	11
1885	0	3	4	4	1	2	4	17
1886	0	0	0	0	0	3	1	4
1887	0	1	1	1	0	0	1	4
1888	0	0	5	1	0	0	3	9
1889	0	3	10	2	0	4	1	20
1890	17	18	24	13	2	12	6	84
1891	18	27	54	24	1	31	10	160
1892	21	3	24	5	5	33	5	90
1893	16	1	18	5	5	21	4	68
1894	2	18	16	8	1	3	3	50
1895	1	2	17	5	0	8	2	33
1896	0	1	15	1	0	3	1	21
1897	0	6	24	3	0	3	2	38
1898	0	0	8	1	4	4	0	17
1899	0	7	19	16	2	0	0	44
1900	4	11	25	0	9	2	7	56
1901	2	2	39	4	4	5	4	60
1902	5	14	27	3	13	1	9	72
1903	0	4	12	1	4	3	2	26
1904	0	0	8	0	0	5	0	13
1905	8	0	17	0	0	0	3	28
1906	0	14	60	7	3	6	3	93
1907	8	7	80	1	10	7	4	116
1908	3	6	102	3	1	4	8	127
1909	4	9	115	14	21	8	6	176
1910	5	11	112	0	25	14	24	185
1911	3	15	118	2	16	3	7	162
1912	1	29	132	14	10	4	8	196
1913	0	14	87	7	9	8	12	137

Note: Some news items are classified as belonging to more than one category. The sum of the first seven columns may therefore be in excess of the totals reported in the last column.

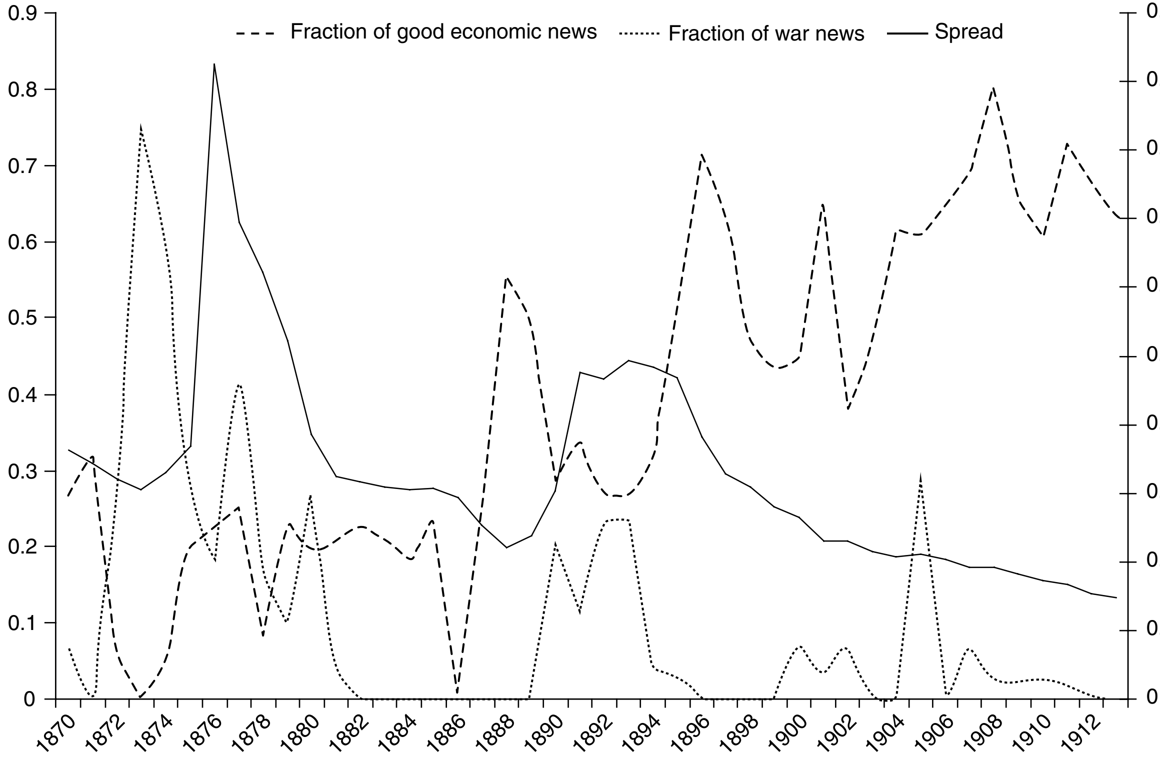

Figure 2.5. Spreads and the percentage of news reports on wars and instability and good economic news: Argentina, 1870–1913

The formulae for exact calculations of yields on bonds with various clauses were only developed in the middle of the twentieth century, and their application often requires the use of calculators and computers. Instead, investors in 1870–1913 relied on approximations, tending to regard bonds as perpetuities (with no redemption date), and focusing on bond prices. Yields were derived by dividing the value of the coupon by the market price of the bond. This approximation was reasonable, given that bonds were usually of very long maturity, and probably seemed natural to the large proportion of investors who were *rentiers* living off the fixed income provided by the bonds. Of course, over time, investors realized that more sophisticated formulae should be applied, and some business manuals provided tables that helped investors calculate more accurately the yield on the bonds they purchased. Nevertheless, for the most part, the contemporary financial and general press continued to report only bond prices, and not their yields.

With the development of the London bond market, and the entrance of new borrowers, new financial instruments were introduced. Some new borrowing countries and railway companies began issuing bonds with maturities of 10 to 25 years, and bonds with lottery clauses. Bonds with lottery clauses were redeemed periodically (usually in equal amounts each period) by holding a lottery and withdrawing at par the bonds whose numbers came up in the lottery. This innovation made it more difficult to compute the yields and to compare yields across bonds because of constantly varying durations (Box 2.1).

In our calculations we use the simplest yield calculation, the ratio of the coupon to the price, as if all bonds were perpetuities. (As mentioned above, we note, however, instances in which the coupons were changed or not paid.) In doing so, we attempt to emulate the way contemporary investors regarded the bonds they invested in, even if today's investors would apply a different formula for the valuation of these assets.[14] Figure 2.6 presents three alternative calculations for the yield of the 1873

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[14] The lottery scheme acted as a price support to bonds trading below par, because there was always a positive probability of immediate redemption at par and an immediate capital gain, a probability that increased rapidly as the announced maturity date approached. Therefore, yields calculated according to the consol formula would understate the true yield (and spread) making the bonds appear less risky than they were. For bonds trading above par, the opposite was true. As a result, perceived differences between good and bad borrowers were seemingly compressed. This may have been one factor underlying the shift in the 1890s by creditworthy borrowers toward issuing perpetuities, which investors could correctly price to reflect their true value.

Box 2.1 NINETEENTH CENTURY DIFFICULTIES IN CALCULATING YIELDS ON LOTTERY BONDS

Consider a bond with a maturity of 10 years with annual drawing of 10 percent of the original subscription that pays an annual fixed coupon. The holder of such a bond bought a stream of uncertain returns: a 1-year bond with probability of 0.1, a 2-year bond with probability 0.1, and so on (the expected maturity in this example is 5 years). Owing to the emergence of such bonds, the *IMM* started reporting yields in the late 1870s. However it warned its readers:

> NOTICE TO CORRESPONDENTS.
> With respect to the additional column—'Last two dividends yield to investor at the latest price'—introduced into this month's lists of stocks and shares, a few words of explanation are desirable. It is proposed to reproduce it from month to month, as a guide to investors; but it should be borne in mind that the yield to the buyer has been calculated without making any allowance for accrued dividend, which in the majority of instances will make the actual return rather in excess of the percentages printed, neither has any allowance been made for the value of redemption drawings, which form an additional item of prospective profit to investors in many foreign stocks, railway bonds (*IMM* June, 1876, p. 192.)

In November 1881, the *IMM* apparently responded to numerous queries by confused investors who were unable to calculate the yield of lottery bonds. In particular, the *IMM* cites cases of bonds trading above par that are therefore expected to suffer capital losses when redeemed. The following paragraph was aimed to assist readers:

> Lastly, there is the action of the haft-yearly or yearly drawings for redemption to be explained. In 1871, when the Argentine Public Works loan was brought out, its amount stood at 6,122,400*l*., and twenty one half-yearly drawings, at 2 per cent per annum accumulating, has reduced the amount outstanding to 3,928,000*l*. and this is to be paid off to the last bond by 1892, eleven years hence. The present price is 95 ex accrued dividend, so that a gain of 5*l*. may upon the doctrine of chances be expected to accrue in about seven years, by which date one-half the at present outstanding bonds will have been redeemed. But to calculate in this manner in respect to any loan is to assume that all future redemptions will take place in due course, an assumption by no means warranted in every case. Chili, for instance, has recently stopped all sinking funds, and various other governments are yet more seriously in default. (*IMM*, November, 1881 p. 491)

Thus, the *IMM* advised readers to calculate just the first term of future lottery, for which there is some certainty with respect to the amounts to be withdrawn. The *IMM* suggested the following method to calculate the value of a redeemable and callable loan (Ibid. p. 546.):

P—Probability of redemption as the amount redeemable divided by the amount outstanding
B—bond price ex dividend
I—coupon interest rate
Y—yield of the bond = I/B
R—Adjustment for redemption = P*(100 − B)
TY—Total yield = Y + R

This method, of course, does not correspond to what modern finance would advise; for example, it does not take into account the probability of early redemption in any year beyond the first. Despite providing this formula to its readers, the *IMM* thus continued to publish the unadjusted yields (coupon over price). Indeed, we follow this practice and use the unadjusted yields, though we checked that our main results hold when using yields corrected for the lottery feature based on modern-day methods.

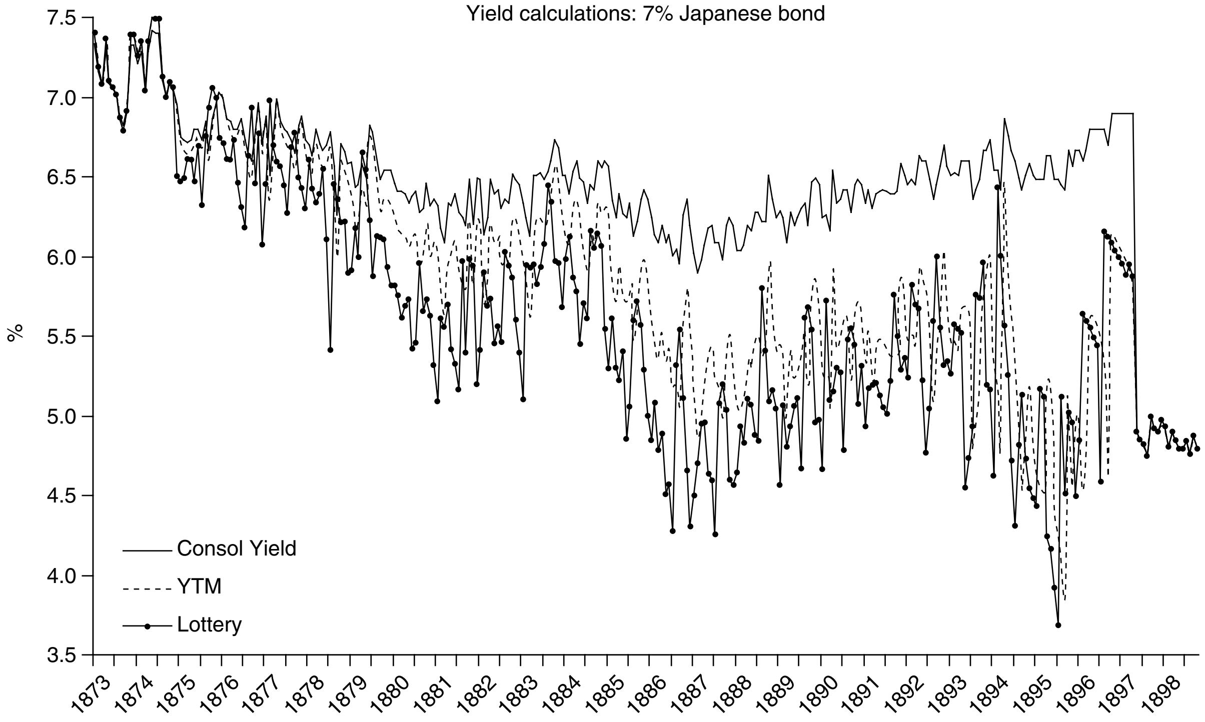

Figure 2.6. Alternative yield calculations

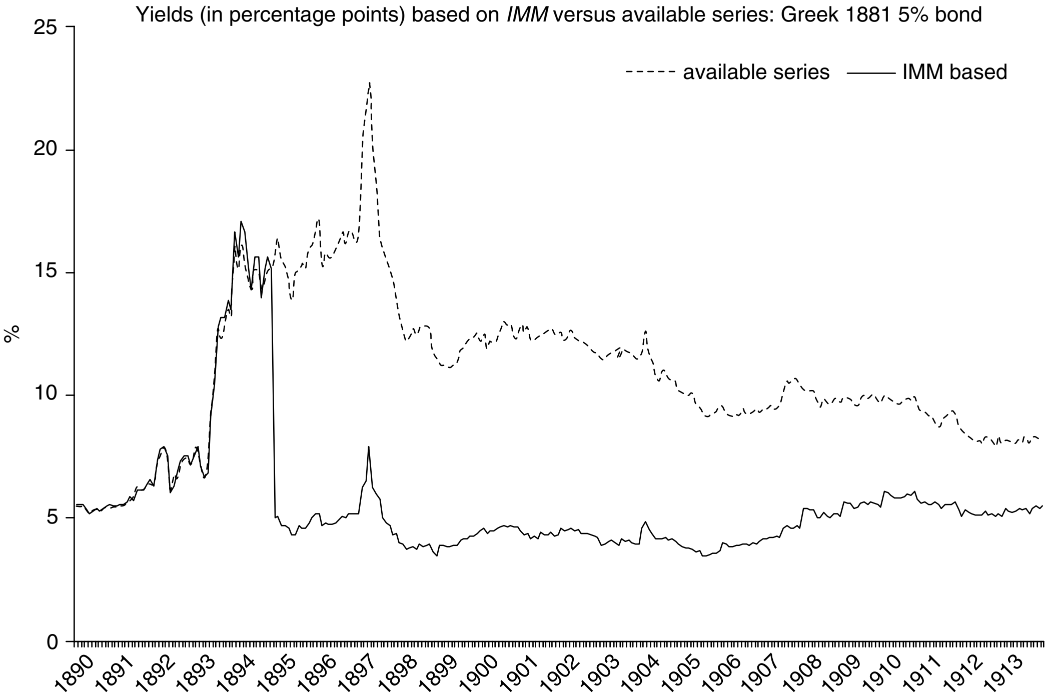

Figure 2.7. Proper calculation of bond yields when coupons are modified

Japanese 7 percent bond. The trends are similar, although the calculations diverge as the bond approaches maturity in 1897.

One shortcoming of the yields and bonds we calculate should be noted: none of them takes into account the nature of the securities provided by the borrowing country; pricing them was a difficult task (involving estimating their true value, the likelihood that investors will actually be able to possess them, and so on), and these features were therefore not (explicitly) incorporated in the bond price data in contemporary sources.

Avoiding Common Pitfalls in the Calculation of Historical Spreads

A common error by modern scholars seeking to calculate historical yields is the following: Most bonds had an announced coupon, usually referred to in the bond's name (e.g., "Argentina 6 percent," or "Mexico 5 percent"). When coupons are not paid out for some time (during partial defaults) yields calculated assuming regular coupon payments are often largely overstated. Furthermore, coupons were often changed following defaults, again rendering the simple official coupon divided by price calculation incorrect. Our hand-collected data procedure avoids this pitfall. The *IMM* provides all the details and covenants of the bond, as well as information on actual coupon values and payments. The calculation we use is thus based on all the available information and generates the most accurate bond yield data currently available. Figure 2.7 compares our own yield series for the 5 percent bond issues in 1881 by Greece with a series used by modern scholars that computes the yield as the original coupon price divided by the bond price, ignoring the change in coupon. Our series, based on the *IMM*, uses the actual coupon, which was reduced to 1.5 percent in December 1894 (following Greece's default in 1892) and subsequently increased annually in small increments to 3.2 percent in 1913.

3

The Determinants of the Cost of Capital: Case Study Evidence

3.1 Introduction

In this chapter and the following ones, Chapters 4 and 5, we examine the determinants of the cost of borrowing—a key factor in economic development—both over time and across countries. What makes it possible for some countries to borrow more cheaply than others do? A variety of factors might affect a country's perception in the eyes of (foreign) investors. In what follows, we focus on four main categories:

(1) Sound macroeconomic policies.

(2) Narrowly defined institutions embedding commitment to monetary discipline, such as the gold standard in the past (Bordo and Rockoff, 1996; Obstfeld and Taylor, 2003b), or currency boards today may also affect the perceived creditworthiness of borrowing countries.

(3) Institutions protecting property rights constitute the third category of factors we examine. Following North (1990) and North and Weingast (1989), investor-friendly institutions protecting property rights, and reforms designed to establish such institutions are a possible explanation for variations in the cost of debt of borrowing countries. According to this school of thought, enforcement of property rights lowers the cost of capital (of both governments and private borrowers), can explain the development of financial markets in England and, more generally, the rise of the British Empire to supremacy

in Europe and the whole world. A large, more recent and influential literature in financial economics has followed this approach, and suggested that the protection of property rights is the most important determinant of financial market development and of the ability of firms to raise external finance around the world (see La Porta et al., 2000, for a survey of this literature.) Related studies by other authors, such as Levine and Zervos (1998), find a link between financial development and economic growth. Even institutions that do not affect the development of financial markets directly may have an impact on the cost of borrowing if they are expected to bring about growth or otherwise improve future economic performance.[1]

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(4) Peace and stability in a country's domestic and international political environment is likely to affect the cost of borrowing as well. Riots and wars disrupt economic activity and discourage investment; government changes attained through violence may also result in reduced willingness to honor existing debt obligations.

The main conclusion that emerges from Chapters 3 through 5 is that strong macroeconomic fundamentals and, perhaps even more important, absence of violence (internally and vis à vis other countries) are crucial prerequisites for countries seeking to borrow at reasonable cost. By contrast, investor-friendly institutional changes rarely elicit an *immediate* response by investors and financial markets. Meiji Japan, for example, introduced a beautifully crafted constitution, yet this fundamental change in the country's polity apparently failed to impress investors. One interpretation of this finding is that *de facto* rather than *de jure* institutions matter: it takes time to establish the credibility of a new constitution and to verify that the lofty ideas embodied in it are indeed going to be implemented in practice.

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[1] A recent wave of studies has empirically analyzed the relationship between indicators of institutional quality and a host of economic outcomes. See Knack and Keefer (1995), Mauro (1995), Kaufmann et al. (1999) Acemoglu, Johnson, and Robinson (2001), Acemoglu and Johnson (2005a) and (2005b), and Acemoglu, Johnson, and Robinson (2005) on institutions, investment, economic development, and growth; Bénassy-Quéré, Coupet, and Mayer (2005) and Wei (2000) discuss institutions and foreign direct investment; Alfaro et al. (2004) focus on capital flows, and Faria and Mauro (2004) and Wei and Wu (2002) on their composition; Mauro (1998) studies the relation between institutions and the composition of government expenditure; economic and political instability is discussed in Acemoglu and Johnson (2003); Acemoglu, Johnson, and Robinson (2004) and Johnson et al. (2000) relate institutions to the frequency and severity of crises.

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AQ: Acemoglu and Johnson (2005a,b) not provided in reference list. Please provide

Furthermore, even with the most elaborate property rights protection clauses, a constitution is unlikely to convince investors that their money is well protected, unless wars and other episodes of violence are credibly resolved. Another possible factor (which does not apply to the case of Japan) underlying the absence of an immediate market response to institutional changes is that these often lead to domestic instability, at least in the short run; in some cases this happens because vested interests are adversely affected.

In contrast with institutional reforms, international wars and episodes of domestic turmoil seem to have an immediate and substantial impact on the ability of countries to access international capital markets. Blood flowing in the streets has a far more immediate and substantial impact on a country's ability to borrow than institutional reforms. Of course, this could still be broadly interpreted as evidence that property rights and the macroeconomic environment are never secure in periods of violence and extreme instability.

Our analysis of these questions proceeds in three stages. This chapter is focused primarily on one historical case study: Japan in the Meiji Period (1868–1912), an era containing some of the most dramatic institutional and economic changes in modern history (see Sussman and Yafeh, 2000). Not only can this period be used to illustrate the response of investors and financial markets to the introduction of new, investor-friendly institutions; it also provides interesting historical evidence on the importance of the gold standard and of the impact of wars. When discussing the risk premium on Japanese debt, we make some brief comparisons with Russia, a country that adopted the gold standard in the same year as Japan (1897) and was its military rival in the most important war of the period.

After discussing the Japanese case study, toward the end of the chapter, we depart briefly from our focus on the nineteenth century and move back in history 200 years to England following the Glorious Revolution (1688). This digression is illuminating, because it follows the highly influential work by Nobel Laureate Douglass C. North with Barry Weingast (1989). They argue that England in the late seventeenth and early eighteenth century is a good example of investor-friendly institutional changes (upholding property rights) that were adequately rewarded by financial markets; we find that the evidence fails to support this argument.

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The impressions from the historical episodes discussed in this chapter serve as a preamble for the more systematic analysis of the relative importance of macroeconomic factors, institutions, and political stability, which are presented in Chapters 4 and 5. The main conclusions that we draw in this chapter are reinforced in the more rigorous analysis of the following chapters.

3.2 Wars, Reforms, and Cost of Capital: Evidence from Meiji Japan

In this case study we attempt to assess the impact of major reforms on the risk premium associated with Japanese Government debt traded in London. We find that most reforms, including the establishment of a central bank and the promulgation of a modern constitution, did little, at least in the short run, to affect the way Japan was perceived by British investors. The only institutional reform that clearly led to an immediate improvement in Japan's "credit rating" was the adoption of the gold standard, discussed below. In addition, Japan's war with Russia (1904–5) and its successful outcome had a far more visible impact on spreads than most institutional reforms.

Figure 3.1 reports the spread (yield difference relative to British Consols) on Japanese and Russian government debt (denominated in pounds sterling and traded in London) from 1870 to 1913. While yields on Japanese bonds fell in the 1870s, they increased moderately from the early 1880s until the mid-1890s, even though the 1880s witnessed the establishment of some of Japan's most important institutions, including the Bank of Japan, a modern system of government, and an elected parliament. The culmination of these institutional changes was the promulgation of the Meiji Constitution in 1889, which explicitly guaranteed the protection of property rights and the rule of law. Nevertheless, no effect is discernible on market perceptions of Japan's country risk.

Similarly, the volume of foreign borrowing and the composition of the Japanese government debt on the London market (described in further detail in Sussman and Yafeh, 2000) failed to react to Japan's institutional reforms. With the exception of two debt issues floated in London during the early 1870s, the period of institutional reform was characterized by net capital outflows, largely accounted for by payments to service and retire foreign debt. This outflow of capital is mirrored in the steady decline in the share of foreign debt in total debt until 1897. The trends of both the share of foreign debt and capital

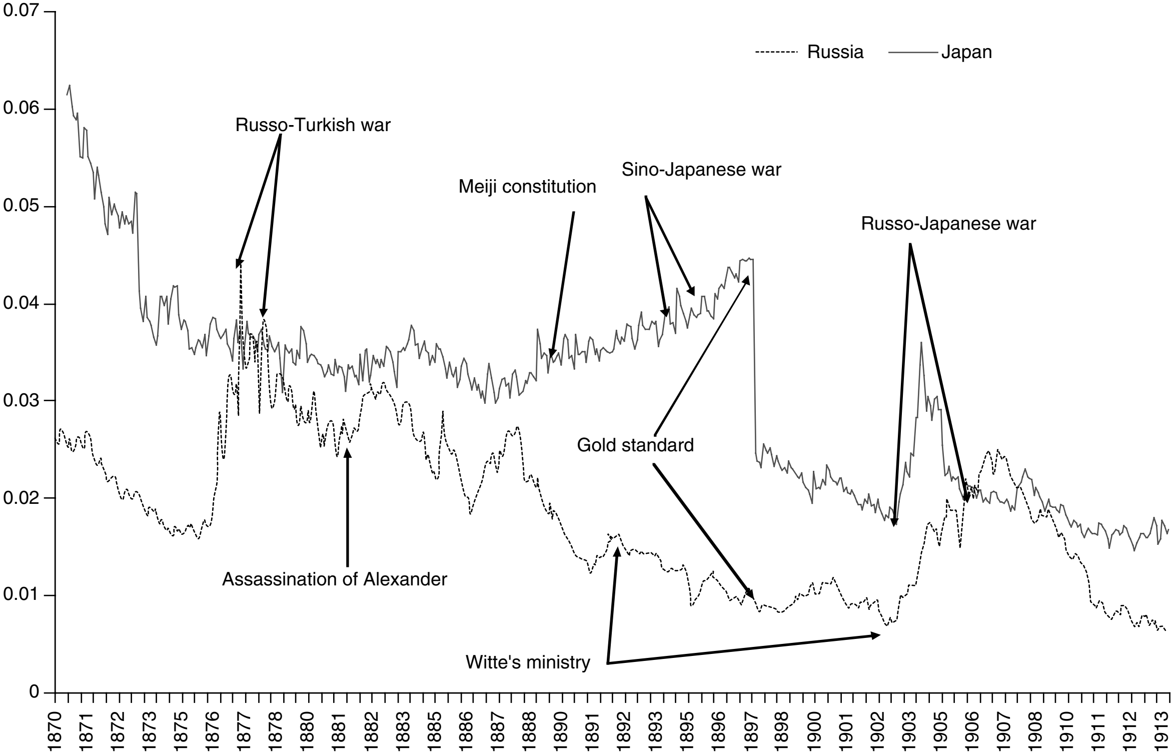

Figure 3.1. Japanese and Russian spreads, 1870–1913

flows were reversed following the adoption of the gold standard. In particular, Japan was able to raise large amounts of capital from abroad to finance the war with Russia; indeed, Japan's foreign debt reached a peak at this time (see below). Perhaps one should not be surprised that British investors were not impressed by the establishment of the Bank of Japan, because this followed several unsuccessful attempts to reform the banking system in the late 1870s. However, the lack of impact of the Meiji Constitution of February 1889 is more intriguing. A large number of articles in the *London Times* described the Meiji Constitution; thus, the absence of a strong market reaction to its promulgation could not have been because investors were unaware of the institutional changes taking place in Japan. The Constitution was described favorably, as a major step forward, granting Japanese citizens substantial liberties and, more importantly, establishing an independent judicial system, a feature that was highly regarded by the *Times*. Nevertheless, British commentators did not seem convinced that the Constitution would prove a major turning point, and investors did not modify their perception of the Japanese government following its promulgation.

In contrast with the Meiji Constitution and other reforms of the Meiji period, the adoption of the gold standard in 1897 had a dramatic effect on Japan's creditworthiness. In its aftermath, the yield differential between Japanese and British bonds declined from approximately 4 percentage points to a 2 percent premium. The observed decline coincided with the early and complete withdrawal of the 7 percent bonds (issued in 1873), and the issuance of new, 5 percent bonds.[2] An additional indication of improved confidence on the part of investors is that the newly issued bonds were of much longer maturity—over 50 years (with restrictions on early redemption), compared to 25 years on previous issues. The adoption of the gold standard was also accompanied by an increase in the volume of debt issued by the Japanese government in London. The share of Japanese foreign debt in total Japanese debt rose from the low single digits prior to the adoption of the gold standard to around 20 percent by the turn of the century. Unlike the establishment of a new state structure, the gold standard was apparently interpreted as evidence of a significant improvement in Japan's creditworthiness.

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[2] It seems reasonable to argue that if the Japanese government had been able to reduce its borrowing costs by refinancing its debt earlier, it would have done so even prior to the adoption of the gold standard.

Judging by reports in the *Economist*, the Japanese government was well aware of the impact of the gold standard on its borrowing ability:

> Japan is very much in earnest over the adoption of the gold standard. The principal motive for this change, however, is . . . because the (Japanese) government find(s) it necessary to borrow money abroad, and the opinion prevails that Japan as a gold standard country would command higher credit, and be able to borrow on more favourable terms in foreign countries than she would as a silver-standard country. There is also an idea that as Japan now considers that she has the right to be regarded as a first-class Power, she ought to adopt for her currency the same standard of value as other first-class Powers. (April 24, 1897, p. 603)

It is interesting to compare the impact of the gold standard on Japan with its impact on Russia.[3] Although neither country had defaulted prior to going on gold, Russia was a familiar and well-established European empire, whereas Japan was a new emerging Asian power. Conveniently for our purposes of comparison, both countries adopted the gold standard in the same year, 1897. As shown in Figure 3.1, the gold standard did not affect the two countries in the same way. Whereas 1897 represented a clear break from the past for Japan, this was not the case for Russia, where the gold standard was adopted at a time when spreads had already reached their historical lows. In fact, Russian spreads registered a continuous decline after the end of a period of instability (the war with the Ottoman Empire in 1877–8, the assassination of the Czar Alexander II in 1881 and the wars near the Asian borders and Afghanistan in 1885). Spreads continued falling while Sergei Witte, the finance minister, held the reins of the Russian economy, running a tight fiscal policy and promoting industrialization. This decline ceased, however, around the time of the adoption of the gold standard.[4]

The discussion of the gold standard in Japan and Russia is closely related to an ongoing debate in the literature about the impact of the gold standard on the ability of countries to raise foreign debt. Several scholars, notably Bordo and Rockoff (1996) and Obstfeld and Taylor (2003b), argue that the gold standard was important in determining countries' ability to borrow. Whereas a constitution may serve as a commitment mechanism to respect the rights of investors, the gold standard, they argue, served as a commitment to bristled sound macroeconomic policies in the pre-1914 period. Flandreau and Zumer (2004)

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[3] The case of Japan is analyzed in detail in Sussman and Yafeh (2000).

[4] Gregory (1979) suggests that the gold standard improved Russia's ability to borrow. However, data on debt volumes (drawn from the *IMM*) remain broadly stable until the early 1900s.

disagree, and view the adoption of the gold standard as the result, rather than the cause, of other economic changes. Ferguson and Schularik (2004) argue that the evidence supporting the importance of the gold standard is misleading; in fact, they view affiliation with the British Empire as the crucial factor, though it often coincided with the gold standard.

The evidence discussed here (and in the next chapter) on the impact of the gold standard is mixed. In some cases, the introduction of the gold standard or other institutions buttressing the monetary regime seems to have elicited an immediate response on the part of financial markets. The introduction, in 1897, of the gold standard in Japan, still a relatively untested borrower in the eyes of British investors resulted in a sizable and immediate decline in borrowing costs. (As shown in Chapter 4, the establishment, exactly 100 years later, of a currency board in Bulgaria, a transition economy, had similar effects.) Our interpretation is that investors immediately rewarded Japan and Bulgaria because they viewed the introduction of the gold standard and the currency board, respectively, as focal points of reform packages committing these relatively untested countries to a stable macroeconomic environment. In contrast, the adoption of the gold standard (also in 1897) failed to convey much new information to investors in the case of Russia, a more established borrower that investors were already familiar with.

Moving from monetary policy to military conflicts, the war between Japan and Russia in 1904–5 had a major impact on the spreads of both countries. Before the war, Japan was perceived as the underdog, and yields on Japanese government bonds rose dramatically, reaching the highest level of the decade in early 1904. Subsequent Japanese victories over Russia led to a decline in the perceived risk of Japanese bonds, and Japanese spreads returned to their prewar levels in 1905. Interestingly, at the beginning of the war, spreads did not rise as sharply in Russia as they did in Japan. However, Russia's spreads continued to rise through the war, as the prospect of a Japanese victory looked increasingly plausible. The Revolution of 1905 and the subsequent turmoil maintained Russian spreads high for another couple of years after the war; spreads declined gradually only as the internal situation stabilized.

The need to finance the war with Russia prompted Japan to increase massively its borrowing, especially its foreign borrowing. It is quite likely that Japan's adherence to the gold standard was an important factor making it possible for Japan to raise such borrowing abroad at reasonable rates. As a percent of government revenues, total debt increased from about 200 percent around 1900 to over 400 percent in 1905. Most of the new debt was issued abroad: foreign debt accounted for about half of the total outstanding Japanese debt after the end of the war with Russia, compared with one-fifth around 1900. Japan thus became one of the largest borrowers on the London market and was now able to issue in other foreign bond markets as well. Following Japan's victory, spreads continued declining, albeit slowly, until about 1910.

The fact that military victory over Russia improved Japan's credit rating is explicitly stated in many news articles. For example, after 1905 there was concern in Britain over the burden of Japan's war expenditures. The *Economist*, however, advised its readers not to worry because "*the sagacity with which the finances of Japan have been administered during a period of stress and anxiety is a good augury* ..." (23 February 1905, p. 2072). A later *Economist* article, titled "*Japan as a Borrower*," explained the "*phenomenal success*" of Japan's loan operations as "*due about equally to the enhanced reputation of Japan by reason of her military and naval exploits, and the skillful manner in which her loan flotations ha[d] been conducted* ..." (20 July 1907, p. 1212). It seems that the reputation acquired during the successful war with Russia made it possible in later years for Japan to withstand investors' concerns (expressed in many news articles) regarding its increasing fiscal deficit. The London market for sovereign debt was much more interested in, and impressed by, the outcome of the war against Russia than by the fundamental institutional reforms in the decades prior to the war.

3.3 Digression: Evidence from Britain after the Glorious Revolution

The case of Britain after the Glorious Revolution has famously been cited as evidence of a link between institutional changes and the cost of debt. In a seminal contribution, North and Weingast (1989) argue that the institutional changes of the late seventeenth century, following the Glorious Revolution of 1688, made the British government and Crown credibly committed to respect the property rights of the Kingdom's citizens. This set of institutional changes is purported to have resulted in a substantial fall in the cost of borrowing for the British government.

In Figure 3.2, we contrast this view of the world with three measures of the interest rate differential (or contemporary spread) between

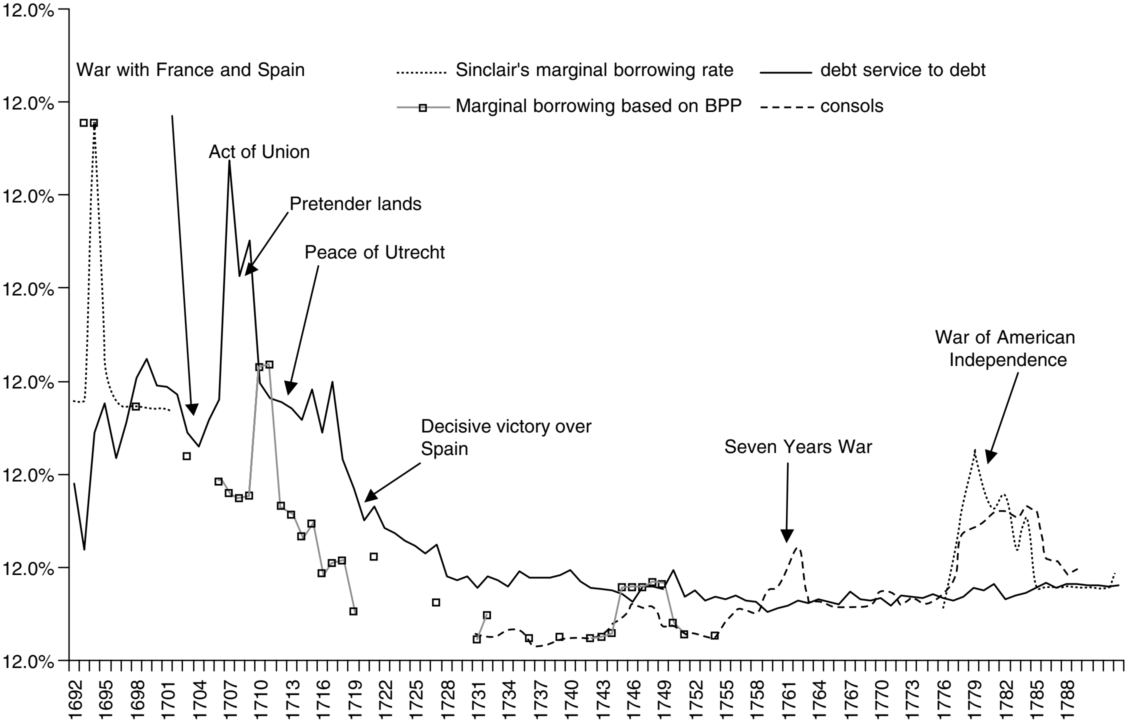


Figure 3.2. Interest rate differential: britain versus the Province of Holland, 1692–1795

British government debt and debt issued by the Province of Holland, the world's main financial center in the seventeenth and early eighteenth centuries. One measure is based on the ratio of debt service to total debt, drawn from Mitchell's International Historical Statistics (Europe); another on Sinclair's (1803) marginal interest rate; the third is based on annuity prices between 1731 and 1753 and daily market Consol yields thereafter. The figure shows that interest rates remained relatively high in the decades following the Revolution, with considerable fluctuations in response to wars and instability. Indeed, interest rates in Britain were substantially higher than in Holland until approximately 1730, about four decades after the Glorious Revolution.

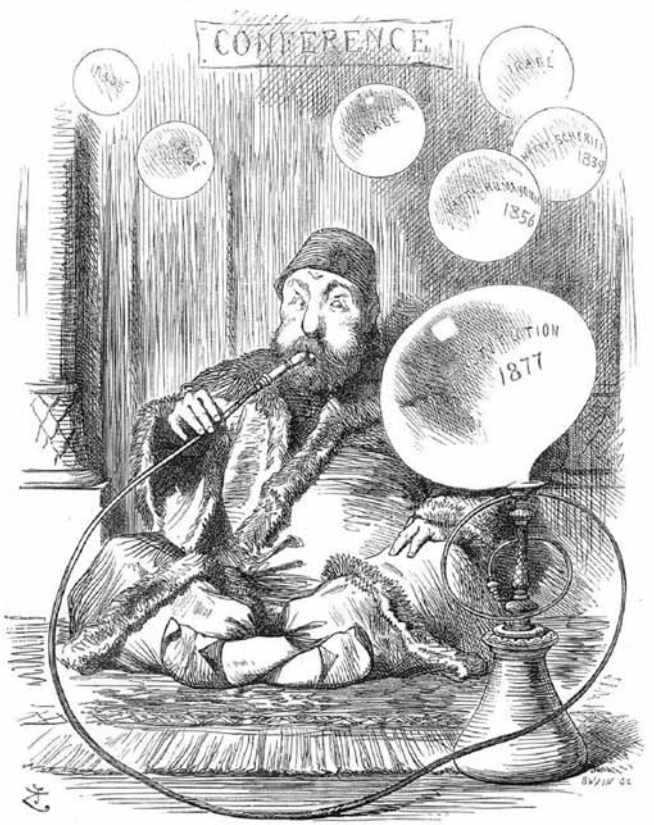
Much like what we observe for Meiji Japan, turning points in the UK–Holland interest differential series closely correspond to outbreaks and conclusions of major wars. For example, interest rates rose substantially during the War of the Spanish Succession (1701–13, against France and Spain, and ending with the peace of Utrecht). Spreads declined following the Act of Union between England and Scotland. A small increase occurred when the Pretender (claimant to the British throne) landed in Scotland. In 1715, Britain faced a Jacobite rebellion, and, for a short period, interest rates rose again. In 1717, Britain was again at war with Spain (the War of the Quadruple Alliance, 1717–20), and interest rates increased—a trend that was reversed following Britain's decisive victories in 1718, when the Spanish fleet was destroyed. A similar pattern is observed (using Sinclair's interest rate series and the Consol rates) for the second half of the eighteenth century. The interest rate differential between Britain and Holland increased during the Seven Years War, and even more sharply during the American War of Independence.

In sum, evidence from Britain in the seventeenth and eighteenth centuries (discussed in far more detail in Sussman and Yafeh, 2004) indicates that interest rates remained high and fluctuated considerably for a long period after the completion of the institutional changes of the seventeenth century. Only after the establishment of peace both domestically and internationally did rates fall durably to a lower level. We conclude that even some of the most dramatic institutional changes in history did not lead to an immediate response in financial markets. This theme will be corroborated in subsequent chapters.

3.4 Concluding Remarks

The main conclusion that emerges from the historical case studies presented in this chapter is that financial markets do not seem to reward countries for institutional reforms in the short run. This conclusion is illustrated in an 1877 caricature, deriding the Ottoman

PUNCH, OR THE LONDON CHARIVARI.—January 6, 1877.



ONE BUBBLE MORE!!

Empire's attempts to introduce constitutional reforms as yet another institutional "bubble," merely designed to attract investors. Clearly, investors would carefully observe whether the constitution would be respected over the following years, before gradually rewarding the country with lower spreads.

While there is little doubt that institutional reforms can be beneficial for long-run growth, the mechanism through which they make a difference does not seem to be an immediate reduction in the cost of capital. In a few cases, fundamental monetary reforms can become focal points of investors' attention, though these seem to constitute exceptions. In contrast, financial markets do respond immediately to major wars, which of course could still be interpreted as a fundamental threat to property rights and investor protection, or, in the case of Japan's victory over Russia, as credible evidence of the country's institutional and economic strength. In the following chapters, we support these conclusions with evidence that is more systematic.

4

News and Sharp Changes in Bond Spreads

4.1 Introduction: The Impact of Events on Bond Spreads

In this chapter, we seek to gauge the extent to which various types of political and economic news affect bond spreads in the historical and modern sample periods. We systematically relate bond spreads to news items, conducting several different types of exercises. Our analysis focuses on the relation between sharp changes (defined in a number of ways) in the spread series and news items belonging to various categories (as described in Chapter 2: instability and wars; economics—separating good/neutral from bad; domestic politics; foreign relations; and reforms and institutions).[1] In the first exercise, we identify the dates when the sharpest changes in the spreads took place, and then consider whether the news reported on those days were significant. In the second exercise, we identify the dates when major news were reported in the newspapers, and then test whether spread changes on those dates were larger (in absolute value) than spread changes during the other months in the sample period.

This approach is similar to that taken by a number of studies that have sought to relate asset price changes to news items, and is closest to the seminal work of Cutler, Poterba, and Summers (1989), who assessed the relationship between changes in the US stock market index and publicly available news bearing on fundamental values. The results of these studies are rather mixed, and typically find that news do not explain a large portion of asset price changes. Drawing on

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[1] As mentioned in Chapter 2, the classification of news into categories requires some judgment, and we strive to be systematic and consistent.

weekly prices of British government Consols in 1900–20, Elmendorf, Hirschfeld, and Weil (1996) find that the variance of returns is higher for weeks with important news than for weeks without such news, and the probability of a very large (positive or negative) return is higher for weeks with news than for weeks without news. Nevertheless, the magnitude of these differences suggests that much of the variability in bond prices cannot be explained by news. In a study of daily stock price changes during the Asian crisis of 1997–8, Kaminsky and Schmukler (1999) find that market movements are often triggered by local and neighboring country news, especially news regarding agreements with international organizations and the views of credit rating agencies. However, several large movements seem unrelated to news, and appear instead to be driven by herd behavior. Using data on prices of closed-end country funds for 1985–94, Klibanoff, Lamont, and Witzman (1998) find that, in weeks with major news (relevant to the specific country) appearing on the front page of *The New York Times* prices react much more to fundamentals. One may interpret this finding to suggest that investors only pay attention to fundamentals when newspaper reports bring a particular country onto their "radar screens."

The mixed record of previous studies in identifying relationships between news and asset prices suggests that, in approaching our own empirical analysis, one's *ex ante* expectations should not be overly optimistic. Our main interest is in finding out—to the extent that news matter—whether country-specific news mattered more in the past than they do today, and what types of news seem to matter more.

Turning to our results, in the modern sample period we find the relationship between news and changes in bond spreads to be tenuous. Indeed, most relationships become statistically insignificant when Argentina is omitted from the sample. To the limited extent that news matter, items related to violence and unrest, and to lesser extent, bad economic news seem to play the largest role. For the historical sample, data constraints imply that while we can undertake an exercise going from large changes in spreads to news items, we cannot go from news—selected on an *ex ante* basis—to changes in spreads. This second exercise can in fact only be conducted drawing on a set of news that is known *ex post* to affect the markets. Bearing that strong caveat in mind, we find that the association between news and spread changes is more significant in the historical sample.

Perhaps less subject to caveats, the news that matter the most are related to “wars and instability,” “bad economic events,” and “foreign relations.” Thus, overall, the conclusions from the case study evidence discussed in Chapter 3 seem to hold for the analysis in this chapter as well.

4.2 Historical Sample—From Large Spread Changes to News

We begin by identifying, for each country, the 10 months with the largest absolute change and absolute percentage change in spreads;[2] and reporting, for those country/months, the main news items and number of related articles (in brackets) in the *London Times* (Table 4.1).[3]

Table 4.1 suggests that our sample can be split into countries with large basis points changes in spreads—the Latin American countries and the European lesser developed countries (with the exception of Russia)—and countries with small basis point changes in spreads—Canada and Australia, the Asian emerging markets of Japan and China, and Sweden. Generally, the large spread changes in the first group of countries are associated with wars and instability, as well as with bad economic news. There is a clustering of sharp changes around military conflicts involving the Ottoman Empire (the war in the Balkans in the late 1870s), which affect Turkey, Russia, Greece, and Hungary. Other armed conflicts such as a crisis in Egypt (late 1870s), the Chilean wars in Latin America (1879), the war between Greece and Turkey over Crete (1897), the Boxer Rebellion in China (1900) and the Japan–Russia war (1904–5) are all associated with sharp changes. In contrast with the “contagious” spread of the crises of the 1990s (see below), the major financial crisis of the 1890s (emanating from the Baring Crisis in Argentina) does not seem to have caused sharp changes elsewhere.

Table 4.1 also suggests that the immediate effect of institutional reforms on spreads appears to be very small. For most countries, we cannot identify any sharp change with an institutional change. The only

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[2] We treat separately periods of default when spread calculations are problematic. Moreover, in order to focus squarely on events exogenous to the debt market, all observations involving bond exchanges are excluded.

[3] Colombia and Costa Rica are excluded from the analysis because of very limited news coverage.

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Table 4.1. Sharp Changes in Spreads, 1870–1913, and New Reports

	change in spread (b. points)	change in spread (percent)	Salient news
Argentina			
Mar 1876	295	50.1	
Jul 1890	117	45.2	Revolution and pol. Unrest (11); ministerial crisis (1); financial crisis and panic in Bourse (numerous); tensions with Chile (1); Pan American Confederation.
Nov 1876	465	38.8	End of panic (1); forced currency (1); commercial news (1).
Jul 1891	199	38.6	Revolt (3); financial panic (1); budget (1); tariff bill (1).
Jan 1912	33	27.4	Railway workers strike and riots (22); tensions with Paraguay (4); new railways (4); meat exports (4); crops output (3).
Jul 1901	55	26.3	
Feb 1877	171	25.5	New small change coinage (1).
May 1876	222	24.1	Stamp on bills of exchange (1).
Feb 1876	84	23.9	Argentina and Paraguay confederation (1).
Jul 1870	80	23.8	First Census (1); international exhibition (1).
Brazil		0.0	
Apr 1898	155	31.2	
Oct 1913	31	21.2	Taxation; rubber export duty (1); further reduction proposed (1); railways (7); trade statistics (1); companies' dividends (2).
Oct 1896	63	20.6	Finance problems (4); stable financial situation (official contradiction to former article) (1); trade restrictions (1); loans and rates (1).
May 1898	−127	−19.4	Government revenues (1).
Apr 1913	24	17.8	Engineering contracts abroad (1); finance: expenditure (2); loans: new issue announced (2); railway (10).
Jan 1891	37	17.6	Commercial frauds (1).
Mar 1898	74	17.5	Growing budget deficit (1); general election (3).
Oct 1912	22	17.3	Brigandry (1); coffee exports (6); damaged coffee, freeze (5); finance: Federal Authorization Bill (1); railways (5); trade (3); presidential election (1).
Apr 1891	44	16.9	Financial situation (2); financial difficulties and fall in Brazilian securities and bonds following the fall of Argentinean and Chilean securities (1).
Oct 1891	45	16.9	Riots in Rio (2); budget surplus (1); new steamers for Brazilian trade (2); restriction on issue of paper money (2); reduction of public debt (1).

AQ: Please check, as no dates appear for most for sake of consistency date has been deleted from Canada 1 Jan 1890 1 Jan 1888 & chile 1 Jan 1879.

Canada		0.0	
Nov 1912	14	65.3	Labor strike (3); economical situation (15); railways (20); shipping, trade (7); Canada and the United States (3); elections (9); labor regulations (4); navel policy (7); Parliament (9).
Apr 1903	23	60.8	Budget (2); Customs policy (6); immigration into Canada (1); trade (2); charge against the Ontario govt. (1); parliamentary visit to Newfoundland (4).
Jan 1889	16	38.7	Commercial news (2).
Mar 1888	−15	−34.8	Canada and commercial union (2); Canada and Great Britain (1); Canada and the United States (3); commercial news (3); legislative news (3).
Feb 1913	10	34.2	Labor strike (5); economy (5); railway (6); trade and shipping (7); marriage and shipping (7); marriage and divorce bill (1); companies law (1); Governor General (4).
Nov 1911	8	32.2	Increase in paper money (1); railways (22); trade (16); economic news (19); elections (19); navy bill (9); parliamentary news (10).
Jan 1890	12	30.4	Legislative news (3); trade and tariffs (8); Canada and the United States (4).
May 1910	10	27.0	Crop failure (1); railways (14); fiscal policies (3); trade and tariffs (3); economic news (31); various parliamentary bills (13).
Jan 1888	8	24.7	US–Canada fishing dispute (2); railway crisis (1).
May 1902	11	23.8	Prohibition (1); finances (1); speculation (1).
Chile		0.0	
Sep 1891	−72	−26.0	Disorders (2); Finance (5).
Oct 1878	461	22.1	
Jul 1876	64	22.1	
Jul 1893	55	21.9	
Jul 1878	60	21.0	
Oct 1879	463	20.4	War news (1).
Jan 1879	−94	−20.3	
Apr 1879	91	17.8	War with Peru and Bolivia(14).
Apr 1891	37	16.0	Revolutionary movement (2); dynamite at president’s house (1); Chilean debt (1); elections (4).
Jul 1897	45	16.6	Chilean finance (1).

Table 4.1. (*Continued*)

	change in spread (b. points)	change in spread (percent)	Salient news
China			
July 1900	54	20.9	Military situation (3); new loans (2).
Aug 1900	−44	−14.1	Chinese crisis and its settlement (2); reform (1).
Apr 1903	22	10.9	Anti-foreign appointments (1); famine in Kwangs (1); affray between foreign soldiers in Peking (1).
Apr 1913	16	10.4	Bomb in Fuchau (1); Indian border: Chinese troops attack British police (2); danger internal and external (2); loans (18); Comm. treaty—Russia (2).
Oct 1911	16	9.9	Revolutionary movement (215); railways (4); economic news (12); financial reform (2); political reform (2); ministerial appointments (6); military reorganization
Aug 1891	36	9.9	Floods (1); crisis (2).
Feb 1904	22	9.9	Foreign troops in China (2); burst of dam (1).
Mar 1904	−23	−9.6	Anti-foreign riots (3)
Feb 1883	42	9.6	
Oct 1907	17	9.5	Weights and measures reforms (1); railways (4); economics (6).
Egypt			
Apr 1976	525	64.4	Egypt and Abyssinia (1); Egyptian loan finance (17); unification of bonds (2); postponement of payment on bonds (1).
Apr 1879	167	42.1	Famine (1); Egyptian finances and loan (8); new government (2); proposition on reducing the rate on the debt (1); reorganizing the debt (1).
Jul 1870	203	39.1	Fight at Ashab Bay (1); Suez canal returns (1).
Jun 1882	92	35.5	War in Egypt–Cairo, Sudan, and Alexandria (114).
Apr 1877	155	32.1	Egypt and the War (1); financial problems (5); new arrangements for setting claims against Egypt (1).
May 1878	−184	−29.2	Neutral army movement (2); good news about finance, unified debt (18).
Oct 1875	157	27.1	Egypt and Abyssinia (1); financial difficulties (1); new codes of Consular Jurisdiction (3).
Apr 1875	63	22.9	War news (37); money order on Khedive stopped (9); financial prospects (1); progress of railways (1); steamboats on the Nile (1).
June 1879	−111	−22.3	Finances: the debt and budget (9).
Jan 1874	110	21.7	Suez cannal (5).

Greece (excluding default period)			
Feb 1897	110	40.5	War against Turkey–Create (4).
Apr 1897	137	33.8	War against Turkey–Create (16).
May 1892	−151	−32.1	General Elections (6).
Jan 1892	110	31.9	Affairs of Greece (2).
May 1897	−161	−29.7	War in Crete (19).
Apr 1903	28	27.1	Greco-Turkish commercial relations (3).
Jul 1907	32	25.3	Floods (1); trade statistics (3).
Jul 1880	68	24.6	Foreign relations (2).
Aug 1897	−77	−23.1	Peace negotiations with Turkey (22).
Dec 1905	16	21.3	Political reform (1).
Hungry			
Apr 1877	233	48.3	
Oct 1876	138	29.0	National debt (3).
Oct 1878	78	20.8	Financial crisis (1); corn market crisis (1); elections (10).
Oct 1873	53	18.4	Wine industry (1).
Oct 1874	55	17.2	Hungarian taxation (3); new loan (2); parliamentary news (2).
Jun 1877	−112	−16.7	Hungary and the Austrain budget (1).
Apr 1876	78	16.4	
Jun 1878	−69	−15.5	Hungary and the Austrain loan (1).
Aug 1987	−84	−14.7	
Jan 1878	−73	−14.5	Deputation to the President on confidence in his cabinet (1).

Table 4.1 (*Continued*)

	change in spread (b. points)	change in spread (percent)	Salient news
Japan			
Feb 1904	54	19.0	Japanese army mobilization (1).
Dec 1899	33	16.7	
Dec 1903	40	16.3	Tension between Russia and Japan (3); taxation (1).
Jan 1889	52	16.2	
Jan 1879	49	16.0	Miscellaneous (2).
Apr 1903	23	13.3	Economic relationship with Korea (1); politics (3).
Jan 1905	−36	−12.4	
Sep 1913	20	12.4	Banking (1); loans (1).
Feb 1905	−31	−12.3	Budget (1); railways (1).
Jul 1894	45	12.2	Korea (1).
Mexico (excluding default period)			
Jun 1893	124	23.8	Indian war (1).
Jul 1893	139	21.5	
Nov 1893	−100	−14.3	Foreign loans (2).
Dec 1913	27	13.7	Military coup (93); railways (17); bank crisis, devalution, and default on wage payments (13); banking reforms (4).
Sep 1893	−105	−13.6	
Jul 1891	51	13.2	Instability (3).
May 1893	61	13.1	Finance (1).
Apr 1903	24	13.0	
May 1895	−62	−12.7	Finance (4).
Feb 1895	−67	−12.2	Forign trade (1).

Mexico (default period)			
Jul 1870	655	46.2	Mexican bond holders’ meeting (1); trade (1).
Jan 1882	367	43.1	Economic progress (1); new silver mines (1).
Jan 1881	−618	−43.0	
Apr 1876	1130	39.8	Revolutionary movement (5).
Jan 1876	769	38.7	
May 1876	1173	29.5	Revolutionary movement (5).
Apr 1880	548	29.3	
Apr 1877	570	21.6	
Jan 1880	−484	−20.5	
Portugal			
May 1891	113	40.3	Explosion of a bomb at the Ministry of the interior (1); financial crisis (11); suspension of payments (2); ministerial crisis (7).
Jul 1891	138	37.7	Commercial treaties (6); monetary crisis (10); financial crisis (2).
Jul 1870	211	37.3	Prussian steamer ‘Santos’ mounts the British flag (outbreak of war) (1).
Oct 1895	36	32.0	Trouble in India (3).
Sep 1898	−75	−31.4	
Feb 1899	−46	−26.7	
Apr 1898	65	24.3	Debt (1).
Aug 1898	−73	−23.2	
Jan 1892	126	20.5	Speech of the king (2).
Nov 1891	90	17.5	Attacks on settlements (1).
Queensland			
Jul 1870	77	43.3	
Jan 1889	21	26.9	Gold and revenue increase (2).
Aug 1870	−56	−22.2	Mineral wealth of Queensland and South Australia.
Jan 1882	19	20.5	Meat freezing works in Queensland (1); change of ministry (1).
Jul 1873	27	18.0	
Jul 1872	26	17.6	Tin in Queensland (1).
Jan 1881	15	15.6	Revenue returns—increase of revenue (1).
Apr 1893	17	14.0	Fearful account of the floods in Queensland (2).
Jul 1874	14	13.4	
Nov 1878	−17	−12.3	Gold in Queensland (1).

Table 4.1. (*Continued*)

	change in spread (b. points)	change in spread (percent)	Salient news
Russia			
Apr 1877	158	55.7	Russo- Turkish war (4); suspend payment (1); commercial treaty with Spain (1); custom receipts (2); finance of Russia (1); new loan (2).
Jun 1876	74	34.4	
Oct 1876	67	26.6	Russo- Turkish war (4); exports of oats and cattle prohibited (1); loans (4); trade in Russia (1); paper money (1).
Nov 1905	39	23.8	Internal Violence (57); general strike (1); political crisis (20); the Tsar's manifesto (6); peasant conference in Moscow (10).
Jan 1878	−73	−20.3	Russian victories and restoration of calm (7); budget (1); finances (3); loan (1); plentiful harvest (1).
May 1877	−89	−20.2	Warships (1); new loan (6); politics (5).
Mar 1878	57	17.5	Dutch loan and finance (4).
Apr 1875	42	16.8	Preparations for war and outbreak of war in Afghanistan (9): finance (5); import duties (1).
May 1878	−58	−15.2	Purchases of ships (10); trial jury to be abolished for political offenses (1).
May 1875	−37	−12.7	Frontier claimed by Russia in Afghanistan (1); riots against Jews (1); opening of St Petersburg sea canal (2).
Sweden			
Oct 1913	10	26.3	
Oct 1910	14	25.9	State Bank of Sweden rate changed (1); iron ore output (1); shipping company trade (1); Swedish Norwegian Australian Shipping Co. formed (1).

Apr 1913	8	21.7	Iron ore: electric smelting: process adopted (1).
Oct 1912	−7	−20.3	State Bank of Sweden: rate changed (1).
Apr 1904	10	18.8	
May 1888	13	18.5	
Jan 1889	16	17.9	
Apr 1889	15	15.4	
Oct 1902	7	15.4	Representation in Sweden of all public sectors (in the election to the 2nd Chamber) (1).
Apr 1905	11	15.3	Swedish navy—reform (1).
Urguay			
Aug 1878	91	74.5	
Jan 1891	319	41.8	Economic conditions (1): tariff bill (1); redemption of paper money (1).
Oct 1890	122	32.2	Political situation (1).
May 1890	167	32.1	
Sep 1882	−132	−31.9	Insurrectionary movement (1); treaty of peace with Spain (1).
Mar 1887	−153	−25.9	
May 1876	325	21.7	
Jul 1879	−140	−21.3	The budget (1).
Nov 1874	120	21.2	
Jul 1887	−147	−19.7	

Note: Months shown are those with the top 10 changes in spreads (in percent, in absolute value), for each country, ranked by the change in spreads. Numbers in brackets refer to the number of news articles on the topic indicated.

Source: News reports from the *London Times*. Bond Spreads from the *Investor's Monthly Manual*.

exceptions are the British-sponsored reform in Egypt in the late 1870s, and reforms in China following the Boxer Rebellion of 1900, both of which involved political dimensions beyond the actual institutional changes.

Bad economic news figure prominently as a cause for sharp changes in the table. Sharp changes in spreads associated with bad weather are found in the resource and agriculture-dependent economies of Brazil, Canada, and China. Fiscal and financial difficulties are also associated with sharp changes in many of the countries (e.g. Argentina, Brazil, Chile, Egypt, Hungary, Mexico, and Portugal). Labor unrest may have affected Canadian spreads in 1912.

To shed more light on the relationship between sharp changes in spreads and news coverage, we compare whether months with sharp changes had, on average, more news items than the average news coverage of that country by the *London Times*. Table 4.2 reports the results

Table 4.2. Sharp Changes and News Articles, 1870–1913 (Average number of news reports per month in the *London Times*)

	Instability and wars	Bad economic news	Institutions and reforms	Total
Argentina				
Months with sharp changes, 1870–1905	2.0	0.8	0.0	6.6
Months with sharp changes, 1906–13	1.0	22.0	0.0	49.0
All months, 1870–1905	0.4	0.3	0.3	3.0
All months, 1906–1913	0.3	1.1	0.5	12.4
Brazil				
Months with sharp changes, 1870–1905	0.3	0.9	0.0	3.7
Months with sharp changes, 1906–13	0.3	1.7	0.0	16.7
All months, 1870–1905	0.6	0.3	0.2	4.4
All months, 1906–13	0.3	0.5	0.0	12.1
Canada				
Months with sharp changes, 1870–1905	0.0	0.2	0.0	17.3
Months with sharp changes, 1906–13	0.0	0.8	0.3	81.3
All months, 1870–1905	0.9	0.4	0.1	13.2
All months, 1906–13	0.2	1.7	0.2	97.7
Chile				
Months with sharp changes, 1870–1905	2.0	0.1	0.0	4.3
All months, 1870–1905	0.4	0.1	0.1	2.0
China				
Months with sharp changes, 1870–1905	1.6	0.1	0.1	13.0
Months with sharp changes, 1906–13	113.5	8.5	2.0	156.5
All months, 1870–1905	2.2	0.5	0.2	10.5
All months, 1906–13	15.4	0.7	1.7	41.3

Table 4.2. (*Continued*)

	Instability and wars	Bad economic news	Institutions and reforms	Total
Egypt				
Months with sharp changes, 1870–85	16.3	4.2	0.6	46.7
All months, 1870–85	11.1	2.2	1.0	37.2
Greece				
Months with sharp changes, 1881–92; 1895–1905	4.4	1.0	0.1	15.1
Months with sharp changes, 1906–13	0.0	1.0	0.0	7.0
All months, 1881–92; 1895–1905	0.2	0.3	0.1	5.6
All months, 1906–13	1.9	0.5	0.5	24.3
Hungary				
Months with sharp changes, 1870–1905	0.2	0.7	0.0	3.8
All months, 1870–1905	0.6	0.2	0.0	1.9
Japan				
Months with sharp changes, 1870–1905	0.6	0.1	0.0	4.7
Months with sharp changes, 1906–13	0.0	0.0	0.0	12.0
All months, 1870–1905	0.5	0.2	0.1	1.2
All months, 1906–13	0.0	0.9	0.0	16.5
Mexico				
Months with sharp changes, 1870–87	1.2	0.0	0.0	2.6
Months with sharp changes, 1888–1905	0.4	0.0	0.0	1.7
Months with sharp changes, 1906–13	93.0	19.0	7.0	158.0
All months, 1870–87	0.6	0.0	0.0	1.8
All months, 1888–1905	0.2	0.0	0.0	1.1
All months, 1906–13	3.8	0.6	0.1	11.1
Portugal				
Months with sharp changes, 1888–1905	1.2	2.6	0.0	8.0
All months, 1888–1905	0.3	0.3	0.1	4.7
Queensland				
Months with sharp changes, 1870–1905	0.0	0.2	0.0	1.1
All months, 1870–1905	0.0	0.1	0.1	1.4
Russia				
Months with sharp changes, 1870–1905	8.7	0.3	0.0	34.7
All months, 1870–1905	4.7	0.7	0.2	26.3
Sweden				
Months with sharp changes, 1870–1905	0.0	0.0	0.3	1.7
Months with sharp changes, 1906–13	0.0	0.0	0.0	4.8
All months, 1870–1905	0.1	0.0	0.1	1.1
All months, 1905–13	0.1	0.6	0.2	8.7
Uruguay				
Months with sharp changes, 1870–1905, excl. 1875–7	0.1	0.2	0.0	0.8
All months, 1870–1905, excl. 1875–7	0.3	0.1	0.0	1.1

Note: Pre- and post-1906 are separate because of the change in Palmer's Index. Other subsamples are chosen to treat default periods separately. Periods without sharp changes are omitted.

both for total news and for the salient categories, namely wars and instability, bad economic news, and reforms.[4] For most of the countries studied, we find a larger frequency of news items reported in times of sharp changes than otherwise (the exceptions are Canada, Queensland, and China).

In sum, readers of the *London Times* were well informed about major events in emerging market countries, and reacted to them. Indeed, most of the sharp changes in the 1870–1913 can be attributed to country-specific events, suggesting that "contagion" was rare during the previous era of financial globalization. As we show below, this stands in sharp contrast with the 1990s, when crises often affected several emerging markets at the same time.

An alternative approach to the identification of sharp changes is a search for "structural breaks" in the spread series. The methodology of the search for structural breaks, which we apply in order to identify sharp and long-lasting changes in time series, is based on Perron (1989), and is discussed in detail in Sussman and Yafeh (2000).[5]

Applying this procedure to the historical sample, and in line with the previous results on the determinants of sharp changes, we find no break in the cost of capital of any country that is the result of institutional reforms, or improved protection of property rights. By contrast, most of the historical breaks (listed in Mauro, Sussman, and Yafeh, 2002) correspond to country-specific events that are directly related to a country's ability to repay its external debt. Beginnings or ends of wars and rebellions feature prominently. For example, domestic revolts are associated with breaks in the Argentine and Brazilian spread series; wars in the Balkans generate breaks in the spreads of

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[4] Because of the change in Palmer's Index to the *London Times* in 1906, we make the comparison separately for the years up to 1905 and from 1906 onward.

[5] Essentially, this is a statistical technique designed to find the most significant long-lasting "jump" or change in a time series. It is based on the following equation: $\log(Y_t) = \beta_0 + \beta_1 \log(Y_{t-1}) + \beta_2 \Delta\log(Y_{t-1}) + \beta_3 EVENT_t$, where Y_t represents the variable of interest (e.g. the spread on a country's bonds); *EVENT* is a dummy variable that takes the value zero at all times prior to the proposed break and the value one from the time of the break onwards. Assuming the series in not unit root, if an event had a long-term impact on yields, then the coefficient on the *EVENT* dummy variable will be different from zero. The search for breaks involves repeated estimation of this equation while moving the break date and the corresponding *EVENT* dummy variable one observation at a time and recording their statistical significance. The break date is the point where the statistical significance of the *EVENT* dummy is highest (the process can then be repeated within each half of the sample to detect additional break points in subperiods). It is also possible to use a variant of this methodology to capture short-term "blips," that is, events that affect the series for a limited time only.

countries involved in them, and political instability in Egypt causes a break in the late 1870s. Some breaks are related to (bad) economic news: for example, a banking crisis in Australia in 1891 affected Queensland's spreads. In several cases, changes in monetary regime were also associated with breaks in the spread series. For example, a break in the spread series was observed in Portugal at the time when that country abandoned the gold standard.

4.3 Historical Sample—From Major News to Spread Changes

To analyze the potential impact of news on spreads, we list, for each country in our sample, major events as reported by the *Investor's Monthly Manual* (*IMM*) and the corresponding dates.[6] Ideally, we would have preferred to select major news events using *London Times* articles, but there was no practical and objective criterion for doing so.

For the pooled sample of all emerging market countries, we find that country/months with events reported in the *IMM* are associated with spread changes that are twice as large as in other country/months, and the difference is statistically significant. This result is robust to dropping any one of the countries from the sample. The difference is significant at the 5 percent level (using at least one definition of spread changes, and with the expected sign) for five out of twelve countries in the sample, and the countries where it is not significant tend to be those with the smallest number of news items. Table 4.3 reports (for the period when the country in question is not experiencing payment difficulties) the results for the eight countries where there are at least fifteen events.[7]

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[6] For the purposes of this exercise, we exclude the following countries from our sample: Egypt, because of its status as a near-British colony for a large share of the sample period; Hungary, to avoid difficult choices on whether events affecting Austria should be considered relevant; Russia and Turkey, because both countries were involved in border conflicts that were reported in the news but did not have a bearing on repayment prospects; and Queensland, to avoid difficult choices on whether one should consider news related to other parts of Australia. Moreover, collecting events data on Russia and Turkey would have been a daunting task in light of the vast number of peripheral incidents and border skirmishes they were involved in at the time.

[7] Only four countries in the sample experienced payment difficulties under the somewhat restrictive *IMM* definition: Colombia, Greece, Mexico, and Uruguay. For each of these countries, we exclude the years when the country experienced payment difficulties. This does not make a substantive difference to the results, except in Greece where the significance of the relationship becomes visibly stronger.

Table 4.3. IMM News and Sharp Changes by Country, 1870–1913 News and spread changes, 1870–1913

		Observations	Avg. |Δ Spread|	Avg. |% Δ Spread|
All countries	Months with events	232	0.0038	10.1395
	All other	5326	0.0019	6.5543
	p-value of t-test		(0.0000)*	(0.0000)*
Argentina	Months with events	44	0.0056	10.3694
	All other	483	0.0032	6.7533
	p-value of t-test		(0.0167)*	(0.0023)*
Brazil	Months with events	24	0.0028	8.4272
	All other	503	0.0013	5.3991
	p-value of t-test		(0.0000)*	(0.003)*
Canada	Months with events	18	0.0011	8.3600
	All other	509	0.0009	9.4452
	p-value of t-test		(0.6971)	(0.7735)
Chile	Months with events	25	0.0027	9.1572
	All other	502	0.0014	5.2648
	p-value of t-test		(0.0020)*	(0.0025)*
China	Months with events	29	0.0043	15.5789
	All other	410	0.0030	13.1497
	p-value of t-test		(0.0603)	(0.5434)
Greece	Months with events	35	0.0056	11.0273
	All other	350	0.0027	4.5063
	p-value of t-test		(0.0550)	(0.0000)*
Japan	Months with events	16	0.0026	11.4043
	All other	501	0.0020	7.9577
	p-value of t-test		(0.2953)	(0.2507)
Portugal	Months with events	17	0.0030	10.3100
	All other	510	0.0014	5.7657
	p-value of t-test		(0.0367)*	(0.013)*

Note: Non-debt related news. *p*-values reported in parentheses refer to the null hypothesis that the average change in spreads for country/months with events of type mentioned is the same as for country/months with no events. Asterisks denote significance at the 5% level.

In interpreting the results, it is of course necessary to bear in mind that *IMM* news are selected with the benefit of hindsight as those that "affect the money markets." On a more positive note, however, the mere fact that a well-established publication such as the *IMM* would publish a detailed exercise of this kind twice a year suggests that market participants then, as now, thought that a relationship between asset prices and events did indeed hold.

In view of the *ex post* way in which the events were selected by the *IMM*, our main interest is to ask which types of events are associated

Table 4.4. IMM News by Category and Sharp Changes 1870–1913 (All Countries) News and spread changes, pooling all country/months, 1870–1913

Type of events	Number of events	Average |Δ Spread|	Average |% Δ Spread|
All types	232	0.0038 (0.0000)*	10.1395 (0.0000)*
Good economic	21	0.0025 (0.5369)	5.6485 (0.7136)
Bad economic	42	0.0050 (0.0000)*	11.6508 (0.0037)*
Political	35	0.0036 (0.0276)*	8.5251 (0.3038)
Reforms	13	0.0035 (0.2067)	8.4119 (0.5537)
Instability and wars	86	0.0037 (0.0005)*	10.2337 (0.0028)*
Foreign relations	51	0.0037 (0.0074)*	12.1791 (0.0004)*
Debt-related	128	0.0032 (0.0027)*	7.6018 (0.3655)
No events	5326	0.0019	6.5543

Note: Non-debt related news. P-values reported in parentheses refer to the null hypothesis that the average change in spreads for country/months with events of type mentioned is the same as for country/months with no events. There are 5,326 country/months with no events. Asterisks denote significance at the 5% level.

with a higher average change in spreads (See Table 4.4). Country/months with "bad economic news" and news about "instability and wars" and "foreign relations" are significantly associated with larger spread changes than other country/months, using both definitions of spread changes. Country/months with "political" news and, not surprisingly, "debt-related" news are also significantly associated with larger spread changes, though only under one definition of spread changes. Finally, neither "good/neutral" economic news nor "reform" news are significantly related to spread changes.

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4.5 Modern Sample—From Large Spread Changes to News

As in the historical sample, we begin by identifying the months with the ten largest spread changes (in absolute value) for each country, and show in Table 4.5 whether major news were reported in those

Table 4.5. Sharp Changes in Spreads, 1994–2001, and News Reports

	Data	Δ Spread	%Δ Spread	News
Argentina				
1st	2001/11	1210	56.0	Negative economic news items (11) about failing debt restructuring attempts (9) and dealings with IMF (2); political bad news (1).
2nd	2002/06	1095	18.5	Riots (3); Central Bank President resigns (1).
3rd	2001/12	1000	29.7	Riots/strikes (7); President/cabinet changes (5); controls (3); talk of debt default (7).
4th	2002/05	975	19.5	More negotiations with IMF to take place (4).
5th	1998/08	824	181.5	No news (Russian crisis).
6th	2002/03	18.4		Negotiations with IMF stalling (6); foreign exchange controls tightened (1).
7th	2002/08	−578	−8.2	O'Neill's visit initially lifts hopes (1) but then fails to secure IMF agreement (1).
8th	2001/07	549	52.3	Spending cuts (3); protest/strikes (2); Washington signals no extra cash (1).
9th	2001/10	547	33.9	Debt swap to take place (2); US loses confidence in Argentina's creditworthiness (4); neutral political news (2).
10th	1995/02	397	33.6	May sign accord with IMF (2).
Brazil				
1st	1998/08	813	133.7	Labor reform (1); relaxation of short-term capital controls (1). (Time of Russian crisis.)
2nd	2002/07	793	51.2	IMF negotiations not going well (2); US seeks to soothe Brazil after remarks by O'Neill (2).
3rd	2002/09	765	46.9	Elections: Serra stages comeback; Lula rides on wave of disillusion over reforms (6).
4th	2002/08	−711	−30.4	Back from the brink on prospects of IMF deal (4);doubt about IMF deal (1); O'Neill heals rift with Brazil (1); Bank of Brazil to aid troubled companies.
5th	2002/10	−653	−27.3	Lula decries market fears of default (1); Lula pulls ahead, poised to win, transition team planned, victory (9).
6th	2002/06	567	57.8	Taking over liabilities of pension funds (2); IMF line of credit (2); relaxing inflation targets (2).
7th	1994/03	471	90.1	Debt restructuring (5); plans for real currency (1); cut in import duties (1); IMF slow to act on Brazil loan (1).
8th	1999/03	−335	−24.3	Real stability plan (2); IMF deal reached (3); $4 billion in aid for Brazilian companies (2); Cardoso wins tax boost from Congress, budgetary discipline.
9th	1997/10	319	89.6	Coffee bumper crop (2).
10th	1999/01	276	22.4	Brazil blocks payments as states default (2); IMF negotiations (2); floating of the real (4); Cardoso pledges to keep inflation down (2).

Bulgaria				
1st	1998/08	1000	153.6	Approves budget (1); becomes hub for Russian gas transit (2). (Russian crisis.)
2nd	1998/09	−513	−31.1	No news.
3rd	1995/04	−385	−17.9	No news.
4th	1997/02	−339	−26.2	Bulgaria “steps back from abyss”: socialists give way (3); petrol increased (1); IMF talks (1).
5th	1997/10	315	68.0	Agreement with Russia on gas deal (1).
6th	1996/02	265	23.7	No news.
7th	1998/10	−263	−23.1	No news.
8th	1995/01	254	15.0	No news.
9th	1996/11	−234	−15.4	Reformist leads in polls (3); cash run on Bulgaria bank (1).
10th	1996/01	−228	−16.9	No news.
Mexico				
1st	1998/08	480	104.1	Political poll results (2).
2nd	1994/12	434	106.4	Peso devalution (5); Chiapas rebellion (2); Mexico seeks to shape international support package (1).
3rd	1995/04	−386	−24.3	Rescue plan for Mexican banks (1); provincial government debts (1); financial aid to Mexico to continue (1).
4th	1995/02	376	37.7	Rebellion (2); financial aid package (8); Mexico’s ruling party in trouble (1).
5th	1995/06	−247	−20.6	Riots and assassination (2); loans to Mexico (3).
6th	1995/10	226	22.2	High-level defection from Mexico’s ruling party (2).
7th	1995/03	216	15.7	Peso slide (1); tough economic package (2); protests (1); rescue plan for Mexican banks (1).
8th	1996/01	−174	−17.3	Mexico to bail out indebted companies (2).
9th	1997/10	172	59.7	Zedillo faces the budget blues (1).
10th	1996/04	−164	−20.2	Reforms to foreign ownership rules threatens privatization process (1); pension reform (1).

Table 4.5. (*Continued*)

	Data	Δ Spread	%Δ Spread	News
Nigeria				
1st	1998/08	1628	186.1	Attempts to curb corruption (1); prospects for civilian rule to last (1).
2nd	2002/10	−1261	−32.1	US plan for regional military base (1); court ruling on Nigeria–Cameroon dispute (2).
3rd	2002/07	1106	67.2	US pushes for fair poll (1); World Bank cuts lending to Nigeria (1).
4th	2000/05	998	46.1	Attacks on foreign executives (1); clashes (1); budget approved (1).
5th	2000/07	−945	−33.7	Doubts about President's ability to reach deal with IMF (1).
6th	2002/09	846	27.4	Attempts to curb corruption (1); effort to register voters (2); political battle intensifies (1).
7th	2002/11	−814	−30.5	US warns Nigeria on dirty money (2); riots (2); fears grow over Nigeria's poll security (1).
8th	1998/10	−786	−34.3	Pipeline disaster with hundreds dead (1).
9th	1994/07	785	43.3	Oil workers' stride (3); protests (1).
10th	1994/03	715	61.4	Currency shortage (2); clash with Cameroon on oil-rich area (1); big cocoa crop (1).
Philippines				
1st	1998/08	423	93.4	Severe fiscal crunch in context of economic crisis (1)
2nd	1998/10	−247	−24.7	No news.
3rd	1998/11	−246	−32.6	No news.
4th	1994/02	155	39.4	No news.
5th	1996/01	−151	−23.3	No news.
6th	2000/10	131	24.0	Hostages/rebels (3); motion to impeach President (3).
7th	1998/09	125	14.3	Philippine Airlines look likely to close (5).
8th	1994/05	−124	−18.7	Opening up to foreign banks (1); securities scandal (1).
9th	2001/11	−188	−17.4	No news.
10th	1997/10	115	34.4	No news.

Poland				
1st	1998/08	226	120.2	Plan for large privatization (1).
2nd	1996/01	−207	−38.8	Political crisis (3); spying row (1).
3rd	1995/04	−175	−20.2	Poland presses case for EU entry (1).
4th	1995/06	−130	−20.0	No news.
5th	1997/10	94	56.3	Poland lines up finance minister, unveils cabinet (2).
6th	1995/01	92	14.3	Early election, budget veto (1); Poland, Russia write off debt (1).
7th	1995/02	83	11.3	Doubt over reforms (1); Prime Ministerial uncertainty, political changes (5); Polish changes (5); Polish-Russian pipeline deal (1).
8th	2002/10	−75	−24.8	No news.
9th	1998/10	−65	−18.3	No news.
10th	1998/09	−59	−14.3	Coal sector restructuring(1).
Venezuela				
1st	1998/08	1746	210.6	No news.
2nd	1998/09	−1017	−39.5	Backing for reforms (1); US and Venezuela close to tax treaty (1).
3rd	1994/08	−514	−24.4	Good economic policy news (1).
4th	1994/06	498	41.1	Right of economic freedom restored (1); bank bailout payments raise fears (1); controls imposed (1).
5th	1995/12	−465	−23.4	Opposition advances (1); overvalued exchange rate complicates policy(1).
6th	1994/03	458	45.1	No news.
7th	1994/07	396	23.1	Uncertainties on economic policy (2).
8th	1999/04	−332	−29.6	Political uncertainty, possible state of emergency (3); Chavez pledges to abide by constitution (1).
9th	1998/12	−329	−20.4	Elections, Chavez win (7).
10th	1994/02	318	45.6	Bank bailouts (3).

Note: Months shown are those with the top 10 changes in spreads (in percent, in absolute value), for each country, ranked by the change in spreads. Numbers in brackets refer to the number of news articles on the topic indicated.

Source: News reports from the *Financial Times*. EMBI bond spreads from J. P. Morgan.

months in the *Financial Times (FT)*. For most countries in the sample, the biggest change in spreads takes place in August 1998, at the time of the Russian long-term capital management (LTCM) crisis—an event unrelated to events occurring in the other countries considered in the sample. We present the tables with the results using spread changes in terms of basis points. The results are similar using spread changes in percent. We also ask whether the frequency of front-page news is the same for months with large spread changes and all other months (these results are summarized in the text but not reported in tables, for the sake of brevity).

There are only two countries (Argentina and Brazil) where the frequency of news is noticeably higher in months with the largest spread changes than in the remainder of the sample period. The same is true for the frequency of *front-page* news. Both statements hold regardless of whether the months with "sharp changes" are defined in terms of changes in basis points or percentage changes in spreads. (In Bulgaria, a country with relatively few news reported in the *FT*, defining sharp changes on the basis of changes in basis points leads to an especially high frequency of news in February 1997—a month associated with a large change in spreads.)[8]

For Argentina, the largest changes are associated with bad economic news during the crisis of November–December 2001 and news about the ensuing riots in December 2001. For Brazil, the largest changes seem to be associated with news regarding the likelihood of presidential election victory on the part of Mr Luiz Inácio Lula da Silva (commonly known as Lula) during the course of 2002. Interestingly, in the early stages of the campaign, an increasing likelihood of a victory by Lula was interpreted as negative news by foreign investors, leading to sharp increases in spreads; in contrast, nearer election day, markets seemed to interpret an ever-increasing probability of a Lula victory as good news for Brazil's willingness and ability to meet its external obligations. For the other countries in the sample, however, there is no clear pattern between news and spreads, and the results for the cases of Argentina and Brazil are very much driven by the specific sets of episodes highlighted above.

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[8] Bulgaria experienced a severe economic and political crisis in late 1996 and early 1997. In February 1997, early elections were won by a reformist government. In 1997, Bulgaria undertook a program supported by the international financial institutions, including the introduction of a currency board in July of that year.

Could it be the case that we fail to identify a strong relationship between news and changes in spreads because the news during this period are just not sufficiently important to move the markets? Our impression is that this is unlikely. Although none of the countries in our sample experienced a major war during the modern period we consider, many important events did take place, including coups, assassinations of leading political figures, violent uprisings, suspensions of existing constitutions, the adoption of new constitutions, major changes in the party in power, changes in the domestic currency, and the establishment of common trade areas. A necessarily incomplete list of major events that failed to be reflected in large spread changes includes the following examples. In Nigeria, the sudden death of General Abacha (June 1998) and the subsequent return to democracy following years of dictatorship. In Mexico, the election of President Fox (June 2000) following 70 years of PRI government. In the Philippines, the impeachment of President Estrada (November/December 2000), the transition to the government of President Macapagal (January 2001), and the peaceful passage of elections in May 2001 following a period of domestic tensions. In Poland, ratification by voters of entry into NATO (March 1999); and public backing (February 1998) by French President Chirac and German President Kohl of Poland's bid to join the European Union. In Argentina, consideration of plans to adopt the US dollar (announced by President Menem in January 1999 and later dropped). On the whole, these can hardly be described as uneventful times.

4.5 Modern Sample—From Major News to Changes in Spreads

In the modern sample, we identify fourty-five country/months with news items related to the emerging market countries in our sample that appear in a long article on the front page of the *FT*. These instances of "really big" news seem to have had a significant impact on spreads: country/months with front-page news and a long article display significantly larger changes in spreads than other country/months (Table 4.6). (With eight countries and 108 months, there are 864 country/months in the sample—reduced to 836 owing to missing observations in the spread series for some countries.) On average, the absolute value of the change in spreads amounted to 199 basis points

Table 4.6. Front-Page News and Spread Changes, 1994–2002

Country		Observations	Average |Δ Spread|	Average |% Δ Spread|
All countries	All front page and long article	45	199.422	17.207
	No front page and long article	791	111.858	12.885
			(0.0019)*	(0.1224)
All countries	All front page	310	135.571	13.214
	No front page	526	105.375	13.061
			(0.0221)*	(0.9067)
Argentina	Months with front-page news	43	237.047	14.226
	All other	64	107.313	16.029
			(0.0042)*	(0.6764)
Brazil	Months with front-page news	50	168.260	16.370
	All other	57	93.684	13.396
			(0.0193)*	(0.2699)
Bulgaria	Months with front-page news	10	172.400	22.763
	All other	87	91.736	10.571
			(0.0573)	(0.0310)*
Mexico	Months with front-page news	57	75.123	13.919
	All other	50	70.560	13.066
			(0.7859)	(0.7830)
Nigeria	Months with front-page news	47	225.340	13.066
	All other	60	246.617	16.666
			(0.7079)	(0.4806)
Poland	Months with front-page news	34	25.206	10.110
	All other	63	32.857	11.178
			(0.3479)	(0.7203)
Philippines	Months with front-page news	34	33.882	6.567
	All other	73	53.904	10.541
			(0.1049)	(0.0934)
Venezuela	Months with front-page news	35	137.571	12.437
	All other	72	151.500	15.153
			(0.7487)	(0.5533)

Note: p-values reported in parentheses refer to the null hypothesis that the average change in spreads for country/months with events of type mentioned is the same as for country/months with no front-page events. Asterisks denote significance at the 5 % level

in country/months with front-page news and long articles, and 112 basis points in the remaining country/months. Defining spread changes in percent terms, the absolute value of the change in spreads amounted to 17.2 percent in country/months with front-page news and long articles, and 12.9 percent in the remaining country/months. The *p*-value of the null hypothesis that changes in spreads are the same regardless of whether they occur in country/months with front page and long article news, or in other months, is 0.002 for spread changes in basis points and 0.122 for spread changes in percent. (This finding is robust to exclude Argentina—a country that has a large influence on the results of other exercises reported below.)

Using a less stringent concept of major news, namely, the 310 country/ months with front-page news (including those in brief summary form, in the so-called briefing or shorts section of the *FT*, but not necessarily a long article), the significance of the results is somewhat diminished and no longer robust to small changes in the sample of countries. Months with front-page news see significantly larger changes in spreads than other months, though only when spread changes are measured in basis points. Moreover, the results for the overall sample are driven, to a large extent, by Argentina: excluding Argentina, country/months with front-page news are no longer significantly associated with larger spread changes.

Drawing on the 310 country/months with front-page news, it is possible to analyze the potential relationship between news and spread changes for each country individually. Defining spread changes in terms of basis points, the association between news and spread changes is significant at the 5 percent level for Argentina, Brazil, and at the 10 percent level for Bulgaria (though only 10 months had news for this country) and the Philippines; it is not significant in Mexico, Nigeria, Poland, and Venezuela.

Are certain types of news more likely to be associated with large spread changes? Considering the 310 country/months with front-page news for the emerging markets in the sample, bad economic news, good/neutral economic news, and "instability and war" news are all significantly associated with larger spread changes, whereas political news, foreign relation news, and "reform and institutional" news are not (though the *p*-value is 0.17 for "reform and institutional" news). Again, these relationships are only significant when spread changes are measured in basis points. Excluding Argentina, only good/neutral economic news are significantly associated with larger spread changes (See Table 4.7).

Before concluding this section, we repeat the search for structural breaks procedure for the sample of emerging markets in the 1990s. For eight emerging markets during 1994–2000, there is only one major break—in August 1998, at the time of the Russian crisis—affecting all countries. Using this procedure, the Mexican crisis of late 1994 also had a discernible impact on Mexico and Venezuela. Although there

Table 4.7. Front-Page News by Category and Spread Changes, 1994–2002
Front-page news and spread changes, pooling all country/months, 1994–2002

Type of events	Observations	Avg. |Δ Spread|	Avg. |Δ % Spread|
All Front Page	310	135.571	13.214
No Front Page	526	105.375 (0.0221)*	13.061 (0.9067)
Good	128	144.531 (0.0272)*	14.461 (0.4673)
Bad	134	156.246 (0.0042)*	13.657 (0.7373)
Neutral/unsure	132	134.871 (0.0834)	12.991 (0.9685)
Good/neutral economic	121	164.901 (0.0010)*	15.153 (0.2783)
Bad economic	70	200.171 (0.0001)*	15.068 (0.4097)
Political	104	115.769 (0.5720)	11.201 (0.3360)
Foreign relations	76	100.395 (0.8092)	15.220 (0.3612)
Reforms	57	149.561 (0.0760)	12.811 (0.9258)
Instability and wars	58	170.828 (0.0088)*	11.264 (0.4863)

Note: p-values reported in parentheses refer to the null hypothesis that the average change in spreads for country/months with events of type mentioned is the same as for country/months with no front page events. There are 526 country/months with no front page events. Asterisks denote significance at the 5% level.

are a number of cases of suspension of existing constitutions, the adoption of new constitutions, major changes in the party in power, changes in the domestic currency, and the establishment of common trade areas during the period, none elicited an immediate response from financial markets. The only exception is the Bulgarian currency board of 1997.

The exercises on news and spread changes reported in this chapter suggest that the relationship between news and spread changes was stronger in the historical period than it is in the modern period. Of course one needs to be cautious in interpreting this result, because there are far more data points in the historical sample than in the modern sample, and the news to spreads exercise for the historical sample is based upon events that were selected with the benefit of hindsight. Beyond this technical explanation, there may well be a fundamental reason behind this result—in the modern sample country-specific news about emerging markets did not seem to matter much to investors, who treated these countries as a group. This feature may be closely related to the high co-movement between emerging market bond spreads in the 1990s, as well as to the contagious spreads of crises, in sharp contrast with the historical sample. We discuss this issue in more detail in Chapter 6 (see also Mauro, Sussman, and Yafeh, 2002).

Despite the differences in the impact of news on spreads in the two periods, an important conclusion that emerges from the analysis in this chapter is that the kinds of news that seem to be more closely associated with large spread changes are consistent in the historical and modern samples. "Instability and war" news seem to matter the most, together with economic news. The results are therefore consistent with one of the main themes of this book, namely those events associated with blood flowing in the streets tend to explain a greater share of variation in spreads, at least in the short run, than do events associated with reforms of political or economic institutions. In the next chapter, we continue the analysis of these issues using multivariate regressions, which take into account, in addition to news reports, macroeconomic and other country-specific characteristics.

5

Spreads, News, and Macroeconomics: A Multivariate Regression Analysis

5.1 Introduction

While previous chapters focused on a few case studies (Chapter 3) or sharp changes in spreads (Chapter 4), in this chapter we systematically consider all variation in spreads for our entire sample of emerging markets, in an attempt to identify the determinants of bond spreads more generally. Using multivariate regression analysis, we simultaneously relate emerging market bond spreads to macroeconomic variables and the number of news items regarding various types of events. This allows us to measure the extent to which fundamentals—including both macroeconomic variables and the information available to investors from news on political, economic, and institutional events—explain variation in spreads on bonds issued by emerging markets, for 1870–1913 and the modern period.

Existing studies suggest that, as for other asset prices, it has not been easy to relate bond spreads to fundamentals. Studies on modern period data usually find that macroeconomic fundamentals explain, if anything, a small portion of the variation in spreads.[1] Moreover, different studies identify different variables as relevant. Indeed, the only variable that seems to be consistently significant across several empirical studies is a country's credit rating. Rating agencies, however, are likely to pay close attention not only to macroeconomic variables and other fundamentals, but also to spreads and market participant

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[1] Examples include: Cline and Barnes (1997); Dell'Ariccia, Schnabel, and Zettelmeyer (2002); Eichengreen and Mody (1998); Kamin and von Kleist (1999); Min (1998); Sy (2002); and International Monetary Fund (2004, pp. 60–70).

views in providing ratings; thus, we do not use credit ratings in our estimates below.

This is not to say that fundamentals do not matter or have no predictive value. On the contrary, some private analysts (notably in investment banks) provide model-based views to their clients on whether countries' current market spreads are justified by fundamentals. All in all, however, the predictive power of existing models seems to be rather limited.

A few recent studies have analyzed the determinants of spreads for the historical period. Bordo and Rockoff (1996) found that adherence to gold standard rules acted as a "seal of approval" that was reflected in significantly lower spreads on sovereign bonds; in contrast, the role of fiscal policy and monetary policy indicators was significant in only few of Bordo and Rockoff's specifications. Obstfeld and Taylor (2003) confirm the importance of gold standard adherence for the period 1870–1913, but argue that public debt and membership in the British Empire were significantly related with spreads in 1925–31 (though not before the First World War). Ferguson and Schularik (2004, 2005) challenge the empirical validity of the gold standard as a determinant of spreads and instead highlight the importance of the British Empire as a determinant of spreads. Flandreau and Zumer (2004) find a significant association between bond spreads and macroeconomic variables (emphasizing especially the roles of the ratio of interest payments to revenues, and economic growth).[2]

AQ: Please specify "2003a" or "2003b" for Obstfeld and Taylor(2003).

The analysis in the present chapter is the first to provide a systematic comparison of the determinants of spreads in the 1870–1913 period and today, using the same methodology for both sample periods. Moreover, this is the first study of the determinants of emerging market bond spreads to incorporate systematic summary measures of events reflected in news, and to assess the importance of various categories of news.

Our main finding is that fundamentals matter in determining bond spreads in the historical sample. Both the country's political and economic climate as reflected in quantitative summaries of news items, and macroeconomic variables, such as exports and the fiscal balance, play a significant role. In contrast, country-specific fundamentals seem to matter to a lesser extent in the modern sample. At the same

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[2] We do not consider interest payments as a determinant of interest rates, because of concerns about the direction of the causal relationship; such concerns would remain even using lagged values, owing to the autocorrelation of interest rates.

time, the same broad patterns regarding the types of variables that matter remain valid in both the historical and the modern sample. In particular, low spreads are associated with sound macroeconomic policies and absence of violence.

5.2 Data and Methodological Issues

In choosing the historical variables and data to be used in the analysis, we strive to stay as close as possible to the data that were available to investors active on the London market. We draw our news indicators from the *London Times* and many of our macroeconomic data from the *Investor's Monthly Manual*. As potential explanatory variables, we focus on the variables that were reported regularly and seemed to feature prominently in analyses reported in the contemporary financial press. For example, we do not use data on gross domestic product (GDP), a concept not used at the time.[3] We collect all of our spread series directly from the *Investor's Monthly Manual*, correcting them on the basis of bond features as reported in the same source. To ensure the quality of the spreads data, we exclude all observations where the *Investor's Monthly Manual* notes that the country is not paying coupons (see also Chapter 2).[4]

Given that one of our main findings is that news items, and especially war news, are associated with higher spreads, the reader might wonder whether our approach, based on the number of news, provides substantial value addition compared with an alternative approach that might be based upon simply noting when important wars were taking place. More generally, does the number of news really present major advantages compared with dummy variables that might be chosen to represent important events? In our opinion, an approach based upon the number of contemporary news reports has three related advantages. First, it leaves far less room for the researchers' judgment in influencing the results: although we do exercise a minimal degree of judgment in allocating news among the various categories,

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[3] The quality of the GDP data constructed by modern scholars for the historical period might also be a source of potential concern.

[4] In addition, we exclude eight observations where the yield is above 10 percent (implausibly high given the standards of the time, and likely to reflect measurement errors). Our results are essentially unchanged if we include all such observations in the estimates.

we include all news reports related to a given country, and therefore have essentially no discretion in choosing which news items to include in our analysis. We would have far more discretion if we were to select events from history books or other sources (in that case, we would have to choose what constitutes an event with no objective criterion to guide us). Second, history books have the benefit of hindsight in highlighting major events. Thus, if we were to use dummies for "major wars," for example, drawing them from history books, we would be picking our events on the basis of more information than was available to contemporary investors at the time. Third, the number of news items is a reasonable proxy for the perceived degree of importance at the time. Minor wars were likely reflected in fewer news items than were major wars, as viewed by contemporaries.

Our regression estimation approach does not introduce technical innovations, as most of the techniques that we use have been adopted by at least one previous study on related topics. Nevertheless, as existing studies have used a variety of approaches, it is worth highlighting a number of features of the approach we take, as follows:

- We use secondary market spreads, rather than primary market spreads. An advantage of this approach is that secondary market spreads are available at all times, not just at times when bonds are being issued.
- We include country-specific dummies (fixed effects) in most of our estimates, though we also present estimates without such dummies, mainly for the sake of data description. Country dummies are necessary to take into account that both spread levels and many, possibly unobservable, country-specific characteristics tend to persist in time. Failure to include such dummies would be equivalent (informally speaking) to overestimating the number of observations that can be truly claimed to be independent.

Our main approach is to run panel regressions with the logarithm of spreads (expressed in basis points) as the dependent variable, and several independent variables, as follows.

News

Our "raw data" consist of the number of news of various categories for each country and each year. (Monthly data are here aggregated to yearly data to be consistent with the macroeconomic data). These data range from zero, very frequently, to—in a few rare cases—hundreds or even thousands of news items per country per year. To use these data in regression analysis, we adopt either of two transformations of the data. The first is the logarithm of one plus the number of news in each of the following categories: "good economic," "bad economic," "political," "reform," "war/violence," and "foreign relations." The second is the share of news in each of the categories listed above in total news for the country and the year in question.[5] (A final category, "other," or "none of the above," is omitted from the regressions, and therefore all estimated coefficients need to be interpreted with respect to it.) A disadvantage of the first approach is that it does not allow for an easy assessment of the importance of news of a given category as a share of total news. Moreover, Palmer's Index to the *London Times*, from which we draw our news, changed format and became far more detailed beginning with the news for 1906. This resulted in approximately a trebling of news items reported from 1906 onward.[6] To correct for this change, we divide by three the number of news for each country, category, and year, beginning in 1906. A disadvantage of the second approach is that instances in which a given country's news items are few but all refer to the same category take an even greater value than do instances in which news items are plentiful but all do not refer to the same category. Thus, for example, a minor incident of violence that generated a handful of news items in otherwise uneventful times may take a greater value than a major war in a country where news is usually plentiful.

Macroeconomic Variables and Other Controls

Exports: the logarithm of exports expressed in common currency (pounds sterling)—an indicator of economic performance, availability of foreign currency, and ability to repay the foreign debt.

Fiscal surplus: the difference between fiscal revenues and expenditures, divided by revenues, as an indicator of fiscal performance.

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[5] For the few country/years with no news reports, we set all fractions to be zero. This is preferable to treating these cases as missing values, and is equivalent to adding one news item to the category "other news" when the total number of news would otherwise be zero.

[6] More precisely, the average number of news for all countries and all news categories in 1906–8 is 2.96 times the average number of items for all countries and all categories in 1903–5. (The increase does not seem to affect particular countries or categories more than proportionately.) This approximate "splicing" procedure assumes that the years 1903–5 were as "eventful" as 1906–8.

(We use revenues as a "scaling" variable—today we would use GDP instead.)

Debt per capita: as an indicator of debt sustainability. The *Investor's Monthly Manual* often provides data on debt in this form, and contemporary commentary often refers to debt per capita. We find this preferable to the debt/GDP ratio because GDP is a modern concept that was not used at the time, and the GDP series that have been constructed for the historical period may not be sufficiently reliable. We also prefer this indicator to the ratios of debt to exports or debt to revenues because, compared with data on population, data on exports or revenues have more missing observations and seem less reliable. We only use this variable in a limited number of specifications, because debt levels are likely to be endogenous to interest rate spreads.

Gold standard: dummy variable taking the value of 1 when countries were on the gold standard in a given year and 0 otherwise.

Default history: dummy variable taking the value of 0 when a country has never defaulted, and 1 in the year of default and all subsequent years.

Market-capitalization-weighted average of the spreads for all emerging markets: to control for developments that affected all emerging markets simultaneously. This is especially useful to capture the decline in spreads experienced by most emerging markets in the early twentieth century (see discussion in Chapter 2).

5.3 Results for the Historical Sample

Overall, the results in this section indicate that several macroeconomic variables and news-related indicators are significantly associated with spread levels with the expected signs, though for some variables the results are not robust to changes in sample and specification.

We begin with descriptive statistics and simple cross-sectional exercises. We report the 1870–1913 average of the spreads and all the potential explanatory variables for each emerging market individually and for the subgroups of countries that ever defaulted at some point in 1800–1913, and those that never did.[7] Few variables differ systematically

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[7] We include Russia in the list of countries that defaulted, in light of its default in 1839 and imposition of a coupon tax in 1885 (Beim and Calomiris, 2001). The results are unaffected if we include Russia among the non-defaulters.

across the two subgroups, reflecting several instances where individual countries really stand out as having particularly high values of some of the variables (debt per capita in Queensland, for example), and such countries fall in both subsamples. These patterns suggest that the pure cross-sectional information in the data may not lead to strikingly significant results; moreover, the results are likely to be subject to "influential observations," that is, the results may change substantially if a particular country is removed from the sample. In what we present below (Table 5.1), we check to the best of our ability that our main results are not substantially affected by such changes in the sample.

AQ: Is the citation of Table 5.1 okay? please check.

We now turn to regression analysis. To focus on the news data, which constitute one of the main contributions of this book, we provide the results of regressions using news indicators only (Table 5.2). This also allows us to explore the relationship between news and spreads for a larger sample of countries, because for some of the countries in our sample macroeconomic variables are not available (and were not available to investors at the time).

As a preliminary descriptive exercise, and to provide a sense of the results including not only the time series information, but also the cross-sectional information in the data, we report the results of pooled regressions without individual country fixed effects. The regressions include quantitative indicators of news and, in some specifications, the average (market-capitalization-weighted) spread for all emerging markets of a given type (using either logarithms or shares) of news. More precisely, in some regressions we use the logarithm of the number of news of each type (our preferred specification); in other regressions, we use the share of news of a given type in total news (i.e. for example, the share of war news in total news).

Recalling that our dependent variable is the logarithm of the spread, the size of the coefficients on quantitative indicators of news needs to be interpreted as follows. When using the logarithm of the number of news, the size of the coefficient is the estimated elasticity with respect to the number of news, that is, the percent increase in spreads resulting from a 1 percent increase in the number of news of a given category. When using fractions, the size of the coefficient indicates the percent increase in spreads resulting from a 1 percentage point increase in the share of news of a given category. The omitted category is "other" news (those that were not classified in any of the categories listed in the estimation), and the coefficients are to be interpreted with respect to that omitted category.

Table 5.1. Averages of Spreads and Potential Explanatory Variables, 1870–1913

Country	Spread (percentage points)	News Items per year							Govt. Balance	Exports (mill. Pounds)	Debt per capita	Fractions (in percent of total news)					
		Wars	Econ. Good	Econ. Bad	Foreign	Reform	Political	Total				Wars	Econ. Good	Econ. Bad	Foreign	Reform	Political
Never defaulted																	
Sweden	1.0	1	5	1	8	1	4	29	−0.01	18.43	3.38	2.7	17.2	2.0	15.8	5.4	20.1
Queensland	1.1	0	11	2	0	2	3	23	0.00	7.41	63.00	1.8	49.6	6.9	1.3	7.9	10.6
Canada	1.2	9	173	8	26	2	62	343	−0.13	31.14	10.22	4.7	37.7	3.0	9.9	0.8	19.5
Hungary	2.0	9	7	1	3	2	11	42	−0.25	69.79	9.76	10.4	21.7	2.6	5.7	3.5	26.9
China	3.1	55	48	7	48	6	4	193	n.a.	25.08	0.12	18.2	27.4	5.3	32.2	2.8	1.2
Japan	3.2	4	27	3	36	1	7	56	0.13	19.18	2.11	24.1	54.5	8.7	41.1	6.9	9.6
Defaulted																	
Russia	1.8	92	69	16	153	5	100	515	−0.18	77.62	4.77	14.5	15.8	3.0	31.9	0.6	15.7
Brazil	2.2	7	34	4	7	2	10	74	−0.16	32.17	2.31	9.8	31.6	6.2	15.8	5.1	16.6
Portugal	2.4	16	14	7	26	5	19	102	−0.07	4.98	9.35	8.6	16.1	5.8	25.4	2.2	16.6
Chile	2.5	4	13	1	10	1	5	36	−0.10	12.88	4.86	13.0	23.6	3.5	28.6	3.7	17.3
Turkey	2.7	44	133	12	274	11	113	517	n.a.	14.48	3.79	6.1	23.5	3.2	48.4	1.7	20.2
Greece	3.0	8	24	6	67	2	26	148	−0.14	3.75	12.50	2.9	19.7	5.4	34.7	1.6	24.0
Mexico	3.0	16	23	2	9	1	2	50	0.05	18.31	1.83	15.1	54.4	1.3	7.6	3.0	4.3
Argentina	3.2	4	28	6	5	4	6	56	−0.36	29.07	12.82	10.5	38.8	8.4	11.5	6.8	12.5
Uruguay	4.2	4	13	1	1	0	5	25	0.01	5.90	22.71	9.7	37.0	9.7	6.9	1.9	21.1
Egypt	4.7	133	53	26	98	12	42	446	−0.14	12.12	15.92	11.4	25.4	5.4	25.6	5.3	9.2
Colombia	4.8	1	8	0	1	0	0	10	−0.06	3.35	1.00	15.7	30.8	0.8	4.7	0.6	2.2
Costa Rice	6.1	0	1	0	0	0	0	2	−0.01	1.26	9.85	8.8	31.6	15.8	3.5	5.3	0.0
Averages (unweighted)																	
Never defaulted	1.9	13	45	4	20	2	15	114	−0.05	28.51	14.76	10.3	34.7	4.8	17.7	4.6	4.6
Defaulted	3.4	27	34	7	54	4	27	165	−0.11	17.99	8.48	10.5	29.0	5.7	20.4	3.2	13.3

Notes: The list of countries that defaulted is based upon Beim and Calomiris (2001). Data sources and definitions are provided in the text. Within each category (defaulters and non-defaulters), countries are ranked by their average spread.

Table 5.2. Spreads and News, Panel Regressions, 1870–1913

	News In logarithms						News in fractions					
	No fixed effects			With fixed effects			No fixed effects			With fixed effects		
Wars	0.114	0.109	0.095	0.052	0.044	0.044	0.640	0.540	0.509	0.359	0.232	0.234
	[0.021]*	[0.020]**	[0.018]**	[0.017]**	[0.014]**	[0.014]**	[0.115]*	[0.106]**	[0.096]**	[0.084]**	[0.065]**	[0.065]**
Good/Neutral economic	−0.165	−0.098	−0.049	−0.147	−0.033	−0.034	−0.302	−0.108	−0.055	−0.314	−0.088	−0.091
	[0.027]*	[0.026]**	[0.024]*	[0.023]**	[0.019]	[0.020]	[0.078]*	[0.073]	[0.067]	[0.058]**	[0.046]	[0.047]
Bad economic	0.069	0.066	0.056	0.041	0.052	0.051	0.834	0.910	0.783	0.163	0.260	0.254
	[0.032]*	[0.030]*	[0.027]*	[0.023]	[0.018]**	[0.018]**	[0.241]*	[0.221]**	[0.200]**	[0.175]	[0.136]	[0.137]
Reform	0.010	−0.006	0.020	−0.008	−0.017	−0.018	0.160	0.003	0.248	0.241	0.123	0.119
	[0.034]	[0.031]	[0.028]	[0.026]	[0.021]	[0.021]	[0.293]	[0.269]	[0.245]	[0.211]	[0.164]	[0.165]
Political	−0.119	−0.126	−0.162	−0.014	0.014	0.014	−0.346	−0.273	−0.280	0.164	0.262	0.261
	[0.023]*	[0.021]**	[0.019]**	[0.023]	[0.018]	[0.018]	[0.160]	[0.147]	[0.133]*	[0.124]	[0.097]**	[0.097]**
Foreign	0.071	0.042	0.019	0.007	−0.008	−0.007	0.360	0.329	0.249	0.087	0.041	0.041
	[0.022]*	[0.021]*	[0.018]	[0.021]	[0.017]	[0.017]	[0.121]*	[0.111]**	[0.101]*	[0.108]	[0.084]	[0.085]
Default history			0.522			0.027			0.488			0.045
			[0.041]**			[0.083]			[0.042]**			[0.082]
Portfolio spreads		0.453	0.517		0.561	0.563		0.498	0.545		0.555	0.559
		[0.044]**	[0.040]**		[0.029]**	[0.030]**		[0.046]**	[0.042]**		[0.028]**	[0.029]**

Note: The sample consists of 627 country/year observations. Single asterisks indicate significance at the 5% level; double asterisks indicate significance at the 1% level. Standard errors are in brackets.

Table 5.2 indicates that news on wars and violence are significantly associated with higher spreads, in all specifications. The impact of war news on spreads seems to be substantial: on the basis of the log specification (first column), a doubling of the number of war news would result in an 11.4 percent increase in the spreads; on the basis of the shares specification (seventh column), a 10 percentage point increase in the share of war news at the expense of "other" news would result in a 6.4 percent increase in the spreads.

The estimated coefficients on both bad economic news and good/neutral economic news have the expected signs, though they are statistically significant only in a subset of specifications. In the shares specification, the coefficient on bad economic news is always significantly larger (more positive) than the coefficient on good/neutral economic news. This implies that a shift of news items from the category "other" to the category "bad economic news" tends to raise spreads more than a shift to the "good/neutral economic news" category. The coefficients on other types of news are not robust to changes in specification. Default history is significantly associated with higher spreads when individual country fixed effects are omitted. Controlling for country effects, default history has the expected sign but is no longer statistically significant (i.e. the default history variable is strongly correlated with the country fixed effects). The average (market-capitalization-weighted) spread for all emerging markets is significantly and robustly associated with the spreads in individual markets (with an elasticity of 0.45 to 0.55): co-movement of spreads across emerging markets was substantial in historical times, though—and this is one of the main themes of this book—not as high as in the 1990s.

Table 5.3 presents regression specifications with controls for various macroeconomic characteristics. In addition to default history and market-capitalization-weighted average spreads, we include gold standard adherence, exports, the government surplus, and debt per capita. In this table, we report the results obtained using not only fixed effects panels, but also two econometric techniques (Feasible Generalized Least Square and Arellano-Bond) aimed at taking into account the fact that spreads tend to be persistent in time.[8] The Annex to this chapter

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[8] The first technique, feasible generalized least squares, lets the residuals (unexplained portion of the spreads) take an AR(1) form, with a country-specific autoregression coefficient. The second technique, developed by Arellano and Bond (1991), includes the lagged dependent variable in the list of regressors, and corrects the well known bias that would result in a panel context by using further lags of the variables (in levels and changes) as

AQ: Please provide reference for Arellano and Bond (1991)

Table 5.3. Spreads, News, and Macroeconomic Variables, 1870–1913

	Fixed effects panel			Feasible generalized least squares			Arellano-Bond	
Wars	0.032 [0.016]*	0.045 [0.013]**	0.042 [0.015]**	0.024 [0.006]**	0.023 [0.007]**	0.027 [0.006]**	0.028 [0.008]*	0.034 [0.008]**
Good / Neutral Economic	−0.024 [0.023]	−0.032 [0.020]	−0.021 [0.023]	0.002 [0.009]	−0.004 [0.010]	0.008 [0.009]	0.012 [0.013]	−0.005 [0.013]
Bad economic	0.013 [0.022]	0.048 [0.018]**	0.030 [0.021]	0.011 [0.008]	0.013 [0.008]	0.012 [0.007]	0.029 [0.011]*	0.026 [0.011]*
Reform	−0.017 [0.024]	−0.021 [0.020]	−0.006 [0.023]	−0.006 [0.009]	−0.009 [0.010]	−0.006 [0.009]	−0.008 [0.013]	−0.007 [0.013]
Political	0.028 [0.021]	0.014 [0.018]	0.022 [0.020]	−0.007 [0.008]	−0.002 [0.009]	−0.009 [0.008]	0.008 [0.012]	−0.001 [0.011]
Foreign	0.041 [0.019]*	−0.001 [0.017]	0.019 [0.019]	−0.003 [0.007]	−0.004 [0.008]	−0.000 [0.007]	0.014 [0.011]	0.004 [0.010]
Gold standard	−0.052 [0.045]	−0.093 [0.038]*		−0.178 [0.037]**		−0.184 [0.034]**	−0.151 [0.045]**	−0.158 [0.041]**
Default history	0.213 [0.116]	0.057 [0.084]	0.229 [0.110]*	0.079 [0.068]		0.238 [0.060]**	0.518 [0.169]**	0.566 [0.118]**
Exports	−0.465 [0.042]**		−0.195 [0.057]**		−0.230 [0.026]**		−0.114 [0.060]	−0.088 [0.054]
Fiscal surplus	−0.143 [0.069]*		−0.053 [0.068]		−0.040 [0.032]		−0.018 [0.037]	−0.010 [0.035]
Debt per capita			0.014 [0.052]					0.077 [0.042]
Portfolio spreads		0.541 [0.031]**	0.411 [0.054]**			0.445 [0.042]**	0.264 [0.055]**	0.175 [0.046]**
Lagged spreads							0.425 [0.039]**	0.462 [0.033]**
Number of observations	531	627	522	627	531	627	482	477

Note: Single asterisks indicate significance at the 5% level; double asterisks indicate significance at the 1% level. Standard errors are in brackets. News indicators refer to the logarithm of the number of news for the category indicated.

reports the results obtained using alternative econometric techniques and equation specifications, showing that our key results are robust to such changes.

The importance of war and violence news is confirmed when controlling for other variables, including macroeconomic variables and adherence to the gold standard. As before, a shift from bad economic news to good economic news would typically tend to be associated with a decline in spreads. Controlling for the gold standard is of special interest, in view of the significant results obtained by Bordo and Rockoff (1996) and Obstfeld and Taylor (2003). In our sample, and controlling for individual country effects, the gold standard is significantly associated with lower spreads in some, though not all specifications.[9] In a number of specifications, some macroeconomic variables are significant. In particular, higher exports and a higher fiscal surplus are negatively and significantly associated with spreads. Other macroeconomic variables, such as debt per capita and inflation, are typically not significant.[10]

While we prefer techniques that include individual country fixed effects, we are aware that the individual country fixed effects contain useful information and try to assess whether they are systematically related to time-invariant (or near time-invariant) country characteristics. The estimated individual country dummies seem to bear some relationship to characteristics such as adherence to the gold standard, geographic location, links to the British Empire, and a history of default. Table 5.4 ranks the countries in our sample according to the individual country dummies estimated in the fixed effects regression in the fifth column of Table 5.2, which includes news and the portfolio

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instruments. In the Arellano-Bond specifications, we let debt per capita be an endogenous variable because, as discussed above, spreads contribute to determining the debt level.

[9] At the same time, countries with a perfect record of adherence to the gold standard clearly enjoyed lower spreads, an issue we discuss below.

[10] The coefficient on debt per capita is usually not significantly associated with spreads; moreover, the coefficient is not robust to changes in specification and sample (not reported for the sake of brevity), especially in regressions without individual country fixed effects. In particular, the results are highly sensitive to the inclusion of Queensland in the sample. This may partly reflect the endogeneity of debt with respect to bond spreads: countries that are able to borrow at relatively low interest rates will accumulate considerable amounts of debt. Queensland may be an example of this, as it had relatively low spreads and an unusually high debt to population ratio in our set of countries. In additional (unreported) specifications, inflation (which reduced the size of the sample considerably, owing to limited data availability) did not turn out to be significant. Perhaps this should not be too surprising, given that inflation was not one of the variables of interest in publications such as the *Investor's Monthly Manual*.

Table 5.4. Individual Country Effects and Country Characteristics, 1870–1913

Country	Individual country effect	Gold Standard	History of default	Links to British Empire	Europe
Costa Rica	0.90	~	+		
Colombia	0.68	~	+		
Uruguay	0.60	~	+		
Mexico	0.47	~	+		
China	0.32				
Japan	0.31	~			
Argentina	0.29	~	+		
Egypt	0.27	~	+		+
Greece	0.26		+		
Turkey	0.25	~	+		
Chile	0.10	~	+		
Portugal	−0.03	~	+		+
Brazil	−0.05	~	+		
Hungary	−0.17	~			+
Russia	−0.33	~			+
Queensland	−0.66	+		+	
Sweden	−0.80	+			+
Canada	−0.87	+		+	

Note: Individual country effects are the estimated dummies from the regression in the fifth column of Table 5.2. For the gold standard, a "plus" sign indicates adherence for essentially the entire period, and a tilde indicates adherence for only part of the period.

spreads, but excludes the gold standard dummy and macroeconomic variables.[11] The dummies represent the (period average) portion of the spreads that is not explained by the independent variables in the regression for each country. Serial defaulters such as Costa Rica, Colombia, and Uruguay display the largest individual country dummies; more generally, countries with a history of default have larger individual country fixed effects than do countries with an impeccable repayment record. Countries located in Europe, countries that adhered to the gold standard for essentially the whole period (Queensland, Sweden, and Canada), and countries with close links to the British Empire (Canada and Queensland) also have relatively low individual country fixed effects. Given the substantial overlap of countries across categories, and the small sample, the reader will note how difficult it is to tell what matters is, for example, links to the Empire or adherence to the gold standard. Interestingly, China and Japan faced relatively high spreads (controlling for fundamentals), despite their unblemished

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[11] Similar exercises based on alternative regression specifications yield broadly similar rankings.

repayment record, possibly because they were not well known to British investors: not only were these countries far from Britain in terms of geography and culture, but also they had accessed the London market for the first time relatively recently. Alternatively, Chinese bonds may have been issued with more collateral, whereas following her victory over Russia, Japan could borrow in London with few securities for its debt (Suzuki, 1994; Sussman and Yafeh, 2000).

In Box 5.1. we show that French investors in Paris were roughly in agreement with their peers in London regarding the ranking of borrowing countries. All in all, regression analysis on the historical data

Box 5.1. INVESTMENT BANKS AND INFORMATION: LONDON VERSUS PARIS

While the London Stock Exchange was the largest in the world, Paris was in second place. Investor characteristics in the two bourses were, however, quite different. In London there were 250,000 individual investors in 1870 and approximately one million by 1913, each holding on average of 15 different securities (Michie, 1987, p. 120). By contrast, in Paris large banks played a major role. In Britain, investors had access to economic and political information which was used to assess the creditworthiness of sovereign borrowers. In France, the large French bank, Credit Lyonnais developed its own research department that specialized in assessing the creditworthiness of borrowing countries (Flandreau, 2003b). It turns out that both the Credit Lyonnais and British investors reached similar conclusions. As illustrated in the table below, the grading system of the Credit Lyonnais (on a scale form I to III, see Flandreau 2003b, p. 44) is very similar to the ranking of country spreads in London: countries with lower spreads in London tend to have a higher grade in Paris. We conclude that private investors (in London) and investment banks (in Paris) were in agreement regarding the quality of borrowing countries.

AQ: Please provide reference for Michie, 1987

1898 Spreads and the Grading System of the Credit Lyonnais (ca. 1898)

Country	Average Spread in 1898	Credit Lyonnais Grade
Sweden	0.03	I
Russia	0.03	I
Hungary	0.04	II
Japan	0.05	II
Portugal	0.05	III
Greece	0.04	III
Argentina	0.055	III
Brazil	0.075	III

suggests that some types of news, notably "war and violence" news are significantly and fairly robustly associated with higher spreads; and that macroeconomic variables such as the fiscal deficit and exports are significantly associated with spreads, with the expected signs.

5.4 Results for the Modern Sample

For the modern period, we find substantially weaker results regarding the importance of news, and similar or slightly weaker results for the role of macroeconomic variables. We present estimates based on both annual and quarterly data. Our sample consists of the eight emerging markets for which spreads are available beginning in 1994. This yields about seventy annual observations with the requisite macroeconomic data and news indicators. Using quarterly data makes it possible to increase the number of observations to around 150 to 230 (depending on the specification), though this requires excluding Nigeria from the sample, owing to data limitations.[12]

Quantitative indicators of news are often significant, especially in the regressions without individual country fixed effects. News about wars and violence seem to play some role, but to a smaller extent than in the past. To the extent that news seem to matter, economic news bear the closest association with spreads (Table 5.5). Somewhat paradoxically, positive/neutral economic news seem to raise spreads even more than do negative economic news, though the difference is not statistically significant. Our interpretation is that the financial press tends to pay more attention to countries experiencing trouble, and will report both positive and negative economic news about countries experiencing a crisis or emerging from a crisis. In the modern sample there are also some signs that news regarding investor-friendly reforms are associated with lower spreads—an empirical association that we do not find in the historical period.

In some specifications, macroeconomic variables are significantly associated with spreads: the higher exports, real economic growth, and the fiscal balance (as a share of GDP), the lower the spreads

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[12] While one could increase the number of emerging markets by accepting a shorter sample period, it seems important to work with the longest available sample period, given that the historical sample period is already far longer than the modern period. A number of existing studies on modern data have used shorter sample periods with larger samples of countries, and have found broadly similar results for the macroeconomic variables.

Table 5.5 Spreads and News, 1994–2002

	Annual data						Quartely data			
	Logs				Fractions		Logs		Fractions	
	No F.E.		With F.E.		No F.E.	With F.E.	No F.E.	With F.E.	No F.E.	With F.E.
Wars/Instability	0.166 (0.079)*	0.183 (0.074)*	0.033 (0.086)	0.063 (0.074)	2.641 (0.699)*	1.683 (0.767)*	0.165 (0.056)*	0.041 (0.041)	1.155 (0.239)*	0.471 (0.177)*
Good/Neutral economic	0.397 (−0.108)*	0.366 (0.101)*	0.262 (0.102)*	0.208 (0.089)*	2.665 (0.503)**	1.316 (0.496)*	0.251 (0.047)**	0.121 (0.033)*	1.481 (0.206)**	0.542 (0.148)*
Bad economic	0.235 (0.089)*	0.217 (0.083)*	0.089 (0.086)	0.055 (0.074)	3.381 (0.684)*	1.722 (0.732)*	0.218 (0.051)*	0.071 (0.035)*	1.527 (0.234)**	0.514 (0.166)*
Reform	−0.331 (0.109)*	−0.294 (0.103)*	−0.125 (0.105)	−0.095 (0.091)	−1.282 (0.814)	−0.147 (0.681)	−0.217 (0.061)*	−0.103 (0.041)*	−0.013 (0.264)	−0.016 (0.174)
Political	−0.118 (−0.087)	−0.107 (0.081)	0.024 (0.082)	0.038 (0.071)	0.922 (0.539)	0.578 (0.476)	−0.031 (0.045)	0.098 (0.032)*	0.755 (0.200)*	0.463 (0.138)*
Foreign	−0.27 (0.087)*	−0.291 (0.082)*	−0.033 (0.103)	−0.079 (0.089)			−0.317 (0.053)**	−0.103 (0.039)*		
Portfolio spreads		0.798 (0.241)*		0.849 (0.184)*	0.799 (0.240)*	0.876 (0.184)*	0.869 (0.104)**	0.885 (0.068)**	0.878 (0.111)**	0.918 (0.071)**
Constant	1.653 (0.229)**	0.011 (0.540)	1.376 (0.290)*	−0.276 (0.437)	−1.221 (0.648)	−0.763 (0.554)	0.017 (0.222)	−0.054 (0.146)	−0.748 (0.274)*	−0.318 (0.182)
Number of observations	72	72	72	72	72	72	282	282	263	263

Note: F.E. = Fixed Effects.

Table 5.6. Spreads, Macroeconomic Variable, and News, 1994–2002

	Annual data					Quarterly data			
	Fixed effects			Feasible generalized least squares		Fixed effects		Feasible generalized least squares	Arellano-Bond
Wars/Instability	−0.002	0.041	0.125	0.083	0.153	0.061	0.041	−0.005	0.037
	[0.085]	[0.076]	[0.048]*	[0.047]	[0.038]**	[0.045]	[0.049]	[0.029]	[0.027]
Good/Neutral economic	0.288	0.229	0.121	0.263	0.191	0.124	0.076	0.036	0.014
	[0.100]*	[0.090]*	[0.061]	[0.064]**	[0.048]**	[0.036]*	[0.045]	[0.025]	[0.025]
Bad economic	0.077	0.053	0.016	0.161	0.066	0.041	0.057	0.005	−0.004
	[0.083]	[0.074]	[0.053]	[0.049]**	[0.044]	[0.039]	[0.045]	[0.024]	[0.024]
Reform	−0.164	−0.119	−0.223	−0.270	−0.282	−0.064	−0.114	−0.032	−0.066
	[0.106]	[0.095]	[0.058]**	[0.067]**	[0.047]**	[0.045]	[0.053]*	[0.026]	[0.027]
Political	0.000	0.023	−0.022	0.015	−0.080	0.084	0.089	0.046	0.017
	[0.081]	[0.072]	[0.044]	[0.046]	[0.036]*	[0.036]	[0.042]*	[0.023]*	[0.022]
Foreign	0.058	−0.021	−0.116	−0.167	−0.185	−0.061	−0.079	−0.029	−0.025
	[0.108]	[0.098]	[0.055]*	[0.063]**	[0.044]**	[0.045]	[0.052]	[0.025]	[0.028]
Exports	−0.438	−0.258	−0.535	−0.138	−0.219	−0.251	−0.322	−0.220	−0.318
	[0.218]	[0.200]	[0.220]*	[0.063]*	[0.077]**	[0.091]*	[0.108]**	[0.046]**	[0.100]
Fiscal surplus	−2.457	−1.334	−2.381	−2.295	−2.933	0.000	0.000	−0.001	−0.001
	[1.921]	[1.734]	[1.133]*	[1.446]	[0.857]**	[0.003]	[0.003]	[0.002]	[0.002]
Portfolio spreads		0.759	0.720	0.676	0.745	0.838	0.839	0.832	0.521
		[0.192]**	[0.111]**	[0.137]**	[0.080]**	[0.073]*	[0.089]**	[0.077]**	[0.053]*
Debt/GDP			−0.317		−0.815				
			[0.348]		[0.224]**				
Growth real GDP			−1.034		−2.110		−1.195	−0.355	−0.618
			[0.952]		[0.818]**		[0.270]**	[0.135]**	[0.135]*
Lagged spreads									0.411
									[0.047]*
Number of observations	72	72	56	72	56	230	161	161	154

(Table 5.6). Other macroeconomic variables, such as the debt/GDP ratio do not seem to play much of a role and occasionally are found to have an impact contrary to expectations.

Consistent with our theme of greater co-movement of spreads in modern times than in historical times (which will be discussed in detail in Chapter 6), we find the coefficient on (market-capitalization-weighted) average spreads to be 0.8 to 0.9 in modern times, compared with 0.4 to 0.5 in historical times.[13]

In interpreting our results for the importance of news about wars and other instances of politically motivated violence, and reforms, in the modern period compared with the historical period, a few caveats are in order. Regarding wars, there was certainly no shortage of major events in the modern sample, including political assassinations, coups, ethnically motivated unrest, and so on. Nevertheless, even if we do not have a precise way of comparing the importance of war news between the modern and historical periods (beyond the sheer number or share of news items), most people's intuition is that the number of major wars and all-out armed conflicts seem to have been less frequent in the modern sample than in the historical sample. Perhaps this is a factor underlying the result that war news seem to have had less impact on spreads in modern times than in historical times. Regarding reforms, the very notion of reforms seems to be fundamentally different in modern times from historical times. Indeed, classifying news about reforms for the modern period seems to us to have been a somewhat easier exercise than for the past. In modern times, there seems to be a considerable degree of consensus on what constitutes "market-friendly, investor-friendly" reforms. These are not only generally judged to be desirable, but are often reported as such in the financial press (including the *Financial Times*, our main source of news). In this light, the tentative evidence that reforms may help reduce spreads in modern times, though only in a few of our estimates, seems fairly consistent with modern notions of reform.

On the whole, investors today and in the past seem to pay attention to both macroeconomic fundamentals and information reflected in the news, especially news related to violent conflict.

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[13] Including the lagged dependent variable among the regressors reduces the estimated coefficient on average spreads for both the historical sample and the modern sample; the result of higher co-movement in modern times than in historical times is thus maintained, as long as comparable techniques are used for both periods.

It seems, however, that country-specific fundamentals today play a less significant role in determining spreads than they did in the past: news matter somewhat less today than they did in the past; and while macroeconomic variables matter as much or almost as much today as they did in the past, it is important to bear in mind the higher quality of today's macroeconomic data. We conjecture that while investors in the past paid close attention to macroeconomic data, they were aware of the limitations of such data, and therefore focused even more closely on information that they obtained through the news.

Annex—Robustness of the Results

In this Annex, we check the robustness of our results to the use of a variety of estimation methods, as customary in those empirical studies in economics where there is no overwhelming presumption that a particular estimation method is the most appropriate. As in the baseline estimates reported in the main text, our key results remain that: war news are significantly and robustly associated with spreads; gold standard adherence and default history are statistically significant in many specifications; exports and, less frequently, fiscal measures are also significant in a number of cases (Tables 5.A.1 and 5.A.2). We include estimates based upon a variety of techniques, each of which has both advantages and drawbacks, as follows.

Pooled panel regressions with no individual country fixed effects make use of the cross-country information, but are subject to the well-known drawback that non-time varying country-specific features that are not included in the list of control variables may be driving the results. *Panel regressions with fixed effects* appropriately take into consideration individual country fixed effects, though it does not correct for persistence in the spreads. In some specifications, we include the lagged spreads. In a panel context, this introduces a bias in the coefficients, though such bias becomes smaller as the length of the time period increases. With more than 40 years of data, the bias is relatively small (Judson and Owen, 1999). *Seemingly Unrelated Regressions* (not reported for the sake of brevity) increases the efficiency of the estimates by taking into account the contemporaneous correlation of the residuals across countries. *Feasible Generalized Least Squares* let the

Annex Table 5.A.1. Pooled And Fixed Effect Regressions, 1870–1913.

	No fixed effects						With fixed effects					
Wars	0.086 [0.020],	0.081 [0.019]**	0.142 [0.022]**	0.095 [0.021]**	0.081 [0.017]**	0.080 [0.019]**	0.054 [0.016]**	0.031 [0.016]	0.032 [0.016]*	0.027 [0.008]**	0.023 [0.009]**	0.029 [0.009]**
Good/Neutral economic	−0.119 [0.026],	−0.098 [0.025]**	−0.050 [0.028]	−0.024 [0.027]	−0.036 [0.023]	0.003 [0.026]	−0.110 [0.023]**	−0.016 [0.023]	−0.017 [0.024]	−0.010 [0.011]	−0.015 [0.013]	−0.017 [0.013]
Bad economic	0.057 [0.030]	0.053 [0.029]	0.019 [0.033]	0.031 [0.031]	0.051 [0.026]*	0.035 [0.029]	0.041 [0.023]	0.018 [0.022]	0.013 [0.022]	0.015 [0.011]	0.006 [0.012]	0.012 [0.012]
Reform	−0.006 [0.032]	0.018 [0.030]	0.028 [0.034]	0.049 [0.032]	0.010 [0.027]	0.022 [0.030]	−0.017 [0.025]	−0.013 [0.024]	−0.013 [0.024]	0.002 [0.012]	0.005 [0.014]	0.007 [0.013]
Political	−0.086 [0.002],	−0.118 [0.021]**	−0.123 [0.027]**	−0.088 [0.025]**	−0.138 [0.019]**	−0.092 [0.024]**	−0.013 [0.022]	0.025 [0.021]	0.025 [0.021]	0.003 [0.010]	0.006 [0.012]	0.005 [0.012]
Foreign	0.033 [0.021]	0.026 [0.020]	0.052 [0.022]*	−0.004 [0.021]	0.03 [0.018]	−0.032 [0.020]	0.019 [0.021]	0.034 [0.019]	0.043 [0.020]*	0.005 [0.010]	0.015 [0.011]	0.008 [0.011]
Gold standard	−0.450 [0.047],	−0.366 [0.046]**			−0.250 [0.043]**	−0.169 [0.050]**	−0.275 [0.044]**			−0.015 [0.022]	−0.004 [0.026]	−0.011 [0.025]
Default history		0.380 [0.044]**		0.380 [0.048]**	0.463 [0.041]**	0.427 [0.050]**	−0.213 [0.101]*		0.216 [0.116]		0.022 [0.065]	0.035 [0.064]
Exports			−0.216 [0.024]**	−0.185 [0.024]**		−0.125 [0.024]**		−0.468 [0.038]**	−0.479 [0.046]**		−0.074 [0.030]*	0.016 [0.035]
Fiscal surplus			−0.405 [0.093]**	−0.400 [0.087]**		−0.144 [0.087]		−0.142 [0.069]*	−0.134 [0.071]		−0.063 [0.041]	−0.035 [0.040]
Debt per capita				−0.120 [0.022]**		−0.072 [0.022]**		0.031	−0.026 [0.055]		−0.023 [0.031]	−0.010 [0.031]
Portfolio spreads					0.462 [0.040]**	0.350 [0.050]**				0.157 [0.022]**		0.151 [0.032]**
Lagged spreads										0.756 [0.023]**	0.786 [0.025]**	0.750 [0.025]**
Number of observations	627	627	531	522	627	522	627	531	522	600	508	508

Note: Single asterisks indicate significance at the 5% level; double asterisks indicate significance at the 1% level. Standard errors are in brackets. News indicators refer to the logarithm of the number of news for the category indicated.

Annex Table 5.A.2. Feasible Generalized Least Squares and Arellano-Bond Regressions, 1870–1913

	Feasible generalized least square			Arellano-Bond					
Wars	0.025 [0.006]**	0.024 [0.007]**	0.023 [0.007]**	0.030 [0.007]**	0.029 [0.007]**	0.029 [0.009]**	0.028 [0.008]**	0.028 [0.009]**	0.031 [0.007]*
Good/Neutral Economic	−0.002 [0.009]	−0.004 [0.010]	−0.004 [0.010]	−0.002 [0.012]	−0.003 [0.012]	0.014 [0.013]	0.012 [0.013]	0.010 [0.013]	−0.002 [0.012]
Bad economic	0.011 [0.008]	0.011 [0.008]	0.010 [0.008]	0.030 [0.010]**	0.030 [0.010]**	0.030 [0.011]**	0.027 [0.011]*	0.028 [0.011]*	0.032 [0.010]**
Reform	−0.007 [0.009]	−0.006 [0.010]	−0.006 [0.010]	−0.016 [0.012]	−0.015 [0.012]	−0.014 [0.013]	−0.007 [0.013]	−0.007 [0.013]	−0.017 [0.012]
Political	−0.006 [0.008]	−0.004 [0.008]	−0.005 [0.008]	0.010 [0.011]	0.008 [0.010]	0.005 [0.012]	0.002 [0.012]	0.004 [0.012]	0.013 [0.011]
Foreign	−0.003 [0.007]	−0.005 [0.008]	−0.004 [0.008]	0.005 [0.009]	0.006 [0.009]	0.008 [0.011]	0.009 [0.011]	0.010 [0.011]	0.010 [0.009]
Gold standard	−0.191 [0.037]**	−0.115 [0.037]**	−0.108 [0.037]**	−0.135 [0.042]**	−0.129 [0.042]**		−0.127 [0.045]**	−0.130 [0.045]**	−0.152 [0.042]**
Default history		0.063 [0.084]	0.134 [0.096]		0.630 [0.163]**		0.456 [0.169]**	0.418 [0.171]*	0.684 [0.163]**
Exports		−0.216 [0.027]**	−0.211 [0.028]**			−0.153 [0.060]*	−0.106 [0.060]	−0.113 [0.061]	
Fiscal surplus		−0.031 [0.030]	−0.029 [0.030]			−0.026 [0.037]	−0.024 [0.037]	−0.020 [0.037]	
Debt per capita			−0.010 [0.031]					−0.043 [0.052]	
Portfolio spreads									0.239 [0.049]**
Lagged spreads				0.346 [0.034],	0.344 [0.034]**	0.437 [0.039]**	0.411 [0.039]**	0.413 [0.040]**	0.371 [0.034]**
Number of observations	627	531	522	568	568	482	482	477	568

Note: Single asterisks indicate significance at the 5% level; double asterisks indicate significance at the 1% level. Standard errors are in brackets. News indicators refer to the logarithm of the number of news for the category indicated.

residuals be autocorrelated with a country-specific AR(1), thus taking into account that of the persistence of spreads through the persistence of the residuals. *Arellano-Bond* includes the lagged dependent variable, but appropriately corrects the bias that would result in a panel context, by using further lags of all the variables as instruments.

6

Co-movement of Spreads: Fundamentals or Investor Behavior?

6.1 Introduction

In previous chapters, we have focused on the determinants of borrowing costs. We have seen that economic characteristics of borrowing countries, as well as domestic and international instability had an impact on the perception of countries by foreign investors, as reflected in bond spreads. In this chapter, we turn to the co-movement of spreads across different countries, and to the frequency of crises shared by more than one country (a phenomenon sometimes called "contagion").[1]

Overall, we find that co-movement of spreads among emerging markets was far higher in the 1990s than during the pre-First World War era. Moreover, sharp changes in spreads (or crises, defined in a number of ways) during the 1990s typically affected many countries at the same time, whereas global crises were virtually nonexistent in the historical sample. However, the prevalence of high co-movement of spreads and contagious crises in modern times appear to be primarily a feature of the 1990s: co-movement of spreads ceases to be relatively high in the second half of 2001, with the onset of the debt crisis in Argentina (the country with the largest share in the Emerging Markets Bond Index (EMBI) index until then). Investors and financial markets of the twentyfirst century would seem to be returning to the behavior they displayed before the First World War, although only time will tell whether this is a temporary or a more permanent return.

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[1] Although there are a variety of definitions of "contagion" in the literature (e.g. Kaminsky and Reinhart 2000; and Kaminsky, Reinhart, and Vegh 2002), we will use the term in this chapter to describe crises that occur simultaneously in more than one country.

While our finding of greater co-movement in modern times (until recently) than historical times is based upon bond spreads, other studies corroborate this result for other asset prices. Based upon equity market returns, Goetzmann et al. (2002) show that cross-country co-movement of equity markets has increased over the past decades, thus requiring investors to hold equities in an ever-increasing number of (more and more similar) countries for their portfolios to be effectively diversified.

We begin this chapter by documenting the extent of co-movement using bond spreads (Section 6.2). We then ask whether greater co-movement of spreads today might be driven by greater co-movement of fundamentals (Section 6.3). We show that fundamentals co-move more strongly today, and analyze in detail one factor underlying such greater co-movement, namely today's lower degree of specialization in emerging markets' output and exports. Before the First World War, emerging market countries were highly specialized in production and exports: Argentina was largely about wheat and wool; Brazil was almost entirely about coffee and rubber. In contrast, today's borrowing countries are far more similar to each other than their historical peers: nowadays, both Argentina and Brazil are relatively well-diversified economies. Nevertheless, in Section 6.4, we show that not all of the greater co-movement of spreads today can be attributed to greater co-movement of fundamentals. Indeed, considering the portion of spreads that is unexplained by fundamentals (the residuals from running regressions of spreads on news and macroeconomic variables, as in Chapter 5), co-movement is still significantly higher in modern times than in historical times.

6.2 Co-movement and the Spread of Crises

We measure the co-movement of sovereign bonds issued by emerging markets using correlation coefficients, principal components analysis, and the share of sharp changes in spreads (crises) affecting more than one country at the same time.[2]

We begin with simple correlation coefficients for the spreads across pairs of emerging markets. The average correlation coefficient is 0.71

[2] Additional techniques to measure co-movement are reported in Mauro, Sussman, and Yafeh (2002).

for the modern period prior to Argentina's difficulties (November 1994–June 2001), compared with 0.47 in the historical period (May 1877–December 1913).[3] Nevertheless, if the modern sample is extended to 2004 (our data end in February), the average correlation coefficient falls to 0.39, primarily because the debt crisis in Argentina (and the rise in spreads on Argentinean bonds to extremely high levels) did not immediately affect other countries. To the extent that the Argentinean crisis spread to other countries, it did so with varying lags for different countries. If Argentina is excluded from the sample, the average correlation coefficient for 1994–2004 is 0.55, similar to the pre-First World War era, although not as high as in the 1990s.

Next, we compute another standard measure of co-movement, namely, the share of variation accounted for by the first principal component in the sovereign spread series for the various emerging market countries considered. This statistic is a measure of the percent of variation which is common to the different series—another way to describe how closely they co-move. The overall pattern of the results is similar to that for the average correlation coefficients. The proportion of variation in emerging market spreads accounted for by the first principal component is about ½ in 1877–1913, about ¾ in 1994–2001, and again about ½ if tests are carried out for the entire 1994–2004 period. More specifically, using monthly data for May 1877–December 1913, the share of variation accounted for by the first principal component is 54.1 percent (with a standard error of 1.8 percentage points).[4] The figures remain unchanged when other samples are used—for example, a sample excluding all countries experiencing payment difficulties. In modern times, the main sample considered is that of the eight emerging markets for which the EMBI spread data are available starting in November 1994. Monthly data are used for consistency with the estimates based upon historical data.[5] The share of

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[3] Some of the techniques used in this section (notably principal components analysis) require a complete and balanced sample. To exclude observations for which the quality of the historical spreads data is less reliable, we need to drop the whole series for the country in question. Our baseline estimates are therefore conducted on the sample of countries for which the spreads are reliable throughout: we include Argentina, Brazil, Canada, Chile, China, Hungary, Japan, Portugal, Queensland, Russia, and Sweden. The exclusion of several countries that experienced (idiosyncratic) defaults would tend to lead us to find greater co-movement. Using different samples, including the full sample of countries, does not substantially alter any of our results.

[4] Details on the calculation of the standard errors appear in Mauro, Sussman, and Yafeh (2002). Egypt is excluded from this exercise because it was taken over by Britain in the middle of the period.

[5] The results at higher frequencies, such as daily or weekly, are not substantially different.

variation accounted for by the first principal component is about 74.6 percent (with a standard error of 3.4 percentage points) for the period ending in June 2001, the onset of Argentina's debt crisis. If the sample period is extended to February 2004, the share of variation accounted for by the first principal component falls to 54.6 percent (with a standard error of 3.9 percentage points), or to 62.2 percent (with a standard error of 3.7 percentage points) if Argentina is excluded.

These statistics come to life in Figures 6.1. and 6.2. (reproduced from Chapter 2 for the convenience of the reader) describing the co-movement of spreads in the two periods. Historical spreads have country-specific shapes and levels, whereas modern emerging market spreads tend to move together, especially prior to 2001.

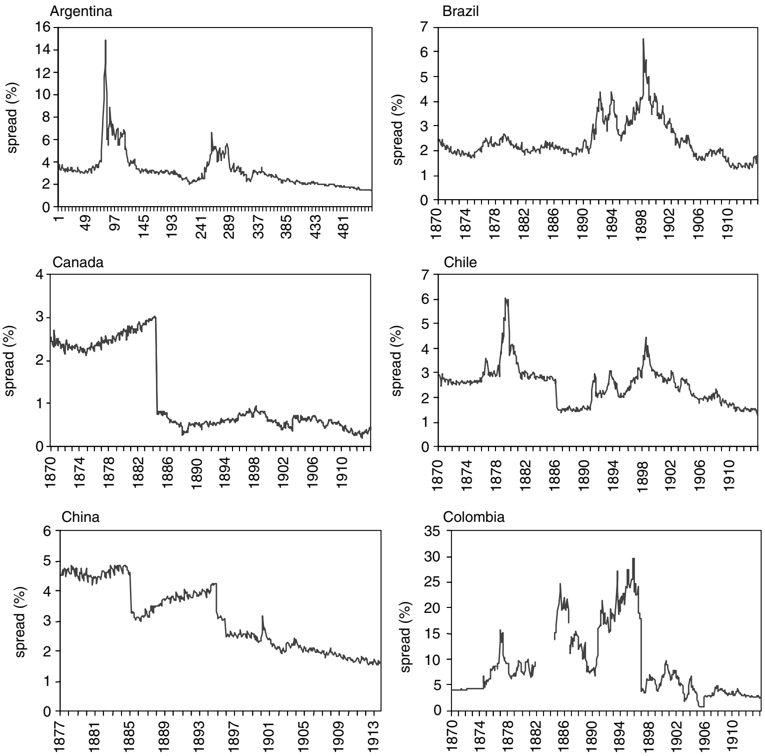

Figure 6.1. Historical spreads

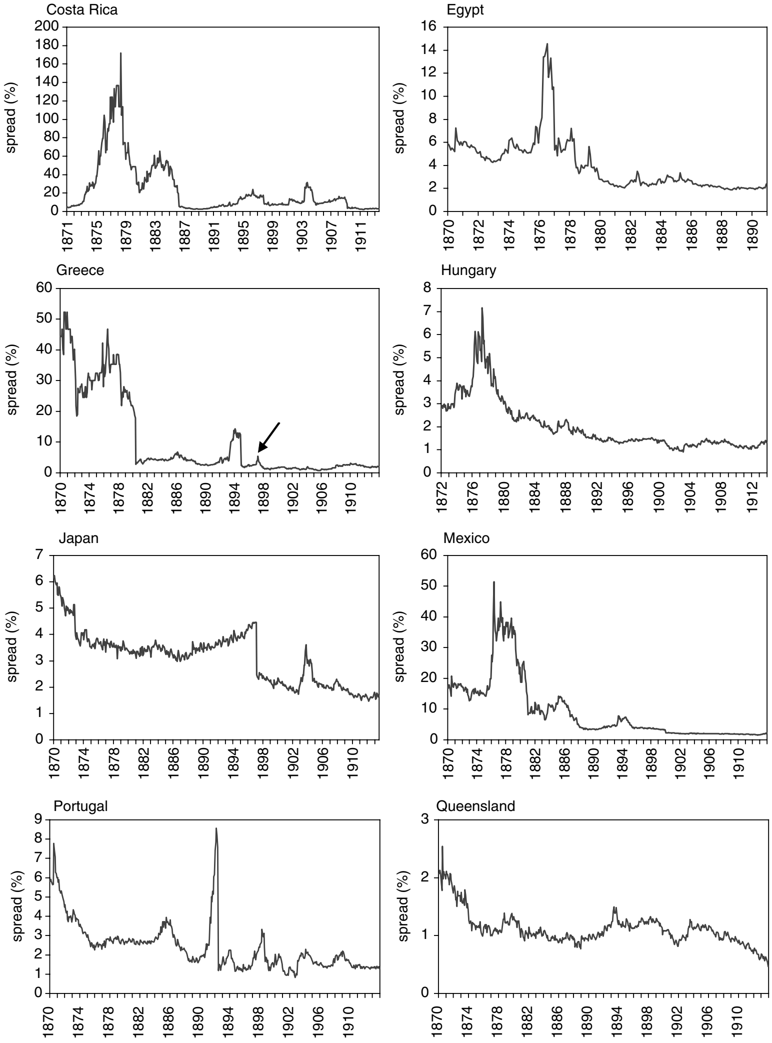

Figure 6.1. (*Continued*)

We conclude that prior to the crisis in Argentina, the modern period seemed very different from the historical period in terms of spread co-movement, but these differences have apparently diminished after 2001.

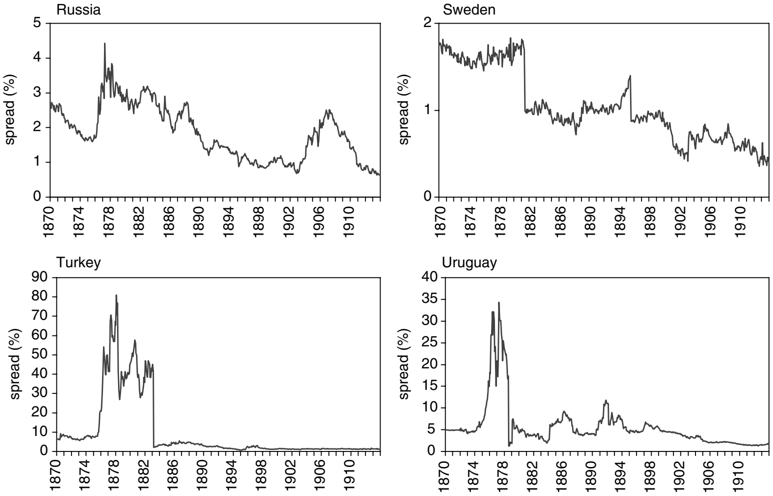

Figure 6.1. (*Continued*)

Table 6.1 reports sharp changes in spreads in the historical period and the modern period. "Sharp" changes in spreads in both periods are defined in three ways: first, as changes exceeding an absolute threshold (changes in basis points); second, as changes relative to existing spreads (changes in percent); and third, as changes exceeding two standard deviations. We then compute the proportion of such changes that affect more than one country at a time. We find that sharp changes in spreads common to more than one country at the same time are now more frequent, as a share of all sharp changes, than in the historical sample. Spreads rose sharply in all or nearly all emerging markets at the time of the Mexican crisis of late 1994 and early 1995, the Asian crisis of mid- and late 1997, and the Russian crisis of August 1998. Modern co-movement of spreads is not a phenomenon restricted to "similar" countries, or countries with close links. For example, during the Asian crisis, events in Indonesia (including news on the then President Suharto's health problems) had a substantial impact on Korean spreads, even though the two countries differed considerably with respect to their economic fundamentals (see also Mauro, Sussman, and Yafeh, 2002; and especially Sussman and Yafeh, 1999). In contrast, "contagion" (the rapid spread of crises across emerging markets) was a relatively rare phenomenon before the First

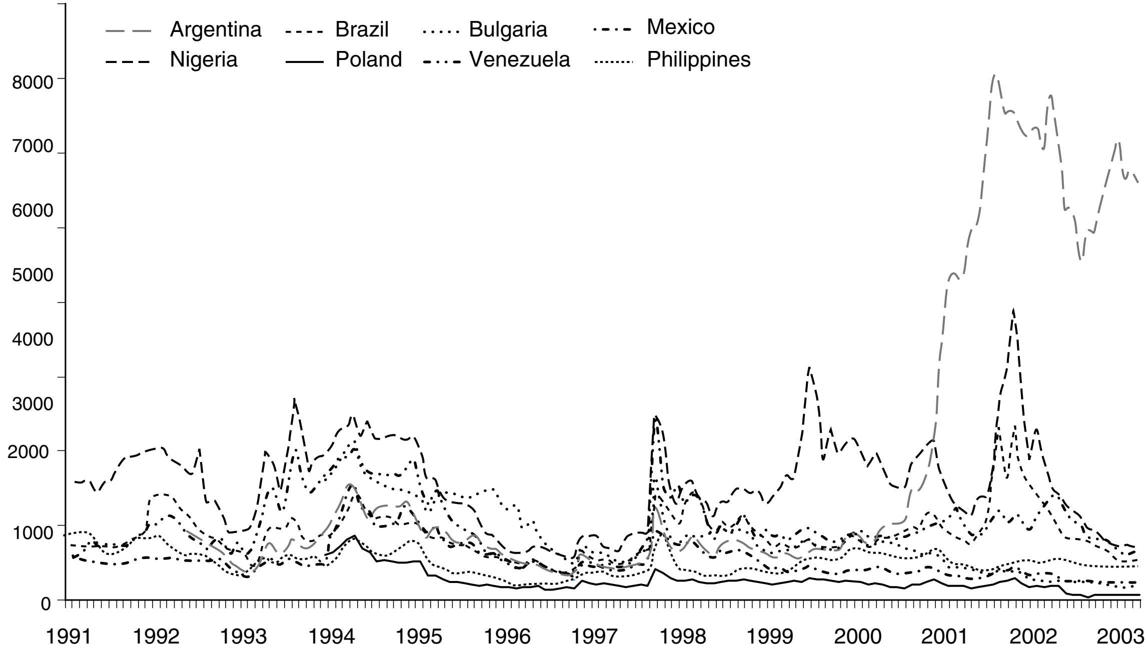

Figure 6.2. Emerging Market Bond Spreads, 1992–2003

Note: EMBI bonds spreads are in basis points.

Source: J. P. Morgan

Table 6.1 Common and country-Specific Sharp Changes, 1877–1913, and 1994–2004

	Historical sample (15 countries, 1877:5–1913:12)			Modern sample (8 countries, 1994:11–2004:2)		
	200 basis points	20%	2 std. devtns.	200 basis points	20%	2 std. devtns.
Sharp changes in percent of total observations (%)	1.4	2.2	3.8	13.2	12.9	5.1
Number of months with characteristics listed:						
No sharp changes	374	327	302	48	49	84
Sharp changes in exactly one country	40	85	81	34	38	15
Sharp changes in exactly two countries	20	20	27	17	8	10
Sharp changes in three or more countries	4	6	28	12	16	2
Proportion of months with characteristics listed:						
(As a sharp of total months in sample period, in percent)						
No sharp changes	85.4	74.7	68.9	43.2	44.1	75.7
Sharp changes in exactly one country	9.1	19.4	18.5	30.6	34.2	13.5
Sharp changes in exactly two countires	4.6	4.6	6.2	15.3	7.2	9.0
Sharp changes in three or more countries	0.9	1.4	6.4	10.8	14.4	1.8
Ratio of months with sharp changes in *more than one* country to months with sharp changes in *at least one* country	37.5	23.4	40.4	46.0	38.7	44.4

Sources: *The Economist's Investor's Monthly Manual* and J. P. Morgan Web site. The historical sample consists of fifteen countries and the modern sample consists of eight countries, listed in the text. The sample periods were chosen to ensure that there are no missing observations. Standard deviations are defined using spread changes in basis points.

Box 6.1. THE BARING CRISIS AND (THE ABSENCE OF) CONTAGION

The coverage of the Baring crisis by the *Investor's Monthly Manual* provides a vivid account of the most well known financial crisis involving sovereign debt in the period under consideration in this book. The investment bank of Baring Brothers was heavily involved in Argentinean government securities. In July 1890 the central bank suspended specie payments, there was a minor revolt, and the government resigned in August. In September the central government assumed provincial debts, which were on verge of default, leading shortly thereafter to the default of the central government and the collapse of Baring's Bank.

> The past month will long be remembered in the City. The downfall of . . . Baring . . . perhaps the greatest firm of merchant banking in the world . . . but it will be even more distinguished by the fact that a crisis of the gravest character has been averted by the action of the Bank of England, aided by Joint-stock and other banks (*Investor's Monthly Manual*, November 29, 1890, p. 564).

In the event, the banks provided liquidity to Baring, allowing it to liquidate some of its assets and negotiate with Argentina without affecting the market. A more detailed article examining developments on the London Stock Exchange shows that the collapse of Baring on November 11 had only a small impact on the Stock Exchange. Despite concerns suggesting that "speculators became alarmed at the prospect of stringent money for a lengthy period and . . . that sooner or later great masses of securities must be liquidated" (*Investor's Monthly Manual*, November 29, 1890, p. 564), the downturn was short-lived and the market rebounded immediately.

According to the *Investor's Monthly Manual*, the most important channel of potential contagion was insufficient liquidity of the financial market, exacerbated by sales of large quantities of bonds in search of liquidity. It also saluted the Bank of England for figuring this out and for supplying immediately the necessary liquidity to the market.

In a subsequent article it is noted that it was only "a small body of speculators who have suffered rather than the multitude of investors, who with commendable caution, . . . diligently refused to be led on to dangerous ground . . ." (*Investor's Monthly Manual*, December 31, 1890, p. 616.) Thus, the provision of liquidity averted herd behavior and a major financial crisis.

Collapse and Recovery of Bonds Prices—November 11 to November 27, 1890 (Based on the *Investor's Monthly Manual*, December 31, 1890)

Country/ bond(%)	Price on November 11th	Price on November 19th	Percent change	Price on November 27th	Percent change
Argentina 1884 5	80	67.5	−15.6	75	+11
Brazil 1889 4	89	77	−13.5	81	+5.2
Mexico 6	91.5	86	−6.0	92	+7.0
Uruguay 5	53	39	−26.4	54	+38.5

Greece 1881–4 5	89.25	86.5	−3.1	91	+5.2
Hungary Gold rentes	89.5	87.5	−2.2	89.5	+2.3
Italy 5 rentes	92	91	−1.1	92.5	+1.6
Portugal 3	56.25	53.75	−4.5	56.25	+4.6
Russia 4	97.5	96.75	−0.8	97	+0.3

As can be seen in the table, Argentina's immediate neighbors suffered the greatest price volatility, while European bonds moved much less. With the exception of Argentina and Brazil, all other bonds were traded on November 27 at prices that were no lower than on November 11.

In the months that followed, spreads rose in a number of Argentina's neighbors. Should this be viewed as contagion? The *Investor's Monthly Manual* is careful to note that events in neighboring countries were independent of the financial crisis involving Baring's Bank. The Uruguayan (central) bank suspended payments before the outbreak of the Baring crisis (*Investor's Monthly Manual*, December 31, 1890, p. 620). In Brazil, there was a ministerial crisis in January 1891, a problem of inconvertible paper money, allegations of vast corruption, and rumors that the Rothschilds were about to lose the role as underwriters for Brazilian debt, which resulted in a sharp decline in Brazilian bond prices (*Investor's Monthly Manual*, January 31, 1891, pp. 2, 4). In Chile a revolution broke out in January 1891, causing a decline in bond prices (Ibid.). Thus, what appeared like contagion in South America was actually the outcome of separate coinciding crises. It could be argued that the revolutionary spirit was contagious, but this is quite a departure from the concept of financial contagion as it is known today.

As noted by previous scholars, the Baring crisis bears a number of similarities with the crises of the 1990s. Eichengreen (1999b) compares it to the Mexican Tequila crisis of 1994–5. The Baring crisis also shares a number of features with the 1998 collapse of Long-Term Capital Management (LTCM), notably with respect to the magnitude of the crisis and the subsequent official intervention (by the US Federal Reserve, in the case of LTCM). While following the Fed's intervention, the consequences of the crisis were limited in advanced country financial markets, however, the Russia/LTCM crisis was followed by lastingly higher spreads in essentially all emerging market countries.

World War. Even the famous Baring crisis of 1890 was not obviously reflected in bond spreads of countries other than Argentina (Box 6.1).[6]

If, indeed, co-movement of spreads is greater today than in the past, to what extent is this attributable to greater co-movement of fundamentals today? Surely, while the impact of country-specific fundamentals on spreads may be lower in the modern period than in the historical

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[6] See also Bordo and Murshid (2000, 2002) who consider the spread of crises between "core" countries and the periphery, and Kaminsky, Reinhart, and Vegh (2002) who point to the defaults of Peru and other Latin American countries in 1826–8 as a possible historical example of contagion.

period (as discussed in Chapter 5), fundamentals must have a considerable impact on spreads in both periods, and are therefore a potential factor underlying greater co-movement of spreads in the present than in the past. The next section analyzes the extent to which fundamentals co-move in each of the two periods.

6.3 Economic Fundamentals: Exports and Specialization, "Then" and Now

Is greater co-movement of spreads in the 1990s than in the past the result of changes in investor behavior, or the natural consequence of greater co-movement of economic fundamentals? The best summary measure of economic fundamentals that is available on a broadly comparable basis for emerging markets in both the historical and the modern periods is exports in common currency (US dollars).[7]

More specifically, we summarize the similarity of economic fundamentals by looking at the co-movement of export growth rates, where co-movement is measured by the magnitude of the first (common) factor in a principal components analysis. For 1870–1913, the first principal component accounts for 26.9 percent (with a standard error of 4.6 percentage points) of the variation in the growth rate of exports of the nine countries for which we have relatively reliable and complete data.[8] For 1968–2002, the first principal component accounts for a significantly higher proportion (53 percent, with a standard error of 6.4 percentage points) of the variation in the growth rate of exports of the seven countries in our EMBI sample for which we have good exports data.[9] Similarly, the average pairwise correlation of export growth was 0.13 in the historical sample, versus 0.43 in the modern one. This finding suggests that higher co-movement of

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[7] As noted in previous chapters, modern measures of economic fundamentals such as gross domestic product or industrial production did not become popular until later in the twentieth century. GDP data are available for a very limited number of countries and usually not before the 1880s. Industrial production is available only for a smaller sample and is not representative of economic activity in emerging markets, which consisted largely of agriculture and natural resource extraction.

[8] Australia, Brazil, Canada, China, Egypt, Japan, Portugal, Russia, and Sweden.

[9] Argentina, Brazil, Mexico, Nigeria, Poland, the Philippines, and Venezuela. The results are robust to a number of variations in the estimation method, such as dropping one or two countries at a time (whether in the historical sample or in the modern sample), using more countries for a shorter historical sample period, or relying on other types of test statistics such as correlation coefficients.

Table 6.2. Composition of Exports by Product, Emerging Markets, 1900

Country	Export item 1	% of item 1 in total exports	Export item 2	% of item 2 in total exports	Export item 3	% of item 3 in total exports	% of top three in total exports	Herfindahl index of exports
Sample average		37.8		12.2		7.8	57.8	2195.0
Argentina	Wheat	32	Wool	18	Hides and skins	14	64	1544
Australia	Wool	27	Meat	5	Butter	4	36	770
Brazil	Coffee	57	Rubber	20	Cotton	3	80	3658
Canada	Lumber	13	Metals	10	Wheat	10	33	369
Chile	Nitrate soda	64	Copper	14	n.a.	0	78	4292
Egypt	Cotton	77	n.a.	0	n.a.	0	77	5929
Japan	Raw silk	21	Cotton	12	Silk products	9	42	666
Mexico	Silver	47	Copper	7	Coffee	4	58	2274
Turkey	Fruit	13	Raw silk	9	Wool	8	30	314
Uruguay	Wool	27	Hides and skins	27	Meat	26	80	2134

Source: Mitchell, B. R., *International Historical Statistics*, various issues.

fundamentals may tend to make today's spreads co-move more strongly than observed in the past.

In turn, today's greater co-movement of exports is likely to be related to the lower degree of specialization in the export structures of today's emerging markets compared with their predecessors in the pre-First World War era. Tables 6.2 and 6.3 shed further light on this hypothesis by listing the major export items of emerging markets in 1900 and 1999.

There is little doubt that emerging market countries in the previous era of globalization were far more specialized, with their top three exports accounting, on average, for close to 60 percent of total exports.[10] This figure is nearly twice as high as the corresponding statistic for emerging markets in the modern sample. The average Herfindahl Index for "concentration of exports" (in the top three

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[10] The specialization figures remain virtually unchanged for the entire 1870–1913 period: there is no evidence that countries became more diversified over time.

Table 6.3. Composition of Exports by Product, Emerging Markets, 1999

Country	Export Item 1	% of total exports	Export Item 2	% of total exports	Export Item 3	% of total exports	% of top 3 Items in total exports	Herfindahl Index of exports
Sample average		19.8		8.5		6.3	34.6	779
Argentina	423 Fixed vegetable oils	9.7	081 Animal Feed	8.8	333 Petroleum and crude oils	6.9	25.3	218
Brazil	281 Iron ore and concentrates	5.7	071 Coffee	5.1	061 Sugar and honey	4.0	14.9	75
Chile	682 Copper	27.2	287 Ores, metal concentrates	12.1	057 Fruit and nuts	7.1	46.5	938
China	894 Bady carriages and toys	4.4	851 Footwear	4.3	764 Telecom equipment	4.1	12.7	54
Colombia	333 Petroleum and crude oils	28.8	071 Coffee	12.3	322 Coal, lignite, and peat	7.2	48.3	1034
Czech Republic	781 Passenger motor cars	8.0	784 Part and accessories	5.5	778 Electrical equipment	3.7	17.1	107
Egypt	334 Refined petroleum products	27.4	333 Petroleum and crude oils	8.4	263 Cotton	6.8	42.6	869
Hungary	713 Internal combustion engines	10.8	752 Data processing equipment	8.9	781 Passenger motor cars	5.4	25.0	224
India	667 Pearls, precious stones	18.1	843 Women's outergarments	5.0	651 Textile yarn	4.4	27.6	373
Indonesia	333 Petroleum and crude oils	9.3	341 Gas	9.0	634 Wood	5.2	23.4	193
Israel	667 Pearls, Precious stones	30.1	764 Telecom equipment	11.1	752 Data processing equipment	4.2	45.5	1049
Jordan	271 Fertilizers, crude	25.6	562 Fertilizers, manufactured	10.6	541 Pharmaceutical products	10.3	46.5	876
Kenya	074 Tea	28.4	071 Coffee	10.4	334 Refined petroleum products	8.2	47.0	984
Korea	776 Thermionic cells	15.2	781 Passenger motor cars	6.9	764 Telecom equipment	5.2	27.4	307
Malaysia	776 Thermionic cells	20.4	759 Parts of and accessories	12.5	752 Data processing equipment	7.6	40.5	630
Mexico	781 Passenger motor cars	9.1	333 Petroleum and crude oils	6.5	764 Telecom equipment	5.2	20.8	152
Morocco	843 Women's outergarments	10.9	842 Men's outergarments	9.0	522 Inorganic chemicals	7.8	27.8	262
Pakiston	658 Textile articles	14.5	652 Cotton fabrics, woven	14.1	651 Textile yarn	13.2	41.8	583
Peru	971 Gold, nonmonetary	20.1	682 Copper	12.2	287 Ores, metal concentrates	10.3	42.7	660
Philippines	931 Special transactions	51.2	776 Thermionic Cells	11.4	752 Data processing equipment	9.0	71.6	2830
Poland	821 Furniture	7.2	781 Passenger motor cars	4.0	793 Ships and boats	3.8	14.9	82
South Africa	681 Silver and platinum	9.5	667 Peals, precious stones	6.8	322 Coal, lignite, and peat	6.0	22.3	172
Taiwan P.O.C.	776 Thermionic cells	12.1	752 Data processing equipment	10.6	759 Parts of and accessories	9.6	32.3	350
Thailand	759 Parts of and accessories	10.3	776 Thermionic cells	6.9	037 Seafood	3.5	20.7	166
Turkey	845 Outergarments	7.1	846 Undergarments	6.4	843 Women's outergarments	5.3	18.8	120
Venezuela	333 Petroleum and crude oils	80.8	684 Aluminium	3.3	671 Various forms of iron	1.2	85.2	6535
Zimbabwe	121 Unmanufactured tobacco	33.4	671 Various forms of iron	6.8	263 Cotton	5.8	46.0	1195

Note: Three-digit numbers refer to Standard International Trade Classification (SITC) Codes, Revision 2.
Source: United Nations Conference on Trade and Development (UNCTAD), 2001.

sectors) is roughly three times higher for the historical sample than for the modern sample.[11]

A casual look at Tables 6.2 and 6.3 conveys two important messages regarding the export and production patterns of emerging markets in the historical period compared with the present. First, the typical emerging market far more focused on a small number of export items. Second, its primary exports were much more likely to differ from those of other emerging market countries.

To see the second point more systematically, imagine that in each period, each of the existing N emerging countries is randomly assigned three primary export items out of a total of Y available products and commodities. What is the probability of at least one overlap in the top three exports of any two countries? This probability is equal to one minus the probability of no overlaps at all. This, in turn, can be derived as follows:

Probability of no overlap = [total number of possible combinations in which country i is assigned three export items out of the available Y products and country j is assigned three non-overlapping items out of the remaining $Y - 3$ products] divided by [total number of possible allocations of three export items out of the Y available to two countries].[12]

In the historical sample, fourteen export commodities are reported for the sample of ten countries for which data are available. The expected frequency of (random) overlaps (i.e. the frequency of country pairs with at least one common export items) is therefore about 0.55. One would thus expect to find about twenty-five country pairs (0.55 times fourty-five possible country pairs) with at least one overlapping export item in the sample. In practice, the number is only 13. The standard deviation of the proportion of pairs with overlaps in the sample is $P/(N(N-1)/2)$, where P is the expected proportion of overlaps and N is the number of countries. It is therefore easy to see that the actual proportion of overlaps is more than two standard deviations lower than its expected mean, under the null hypothesis that exports are randomly assigned. In other words, it is possible to

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[11] The Herfindahl index, a standard measure of concentration, is defined here as the sum of the squares of the shares (in percentage points) of the top three products in total exports. In the extreme case of only one product accounting for all exports by a given country, the index would take the value of $100 \times 100 = 10{,}000$.

[12] Formally, if Y is the total number of available export items and X is the number of export items assigned to each country (in our case, $X = 3$), this is equal to $1-[(Y-X)!(Y-X)!]/[(Y-2X)!Y!]$.

reject the null hypothesis of random assignments of export items with a confidence level of over 95 percent.

In the modern data (with twenty-seven countries and thirty-four export items), the expected number of country pairs with at least one common export item is eighty-eight. The actual number in the data is 83, very close to (and statistically not different from) the number of overlaps one would expect to observe if export items were randomly assigned.

On the whole, we have shown that emerging markets in the past were more specialized in a few export commodities than their counterparts today. To our knowledge, the present study is the first to show this result based on systematic data analysis. Our findings are consistent with the work by Imbs and Wacziarg (2003), who analyze the changing degree of specialization for a panel of countries at various stages of economic development, based upon post-Second World War data. They show that the typical pattern of development is for countries to be initially specialized at low levels of development, then to become gradually more diversified as their per capita incomes grow, and finally to return to being somewhat more specialized once they cross a per capita income threshold that would seem to characterize some of the higher-income emerging markets.

6.4 Do Fundamentals Explain the High Co-Movement of Spreads in the 1990s?

Despite the higher degree of co-movement of exports—and the greater similarity in the product structure of exports—in modern times than in historical times, probably only part of the explanation for the relatively high degree of co-movement in spreads in modern times (and in the 1990s in particular) has to do with fundamentals. In fact, our view is that fundamentals are unlikely to be the main part of the story: for example, the recent decline in co-movement of spreads that followed the Argentinean crisis is unlikely to be driven by changes in the degree of co-movement of fundamentals.

To assess more systematically whether fundamentals could be a substantial part of the story, we analyze the degree of co-movement of that portion of bond spreads that is not explained by fundamentals. More technically, we analyze the co-movement of the residuals from the regressions in Chapter 5 that sought to explain spreads on the basis of news indicators and macroeconomic variables.[13] Such residuals are the portion of bond spreads that cannot be explained by fundamentals.

We now consider measures of co-movement for these residuals. The share of variation accounted for by the first principal component is 31.5 percent (standard deviation: 6.0 percentage points) for 1881–1913;[14] 67.3 percent (standard deviation: 7.7 percentage points) for 1996Q1–2001 Q2;[15] and 50.8 percent (standard deviation: 8.2 percentage points) for 1996Q1–2002Q4. Thus the results are broadly similar to those obtained in Section 6.2 without controlling for fundamentals: the degree of co-movement is greater in modern times than historical times; furthermore, in this exercise, even the extended modern series which includes the onset of the Argentinean crisis exhibits higher co-movement than the historical sample. This broad pattern of results is maintained using alternative measures of co-movement (omitted here for the sake of brevity). On the whole, this suggests that fundamentals are unlikely to be a major factor accounting for changes in the degree of co-movement of spreads over time.

An alternative, and perhaps more plausible, explanation for the high co-movement of spreads in modern times relates to differences between the modern and historical periods in the institutional arrangements for investing in emerging markets. However, it is not immediately obvious exactly what differences in institutional arrangements are relevant in this context. It might be argued that the presence of international financial institutions that seek to alleviate the consequences of financial crises could result in greater co-movement of spreads. If the international financial institutions are always going

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[13] Specifically, we use the residuals from the regression in the 1st column in Table 5.3 for the historical period; and a regression as in the 6th column in Table 5.6, but omitting the portfolio spreads—the results on the other coefficients are quite similar—for the modern period.

[14] The principal components procedure requires a complete panel data set and computing the residuals requires that all the macroeconomic variables and news indicators be available for the whole sample period. Owing to data limitations, the sample thus needs to be restricted to the eight countries for which macro data are available and which did not experience payments difficulties that led us to question the quality of the spreads data in any single year (Argentina, Canada, Chile, Hungary, Japan, Portugal, Queensland, and Sweden), for 1881–1913. The observation for 1885 is dropped owing to lack of macro data for Queensland for that year.

[15] For the principal components procedure to be a sensible exercise, a sufficiently long time series is needed, making it necessary to use quarterly data in this case. Owing to data limitations, Nigeria is omitted from the sample, and the sample period has to be restricted to begin in 1996.

to come to the rescue of international investors, the argument might go, investors would be less likely to pay attention to individual country characteristics, helping explain why all spreads tend to move in unison. We find this hypothesis somewhat implausible, particularly in view of today's large spreads, which presumably reflect a high-perceived probability of default followed by investor losses. Nevertheless, this hypothesis has attracted considerable interest and we summarize the related studies in Box 6.2. It is important to note that the general tension between avoiding widespread financial crises and creating moral hazard problems existed in the previous era of globalization as well, as illustrated by the Baring Crisis (see Box 6.1 above). The intervention of the Bank of England in assistance of Baring's Bank could have reduced the incentives of investment banks, underwriters and investors to exert effort to gather information on borrowers and assess their creditworthiness. Investors in Argentinean bonds incurred heavy losses despite the bailout, but perhaps their losses would have been even higher without the Bank of England's intervention. With hindsight, it seems that the risk of opportunistic behavior did not materialize.

A more relevant difference in institutional arrangements, in our opinion, relates to the key role that individual investors played in the past. As noted in the previous chapter, Michie (1987) estimates that the number of individual investors on the London Stock Exchange in 1913 was about one million (see also Edelstein, 1982). This stands in sharp contrast with the role played today by large institutional investors (such as mutual funds, pension funds, and hedge funds), which—at least in the 1990s—appeared to invest in or divest from groups of emerging markets seemingly regardless of the varying strengths of the underlying economies' fundamentals. From the point of view of individuals, investing in foreign countries through funds may reduce monitoring and transaction costs. Yet when a crisis emerges, these funds tend to liquidate their holdings of securities in several emerging markets *en bloc*, apparently so as to maintain a given risk and liquidity profile. Hedge funds, for example, seem to operate in a way that forces them to sell their holdings in healthy economies when a crisis erupts elsewhere.[16] Another potential explanation is that "noise traders" or "herd behavior" (see a survey in Shleifer, 2000)

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[16] See, for example, Eichengreen (1999a). Kaminsky and Reinhart (2000) discuss the behavior of investment funds more generally.

Box 6.2 SPREADS, CO-MOVEMENT, INTERNATIONAL FINANCIAL INSTITUTIONS, AND MORAL HAZARD—A LITERATURE REVIEW

A potential hypothesis is that the greater co-movement in spreads observed in the 1990s might be due in part to investor "moral hazard" resulting from the presence of the international financial institutions in today's environment. Indeed, a notable difference with respect to the pre-1914 era is the presence of international financial institutions, notably the International Monetary Fund, that in many cases lend to countries experiencing balance of payments difficulties. (This was emphasized in the earlier working paper title of Marc Flandreau's 2003b study: "Caveat Emptor: Coping with Sovereign Risk without the Multilaterals"). If the international financial institutions were always going to help countries in trouble, one might argue, today's international investors would have little incentive to monitor countries' fundamentals: in the end, regardless of countries' behavior, investors would nearly always be repaid. If that were the case, all countries would then have similar spreads at any point in time, and co-movement would indeed be expected to be greater today than in the past. Changes in country-specific risks would not be reflected in spreads, because the international financial institutions would provide insurance against such risks. Changes in spreads would only be driven by common shocks (such as changes in advanced country interest rates, or "risk appetite") affecting all emerging markets. (The international financial institutions are not large enough to protect all emerging markets at the same time against such common shocks). This hypothesis has generated considerable interest in recent years, and some researchers have addressed it directly. The evidence supporting the hypothesis is mixed, though, admittedly, this is an especially difficult research objective, and existing studies often have methodological limitations. Several studies have found little impact of the IMF's presence on emerging market spreads. In regression analysis of the determinants of emerging market spreads before and after the Mexican "bailout," Zhang (1999) found the dummy variable for the post-Mexico period to have an insignificant and positive coefficient—the opposite of what one would find if moral hazard had increased after the crisis. Nevertheless, it has to be recognized that the main effect of the Mexican crisis of late 1994 and early 1995 must have been to increase investors' perceived probability of crisis; the IMF's rescue package would likely have been a less important, perhaps partially mitigating factor. Kamin (2004) finds that emerging market countries that could be considered to be "systemic," in view of their large economic size or other considerations, and that might therefore be viewed by some market participants as more likely to obtain an international rescue package, do not enjoy lower spreads than other countries. Lane and Phillips (2000) do not find a significant relationship between news regarding IMF packages and emerging market spreads. Brealey and Kaplanis (2004) find that most IMF-related news have little impact on spreads, although announcements that IMF support would not be forthcoming did lead to negative abnormal returns. Of course, studies (including our own in Chapter 4) seeking to identify the impact of news on spreads are subject to the possibility that "news" are in practice fully expected.

AQ: Please provide reference for Zhang (1999) and Dell' Ariccia.

Perhaps the most careful test of this hypothesis to date is provided by a recent study by Dell'Ariccia, Schnabel, and Zettelmeyer (2004). The authors test for the existence of a moral hazard effect attributable to official crisis lending by analyzing the evolution of sovereign bond spreads in emerging markets before and after the Russian crisis. They interpret the "non-bailout" of Russia in August 1998 as an event that decreased the perceived probability of future crisis lending to emerging markets. In the presence of moral hazard, such an event should raise the cross-country variance of spreads, controlling for fundamentals. They find evidence consistent with this hypothesis. This is an interesting result, though an important caveat is in order. As seen in our own empirical analysis, the extent to which fundamentals explain spreads is limited. And emerging market spreads rose dramatically after the Russian crisis, for a variety of reasons, including large losses, and subsequent reduction in demand, by several specialized investors (notably hedge funds). Thus, an increased variance (as opposed to an increased coefficient of variation—the ratio of the variance to the mean) in the portion of emerging market spreads that is not explained by fundamentals is also consistent with the view that spreads rose in all emerging markets owing to other factors.

On the whole, our impression is that the view that the greater spread of co-movement in the 1990s might be due to the presence of the international financial institutions is supported by weak evidence. It is also important to note that spreads were much higher in the 1990s than in the pre-1914 era, suggesting that the perceived probability of default, and ensuing losses by international investors, was substantial in the modern period, despite the presence of the international financial institutions.

might play a more important role today than a hundred years ago, perhaps because large investment funds follow each other's strategies.[17] Yet another possible explanation (for which we have no specific evidence) is that the somewhat slower trading technologies of the past may have been advantageous in reducing panics and the spread of crises. For example, while news reports discussed in Box 6.1 suggest considerable concern among investors at the time of the Baring crisis of 1890, relatively slow trading technologies may have helped in inducing investors to "take a breather."

But if investor behavior is the main determinant of the degree of co-movement in spreads across countries, why does co-movement seem to have declined following the most recent crisis in Argentina? Are we arguing that institutional constraints led investors to behave in a seemingly irrational manner prior to 2001, but have suddenly been

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[17] Somewhat related is the literature on the synchronicity of movements in stock prices in different countries (e.g. Morck, Yeung, and Yu, 2000; Li et al., 2004). In these studies co-movement of stocks (within a given market) is interpreted as evidence of inefficiency: investors are unable to distinguish between the fundamental values of different companies. We are not sure to what extent these arguments are applicable to the context of co-movement of spreads on bonds issued by different countries.

able to come to their senses and clearly distinguish between the economic fundamentals of Argentina and those of other countries?

While it may be too early to tell why the Argentinean crisis failed to cause immediate contagion, we conjecture that three factors may be at play. First, and most important, the Argentinean crisis was widely anticipated. Views on the country worsened gradually, with no obvious defining event or sudden surprise. Investors had time to get out of Argentina without panic and without sudden losses. Second, a technical factor may also have played a minor, though helpful role: Argentina's share of the EMBI was reduced by J. P. Morgan from 20 percent to two percent within a few months. (This reduction was prompted in large part by a debt swap whose characteristics implied that many of Argentina's bonds no longer met the requirements of international tradability for inclusion in the index.) Many emerging market institutional investors seek to mimic returns on the EMBI; they were thus able to reduce their exposure to Argentina selectively, rather than being forced to divest from emerging markets as a whole. Finally, to some extent, investors may have drawn lessons from the contagious crises of the 1990's and modified their behavior.

Based on these considerations, the future extent of spread co-movement is uncertain. On the one hand, greater similarities and co-movement of economic fundamentals across emerging markets may again tend to foster greater co-movement in the future. On the other hand, even in the 1990s, investor behavior (notably investment fund behavior) seems to have been a crucial factor behind the spread of crises (see also Kaminsky and Reinhart, 2000), and investor behavior may have changed following the recent crisis in Argentina. Comparing the 1990s and the early twentyfirst century, it is too early to tell which will be the exception and which will be the rule.

8

A Few Lessons for the Future

The international financial environment in which today's emerging markets operate is characterized by high integration and considerable reliance on bond finance. The premise of this book is that, in order to learn more about this type of environment—which, in modern times, has been in place only since the early 1990s—it is useful to go back in history to the most recent period that witnessed these same characteristics, namely 1870–1913. During that past era, London—the world's main financial center at the time—saw massive amounts of bond issuance by emerging markets and very active trading by well-informed investors. In this book, we have focused on the determinants and behavior of spreads on emerging market bonds, and on some of the institutional features of the markets and their investor community, for the two periods, identifying both similarities and differences between them. In both the pre-First World War period and today, investors responded to events, news, and economic data, albeit in somewhat different ways, and a comparison yields interesting insights.

Three main themes are emphasized in this book. The first is that institutional and political reforms (such as the introduction of a constitution) or efficiency-enhancing structural reforms seldom reduce the cost of capital quickly. In a few instances, reforms of the monetary framework did have a rapid and substantial impact on spreads, especially when they were seen as the focal point of a concerted effort at buttressing the credibility of macroeconomic policies. Overall, however, other types of events—especially wars and episodes of politically motivated violence—have a far more immediate and pronounced impact on the cost of borrowing. In the short run, peace and stability seem to matter more for the ability of countries to borrow, then the establishment of investor-friendly institutions. Nevertheless, there is little doubt that appropriate reforms can be beneficial in the long run, but their benefits seem to accrue in a gradual manner, possibly because it takes time for investors to observe whether new *de jure* arrangements are respected *de facto*, in a durable manner. A lesson for today's emerging markets is therefore not to necessarily expect immediate rewards for the introduction of "good institutions." Political opposition to reforms seems somewhat more understandable if the financial benefits of reforms emerge only gradually and possibly with long lags. In making the case for reforms, expectations of the speed with which reforms may translate into beneficial reductions in the cost of capital should therefore be set at realistic levels.

Our evidence also confirms that sound macroeconomic policies help countries gain better access to bond finance that—as long as such finance is put to productive use in the context of domestic and international peace—may ultimately lead to more rapid economic growth. Indeed, there is some evidence suggesting that a few well-chosen, well-implemented, and fundamental macroeconomic changes have yielded considerable financial benefits for countries within a few years. For example, going beyond the relatively high-frequency evidence on modern spreads presented above, during the 1980s and 1990s emerging market countries such as Chile, Israel, Mexico, and Poland combined fiscal stabilization and a reduction in inflation to the single digits with reforms in the monetary area, such as the introduction of central bank independence or inflation targeting, as well as reforms in the fiscal area, such as pension reforms; as a result, these countries were able to improve their debt structures, making them less reliant on short-term or foreign-currency debt, and to reduce their cost of borrowing significantly, within a limited number of years (Borensztein et al., 2004, p. 20). In this context, it is important to note the role of narrowly defined monetary institutions such the gold standard in the past or currency boards more recently. We find these institutions, aimed at signaling commitment to stable policies and (to some extent) tying the government's own hands, can sometimes affect the creditworthiness of a borrowing country (the example of the adoption of the gold standard in 1897 Japan was discussed in detail in Chapter 3). Nevertheless, if policies turn out to be inconsistent with the commitment implied by the monetary institutions, the resulting loss of credibility and rising spreads may precipitate a crisis.

More generally, despite the apparent consensus today regarding the appropriate set of institutions and policies a country should adopt, similar institutions (e.g. a *de facto* independent central bank today, or the gold standard in the past) do not always involve the same degree of commitment across countries: the likelihood of suspension of the gold standard or of central bank independence depends on a deeper institutional structure, which is not always easy to gauge. We are therefore not surprised by the generally slow assessment of institutional changes by financial markets. To evaluate a fundamental change, sufficient time has to pass—thus, even though some emerging markets occasionally herald the introduction of democratic, market-oriented institutions, there is little wonder why investors do not typically rush to invest in these countries.

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The second theme emphasized in this study is that country-specific developments played a more important role in determining spreads in 1870–1913 than they did in the 1990s. This is reflected in both greater ability of country-specific fundamentals (both news and macroeconomic variables) to explain historical spreads, and in the higher co-movement of spreads across emerging markets in the 1990s. We have also seen that economic fundamentals, measured by exports, co-move to a greater extent today than they did in the pre-First World War era, a feature which is consistent with the greater similarity of export product composition across emerging market countries today than in the past. However, the higher co-movement of emerging market bond spreads in the 1990s relative to 1870–1913 can only partially be explained by higher co-movement of economic fundamentals. We conjecture that the arrangements underlying institutional investor behavior have important consequences for the behavior of bond spreads. Argentina's massive default in 2001 seems to have been followed by a decline in co-movement of spreads across emerging markets, but it remains to be seen whether this is simply a temporary reversal or a more permanent return to the distant past. It is therefore important to remain alert to the possibility of high co-movement in financial variables across emerging markets in the future, and to crises that may affect several emerging markets simultaneously, regardless of fundamentals. Even though the recent crisis in Argentina did not immediately spill over to other emerging markets as had been the case for the Mexican, Asian, and Russian crises, our impression is that rapid international contagion is still a likely possibility. It would therefore be desirable to continue considering policies and mechanisms (both at the national level and in the international architecture) aimed at reducing the possibility and alleviating the consequences of such contagion. Our view from the past suggests that contagion is not endemic to global finance—even the Baring crisis did not result in global contagion—and this objective is therefore attainable.

The third theme is related to the resolution of sovereign debt crises in the two periods. We conjecture that the existence of institutions aimed at resolving debt crises may be seen as part of the financial market architecture that enabled the continuous expansion of the international bond market in the nineteenth century, despite large defaults. At the same time, the achievements of the Corporation of Foreign Bondholders should be viewed as an upper limit on what might be achieved through creditor coordination. Thus, while a revamped association of creditors might help improve the functioning of the international market for sovereign debt in the twenty-first century, it would seem unlikely to alleviate the costs of debt crises in emerging markets in a major way.

More generally, we hope to have helped make the case that a better understanding of today's international financial environment can be gained by studying both the similarities and the differences between the two eras of globalization and bond finance. Despite the difficulties and caveats involved in the construction of some of the historical variables, we feel that the information and data sets we have put together in the process are reliable and exciting enough to serve as a stimulus and a helpful tool for the efforts of other researchers.

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