# POLITICAL RISKS IN INTERNATIONAL FINANCE

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Jason Weinreb
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I certify that I have read this dissertation and that, in my opinion, it is fully adequate in scope and quality as a dissertation for the degree of Doctor of Philosophy.

(Stephen Haber) Principal Adviser

I certify that I have read this dissertation and that, in my opinion, it is fully adequate in scope and quality as a dissertation for the degree of Doctor of Philosophy.

(Kenneth Scheve)

I certify that I have read this dissertation and that, in my opinion, it is fully adequate in scope and quality as a dissertation for the degree of Doctor of Philosophy.

(Michael Tomz)

Approved for the Stanford University Committee on Graduate Studies

# Abstract

Political regime change creates a number of financial risks for international investors. One is sovereign risk, or the possibility that a government may fail to repay outstanding debts. A second is fiscal risk, defined as uncertainty about prospects for government revenue and excessive vulnerability to macroeconomic shocks. Finally, there is the risk that a newly-elected government will dramatically revise the economic policies of its predecessor. This thesis comprises three essays examining these risks in two different political contexts: British decolonization during the mid-twentieth century, and the present-day United States.

(1) **Decolonization and the End of Credibility: Evidence from the London Stock Exchange** European decolonization was a dramatic change in the structure of international relations, as hierarchical relationships between metropoles and their colonies became a relatively anarchic collection of postcolonial states and former imperial powers. This paper examines the impact of this change in international order on economic cooperation through the lens of quasi-sovereign debt during British decolonization, as economic historians have argued that for former British colonies in particular, political independence from London should have compromised their terms of credit. Using novel data on British colonial bond prices from the London Stock Exchange and British government documents from The National Archives, I show that while investors refused to lend to soon-to-be-independent colonies, the yields on colonies' existing bonds remained low throughout the decolonization era. To reconcile these divergent findings, I document the existence of an implicit British government guarantee of existing colonial bond issues, as well as sweeping British government

intervention in the London Stock Exchange to artificially inflate issue prices. These findings suggest that hierarchical international relations do indeed promote economic cooperation, but are far less coercive than is argued in the existing literature.

(2) **Democratization and the Development of Fiscal Capacity: Taxation in Britain's Former Colonies to 1980** An important question in political economy is how political institutions affect the development of fiscal capacity. In this paper, we analyze the impact of democracy on fiscal capacity in Britain's former colonies, for whom tax revenue was especially important for economic development, and whose nascent political institutions provide a hard test for assessing the impact of politics on taxation. Not only was income taxation in former British colonies surprisingly substantial, but democracy actually decreased reliance on income taxation as a revenue source, both relative to total taxation and GDP. We also show that democracy in postcolonial states was associated with a higher reliance upon export taxes, even after controlling for the economic potential to levy export duties in the first place. These findings suggest that democratic former colonies essentially chose to provide public goods on the backs of the poor, who would have almost exclusively suffered the burden of non-income-based taxes – an interpretation at odds with conventional wisdom that democracy generally promotes progressive taxation and improves fiscal capacity.

(3) **Sectoral Effects of Executive Partisanship: Evidence from the 2016 US Election** Much research has evaluated stock market reactions to national elections, but has not examined how the economic impact of government partisanship might vary across industries. To address this question, I analyze the behavior of industry-specific stocks during the 2016 US Presidential Election, whose surprise outcome and far-reaching implications for a number of sectors make it an ideal case study of the macroeconomic consequences of executive partisanship. I show that industry stocks reacted to Donald Trump's victory in systematic ways consistent with his campaign promises and largely in line with

investors' historical experience with Republican administrations. I also document the market's inattention to virtually all of the campaign scandals that unfolded prior to the election, corroborating that post-election fluctuations in stock prices fully reflected expectations about the macroeconomic outlook under a Trump administration.

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# Chapter 1

# Decolonization and the End of Credibility: Evidence from the London Stock Exchange

## 1.1 Introduction

One of the most serious obstacles to international cooperation in world politics is anarchy, typically defined as the absence of a binding supranational authority to enforce contracts. As an organizing principle of international relations, anarchy sits opposite to what David Lake (2009) has called hierarchy – an international order wherein subordinate states relinquish political and economic autonomy to dominant powers in exchange for a combination of military protection and economic assistance. A shining example of international hierarchy was European imperialism before the Second World War, which was followed in the 1950s and '60s by decolonization: a relatively abrupt change in international order from hierarchy towards anarchy that

upended international relations between Europe and the periphery.

This paper explores the impact of changing international order on economic cooperation through the lens of quasi-sovereign debt during British decolonization. Economic historians have argued that for British colonies in particular, control by London mitigated contract enforcement problems surrounding their public debt, so that the colonies were more creditworthy than sovereigns with similar fundamentals. The implication for international relations is that shifting from the hierarchy of British colonialism to the relative anarchy of postcolonialism should have translated to a sharp increase in default risk for British colonial bonds. We test this claim with two kinds of evidence – novel data on colonial bond yields from the London Stock Exchange, and declassified British government correspondence from The National Archives, London. Qualitative evidence suggests that the prospect of political independence sharply reduced British colonies' ability to float new loans in London, yet the yields on colonies' existing bonds clearly remained flat throughout the decolonization era.

To explain this apparent puzzle, we document the existence of two unexplored features of the colonial bond market. First was an implicit British government guarantee of existing colonial issues, wherein preferential treatment of colonial bonds on the London Stock Exchange led investors to believe Britain would repay its former colonies' debts in full. Second, the British government intervened dramatically in the secondary market for colonial bonds, purchasing the securities in large quantities to artificially support their prices and carefully manipulating the timing and terms of issue to maximize subscription. The result was that the secondary market for colonial bonds at decolonization was extremely thin and highly structured by the British government – so thin and so structured that even the default risk from independence,

while substantial, was never fully reflected in colonies' existing bond prices.

We proceed as follows. Section 1.2 reviews existing research on the impact of international order on default risk, and presents two hypotheses about the impact of decolonization on colonies' access to and cost of credit. We evaluate these arguments in Sections 1.3 and 1.4, respectively, and we reconcile our findings in the remainder of the paper. Section 1.5 provides background about the colonial bond market needed for our subsequent discussion in Sections 1.6 and 1.7, which highlight the ways that British government policies artificially suppressed yields on existing colonial loans. Finally, Section 1.8 concludes.

## 1.2 Credit Risk and the Structure of International Relations

Research on the economic impact of imperialism suggests that two of its most important consequences were to facilitate foreign direct investment and decrease credit risk. In a seminal article, political scientist Jeffry Frieden (1994) argued that colonial control was an effective way for metropolitan investors to safeguard their assets with peripheral hosts, and this idea that hierarchical international relations might have financial benefits has also caught on amongst financial historians. Ferguson and Schularick (2006) and Accominotti et al. (2011), in particular, use London market data from 1880 – 1913 to demonstrate the existence of an "Empire Effect," whereby colonies' bond spreads over the consol were lower than those of sovereign countries around the same time, as well as relatively inelastic to underlying economic fundamentals. Accominotti et al. (2010) also constructed a counterfactual interest rate for

what colonies during that same period would have paid for capital had they been sovereigns with identical fundamentals, and using this measure, estimated a similar capital "surplus" from British rule. There are several potential sources of this colonial surplus, the most frequently cited being imperial power's ability to coerce debt repayment. Mitchener and Weidenmier (2010), for example, demonstrate that "supersanctions" – such as the administration of finances or customs houses by foreign creditors – were effectively used from 1870 – 1913 to enforce sovereign debt contracts. In a sense, then, the creditworthiness of British colonies had rested on London's "perceived degree of political control," which began eroding in the postwar period (Accominotti et al., 2010, 56). Indeed, decolonization seemed far-off in the late nineteenth and early twentieth centuries, but by 1950 it seemed imminent.

Thus, one financial consequence of decolonization – essentially the reorganization of international relations from hierarchy to anarchy – is that credit risk in soon-to-be independent countries should have soared. In particular, we would expect to observe two phenomena in the colonial bond market, which we formulate as testable hypotheses:

$H_1$ *Decolonization should coincide with a reduction in the amount of new debt issued.*

$H_2$ *Decolonization should coincide with an increase in the yields of existing colonial bonds.*

Below, we evaluate these arguments for a representative sample of Britain's non-self-governing ("crown") colonies. Despite their lack of sovereignty, these territories borrowed money on the London Stock Exchange, and many of the loans that they contracted under British rule remained listed long after independence. Moreover, in contrast to Dominions such as Canada and Australia that became fully sovereign

over decades, the independence dates of the crown colonies are clear, enabling us to meaningfully evaluate the impact of sovereignty on their terms of credit.

## 1.3 Decolonization and Credit Rationing

What was the impact of independence on colonies' access to credit? Data on the amount of London market capital raised by colonial governments, presented in Figure 1.1, suggests two possible answers. One story is that the colonies were able to obtain enough long-term loans to meet their borrowing needs and consequently began approaching the market less often after 1952. Another possibility – and the right one – is that colonial borrowing peaked in 1952 and dropped precipitously thereafter precisely because investors could not be persuaded to put their money into the colonies.

Indeed, British government correspondence in The National Archives drives home the magnitude of investors' fears over decolonization and provides incontrovertible evidence that lenders of all kinds sharply rationed colonial credit on the eve of independence. Of large investment banks, one Colonial Office official lamented, "The cold fact is that the British banks are increasingly reluctant to commit themselves to long or even medium term lending in the Colonies," citing the refusal of Standard, National and Barclays banks to contribute even £250,000 each to housing development in Tanganyika.[1] In late 1960 those same three banks implored the British government to reassure investors with a statement to the effect that Kenya would remain in the Sterling area and not restrict remittances.[2] No such statement was issued, however,

[1] CO 1025/79, Item 137, Wilson to Rawlinson, 20 March 1956.
[2] T 236/6456, Parsons to RIckett, 28 July 1960.

and the banks then considered raising their lending rates in East Africa by half a percent – to 7.5% – due to "general nervousness" on the eve of Tanganyika's independence under Nyrere.[3] Britain pressured the banks not to raise rates, and East African governments threatened to retaliate with rate caps in the event of an increase, so the banks decided not to change their policies.[4] After all, any increase in lending rates would have further undermined confidence not only in Tanganyika, but also in neighboring Kenya and Uganda.

International development banks were similarly unwilling to provide fresh capital to soon-to-be independent countries. The IBRD, interested though it was in African development, was leery of loaning money to the colonies without comprehensive guarantees from Her Majesty's Government. In secret 1961 meetings with the Colonial Office, the Bank refused to supply funds to build Nigerian railways once Britain intimated that its guarantee over the requisite loans would lapse at Nigeria's independence.[5] And the Council of Foreign Bondholders, formerly uninterested in the colonies, considered extending its activities to the debts of former Commonwealth governments following the Federation of Rhodesia and Nyasaland's dissolution in 1963.[6]

Not only were banks reluctant to lend to the colonies – so were private investors. British policymakers as well as stockbrokers repeatedly emphasized that investors'

[3]T 236/6456: Dawbarn to Mackay, 12 August 1960; Turnbull to Secretary of State for the Colonies, 24 August 1960.

[4]Instead, they implored Britain to intervene through the East African Currency Board. T 236/6456: Gorell Barnes to Mynors, 26 August 1960; Crawford to Secretary of State for the Colonies, 25 August 1960; Renison to Secretary of State for the Colonies, 25 August 1960; Michie to Mynors, 7 September 1960.

[5]CO 1025/138, Colonial Loans Bill: Brief for the Second Reading.

[6]CO 1025/229, Item 62, Council of Foreign Bondholders to Under-Secretary of State, 9 January 1964.

general anxiety about decolonization was a major stumbling block to successfully financing most of the colonies. A Colonial Office report on factors affecting colonial loans noted that, "Progress of many colonies towards self-government in recent years has shaken the confidence of the institutional investor because he now realizes that before the new loans mature in twenty or more years the colony concerned might well have become independent with no absolute certainty that it would meet its liabilities."[7] Indeed, investors were "influenced by the general trend towards independence and by their assessment of how the situation will develop generally over the next 20-25 years."[8] For this reason, those colonies that did succeed in raising London loans usually "were not early candidates for independence" and were blessed with a stroke of good luck; in particular, they happened to experience relative political calm during times at which general conditions on the London market were also favorable.[9]

Indeed, any hint of political change in the colonies squashed their chances of obtaining London market finance, and politically stable colonies were thought more likely than unstable ones to succeed in raising loans. Underwriters refused to take up a loan to British Guiana after Cheddi Jagan's victory in the colony's 1957 legislative elections, as they feared the loan would be undersubscribed in light of the associated political uncertainty.[10] In the 1960s, the brokers believed that Fiji was a worse name than Jamaica for a London loan after "recent political disturbances" in Fiji.[11] In Malaya, the government was urged to make more use of local resources such as sterling balances and increased taxation in lieu of raising a long-term loan in London, which

[7]CO 1025/75, Item 8, Factors Affecting the Market for Colonial Loans.

[8]CO 1025/111, Item 10, Cabinet Economic Policy Committee: Loan Finance for Colonial Development.

[9]CO/1025/111, Item 11, Economic Policy Committee: Brief for the Secretary of State for the meeting on the 22nd May, 1957.

[10]T 220/490, Item 90, Colonial Development Program, 19 November 1957.

[11]CO 1031/3146, Radford to Harding, 13 January 1960.

"would be virtually impossible in the present political circumstances of Malaya."[12] Overall, the Colonial Office felt powerless to do much more than issue loans for the smaller colonial territories, distinguished by "their lack of constitutional development and their peaceful history, but with every fresh bout of political agitation territories like the East African ones are bound to find it progressively more difficult to raise money by way of public issues in London."[13]

Moreover, political upheaval in one colony sometimes had knock-on effects in others, disturbing investors' confidence in all colonial issues for a time, irrespective of the borrower.[14] Following difficulties in the Federation of Rhodesia and Nyasland in 1959, for example, Scrimgeours discounted the possibility of underwriting or subscribing any African issues for months afterwards.[15] And for Jamaica's loan of 1976/78, British officials thought that even a rate of 7.5% would not have been unreasonable; though Jamaica enjoyed "good standing and stability," UK investors were "not nowadays very enthusiastic about investment in even the most reliable overseas territories."[16]

The unease surrounding colonial debt of course affected each colony somewhat differently, and it is clear that investors did not always paint them all with the same brush. Regrettably, one distinction seems to have been racial. Investors undoubtedly saw Rhodesia and Nyasaland "as a much safer political bet largely because it is regarded as predominantly a 'White' Government contrasted with the 'Black' Governments, actual or potential, in tropical Africa."[17] Stockbrokers also confided in the Colonial Office that the prospects for West Indian loans were markedly better than

[12]CO 537/7644, 16516/25, September 1950.
[13]CO 1025/107, Item 76, 4 December 1958.
[14]CO 1025/75, Item 8, Factors Affecting the Market for Colonial Loans.
[15]CO 1025/112, Item E/41, Scrimgeour to Bellevue, 23 March 1959.
[16]CO 1031/3146, Kirkness to Maccoll, 8 March 1962.
[17]CO 1025/112, note to Perth, 18 February 1959

those for Africa,[18] and newly independent Ghana, Ceylon, and the Federation of Malaya were thought safer investments than the dependent colonies.[19]

Investors may have also discriminated among colonies based on their economic prospects, though this claim is harder to evaluate. Colonial Office correspondence implies that there was a pecking order when it came to prospects for development finance in Africa: while Kenya and Uganda experienced severe difficulties raising London loans, Sierra Leone and the East Africa High Commission – which respectively offered opportunities for railway development and diamond mining – had some intermittent success. One extreme case was the Sierra Leone 3.5% stock of 1968/70, where all 2m on offer was fully subscribed within five minutes of listing in London.[20] However, such offerings were the exception to the rule, and probably resulted mostly from fortuitous timing; African bond offerings typically enjoyed the most success when investors anticipated imminent reductions in British bank rates, as this "considerably heightened the effect of the attractive terms offered" for colonial loans.[21]

Even so, independence was a death knell for the colonies' ability to raise money in London. In 1958, the Colonial Office surmised, "the fundamental reason for the marked deterioration in the market for colonial loans over recent years is essentially the doubts which the investor feels about our policy of self-government for the Colonies." And while the Office was expert in matters of colonial finance, it was "not easy to see what steps a Colony can take to establish or preserve its creditworthiness on the market."[22]

[18]CO 1025/112, Item 120, note to Phillips.

[19]T 220/642, Item 53, Draft s/o Letter to Colonial Financial Secretaries: Colonial Stock.

[20]CO 267/702/2: £2030 Sierra Leone Government 3.5% Inscribed Stock, 1968/70; Item 18, Extract from Weekly Bulletin (Sierra Leone) No. 36.

[21]CO/1025/111, Item 11, Economic Policy Committee: Brief for the Secretary of State for the meeting on the 22nd May, 1957.

[22]CO 1025/112, Rate of Interest on Exchequer Loans to the Commonwealth, 12 September 1958.

Another memo concluded, "All the evidence we have so far received indicates that the London market in colonial stocks is a rapidly shrinking one,"[23] so that even the strongest borrowers shied away from approaching the market, given the exorbitant interest rates they would have faced there. Jamaica is a case in point. In 1962, the Jamaican government "was unwilling to go on the Market at 7.5% and then perhaps raise no more than 1-1.5 million, if that. This would do great damage to Jamaica's credit standing all over the world for a long time to come, especially since London was regarded as Jamaica's 'home base', and might be expected to take a better view of her standing than other markets."[24]

Moreover, when colonies did decide to approach the market during decolonization, their new bond issues were often woefully undersubscribed. Between September 1954 and September 1956, for example, "six colonial issues have been made for a total of £21m. Of these one (Cyprus, November 1955) was a special operation wholly taken up by the Crown Agents. Four of the remaining five were failures."[25] A Jamaica issue of £4,212,000 also "must be regarded as a failure" after the Crown Agents took up £212,000 of the issue and the public purchased only £1.5m of the remaining £4m on offer. This case was "particularly disappointing" because "conditions for the loan were as favorable as they could be." The terms were appropriate; Jamaica was the best candidate of all the colonies for a loan; and there was no recent news of adverse developments in the colony, e.g. dwindling cash reserves and labor unrest, to deter investors.[26]

It is somewhat difficult to gauge the extent of loan failures, as loans were sometimes

[23]CO 1025/107, Item 76, Note by Poynton, 4 December 1958.
[24]CO 1031/3146, Kirkness to Maccoll, 8 March 1962.
[25]CO 1025/76, Colonial Loans on the London Market.
[26]CO 1025/111, Item 66, Phillips to Moreton, 3 July.

postponed or cancelled altogether if policymakers anticipated a poor showing. Yet despite this problem of selection, Colonial Office correspondence references two types of bad loans: those that were scheduled but never actually offered to the public because of pessimism about subscription; and issues whose subscriptions were a flop once floated on the market. One report noted that "several of the smaller territories have London loan needs which they seem unable to bring to fruition," and provides a list of such loans that were planned but subsequently cancelled (see Table 1.1).

In sum, overwhelming evidence suggests that investors severely rationed colonial credit on the eve of independence. Given their apprehension about decolonization, we also expected to observe sharp increases in the yields on existing colonial bond issues. However, we next document that yields in fact remained flat throughout the entire decolonization period, a puzzle that we reconcile in the remainder of the paper.

## 1.4 Decolonization and Bond Prices

This section describes our data set of British colonial bond yields and analyzes their behavior surrounding the achievement of independence. Colonial bond yields can be computed from the Stock Exchange Daily Official List (SEDOL), a compendium that reports the values of all assets traded on the London Stock Exchange for every trading day. A special section featured in this catalogue, "Dominion, Provincial, and Colonial Government Securities," lists information about the prices of crown colony bonds from which yields to maturity can be calculated. For a representative sample of crown colonies covered in SEDOL, I began by examining roughly an 11-year period: five calendar years before formal legal independence, the year of independence, and five post-independence years. For every loan listed for this entire period, I collected

monthly price quotations – listed as pence on the pound – by taking the daily quotation from the last day of every calendar month.[27] I also collected the month and year of maturity for each loan, enabling me to calculate the yield to maturity.[28]

Yields are a common measure of the riskiness of assets – they quantify the return to investors from holding a bond of a certain interest rate and maturity at a given market price. One of the most common yield formulae is the yield to maturity, which measures the expected discounted future value of the bond over its remaining lifetime.[29] The most important feature of yields is their inverse relationship with prices: when bond prices rise, yields fall, and vice versa. The logic is that, for a given rate of return (the interest rate), investors prefer safer assets to risky ones. Because safe assets are in higher demand, their price is high and thus yields are low. By contrast, when assets become riskier, there is less demand and prices fall, causing yields to rise. Thus, in an efficient market, fluctuations in bond yields reflect changing perceptions of default risk.

In this paper, we analyze the behavior of a representative sample of pre-existing colonial bonds listed in Table 1.2. Surprisingly, Figures 1.2 and 1.3 show that the spreads on these bonds remained low throughout the decolonization era, even while colonial default risk soared. Above, we established that as decolonization loomed, new colonial issues were deemed substantially riskier than British debt – so risky, in fact, that no one was willing to buy them. However, when we consider the spreads on existing bond issues, we see that they are near zero throughout the 1960s, and sometimes actually negative.

[27] Specifically, I collected the high and low price quotation and took their average. However, using the closing price does not produce substantially different yields series.

[28] Hereafter I use "yield" to mean yield to maturity, as opposed to the coupon yield; methodological details are in the appendix.

[29] See the Appendix for details.

Indeed, most spreads on existing colonial bonds do not increase significantly after independence; instead, they increase slightly before independence and decrease afterwards, or exhibit no clear trends. The exceptions are Northern Rhodesia and Nyasaland (present-day Zambia and Malawi, respectively), where their joint federation dissolved in 1963. At the time, apportioning the Federation's debt between its constituent territories was a hot-button issue; while Northern Rhodesia was thought able to pay its share, there were serious doubts about Nyasaland's solvency. Parliamentary debates in the 1963 House of Commons are telling: Nyasaland's situation was so dire that a vigorous argument ensued over whether Britain should shoulder the territory's debt burden.[30] Importantly, though, the dissolution of the Federation did not mean independence for its territories – both Northern Rhodesia and Nyasaland remained crown colonies for a few years afterwards. And when each finally did become independent – indicated by dashed lines in Figure 1.3 – their spreads either remained constant or fell.

Also interesting are Kenya's spreads, which increase modestly due to a nationalist guerrilla uprising (the Mau Mau Emergency) throughout the 1950s. After relative political stability resumed, spreads decreased after independence. If anything, post-independence spreads were at levels predating the Mau Mau Emergency. To reiterate, most spreads in the sample behave like Kenya's: they exhibit a slight rise and fall, not a one-time increase. This suggests that bond spreads may have responded in a limited way to political instability, but that independence did not translate to increased default risk on existing colonial loans.

[30] "Federation of Rhodesia and Nyasaland (Dissolution) Order in Council, 1963." Parliamentary Debates (Hansard) (House of Lords). vol 254 cc131-207. December 17, 1963

Granted, the method used so far does not account for three issues. First, independence may have been priced into bond yields earlier than five years before the formal date;[31] second, investors' response to decolonization might have been incremental, and thus, un-detectable as one-shot increases in yields; and third, decolonization in one territory might have affected the yields of another. There is, unfortunately, no way around the second problem. But to alleviate the remaining two, we can extend our analysis farther back in time and concentrate on cases of decolonization that were both early and surprising.

One prime example of such a case is the Gold Coast (present-day Ghana). This was essentially the first colony outside of North Africa to become independent. Moreover, we have good information about when exactly that development first seemed inevitable to investors. Formal independence came in 1957, yet expectations of eventual self-government formed during the Accra riots a decade earlier. Expatriate business had experienced mild forms of opposition in the Gold Coast since the mid-1930s, with local farmers monopolizing the cocoa business from Europeans. Later in the decade, there were also strikes in the West Indies over wages and unemployment of which British citizens were well aware. But investors in the Gold Coast did not connect these developments to that colony's eventual independence. By contrast, only in 1948 did they realize that self-government there was not far off. In February, European and Asian businesses were looted as part of widespread riots in the capital of Accra; and this was the watershed event of which investors took note. According to Stockwell (1995, 293), "It was the disturbances in Accra in 1948 which, above

[31] This possibility is certainly reasonable, but I argue more unlikely than not. The Colonial Office could not predict the pace of decolonization accurately enough for use from an investment standpoint. It is hard to believe that private investors – who had much less information – would have done a better job.

all, however, alerted expatriate business to the volatility of local politics and which demonstrated the intense unpopularity of some companies. . . No subsequent single political event seems, on available evidence, to have concerned British companies to quite the same extent." How did the bond market react to this turbulence? Judging by Gold Coast spreads in Figure 1.4, apparently not very much. Even from 1943 – five years before the events in Accra – bond spreads remain flat. They slightly increase after formal independence, but quickly decrease. This evidence, combined with more limited coverage of other colonies, suggests that bond spreads did not react in any meaningful way to the palpable default risk associated with decolonization.

How could existing bond yields remain so low even while investors were sharply rationing new credit? Below, I show that British government policies suppressed colonial bond yields despite the colonies' complete inability to issue new public debt. In particular, British government intervention in the colonial bond market and London's implicit guarantee of pre-existing colonial issues meant that yields on these securities would remain low even as independence approached.

## 1.5 Colonial Bonds: A Primer

Before describing the ways in which the British government kept colonial bond yields from rising, we begin with a brief overview of the mechanics of the colonial bond market, including the interests of important British government players vis à vis the colonies. Public debt issued on the London Stock Exchange was one of several sources of funds for the colonies, including aid from the British government, loans from the International Bank for Reconstruction and Development (IBRD), capital investment by British businesses in the colonies, and – to a surprising extent – colonies' own

resources, namely their sterling balances, export earnings, and tax revenues. Direct assistance from London, in the form of Colonial Development and Welfare grants, was the single largest source of development finance for the colonies; however, public issues raised on the Stock Exchange were a valuable source of supplemental revenue for colonial governments to invest in public works. Indeed, the single largest stated purpose of colonial bond issues – provided to investors in colonies' loan prospectuses – was to fund development projects ranging from railways and roads to harbors (Sunderland, 2007). During imperialism's heyday, investors were happy to fund such projects for at least two reasons. First, they were moneymakers, likely to generate future revenue and increase the colonies' export potential, which in turn benefitted British business. Second, colonial bond issues were carefully regulated by the British government, which reassured investors against the possibility of default.

Indeed, the most important feature of colonial bonds was their direct management by a group of British government purchasing agents called the Crown Agents. The Agents' mission, described at length by Sunderland (2004, 2007), was broadly to help the colonies secure non-aid-based finance in the UK. They fulfilled a three-part role, acting first as a kind of asset manager for the colonies, investing colonial governments' own capital in the London money market; second, as a colonial stockbroker, arranging the timing and terms of colonial bond issues on the Stock Exchange with the help of underwriters; and third as contractor and supplier, securing for the colonies the raw materials needed for public works projects. The Agents' top priority was securing the colonies as much loan finance as possible, as they received a commission for each successful colonial bond flotation. This did not necessarily mean placing as many colonial issues as possible, however – if the London market became oversaturated

with colonial loans so that some failed due to insufficient demand, this would be bad for business. Thus, the Crown Agents' objective was to maximize available loan finance for their colonial clients, subject to what the market could provide.

Once a loan was issued, the Crown Agents were tasked with ensuring that adequate funds existed for its eventual repayment. This involved a complex array of accounts that the Crown Agents managed on behalf of the colonies, but briefly, revenues for the repayment of individual loans came from two kinds of funds monitored by the Agents. First were sinking funds – every colonial issue had at least one, to which colonial governments periodically transferred general revenue to service interest payments. The problem was that not infrequently, sinking fund revenues were insufficient to ensure timely debt service, as Table 1.3 shows.

The Crown Agents circumvented this problem with a second type of fund called the Joint Colonial Fund (JCF) – essentially a giant money market fund owned by the colonies as a group, managed by the Agents, whose balance could be used for discretionary purposes. When one colony's sinking fund revenue was insufficient to repay its outstanding debt, advances from the JCF would fill the gap. In practice, nothing prevented the Agents from effectively robbing Peter to pay Paul, as West Indian money in the JCF could be advanced to African colonies with sinking fund shortfalls. Miraculously, this precarious system of debt finance seems to have worked, as Sunderland (2007) reports that all colonial loans floated by the Crown Agents from the outbreak of World War I through the 1960s were repaid on time. Nonetheless, this success by a shoestring provoked ire among powerful departments in the British government, who sought to limit the amount of lending to the colonies to protect their own financial interests.

At its heart, colonial debt finance was a tug of war between the Colonial Office and the Treasury, complicated by officials at the Bank of England. At one extreme, the Colonial Office had a strong bureaucratic interest to secure for the colonies as much money as possible: its official position was that growing the colonies was "vital to the maintenance of the strength of the UK economy and of the sterling area as a whole," its mission to "explain the existence of a need for additional loan finance and to anticipate any doubts about the damage which its provision might import for the UK economy."[32]

The chief purveyor of such doubts was the Treasury, which sought to subordinate colonial development wholesale to the wider needs of Britain's domestic economy, already in dire straits throughout the 1950s. The country had exited World War II with a dizzying national debt – starting out at 237.2% of GDP in 1946 – that consisted not only of Sterling liabilities, but also of foreign currency debts from US and Canadian war loans. Britain's external sterling liabilities exceeded its reserves to such an extent that the government resorted to exchange controls to prevent holders of Sterling outside of the UK from liquidating their balances. Moreover, with postwar productivity lagging far behind domestic demand (basic foodstuffs were rationed until July 1954), Britain could not simply grow its way to a lower debt-to-GDP ratio; instead, the government resorted to financial repression, funding the national debt with private savings. First, the government subjected London clearing banks to a minimum liquid asset ratio of 30% and pressured them (via "moral suasion") to limit cash advances to borrowers, effectively forcing the banks to hold government paper. Second, bank credit was severely constrained in an effort to direct private savings

[32]CO 1025/82, Wilson to Galsworthy, 6 December 1955.

away from new investment towards British government securities.[33]

In the Treasury's view, the colonies' use of the London market to finance their development stood to exacerbate Britain's debt problem. First, the competition of colonial bond issues with British treasuries, however limited, stood to undermine the government's ongoing campaign of financial repression: the more money that investors put into colonial issues, which offered terms comparable to British consols, the less savings could be channeled into British government debt. Moreover, the colonies were white elephants: their repeated calls on the Exchequer would add substantially to an already sizable national debt while doing nothing to increase British government revenue, and would be inflationary when prices were already rising to worrisome heights. Thus, the Treasury's position was that "self-financing" of the colonies – through their sterling balances, tax revenues and their own investments – was imperative, and that both the London market and Exchequer should be avoided at all costs.

The Bank of England shared the Treasury's view that the colonies should largely finance themselves and that any UK government funds devoted to their development should be limited. Nonetheless, it also recognized that the government could not simply take away the colonies' access to London market loans full stop, as this would undermine the Bank's chief interest: the stability of the London Stock Exchange. On one hand, the Bank felt that a glut of colonial bond offerings was clearly to be avoided, as a backlog of colonial issues on the market – some of which would inevitably fail – would imperil British underwriters in the City and disturb normal bond market activity. On the other hand, were colonial governments to make excessive use of their own resources for development per Treasury wishes, they might desperately redeem

[33]For discussions of financial repression and banking in postwar Britain, see Allen (2014) and Calomiris and Haber (2014).

their existing London money market investments for short-term cash, which the Bank feared would have an equally disruptive effect on the Stock Exchange.[34]

In practice, the Bank's cautious outlook and the Treasury's stalwart attitude ensured that from the mid-'50s, non-aid finance for the colonies largely remained relegated to government-regulated bond offerings on the London market. Though the Colonial Office, the Crown Agents and their brokers, and colonial governments proposed a dozen additional schemes to augment colonies' London loans starting in 1954, concerted Treasury and Bank resistance guaranteed that none saw the light of day. Some of these proposals, such as raising colonial loans outside the Sterling area and increasing IBRD aid, were dismissed out of hand – more wishful thinking than viable alternatives – while others were more actionable recommendations. Increasing colonies' access to loans was such a pressing and difficult problem that, over the course of just four years (1954–58), the government considered at least sixteen distinct policy solutions.

Ironically, the earliest of these proposals would have done the colonies the most good but were swiftly rejected by the Bank and Treasury, while later ideas – though they would have increased colonies' capital only on the margin – were debated more seriously before being laid to rest. In 1954, the Colonial Office first suggested that the Exchequer increase direct loans to the colonies, but the Treasury objected that need at the time was insufficient and that any such outlays would be inflationary. By 1959, the Treasury would relent and Exchequer loans to the colonies would become a reality, but from 1954, measures to provide the colonies directly with government finance were rejected time and again. These included Exchequer loans to the colonies through a newly created Colonial Loans Board, loans from the Colonial Development

[34]T 233/1425, O'Brien to Compton, 20 February 1958.

Corporation (CDC) to colonial governments, and loans from the Colonial Development Finance Corporation (CDFC) to colonial statutory corporations, created to assist with agricultural development, power generation, and the like. The resistance against increasing direct UK aid to the colonies subsequently focused minds on increasing the capital available to them on the Stock Exchange.

## 1.6 A British Government Guarantee?

Thus began British government action to support colonial issues on the London market, which ultimately suppressed colonial bond yields through two channels. The first was an implicit British government guarantee of existing colonial issues combined with financial regulations that effectively reduced market liquidity. Though London expressly denied any responsibility for the repayment of colonial debt, its policies – namely preferential treatment of colonial bonds under British law – gave investors the illusion that the British government would step in to honor colonies' obligations. Importantly, the British government made no attempt to disabuse investors of their false belief in the existence of such a guarantee, instead using it to increase demand for new colonial issues. Only when directly confronted by British citizens about the status of their colonial bonds did the British government categorically deny its responsibility for their repayment.

Archival evidence makes clear the government's decision to leave colonial bonds without a guarantee, and that it only admitted as much when pressed by individual investors. In 1954 the colonial stockbroker Scrimgeours pushed for a statement "to the effect that H.M.G. would have some responsibility for the servicing of loans issued by territories before they had been granted self-government." The Bank of England

vetoed even watered-down versions of this idea, however, opposing any official government statement of reassurance surrounding colonial bonds. Scrimgeours again broached the subject of guarantees in 1955, this time with the Crown Agents, "but again it was not pursued partly because the attitude of the Treasury and the Bank of England remained unchanged."[35] Indeed, the Treasury felt that a UK guarantee would have been "bad training for independence" and "might encourage irresponsibility."[36]

While no formal British government guarantee covered colonial bonds, the securities *were* granted preferential legal treatment on the London Stock Exchange. Since the Colonial Stock Act of 1900, the colonies' London market issues were included on a Trustee List of securities, which held colonial governments legally accountable for default in British courts.[37] This policy had two important effects. First, because the dealings of large investment trusts were restricted by law to Trustee List securities, institutional investment in the colonies had historically been substantial. For example, Atkin (1977, 76) estimated that between 1918 and 1931, "trustees held around one-third of the colonial government loans issued in London." Even in the 1950s, trusts still "arranged their investments on certain fixed principles," and were "unwilling in any circumstances to vary substantially their proportionate holdings of Colonial stock."[38] They held colonial bonds to maturity as a rule, thus keeping them anywhere from twenty to forty years. The lack of enthusiasm for trading colonial bonds amongst institutional investors reduced liquidity in the colonial bond market, which helped to keep yields stagnant and low.

[35]CO 1025/75, Wilson to Galsworthy, 15 February 1956.

[36]T 233/1425, Working Party on Colonial Stock Issues: Loan Finance for Colonial Development, Note by the Colonial Office.

[37]There were earlier versions of the Act, but these only concerned the payment of stamp duties; see Atkin (1977).

[38]CAOG 9/351, pg. 4.

Besides reducing market liquidity via investment trusts, the inclusion of colonial bonds on the Trustee List also kept yields low for a second reason: it amounted to a bona fide seal of approval from the Treasury, which gave novice investors the erroneous impression that colonial debt was effectively guaranteed by the British government. Indeed, there was "a good deal of popular misapprehension" about the meaning of the Colonial Stock Act that had existed since at least the 1920s. *The Economist* commented:

> It is often imagined that the Colonial Stock Act affords real protection for the investor, that all Colonial prospectuses are examined by officials of the Treasury, and that none is allowed to appear until the Treasury has fully assured itself of the necessity of the loan and of the soundness of the security behind it. It is even imagined that, in the event of a default, the British Government would be bound to come to the rescue of the investor. All these beliefs are fallacious.[39]

Admittedly, a handful of knowledgeable investors entirely discounted the inclusion of colonial bonds on the Trustee List. The British Association of the Chambers of Commerce, for example, declared that colonies were not providing pertinent information to investors when raising new capital: namely their financial statistics, particularly outstanding debt, and proposed uses of loan funds; instead, for many colonial loan prospectuses, "it is obvious that the paragraph in the document indicating that the loan is a trustee security is its main pillar of support."[40] John Maynard Keynes, too, considered colonial securities an "anomaly" of the Trustee List and of dubious value.[41] Over time, the Trustee List became a government tool of financial favoritism: it was used to subsidize loans to politically important borrowers by

[39] "Trustee Securities." *The Economist*, 16 Mar. 1929: 578.
[40] "Prospectuses of Overseas Dominions and Crown Colonies." *The Economist*, 22 May 1926: 987.
[41] Keynes, Foreign Investment and the National Advantage, 586; Quoted in Atkin (1977, 83).

restricting the field of trustee investment to particular securities.[42]

As decolonization loomed the Bank of England realized that the average English pensioner, in contrast to *The Economist*'s editors, was continuing to put blind faith in the Trustee List, and that this misguided confidence might continue to be a boon for colonial investment, as it had been in the past. In 1959 the Bank of England's A.D. Peck commented, "the market generally believes that it is unthinkable that H.M. Government could be indifferent to default on its obligations by such a [Trustee] borrower." And despite the political uncertainty and troubling financial situation in the colonies, "Such business as has been possible clearly owes much to the cachet which the [colonial] stocks enjoy on the Trustee List and to mistaken assumptions as to the real value of this cachet."[43]

Seeking to use these "mistaken assumptions" to further cultivate colonial development, the Treasury decided to include independent Commonwealth bonds in the Trustee List when it was expanded in 1959, but for two reasons this strategy only partially succeeded. First, while "In 1900, inclusion in the Trustee List was a highly important and valuable concession for Colonial Territories . . . Since then and particularly in the last 20 years [since 1959] the importance to the borrower of trustee status has declined."[44] The Treasury knew this was the state of affairs, yet it decided to include the securities of new Dominions on the Trustee List anyway: "from a public relations angle," it wrote, "we should try and leave the [Dominion] stocks appearing to have a privileged position."[45] Second, investment trusts, though they remained confined to investing in the Trustee List, flocked to equities that were newly included

[42] "Trustee Law Anomalies." *The Economist*, 12 Mar. 1932: 581.
[43] T 220/642, Item 14, Draft – Trustee List: Dominion and Colonial Stocks, 11 March 1959.
[44] Ibid.
[45] T 220/642, Item 18, Investment Powers of Trustees and the Colonial Stock Act, 17 March 1959.

in 1959; the bonds of Ghana and Malaya were just one new addition alongside the stock of more profitable British corporations.[46]

The extent to which colonial bonds' inclusion on the Trustee List amounted to an implicit British government guarantee is open to some debate. However, available evidence suggests that a number of investors were indeed fooled into believing that London was guaranteeing the future repayment of colonies' bonds after independence. In fact, English pensioners regularly wrote to British government departments enquiring about the status of the colonial bonds that they held. An ex-colonial civil servant wrote the Colonial Office in 1963 that he had invested in Kenya stock in 1952; at the time Kenya "was a thriving British colony and the investment was a gilt-edged one," and "things were very different from what they appear to be now." In particular, the man wondered whether Kenya's new government was under any legal obligation to repay loans that had been issued to the colony.[47]

Another investor, a Mrs. Christie of Chiswick, put £1000 in Kenya 3.5% stock in 1951 at the advice of a Nairobi bank, which "told me the money would be safe as long as it was in a British owned Kenya – so I left it there optimistically." In December 1962, Christie asked the Crown Agents to return her money to her, as she "considered the loan should terminate with the British government handing over Kenya to the Africans," but the Agents refused. The Income Tax Department in Kenya then informed Christie that "those who live 'overseas' will not be paid a refund of double taxation on their Kenya investments," which for Christie signified "the beginning of 'things to come:'"[48]

[46] Krozewski (1996, 60)
[47] CO 1025/229, Item 26, Owen to CO, 12 May 1963.
[48] CO 1025/229, Item 17/18, Christie to CO, 13 March 1963.

> When the Africans get hold of the colony they will 'freeze' all money in Kenya – surely the British Government sees this situation arising. I am not able to sacrifice £1000 as my resources are very limited, and I am in my 60s and needing every penny to make ends meet. I am sorry to put my worries before you, sir, but, if at all possible, will you please ask the Colonial Office if anything can be done for the British people who are out of Kenya and want to terminate the loans. We are told Mr. Sandys is a ruthless man, and is not interested in the white people. One wants fair play from a government, where finances and lives of people are in such a frustrating state. I am still awaiting a reply to my letter of 1st March '63 to the Crown Agents. I apologize for this lengthy letter, and for troubling you with my private affairs – but I do so in desperation as time is short – Self-Government is not far off in Kenya.
>
> Yours faithfully,
> Mrs. M. Christie.

The British government's response to such letters varied depending on the department that received them, as investors heckled the Colonial Office, the Crown Agents and the Bank of England about the fate of colonial bonds. Of course, all official replies to UK investors always reiterated that the British government was in no way liable for meeting any payments due in respect of colonies' outstanding debts. The Colonial Office reply, evidently redrafted several times, was that newly independent Commonwealth governments had made clear their intentions "to honour their obligations for stocks issued by the former colonial administrations," and were continuing to do so. No colonies had ever defaulted – and they would certainly not wish to compromise their future creditworthiness by expropriating bondholders.[49]

The Bank of England had its own response ready, as it received numerous queries about who would assume the debts of the Federation of Rhodesia and Nyasaland were it to dissolve. The Bank's form letter to nervous investors also went through

[49]CO 1025/229: Item 28, Dixon to Owen, 24 May 1963; Item E/18, Dixon to M. Christie, 8 April 1963. CO 1025/153: Item 46/E/1, Barber to Sharples, 4 July 1960.

several revisions because early versions suggested "half-hearted attempts to conceal black pessimism." Policymakers at the Bank wanted "to find a form of words which is honest, i.e. which will give no false comfort to the investor – still less give him any guarantee from the U.K. government – but which will not provide a lever for pressure on the U.K. government to give a guarantee." Evidently, those in charge at the Bank decided that the best policy was to keep quiet, telling investors, "The Bank regret that they are unable to advise you in this matter, since it is plainly impossible for them to forecast what changes, if any, will be made in the Constitution of the Federation."[50]

Such platitudes offered little reassurance. In Mrs. Christie's case, she was particularly dismayed that the British government would not assume responsibility for colonial debt when, with her emphasis, "it is the British government which is abandoning the colonies and they are handing over our money to Africans who will be given complete independence." Christie then challenged the Secretary of State for the Colonies to put his money where his mouth was, quipping, "Mr. Sandys is extremely optimistic about Kenya's behaviour when it is freed from its shackles – but would he permit his own money to be invested in such a country, without protest?"[51]

Another pensioner felt similarly. He wrote the Crown Agents about the £600 he invested in Kenya Government 4% Stock, 1961-71, protesting that "as it is the British government who are about to hand over the Government of Kenya to Africans, possibly headed by the evil Kenyatta, it surely behoves [sic] them to use their influence to repay a loan a large number of British people invested, never dreaming that such political changes could be made."[52]

[50]CO 1025/153, Item E/19, Smith to Rhodes, 6 January 1961.
[51]CO 1025/229, Item 14, M. Christie to Dixon, 18 April 1963.
[52]CO 1025/153, Item 21, letter to Crown Agents, 21 March 1961.

A Mr. W.A. Daspher of Surrey voiced similar racially-charged criticism – to his MP, Richard Sharples, no less. In a letter to Sharples regarding East Africa, Kenya and Federation of Rhodesia & Nyasaland bonds, Daspher lamented that at the time of issue, "no indication was given then that it was the intention to take the administration of these territories out of the hands of the white people and hand it over to the natives. In view of this I feel that the [British] government cannot just sit back and let things take their chance." Daspher continued,[53]

> I cannot imagine that 'drawing the attention' of Kaunda, Kawawa, Tom Mboya, Jomo Kenyatta, and others of similar caliber [to the need to preserve the status of their existing bonds] will have the slightest effect, especially as Sir E. Vasey, Financial Adviser, Tanganyika, has now been 'removed.' It may be useful to mention that I have had some experience of living and working amongst natives, and have not a very high opinion of their integrity, hence my fears for the future, unless the Government takes steps to guarantee Europeans against loss due to this Government?s actions. With many thanks for the interest you have already taken, and in anticipation of your further kind assistance.
>
> Yours sincerely,
>
> —-

Besides African issues, West Indian bonds were also cause for concern. A Mr. D.C. Topham of London wrote the Colonial Secretary about his shares of St. Lucia 6% Bonds 1967/8, asking whether the British Government or the island would assume responsibility for repayment after independence. In the event St. Lucia would be in charge of settling the loan, Topham inquired, "upon what revenues or assets will these Bonds be secured?" At the time, St. Lucia was not a "self-supporting" colony, but supported financially by the West Indies federal government.[54]

[53] CO 1025/153, Item 46/E/3, Daspher to Sharples, 29 January 1962.
[54] CO 1025/153, Topham to CO, 21 September 1961.

All of these letters strongly suggest that many individual investors wrongly believed that the British government would or *might* guarantee their existing colonial issues, and that investors were only disabused of this notion after directly enquiring whether Britain or former colonies would bear responsibility for debt repayment. To the extent that the belief in a British government guarantee of colonial bonds was widespread, it would explain the ultra-low colonial bond yields we observed earlier.

## 1.7 The British Government as Market-Maker

The possibility of a British government guarantee is just one of two explanations for the colonies' low bond yields on the eve of independence. The other is London's comprehensive intervention in the colonial bond market, where already the British government had been the dominant player for decades. Under government auspices, the Crown Agents bought the lion's share of colonial bonds on the market, as their steady purchase of the securities was supposed to keep issue prices from plummeting and create wider market confidence in colonial bonds. Thus, instead of selling colonial bonds, the Agents held onto them in large quantities; "their normal practice was to switch Colonial securities around among the different Colonial funds which they held."[55] The Colonial Office reported that "the bulk of the [colonial] stocks offered have been taken up by the Crown Agents and not by the general investor at all,"[56] to an extent which surprised even the Treasury and the Bank of England.[57] In short, the Agents were "the only substantial real investor in Colonial issues on the London

[55]CO 1025/76, Item 69, Loan Finance for Colonial Development, 4 January 1957.
[56]CO 1025/76, Item 68, Compton to Poynton, 4 December 1956.
[57]CO 1025/76, Item 69, Loan Finance for Colonial Development, 4 January 1957.

market"[58] both in the aggregate and on an issue-specific basis, as Tables 1.4 and 1.5 make clear.

At decolonization, however, even this government support was insufficient to prevent the mounting failure of colonial loans; and the lack of political will to provide direct loans or policy concessions to cash-strapped colonial governments meant that the Colonial Office faced a stark choice: "face a shortfall of some £25,000,000, or do something to make colonial loans more popular."[59] Thus, the British government attempted to make colonial bonds appear more bullish than they actually were via quiet and meticulous government intervention in the London Stock Exchange. Together, the Colonial Office, Treasury, Crown Agents and their brokers decided which colonial borrowers would be allowed to float loans in London, when they would be allowed to do so, and on what terms.

The colonies had always required British government approval to float loans in London; however, decolonization fundamentally changed the government's calculus in its regulation of colonial issues. In the early twentieth century, when colonies requested to float a loan in London, they usually got their way, barring some egregious fiscal abuse. Moreover, the process was quick and straightforward, as colonies usually dealt only with the Crown Agents, and the assent required by the Treasury was cursory – merely a legal formality.

At decolonization, the situation was markedly different. The government had always sought to keep bad colonial loans off the London market, but became so concerned about the slightest possibility of any under-subscription that standards for approving loans became much more stringent. Not content with having the colonies

[58] T 220/490, Item 140, Jenkyns to Taylor, "Colonial Stocks."
[59] CO 1025/75, Item 21A, Brief for Secretary of State, 3 February 1956

make a mediocre showing in London, the government's policy was ostensibly to approve only the most promising loans or none at all. Moreover, there were more cooks in the kitchen in deciding whether any given colony could go to market, judging from the volume of correspondence between the Crown Agents, Colonial Office and Treasury about which colonies could float loans at what time of year. The question was not how individual colonies' cash needs could be met, but how larger Colonial Loan Programmes could succeed given colonies' poor reception on the Stock Exchange. In sum, while the government was largely a passive gatekeeper between the colonies and the Stock Exchange through World War II, it was by the 1950s effectively engaged in colonial stock picking, aiming to maximize the overall prospects for colonial development in light of new constraints.

To be clear, no longer was the top priority meeting the individual development needs of particular colonies – if that were the case, we would have seen almost exclusively East African loans during the '50s and '60s. Instead, the financial requirements of specific colonies were subordinated to restoring confidence in colonial securities more generally. This meant that the government would need to minimize the number of failing colonial loans on the market and stack the deck with as many successes as possible. Indeed, the London market was so tenuous that the failure of even one colonial loan would stand to jeopardize the chance of floating any others for the foreseeable future. The Treasury believed that, "If the market preserves its present complexion, however, so that the next colonial issue fails. . . it would therefore be impossible to float a second colonial loan for a long time."[60] Thus, the choice of borrower was crucial, based more on the ability to raise loans than on the need for them.

[60]T 220/489, Item 114, Colonial Loans on the London Market.

Which colonies could borrow on the London market was decided in the larger context of a "London queue" to issue fixed income securities. In line were not only the colonies but also local British authorities and corporations, waiting their turn to issue bonds or stock on the London market. A headline from the Evening Standard that exclaimed, "Colonies queuing up for new loans" gives some idea of what was in store for this London queue in the summer of 1951: "the first of the new [colonial] loans is expected to be floated as soon as the latest issue of 'Coal' compensation stock is out of the way. High up on the list of borrowers is Mauritius, which is reported to require some £2 million." Mauritius was first in line among the colonies ostensibly because "The Treasury cannot afford to risk a failure in view of the large number of [colonial] applicants in the queue."[61]

While the public had some knowledge of the London queue, both the order of borrowers and timing of their issues were decided privately by the Treasury and an advisory Capital Issues Committee, who could modify the queue at will as circumstances required.[62] Sometimes the adjustments under consideration were drastic. At one point, for example, the Treasury proposed putting colonial governments ahead of local British authorities in the borrowing queue, despite that the latter had presumably already scheduled their loan issues. After all, if local authorities absorbed the limited capital that investors were willing to put into debt instruments in London, there would be little left for colonial bonds.[63]

Getting the right timing for colonial issues was also important for maximizing their chance of success, and two dimensions of timing were important. First, the day of issue would need to be carefully scheduled so as to capitalize on favorable shifts

[61]CO 167/952/2, Item 61, "Colonies queuing up for new loans." *Evening Standard*, 8 June 1951.
[62]CO 537/7644, Item 34, "The Colonies' London Loans."
[63]T 220/489, Item 84, Colonial Borrowing in London, 5 September 1956.

in market sentiment. Schedules for loan issues were understood to be provisional because "market conditions and other (e.g. political) factors may make it necessary to revise our ideas on both the order and amounts of individual loans." Uganda, for example, had to be especially flexible concerning the timing of its issues. First, in December 1954, a scheduled loan for the colony had to be pushed back until at least the following month.[64] Then a loan in summer 1955 was pushed up because the gilt-edge market had unexpectedly been "firming up" the previous week.[65]

Secondly, it was important to schedule issues so as to avoid periods of political turmoil in the colonies, but here the Colonial Office was largely at the mercy of the financial press. Articles in the Financial Times "about the rate of constitutional advance in the Colonies had undoubtedly made matters worse,"[66] and "One thing which might help in making the issue a success would be favourable publicity . . . in the weeks immediately preceding the issue." Policymakers had long recognized that "it might be as well to pave the way for the new loan by a little discreet publicity,"[67] but the problem was that "favourable publicity cannot be turned on like a tap."[68] The only viable option, therefore, was to wait for periods of relative calm in the colonies before floating loans, when mention of the colonies would fade from the press and investors? worries would recede. For example, brokers convinced the Colonial Office that "Jamaica was a better name than Fiji" to be the next colonial borrower on the market due to "recent disturbances in Fiji which they thought should be allowed to fade from the investor's mind before attempting to issue a loan for that territory."[69]

[64]CO 1025/78, Item 42, 16 December 1954.
[65]CO 1025/78, Item 114, Brief from Galsworthy, 20 July 1955.
[66]CO 1025/14, Item 34, London Market for Colonial Loans, 9 October 1953.
[67]T 220/132, Item 73, Downie to Cohen, 4 July 1946.
[68]CO 1025/112, Item 122, Vile to Marnham and Morris, 9 January 1959.
[69]CO 1031/3146, Radford to Harding, 13 January 1960.

In addition to timing, another consideration was the need for variety in which colonies approached the Stock Exchange. Allowing only East African colonies to float loans, for example, was not a winning strategy:

> to avoid piling up commitments for large amounts at any particular period of the year, it is essential to space out the East African calls as widely as possible within the physical limits which the need to have the money imposes. Thus, we have provided in our provisional programme for gaps of three months and upwards between individual calls in 1955, the length of the gap being roughly proportionate to the size of the preceding issue.

The general rule was that there "must be a gap of at least two years between calls by any one borrower," which meant that some desperately-needed loans were significantly postponed. For example, it was "out of the question that the 1955 Railways' £4m flotation can be made before December, 1955: any earlier date would be too close for safety to the September, 1954 issue. Similarly, we could not envisage a further Uganda issue before mid 1956 in view of the call which is to be made in December this year, whether or not this 1954 issue realizes the full £7 million which Uganda needs."[70]

Which colonies could issue loans and when they could do so were not the only factors under the thumb of the government – the terms of colonial loans were also carefully regulated. First, the size of issues was generally kept small to maximize the rate of subscription. The Colonial Office habitually pruned its estimates for colonies' loan needs at the behest of the Treasury, and even then, stockbrokers pushed for further reductions in the size of issues. In the case of Jamaica, for example, a £4m loan would have been feasible but "about the limit" of what the market could provide, and "it might ease the problem of securing underwriting if the amount were kept nearer

[70]CO 1025/78, FIN 95/03

to £3m."[71] Sometimes, rather than floating a smaller issue all at once, the principal was raised bit by bit in a complex bid to inflate the subscription rate. The idea was that if the market subscribed to enough of a small initial issue, the government would float and then purchase another issue in rapid succession; this would make it appear to the average investor that indeed, the particular colonial loan was deemed a good investment by the market. In the case of a £3.5m issue for the East Africa Railways and Harbours, if the market took at least £3 million, the Crown Agents were to issue an additional £0.5m, all of which they would buy themselves, pushing the subscription rate to 75%.[72]

Deciding the terms of colonial loans was a complex balancing act, however, as their terms could not appear too attractive so as to alert suspicion. By the late 1950s, colonial bond yields were about 0.1% higher than UK gilt-edged stock, and the Colonial Office "considered very carefully with the Bank of England, the Crown Agents, our brokers and the Treasury whether to offer an even higher margin of rates on Colonial stock." However, "to do so would involve the serious danger that Colonial government loans might come to be regarded in the Market as 'stinking fish.'"[73] Similarly, one official commented that "The terms for Colonial loans are however already more attractive than those for any other section of the gilt-edged market and I am advised that it would be unwise materially to improve the general level of terms now in force: to do so would add to the impression that investment in Colonial Government stock entails a risk."[74]

Such comprehensive regulation of colonial loan issues must have improved their

[71] CO 1031/3146, Radford to Harding, 13 January 1960.
[72] T 220/489, Items 88 and 89, Colonial Borrowing in London, 17 September 1956.
[73] CO 1025/111, Item 14, Sterling and Commonwealth Economic Development, 30 May 1957.
[74] CO 1025/111, Item 10, Loan Finance for Colonial Development, 17 May 1957.

overall standing somewhat in the eyes of investors but was by no means a panacea for the securities' troubles on the London market. Indeed, even with substantial purchases of colonial debt by the Crown Agents, some loans came perilously close to failing. The final line of defense against such failures was none other than the colonial stockbrokers, Scrimgeours, themselves. Using their own capital, the firm bought hundreds of thousands of pounds of colonial bond issues, thereby preventing under-subscription; it contributed £250,000 to a Kenya loan, and later, £1.5 million to a British Guiana loan. Sometimes, Scrimgeours overestimated the funds they would need to contribute to prevent loans from failing, which effectively meant that the most dubious colonial loans were occasionally oversubscribed.

Scrimgeours' meddling in the British Guiana loan of 1956 is one such case, and its lengthy description – contained in a Colonial Office letter to the colony's financial secretary – merits direct quotation:

> As you will already know, the outcome of the British Guiana loan on the 12th April was that it was over-subscribed to a slight extent; but this success was more apparent than real, and I think you should know what lay behind it. For obvious reasons the information in this letter must be kept extremely secret, and I should therefore be grateful if you would regard it as being strictly for your own personal information and that of the Governor. If it were in any way to leak it could not fail to have the most unfortunate results.
>
> When the terms were fixed a week before the issue took place, the market seemed fairly lively and Scrimgeours (the Crown Agents' brokers) thought that enough investors might be attracted by the prospect of 5% for twenty four years to cover the amount offered for public subscription, i.e. £3 million. The market then suffered a slight relapse; Scrimgeours were able to place the underwriting but there was not any great enthusiasm.
>
> The loan was advertised on Tuesday, 10th April, and there appeared in the same issue of the Times an item from British Guiana reporting a demand by Jagan for a new constitution. This was commented upon in the market

> and did not help at all! Another item of news which did not help matters was the result of the Ceylon elections.
>
> It was clear by the following day that the loan was unlikely to go at all well, but Scrimgeours carried out a drive among their larger underwriters to induce them to put in applications. They managed to produce about £1.5 million in this way, but it was fairly obvious that other applications were most unlikely to come anywhere near filling the breach.

Scrimgeours then decided to "put in applications for £1.5 millions on their own behalf, but, as they would not be in a position to hold that amount for any length of time, they asked if the Crown Agents would be prepared, if necessary, to take some of the weight off their shoulders at something below this issue price; and the Crown Agents agreed to stand behind Scrimgeours up to about £750,000 at 1 discount."[75] This "very handsome and public spirited action on Scrimgeours' part" was overkill, as "it was found that £1.1 million from Scrimgeours was sufficient to produce a slight oversubscription." The brokers later received a personalized thank you note from the Colonial Office for their efforts, having "exposed themselves to the risk of considerable losses in order to make the loan appear a success."[76]

Thus the Colonial Office, Treasury, Crown Agents and their brokers coordinated the order, timing and terms of colonies' bond issues in a last-ditch effort to make colonial bonds appear more bullish than they actually were. In practice, the large-scale purchase of colonial debt by the government and its manipulation of the initial terms of issues was an all-important reason for the ultra-low colonial bond yields we observed around decolonization, despite the increase in colonial default risk that this period brought about.

[75] CO 1025/76, Item 46, Galsworthy to Essex, 25 April 1956.

[76] CO 1025/76: Item 44, Lennox-Boyd to J. Scrimgeour, 9 April 1958; Item 46, Galsworthy to Essex, 25 April 1956.

## 1.8 Conclusion

European decolonization ranks among the twentieth century's largest geopolitical shifts. While fifty-five independent countries had existed in 1947, there were over 150 by the late 1980s.[77] This fundamental shift in the organization of international relations – from a hierarchical system of metropoles and their colonies, to a post-colonial world of relative anarchy – provides an ideal setting to examine the impact of changing international order on interstate cooperation. Particularly for Britain's former colonies – the subject of this paper – existing research suggests that shifting from international hierarchy to anarchy should have had an especially damning effect on their terms of credit, increasing yields on their existing bonds and decreasing the volume of newly available credit.

Using novel data from the London Stock Exchange and The National Archives, London, we showed that though fears over decolonization unambiguously decreased colonies' access to new loans, yields on their existing bonds nonetheless remained low. To reconcile these seemingly contradictory findings, we documented that colonial bond yields were kept artificially low by the British government, via an implicit repayment guarantee and careful manipulation of the terms of colonial bond issues.

The implication of our study for international relations theory is that hierarchy can indeed help mitigate the risk of defection from international agreements, as Britain's regulation of the colonies' bond issues significantly reduced default risk. At the same time, this paper demonstrated that the hierarchy to which London subjected its colonies was far less coercive than is typically depicted in the literature. Keeping

[77] Yergin and Stanislaw (2002, 75)

market-based measures of colonial default risk low required extensive market intervention by the British government, most of which was unknown to the public, as well as a vague notion that London would guarantee its colonies' debts. Both of these polices stand in sharp contrast to gunboat diplomacy and "super sanctions" that have characterized earlier studies of how international hierarchy affects the enforcement of economic agreements (Maurer, 2013; Mitchener and Weidenmier, 2010). Future work should expand our understanding of the economic dimensions of international hierarchy, and examine which of its various components are most conducive to international cooperation.


Figure 1.1: **London Market Loans Issued by Colonial Governments.** Sources: CO 1025/107, London Market Loans; T 220/571, Items 113 and 114, Colonial Development and Welfare Acts.

| Intended Issue Date | Borrower | Amount |
|---|---|---|
| January, 1955 | St. Lucia | £450,000 |
| March, 1955 | St. Vincent | £400,000 |
| May, 1955 | Antigua | £300,000 |
| September, 1955 | Dominica | £300,000 |
| 1956 | Grenada | £500,000 |

Table 1.1: **List of Cancelled Colonial Loans, 1955-1956** Source: CO 1025/79, Item 143, Wileon to Hobden and Fairclough.

| Colony | Year of Issue | Year of Matures | Interest Rate (%) | Call Option? | Sinking Fund Rate (%) | Amount Quoted (£) |
|---|---|---|---|---|---|---|
| Barbados | 1959 | 1971 | 6.00 | Y | | 2584000 |
| British Guiana | 1934 | 1969 | 3.00 | Y | 1.60 | 385322 |
| British Guiana | 1942 | 1972 | 3.50 | Y | 2.10 | 810000 |
| British Guiana | 1951 | 1968 | 3.50 | Y | 1.00 | 2180000 |
| British Guiana | 1956 | 1985 | 5.00 | Y | 1.00 | 3540000 |
| Ceylon | 1935 | 1964 | 3.00 | Y | 2.37 | 4500000 |
| Ceylon | 1934 | 1959 | 3.25 | N | 1.00 | 800000 |
| Ceylon | 1939 | 1959 | 3.50 | Y | 3.50 | 1015000 |
| Ceylon | 1930 | 1965 | 4.50 | N | 1.25 | 1843775 |
| Ceylon | 1930 | 1970 | 5.00 | Y | 1.00 | 1250000 |
| Cyprus | 1950 | 1971 | 3.50 | Y | | 7848000 |
| Cyprus | 1932 | 1966 | 4.00 | Y | 1.50 | 615000 |
| Malaya | 1935 | 1970 | 3.00 | Y | | 6900000 |
| Malaya | 1949 | 1976 | 3.00 | Y | | 9945000 |
| Fed. Rhod. Nyas. | 1954 | 1974 | 4.00 | Y | 1.00 | 10000000 |
| Gold Coast | 1931 | 1970 | 4.50 | Y | 1.00 | 1170000 |
| Gold Coast | 1943 | 1963 | 3.00 | N | 1.00 | 2010000 |
| Kenya | 1948 | 1970 | 2.50 | Y | 1.00 | 3710000 |
| Kenya | 1946 | 1976 | 2.50 | Y | 1.00 | 1820000 |
| Kenya | 1951 | 1978 | 3.50 | Y | 1.00 | 6070000 |
| Kenya | 1930 | 1971 | 4.50 | Y | 1.00 | 3400000 |
| Kenya | 1952 | 1978 | 4.50 | Y | 1.00 | 12625000 |
| Nigeria | 1947 | 1971 | 2.50 | Y | | 1250000 |
| Nigeria | 1949 | 1977 | 3.00 | Y | | 3000000 |
| Nigeria | 1951 | 1966 | 3.50 | Y | | 6800000 |
| Northern Rhodesia | 1949 | 1965 | 3.00 | Y | | 3540000 |
| Northern Rhodesia | 1933 | 1965 | 3.50 | Y | | 1097000 |
| Northern Rhodesia | 1951 | 1972 | 3.50 | Y | | 7730000 |
| Northern Rhodesia | 1952 | 1970 | 4.50 | Y | | 2540000 |
| Nyasaland | 1951 | 1978 | 4.50 | Y | 1.00 | 2060000 |
| Sierra Leone | 1938 | 1963 | 3.50 | Y | 1.00 | 570000 |
| Sierra Leone | 1950 | 1970 | 3.50 | Y | 1.00 | 3710000 |

Table 1.2: **Summary Statistics** This table describes each of the 32 colonial loans examined in the paper. Characteristics shown are the issuing colony, the year and quoted amount of each issue, the maturity, and interest rate. Call options are available on about 90% of the loans (29 out of 32 total) up to ten years before maturity. Sinking fund rates are also of interest; most must be at least 1%, yet there is often no more information. Some loans from British Guiana and Ceylon came with sinking funds exceeding 2 or 3%.

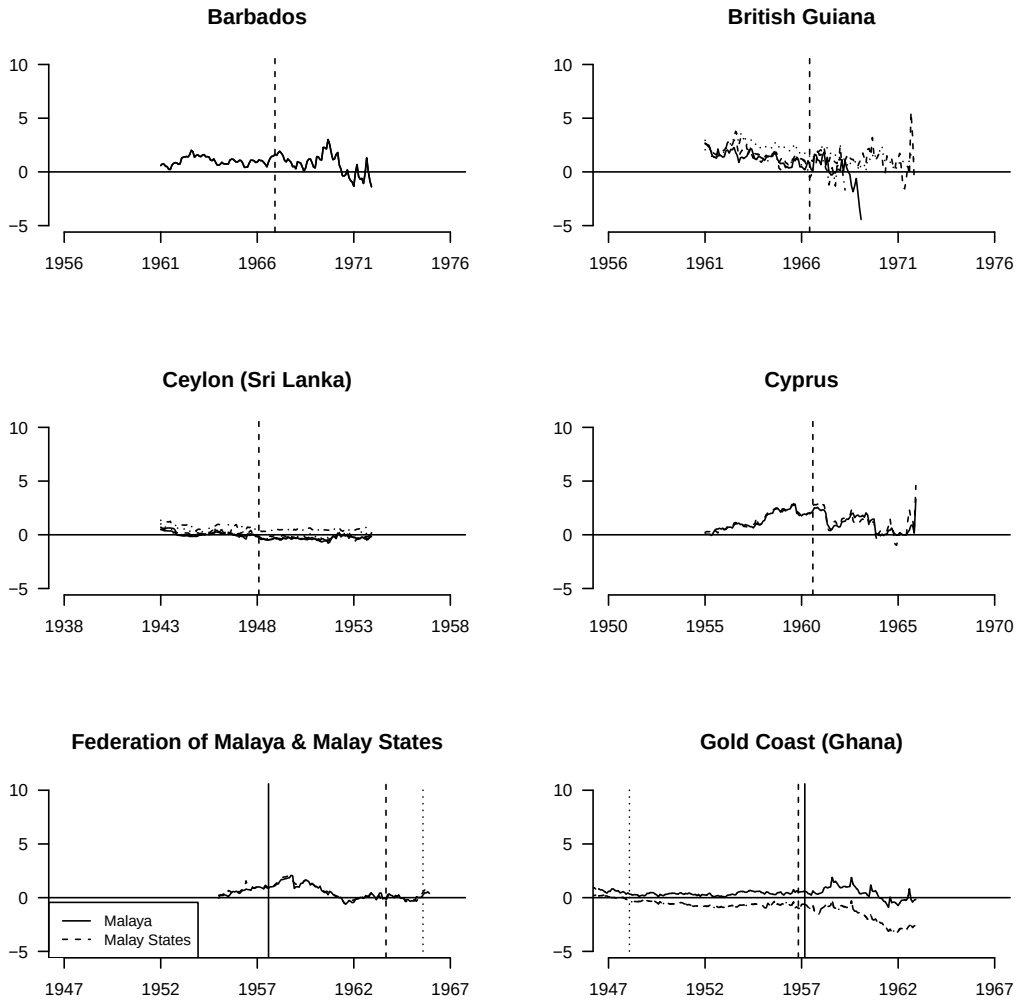


Figure 1.2: **Crown Colony Bond Spreads at Independence, I.** This figure shows selected colonies? bond spreads over the British 2.5% Consol. Unless indicated otherwise, dashed lines mark the date of formal legal independence from the United Kingdom. Federation of Malaya and Malay States: the solid line marks Malaya's independence within the British Commonwealth (August 1957), the dashed line indicates its reconstitution as Malaysia (September 1963), and the dotted line marks Singapore's subsequent secession (August 1965). Gold Coast: the dashed line represents the formal announcement of independence (November 1956); the solid line marks the formal date of independence (March 1957); the leftmost dotted line marks the start of the Accra Riots (February 1948). Source: SEDOL and author?s calculations

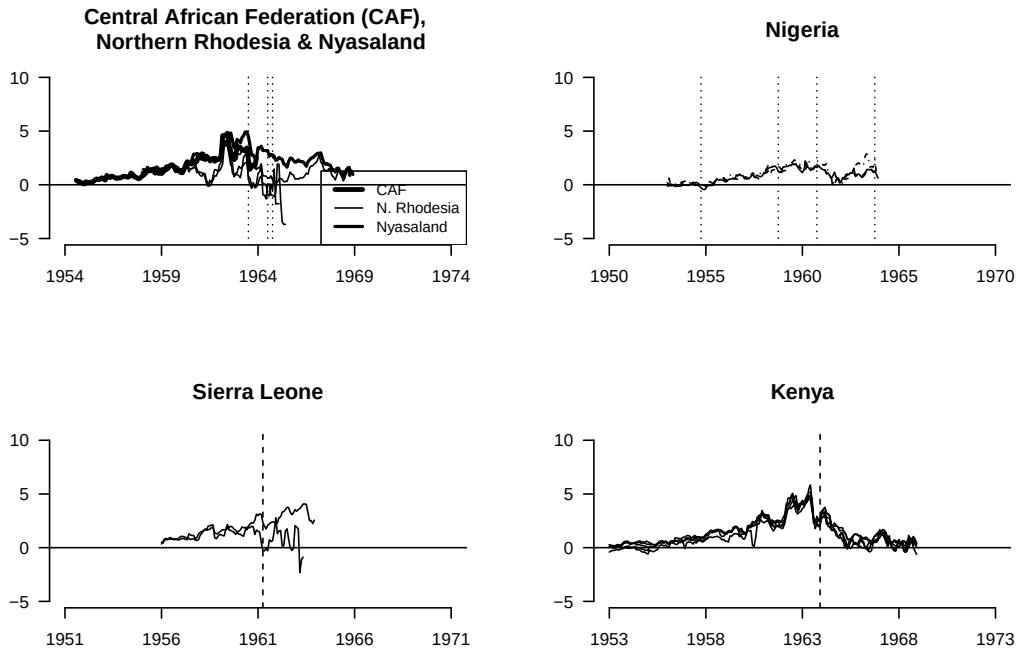


Figure 1.3: **Crown Colony Bond Spreads at Independence, II** This figure shows selected colonies? bond spreads over the British 2.5% Consol. Unless indicated otherwise, dashed lines mark the date of formal legal independence from the United Kingdom. Rhodesia and Nyasaland: the leftmost dotted line is dissolution of the Central African Federation (July 1963); the middle dotted line marks the independence of Nyasaland as Malawi (July 1964), and the rightmost dotted line the independence of Northern Rhodesia as Zambia (October 1964). Nigeria: the first dashed line marks Nigeria's transition to self-government within the Commonwealth (October 1954); the solid line marks the announcement of Nigeria's independence, where independence was formally granted at the second dashed line (October 1960); at the dotted line, Nigeria proclaimed itself an independent republic (October 1963). Source: SEDOL and author?s calculations

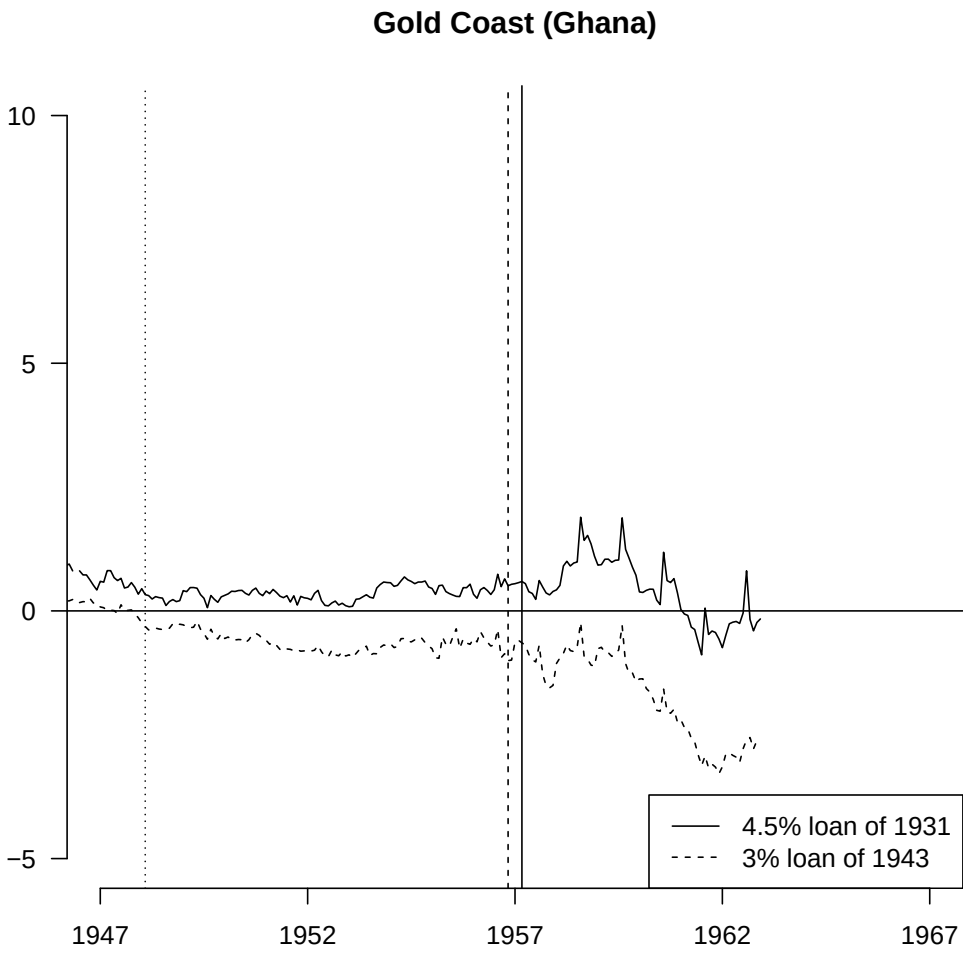


Figure 1.4: **Gold Coast (Ghana) Bond Spreads, 1943 – 1963** The dashed line represents the formal announcement of independence (November 1956); the solid line marks the formal date of independence (March 1957); the dotted line marks the start of the Accra Riots (February 1948). Spreads are over the 2.5% Consol. Source: SEDOL, author's calculations.

| Loan | Redeemable | Amount | Estimated Shortfall |
|---|---|---|---|
| Ceylon 3.5%, 1954/59 | April 1959 | 1,015,000 | 77,000 |
| Ceylon 3.25%, 1959 | December 1959 | 800,000 | Nil. |
| Jamaica 3.5%, 1955/59 | September 1959 | 1,300,000 | 350,000 |
| Jamaica 3%, 1956/61 | April 1961 | 1,200,000 | 500,000 |
| Kenya 3%, 1956/61 | October 1961 | 375,000 | 130,000 |
| Mauritius 3.5%, 1957/62 | August 1962 | 479,000 | 300,000 |
| Gold Coast 3%, 1963 | February 1963 | 2,010,000 | Nil. |
| Sierra Leone 3.5%, 1958/63 | June 1963 | 570,000 | Nil. |
| Nigeria 4%, 1963 | October 1963 | 5,700,000 | 1,500,000 |
| Ceylon 3%, 1959/64 | July 1964 | 4,500,000 | Nil. |
| Grenada 3%, 1959/64 | December 1964 | 167,000 | Nil. |

Table 1.3: **Sinking Funds of Crown Agents Loans Due for Redemption 1959-1964** Source: T 233/1425, Item 129.

| **Loan** | **Nominees, Banks and Jobbers** | % | **Crown Agents? holdings** | % | **Private holdings up to £1000** | % | **Other holdings above £1000** | % |
|---|---|---|---|---|---|---|---|---|
| Fed. Malay States 3% Stock, 1960/70 | 531286 | 8 | 5907894 | 86 | 150603 | 2 | 310214 | 4 |
| Ceylon 4% Stock, 1965 | 313843 | 17 | 1309090 | 71 | 94775 | 5 | 126065 | 7 |
| E. Africa High Commission (Railways and Harbors) 5.25% Stock, 1977/83 | 4271900 | 50 | 1796045 | 21 | 46208 | 5 | 1969966 | 23 |
| Kenya Government 5% Stock, 1978/82 | 1359410 | 32 | 1544029 | 37 | 279471 | 7 | 1042088 | 25 |
| Gold Coast 4.5% Stock, 1960/70 | 181539 | 16 | 926634 | 79 | 40490 | 3 | 21336 | 2 |

Table 1.4: **Holdings of Select Colonial Issues in £m, by Purchaser** Source: CO 1025/111, Working Party on Colonial Stock Issues.

| Year | Net addition to outstanding amount of Colonial stock (£m) | Net increase in Crown Agents holding of Colonial stock (£m) | Amounts of loan taken up locally (£m) | Approximate amounts of increase in holdings by the UK public (£m) |
|---|---|---|---|---|
| 1951 | 29 | 20.5 | 1.5 | 7 |
| 1952 | 30 | 14.5 | 3.5 | 12 |
| 1953 | 34 | 16 | 2 | 16 |
| 1954 | 17 | 13.5 | 0.5 | 3 |
| 1955 | 4 | 3.5 | 0.25 | 0.25 |

Table 1.5: **Aggregate Purchases of Colonial Stock by Year** Source: CO 1025/82, Item 28, Lennox-Boyd to Macmillan, 25 April 1956.

# Appendix: Calculating the Yield to Maturity

This appendix details the methodology of computing the yields on colonial bonds. In this paper I use the standard yield to maturity (YTM). The YTM is a function of not only the bond's interest rate and current market price, but also its face value and time to maturity – how many periods the investor will be paid over the bond's life.

As an example, consider the payment scheme of a 10-year bond with face value $FV = \$100$ and interest of $r = 6\%$ paid semi-annually. Every six months, the bondholder receives a coupon payment $C = 100 \times 0.06 = \$6$. At the end of 10 years, he will receive \$6 as the final coupon payment, plus the \$100 face value. Thus, there are $n = 2 \times 10 + 1 = 21$ payment periods. The price of the bond at issue – here \$100 – equals the discounted present value of the stream of future payments associated with the bond:

$$100 = \sum_{n=1}^{21} \left( \frac{6}{(1 + YTM)^n} \right) + \frac{100}{(1 + YTM)^{21}}$$

Solving for the YTM with a computer gives that at issue, $YTM = 0.03$, or 3%. Next, fast forward to some time $t > 1$ after the bond has been issued. The YTM now relates the bond's price at $t$, $p_t$ , to the discounted present value of the stream of future payments; it solves:

$$p_t = \sum_{N=1}^{n-t+1} \left( \frac{C}{(1 + YTM)^N} \right) + \frac{FV}{(1 + YTM)^{n-t+1}}$$

In my analysis, I calculated the YTM as follows. For a given colonial bond:

1. Collect the features that do not change – the bond?s year of maturity $y_m$ and month of maturity $m_m$, interest rate $r$, and the calendar months for payment

$(m_1, m_2)$. These fall into six-month intervals such as $(m_1, m_2)$ = (January 15, June 15) or $(m_1, m_2)$ = (March 1, September 1); and $m_m = \{m_1, m_2\}$. The face value of the bond is always $FV = 100$, since price quotations are listed as pence on the pound.

2. Now consider a monthly price quotation for the bond at some time $t$, denoted $(m_t, y_t, p_t)$. The quote has three components: $m_t$ is the calendar month of the quote; $y_t$ is the calendar year, and $p_t$ is the traded price of the bond. (In my analysis, $p_t$ was the average of a high and low price quotation. However, closing prices and average prices co-move strongly, so empirical findings are not sensitive to which measure is used.)

   To find the number of periods to maturity, compute,

$$n(m_t, y_t) = 2(y_m - y_t) + 1(m_m = m_1) + 1(m_t \in [m_1, m_2)) + 2 \cdot 1(m_1 = \text{Jan})$$

   where $1(\cdot)$ is an indicator.

3. Next, compute the coupon payment each period. Since $FV = 100$ and interest rates are expressed as percentages in the data, we divide the yearly payment by 2 to compute the semi annual coupon payment:

$$C = \frac{r}{2}$$

4. Finally, we can compute the $YTM$. Take the current market price of the bond $p_t$ as a cash outflow – i.e., write it as $-p_t$ , as if an investor were paying for the

bond. Then use the RATE$(\cdot, \cdot, \cdot, \cdot)$ function in Microsoft Excel, where

$$YTM = 2 \cdot 100 \cdot \text{RATE}\left(n(m_t, y_t), C, -p_t, 100\right)$$

The multiplication by 2 puts the colonial bond on an equivalent (i.e. annual) basis with the British consol, and the multiplication by 100 expresses the YTM in percent.

# Chapter 2

# Democratization and the Development of Fiscal Capacity: Taxation in Britain's Former Colonies to 1980

## 2.1 Introduction

An important question in political economy is how political institutions – democracy, in particular – affect the development of fiscal capacity. The conventional wisdom, largely based on research into the economic development of Western Europe, is that democratic political institutions tend to improve governments' capacity to tax. However, it is less clear whether this holds true outside the European context. In this paper, we analyze democracy's impact on fiscal capacity in Britain's former colonies,

for whom tax revenue was especially important for economic development, and whose nascent political institutions provide a hard test for assessing the impact of politics on taxation. How, in particular, did democratization affect these economies' capacity levy income taxes on the wealthy?

New data on taxation in former British colonies from independence through the 1970s suggest three surprising discoveries. First, income taxation in former British colonies was substantial, with personal and corporate income taxes contributing almost as much to government coffers as did indirect taxes. This contrasts sharply with portrayals of these countries in the literature as almost exclusively dependent upon trade taxes. Our second finding is that while post-independence governments taxed income considerably in general, their propensity to do so actually decreased with the level of democracy; in fact, former British colonies that were democratic derived around 7% less of their tax revenue from income taxes compared to their less democratic counterparts. Finally, we show that increased democracy in post-colonial states was associated with a higher reliance upon export taxes, even after controlling for the economic potential to levy export duties in the first place. Taken together, these findings suggest that democratic former colonies essentially chose to provide public goods on the backs of the poor, who would have almost exclusively suffered the burden of non-income-based taxes, especially those on exports. Country vignettes support this interpretation, as several postcolonial governments ostensibly levied export taxes on farmers in rural areas to provide infrastructure and services to key urban constituencies.

We proceed as follows. Section 2.2 situates our project in the political economy of tax literature, which addresses the the impact of colonialism and democratization

on the design of tax systems. Section 2.3 presents our data set of former colonies' tax systems and presents regressions demonstrating the robust negative relationship between democracy and the reliance on income taxation. In Section 2.4, we analyze the relationship between democracy and dependence on export duties in the context of countries' export tax potential, which we measure as the price elasticity of demand for country-specific exports. We then also contextualize democracy's relationship to income and export taxes in a series of country vignettes before concluding in Section 2.5.

## 2.2 The Political Economy of Taxation

Our paper pushes back against two common arguments in studies of postcolonial fiscal capacity. The first is that, thanks to the legacy of European rule, former colonies' tax systems should have looked quite similar after independence, with little interesting variation to explain. In this view, Europeans shaped their colonies' tax systems to maximize revenue available to the metropole while minimizing the effort required for tax collection, which meant heavy taxes on trade and little in the way of direct taxes on income or property. Those colonies that relied significantly on direct taxes usually did so only as a last resort, when their geography or resource endowments limited the scope for taxing trade (Gardner, 2012; Frankema and Van Waijenburg, 2013). The dominance of trade taxes made sense not only because of their low administrative costs (they could be collected at port), but also because agricultural production and commodity exports were of vital economic importance in most colonies, which were initially established to provide raw materials for Europeans.

Scholars have evoked the dominance of trade taxes not only in the former British

empire, but also in Latin America. Sokoloff and Zolt (2007) document that Latin American countries experienced steeply regressive taxation under colonial rule and enjoyed lower long-run investment in public goods as a result. The implication is that, like Latin America, Britain's former colonies suffered from an over-dependence on indirect taxes that persisted well after independence, undermining their long-run economic development and the adoption of more progressive tax schemes. In contrast to this interpretation, we show that direct taxation was in fact a significant source of revenue for many of Britain's former colonies. Notwithstanding the importance of customs duties, there is underappreciated variation in former colonies' fiscal capacity, proxied by the share income taxation in either total tax revenue or GDP, that warrants an explanation.

In explaining the development of fiscal capacity in former colonies, we shift the focus from economic fundamentals towards political institutions. Indeed, decolonization itself was an abrupt political shift that should have affected fiscal capacity for a number of reasons. First, freedom from British control meant that post-colonial governments now had the autonomy to pursue new economic policies, such as import-substitution industrialization, which should have increased the importance of direct taxation relative to customs duties. Second, decolonization magnified indigenous ethnic and political cleavages previously kept in check by the British, and resulting shifts in the relative power of political constituencies should have also affected the distribution of the tax burden.

Most work in political economics paints taxation as the outcome of a political bargain between citizens and the government (Levi, 1989; Bates and Lien, 1985), and we show that the tax bargain in former colonies was most like that studied in

Latin America, as opposed to taxation in Europe and the post-communist world. The classic example of a tax bargain, based on the development of Early Modern Europe, is progressive taxation in a parliamentary democracy, wherein taxpayers are given indirect control rights over government expenditure and perhaps the issue of sovereign debt in exchange for tax compliance (North and Weingast, 1989). Numerous studies have linked the development of representative democracy to higher fiscal capacity and more progressive taxation (Timmons, 2010; Brewer, 1990; Tilly, 1992). This is especially the case in countries that experienced interstate wars, which are believed to be an important impetus for governments to invest in fiscal capacity (Centeno, 2002; Dincecco et al., 2016).

Other kinds of tax bargains have been studied outside of the European context. Gehlbach (2008) documents that a second type of tax bargain was popular in post-communist states, wherein governments largely relied for revenue on easily taxable sectors of the economy in exchange for industry protection. Alternatively, in countries with even weaker political institutions, tax policy is usually kept out of the public eye (Moore, 2004), and governments forgo whatever revenue might be gained from direct taxation to avoid making political concessions to taxpayers. Instead, these governments rely on all manner of indirect taxes whose incidence is opaque and falls disproportionately on the poor, making them less politically costly to levy. The downside is that indirect taxes often promise low yields, undermining the development of fiscal capacity. In the Latin American case, Best (1976) has shown that the composition of tax revenues skewed towards import and excise taxes, which benefitted large and politically-powerful landowners at the expense of the poor majority. Similarly, we show that Britain's former colonies operated under a tax bargain where public goods

were essentially provided on the backs of the poor. In fact, more democratic postcolonial states actually levied fewer direct taxes on the wealthy, and more trade-based taxes on the poor.

## 2.3 Post-Colonial Taxation and Democracy: Squeezing the Poor?

This section describes the construction of our data set before presenting our key findings. Coverage for all countries in our sample except Sierra Leone begins at or before independence from the United Kingdom (see Table 2.1), and we assume that the first year of available data for each country is indicative of taxation during British rule. To build our data set, we relied upon native economic sources listed in the Appendix to code the variables of interest. These sources provide estimates of tax revenue by category – such as Property Tax, Stamp Duties, or Charges for Goods and Services – in local currency or in some cases in British pounds. For each country-year, we normalize revenue in each category either by total ordinary revenue or GDP, both to avoid currency conversion issues between countries and within countries over time, and to account for inflation.

Immediately, we see substantial variation in former British colonies' capacity to tax. At the low end of our sample is Nigeria in the 1960s, with tax revenues amounting to just 3% of GDP. At the other extreme are Guyana and Zambia, which collected 23% and 25% of GDP in tax revenues in an average year, respectively.

Our main focus is the composition of tax revenues within countries. Because each country's revenue account is broken into somewhat different categories, we devised a

broad classification scheme by which to group revenue headings that is applicable to all countries. For example, our definition of "income taxes" includes not only the revenue heading "Income Tax" per se, but also related headings such as "Graduated Personal Tax", "Poll Taxes" and "Direct Taxes on Households." Our full classification scheme for various revenue categories in country sources is presented in Table 2.2. Some countries provided further data on the composition of customs taxes, specifying the amount of revenue generated from import duties, export duties and excise taxes. Where available we collected these figures as well, again normalizing them by total ordinary revenue.

The breakdown of tax revenues across countries, presented in Figure 2.1, motivates our first major finding: that income taxation in most former colonies was substantial. Average income tax revenue as a share of total revenue in an average year is at least 20% in 13 of our 15 sample countries, and of these, Caribbean former colonies derived a whopping 35 to 40% of their revenues annually from income taxes alone. This is not to deny that indirect taxes were a slightly more important revenue source than income taxes, but the latter were a close second: while customs taxes comprised approximately 40% of ordinary revenue across the sample, income taxes contributed 30%.

The relative importance of income taxation as a revenue source suggests that former British colonies had more fiscal capacity than is commonly argued by scholars of colonial economic history. Research that stresses the dependence of former colonies on trade taxes misses their simultaneous reliance on direct taxes, though this fact was well-recognized by contemporary observers. In a famous 1963 essay for *Foreign Affairs*, economist Nicholas Kaldor (1963, 412) drew a sharp distinction between Latin

American nations and Commonwealth countries. While the former were "conspicuously unsuccessful in imposing taxes on the wealthy classes," the latter "inherited relatively high standards of tax administration from their colonial days," which manifested in a higher share of direct taxes in total revenue.

What explains the large amount of income taxation in Britain's former colonies? One story is that the process of democratization contributed to a move towards progressively higher taxes on the wealthy. However, we show that democratic political institutions in former colonies' had no such impact. In fact, our second finding is that more democratic former colonies tended to tax income more, not less.

Two kinds of evidence support this interpretation, the first being the trajectory of income taxation in former colonies that transitioned towards and away from democracy. Judging by standard measures of political regime type, no countries in our sample fully democratized in the sense of moving from clear autocracy to robust democracy. However, five countries experienced large annual increases or decreases in the Polity score, defined as a yearly difference of more than 2 points, which is the average within-country standard deviation of Polity scores in our sample; and two of these five countries – Nigeria and Sierra Leone – completely transitioned from democracy to autocracy by all dichotomous measures of regime type.

Studying the path of income taxation in these countries, shown in Figures 2.2 and 2.3, is instructive. For Cyprus and Zambia, shifts in the level of democracy proxied by Polity scores had no meaningful impact on the share of income taxation, whether as a share of GDP or total tax revenue. Kenyan data suggest the country's move towards autocracy actually coincided with a higher reliance on income tax revenue. The same is true for Sierra Leone and especially of Nigeria, both of which

transitioned from democracy to autocracy by codings from Cheibub et al. (2010) and Boix et al. (2013). In short, the experiences of countries over time suggest that if anything, democratization in former colonies should have coincided with less reliance on income taxation as a source of revenue.

To test this hypothesis systematically, we perform linear regressions on our larger panel to estimate the effect of changes in the level of democracy on the share of income taxation, both as a share of overall tax revenue and GDP. In proxying for democracy, we use three different indicator variables. The first, is whether a country has a Polity Score of at least 6; and the second and third are the dichotomous regime codings by Cheibub et al. (2010) (denoted $DD = 1$ for democracies) and Boix et al. (2013) (denoted $BMR = 1$ for democracies). We include as controls logged per capita GDP in constant 1948 US dollars to measure countries' level of development; the rate of consumer price inflation to capture general macroeconomic stability; and non-tax revenue to proxy for natural resource wealth, either as a share of GDP or of total tax revenue. We also include country and year fixed effects to control for unobservable time-invariant country characteristics and common time shocks that could affect the composition of tax revenues independent of political regime type, our primary variable of interest.

Results of our analysis are shown in Table 2.3. In specifications (1) through (3), democracy is negative and statistically significant, and a switch from autocracy to democracy decreases the share of income tax revenue in total tax revenue by around 7 to 10 percentage points. In models (4) through (6) the coefficients on democracy measures are insignificant, but suggest that democracy is associated with a 1% drop in the share of taxes coming from personal and corporate income, all else equal. Our

control variables also have the expected signs, and their magnitudes remain stable across specifications, lending credibility to our results.

The decrease in income taxation associated with democracy in our sample suggests that postcolonial governments essentially chose to provide public goods on the backs of the poor, who would have borne most of the burden from non-income-based taxes. If this interpretation were true, we should also find a positive association between the level of democracy and the share of regressive taxes, especially those on trade.

Here, we choose to focus on the relationship between democracy and export taxation in particular for two reasons. First, there is substantial cross-country variation in the scope of export taxation that warrants an explanation, especially because these taxes were usually a substantial source of government revenue. Economically, it is well-known that countries with market power can improve their terms of trade by imposing an export tax. Moreover, even when a country does not have monopoly power in world markets, export taxation may make sense: by raising the relative price of exports, export taxes provide a potentially lucrative source of revenue for cash-strapped governments (Devarajan et al., 1996).

Figure 2.4 illustrates the breakdown of indirect taxes for countries with available data, and suggests that many countries relied as much (or more) on export duties than on excise taxes. Average reliance on export and excise duties across countries is approximately equal (comprising 9.7 and 10% of ordinary revenue, respectively). By contrast, the maximum dependence on export duties (40% of ordinary revenue, Ghana in 1958) far exceeds the maximum dependence on excise duties (23% of ordinary revenue, Jamaica in 1968). While Zambia, Ghana and Sri Lanka heavily relied on export tax revenues, Cyprus and Kenya's economic surveys recorded no export taxes

whatsoever.

A second reason to focus on export taxes in the context of democratization is their distributional implications, as the ultimate amount of revenue generated from export taxes – as well as who pays them – boils down to how these taxes are administered. If a few, large domestic producers can successfully collude in setting export prices without government interference, then the incidence of export taxes will fall entirely on foreign consumers. In this idealized world, domestic production and producer incomes do not change and export prices increase by the amount of the tax, which is collected by the government. In practice, however, export taxes are administered by governments through marketing boards, state-owned entities which buy goods from exporters at a fixed price to be sold on the world market. The benevolent view of marketing boards is that they set prices to insulate farmers from fluctuations in world commodity markets, but more often than not, these boards squeeze producers by paying them below-market prices. The result is that domestic production falls, and domestic producers pay a substantial part of the export tax. If democratic former colonies squeezed poor farmers to provide public goods, then democratization should have coincided with increased export taxation. The next section evaluates this claim using country-level data on the composition of exports.

## 2.4 Democracy and Export Taxes

To correctly infer democracy's impact on export duties, it is vital to consider how the economic structure of former colonies' affected export taxes independent of political institutions. For this reason, we collected data on the composition of former colonies' exports to calculate their export tax potential, and add this variable as a control in our

regressions of export duties on democracy. We first describe our measure of countries' export tax potential before presenting our regression analysis of democracy's effect on export tax revenues.

### 2.4.1 The Role of Export Elasticity of Demand

Former colonies whose commodity exports could not be obtained from other markets or easily replaced by suitable substitutes would have been in an especially opportune position to tax exports, and had much greater potential to impose high export duties. Indeed, the ability to raise revenue from export taxes depended largely on the *price elasticity of demand* for a country's exports, defined as the percent change in quantity demanded divided by the percent change in price.[1] For example, if a 20% price hike in grain results in a 10% decrease in the amount of grain demanded, then the price elasticity of demand for grain is $-0.1/0.2 = -0.5$..[2] In our regressions, we use a country's yearly export elasticity of demand as a proxy for its export tax potential.

To construct this measure, we collected product-level data on the set of commodity exports for each country in our sample, and the elasticity of each good in the group. Specifically, for each country, we used a two-step process to determine the set of relevant commodity exports. First, we calculated the weight, by value, of all exports listed in country sources during the year of independence. We then restricted our attention to those export products that comprised at least 7% of exports by value, listed in Table 2.4. Next, we collected estimates of the price elasticity of demand for

[1] In standard trade theory, the optimal export tax rate is, in fact, the reciprocal of the elasticity of demand.

[2] Hereafter, we always refer to price elasticities of demand when discussing measure of export elasticity. Following convention, we express elasticities in negative numbers, with more negative values reserved for products with more elastic demand.

each of these products from secondary sources, also provided in Table 2.4 and graphed in Figure 2.5. Using this list of products for all subsequent country-years, we next constructed an annual "elasticity score" – essentially an average of major products' price elasticities weighted by their yearly contributions to exports. Formally, for included export products $j \in J$ of country $i$, with elasticities $\xi_j$, the elasticity score in year $t$ is

$$Z_{it} = \sum_{j \in J} w_{ijt} \xi_j$$

where $w_{ijt}$ is the export share of product $j$ for country $i$ in year $t$. The minimum possible elasticity score in our data set is $-3.26$, corresponding to exporting 100% shellfish, the most elastic export in our sample. The maximum possible score is $-0.2$, corresponding to exporting 100% copper, the most inelastic export in our sample. Average elasticity scores by country are shown in Figure 2.6. As expected, Caribbean countries, which rely most on sugar, have more negative elasticity scores, corresponding to more elastic export products. The opposite is true of African countries, which rely more on mineral exports, for which fewer substitutes are readily available.

### 2.4.2 Analysis

To analyze the effect of democracy on export duties, we employ fixed effects models of the form

$$Y_{it} = \beta X_{it} + \eta \cdot \mathbf{1}(\text{Democracy}_{it}) + \gamma_i + \zeta_t + \epsilon_{it}$$

where $Y_{it}$ is the share of export duties in total tax revenue (or GDP) of country $i$ in year $t$; $X_{it}$ is a vector of economic controls, including the elasticity score; $\gamma_i$ is the fixed effect for country $i$ and $\zeta_t$ is the fixed effect for year $t$. Our interest is the

coefficient $\eta$ on the indicator variable for whether country $i$ is a democracy in year $t$. Given the limited data on export duties across our sample, we rely on two codings for regime type. The first is whether a country has democratized substantially in the given year, coded 1 if it experienced an annual increase in the polity score of more than 2 points. This measure refers back to our descriptive analysis in Section 2.3, as a yearly move of this size are at least one standard deviation above the sample mean. We are also able to estimate a coefficient on democracy when using the earlier "DD" dichotomous coding from Cheibub et al. (2010).

These measures of democracy and democratization are significant across all specifications in Table 2.5. Democracy as coded by Cheibub et al. (2010) led to an average increase in the export tax share of total tax revenue by 9 percentage points, and increased the average export tax-to-GDP ratio by 5 percent, and both differences are significant. When we consider countries that have undergone substantial democratization recently, proxied by an annual increase in Polity of at least two points, export taxes in total tax revenue increase significantly by 14 percent, and they increase in GDP significantly by 5 percent. The coefficients on our elasticity score measure of export potential are positive and stable across specifications, though the size of their effects varies relative to the impact of democracy. This suggests that the demand elasticity of a country's exports was indeed an important factor in determining the extent of export taxation. In addition, our other economic controls have the expected sign. Overall, our regressions support the idea that democracy in former British colonies coincided with significantly higher export taxes, corroborating our interpretation that democratization generally seems to have left the poorest taxpayers responsible for public goods provision.

### 2.4.3 Export Taxes as Political Tools

Finally, qualitative country evidence also suggests an explicit link between political institutions and the distribution of tax burdens. In fact, taxing the poor to provide public goods seems to have been a common political strategy in most former British colonies. Particularly when government opponents were concentrated among agricultural producers, heavy export taxes allowed leaders to disenfranchise their competition. At the same time, revenue gained from export taxes would fund industrial projects such as state-owned airlines, factories and hotels (Martin, 1992, 46), which would benefit government supporters in urban areas. Export tax programs also allowed governments to buy political favors for government cronies by design, in the form of jobs in the marketing boards themselves, where export revenues could be easily stolen.[3] In short, democratic leaders likely taxed income less and exports more to redistribute wealth from rural to urban voters in a bid to consolidate political power (Bates, 1981). However, there were exceptions to this pattern whenever rural voters were pivotal political constituencies, and in countries like Mauritius and Kenya, governments directed redistribution away from cities towards farming towns to maintain their popular support.

Consider first the case of British Guiana, where export taxes facilitated the disenfranchisement of government opponents to the benefit of party supporters. Since the Second World War, the Rice Producer's Association (RPA) in Guiana had existed to provide a forum for farmers to negotiate prices with the Guiana Marketing Board, and to lobby for subsidized agricultural inputs like cheap fertilizer and gasoline. While

[3]This was common in Ghana during the Nkrumah regime. Other instances of corruption in African marketing boards include investigations into the Northern Nigerian Regional Marketing Board in 1963 and the 1966 arrest of the the director of Kenya's Maize Marketing board; see Williams (1985, 721).

the RPA was technically a private business organization elected by farmers, it was in all but name controlled by Cheddi Jagan's populist supporters within the Indian-dominated People's Progressive Party (PPP).

While Indians benefitted from their political ties to Jagan, his policies provoked ire from opponents within the rival People's National Congress (PNC). The predominantly African party objected to Jagan's "communist policies," especially the taxes on luxury goods, capital gains, and gifts that he introduced in his February 1962 budget. The riots that resulted from that budget were unsurprisingly directed against Indians, Jagan's core constituents.(Gafar, 2003, 37)

Jagan's ouster saw the election of the PNC's Forbes Burnham, who derived its political support from Africans. As such, he sought to settle the score between Africans and Indians in part through tax policies. The predominately Indian RPA failed to negotiate increases in the price of rice for over seven years under Burnham's rule, which meant that the export taxes levied on rice farmers redistributed income from Indians to African PNC supporters (Despres, 1975, 100-101). Indeed, Gafar (1998, 166) argues that Burnham could afford to squeeze Guyana's rice producers for revenue because he did not depend on Indo-Guyanese rice farmers for political support.

Export taxes played a similar redistributive role in Ghana. Here, the production of cocoa was dominated by farmer-chiefs in the Ashanti region who opposed Nkrumah and the socialist ideology of his Convention People's Party (CPP). The CPP's Cocoa Policy, administered through the Cocoa Marketing Board, expropriated wealth from the Ashanti cocoa producers by levying both heavy export taxes and "voluntary contributions" from cocoa farmers, which were essentially forced levies on earned income.[4] Withholding profits from cocoa farmers during the crop's boom years dis-incentivized

[4]TNA: DO 35/9323

cocoa production that would have been a valuable source of foreign exchange. At the same time, export tax revenues from the Cocoa Marketing Board funded various "progressive socialist schemes," among them education and childcare, that Ghanians in towns that were the CPP's backbone of political support (Mohan, 1967).

In Mauritius, income redistribution after independence was a major priority as well. Here, however, export tax revenues helped fund social programs for poorer sugar planters, a pivotal political constituency. According to Gulhati et al. (1990, 20), the "Government used sugar duties as a major redistributive instrument, in addition to a progressive income tax structure." Revenue from sugar export taxes was on the order of 10–20% throughout the 1970s, helped in part by Mauritius' preferential treatment from the European Economic Community (EEC). As part of the Lomé Convention, Mauritius essentially received free access to the European market, where it sold sugar at three times the world price for a number of years before international sugar prices collapsed later in the decade (Zafar, 2011, 99).

The government used these export revenues, including those from duties, to subsidize the price of rice, wheat, water and electricity for a broad segment of the population, in addition to investing in public education and health services Gulhati et al. (1990). According to Bräutigam (2008), export tax revenues went towards the Sugar Industry Development Fund, created in 1974 to provide low-interest loans and grants for lower-income workers in the sugar industry and related professions, such as shipping. Moreover, the government strategically used its power to tax to cement its hold on power. For example, in the run-up to the 1975 election, the incumbent Mouvement Militant Mauricien (MMM) party made the export tax more progressive to pander to the party's political base, namely low-income Hindu sugar planters. Export tax rates

for this group were set to zero at the bottom of a five-tiered export tax bracket, and the MMM government again secured its place in office.

In Kenya as well, the structure of export taxes on coffee reflected the government's redistributive policy orientation towards smallholders. Westlake (1973, 5) shows that while both small coffee planters and larger estates paid export taxes, "the rates of income taxation in the estate sector are therefore much higher than those of the smallholder sector." This is because small planters paid a graduated and progressive tax on their gross incomes from coffee, while estates were run as companies and subject to a 40% corporation tax. These policies were part of a larger agenda of progressive taxation that the government pursued from independence through the early 1970s, outlined in the now seminal Sessional Paper No. 5 of 1965. In particular, Kenyatta's stated objective was in part to promote "rural-urban balance" and reduce income inequality (Leys, 1979). This was achieved via a sales tax introduced in 1972, notable for its exceptions for staple goods such as sugar, flour, fertilizer and medicine; the abolition of consumption taxes and what had been regressive poll taxes; and the introduction of a capital gains tax in 1975 (Nyamongo, 1987).

## 2.5 Conclusion

The impact of politics on taxation in developed countries has received considerable scholarly attention, but the political drivers of fiscal capacity in newly sovereign countries are less well-understood. To close this gap in the literature, we analyzed the impact of democracy on tax capacity in Britain's former colonies, using novel data on countries' sources of tax revenue from independence through the 1970s. Not only was

there surprisingly substantial income taxation across the newly independent Commonwealth, but democracy actually worked to decrease reliance on income taxation as a revenue source, both relative to total tax revenue and GDP. Instead of funding public goods via income taxes on the wealthy, more democratic former colonies instead exploited the poor via high taxes on exports. The implication is that in these countries, democracy hindered the development of fiscal capacity – an interpretation at odds with the popular idea that democracy should uniformly improve governments' ability to tax. Future work should examine whether democracy's negative impact on fiscal capacity was unique to the British Commonwealth, applied generally to former colonies after independence, or is also applicable to a broader set of cases.

A related focus should be whether the relationship we identified between democracy and export taxation generalizes to other economic contexts. When one considers non-commodity-exporting countries, does regime type still significantly affect the incidence of export or other trade-based taxes? Finally, future research should explore whether heavy reliance on export taxes has generally been a common feature of public finance within newly sovereign states, and if so, should assess the longer-term developmental consequences. For example, Zambia's excess dependence on copper taxes before prices declined in the 1980s echoes Brazil's initial dependence on coffee exports, where both governments funded themselves via export taxes at great long-term cost to economic development. Analyzing commodity exporters' past failures to diversity their revenue sources, and the extent to which politics impeded this process, may suggest how LDCs might improve their development prospects going forward.

| **Country** | **Years Included** | **Year of Independence** |
|---|---|---|
| Barbados | 1961 – 1971 | 1966 |
| Ceylon (Sri Lanka) | 1948 – 1959 | 1948 |
| Cyprus | 1956 – 1975 | 1960 |
| Ghana | 1957 – 1969 | 1957 |
| Guyana | 1962 – 1976 | 1966 |
| Jamaica | 1959 – 1972 | 1962 |
| Mauritius | 1965 – 1979 | 1968 |
| Nigeria | 1960 – 1973 | 1960 |
| Rhodesia (Zimbabwe) | 1964 – 1975 | 1965 (UDI) |
| Sierra Leone | 1963 – 1980 | 1961 |
| Singapore | 1963 – 1977 | 1963 |
| Tanzania | 1955 – 1978 | 1964 |
| Trinidad | 1951 – 1974 | 1962 |
| Zambia | 1964 – 1979 | 1964 |

Table 2.1: **Country Coverage** This table describes the country coverage of our data set.

| *Revenue Type* | *Revenue Source* | *Example Revenue Headings* |
|---|---|---|
| DIRECT TAXES | **Taxes on Personal & Corporate Income** | Income Tax<br>Direct Taxes on Households<br>Graduated Personal Tax<br>Poll Tax<br>Development Contribution Tax<br>Direct Taxes on Corporations<br>Succession Duties |
| | **Taxes on Property** | Income from Property and Enterprises<br>Estate Duties |
| INDIRECT TAXES | **Customs Duties** | Export Duties<br>Import Duties<br>Excise Duties |
| | **Other Production & Expenditure Taxes** | Sales Tax<br>Stamp Duties<br>Licenses<br>Fees<br>Post Office<br>Telecommunications<br>Miscellaneous |
| NON-TAX REVENUE | **Interest & Repayment of Loans** | Interest, Profit and Rents<br>Interest Profits and Dividends<br>Loan Proceeds |
| | **Charges for Goods and Services** | Sales and Fees |
| | **Revenue from Government Land** | Land Rents<br>Royalties<br>Sale of Land or Used Assets |
| | **Miscellaneous Non-Tax Revenue** | Voluntary Contributions<br>Currency Board Assets<br>Profits of SOEs<br>Reimbursements from Govt. Depts. |

Table 2.2: **Tax Revenue Classification** This table lists, in bold, the revenue headings employed in our data set. The rightmost column provides examples of revenue categories from country sources that were classified under each sub-heading.

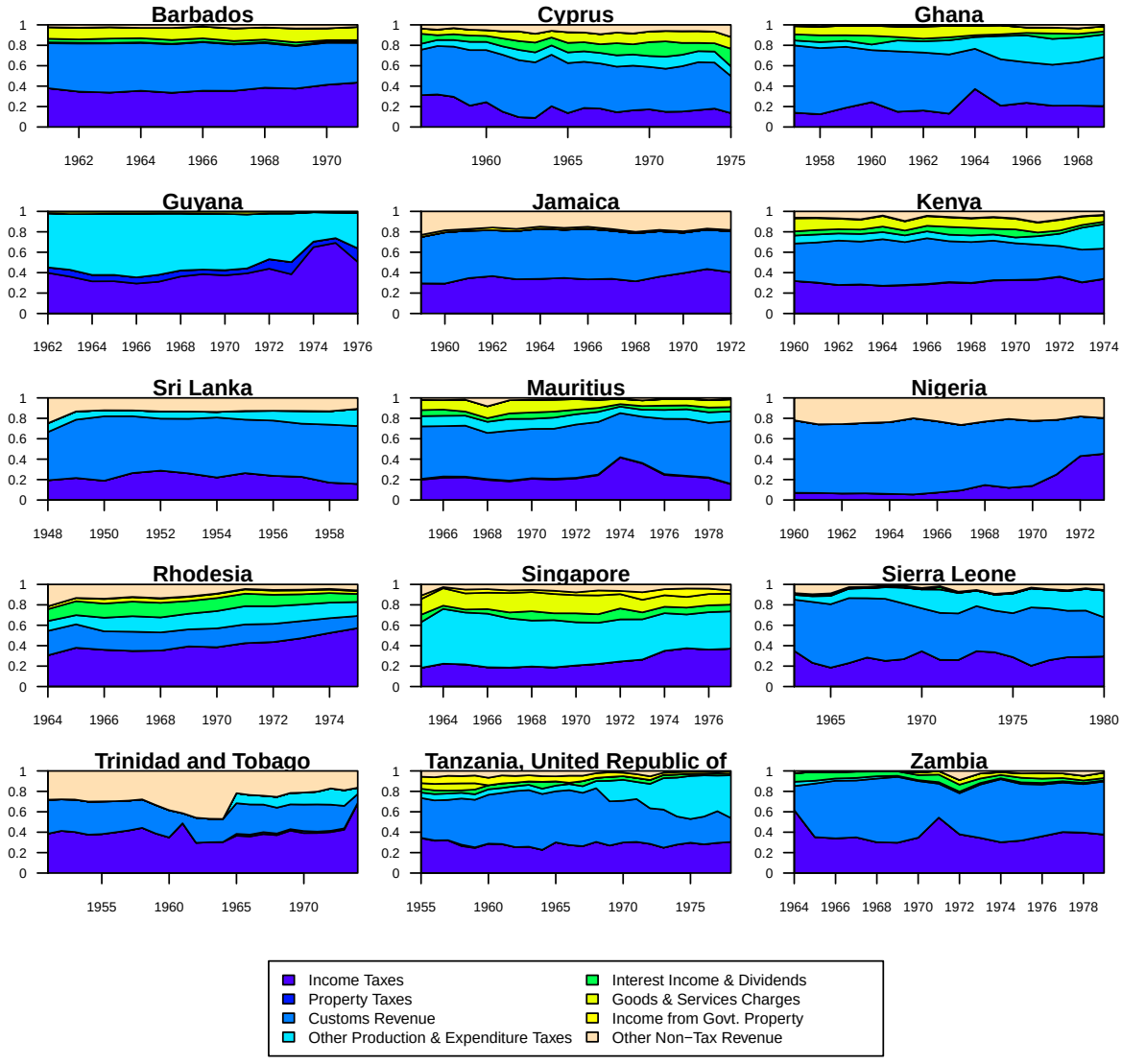


Figure 2.1: **Former British Colonies' Composition of Tax Revenues** This figure plots the subclasses of revenue earned by each colony as a share of its total ordinary revenue on the y-axis.

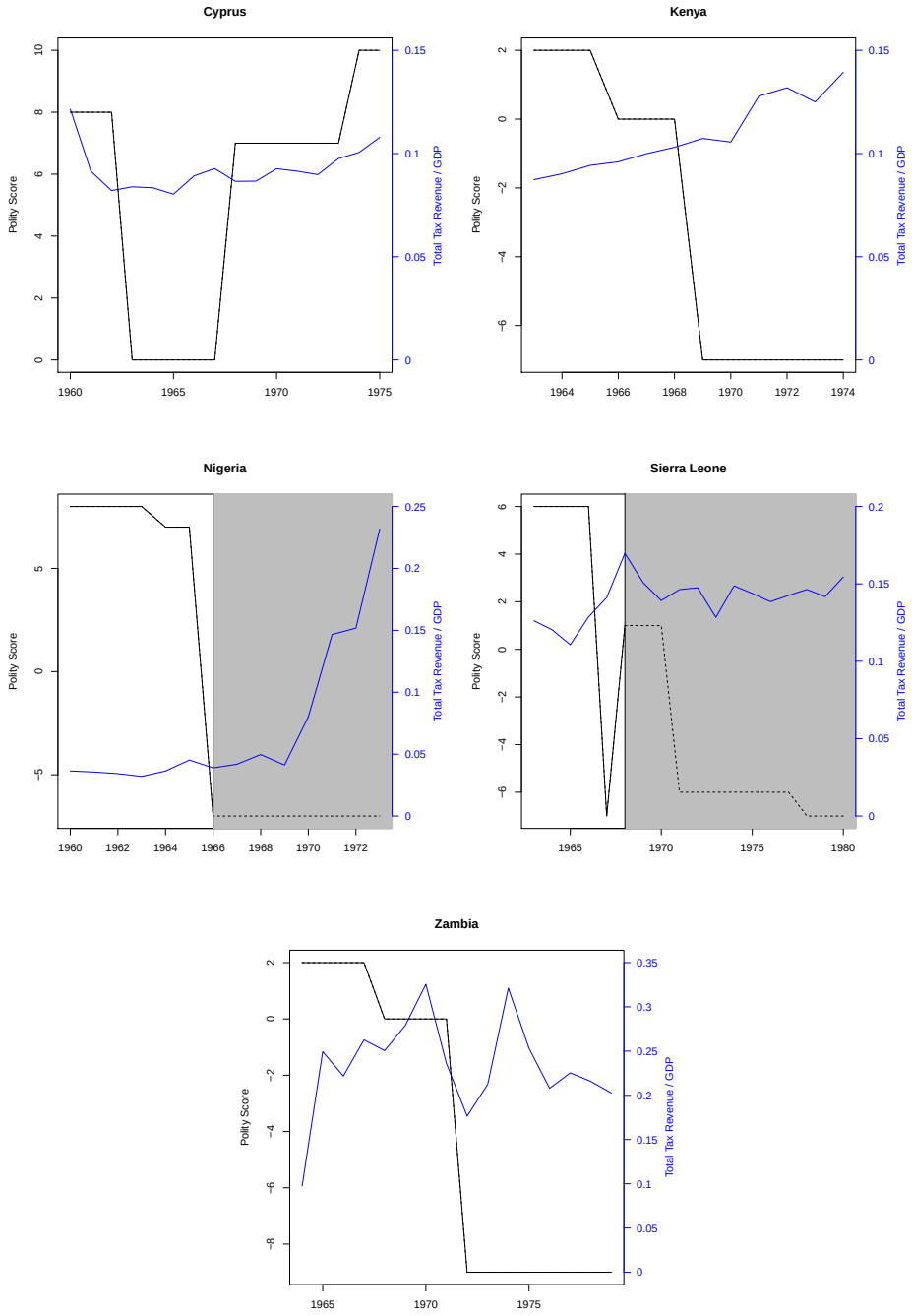


Figure 2.2: **Income Tax Revenues in GDP** This figure plots income tax revenue as a share of GDP on the right axis, and the Polity IV measure on the left axis for countries over time.

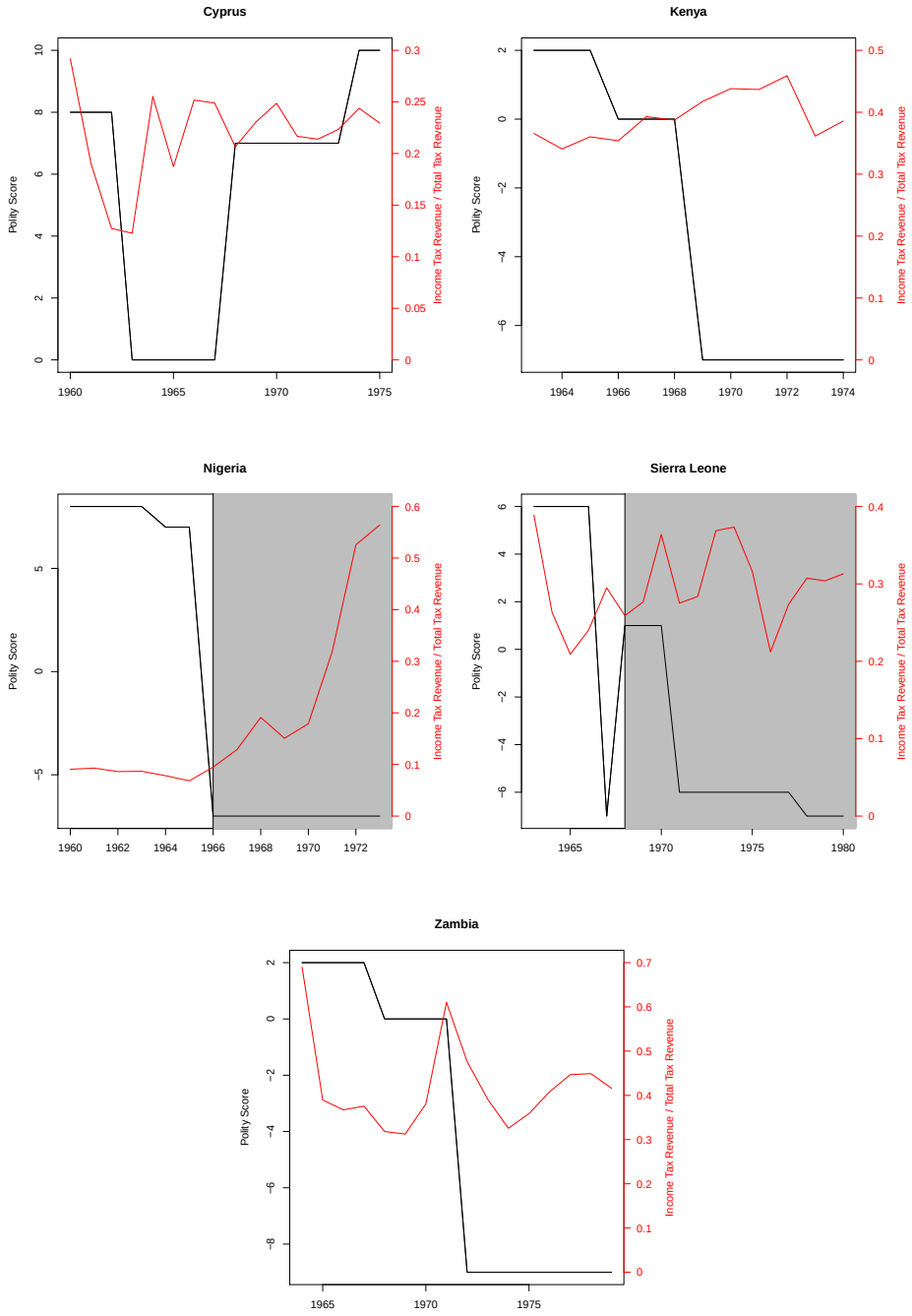


Figure 2.3: **Income Tax Revenues in Total Tax Revenues** This figure plots income tax revenue as a share of total tax revenue on the right axis, and the Polity IV measure on the left axis for countries over time.

| | *Dependent variable: Income Tax Revenue* | | | | | |
|---|---|---|---|---|---|---|
| | Share of Total Tax Revenue | | | Share of GDP | | |
| | (1) | (2) | (3) | (4) | (5) | (6) |
| Polity $\geq 6$ | $-0.100^{***}$ | | | $-0.017$ | | |
| | (0.037) | | | (0.013) | | |
| DD = 1 | | $-0.075^{**}$ | | | $-0.010$ | |
| | | (0.032) | | | (0.012) | |
| BMR = 1 | | | $-0.097^{***}$ | | | $-0.017$ |
| | | | (0.037) | | | (0.013) |
| Log(GDP Per Capita) | $0.170^{***}$ | $0.175^{***}$ | $0.172^{***}$ | $0.054^{***}$ | $0.056^{***}$ | $0.055^{***}$ |
| | (0.028) | (0.028) | (0.028) | (0.011) | (0.011) | (0.011) |
| Inflation | $-0.061$ | $-0.055$ | $-0.052$ | $-0.025$ | $-0.022$ | $-0.021$ |
| | (0.089) | (0.087) | (0.086) | (0.033) | (0.032) | (0.032) |
| Non-Tax Revenue / GDP | 0.174 | 0.367 | 0.270 | | | |
| | (0.672) | (0.662) | (0.662) | | | |
| Non-Tax Revenue /Total Tax Revenue | | | | $-0.114^{*}$ | $-0.118^{*}$ | $-0.115^{*}$ |
| | | | | (0.064) | (0.064) | (0.063) |
| Observations | 124 | 130 | 130 | 124 | 130 | 130 |
| $R^2$ | 0.350 | 0.347 | 0.357 | 0.310 | 0.317 | 0.322 |
| *Note:* | | | | | | $^{*}$p<0.1; $^{**}$p<0.05; $^{***}$p<0.01 |

Table 2.3: Regression Results: Income Taxation

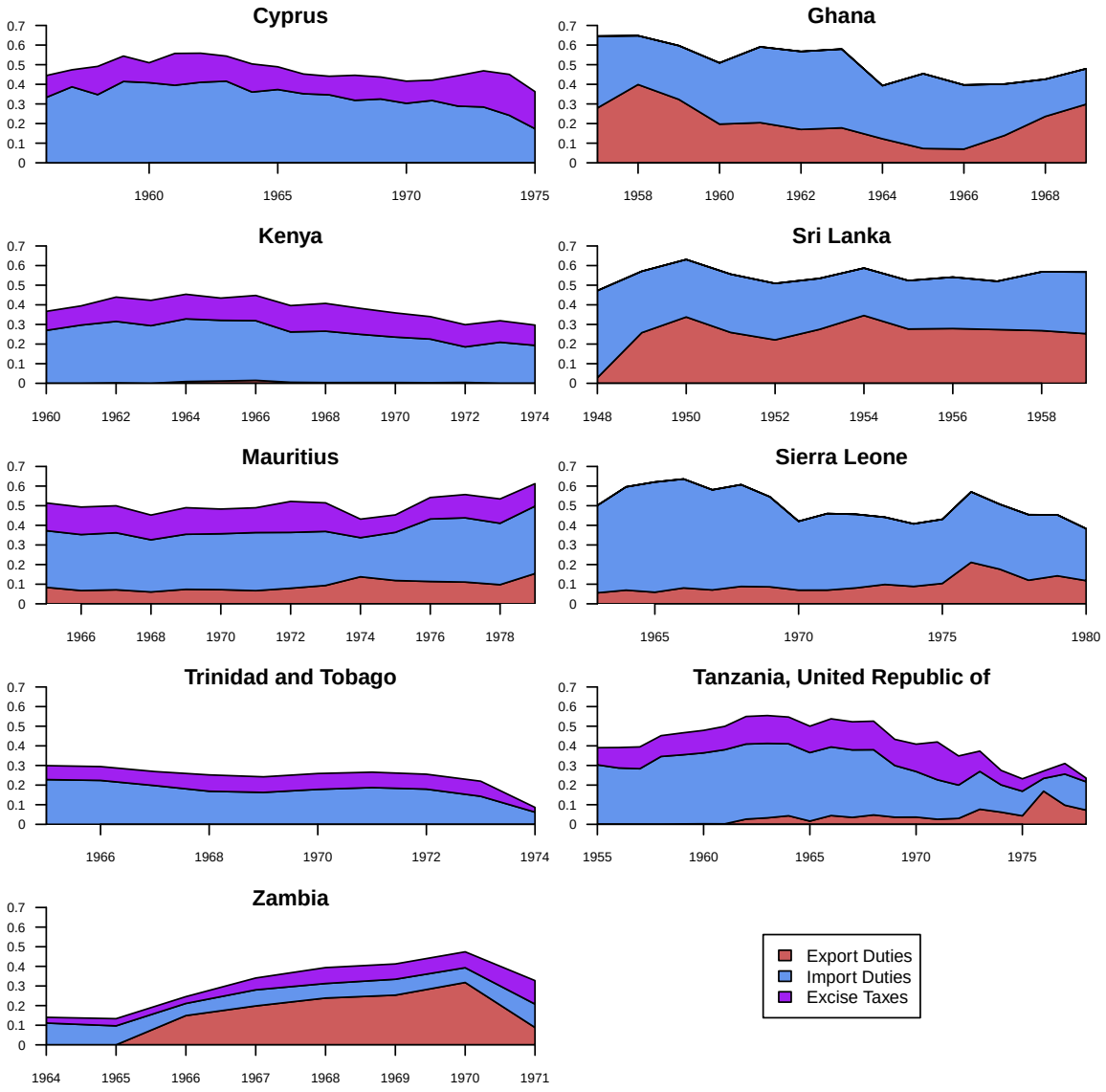


Figure 2.4: **Former British Colonies' Composition of Trade Duties** This figure plots trade duty revenues earned by each colony as a share of its total ordinary revenue on the y-axis.

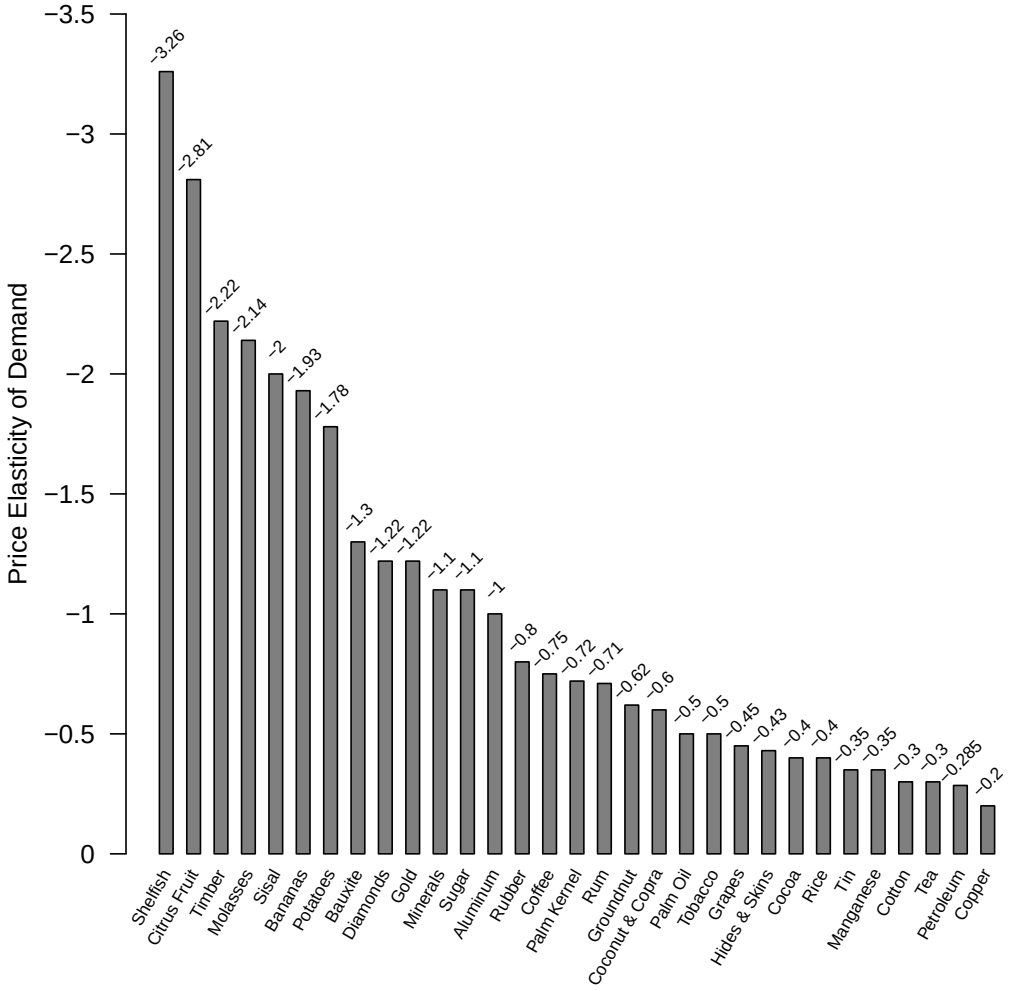


Figure 2.5: **Price Elasticities of Demand for Primary Exports by Commodity** This figure plots the price elasticity of demand for each export product in the sample.

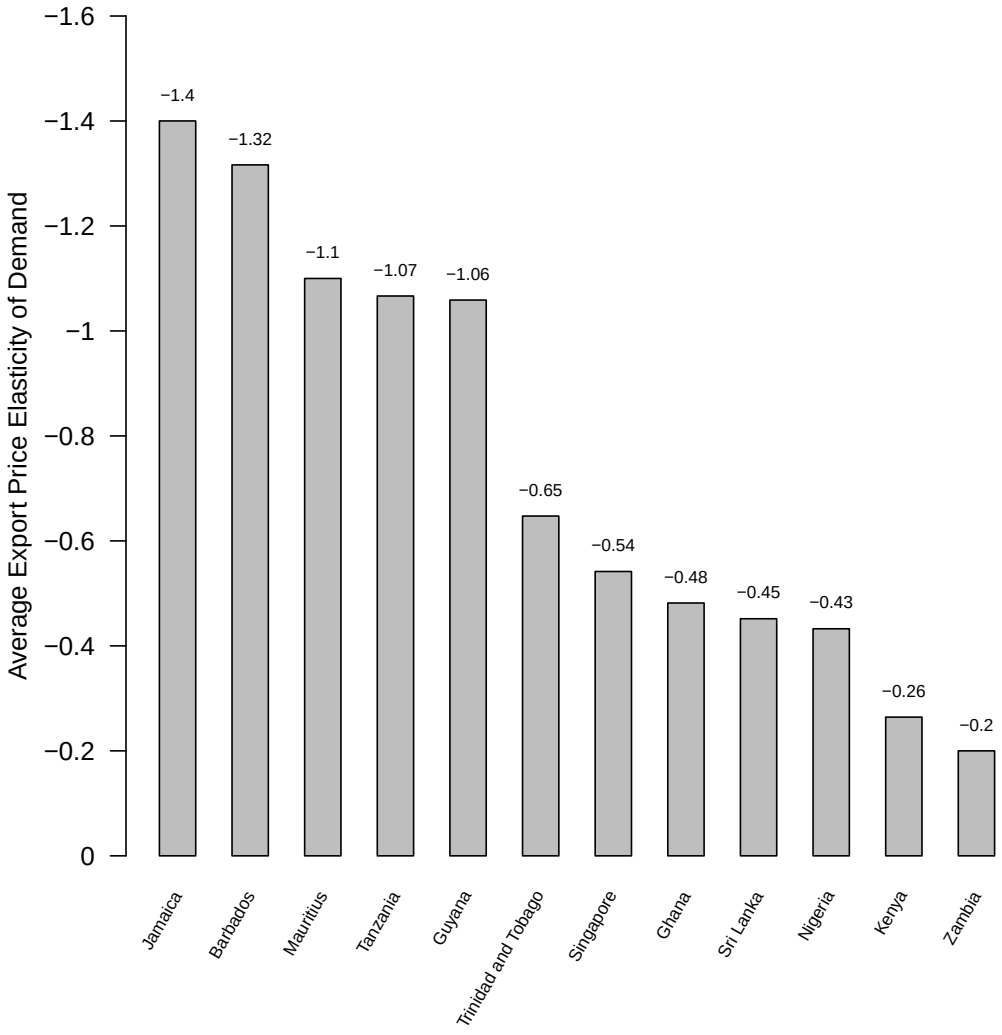


Figure 2.6: **Price Elasticities of Demand for Primary Exports by Country** This figure plots the average price elasticity of demand for each country in the sample.

| Country | Included Products | Export Share | Price Elasticity | Source |
|---|---|---|---|---|
| Barbados | Sugar | 72.3% | −1.1 | Bond (1987) |
| | Rum | 7.04% | −0.71 | Hirsch (1951) |
| | Molasses | 7.01% | −2.14 | de Vries (1950) |
| Ceylon | Tea | 45.4% | −0.3 | Bond (1987) |
| | Rubber | 12.7% | −0.8 | Bond (1987) |
| | Coconut (incl. Copra) | 8.0% | −0.6 | Bond (1987) |
| Ghana | Cocoa | 63.9% | −0.4 | Bond (1987) |
| | Gold | 12.3% | −1.22 | de Vries (1950) |
| | Manganese | 11.3% | −0.35 | de Vries (1950) |
| | Timber | 12.5% | −2.22 | de Vries (1950) |
| Guyana | Sugar | 29.2% | −1.1 | Bond (1987) |
| | Bauxite | 26.9% | −1.3 | Bond (1987) |
| | Alumina | 19.9% | −1.0 | Pindyck (1977) |
| | Rice | 15.0% | −0.4 | Bond (1987) |
| Jamaica | Bauxite & Alumina | 48.6% | −1.15* | Bond (1987); Pindyck (1977) |
| | Sugar, Rum & Molasses | 26.4% | −1.28* | Bond (1987); de Vries (1950); Hirsch (1951) |
| | Bananas | 7.2 % | −1.93 | Houck (1964) |
| Kenya | Coffee | 25.1% | −0.75 | Hirsch (1951) |
| | Sisal | 17.1% | −2.0 | Nafziger (2012, 728) |
| | Tea | 12.9 % | −0.3 | Bond (1987) |
| Mauritius | Sugar | 92.6% | −1.1 | Bond (1987) |
| Nigeria | Cocoa | 27.7% | −0.4 | Bond (1987) |
| | Palm Kernel | 19.7% | −0.72 | Cheng (1959, 114) |
| | Groundnut | 17.3% | −0.62 | Murti and Sastri (1951) |
| | Rubber | 10.7% | −0.8 | Bond (1987) |
| | Palm Oil | 10.6% | −0.5 | Bond (1987) |
| | Petroleum | 3.2% | −0.285 | Wilson (1974) |
| Singapore | Rubber | 52.0% | −0.8 | Bond (1987) |
| | Petroleum | 20.5% | −0.285 | Wilson (1974) |
| Tanzania | Sisal | 28.8% | −2.0 | Nafziger (2012, 728) |
| | Cotton | 14.0% | −0.3 | Bond (1987) |
| | Coffee | 13.9 % | −0.75 | Hirsch (1951) |
| | Diamonds | 11.9 % | −1.22 | de Vries (1950) |
| Trinidad | Sugar | 71.4% | −1.1 | Bond (1987) |
| | Cocoa | 17.1% | −0.4 | Bond (1987) |
| Zambia | Copper | 94.2% | −0.2 | Bond (1987) |

Table 2.4: **Former British Colonies' Primary Exports** This table lists the primary commodity exports for each country included in the construction of yearly elasticity scores, and the export shares of each commodity in the year of independence. Elasticities for product groups denoted (*) are taken to be the arithmetic means of component products.

| | *Dependent variable: Export Tax Revenue* | | | |
|---|---|---|---|---|
| | Share of Total Tax Revenue | | Share of GDP | |
| | (1) | (2) | (3) | (4) |
| DD = 1 | 0.096* | | 0.055*** | |
| | (0.057) | | (0.015) | |
| +1SD Polity = 1 | | 0.146*** | | 0.059*** |
| | | (0.045) | | (0.015) |
| Elasticity Score | 0.129 | 0.106 | 0.022 | 0.022 |
| | (0.079) | (0.065) | (0.022) | (0.022) |
| Log(GDP Per Capita) | −0.001 | 0.022 | 0.007 | 0.004 |
| | (0.040) | (0.034) | (0.012) | (0.012) |
| Inflation | −0.039 | 0.001 | −0.011 | −0.007 |
| | (0.087) | (0.069) | (0.023) | (0.022) |
| Non-Tax Revenue / GDP | −1.745* | −1.048 | | |
| | (0.938) | (0.889) | | |
| Non-Tax Revenue /Total Tax Revenue | | | −0.027 | −0.038 |
| | | | (0.072) | (0.073) |
| Observations | 80 | 72 | 80 | 72 |
| $R^2$ | 0.128 | 0.237 | 0.218 | 0.262 |
| *Note:* | | | | *p<0.1; **p<0.05; ***p<0.01 |

Table 2.5: Regression Results: Export Duties

# Appendix: Country Data Sources

This appendix lists the country-specific sources used to construct our data set. Sources marked (T) were used in calculating ratios of tax revenue categories to total tax revenue and GDP. Where applicable, sources marked (D) were used in calculating ratios of excise, import and export duties to total tax revenue and to GDP. We used exchange rates from Global Financial Data, and the US Consumer Price Index from the Bureau of Labor Statistics, to convert nominal GDP for each country into constant 1948 US dollars.

### Barbados

Barbados Economic Survey, 1964, page 42 (T)

Barbados Economic Survey, 1967, page 73 (T)

Barbados Economic Survey, 1971, page 71 (T)

### Ceylon

Ceylon Yearbook, 1950, page 254 (T, D)

Ceylon Yearbook, 1951, page 264 (D)

Ceylon Yearbook, 1952, page 296 (T, D)

Ceylon Yearbook, 1954, page 286 (T, D)

Ceylon Yearbook, 1956, page 114 (T, D)

Ceylon Yearbook, 1957, page 116 (T, D)

Ceylon Yearbook, 1960, page 157 (T, D)

Ceylon Yearbook, 1961, page 164 (T, D)

**Cyprus**

Republic of Cyprus, Statistical Abstract, 1965, page 248 (T, D)

Republic of Cyprus, Statistical Abstract, 1969, page 253 (T, D)

Republic of Cyprus, Statistical Abstract, 1975, page 209 (T, D)

Republic of Cyprus, Statistical Abstract, 1975, pages 210-214 (D)

**Ghana**

*After 1962, Income and Property taxes are grouped together; we classify this category as income taxation. "Voluntary contributions" are levied on cocoa farmers; we classify these as income taxation.*

Ghana, Economic Survey, 1957, VI. Current Account, Table 6a (T, D)

Ghana Economic Survey, 1962, Page 104, Table 98 (T, D)

Ghana Economic Survey, 1969, Page 109, Table III (T, D)

**Guyana**

*We treat "Income from Property and Enterprises" as a property taxes, "Indirect Taxes" as customs taxes, and "non-tax payments by households" as charges for goods and services.*

Guyana, Quarterly Statistical Digest, December 1967, page 32 (T)

Guyana, Quarterly Statistical Digest, December 1972, page 14 (T)

Guyana, Quarterly Statistical Digest, January - December 1978, page 88 (T)

**Jamaica**

Jamaica Economic Survey 1959, page 61 (T, D)

Jamaica Economic Survey, 1961, page 71 (T, D)

Jamaica Economic Survey, 1962, page 65 (T, D)

Jamaica Economic Survey, 1963, page 77 (T, D)

Jamaica Economic Survey, 1964, page 115 (T, D)

Jamaica Economic Survey, 1965, page 107 (T, D)

Jamaica Economic Survey, 1966, page 105 (T)

Jamaica Economic Survey, 1967, page 112 (T, D)

Jamaica Economic Survey 1969, page 126 (T, D)

Jamaica Economic Survey 1970, page 146 (T, D)

Jamaica Economic Survey 1972, page 100 (T, D)

**Kenya**

*Property taxes include estate duties, as well as land premia & taxes.*

Kenya Economic Survey, 1962, page 35, Table 26 (T, D)

Kenya Economic Survey, 1965, page 62 (Table 46) and 63 (Table 47) (T, D)

Kenya Economic Survey, 1970, pages 153-154, Tables 10.11 and 10.12 (T, D)

Kenya Economic Survey, 1974, pages 176-177, Tables 11.10 and 11.11 (T, D)

Kenya Economic Survey 1975, pages 51-52, Tables 6.2 and 6.3 (T, D)

**Mauritius**

Mauritius, Bi-Annual Digest of Statistics, December 1968, page 15, Table 20 (T, D)

Mauritius, Bi-Annual Digest of Statistics, December 1970, page 18, Table 24 (T, D)

Mauritius, Bi-Annual Digest of Statistics, December 1972, page 14, Table 18 (T, D)

Mauritius, Bi-Annual Digest of Statistics, December 1974, page 30, Table 34 (T, D)

Mauritius, Bi-Annual Digest of Statistics, December 1977, page 35, Table 4.4 (T, D)

Mauritius, Bi-Annual Digest of Statistics, December 1980, page 36, Table 4.4 (D)

**Nigeria**

Nigeria Economic Survey, 1960 - 1975, Table 9.10, Page 133 (T)

**Rhodesia**

*"Revenue from Investments and Property" is treated as interest income. "Other Income and Profits Taxes" are treated as income taxes.*

Economic Survey of Rhodesia, 1970, Table 9 (T, D)

Economic Survey of Rhodesia, 1975, Table 8 (T, D)

**Sierra Leone**

National Accounts 1963/64 - 1971/72, Sierra Leone, Table 24 (T, D)

National Accounts 1972/73 - 1976/77, Sierra Leone, Page 26, Table 24 (T, D)

National Accounts 1976/77-1980/81, Sierra Leone, Page 26, Table 24 (T, D)

**Singapore**

Singapore Yearbook of Statistics, 1967, Page 110, Table 11.2 (T)

Singapore Yearbook of Statistics, 1971/72, Page 129 Table 11.2 (T)

Singapore Yearbook of Statistics, 1975/76, Page 161 Table 12.2 (T)

Singapore Yearbook of Statistics, 1978/79, Page 186 Table 12.2 (T)

**Tanzania**

Tanganyika, Statistical Abstract, 1959, Table P.1, pages 100-101 (T, D)

Tanganyika, Statistical Abstract, 1964, Table P.2, pages 111-112 (T, D)

Tanzania Statistical Abstract, 1970, Table P.3, page 146 (T, D)

Tanzania Statistical Abstract, 1973, Table P.3, page 149 (T, D)

Tanzania Statistical Abstract, 1973 - 1979, Table P.3, page 296 (T, D)

**Trinidad & Tobago**

Government of Trinidad & Tobago, Annual Statistical Digest, 1958, page 165, Table 131 (T)

Government of Trinidad & Tobago, Annual Statistical Digest, 1965, page 115, Table 131 (T)

Government of Trinidad & Tobago, Annual Statistical Digest, 1973/74, page 252, Table 244 (T, D)

**Zambia**

Zambia Economic Report, 1970, page 107 (Table 8) (T, D)

Zambia Economic Report, 1973, page 117-118 (Table 44) (T, D)

Zambia Economic Report, 1980, page 25, Table III.5 (T)

# Chapter 3

# Sectoral Effects of Executive Partisanship: Evidence from the 2016 US Presidential Election

## 3.1 Introduction

Since the 1990s, academics and investors have paid increasing attention to the impact of government partisanship on stock market performance. For traders, accurately forecasting how parties in power will affect their portfolios is a valuable source of alpha. In political economy, by contrast, the stock market is widely-used to study the macroeconomic effects of government partisanship because it mitigates endogeneity problems in linking politics directly to economic policy. While politicians' Left-Right

leanings might independently influence their policy choices, another possibility is that national economic problems both put certain leaders in office and demand particular policy responses, so that observed relationships between partisanship and policy are spurious. Highly liquid stock markets provide a way around this issue because they are real-time barometers of investors' beliefs about the economy that respond to political events, but do not independently influence who holds office (Snowberg et al., 2006). Thus, under certain conditions, stock market reactions to elections will reflect the causal impact of changing government partisanship on expected economic outcomes.

Previous studies have focused on broad stock market reactions to the election of Left or Right governments, but have not used markets to examine how the economic impact of government partisanship might vary across industries. This industry variation is of theoretical and substantive importance because to the extent that government partisanship impacts economic growth (Bartels, 2009; Alesina and Sachs, 1988); exchange rates (Bernhard and Leblang, 2006); interest rates (Alesina et al., 1997); and tax policy (Quinn and Shapiro, 1991), it should also have substantially different effects across economic sectors. To cite just one example, when expectations change regarding the clip of future economic growth, cyclical stocks such as automakers – whose prices rise in economic expansions and fall during downturns – will react much more than defensive stocks such as consumer staples – whose prices are largely uncorrelated with economic activity.

Our paper fills a gap in the literature by examining the reaction of industry-specific stocks to changes in government partisanship. Specifically, we analyze the reactions of various economic sectors to the 2016 US Presidential Election, which is ideal case study for at least two reasons. First, Donald Trump's stunning defeat of

Hillary Clinton was a significant surprise that pundits, pollsters and professors all failed to predict; from a research design perspective, stock returns following Trump's victory are an ideal estimator of the impact of a Republican President on specific industries. Second, Trump explicitly implicated a number of economic sectors in his campaign, ranging from larger ones such as defense, healthcare and energy, to smaller ones such as construction firms and private prison companies. This makes his election especially relevant for studying the industry-specific effects of executive partisanship, and suggests a number of industry-level hypotheses that we test below.

First, we show that industry stocks reacted to the 2016 election outcome in systematic ways consistent with Trump's campaign promises, and in line with investors' historical experience with Republican administrations. Trump's unique plans to increase infrastructure spending and curtail immigration impacted sectors ranging from private prison firms and money transfer companies to construction and manufacturing firms. Moreover, defense, oil, coal and pharmaceutical companies rallied significantly following Trump's victory, while renewable energy flagged. These reactions are not only consistent with Trump's stated policy proposals, but also with how investors have typically viewed the US macroeconomic outlook under Republican presidents.

To rule out the possibility that post-election market reactions might have substantially understated Trump's perceived economic impact, we then put them in a pre-election context. In particular, we demonstrate that stocks did not fluctuate in response to virtually all of the scandals that plagued Trump and Clinton's campaigns before the election, save one: FBI Director James Comey's last-minute decision to re-open the investigation into Clinton's e-mails from her time as Secretary of State. Overall, pre-election evidence suggests that the possibility of a Trump victory was

largely not priced in before election night, corroborating our interpretation that market moves on November 9th accurately reflected investors' beliefs about Trump's potential industry-specific effects.

We proceed as follows. Section 3.2 reviews previous work on the impact of Republican and Democratic presidents on the stock market. We consider not only academic research measuring broad stock market returns, but also work by practitioners on the implications of presidential partisanship for specific industries. In Section 3.3, we provide background about Donald Trump's campaign and suggest a set of testable implications for the expected impact of his presidency on industry-specific stocks. Section 3.4 details our sample selection process and research design before we analyze industry-specific reactions to Trump's surprise election victory in Section 3.5. In Section 3.6, we document the market's inattention to the ups and downs of Trump's electoral momentum during campaign season, corroborating our interpretation that Trump's victory was a complete surprise that allowed for valid identification. Section 3.7 concludes.

## 3.2 Political Partisanship and US Stock Market Performance

Our paper speaks to a large literature assessing the impact of US Presidential partisanship on the economy, as seen through the stock market. Niederhoffer et al. (1970) were among the first to find that markets rallied significantly more often in the days following Republican presidential victories, compared to Democratic ones, and their view steadily gained traction through the 1970s. In a 1976 article for the financial

magazine *Barron's* titled "Vote Republican if You Want the Market to Rise after Election Day," Reilly and Drzycimski (October 18, 1976) showed that after elections from 1940 – 1972, stock prices tended to rise, with the largest increases following Republican victories; and by 1980, the maxim that the market prefers Republicans to Democrats had become conventional wisdom on Wall Street. Subsequent studies such as Riley and Luksetich (1980), which attempted to isolate the returns after elections from overall market trends, ostensibly corroborated the idea that markets do, in fact, prefer Republicans. However, one should not accept these early analyses as proof that Republican administrations are better for business for at least two reasons. First, it could have been other factors – not the party of the new President – that caused the market swings observed by Niederhoffer and others. Second, evidence of higher absolute returns under Republican administrations does not imply that *excess returns* – measured relative to the long-run market average – are also higher under Republicans.

In fact, when one controls for market drivers of returns, and measures the impact of the President's party on excess rather than absolute returns, the finding of a Republican premium completely reverses. In their now-famous article, Santa-Clara and Valkanov (2003) model excess returns from 1927 – 1998 as a function not only of executive partisanship, but also the dividend-price ratio, various credit spreads, and interest rates. They find that excess returns are a whopping 9% higher under Democratic administrations – a result known in the literature as the "Presidential Puzzle." The size and existence of this Puzzle were widely debated amongst academics until economists began using more sophisticated estimators to model stock returns as a function of presidential partisanship. What they found is that any Democratic

premium is either marginal or insignificant.

The main difference between Santa-Clara and Valkanov (2003) and their successors centered on the treatment of variation in equity volatility over time – what econometricians call heteroskedasticity in stock returns. One can either attempt to "correct" for heteroskedasticity by using wider standard errors that are asymptotically consistent for large N, as did Santa-Clara and Valkanov (2003); or one can treat heteroskedasticity as an important temporal dynamic to be modeled, as does most work in financial economics today. Studies of the Presidential Puzzle that explicitly model heteroskedasticity include Campbell and Li (2004), who use both WLS and GARCH models of stock returns and find no significant Democratic premium. Other work by Powell et al. (2007) showed that Santa-Clara and Valkanov's use of a dummy for Democratic presidential partisanship created a further spurious regression problem that led them to drastically overestimate the Democratic premium.

Despite the rigor of these later studies, they all suffer from the same fundamental problem of neglecting reverse causality. While presidential partisanship may drive stock returns, it is also undeniable that expectations about the economy – reflected in stock returns – are important in deciding the party of the next executive. To isolate the direction of causality, recent research has exploited two important data sources: financial tick data, whose high frequency allows researchers to pinpoint the impact of electoral surprises on economic expectations in real time; and the prices of contracts on political prediction markets, which allow participants to trade securities whose payoffs are determined solely by the outcomes of elections. A seminal paper by Snowberg et al. (2006) leverages both types of data, analyzing the response of futures tick data to changes in the perceived likelihood of a George W. Bush victory in 2004,

as measured by prediction markets. Circling back to Niederhoffer's work almost fifty years earlier, Snowberg et al. (2006, 1) report the existence of a Republican premium, as "Bush's reelection led to modest increases in equity prices, nominal and real interest rates, oil prices, and the dollar." Like Snowberg et al. (2006), we exploit the surprise of Trump's election as a sudden change in government partisanship. By measuring the post-election behavior of asset prices, we can directly assess the impact of executive partisanship on stock market performance.

Our study improves upon previous ones not only because of its research design, but because it explores an important but neglected topic: industry-specific responses to executive partisanship. Though academics have said a lot about the impact of Democratic versus Republican administrations on stock returns generally, there has been much less research into its consequences for particular industries. A paper by Homaifar et al. (1988) provides evidence for the common adage that defense stocks seem to perform better under Republican presidents; and Stangl (2012) shows that a few industries, classified by their four-digit SIC codes, perform differently depending on the executive's party. In addition, Gaikwad (2013) demonstrates that companies that made campaign contributions to Democrats rallied following the increase in President Obama's approval ratings from the killing of Osama Bin Laden. Research by Booth and Booth (2003) explores whether the behavior of share prices around elections varies based on firms' market capitalization, and Nippani and Medlin (2002) explores the impact of the 2000 US Presidential Election on the Dow Jones Industrial Average and the NASDAQ Composite separately, suggesting that industrial and technology firms may react differently around elections. The closest paper to ours, outside the US context, is Doski and Shivan (2016), which examines sector-specific

| **Favor Republicans** | **Favor Democrats** |
|---|---|
| Asset Managers | Biofuels |
| Brokers & Investment Banks | Generic Drug Companies |
| Coal | Geothermal |
| Credit Card Companies | Healthcare Information Technology |
| High Dividend-Yielding Companies | Hospitals |
| Large Cap Pharmaceuticals | Medicaid Companies |
| Managed Care | Natural Gas |
| Oil & Gas | Solar Power |
| Student Loan Providers | Wind Power |

Table 3.1: **Morgan Stanley: Executive Partisanship and Industry Performance** This table presents information from a Morgan Stanley memo on the likely industry beneficiaries from Republican and Democratic presidents.

changes in trading volume and frequency on the Iraqi ISX Index around Kurdistan parliamentary elections.

Most claims about how executive partisanship affects specific industries in the United States are confined to work by practitioners, which we draw upon here. Every election year, the financial press abounds with speculation about which industries and single names are expected to benefit from one presidential hopeful versus another, and those views are nicely summarized in a 2008 document by Morgan Stanley entitled "Investment Strategy for a Post-Election Environment." The memo, reproduced in Table 3.1, suggests being bearish on biotechnology and pharmaceuticals, and bullish on defense stocks during an election year, regardless of which party wins; and it goes on to list potential industry beneficiaries from Republican and Democratic presidential victories.

The takeaway is that Democrats are expected to benefit clean energy companies and those healthcare companies that would benefit from the expansion of insurance coverage. Republicans, by contrast, benefit the financial sector; the coal, oil & gas

industry; and drug companies. These expectations suggest our first set of testable implications for the impact of Trump's victory on industry groups in the US market:

$H_1$: *Defense stocks should rally following a Trump victory.*

$H_2$: *Pharmaceuticals should rally following a Trump victory, while medical care companies should sell off.*

$H_3$: *Renewable energy should sell off following a Trump victory; coal & oil should rally.*

In addition to focusing on healthcare, energy and defense stocks in our analysis, we also analyze the behavior of industries with particular skin in the 2016 race. Indeed, Donald Trump's campaign rhetoric implicated a number of niche industries and even specific firms in the election, which we describe next. Below, we provide some background about the Trump campaign and generate testable hypotheses about what a Trump Presidency would mean for specific stocks.

## 3.3 President Trump and the Stock Market

Donald Trump first announced his presidential bid in June 2015. At the time, no one predicted he would become the Republican frontrunner, especially given his competition with more established GOP politicians like Florida Senator Marco Rubio, and former Florida Governor, Jeb Bush. Following their withdrawals from the race in March 2016 and Trump's shocking success in the May 3rd Indiana state Primary, it was clear that Trump stood the best chance of receiving the Republican nomination. Almost from the moment Trump's remaining rivals suspended their campaigns on

May 5th, he began making comments that would have significant implications for financial markets. Below, we review some of Trump's key campaign promises and assess their likely impact on industry stocks if implemented during his presidency.

### 3.3.1 Immigration & Trade Policy

Curbing the immigration of non-whites – Mexicans and Muslims in particular – was a hallmark of Trump's campaign. Since June 2015, Trump was unwavering in his commitment to curtail illegal immigration via the construction of a giant wall on the US border with Mexico, and vowed to make the Mexican government pay for it. If the wall did come to pass on Mexico's dime, it would likely benefit Cemex (NYSE:CX), a building materials company headquartered in Mexico specializing in cement and ready-mix concrete. Trump's focus on Mexico in the context of immigration would not only impact Cemex, but also have knock-on effects for the entire Mexican economy. Indeed, Trump's rhetoric made the Mexican peso into the preferred proxy trade of investors wishing to bet on the outcome of the US election,[1] and his victory has already led to a 10% slide in the currency. Along these lines, another potential asset affected by Trump is the iShares MSCI Mexico Capped ETF (NYSE:EWW) which provides investors concentrated exposure to Mexican industrials, financials and consumer staples.

Besides the wall bordering Mexico, another defining theme of Trump's immigration policy is the mass deportation of illegal immigrants. In late 2015, Trump promised to create a "deportation force" to remove some estimated 11 million undocumented immigrants from the United States, and to triple the number of Immigration

[1] "Mexican Peso: The Hot Proxy Bet for the U.S. Election." *Wall Street Journal.* 27 Sep, 2016.

and Customs Enforcement agents. By Summer 2016, it seemed as if Trump might soften his stance and provide a path to amnesty for some illegal immigrants, yet even this would have likely amounted to "touchback amnesty": a policy whereby illegal immigrants are effectively deported before being allowed to re-enter the country. However, rather than "pivot" to the center, Trump chose to double down on his anti-immigrant rhetoric through the Fall of 2016, adopting a position of "no amnesty" for illegal immigrants. In the wake of the election, the exact details of Trump's immigration policies remain unclear, but mass deportation remains an important centerpiece.

Were Trump to succeed in expanding deportations, the move would have ripple effects for at least two industries. First, private prison companies, such as The GEO Group (NYSE:GEO) and Corrections Corporation of America (NYSE:CXW), would see increases in revenue from more frequent use of their facilities to detain illegal immigrants during the deportation process. Second, money-transfer companies such Western Union (NYSE:WU) and MoneyGram International (NYSE:MGI) would likely see a fall in profits, as fewer immigrants in the US would send fewer remittances through these firms' offices. A final industry potentially implicated in Trump's immigration policies is consumer staples. For example, companies such as Walmart (NYSE:WMT) and Best Buy (NYSE:BBY) benefit from immigration on at least two fronts – cheaper labor costs, and a larger base of low-income customers – making the prospect of increased deportation bad for their bottom lines.

Trump's isolationist stance on immigration is mirrored in his rhetoric about US trade. He has repeatedly claimed that our trade deficit is costing taxpayers billions of dollars, and has vowed to scrap NAFTA and impose steep tariffs on Mexican and Chinese imports. Economists worry that these policies would trigger a trade war

with Mexico, and the renegotiation of NAFTA would ultimately affect a number of industries, including US automakers. Some, such as Chrysler (NYSE:FCAU), Ford (NYSE:F) and General Motors (NYSE:GM) have a significant presence in Mexico, and a renegotiation of NAFTA would hurt their exports to the United States. Trump's public criticism of Ford for opening new factories in Mexico suggests the company should have been rooting for a Clinton victory. Moreover, a large trade war with Mexico would significantly implicate the American auto industry generally, as automobiles are the single largest Mexican export to the US, and the third largest US export to Mexico, with cross-borer trade in automobiles between the two countries amounting to $96 billion in 2015.[2]

While US automakers would suffer from Trump's protectionist policies, an undeniable beneficiary would be the US steel industry, in particular US Steel (NYSE:X). Trump's stated plan to initiate trade disputes against China – both in US courts and at the World Trade Organization – would be a boon for US steel manufacturers if China were found in violation of anti-dumping provisions regarding its steel exports to the US. And while the Clinton campaign has exposed Donald Trump's personal use of Chinese steel in his business ventures, he would likely face popular pressure as President to make good on his campaign pledges to protect American steelworkers.

Overall, Trump's policy positions on trade and immigration suggest four additional hypotheses about the effect of his presidency on stock prices:

> $H_4$: *Stocks proxying for the Mexican economy should sell off following Trump's victory.*
>
> $H_5$: *Private prisons should rally following Trump's election; money transfer*

[2] https://ustr.gov/countries-regions/americas/mexico

*firms should sell off.*

$H_6$: *Consumer staples should sell off after Trump's victory.*

$H_7$: *Manufacturing stocks should rise from Trump's election; the share prices of US automakers should fall.*

### 3.3.2 Defense, Infrastructure & Energy Policy

Despite his lack of specifics about a defense plan, Trump has made strong public statements about his willingness to expand the military. In his campaign video on the subject, Trump remarked, "I'm going to make our military so big, so powerful, so strong, that nobody – absolutely nobody – is going to mess with us." Mr. Trump's stated plan to shore up our missile defense systems will cost approximately $1 trillion dollars according to some estimates, and his plans to expand the size of US armed forces are based on projected need in case of our involvement in two major wars.[3] Such policies would clearly benefit large defense companies, most of which are publicly traded, further motivating $H_1$ above.[4] Along related lines, US construction companies and infrastructure project managers like Chicago Bridge and Iron (NYSE:CBI) or Vulcan Materials (NYSE:VMC) might also benefit from a Trump administration, as he pledged to spend over $500 billion on infrastructure – almost twice Hillary Clinton's promised infrastructure contribution.

In terms of energy policy, Trump unambiguously favors traditional energy sources over renewables, and has promised to remove regulations that inhibit new exploration

[3] "Trump would spend billions more on military, but for what? experts ask. *Reuters.* 8 Sep, 2016.

[4] These companies include Boeing (NYSE:BA), Lockheed Martin (NYSE:LMG), and Northrop Grumman (NYSE:NOC), among others.

for fossil fuels. In particular, Trump's platform calls for increasing American coal production by ending the moratorium on new coal mine leases on federal lands, as well as the prohibition for coal mining near waterways; he also plans to increase US oil production, with the stated goal of becoming independent from OPEC.[5] Such policies would clearly benefit US coal companies such as Consol Energy (NYSE:CNX), SunCoke Energy (NYSE:SXC), and Westmoreland Coal (NYSE:WLB), as well as oil companies such as Exxon Mobil (NYSE:XOM); and they would likely mean less public investment in alternative energy, which would harm companies like Solar City (NASDAQ:SCTY), SunRun (NASDAQ:RUN), and Renewable Energy Group (NASDAQ:REGI). Trump's foreign policies might also be a boon for US oil companies. Both in campaign speeches and on cable news, Trump has promised to go to war with ISIS and take the caliphate's oil with the help of Exxon Mobil specifically. Moreover, any instability that Trump creates in the Middle East would raise the price of world price of oil, further increasing US oil revenues.

In sum, Trump's position on energy policy clearly aligns with $H_3$ above, and his infrastructure plan suggests an additional hypothesis:

$H_8$: *Construction companies should rally following Trump's election.*

### 3.3.3 Healthcare

Unlike the industries above, healthcare would have somewhat of an uncertain future under a Trump presidency. On one hand, if Trump succeeded in repealing Obamacare, it would have a negative impact on medical providers like Aenta (NYSE:AET), Humana (NYSE:HUM) and CIGNA (NYSE:CI) on at least two fronts. First, abolishing

[5] https://www.donaldjtrump.com/policies/energy/

Obamacare would mean an end to the healthcare exchanges, which are an important source of business for these companies. Second, Trump's plan to essentially privatize Medicare would remove a vital source of revenue for hospitals and managed care providers. These companies would benefit handsomely under Clinton, as she has promised to expand Obamacare.

By contrast, biotechnology and pharmaceutical companies would likely benefit more from Trump in the White House, when compared to a Clinton presidency. Clinton has long been a staunch proponent of lowering prescription drug costs and protecting consumers from what many see as unjustifiable price hikes. Moreover, her statements on the issue have had demonstrated negative impacts on drug companies in the past. After now-infamous Martin Shkreli drastically raised the price of Daraprim, a longtime medicine to treat parasitic infections, Hillary Clinton tweeted that she would shortly release a plan to curb drug costs, which sent the NASDAQ Biotechnology Index down almost 5%.[6] Thus, we might expect firms such as Gilead (NYSE:GLD), Merck (NYSE:MRK) and Pfizer (NYSE:PFE) to see their profits slashed under a Clinton administration, making the prospect of a President Trump relatively appealing. Trump's positions on universal health care and his benign stance towards prescription drug companies align with $H_2$ above.

### 3.3.4 Tax Policy & Gun Control

Donald Trump's proposed reduction in the corporate tax rate from 35% to 15%, and his plan to allow companies to repatriate their offshore corporate profits at a one-time tax rate of 10%,[7] both stand to benefit large American multinationals – especially

[6] "Clinton's Tweet on High Drug Prices Sends Biotech Stocks Down." *Bloomberg.* 21 Sep, 2015

[7] https://www.donaldjtrump.com/policies/tax-plan/?/positions/tax-reform

those with large amounts of cash overseas. US technology companies including Apple (NYSE:AAPL) and Microsoft (NYSE:MSFT) held more than a fifth of US companies' overseas profits in 2015, and Apple CEO Tim Cook has said the company will not repatriate that money "until there is a fair [tax] rate."[8] The likelihood of reduced taxes should benefit not only Apple and Microsoft, but also other companies with similar cash profiles, such as Oracle (NYSE:ORCL), Caterpillar (NYSE:CAT) and General Electric (NYSE:GE). A further beneficiary of lower taxes, particularly on the wealthy, would be luxury brands. Companies such as Coach (NYSE: COH), Movado (NYSE:MOV), Sotheby's (NYSE:BID) and Ferrari (NYSE:RACE), for example, would likely see increases in sales to the extent that lower taxes would translate to an increase in conspicuous consumption among the rich.

On gun control, Trump has been a staunch advocate of Second Amendment rights and has leveraged his differences with Hillary Clinton on the issue to win votes from opponents of gun control. According to the political ad tracker SpotCheck, one of the most effective Trump campaign ads depicted a woman unable to use a gun to protect herself against a burglar, insinuating that stricter gun laws under a Clinton presidency would put her life at risk.[9] And while firearm companies like Smith & Wesson (NYSE:SWHC) and Sturm, Ruger (NYSE:RGH) have outperformed in 2016, they would likely see further gains under a gun-friendly Trump administration.

Our discussion of Trump's proposed tax changes and stance on gun control suggest two final hypotheses to be tested:

$H_9$: *Stock prices of US multinationals with large amounts of overseas cash, as*

[8] "Tim Cook, the interview: Running Apple ?is sort of a lonely job." *Washington Post.* 30 Aug 2016

[9] "The 2016 US Election." Lynn Vavreck. Stanford University, 26 Oct 2016.

*well as luxury brands, should rise on Trump's victory*

$H_{10}$: *Stock prices of gun manufacturers should increase following Trump's election*

## 3.4 Data and Research Design

### 3.4.1 Sample Selection

We first describe the universe of assets in our event study. In line with our ten hypotheses above, we attempted to select large, publicly traded US companies belonging to the industries susceptible to gains or losses under a President Trump. These include large sectors such as defense and healthcare, as well as smaller ones such as money transfer firms and privately-owned prisons. To determine whether to include a stock in analyzing a given event of interest, we perform an exhaustive media search for company-specific news within a three-day window on either side of the event. We exclude companies for which there was news in major US newspapers of firing or hiring; changes in management; the release or recall of products; lawsuits or government inquiries; data releases or revisions; and mergers, acquisitions or stock splits.[10] Note that we carried out our stock selection process once for every event of interest – first for the election, and next for the individual campaign events described in Section 3.6. A list of the stocks in our study is provided in Tables 3.3 and 3.4.

[10]Our sample of newspapers included The Wall Street Journal, The New York Times, USA Today, The Los Angeles Times, The New York Post, The Chicago Tribune, The Washington Post, and Newsday.

### 3.4.2 Empirical Strategy

To assess the impact of Trump's election on stock returns, we adopt an event study framework based on cumulative abnormal returns (CARs). This design has been widely-used to measure financial market responses to elections (Campello, 2015; Sattler, 2013; Bernhard and Leblang, 2006), as well as the value of political connections (Fisman, 2001; Acemoglu et al., 2016) and changes in regulation (Binder, 1985; Wilf, 2013).

Following Campbell et al. (1997), we first model returns of a specific stock during an *estimation window* of length $L_1$ days, before our event of interest (here, election day). By convention, call the first day of the estimation window $\tau_0$ and the last day $\tau_1$. We use the "Market" model, where the returns of a stock $\mathbf{R}$ are a function of the average market return $\mathbf{m}$ plus noise, estimated as follows:

$$\begin{aligned} R_t &= \beta_0 + \beta_1 m_t + \epsilon_t \\ \mathbb{E}[\epsilon_t] &= 0 \\ \mathbb{V}[\epsilon_t] &= \sigma^2 \end{aligned}$$

where $(\beta_0, \beta_1)$ is a vector of coefficients to be estimated.

We then compute the *abnormal returns* during this estimation window by subtracting the returns predicted by our model, $\mathbb{E}[R_t] = \hat{\beta}_0 + \hat{\beta}_1 m_t$, from the observed returns $R_t$; thus, at time $t$, the abnormal return is simply $\hat{\epsilon}_t = R_t - \hat{\beta}_0 - \hat{\beta}_1 m_t$. The resulting series of $L_1$ abnormal returns will have mean 0 by construction and some estimated variance, denoted $\hat{\sigma_\epsilon}^2$.

Next, we examine the behavior of stock returns during an *event window* of $L_2$

consecutive days, beginning with the day of our event of interest $\tau_1 + 1$ through day $\tau_2$. We then compute abnormal returns during the event window, subtracting realized returns from their expected values based our earlier market model.

Finally, we aggregate abnormal returns during the event window into the *cumulative abnormal return* (CAR) given by

$$\widehat{CAR} = \sum_{t=\tau_1+1}^{\tau_2} \hat{\epsilon}_t$$

Because we assumed abnormal returns are i.i.d. $\mathcal{N}(0, \sigma^2)$, then under the null hypothesis of no stock market reaction to election-related news, $\widehat{CAR}$ will be normally distributed with mean 0 and variance

$$\hat{\sigma}^2 = (\tau_2 - \tau_1 - 1)\sigma_\epsilon^2$$

Thus, we can construct a test statistic for the null hypothesis by standardizing the CAR by its variance – what Campbell et al. (1997) refer to as the standardized cumulative abnormal return:

$$\widehat{SCAR} = \frac{\widehat{CAR}}{\hat{\sigma}\sqrt{\tau_2 - \tau_1 - 1}}$$

With a sufficiently large estimation window (i.e. when $L_1 > 30$), this statistic will be distributed approximately standard normal.

Note that the value of $\widehat{SCAR}$ depends on both the length of the estimation window, $L_1$, as well as the length of the event window, $L_2$. We present results using estimation windows of 30 and 60 days, and event windows of 1 and 3 days.

While the statistics above pertain to the abnormal returns of single stocks, we

can also aggregate the abnormal returns of several companies into an industry-wide abnormal return, which is our dependent variable throughout the paper. Given a series of CARs for $n$ individual stocks, we can compute the aggregate CAR as

$$\overline{CAR} = \frac{1}{n} \sum_{i=1}^{n} \widehat{CAR}_i$$

The variance of the industry-wide CAR for an event will require us to account for the within-industry covariance between abnormal returns. The expected positive correlation between the abnormal returns of stocks In the same industry implies that the variance of an industry-specific CAR will be wider than that for uncorrelated assets. In this paper, we compute the variance-covariance matrix $\mathbf{\Sigma}$ of the abnormal returns across stocks in a given industry during the estimation window, and use this matrix to compute the variance of our aggregate CAR:

$$\mathbb{V}(\overline{CAR}) = \frac{1}{n^2} \left( \sum_{i=1}^{n} \hat{\sigma}_i^2 + 2 \cdot \sum_{j>i\geq 1}^{n} \text{Cov}(\hat{\epsilon}_i, \hat{\epsilon}_j) \right)$$

where $\text{Cov}(\hat{\epsilon}_i, \hat{\epsilon}_j)$ is the $ij$-th element of $\mathbf{\Sigma}$. Then, our industry-wide CAR is distributed approximately $\mathcal{N}(\overline{CAR}, \mathbb{V}(\overline{CAR}))$.

It is worth noting that the magnitude of abnormal returns in our analysis will depend on our predictions of what "normal" stock returns should be – estimates which hinge on the specification of our statistical model. While the market model of returns is among the simplest available, it has a number of advantages. First, it imposes minimal assumptions on the data at little cost in terms of fit, as Brown and Warner (1980, 1985) show that the market model gives predictions similar to more complex models. In our case, time series models such as ARIMA and ARCH processes and

ARCH terms do not make significantly better predictions of mean returns, whether in or out of sample. In addition, US market volatility was historically low around the 2016 election as investors awaited the Fed's decision to raise interest rates – this environment not only makes models that explicitly account for volatility less necessary, but also more prone to overfitting our returns series. In fact, the standard errors from our market model will be larger than those generated by a GARCH-style model, making our estimates of statistical significance conservative (Wolfers and Zitzewitz, 2016). For all of these reasons, the simple market model of returns that we propose is sufficient.

## Causal Inference and the 2016 Election

Before presenting the results of our statistical analysis, we situate the 2016 election in the context of our research design. To interpret post-election cumulative abnormal returns as the causal impact of the election on stock prices, a crucial assumption is that the election outcome be a surprise. If investors can anticipate an election's result in advance, then its impact will have already been reflected in prices before the election takes place. In particular, market participants will hedge before elections if there is a non-trivial chance that one candidate will win, and this would invalidate our inferences about the election's impact on stock prices.

We focus on the 2016 election precisely to rule out these anticipation effects. For all intensive purposes, Trump's pre-election probability of victory was so small that any fluctuations in his campaign momentum should not have impacted stock prices in advance of his victory. Indeed, Trump's win was one of the most stunning upsets in the history of American elections. Pre-election forecasts had all but ruled out the

prospect of a Trump presidency, with Nate Silver giving Clinton a 71% chance of winning just before election night, the New York Times putting the probability of a Clinton victory at 85%, and online betting markets on election day pricing in an approximate 90% chance of Clinton winning.[11] Clinton's own campaign's strategy in the run-up to election night reflected her confidence in these landslide predictions, as she chose to campaign on behalf of fellow Democrats in down-ballot races rather than shore up her personal election prospects in swing states. For example, Clinton spoke in support of Senate hopeful Maggie Hassan (D-NH) at a rally in Manchester, NH, given Hassan's tight race with Republican incumbent Kelly Ayotte, and she spoke in Pittsburgh in the hopes of unseating Senator Pat Toomey (R-PA), a Trump supporter.

As Clinton's once-assured victory began to slip away on election night, with Trump unexpectedly winning traditionally Blue states like Michigan and Wisconsin, news anchors across the country broadcast their surprise to the nation; and when left-learning news networks finally projected that Trump would win the election, liberal pundits ranging from Rachel Maddow to Van Jones and Martha Raddatz were on the verge of tears. The state-by-state coverage of Trump's upset propelled markets into a frenzy of overnight trading, and markets plummeted as traders digested the unexpected election results in real-time. Every available measure suggests Trump's victory was an absolute surprise that politicians, pollsters, pundits and investors had all failed to predict. For this reason, we can be relatively sure that stock price responses to the election outcome are well-identified industry-specific estimates of Trump's expected economic impact.

[11] For example, see odds from PredictIt at http://predictwise.com/politics/2016-president-winner

## 3.5 Results

Our findings in Table 3.5 largely conform to earlier expectations about which industries would win and lose from a Trump presidency, particularly when considering three-day CARs. One-day CARs are admittedly small and insignificant across the board, but are probably too noisy to be meaningful, as market participants certainly registered the election as a major surprise and drastically adjusted their portfolios in response. This is reflected not only in the staggering three-day CARs we observe, but also in the financial press coverage of the election's aftermath. The Wall Street Journal meticulously followed the impact of Trump's win on every asset class in the days after the election, including rallies (sell-offs) in industries expected to benefit (lose) from his campaign promises, the rise in bond yields due to speculation about impending infrastructure spending, the drastic fall in market volatility as measured by the VIX, a stronger dollar, and the rally in oil. The Journal even introduced a real-time "Markets Live" blog on its homepage the day after the election that allowed investors easy access to developing stories about the markets.

Turning to our industry-level results, defense stocks posted highly significant three-day CARs on the order of +6%, providing strong support for $H_1$.We also found evidence consistent with our second and third hypotheses. Pharmaceuticals registered three-day CARs upwards of +6.5% following Trump's victory, and medical care companies posted abnormally low returns, though these were less than 1% below average and too small to be significant. Oil and coal companies registered returns approximately +5% higher than normal, a highly significantly difference. Renewable energy firms, meanwhile, posted returns that were 1 to 2% below average, but this difference was insignificant.

Our fourth hypothesis was that stocks proxying for the Mexican economy would sell off significantly after Trump's victory, which our data strongly confirm. The Mexico ETF in our sample experienced three-day CARs after the election of almost $-20\%$, making Mexico-related funds among the biggest expected losers from Trump's presidency. By contrast, the biggest expected winners from Trump's victory were private prisons, which posted astounding cumulative abnormal returns upwards of $+30\%$, all highly significant. These results are consistent with $H_5$. However, we also expected that money transfer firms would sell off after Trump's win, yet instead they rallied significantly, with CARs of over $+4\%$. Consumer staples sold off in line with $H_6$, posting three-day CARs of $-1.3\%$ and $-1.7\%$ across specifications. Moving to $H_7$, Manufacturing stocks were a big winner from Trump's election victory, registering three-day returns that were significantly higher than normal by around 13%, but US automakers in particular did not sell off as we predicted; their returns were modestly higher than expected. One possible explanation for this result is that while Trump's promised repeal of NAFTA would certainly harm US car companies, these firms might also benefit in the medium term from Trump's proposed corporate tax holiday, his de-emphasis on environmental regulation, and the likely expansion of US oil production.

Consistent with $H_8$, construction companies posted highly significant CARs exceeding $+5\%$. Furthermore, technology firms with large market capitalizations and high amounts of overseas cash, as well as luxury brands in our sample, rallied significantly after the election, in support of $H_9$. Finally, the negative impact of Trump's election on gun manufacturers is surprising and cuts against our final hypothesis $H_{10}$. Perhaps with no threat of increased gun control under Donald Trump, there was no rush to buy guns in the days following the election, which meant the sector would have

underperformed traders' short-term expectations. At the same time, the sell-off in firearms remains puzzling, as a Trump presidency certainly bodes well for the sector's long-term profitability, which should have been the dominant driver of stock prices after the election. Despite the puzzling reaction of gun stocks, our overall analysis of cumulative abnormal returns following Trump's election is strongly consistent with our hypotheses outlined above. Eleven out of the fifteen industries in our sample rallied or sold off as expected in response to Trump's victory – and of these reactions, eight were highly significant.

The qualitative evidence we presented of the election's surprise outcome suggests that the market reactions we observed should have captured in full investors' expected beliefs about the economic impacts of Trump's presidency. At the same time, there is a possibility that even with a very low ex ante probability of a Trump victory, investors may have hedged against this outcome given that Trump was widely seen as a substantial tail risk for both America and the world.[12] If this were true, then the above market responses we documented to Trump's victory would be understating his expected future impact on the industries in our sample.

To rule out this possibility, we next examine pre-election reactions of the same industries to surprise campaign events that exogenously impacted Trump's probability of winning the election. Except in one case, we observe no systematic industry responses to changes in Trump's electoral momentum before election night. This suggests that investors did not hedge substantially against Trump's presidency before the election, so that the post-election stock returns we observed accurately reflected the expected industry-level impacts of Trump's victory.

[12]See "Presidential Tail Risks Tame Trading." *Wall Street Journal*, 21 Oct 2016; "Citi: People Aren't Taking the Possibility of a Trump Presidency Serious Enough." *Bloomberg.* 13 Sep 2016.

## 3.6 Pre-Election Analysis

This section describes our analysis of industry stock price responses to as-if-random changes in Trump's electoral odds prior to election day. In particular, we focus first on four surprise negative shocks to Trump's campaign. On May 15, 2016, Trump suggested he might renegotiate the US national debt – an unthinkable choice to those on both sides of the aisle that fueled a storm of criticism surrounding Trump's economic policy positions. Next, on August 30, Trump began an ad hominem attack against the family of a fallen Muslim US soldier, Humayum Khan, after his parents spoke in support of Hillary Clinton at the Democratic National Convention that evening. Trump's attempts to assassinate the character of his rivals continued with a sinister October 1 Twitter rampage against former beauty queen Alicia Machado, whom the Clinton campaign held up during the during the First Presidential Debate as a exemplar victim of Trump's sexist comments. Also on October 1, the New York Times released for the first time copies of Donald Trump's tax returns, and they showed significant losses and accounting gimmicks that sparked further criticism of Trump in national media. The last surprise blow to Trump's campaign – and perhaps the most damning – came on October 7, when he was caught on tape using vulgar language to describe his previous relationships with women.

While examples of Trump's missteps abound, the Clinton campaign also suffered several surprise setbacks in the run-up to election day. All of these events jeopardized Clinton's supposed electoral security by some margin, and in our research design, serve as exogenous *positive* shocks to Donald Trump's probability of winning the election. In particular, we focus on the market's response to four events that undermined the Clinton campaign's momentum. First came Wikileaks' surprise release on March 16

of over 30,000 of Clinton's emails while she was Secretary of State. The data dump drew negative attention to Clinton's prior dealings in government and was also used by Trump and the media to raise questions about her honesty. Second, e-mails from Democratic National Convention (DNC) staffers were leaked on July 22, and showed a concerted effort by the DNC to undermine Bernie Sanders' campaign and make Clinton the party's frontrunner for President. Like the earlier Wikileaks fiasco, the DNC scandal renewed the media's focus on Clinton's lack of integrity. Finally, on September 11, Clinton suddenly came down with pneumonia. Not only did the media portray her illness as narrowing her race over Trump, but it also distracted Clinton's campaign from the substantive issues necessary to widen her lead. The most severe hit to Clinton's chance of victory came on October 28 – just days before the election – when FBI Director James Comey made a snap decision to re-open the Bureau's investigation into Clinton's State Department emails. The move was widely billed as undermining Clinton's campaign in the run-up to election night.[13] For completeness, the full list of the events in our pre-election analysis, their dates and expected impact on Trump's probability of victory are presented in Table 3.2.

Looking at the first seven campaign events in Table 3.2, no industries responded systematically to these surprise increases and decreases in Trump's probability of victory. While some industries reacted to a limited number of events in ways consistent with our earlier hypotheses, many responded in ways opposite of what was expected, or not at all. Moreover, the magnitude of cumulative abnormal returns for a given industry often varies considerably across model specifications, undercutting our confidence that these results are substantively as well as statistically significant. The

[13]See for example "Emails in Anthony Weiner Inquiry Jolt Hillary Clinton?s Campaign." *New York Times*, 28 October 2016.

| Description | Abbreviation | Date | Effect on Pr(Trump Win) |
|---|---|---|---|
| WikiLeaks releases Clinton e-mails | HRC Emails | Mar 16, 2016 | + |
| Trump suggests renegotiating the national debt | National Debt | May 5, 2016 | − |
| DNC e-mails leaked | DNC Emails | Jul 22, 2016 | + |
| Trump attacks the Khan family | Khan Family | Jul 30, 2016 | − |
| Clinton catches pneumonia | HRC Pneumonia | Sep 11, 2016 | + |
| Trump attacks Alicia Machado; Trump Tax Returns Leaked | Beauty Queen | Sep 30, 2016 | − |
| Trump audio tape leaked | Women Tape | Oct 7, 2016 | − |
| FBI Re-Opens Clinton E-mail Investigation | Comey Letter | Oct 28, 2016 | + |

Table 3.2: **Pre-Election Events of Interest** This table lists the campaign events analyzed in our study and the direction of their impact on Trump's probability of winning the Presidency.

large variation in effect sizes in our pre-election analysis contrasts sharply with our post-election analysis, where the variance in cumulative abnormal returns was much smaller and observed effects were consistent in sign and statistical significance.

Consider first the reactions of various industries to events that exogenously decreased Trump's probability of victory during the campaign. Trump's comments entertaining a renegotiation of the US debt did have significant, negative effects on four expected beneficiaries of his presidency as per Table 3.6: manufacturing, oil & coal, firearms, and large caps. However , other industries exhibit significant CARs inconsistent with how this supposed shift in Trump's odds would have affected their prospects. In particular, renewable energy firms posted significantly negative CARs though they should have rallied in response to a reduced chance that Trump would take the White House. Similarly, the iShares Mexico ETF posted returns on the order of 1 to 2% below average, and this underperformance was significant – yet we would have expected significant *gains* for the country in the wake of comments that

decreased Trump's favorability.

Similarly, cumulative abnormal returns following Trump's attacks on the Khan family (Table **??**) show that investors did not price in this event as a bona fide shift in Trump's probability of victory. Only four of the fifteen industries in our sample reacted significantly to the Khan fiasco and of those, three responded in ways opposite to expectations. Money transfer firms, automakers and consumer staples sold off significantly after Trump's comments about the Khans, but each should have risen in response to the damage this did to his campaign.

The release of Trump's tax returns and attack on Alicia Machado (Table 3.8) also had limited effects, corroborating our interpretation that investors were not substantially hedging against Trump's presidency before the election. While automakers and manufacturing companies did react significantly in the expected direction to the leak of Trump's tax returns, they are the only industries out of fifteen to do so. At the same time, the three-day CARs of several industries, including defense and firearms, change sign across specifications. Finally, several industries rallied in response to the leak, even though they should have declined following this unfavorable news for Trump's campaign. In particular, oil and coal stocks, as well as pharmaceuticals, posted gains on the order of 0.5%, even though the tax return story plausibly made Trump's promises of deregulation – favored by these firms – less likely to pass.

Importantly, the single most detrimental shock to Trump's chance of victory – the release of a tape revealing deeply misogynistic comments – fell on deaf ears so far as markets were concerned. Most CARs across specifications in Table 3.9 are insignificant, and of those that are, only automakers show consistent results in the anticipated direction given our discussion in Section 3. Again, many industries react

in the wrong direction to such a strong decline in Trump's electoral fortunes. We see pharmaceuticals, oil and coal, firearms, luxuries, and private prisons all rallying after the tape's release, when each industry would stand to lose from Trump's defeat. At the same time, none of these counterintuitive moves was statistically significant at conventional levels, Overall, our analysis of the market's reaction to the Trump tape squares with similar work by Wolfers and Zitzewitz (2016) who found no significant reaction from market participants to the tape.

The market's responses to gaffes in Clinton's campaign were also muted and contradictory, bolstering our conclusion that traders were not hedging against Trump's victory in advance of November 8th. Clinton's e-mail scandal (Table 3.10) did lead to a rally in several industries that we expected would favor Trump, including defense, prisons and construction, but many industries in the sample respond in this case in ways opposite to expectations. Renewable energy firms, automakers, and money transfer companies should have all sold off in response to Clinton's e-mails scandal, but each registered CARs in the +1 to +5% range. Similarly, the Mexico ETF rallied following the WikiLeaks release when it should have sold off, given the bearish outlook for the country were Clinton to lose.

The market's response to revelations of the DNC's support for Clinton over Democratic rival, Bernie Sanders, tells a similar story (Table 3.11). Of the industries that did react significantly to the news, there is no reason to expect that pharmaceuticals or large caps should have sold off. These industries have benefited from a Trump presidency, yet registered significant, negative CARs in response to this blow to Clinton, on the order of −1% to −3%. Money transfer firms also experienced significant +3% CARs in response to the Wikileaks dump when they should sold off, given that

the DNC scandal certainly worked in Trump's favor.

Next, we observe a broad, negative market reaction around Clinton's sudden case of pneumonia on September 11th (Table 3.12). When we consider three-day CARs in particular, every industry apart from prisons and consumer staples posts large and negative CARs, most of which are significant and consistent in magnitude across models. Pro-Clinton industries such as renewables and automakers registered particularly large underperformance, on the order of 7% to 8% below average. However, pro-Trump industries also underperformed; particularly striking are the $-9\%$ and $-10\%$ CARs of oil & coal stocks, and we also see manufacturing and construction modestly underperforming. The broad nature of the sell-off surrounding Clinton's illness was probably reflecting other sentiments besides any changes in her election odds, as both pro- and anti-Trump industries suffered abnormally large losses on the day.

The exception to the rule of investors' non-reaction to campaign events was FBI Director James Comey's surprise decision to re-open the Clinton e-mail investigation on October 28, just twelve days before the election. In the following days, several leading Democrats called for Comey's resignation, arguing that his decision gave Donald Trump's campaign an unfair last-minute advantage, and once Clinton lost the election, some rank-and-file Democrats continued to blame the e-mail scandal for her defeat.[14] Nine of the fifteen industries in our sample reacted significantly to news of Comey's re-opening of the Clinton e-mail investigation, and of those, six responded in the expected direction. The particularly large rally in money transfer firms, a smaller but significant rally in consumer staples, and a significant sell-off in pharmaceuticals cut against our expectations, but on the whole, the market's reaction

[14] "Comey?s Start-And-Stop Clinton Probe Turns Up Heat on FBI." *Bloomberg* 6 November, 2016.

to Comey suggests that his decision did prompt investors to begin hedging modestly against Trump's presidency. At the same time, the size of these last-minute market moves was much smaller than the post-election reactions we observed. Moreover, only six industries reacted significantly to Comey, whereas 11 reacted significantly after the election. Taken together, this suggests that Comey's decision did register with investors, but that any resulting moves in stock prices were too small and insignificant to have severely biased our post-election estimates of Trump's expected impact.

## 3.7 Conclusion

Studies of the economic consequences of government partisanship have typically analyzed its impact on broad macroeconomic variables such as budget deficits and GDP growth, but do not examine the extent to which the economic effects of partisanship vary across industries. Our paper addressed this question by examining industry stock price responses to the 2016 US election, whose surprise outcome enabled us to precisely identify the causal impact of a change in government partisanship on the economic outlook of several industries. We found that Donald Trump's victory had markedly different effects across economic sectors of varying size. Larger industries such as defense, fossil fuels and manufacturing rallied as expected following Trump's election, while others like renewable energy sold off. These responses were not only consistent with Donald Trump's policy proposals but also with how markets have typically viewed Republican administrations. Moreover, niche sectors such as private prisons and money transfer firms – which were explicitly implicated in Trump's proposed immigration policies, but not historically favored by either party – reacted in systematic ways consistent with Trump's campaign promises. Our results suggest

that even though campaign promises may be cheap talk, investors tend to take politicians at their word after elections, rather than adopt a "wait and see" attitude, where markets react only after policies change.

Future work should continue studying investors' reactions to Donald Trump in light of his recent decisions to stack his cabinet full of business magnates (particularly former Exxon Mobil CEO Rex Tillerson); his promises to extensively deregulate industries from fossil fuels to banking; and his unique brand of corporate activism via Twitter. All of this raises new questions about the financial value of business connections to high-ranking US politicians. Fisman et al. (2012) demonstrated that the value of political connections to Vice President Dick Cheney were precisely zero, implying that America's political institutions prevent firms from benefitting from personal connections at the top. However, with Trump as President, this dynamic may change, particularly because his numerous business conflicts of interest could affect the policymaking process. The extent to which business ties to Trump, or to members of his cabinet, impact the profitability of specific companies deserves careful study as Trump's administration begins its first term.

| Industry | Short Name | Ticker | Exp. Effect of Trump Win | HRC E-Mails | National Debt | DNC E-Mails | Khan Family | HRC Pneumonia | Beauty Queen | Women Tape | Comey Letter |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Automobiles | Chrysler | FCAU* | − | ✓ | | | | ✓ | | ✓ | ✓ |
| | Ford | F | − | | | | ✓ | | ✓ | ✓ | ✓ |
| | GM | GM | − | ✓ | ✓ | ✓ | ✓ | | ✓ | ✓ | ✓ |
| | Tesla | TSLA | − | ✓ | | | | | | | ✓ |
| Construction | Aecom | ACM | + | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| | Cemex | CX | + | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| | Granite Construction | GVA | + | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| | Chicago Bridge & Iron | CBI | + | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| | Vulcan Materials | VMC | + | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| | Fluor | FLR | + | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Cons. Staples | Walmart | WMT | − | | | | | ✓ | | ✓ | ✓ |
| | Tyson Foods | TSN | − | ✓ | ✓ | ✓ | ✓ | ✓ | | ✓ | ✓ |
| | Best Buy | BBY | − | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Defense | Boeing | BA | + | | ✓ | | ✓ | ✓ | | | ✓ |
| | Lockheed Martin | LMT | + | | ✓ | ✓ | ✓ | | | | ✓ |
| | Northrop Grumman | NOC | + | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| | Raytheon | RTN | + | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| | Oshkosh | OSK | + | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| | United Technologies | UTX | + | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| | General Dynamics | GD | + | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Renewables | Solar City | SCTY* | − | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| | SunRun | RUN* | − | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| | SunPower | SPWR* | − | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| | Renewable Energy Grp. | REGI* | − | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Oil & Coal | Exxon Mobil | XOM | + | ✓ | | | ✓ | ✓ | ✓ | ✓ | ✓ |
| | Consol Energy | CNX | + | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| | SunCoke Energy | SXC | + | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| | Westmoreland Coal | WLB* | + | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| | Hallador | HNRG* | + | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| | Cloud Peak Energy | CLD | + | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Firearms | Sturm, Ruger | RGR | + | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| | Smith & Wesson | SWHC | + | ✓ | ✓ | ✓ | ✓ | ✓ | | ✓ | ✓ |

Table 3.3: **Sample of Stocks, Part I** Asterisks denote listing on the NASDAQ, all other stocks listed on the NYSE.

| Industry | Short Name | Ticker | Exp. Effect of Trump Win | HRC E-Mails | National Debt | DNC E-Mails | Khan Family | HRC Pneumonia | Beauty Queen | Women Tape | Comey Letter |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Pharmaceuticals | Gilead | GILD | + | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| | Merck | MRK | + | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| | Pfizer | PFE | + | | | | ✓ | ✓ | | ✓ | ✓ |
| Medical Care | HCA Holdings | HCA | ? | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| | Anthem | ANTM | ? | ✓ | ✓ | | ✓ | ✓ | ✓ | ✓ | ✓ |
| | Community Health Sys. | CYH | ? | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| | Aetna | AET | ? | ✓ | ✓ | | ✓ | ✓ | ✓ | ✓ | ✓ |
| | UnitedHealth | UNH | ? | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| | CIGNA | CI | ? | ✓ | ✓ | | ✓ | ✓ | ✓ | ✓ | ✓ |
| | Humana | HUM | ? | ✓ | ✓ | | ✓ | ✓ | ✓ | ✓ | ✓ |
| Tech | Microsoft | MSFT | + | ✓ | ✓ | | ✓ | ✓ | ✓ | ✓ | ✓ |
| | Apple | AAPL | + | | | ✓ | ✓ | | | ✓ | ✓ |
| | Oracle | ORCL | + | ✓ | ✓ | ✓ | | ✓ | ✓ | ✓ | ✓ |
| | Caterpillar | CAT | + | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| | GE | GE | + | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Luxuries | Ethan Allen | ETH | + | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| | Coach | COH | + | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| | Sotheby's | BID | + | ✓ | | ✓ | | ✓ | ✓ | | ✓ |
| | Movado | MOV | + | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| | Ferrari | RACE | + | ✓ | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| | Tiffany's | TIF | + | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Manufacturing | US Steel | X | + | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| | Steel Dynamics | STLD* | + | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| | Alcoa | AA | + | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| | La-Z-Boy | LZB | + | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Mexico | iShares Mexico ETF | EWW | − | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Finance | Western Union | WU | + | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| | Moneygram | MGI* | + | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Prisons | GEO Group | GEO | + | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| | Corrections Corp. of Am. | CXW | + | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |

Table 3.4: **Sample of Stocks, Part II** Asterisks denote listing on the NASDAQ, all other stocks listed on the NYSE.

| **Industry** | **CAR(30, 1)** | SE | **CAR(60, 1)** | SE | **CAR(30, 3)** | SE | **CAR(60, 3)** | SE |
|---|---|---|---|---|---|---|---|---|
| Defense | −0.2 | (0.9) | −0.1 | (0.7) | +6.3*** | (0.9) | +6.4*** | (0.7) |
| Oil and Coal | −1.0 | (2.4) | −1.1 | (2.4) | +5.2** | (2.4) | +5.3** | (2.4) |
| Pharmaceuticals | +0.0 | (1.0) | −0.1 | (1.0) | +7.0*** | (1.0) | +6.6*** | (1.0) |
| Mexico | +0.7 | (0.9) | +0.9 | (1.0) | −19.7*** | (0.9) | −18.7*** | (1.0) |
| Large Caps | +0.1 | (0.3) | +0.1 | (0.3) | +0.6** | (0.3) | +0.5 | (0.3) |
| Firearms | +0.9 | (1.7) | +1.1 | (1.8) | −24.5*** | (1.7) | −23.9*** | (1.8) |
| Luxuries | −2.6*** | (0.7) | −2.5*** | (0.8) | −1.7** | (0.7) | −1.4* | (0.8) |
| Manufacturing | +1.5 | (3.0) | +1.8 | (2.7) | +13.4*** | (3.0) | +14.1*** | (2.7) |
| Private Prisons | −1.1 | (2.4) | −0.1 | (6.9) | +30.0*** | (2.4) | +33.3*** | (6.9) |
| Money Transfer | +1.3 | (1.6) | +1.3 | (1.4) | +4.5*** | (1.6) | +4.5*** | (1.4) |
| Autos | −1.2 | (0.9) | −1.3 | (0.9) | +0.7 | (0.9) | +0.5 | (0.9) |
| Construction | −0.5 | (1.7) | −0.4 | (1.4) | +5.7*** | (1.7) | +5.9*** | (1.4) |
| Consumer Staples | −0.8 | (0.5) | −0.9 | (0.9) | −1.3** | (0.5) | −1.7** | (0.9) |
| Renewables | +1.7 | (2.3) | +1.9 | (2.3) | −2.3 | (2.3) | −1.6 | (2.3) |
| Medical Care | +1.0 | (1.9) | +1.0 | (1.6) | −0.9 | (1.9) | −0.8 | (1.6) |

Table 3.5: **Trump's Historic Victory: 9 November, 2016** This table shows the size (in percentage points) and standard errors for two different estimates of cumulative abnormal returns following Trump's surprise defeat of Hillary Clinton. The leftmost (rightmost) columns display estimates of one-day (three-day) CARs with estimation windows of 30 and 60 days, respectively.

| **Industry** | **CAR(30, 1)** | SE | **CAR(60, 1)** | SE | **CAR(30, 3)** | SE | **CAR(60, 3)** | SE |
|---|---|---|---|---|---|---|---|---|
| Defense | +0.4 | (0.7) | +0.5 | (0.9) | +0.3 | (0.7) | +0.4 | (0.9) |
| Oil and Coal | −0.3 | (3.5) | −0.7 | (4.4) | $-8.5^{**}$ | (3.5) | $-9.6^{**}$ | (4.4) |
| Pharmaceuticals | −0.4 | (1.2) | −0.5 | (1.1) | −0.8 | (1.2) | −1.0 | (1.1) |
| Mexico | −0.7 | (0.9) | −0.8 | (0.9) | $-2.7^{***}$ | (0.9) | $-2.8^{***}$ | (0.9) |
| Large Caps | −0.5 | (0.6) | −0.6 | (0.5) | $-1.2^{*}$ | (0.6) | $-1.5^{***}$ | (0.5) |
| Firearms | +1.8 | (4.0) | +1.1 | (3.4) | +2.6 | (4.0) | +1.0 | (3.4) |
| Luxuries | −1.5 | (1.4) | −1.6 | (1.3) | −1.3 | (1.4) | −1.4 | (1.3) |
| Manufacturing | −1.2 | (2.0) | −1.3 | (2.7) | $-7.7^{***}$ | (2.0) | $-8.5^{***}$ | (2.7) |
| Private Prisons | $+4.2^{***}$ | (1.3) | $+4.2^{**}$ | (1.7) | $+3.0^{**}$ | (1.3) | $+2.9^{*}$ | (1.7) |
| Money Transfer | +0.1 | (1.3) | +0.2 | (2.4) | −0.3 | (1.3) | −0.2 | (2.4) |
| Autos | +0.0 | (1.3) | −0.1 | (1.3) | +0.6 | (1.3) | +0.4 | (1.3) |
| Construction | +0.5 | (1.1) | +0.3 | (1.5) | −1.8 | (1.1) | $-2.4^{*}$ | (1.5) |
| Consumer Staples | +0.0 | (0.2) | −0.2 | (1.0) | $+2.6^{***}$ | (0.2) | $+2.1^{**}$ | (1.0) |
| Renewables | $-4.6^{*}$ | (2.7) | −4.3 | (4.1) | $-5.4^{**}$ | (2.7) | −4.3 | (4.1) |
| Medical Care | +0.2 | (0.9) | +0.2 | (1.2) | −1.2 | (0.9) | −1.2 | (1.2) |

Table 3.6: **Trump's National Debt Comments: 5 May, 2016** This table shows the size (in percentage points) and standard errors for two different estimates of cumulative abnormal returns following Donald Trump's comment that he would consider renegotiating the US national debt. The leftmost (rightmost) columns display estimates of one-day (three-day) CARs with estimation windows of 30 and 60 days, respectively.

| **Industry** | **CAR(30, 1)** | SE | **CAR(60, 1)** | SE | **CAR(30, 3)** | SE | **CAR(60, 3)** | SE |
|---|---|---|---|---|---|---|---|---|
| Defense | +0.1 | (0.6) | +0.0 | (0.7) | +0.0 | (0.6) | −0.1 | (0.7) |
| Oil and Coal | −4.5 | (3.1) | −4.2 | (3.7) | −4.3 | (3.1) | −3.6 | (3.7) |
| Pharmaceuticals | +1.0 | (0.8) | +1.0 | (0.8) | −0.9 | (0.8) | −0.8 | (0.8) |
| Mexico | +0.1 | (0.8) | +0.0 | (1.0) | +1.2 | (0.8) | +1.0 | (1.0) |
| Large Caps | +0.2 | (0.3) | +0.3 | (0.6) | +0.4 | (0.3) | +0.8 | (0.6) |
| Firearms | +2.0 | (2.8) | +2.4 | (2.7) | −2.6 | (2.8) | −1.1 | (2.7) |
| Luxuries | +0.2 | (1.1) | +0.4 | (1.3) | −1.2 | (1.1) | −0.6 | (1.3) |
| Manufacturing | −2.7 | (2.4) | −2.4 | (2.9) | −3.6 | (2.4) | −2.8 | (2.9) |
| Private Prisons | +1.2 | (1.2) | +1.2 | (1.1) | $-3.9^{***}$ | (1.2) | $-3.8^{***}$ | (1.1) |
| Money Transfer | −2.5 | (1.6) | $-2.8^{*}$ | (1.5) | −2.2 | (1.6) | $-3.0^{**}$ | (1.5) |
| Autos | −0.8 | (1.6) | −0.8 | (1.5) | $-3.1^{*}$ | (1.6) | $-3.2^{**}$ | (1.5) |
| Construction | −1.1 | (1.0) | −1.1 | (1.1) | −0.8 | (1.0) | −0.9 | (1.1) |
| Consumer Staples | +0.3 | (0.3) | +0.5 | (1.1) | $-1.1^{***}$ | (0.3) | −0.5 | (1.1) |
| Renewables | $-3.8^{**}$ | (1.8) | −3.7 | (3.1) | −2.3 | (1.8) | −2.6 | (3.1) |
| Medical Care | −0.9 | (1.0) | −1.1 | (1.3) | +0.0 | (1.0) | −0.5 | (1.3) |

Table 3.7: **Trump Attacks the Khans: 30 July, 2016** This table shows the size (in percentage points) and standard errors for two different estimates of cumulative abnormal returns following Trump's attacks on the Khans, after their emotional DNC speech supporting Clinton for president. The leftmost (rightmost) columns display estimates of one-day (three-day) CARs with estimation windows of 30 and 60 days, respectively.

| **Industry** | **CAR(30, 1)** | SE | **CAR(60, 1)** | SE | **CAR(30, 3)** | SE | **CAR(60, 3)** | SE |
|---|---|---|---|---|---|---|---|---|
| Defense | −0.5 | (0.6) | −0.3 | (0.5) | +0.1 | (0.6) | −0.1 | (0.5) |
| Oil and Coal | +0.3 | (2.1) | +0.7 | (2.3) | +0.5 | (2.1) | +0.7 | (2.3) |
| Pharmaceuticals | +0.5 | (0.8) | +0.4 | (1.1) | +0.2 | (0.8) | +0.3 | (1.1) |
| Mexico | −1.8 | (1.1) | −1.8* | (1.0) | +1.8 | (1.1) | +1.5 | (1.0) |
| Large Caps | −0.2 | (0.3) | −0.3 | (0.3) | +0.0 | (0.3) | −0.2 | (0.3) |
| Firearms | +0.6 | (1.1) | +0.3 | (1.5) | +0.6 | (1.1) | −0.1 | (1.5) |
| Luxuries | +0.4 | (0.9) | +0.3 | (1.0) | +0.2 | (0.9) | +0.1 | (1.0) |
| Manufacturing | −2.0 | (2.7) | −2.4 | (2.7) | −6.4** | (2.7) | −7.0*** | (2.7) |
| Private Prisons | +2.8 | (9.5) | +1.8 | (6.8) | +5.6 | (9.5) | +4.2 | (6.8) |
| Money Transfer | +1.9* | (1.0) | +1.5 | (1.2) | -0.3 | (1.0) | -0.5 | (1.2) |
| Autos | +0.5 | (0.8) | +0.3 | (1.0) | +3.3*** | (0.8) | +3.1*** | (1.0) |
| Construction | −0.7 | (1.1) | −1.2 | (1.1) | −1.2 | (1.1) | −1.6 | (1.1) |
| Consumer Staples | +1.2 | (1.7) | +1.4 | (1.3) | +1.1 | (1.7) | +0.9 | (1.3) |
| Renewables | −0.4 | (1.6) | −0.6 | (2.1) | −2.9* | (1.6) | −2.4 | (2.1) |
| Medical Care | +0.4 | (1.1) | +0.3 | (1.0) | −0.6 | (1.1) | −0.4 | (1.0) |

Table 3.8: **Trump's Tax Returns Leaked & Attack on Alicia Machado: 30 September, 2016** This table shows the size (in percentage points) and standard errors for two different estimates of cumulative abnormal returns following the surprise release of Trump's tax returns by the New York Times, and his attacks the following day on beauty queen Alicia Machado for her association with Clinton's campaign. The leftmost (rightmost) columns display estimates of one-day (three-day) CARs with estimation windows of 30 and 60 days, respectively.

| **Industry** | **CAR(30, 1)** | SE | **CAR(60, 1)** | SE | **CAR(30, 3)** | SE | **CAR(60, 3)** | SE |
|---|---|---|---|---|---|---|---|---|
| Defense | −0.3 | (0.6) | +0.0 | (0.5) | +0.4 | (0.6) | +0.3 | (0.5) |
| Oil and Coal | +0.3 | (2.1) | +0.7 | (2.3) | +0.5 | (2.1) | +0.7 | (2.3) |
| Pharmaceuticals | +0.6 | (0.6) | +0.7 | (0.9) | +0.7 | (0.6) | +0.7 | (0.9) |
| Mexico | −1.8 | (1.1) | −1.8* | (1.0) | +1.8 | (1.1) | +1.5 | (1.0) |
| Large Caps | −0.2 | (0.3) | −0.4 | (0.4) | −0.2 | (0.3) | −0.4 | (0.4) |
| Firearms | +1.5 | (1.8) | +1.4 | (2.0) | +1.4 | (1.8) | +0.3 | (2.0) |
| Luxuries | +0.4 | (0.9) | +0.3 | (1.0) | +0.2 | (0.9) | +0.1 | (1.0) |
| Manufacturing | −1.3 | (2.2) | −1.5 | (2.3) | −3.5 | (2.2) | −4.1* | (2.3) |
| Private Prisons | +2.8 | (9.5) | +1.8 | (6.8) | +5.6 | (9.5) | +4.2 | (6.8) |
| Money Transfer | +1.9* | (1.0) | +1.5 | (1.2) | −0.3 | (1.0) | −0.5 | (1.2) |
| Autos | +1.2 | (0.9) | +0.7 | (1.4) | +2.7*** | (0.9) | +2.4* | (1.4) |
| Construction | −0.7 | (1.1) | −1.2 | (1.1) | −1.2 | (1.1) | −1.6 | (1.1) |
| Consumer Staples | +0.4 | (1.1) | +0.7 | (0.8) | +0.2 | (1.1) | −0.2 | (0.8) |
| Renewables | −0.4 | (1.6) | −0.6 | (2.1) | −2.9* | (1.6) | −2.4 | (2.1) |
| Medical Care | +0.4 | (1.1) | +0.3 | (1.0) | −0.6 | (1.1) | −0.4 | (1.0) |

Table 3.9: **Misogynistic Tape of Trump Released: 7 October, 2016** This table shows the size (in percentage points) and standard errors for two different estimates of cumulative abnormal returns following the release of a tape of Donald Trump's inappropriate comments about women. The leftmost (rightmost) columns display estimates of one-day (three-day) CARs with estimation windows of 30 and 60 days, respectively.

| **Industry** | **CAR(30, 1)** | SE | **CAR(60, 1)** | SE | **CAR(30, 3)** | SE | **CAR(60, 3)** | SE |
|---|---|---|---|---|---|---|---|---|
| Defense | +0.5 | (0.8) | +0.5 | (0.7) | +1.5* | (0.8) | +1.5** | (0.7) |
| Oil and Coal | −0.9 | (4.4) | −0.8 | (4.9) | −3.6 | (4.4) | −3.0 | (4.9) |
| Pharmaceuticals | −0.5 | (0.9) | -0.3 | (0.9) | −1.1 | (0.9) | −0.6 | (0.9) |
| Mexico | +1.9** | (0.9) | +2.0** | (1.0) | +3.5*** | (0.9) | +3.8*** | (1.0) |
| Large Caps | +1.1*** | (0.4) | +1.1*** | (0.4) | +1.9*** | (0.4) | +1.9*** | (0.4) |
| Firearms | +1.0 | (2.3) | +1.0 | (2.9) | +1.4 | (2.3) | +1.7 | (2.9) |
| Luxuries | +0.1 | (1.2) | +0.3 | (1.3) | +0.5 | (1.2) | +0.9 | (1.3) |
| Private Prisons | +1.9 | (1.9) | +1.7 | (1.8) | +4.0** | (1.9) | +3.4* | (1.8) |
| Money Transfer | −0.6 | (3.2) | −0.5 | (2.7) | +3.1 | (3.2) | +3.3 | (2.7) |
| Autos | +1.0 | (1.6) | +1.3 | (1.3) | +1.4 | (1.6) | +2.4* | (1.3) |
| Construction | +1.8 | (1.7) | +2.0 | (1.7) | +3.7** | (1.7) | +4.3*** | (1.7) |
| Consumer Staples | −0.1 | (1.3) | −0.1 | (1.4) | −1.2 | (1.3) | −1.1 | (1.4) |
| Renewables | +3.1 | (5.0) | +3.3 | (4.7) | +4.6 | (5.0) | +5.1 | (4.7) |
| Medical Care | −0.3 | (1.5) | −0.3 | (1.4) | −0.6 | (1.5) | −0.6 | (1.4) |

Table 3.10: **Clinton WikiLeaks Release: 16 March, 2016** This table shows the size (in percentage points) and standard errors for two different estimates of cumulative abnormal returns following WikiLeaks' release of Clinton's private emails. The leftmost (rightmost) columns display estimates of one-day (three-day) CARs with estimation windows of 30 and 60 days, respectively.

| **Industry** | **CAR(30, 1)** | SE | **CAR(60, 1)** | SE | **CAR(30, 3)** | SE | **CAR(60, 3)** | SE |
|---|---|---|---|---|---|---|---|---|
| Defense | +0.1 | (0.4) | +0.0 | (0.6) | +0.4 | (0.4) | +0.2 | (0.6) |
| Oil and Coal | −0.3 | (2.7) | −0.2 | (3.5) | +4.4 | (2.7) | +4.4 | (3.5) |
| Pharmaceuticals | −0.6 | (0.6) | −0.6 | (0.8) | $-2.7^{***}$ | (0.6) | $-2.6^{***}$ | (0.8) |
| Mexico | −0.1 | (0.8) | −0.1 | (1.0) | $-1.9^{**}$ | (0.8) | $-2.0^{**}$ | (1.0) |
| Large Caps | $-1.4^{***}$ | (0.3) | $-1.3^{***}$ | (0.5) | $-1.2^{***}$ | (0.3) | $-0.9^{**}$ | (0.5) |
| Firearms | −0.4 | (2.8) | +0.0 | (2.7) | +1.9 | (2.8) | +3.2 | (2.7) |
| Luxuries | −0.1 | (1.0) | −0.1 | (1.3) | +1.6 | (1.0) | +1.7 | (1.3) |
| Manufacturing | −0.3 | (1.8) | −0.3 | (2.1) | +1.8 | (1.8) | +1.5 | (2.1) |
| Private Prisons | +0.5 | (1.1) | +0.4 | (1.2) | +0.7 | (1.1) | +0.6 | (1.2) |
| Money Transfer | +0.5 | (1.2) | +0.3 | (1.2) | $+2.7^{**}$ | (1.2) | $+2.2^{*}$ | (1.2) |
| Autos | −0.8 | (1.1) | −0.7 | (1.2) | −0.1 | (1.1) | +0.2 | (1.2) |
| Construction | $-2.3^{**}$ | (1.0) | $-2.3^{**}$ | (1.1) | −0.4 | (1.0) | −0.6 | (1.1) |
| Consumer Staples | +0.1 | (0.3) | +0.2 | (1.1) | $+1.0^{***}$ | (0.3) | +1.6 | (1.1) |
| Renewables | −0.9 | (1.8) | −0.9 | (3.1) | +0.6 | (1.8) | +0.2 | (3.1) |
| Medical Care | −0.9 | (1.0) | −1.0 | (1.5) | −0.9 | (1.0) | −1.3 | (1.5) |

Table 3.11: **DNC Email Leak: 5 May, 2016** This table shows the size (in percentage points) and standard errors for two different estimates of cumulative abnormal returns following the release of DNC emails showing the organization's favoritism of Clinton. The leftmost (rightmost) columns display estimates of one-day (three-day) CARs with estimation windows of 30 and 60 days, respectively.

| **Industry** | **CAR(30, 1)** | SE | **CAR(60, 1)** | SE | **CAR(30, 3)** | SE | **CAR(60, 3)** | SE |
|---|---|---|---|---|---|---|---|---|
| Defense | −0.4 | (0.5) | −0.3 | (0.5) | −0.1 | (0.5) | −0.1 | (0.5) |
| Oil and Coal | −4.4* | (2.4) | −4.3* | (2.3) | −9.9*** | (2.4) | −9.2*** | (2.3) |
| Pharmaceuticals | +0.0 | (1.0) | −0.1 | (0.8) | −0.2 | (1.0) | −0.4 | (0.8) |
| Mexico | −1.6 | (1.0) | −2.0** | (1.0) | −3.2*** | (1.0) | −3.0*** | (1.0) |
| Large Caps | +0.0 | (0.3) | −0.4 | (0.4) | −0.2 | (0.3) | −0.2 | (0.4) |
| Firearms | −3.1* | (1.7) | −3.1 | (2.8) | −3.4* | (1.7) | −4.0 | (2.8) |
| Luxuries | −0.8 | (1.0) | −0.7 | (1.0) | −0.4 | (1.0) | −0.1 | (1.0) |
| Manufacturing | −1.9 | (1.4) | −1.6 | (1.6) | −3.4** | (1.4) | −3.9** | (1.6) |
| Private Prisons | +3.2 | (9.3) | +1.2 | (6.7) | +7.7 | (9.3) | +5.3 | (6.7) |
| Money Transfer | +0.2 | (1.2) | +0.0 | (1.2) | −1.9* | (1.2) | −1.7 | (1.2) |
| Autos | −2.3 | (1.9) | −3.5 | (2.3) | −7.3*** | (1.9) | −7.7*** | (2.3) |
| Construction | −1.3 | (0.8) | −1.7* | (1.0) | −2.0** | (0.8) | −2.2** | (1.0) |
| Consumer Staples | +0.1 | (1.1) | +1.1 | (0.9) | +1.2 | (1.1) | +1.4 | (0.9) |
| Renewables | −0.7 | (2.3) | −0.2 | (2.2) | −9.1*** | (2.3) | −8.9*** | (2.2) |
| Medical Care | +0.0 | (0.9) | −0.3 | (1.0) | −1.7** | (0.9) | −1.5 | (1.0) |

Table 3.12: **Clinton Contracts Pneumonia: 11 September, 2016** This table shows the size (in percentage points) and standard errors for two different estimates of cumulative abnormal returns following news of Hillary Clinton's illness during a 9/11 memorial. The leftmost (rightmost) columns display estimates of one-day (three-day) CARs with estimation windows of 30 and 60 days, respectively.

| Industry | CAR(30, 1) | SE | CAR(60, 1) | SE | CAR(30, 3) | SE | CAR(60, 3) | SE |
|---|---|---|---|---|---|---|---|---|
| Money Transfer | $+5.7^{***}$ | (1.1) | $+5.4^{***}$ | (1.1) | $+10.6^{***}$ | (1.1) | $+9.7^{***}$ | (1.1) |
| Pharmaceuticals | $-2.4^{***}$ | (0.8) | $-2.3^{***}$ | (0.9) | $-2.2^{***}$ | (0.8) | $-1.9^{**}$ | (0.9) |
| Defense | +1.0 | (0.9) | +1.0 | (0.7) | +1.2 | (0.9) | $+1.4^{*}$ | (0.7) |
| Firearms | +1.1 | (1.8) | +1.2 | (1.7) | $+4.1^{**}$ | (1.8) | $+4.4^{***}$ | (1.7) |
| Consumer Staples | $+1.1^{**}$ | (0.4) | +0.9 | (0.8) | $+2.0^{***}$ | (0.4) | $+1.6^{*}$ | (0.8) |
| Renewables | -1.4 | (2.0) | −0.9 | (2.2) | $-4.2^{**}$ | (2.0) | −3.1 | (2.2) |
| Large Caps | $+1.4^{***}$ | (0.4) | $+1.3^{***}$ | (0.4) | $+1.5^{***}$ | (0.4) | $+1.2^{***}$ | (0.4) |
| Luxuries | $+1.5^{*}$ | (0.8) | $+1.5^{*}$ | (0.8) | $+1.3^{*}$ | (0.8) | +1.2 | (0.8) |
| Autos | +0.3 | (1.5) | +0.4 | (1.3) | +1.4 | (1.5) | +1.6 | (1.3) |
| Construction | $+5.3^{***}$ | (1.1) | $+5.3^{***}$ | (1.0) | $+5.7^{***}$ | (1.1) | $+5.9^{***}$ | (1.0) |
| Private Prisons | +0.2 | (2.3) | +0.8 | (6.8) | $+4.5^{**}$ | (2.3) | +6.1 | (6.8) |
| Oil and Coal | +3.4 | (2.3) | +3.7 | (2.7) | $+8.0^{***}$ | (2.3) | $+8.8^{***}$ | (2.7) |
| Mexico | −0.4 | (1.0) | −0.4 | (1.0) | $-2.0^{**}$ | (1.0) | $-1.9^{**}$ | (1.0) |
| Manufacturing | +0.2 | (2.8) | +0.6 | (2.5) | +3.0 | (2.8) | +4.2 | (2.5) |
| Medical Care | −0.5 | (1.8) | −0.6 | (1.5) | −1.8 | (1.8) | −2.1 | (1.5) |

Table 3.13: **James Comey Re-opens Clinton Email Scandal: 28 October, 2016** This table shows the size (in percentage points) and standard errors for two different estimates of cumulative abnormal returns following FBI Director James Comey's snap decision to brief Congress on the ongoing investigation into Hillary Clinton's emails. The leftmost (rightmost) columns display estimates of one-day (three-day) CARs with estimation windows of 30 and 60 days, respectively.

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