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RESEARCH ARTICLE

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Did the Nationalist Government Manipulate the Chinese Bond Market? A Quantitative Perspective on Short-Term Price Fluctuations of Domestic Government Bonds, 1932–1934

Abstract Based on a newly constructed set of data, this paper offers a quantitative perspective on the Nationalist Government's relations with China's domestic bond markets during the period 1932–34. For all the recent revisionist scholarship on the achievements of Nationalist state-building, the perception of the Nationalist elite as corrupt is still widely accepted. In order to demonstrate the empirical potential of quantitative financial history, this paper tests one particular assertion: that members of the Nationalist elite manipulated the issue price of domestic government bonds in order to enrich themselves and their associates. We test this by calculating two price data correlations: that of a first sample of government bonds, all of them issued before 1932, and that of a second sample of government bonds, which includes bonds issued during the period under review. The price fluctuations of the first sample are correlated with each other to a much higher degree than those of the second sample. This indicates that the prices of bonds in the first sample were reacting similarly to the same range of influences, while the bonds issued during the period under review and included in the second sample were displaying individual price fluctuations. One possible explanation for this is that members of the Nationalist elite enriched themselves or their associates by issuing domestic government bonds at artificially low prices. In sum, the article illustrates both the potential and the limitations of quantitative history: it allows us to test and dismiss a precisely formulated hypothesis about Nationalist corruption, but it is only one possible way in which statistical analysis can be applied and does not cover the whole

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realm of state practices.

Keywords bond markets, Guomindang, financial history, quantitative methods

Introduction

The research presented in this article attempts to bring a new, quantitative dimension to the study of the Chinese Nationalist party-state, which dominated the politics of China from the mid-1920s until the late 1940s. Many studies seek the roots for the 1949 demise of the mainland government of the Chinese Nationalist Party of Chiang Kai-shek, the Guomindang (hereafter GMD), in the pre-war policies of the Nationalist state. The purpose of this article is not to dispute that Nationalist fiscal policy proved unsustainable in the long term. Rather, the authors use a newly compiled data set of the prices of Nationalist Government bonds traded on the Shanghai Stock Exchange to gain a more in-depth understanding of the relations between bondholders and the Nationalist Government during the early 1930s. In order to illustrate the potential of quantitative evidence for the study of Nationalist China, this article considers the question of whether the Nationalist Government manipulated the market in domestic government bonds.

This study is based, first of all, on the relationship between the fluctuation in the prices of Chinese government bonds and the confidence that the Nationalist Government's fiscal policy inspired. As William N. Goetzmann, Andrey D. Ukhov and Zhu Ning point out in a study of Chinese government bonds traded on the London Stock Exchange, "the rationale for market reactions to news from major political events is based on the presumption that the likelihood of payment on the security fluctuates with the political and military events affecting the issuing authority."[1] That connection was also noted by the earlier study of Douglas Paauw, who noted in his highly pessimistic assessment of Nationalist fiscal policy that it was "paradoxical that […] the confidence of foreign governments in Nanking finance increased during this period of fiscal demoralization in China," since prices of Chinese bonds held abroad rose between 1933 and 1937.[2]

Subsequent scholarship was dominated until the 1990s by the views of Lloyd E. Eastman, who argued that "the [Nationalist] regime […] valued the urban economy, but as a source of revenue; it devoted little attention to the problems of economic development."[3] Because the Nationalist government was more concerned with raising revenue than considering the effects of the means by which revenue was

[1] William N. Goetzmann, Andrey D. Ukhov, and Ning Zhu, "China and the World Financial Markets 1870–1939: Modern Lessons from Historical Globalization," 278.
[2] Douglas Paauw, "Chinese National Expenditures during the Nanking Period," 10.
[3] Lloyd E. Eastman, *The Abortive Revolution: China under Nationalist Rule, 1927–1937*, 228.

raised, it relied on borrowing to an unsustainable extent. In Eastman's phrase, "the policy of borrowing had […] become a Frankenstein's monster that threatened to kill its own creator."[4] More recently, Julia Strauss has pointed to the achievements of Nationalist fiscal policy in widening the regime's tax base during the Nanjing decade, and Margherita Zanasi has demonstrated that the economy was a key part of the Guomindang's efforts to modernize China.[5] With regard to the wartime period, Hans van de Ven has demonstrated the Nationalists' relative success in terms of wartime economic mobilization, given the state of China's economy on the eve of war in 1937.[6] Despite the recent revisionist trend in scholarship, the idea that members of the Nationalist elite benefitted from insider information in taking advantage of the price fluctuations of domestic government bonds is still widely accepted.[7] It is this assertion which we test in this article, to consider the potential of quantitative evidence in studying the history of Nationalist China.

In the first section of this article, Boecking explains the role of bonds within Nationalist fiscal policy. In the second section, Boecking and Scholz analyze the weekly dynamics of the price fluctuations of Chinese Government domestic bonds for the period 1932–34. Based on Goetzmann, Ukhov and Zhu's statement that bond prices respond to bondholders' expectations about the political future of the issuing government, we analyze the correlation of weekly price fluctuations of domestically traded Chinese Government bonds, using a newly constructed set of bond price data, calculating two correlations: that of a first sample of government bonds, all of them issued before 1932, and that of a second sample of government bonds, which includes bonds issued during the period under review. We use a series of bond prices rather than bond yields since, at the present point of our research, we have not yet calculated the yield for each bond, due to the complications in doing so presented by the debt consolidations of 1932 and 1936, and the frequent changes in the interest rates paid. The timeframe of our case study is 1932–34, which is the timeframe of the original data run in the *North China Herald*. Also, this timeframe predates the nationalization of the major commercial banks in spring 1935, after which the Nationalist Government was in a position to impose mandatory bond sales, thus distorting the signaling effect of bond prices as indicators of the opinion of bondholders of the political future of the Nationalist Government. Both the time frame and the source of data distinguishes our study from the recent article by Chun-yu Ho and Dan Li, who study the time period from 1921 to 1942 based on

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[4] Ibid., 232.
[5] Julia Strauss, *Strong Institutions in Weak Polities: State Building in Republican China, 1927–1940*; Margherita Zanasi, *Saving the Nation: Economic Modernity in Republican China*.
[6] Hans van de Ven, *War and Nationalism in China, 1925–1945*.
[7] Parks M. Coble, *The Shanghai Capitalists and the Nationalist Government, 1927–1937*, 234; Chun-yu Ho, Dan Li, "A Mirror of History: China's Bond Market, 1921–1942," 413.

data published in *Shenbao*, concluding that "civil conflicts did not matter a lot in the financial market."[8]

In the third section, Boecking considers several possible explanations for the type of fluctuations observed in the first sample, concluding that changes in China's foreign and security policy environment accounted for more downward trends in domestic government bond prices—and by extension losses in political confidence—during the period observed than the Nationalist Government's fiscal policy *per se*. During the Nanjing decade, the making of fiscal policy and foreign and security policy were intertwined for the Nationalist Government in Nanjing. Foreign governments dealing with the Nationalists paid close attention to the prices of Chinese Government bonds traded on foreign and domestic capital markets. Such were the absurdities arising from the presence of informal empire in China before the second Sino-Japanese War that, until January 1939, the Nationalist Government serviced its foreign financial obligations, including those to Japan, a country with which it was at war (albeit an undeclared war).[9] In the fourth section, Boecking considers the implications of our findings based on data from the years 1932 to 1934 for a study of Nationalist fiscal policy during the entire Nanjing decade.

Government Bonds within Nationalist Fiscal Policy

When the Nationalist Government established its capital in Nanjing in 1927, borrowing abroad was not a feasible option for raising new government revenue due to earlier defaults by successive republican governments in Beijing.[10] Instead, the Nationalists used new tax revenue, chiefly tariff revenue, which had increased significantly after the Nationalists regained tariff autonomy in 1929 (see Fig.1), as a source of funds for amortization with regard to foreign loans, and as both a source of amortization and security for domestic loans.[11] Using revenue to finance borrowing can be interpreted in different ways; either as a fiscally responsible way of maximizing government expenditure while also providing a low-risk, low-interest investment or as a means of addressing short-term financial obligations at the cost of using future government revenue to pay bondholders, thus redistributing government revenue in favour of bond-holders.[12] Overall,

[8] Ibid., 429.
[9] Felix Boecking, "Unmaking the Nationalist State: Administrative Reform among Fiscal Collapse, 1937–1945," 283–84.
[10] Arthur N. Young, *China's Nation-Building Effort, 1927–1937: The Financial and Economic Record*, 92.
[11] W.A. Thomas, *Western Capitalism in China: a History of the Shanghai Stock Exchange*, 247.
[12] Jan de Vriess, Adrian van der Woude, *The First Modern Economy: Success, Failure and Perseverance of the Dutch Economy 1500–1815*, 115.

Nationalist debt management until 1937 was successful. Two-thirds of government deficit represented payments to retire earlier debt;[13] by 1937, only 10% of China's national debt was in arrears, compared to 50% in 1928.[14]

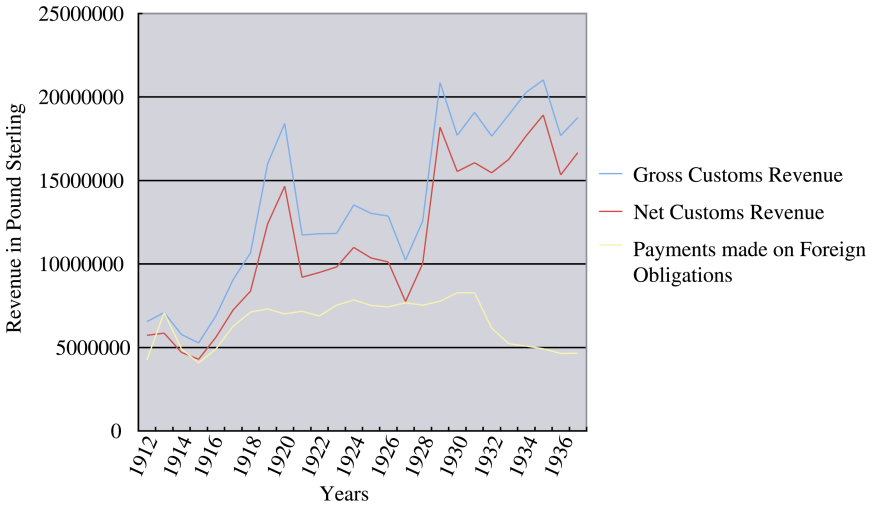

Fig. 1 Relation of Combined Maritime and Native Customs Revenue to China's Foreign Loans and Indemnities (in £)[15]

Foreign bondholders' perception of the Nationalist Government's fiscal policies is illustrated by a look at the yields of Nationalist Government bonds traded abroad, which are the most common indicator of bond price fluctuations. The current yield of bonds is calculated by dividing annual interest payable by the price at which the bonds are being traded.[16] Thus, the lower the price at which the bonds are being sold, the higher the yield. In 1927, "the approximate range of yields of leading foreign loans [traded on the London Stock Exchange] was: The 1898 Loan at 4 ½ percent (customs-secured), 7 to 11 per cent; Reorganization Loan of 1913 (customs-secured), 9 to 12 per cent; and Shanghai-Nanking Railway Loan of 1903, 11 to 15 per cent."[17] By 1937 "the 1898 Loan with a 1943 final maturity sold in London on a 3¾ per cent basis; the 1913 Reorganization Loan with 1960 final maturity yielded 4.9 per cent; the Crisp Loan of 1912 with 1952 maturity yielded 5.2 per cent; and the Shanghai-Nanking Railway Loan of 1903 with maturity

[13] Young, *China's Nation-Building Effort*, 149.
[14] Ibid., 141.
[15] Statistical Department, Inspectorate General of Customs, *The Trade of China, 1938: Introductory Survey with Tables for Revenue, Value, Treasure and Shipping*, 110. This figure was prepared by Madeline Graham based on data provided by Felix Boecking.
[16] Frank J. Fabozzi, *Bond Markets, Analysis and Strategies*, 37.
[17] Young, *China's Nation-Building Effort*, 98–99.

yielded 6 per cent."[18] The increase in Chinese Government bond prices (expressed by the fall in current yields) clearly indicates that by 1937 investors on the London Stock Exchange had more confidence in the Nationalist Government's fiscal policy than they had had in 1927. This increase in confidence can at least partly be explained by the increase in Customs revenue, which provided a greater margin of safety for interest and principal payments being met. The fact that payment of interest and principal on foreign loans was only suspended in January 1939 indicates that the foreign bondholders' confidence was not misplaced.

At the same time, as Table 1 demonstrates, the percentage of deficit covered by borrowing, having reached a low of 12% in 1933, had exceeded the 1929 percentage by 1937. Under the Nationalist Government, domestic bond issue increased significantly. Between 1927 and 1935, the Nationalist Government issued C$1,636 million worth of domestic bonds, or C$182 million each year on average. This compared to a total domestic bond issue of C$612 million, or C$38.3 million annually on average issued by successive Republican governments between 1911 and 1927.[19] The increase in domestic borrowing was helped by the bank coup of spring 1935, in which the Nationalist Government brought the Bank of China and the Bank of Communications, China's two largest banks, back under central government control by forcing them to purchase large amounts of government bonds with the receipts of which the Nationalists then purchased majority shares in these two banks.[20] Thereafter, the Nationalist Government was in a much stronger position to place government bonds.

Table 1 Expenditures, Revenues and Deficits of the National Government, 1929–37[21]

Year ending June 30	Expenditure excluding balances at end of the period, millions of *yuan*	Revenue, unborrowed, excluding balances at beginning of the period, millions of *yuan*	Deficit covered by borrowing	
			Amount, millions of *yuan*	Percentage of expenditure
1929	434	334	100	23.0
1930	585	484	101	17.3
1931	775	558	217	28.0
1932	749	619	130	17.4
1933	699	614	86	12.3
1934	836	689	147	17.6
1935	941	745	196	20.8
1936	1,073	817	256	23.8
1937	1,167	870	297	25.4

[18] Ibid., 101–2.
[19] Linsun Cheng, *Banking in Modern China: Entrepreneurs, Professional Managers, and the Development of Chinese Banks, 1897–1937*, 116.
[20] Ibid., 99.
[21] Jonathan Spence, *The Search for Modern China*, 349.

But allowance must also be made for the organic growth of China's domestic bond market, and for the Nationalist Government's role in fostering this growth. This process began much later in China than in Europe and North America. Hans van de Ven has pointed out that the Qing imperial Chinese state only began to issue bonds at a late point compared to Western states.[22] The imperial Chinese government attempted to raise revenue from domestic bonds in the 1890s, but failed to raise significant amounts.[23] Unlike Western European states, therefore, China possessed no tradition of government bonds as conservative, dependable investments for small private investors. The Chinese bond market began to develop in the 1910s, when the new Republican government in Beijing turned again to domestic investors in order to avoid the political complications of relying on foreign loans.[24] Government securities became the "main business of the securities exchanges"[25] after the stock market crash of 1922 diminished investor confidence in joint stock companies and share trading, and bonds became a more attractive investment.[26] The lack of alternative investment opportunities on the securities exchanges no doubt was a contributing factor in the development of a speculative market in Chinese bonds. According to Young, the market in domestic government bonds in Shanghai grew after the Nationalists moved their capital to Nanjing in 1927 because banks bought bonds as part of their reserve requirement, advanced cash against government bonds, and bought bonds on their own account as investment.[27] The fact that a large part of domestic government bonds were held by Chinese banks even before the banking coup of 1935 meant that the banks themselves accounted for a large part of the continuingly growing volume of bond sales.[28]

Linsun Cheng characterizes the bond market of the Nationalist pre-war period as "highly sensitive and speculative."[29] Bond prices were affected, at various times, by seasonal fluctuations in the Shanghai financial market, changes in the political situation, natural disasters, exchange rate fluctuations and the actions of major speculators. To give but one example; the Japanese attack on Shanghai in late 1931 and early 1932 led to a 50% fall in the prices of major government bonds.[30] Not all banks viewed the Nationalist Government as fiscally reliable. The management of the Shanghai Commercial and Savings Bank 上海商业储蓄银行, one of Shanghai's most important private banks, argued in 1934 that the

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[22] van de Ven, "Military and Financial Reform in the late Qing and Early Republic," 35.
[23] Thomas, *Western Capitalism in China*, 248.
[24] Ibid., 247.
[25] Andrea McElderry, *Shanghai Securities Exchanges: Past and Present*, 4.
[26] McElderry, *Shanghai Securities Exchanges*, 15.
[27] Young, *China's Nation-Building Effort*, 93.
[28] Coble, *The Shanghai Capitalists and the Nationalist Government, 1927–1937*, 76.
[29] Cheng, *Banking in Modern China*, 124.
[30] Ibid., 124.

bank "should not make a lot of government loans since [it was] a commercial bank." Such government loans as were to be made had to be based on "scrutiny of the government's financial situation […] conducted in advance"; the feasibility of the loan had to be "based on the government's financial credit," and the "fluidity and ease of disposal [of the loans] had to be kept."[31]

That this concern was justified was demonstrated by the debt consolidations of the Nationalist Government. Debt consolidation, in this case, is a euphemism for partial default, since the 1932 debt consolidation was based on cutting interest rates and extending the amortization period of existing loans. Again, in 1936, debt consolidation meant that the amortization period of existing loans was extended. In the 1932 debt consolidation, security for internal loans was transferred from salt monopoly revenue and unspecified other internal revenues to tariff revenue.[32] Despite two partial defaults within the space of four years, domestic bond prices began to rise again in 1937 following the latter, not least because the Nationalist Government had issued no new domestic bonds since the 1936 debt consolidation. The average current yield of domestic bonds in June 1937 was 8.7% compared to 11.6% in 1936, 24.4% in 1932 and 17.3% in 1928.[33] From the government's point of view, using the expanding domestic bond market was a way of legitimately financing its deficit without resorting to excessive indirect taxation, or irregular levies. In increasing domestic bond issue, the Nationalists relied on their partial control over the banking sector to place bond issues; however, the subsequent development of bond prices demonstrates that, despite this measure of coercion, the government did not destroy public confidence in the bond market permanently. In both the 1932 and the 1936 internal debt consolidations, tariff revenue was used as a security. Increased tariff revenue (see Fig.1) together with the precedent of tariff revenue having been used as a security for debt consolidation in 1922 suggested a margin of safety for meeting the cost of China's domestic obligations.[34]

The government's perceived competence in managing its fiscal affairs was also important in creating public trust in Guomindang monetary policy. Niv Horesh has argued for the "efficacy of the Kuomintang's monetary policy," based on the Nationalists' success in ending private banknote issue in 1935, and limiting the influence of foreign banks on the Chinese banking market.[35] Because money

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[31] Shanghai Shangye Chuxu Yinhang, "Benhang zhengfu jiekuan zhi yanjiu (Study of our Bank's government loans)," December 1934, SHCS file, No.1625; in Cheng, *Banking in Modern China*, 134.
[32] Young, *China's Nation-Building Record*, 104–8.
[33] Ibid., 99.
[34] Thomas, *Western Capitalism in China*, 250.
[35] Niv Horesh, "'Many a Long Day': HSBC and Its Note Issue in Republican China, 1912–1935," 38.

"issued by organizations such as banks and governments relies on impersonal trust in these organizations, as well as trust that society in general will accept the tokens produced by those organizations,"[36] the Nationalists had to demonstrate fiscal competence in order to create public confidence in their currency. In analyzing relations between the state and the banking sector in Republican-era Tianjin, Brett Sheehan concludes that, in extending loans, "Tianjin's modern bankers sought stable government institutions with the legitimacy to commit verifiable sources of revenue to the banks in return for loans."[37] Taking the exchange rates of the new Chinese currency introduced in 1935 as an indication of public confidence, these rates remained stable as long as the money supply remained constant, and the government deficit was sustainable. Once the Nationalist Government resorted to issuing insufficiently backed currency during the second Sino-Japanese War, public confidence in the new currency, which had also been damaged by Japanese currency warfare, decreased, and exchange rates declined. As Horesh points out, "statehood, nation building and monetary reform were inextricably interwoven in Republican China."[38] In 1935, the Nationalists' efforts to retire or restructure public debt, rather than repudiating it, as well as the mid-term increase in government revenue through the increase in tariff revenue, facilitated the beginnings of a territorial currency, and thus contributed to the Nationalist state-building project.

The Correlation of Price Fluctuations of Domestic Bonds, 1932–34

Having demonstrated the importance of bonds within Nationalist fiscal policy, we analyze the degree to which price fluctuations of individual domestic government bonds are correlated with each other, calculating two correlations: that of a first sample of government bonds, all of them issued before 1932, and that of a second sample of government bonds, which includes bonds issued during the period under review. If the Nationalist Government had issued bonds at artificially low prices to benefit its associates, we would expect to find a low degree of correlation between individual bond issues in the second sample, which contains all bonds contained in the first sample as well as bonds issued during the period under review, with anomalous price movements of individual bonds, as bonds issued at an artificially low price quickly approached market valuation. Similarly, if there had been insider information pertaining to the price movement

[36] Brett Sheehan, *Trust in Troubled Times: Money, Banks, and State-Society Relations in Republican Tianjin*, 5.
[37] Ibid., 150.
[38] Horesh, "'Many a Long Day'," 37.

of individual bonds available to members of the Nationalist elite, we would expect to find anomalous price movements of individual bonds, and a low degree of correlation.

The quantitative analysis contained in this section is based on the historic current-month closing prices of fourteen Nationalist government bonds traded on the Shanghai Stock Exchange, printed at regular intervals in the *North China Herald*, the weekly edition of the *North China Daily News*. The first sample contains eleven bond issues, the second sample fourteen. These data were collected by Boecking from microfilmed copies of the North China Herald held at the Widener Library at Harvard University. The price data were published in an English-language paper for a bilingual readership,[39] based on data provided by a Shanghai stock broking firm. The interval for our quantitative analysis was determined by the availability of published data in the *North China Herald*; for the purposes of this article, we chose the calendar years 1932, 1933, and 1934. This section is the product of collaborative work. Scholz visualized the data provided by Boecking as graphs and conducted the quantitative analysis.

The quantitative analysis done for this article is the first part of a two-part study that will eventually cover the entire Nanjing decade. In this article, we demonstrate that from 1932 to 1934, the fluctuations of Chinese Government domestic bonds were correlated to a significant degree, based on Scholz's calculations of the Pearson correlation coefficient. Scholz calculated the Pearson correlation coefficient for all fourteen bonds for all three years. Where data for one particular bond are missing for one particular date, that data point was excluded from the calculation of the correlation coefficient. The correlation coefficient was tabulated (cf. Table 2), and the validity of the use of the Pearson correlation coefficient was determined by a *chi*-square test, which was used to ascertain how close the data are to a Gaussian normal distribution. The results of the *chi*-square test showed that the data are well within the permissible scope of the use of the Pearson correlation coefficient. The Pearson correlation coefficient shows a significant correlation (i.e., > 0.9) of price fluctuations for 53.85% of all fourteen bonds. If the bonds for which data are not reported for the entire time window are not included in this calculation, the Pearson correlation coefficient shows a significant correlation for 87.9% of the bonds.

For the purposes of this study, we are interested in the degree of correlation between the fluctuations of the prices of different Chinese Government bonds traded on the Shanghai Stock Exchange. Therefore, Scholz normalized the data before visualizing them: each data point is expressed as a fraction of the highest value for each bond. Scholz also depicted the fluctuations of the normalized bond prices in one graph for the entire time window (See Fig. 2).

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[39] I am grateful to Rudolf Wagner for this point.

Table 2 Correlation among Chinese National Government Domestic Bond Prices 1932–34, tabulated

	18th Year Customs	Reorganization	Disbandment	19th Year Customs	Rehabilitation
Reorganization	0.963				
Disbandment	0.926	0.976			
19th Year Customs	0.988	0.973	0.935		
Rehabilitation	0.962	0.996	0.976	0.973	
20th Year Tobacco	0.951	0.997	0.986	0.964	0.996
20th Year Customs	0.939	0.995	0.981	0.954	0.993
Consolidated Tax	0.930	0.991	0.986	0.944	0.990
Salt Revenue	0.930	0.991	0.986	0.943	0.990
20th Year Currency	0.571	0.778	0.740	0.762	0.686
6 % Consolidated	0.878	0.974	0.986	0.889	0.963
22nd Year Customs	0.317	0.835	0.677	0.894	0.907
23rd Year Customs	0.396	0.741	0.773	0.765	0.736
96 Millions	0.494	0.537	0.632	0.486	0.444

	20th Year Tobacco	20th Year Customs	Consolidated Tax	Salt Revenue	20th Year Currency
20th Year Customs	0.997				
Consolidated Tax	0.996	0.998			
Salt Revenue	0.996	0.998	1.00		
20th Year Currency	0.837	0.882	0.775	0.755	
6 % Consolidated	0.982	0.980	0.987	0.986	0.603
22nd Year Customs	0.963	0.929	0.952	0.933	0.787
23rd Year Customs	0.738	0.731	0.826	0.814	0.803
96 Millions	0.502	0.5481	0.664	0.634	0.638

	6 % Consolidated	22nd Year Customs	23rd Year Customs
22nd Year Customs	0.655		
23rd Year Customs	0.899	0.769	
96 Millions	0.926	0.538	0.854

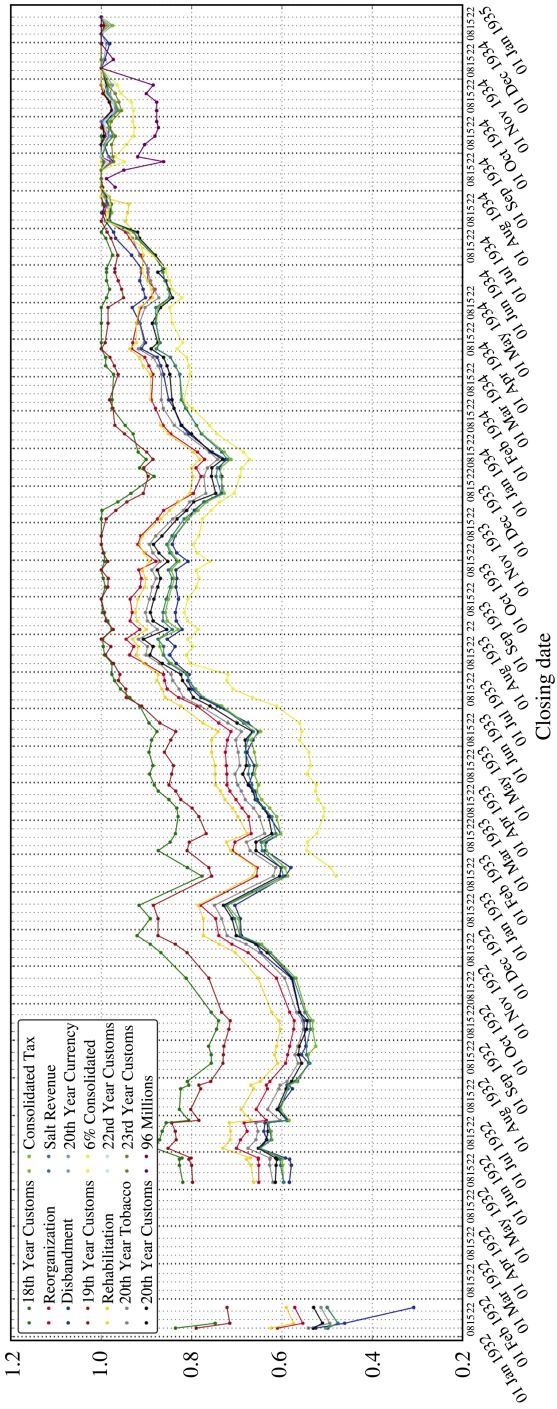

Fig. 2 Chinese National Government Domestic Bond Prices, 1932–34, normalized

Explaining Chinese Government Domestic Bond Price Fluctuations

The statistically significant degree of correlation between the prices of different issues of Chinese government domestic bonds in the first sample suggests that prices of bonds issued before our window of observation were reacting to the same factors during this time. Within the second sample, correlation is much lower. One possible explanation is that during the period under observation bonds were issued at artificially low prices to benefit the Nationalist Government's associates. But what factors were the bonds within the first sample reacting to? This section considers two possibilities in terms of another type of correlation within the first sample: changes in foreign and security policy environment and changes in the Chinese National Dollar/Sterling and Chinese National Dollar/US Dollar exchange rates, which themselves were temporally correlated with changes in China's foreign and security policy environment.

The most significant change in China's foreign policy and security environment during the Nanjing decade, the Japanese seizure of China's three northeastern provinces, beginning in September 1931, immediately predates the period for which we currently have data. The Shanghai Incident, which lasted from January 28, 1932 until March 3, 1932, resulted in the closure of the Shanghai Stock Exchange from the end of January 1932 until the beginning of May 1932. During this period, the Nationalist Government consolidated its debt through a partial default (see above), in a plan published on February 1, 1932. When bond trading on the Shanghai Stock Exchange reopened in early May 1932, bonds were traded at prices that were consistently higher than the closing prices before the suspension of trading on the Shanghai Stock Exchange in January 1932. Even a slight decline in summer 1932 arrested itself at a level higher than the January closing prices. Hence, the debt consolidation of February 1932 had not caused a decline in bond prices. After an increase in bond prices towards the end of the year, there followed a decline in January 1933, concurrent with the Japanese invasion of Rehe. By mid-February 1933, bond prices had started to recover, and, in the wake of the signing of the Tangku Truce between China and Japan, bond prices rose to a new high, which lasted until October 1933, when the resignation of Song Ziwen as finance minister, followed by an insurrection in Fujian Province against the Nationalist Government in Nanjing, caused a decline of bond prices to the levels of July 1933. Once Song's succession had been arranged, and the Fujian Incident resolved, bond prices continued to rise again, reaching new heights in summer 1934 (see Table 3). With the exception of Song Ziwen's resignation, in which disagreements with Chiang Kai-shek played a large part, all

the major fluctuations in the prices of Chinese domestic government bonds traded on the Shanghai Stock Exchange during this period are closely correlated in time to changes in China's foreign policy and security environment.

Table 3 Foreign Exchange Rates, 1932–34[40]

	£ (pence per Chinese $)		US $ (cents per Chinese $)	
1932	High	Low	High	Low
January	16.77	15.96	23.77	22.96
February	17.81	16.45	25.00	23.53
March	16.72	14.57	24.28	22.75
April	14.35	13.75	22.72	21.84
May	14.39	13.69	21.93	20.71
June	13.78	13.52	21.06	20.28
July	13.93	13.33	20.51	19.64
August	14.97	13.85	21.68	20.22
September	14.99	14.38	21.66	20.61
October	15.22	14.61	21.30	20.68
November	15.36	15.00	21.13	19.71
December	15.79	13.83	20.08	19.09
1933				
January	14.45	14.13	20.42	19.66
February	14.51	13.98	20.54	19.47
March	14.84	14.21	21.77	20.20
April	16.19	14.16	24.25	20.31
May	15.50	14.50	25.13	24.06
June	15.63	15.00	27.25	25.13
July	15.63	14.88	31.00	27.94
August	15.19	14.69	29.13	26.94
September	15.50	15.25	30.94	28.44
October	15.50	15.25	30.81	28.75
November	15.56	15.13	34.31	31.25
December	15.88	15.18	34.06	32.75
1934				
January	16.44	16.00	34.69	33.06
February	16.81	16.13	35.63	33.75

(*To be continued*)

[40] Young, *China's Nation-Building Effort*, 471–72.

(*Continued*)

	£ (pence per Chinese $)		US $ (cents per Chinese $)	
1934	High	Low	High	Low
March	16.56	16.13	35.38	34.38
April	16.25	15.31	35.00	32.94
May	15.56	14.63	33.19	31.19
June	16.25	15.50	34.25	32.50
July	16.31	16.00	34.44	33.69
August	16.88	16.13	35.44	33.88
September	17.56	16.94	36.63	35.38
October	18.50	15.69	37.88	32.38
November	16.31	15.88	34.31	33.06
December	16.94	16.31	34.88	33.75

The same pattern of temporal correlation emerges from considering the Chinese National Dollar/Sterling and Chinese National Dollar/US Dollar exchange rates against the background of changes in China's foreign and security policy environment. Both the sterling and the US Dollar value of the Chinese National Dollar are at their highest point of the time period under consideration following the end of the first Shanghai War in 1932. Following the resignation of Song Ziwen in October 1933 and the Fujian Insurrection, exchange values declined significantly at the end of 1933. While bond prices recovered in summer 1934, the exchange value of the Chinese National Dollar did not. Broadly speaking, though, changes in the exchange value of the Chinese National Dollar, too, are correlated with changes in China's foreign and security policy environment.

Long-Term Implications

Bonds were an important part of Nationalist fiscal policy, and the dynamics of price fluctuations suggest that Chinese government domestic bond prices reacted acutely to changes in China's political and security environment. The significant degree of correlation which we found in the price fluctuations of different Chinese Government domestic bonds in the first sample, and the close temporal correlations of many of these fluctuations with changes in China's foreign policy and security environment, demonstrate that that environment was an important variable in determining bond price valuations during the period under discussion for bonds which had been issued prior to the period under observation. The lower degree of correlation between the price fluctuations of bonds contained within

the second sample, which also contains bonds issued during the period of observation, suggests that the Nationalist Government did indeed manipulate the market in domestic government bonds by issuing new bonds at artificially low prices.

Traditionally, the Nationalist Government's fiscal and economic policy has been labeled as ineffective, if not insincere, or plainly exploitative. The evidence of bond price movements examined for this article suggests that the trajectory of Nationalist policy-making was more complex than that. The return to low yields after the debt consolidation of 1936 can be explained as consequence of the banking coup of spring 1935, with the nature of the bond market distorting the signaling effect, given that the government could instruct the Central Banking Group to buy bonds. The return to low yields after 1932 consolidation cannot be explained in the same way, given that it preceded the banking coup, and notwithstanding speculative bond purchases. This means that there has to be another reason for the return to low yields, and greater political confidence on the part of Chinese bondholders has to be considered as an explanation. The evidence presented here indicates that, until 1937, the Nationalists successfully used increased government revenue to maintain bondholders' confidence both domestically and abroad, thus challenging the views of Paauw and others on the Republic of China's "fiscal demoralization" at this time.[41]

While short-term fluctuations in the prices of Chinese Government-backed bonds traded on the Shanghai Stock Exchange were closely correlated temporarily with changes in China's foreign and security policy environment, and while the evidence suggests that the Nationalist Government issued bonds at artificially low prices during the period from 1932 to 1934, these factors do not explain long-term price changes. In foreign and security policy terms, the Nationalist Government was in a precarious position in 1936, just as it had been in 1927, albeit for different reasons. The Xi'an incident of December 1936 underscored the political divisions within the fragmented Nationalist polity. The Communist insurrection continued to threaten China's political consensus in favour of military-backed authoritarian regimes. Large parts of the territory formerly controlled by the Qing state, whose legitimate successor the Nationalist Government considered itself, were under the control of power-holders competing with the Nationalist Government. In 1936, there was a pronounced Japanese threat to China's national security where there had been a position of ambivalence in 1927.

And yet, average current yields of Nationalist Government-backed bonds were lower than they had been in 1927. If we accept the hypothesis that bond prices reflect investor confidence, we have to identify another explanatory

[41] Paauw, "Chinese National Expenditures during the Nanking Period," 10.

variable to explain this development. One explanation is the fiscal policy that the Nationalist Government had pursued in the period between 1927 and 1936. This suggests that the Nationalist Government's policy of fiscal realism and consolidation, backed by increasing tax revenue—chiefly tariff revenue—had paid off in terms of increasing bondholders' confidence in the Nationalist Government's fiscal policy, despite short-term changes in China's foreign and security policy environment. Considering the years covered by our data in context, it seems that there was a window of opportunity for the Nationalist Government's fiscal policy in 1932–34, when the deficit had reached its lowest point and yields were low. The timing of this is all the more surprising, given that it followed the Manchurian Incident, the consequent loss of a large part of Chinese territory, and took place as the delayed effects of the Great Depression, delayed because of China's silver-based currency, began to affect China.

Conclusion

The aim of this article is to bring new quantitative evidence to bear on the well-established question of the nature of Nationalist governance. Goetzmann, Ukhov, and Zhu (2007) and Ho and Li (2014) have studied the dynamics of Chinese bond price fluctuations in the long term. Political and military events have short-term as well as long-term effects on bond prices, though, and so the data sample utilized for this article covers the period from 1932 to 1934, relying on weekly data points. Goetzmann, Ukhov, and Zhu's argument that the likelihood of payment on a security fluctuates with political and military events affecting the security is the starting point for any argument which posits that bond prices can be taken as a proxy for the confidence of bondholders in the Nationalist Government, such as that of Ho and Li and our own. Based on that understanding of the meaning of bond price fluctuations, we can use the data to quantify the confidence of a certain segment of the Chinese population, bondholders, in the Nationalist Government, and to answer long-standing research questions such as whether the Nationalists manipulated the market in domestic government bonds.

Our study of this period demonstrates the potential of this methodology to bring a quantitative dimension to the study of Nationalist governance during the entire Nanjing decade. This dimension ought to be taken into account in the same way that textual sources are evaluated in historiography. Much further work remains to be done in this vein. The second stage of our research, not yet completed, will allow us to isolate the effects of concurrent developments in the world economy, and of speculative buying, by comparing our weekly time-series of the prices of Chinese Government bonds traded on the Shanghai capital

market with the prices of Chinese Government bonds and bonds of other governments traded on the London stock exchange.

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