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Global banking and the spillovers from political shocks at the core of the world economy

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Abstract

When do political shocks in core countries reverberate across the global financial system? We identify cross-border banking as a distinct transmission mechanism for political shocks. Democratic processes that advance (undermine) the interests of the global banking industry in core economies benefit (hurt) countries with closer banking ties to these economies. Empirically, we leverage the unanticipated outcomes of the 2016 US presidential election and the Brexit referendum to identify the role of cross-border banking in transmitting these shocks. We show that US global banks benefited disproportionately from the US election surprise. Accordingly, countries with closer ties to US banks fared relatively better; exposure to US bank flows cushioned the negative effect of the election. Evidence from Brexit reinforces the banking-channel hypothesis. The findings further our understanding of the role of global banks in the international financial order and underscore the need for more research on the political economy of global banking.

Keywords Financial globalization · Global banking · Political economy · Elections · Spillovers

JEL Classification F3 · F5 · F6 · G1

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1 Introduction

How do political shocks at the core of the global financial system affect economic outcomes across the globe? In particular, what is the role of global banks in transmitting political shocks across borders? The 2016 presidential election in the United States, the 2016 Brexit referendum in the United Kingdom, and the recent wave of nationalist populism in developed and developing countries alike have led to substantial turbulence in global financial markets. The frequency of these events combined with their high stakes compels scholars and policymakers to grapple with questions about the risks of global financial integration: To what extent do political shocks in central economies lead to financial instability elsewhere? Through what mechanisms do these shocks affect the rest of the world?

Existing research has made great advances in understanding the risks posed by fickle capital flows in global capital markets. Current scholarship shows that capital flows can fuel financial volatility (Hays et al., 2003; Wibbels, 2006; Kim, 2007; Copelovitch & Singer, 2017), facilitate the spread of financial crises across countries (Oatley et al., 2013; Pepinsky, 2014; Rey, 2015; Bauerle Danzman et al., 2017), and expose countries to the vagaries of economic policy in core economies (Mosley, 2003; Bauerle Danzman et al., 2017; Ballard-Rosa et al., 2021). More specifically, when it comes to political shocks, research indicates that financial globalization provides an international transmission channel for political events and their externalities (Bernhard & Leblang, 2006; Bechtel & Schneider, 2010). Electoral uncertainty in one country, for example, can lead to heightened financial market volatility in neighboring countries (Bernhard & Leblang, 2006). Yet, while existing research has furthered our understanding of the effects of financial integration, much less is known about the role of a major source of international finance, namely global banks.

While most political economy scholarship focuses on the effects of portfolio and foreign direct investment flows, bank-intermediated flows account for a large share of global finance. Bank flows exceed portfolio equity flows to emerging markets and are the single most important source of cross-border finance for corporations in both advanced and emerging economies (Cerutti & Hong, 2018). Bank flows also play an increasing role in explaining the volatility of global capital flows (Eichengreen et al., 2018). Importantly, from a political economy perspective, global banks stand to exert great influence in the global political economy, given the high concentration of international credit provision in a handful of financial institutions (Braun & Raddatz, 2010; Winecoff, 2014; Aldasoro & Ehlers, 2019). Thus, there is good reason to investigate further the role of global banks as critical links in the global financial system.

We argue that global banks and cross-border bank flows constitute an important, although overlooked, channel for the international propagation of political shocks originating in core countries. Specifically, we argue that political change that favors (hurts) the global banking industry will have positive (negative) spillovers onto those countries that are highly exposed to these global banks. Similarly, cross-border banking ties can have a cushioning effect, helping offset the negative spillovers from shocks in other policy areas. This is because political shocks are multidimensional and affect different policy areas in different ways. For example, positive spillovers

in banking may offset negative spillovers in trade. This cushioning effect should be more pronounced in countries that have close banking ties to the core country.

Headquartered in international financial centers, global banks fulfill a key role in financing investment and consumption across the world. As central actors in the global allocation of capital, global banks' decisions to curtail or increase cross-border lending in response to political or policy shocks affect economic growth not only in the world's core economies, but especially in countries where foreign capital in general, and bank flows in particular, constitute a relevant source of financing for firms and governments. We thus posit that political shifts that advance the interests of the global banking industry through deregulation or more lenient funding conditions will benefit borrowing nations, by easing their access to credit and liquidity. Conversely, adverse political shocks to the financial industry should disproportionately hurt countries that depend on the credit and liquidity provided by these institutions.

Empirically, we leverage two unanticipated events—the outcomes of the 2016 US presidential election and the 2016 Brexit referendum—to estimate the effect of cross-border banking on the transmission of core-country political shocks. Several features of these two cases make them particularly conducive for evaluating the spillovers from political shocks. First, the United States and United Kingdom hold a privileged position in the global financial system, effectively rendering them "bankers of the world" (Frieden, 1987; Oatley et al., 2013). This central position provides a vantage point from which to study the channels through which political shocks propagate from the system's core. Second, as both events had clear implications for the financial sector, studying them in detail allows us to test the role of cross-border banking relative to competing mechanisms. Third, the unanticipated nature of these events provides a quasi-experimental setting for identifying their effects on global markets. Finally, the cases provide variation in the direction of the shock—a positive shock to the global banking industry in the case of the US election, a negative one in the case of Brexit—while holding constant aspects such as the inward-looking, nationalistic turn in economic policy.

Our analysis uses daily price data for 143 single-country exchange-traded funds (ETFs) covering 48 developed and developing economies. Using an event study design, we infer investors' expectations about the global spillovers of the 2016 US election and the Brexit referendum from asset price responses to these events. The size and liquidity of global ETF markets, which have become one of the main contemporary instruments for global investing, make them an ideal setting in which to estimate global economic spillovers. Compared to national stock market data which are conventionally used in the literature, global ETF markets are more informationally efficient and capture more directly investor assessments of system-wide shocks as opposed to local country risks.

We find that cross-border banking plays an important role in shock transmission. Countries with stronger banking ties to the United States fared relatively better in response to the 2016 election surprise than countries with weaker ties. While the election had an overall negative effect on international markets, countries with greater exposure to US bank flows were less adversely affected. These cross-country results are consistent with investor expectations of enhanced credit provision by US global banks following the election. Indeed, using stock market data for 408 US financial

institutions, we show that while the election surprise represented a negative shock to global markets, the US financial sector in general, and US global banks in particular, received a large valuation boost, consistent with markets' expectations of future financial deregulation and increased activity by banks with global operations.

Similarly, we find that banking ties to the United Kingdom played a key role in transmitting the negative spillovers from Brexit. The unanticipated victory of the Leave campaign represented a negative shock to the UK banking industry, as the country was expected to leave the European Single Market. Accordingly, countries with greater exposure to the British banking sector experienced larger negative effects from the Brexit vote. Importantly, we find the effects of both events to be large and persistent over time, which indicates a lasting change in investor assessments of country fundamentals, as opposed to a short-lived market overreaction to high-salience events.

This article's contributions are threefold. Foremost, we underscore the pivotal position of global banks in the international financial order. International political economy scholarship has largely focused on portfolio and foreign direct investment flows to the detriment of bank flows. Given banks' large role in global credit provision and the high level of concentration in the industry, our results provide good reason to further investigate the political economy of global banking relations. Second, we contribute to the literature on the complex interactions between domestic politics and the global political economy. Recent international relations scholarship has drawn renewed attention to system-level explanations by shifting the analytic focus from actor attributes towards relations between actors (Hafner-Burton et al., 2009; Oatley et al., 2013; Chaudoin et al., 2015; Farrell & Newman, 2016). Our findings complement this research agenda by shedding new light on the heterogeneous effects of different global networks. Third, our empirical strategy contributes to the relational study of financial interdependence. Just as neuroscientists leverage brain lesions to infer the functions of particular brain regions, we leverage the occurrence of discrete shocks to critical nodes in the global financial system to illuminate the role of certain types of network connections. By exploring these discrete shocks, we are able not only to analyze how shocks propagate in times of crisis, but also to infer the latent function of cross-border financial ties in "normal" times.

2 Global Financial Spillovers from Core-Country Political Shocks

We start by modeling the conditions under which political events in core countries will generate global economic spillovers. Then, we decompose the various transmission mechanisms that carry these shocks across borders to identify the role of global banks and bank flows in this process. Existing work shows that globally-integrated financial markets provide a powerful vehicle for the cross-border transmission of national political shocks (Bernhard & Leblang, 2006; Bechtel & Schneider, 2010). Bernhard and Leblang (2006), for example, document that electoral uncertainty in one country often leads to increased market volatility in neighboring countries. However, few studies have explicitly isolated the relevant transmission mechanisms.

We build on Wagner et al. (2018) to formally derive the spillover effects of a political shock on international financial markets. For current purposes, we define political shocks as the outcomes of democratic processes—such as elections, referenda, and cabinet formation—that produce changes in the partisan or ideological composition of the government and, as a result, lead to (expected) changes in the future course of economic policy.

We model global financial spillovers as the effect of national political events on equity prices in third countries. We begin by defining the expected price of a portfolio of country stocks under two potential policy regimes, A and B, as P_A and P_B, respectively. P_A and P_B embody investor expectations of the value of a country's stocks under the two regimes. Prior to the shock or policy intervention, the value of the country portfolio reflects the expected payoff under the two policy regimes weighted by each policy regime's chances of being implemented. As equity prices reflect expectations of future cash flows, markets will react not only to actual policy shifts, but especially to expectations of changes in future policy.

If we define the probability of each policy outcome as π_A and π_B, such that $\pi_A = 1 - \pi_B$, we can represent the value of the country portfolio before the political shock as:

$$P = \pi_A P_A + \pi_B P_B. \tag{1}$$

The change in the value of the country portfolio following the realization of outcome A can then be written as:

$$\Delta P = P_A - P = (P_A - P_B)(1 - \pi_A). \tag{2}$$

This expression shows that the effect of a political shock depends on two factors. First, the effect depends on the extent to which the outcome is unexpected, $1 - \pi_a$. If the outcome is predictable, financial markets will price it ahead of time and the event itself will have no discernible effect on markets (if $\pi_A = 1$, then $\Delta P = 0$). Second, the effect of a political shock depends on the difference in the expected value of the country portfolio under the two potential policy outcomes, $P_A - P_B$. If investors expect third countries to fare equally well under the two potential outcomes, then the political event will have no discernible effect on markets (if $P_A - P_B = 0$, then $\Delta P = 0$). If, however, investors expect a country to fare better (worse) under one policy regime than the other, then stock market valuations in the third country should increase (decrease) upon the realization of the event's outcome (e.g. if $P_A - P_B > 0$, then $\Delta P > 0$). Therefore, we should observe international financial spillovers when unexpected events bring about consequential policy changes (or expectations thereof).

To be sure, political shocks are typically multidimensional and thus can have diverse, and often conflicting, effects on international financial markets. Executive turnover or changes in governing coalitions often imply different changes in different policy areas (Bernhard & Leblang, 2006; Sattler, 2013). A political shock in a core country may thus encapsulate multiple shocks of varying magnitude and direction. When it comes to international economic policy, for example, an election outcome may represent a retreat from free trade—a decidedly negative shock for a country's trade partners—while simultaneously representing a move towards greater financial

liberalization and deregulation at home—a potentially positive shock for those countries with which the core economy holds close financial ties and which therefore stand to benefit from a potential increase in capital inflows.

The 2016 United States presidential election is a useful example. The Republican and Democratic candidates ran on markedly different policy platforms. The Republican candidate ran on a nationalistic platform for US economic and foreign policy, explicitly singling out trade partners such as Mexico and China as threats to US manufacturing, and denouncing trade agreements such as NAFTA and the Trans-Pacific Partnership (TPP).[1] The Democratic candidate, in contrast, ran on a liberal internationalist platform that proposed to maintain, if not expand, US economic and political engagement with the world. Similarly, the two campaigns revealed competing views on financial policy. Whereas Republicans committed to lowering corporate taxes and relaxing banking regulations, Democrats proposed to tighten financial regulation.[2] At last, the Republican victory represented a multidimensional shock with competing spillover effects. Whereas close trade partners expected negative effects from the protectionist turn in US trade policy, close financial partners could expect positive effects from further financial deregulation and an attendant boost in the global activity of US financial institutions.

To disentangle these competing transmission mechanisms, we further decompose political shocks into their various policy components. We denote the financial policy component as P_A^F and P_B^F, respectively. This component captures the effect of political shocks on financial policy and the financial industry. Examples would include a move towards greater financial deregulation or a reduced willingness to enforce international regulatory standards. The difference $P_A^F - P_B^F$ therefore captures the share of the shock that affects the core country's financial industry. In the case of the 2016 US election, the difference between P_A^F and P_B^F would represent the policy implications arising from differences in the candidates' policy platforms concerning financial regulation.

We denote as P_A^{NF} and P_B^{NF} the vector of expected policies that have distinct implications for third countries' stock market valuations, but no direct implication for the financial industry in the originating country. P_A^{NF} and P_B^{NF} thus capture the various non-financial factors that may drive international stock market reactions to political shocks. These include changes in the orientation of trade, macroeconomic, foreign and security policy, as well as changes in policy uncertainty more generally (Bechtel & Schneider, 2010). The non-financial component could be further disaggregated into its own individual components, though we proceed with the current notation for the sake of simplicity. We can then rewrite the change in third countries' stock valuations following the realization of political outcome A as:

$$\Delta P = \left[\beta(P_A^F - P_B^F) + \delta(P_A^{NF} - P_B^{NF})\right] \times (1 - \pi_A), \tag{3}$$

[1] "Donald Trump's Surprise Early Success Causes a Sell-Off in Equities and the Mexican Peso." *The Economist*, November 8, 2016.

[2] "Clinton vs. Trump – Where They Stand on Wall Street." *The Wall Street Journal*, October 25, 2016. See also "Donald Trump Says He Would Dismantle Dodd-Frank Wall Street Regulation." *Fortune*, May 18, 2016.

where β and δ capture the size and direction of the financial and non-financial components, respectively. The above decomposition allows us to analytically separate the global spillovers of political shocks into their distinct transmission mechanisms. These mechanisms may reinforce or offset each other depending on their direction and magnitude. Negative spillovers in the financial arena (e.g. a shock that restricts funding conditions for global banks) may compound negative spillovers in other areas, such as a surge in protectionism. Conversely, positive financial spillovers may compensate for negative externalities in other policy domains, thus serving to cushion third countries from the otherwise negative effects of a shock at the core country.

Whether political events have favorable or unfavorable international spillovers will thus depend on third countries' exposure to the different spillover channels. In what follows, we focus on an oft-overlooked transmission mechanism: countries' exposure to the credit and liquidity provided by global banks. International political economy scholarship has emphasized the role of portfolio and direct investment flows as transmission channels for global shocks (Ahlquist, 2006; Wibbels, 2006; Burgoon, 2001; Haggard & Maxfield, 1996). An incipient but growing literature, however, draws attention to the importance of bank flows in global finance (Oatley et al., 2013; Hardie et al., 2013; Cerutti & Hong, 2018). We specify the role of banks in the global provision of liquidity and derive hypotheses about their role in shock transmission. We then present an empirical strategy to estimate the importance of the cross-border banking channel (i.e., β) relative to competing mechanisms.

2.1 Global Banks as a Transmission Channel

We argue that global banks represent a critical link among national economies that serves to propagate political shocks from the core to the periphery of the global financial system. This is due to global banks' key role in financing investment and consumption across the globe. International lending by global banks represents approximately 40% of world GDP, having exceeded 60% prior to the 2007-08 global financial crisis (McCauley et al., 2017). As central actors in the global allocation of capital, global banks' decisions to expand or curtail lending in response to political and policy shocks affect economic growth not only in the world's core economies, but especially in countries where foreign capital in general, and bank flows in particular, are an important source of financing.

Shocks to global banking activity are transmitted to the world economy both through direct and indirect channels. For one, global banks fund economic activity by lending directly to foreign businesses and governments. But global banks also finance global economic activity indirectly by funding local banks across the globe. Local banks source funds from global markets to provide credit to local firms, households, and governments (Schnabl, 2012; Bruno & Shin, 2015; Cohen et al., 2017). Bruno & Shin (2015, 538-9), for example, show that bank-to-bank lending is typically the single largest component of cross-border bank flows, and that bank-to-bank flows have played a major role in the expansion of domestic lending. Similarly, Ongena et al. (2013) show that the direct channel whereby global banks lend to local firms is an important driver of cross-border liquidity spillovers. As Cohen et al. (2017, 600) point out, "when global banks apply more lenient funding conditions to local banks,

these may be transmitted … across borders through the interactions of global and local banks."

Through this lending channel, global banking serves as a cross-border transmission mechanism for credit conditions (Van Rijckeghem & Weder, 2003; Bruno & Shin, 2015; Cohen et al., 2017). Positive and negative credit shocks in creditor countries are felt in borrowing countries as global banks expand and contract their lending, respectively, to foreign governments, businesses, and local banks. Indeed, models of the international business cycle with global banks show that cross-border bank flows are a major driving factor in the synchronization of national economic cycles (Meh & Moran, 2010; Kollmann et al., 2011; Kalemli-Ozcan et al., 2013). Kollmann (2013), for example, estimates that global banking shocks account for 2-5% of the variance of US GDP and 3-14% of the variance of the euro area GDP.

Regulatory and policy changes in core countries that affect global banks' balance sheets and funding conditions should therefore produce non-trivial cross-border spillovers. An increase in bank capital requirements, for instance, constrains global banks' ability to lend abroad, thus reducing the cross-border availability of credit. Conversely, lax regulatory requirements in core economies spill over into global markets by freeing up capital flows to borrowing countries, facilitating the relaxation of global regulatory standards, and allowing foreign countries to benefit from the onset of financial booms in core countries (Wilf, 2016; Aiyar et al., 2014; Berrospide et al., 2017). In this respect, global banking relations forge links across national financial systems such that "outcomes in other jurisdictions are dependent upon outcomes in the US to a significant extent" Winecoff (2015, 30).

Consequently, political shocks in core countries that lead to financial regulatory change, or expectations thereof, should produce large movements in international financial markets, as investors update expectations of economic performance and corporate earnings in borrowing countries. These market movements will be driven by well-informed market participants, whether well-informed professional and institutional equity investors broadly speaking or the trading desks of global banks themselves. Indeed, global banks expecting a policy change may adjust their own global equity portfolios to reflect expected changes in cross-border lending to countries in which they are already active.

Specifically, we expect the market spillovers from political shocks at the core to be larger in those countries that have higher exposure to the activities of global banks. Countries with stronger banking ties to core countries should be more susceptible to the effects of (expected) financial policy shocks. We thus hypothesize that countries that have denser cross-border banking relations with core countries will benefit from political shocks that favor the interests of the global financial industry. Expected changes towards financial deregulation or more lenient funding conditions for US banks will produce positive spillovers onto countries that borrow heavily from the US financial sector. By the same logic, political change that adversely affects the financial industry in core countries will lead to larger negative spillovers onto countries that are more closely connected to the global banking industry.

3 Research Design

We assess the role of cross-border banking in the propagation of political shocks by examining international financial market reactions to the 2016 US presidential election and the 2016 Brexit referendum. These two political events provide a conducive setting for studying global banking spillovers. First, the United States and United Kingdom occupy a central position in the global financial system, which allows us to identify the channels through which shocks propagate from the system's core. Second, as both events had clear policy implications for the financial sector, studying them in greater detail enables us to test the viability of our proposed financial transmission mechanism. Third, the unanticipated nature of these events provides us with exogenous variation to estimate their effects on global markets. Finally, while both events represented a turn towards nationalist economic and foreign policies, they also represented shocks in opposite directions for the global banking industry. As we show below, the US election outcome represented a favorable shock for US finance, while Brexit led to negative expectations for the British financial sector.

Our empirical analysis proceeds in three parts. We first establish that the 2016 US election represented a positive expectation shock for US global banks using qualitative and quantitative evidence. To assess the role of global banks as a transmission mechanism, we must be able to demonstrate that the shock had a relevant financial policy dimension. If the election led to expectations of future deregulation, weaker enforcement of international regulatory standards, or more lenient funding conditions for global banks, then markets should have expected a boost to global banks' activity and profitability (Wilf, 2016). We should therefore observe an increase in global banks' stock valuations over and above any effects on the financial industry and the broader US economy. To that end, we conduct an event study using stock price data for the full population of publicly-traded US financial institutions to test whether US global banks benefitted from the election surprise above and beyond any effect on the financial industry.

Second, we estimate the global spillovers from the US election. We use data on single-country exchange-traded funds (ETFs) to determine whether and how much the election affected international markets (see details below). We then decompose the election's spillover effects to disentangle the role of cross-border banking from competing economic and political mechanisms. Third, we conduct the same analysis for the 2016 Brexit referendum. A comparison of the US and UK shocks allows us to explore both positive and negative shocks to the global banking industry, lending further credibility and generalizability to our analysis of the cross-border banking mechanism.

3.1 Event Study Design

We use an event study design in all three parts of our analysis (see Campbell et al., 1997).[3] The event studies seek to estimate the abnormal return on a given financial

[3]Examples of event studies in political science include Bechtel and Schneider (2010), Sattler (2013), and Wilf (2016).

asset—here, bank stocks and single-country ETFs—as a result of a political event. The abnormal return is the difference between the actual return on the asset and the expected return absent the event. We define the return on bank stocks and country ETFs as the daily percentage change in the assets' price, formally: $R_{i,t} = (P_{i,t} - P_{i,t-1})/P_{i,t-1}$, where $P_{i,t}$ is the price of bank stock i or country ETF i at time t. Since financial asset prices embody the available information about the value of the underlying asset, changes in prices should reflect changes in the expected value of the bank or country stocks as a result of the political shock. The abnormal return is then:

$$AR_{it} \equiv R_{it} - E[R_{it}],$$

where AR_{it}, R_{it}, and $E[R_{it}]$ are the abnormal, observed, and expected (or normal) return of asset i at time t. The expected, or normal, return is the return on bank stocks or country ETFs that we would have observed had the event not happened. The notion of abnormal returns is thus explicitly counterfactual: it establishes a hypothetical, baseline scenario of normal market performance against which the observed asset performance around the time of the political event is compared. We can use the abnormal return to assess whether and how much the event of interest affected US bank and country ETF valuations.

To estimate the abnormal return, we must decide on a clear definition of the event; a delimitation of the event window (the period over which the impact of the event is to be estimated); a delimitation of the estimation window (the period over which normal market behavior is to be modeled); and a model for estimating the normal, counterfactual behavior of the asset in question. For the 2016 US election, we define the event as the election outcome on November 8, 2016. The Republican victory became known on the night of November 8. Because US stock exchanges close at 4 p.m., we initially define the event window as the day after the election, and estimate the abnormal return on bank stocks and country ETFs on November 9, 2016.

To ensure that our estimates reflect investor assessments of fundamentals—banks' and countries' actual exposure to the election outcome—and to account for the possibility that it might take some time for investors to fully appreciate the implications of the election, we also estimate the abnormal return for different sizes of the event window: from one day to one month and through the end of 2016. In the case of country ETFs, this is important because short-term market responses for individual countries may be contaminated by investor assessments of peer countries (Gray, 2013; Brooks et al., 2015). Observing only short-term reactions might also lead to overestimation of the election impact, as markets often overreact to unexpected events (Bondt & Thaler, 1985; Chopra et al., 1992). For event windows longer than one day, we compute the cumulative abnormal return (CAR)—the sum of the daily abnormal returns over the event window—which captures the accumulated impact of the event over the period of interest.

To estimate the expected (counterfactual) return, $E[R_{it}]$, that is, the expected return on bank stocks and country ETFs over the event window absent the election, we use a market model in which the asset return is expressed as a linear function of the market return. For each bank or country ETF, we estimate a normal performance model given by: $R_{it} = \alpha_i + \beta_i R_{mt} + \epsilon_{it}$, where R_{it} is the daily return on bank or country i, R_{mt} is the return on the stock market, ϵ_{it} is the asset-specific return, and

α and β are the parameters of the market model to be estimated, where β captures the extent to which the return on the bank stock or country ETF co-moves with the broader market.

In the analysis of US banks, we specify the market return, R_{mt}, as the return on the US stock market as proxied by the S&P 500 index.[4] In the cross-national analysis, we specify the market return, R_{mt}, as a combination of external risk factors that commonly affect national stock markets: the return on a broad index of the US stock market (S&P 500), the return on a stock index of developed economies (MSCI World), and the return on an emerging market stock index (MSCI Emerging Markets). These factors capture common external risks such that the remaining variation in country ETF returns reflects country-specific risks.

The parameters of the normal return model are estimated for a subset of the data defined as the estimation window. We use data from January 1, 2013 to November 7, 2016. For country funds established after the start of the estimation window, we use all available price data. We estimate the normal return, $E[R_{it}]$, as the out-of-sample prediction of the market model for the event window, and use those return predictions to obtain the abnormal return.

A critical assumption underpinning the event study design is that the event in question was unanticipated by market participants. Event study estimates can be biased if investors anticipate the event, because asset prices will have already incorporated information on the expected impact of the event before the event takes place. Both in the case of the 2016 US election and the Brexit referendum, there is sufficient evidence that the outcome was unanticipated. Despite the Republican victory in the US election, the prevailing expectation until election day was that the candidate from the Democratic Party, Hillary Clinton, had the upper hand against the Republican candidate, Donald Trump. Immediately before the election, mainstream sources of election forecasting predicted a Clinton victory with 70–99% chance.[5] Prediction markets, where participants trade the outcome of political events, also gave Clinton much better odds.[6] As Fig. 1 shows, the market-implied probability of a Republican win fluctuated around 15-35% throughout the campaign, never exceeding 43%. In line with these forecasts, financial markets had largely priced in a Democratic victory ahead of the election.[7] Similarly, the victory of the Leave campaign in the Brexit referendum was largely unanticipated by pollsters, prediction markets, and financial investors. The implied probability of a Leave win in British prediction markets never exceeded 45% throughout the campaign period (see Fig. S4). The unexpected nature

[4] Using a broad-based index for the US stock market allows us to assess the election's effect on the financial sector relative to the rest of the economy. Alternatively, we use the S&P Banks Select Industry index to capture market risks specific to the banking industry, with no substantive changes in results.

[5] "Who Will Be President?" *The New York Times*, November 8, 2016.

[6] "US Presidential Election: Clinton backed in as FBI investigation comes to nothing." *Betfair*, November 7, 2016.

[7] See "Wall Street doesn't just see a Hillary win, it sees a landslide." *CNBC*, August 29, 2016. See also "Wall St is pretty certain Hillary Clinton will be president." *CNBC*, April 7, 2016. See also "Stock Futures Plunge as Donald Trump Posts Surprising Win." *The Wall Street Journal*, November 9, 2016.

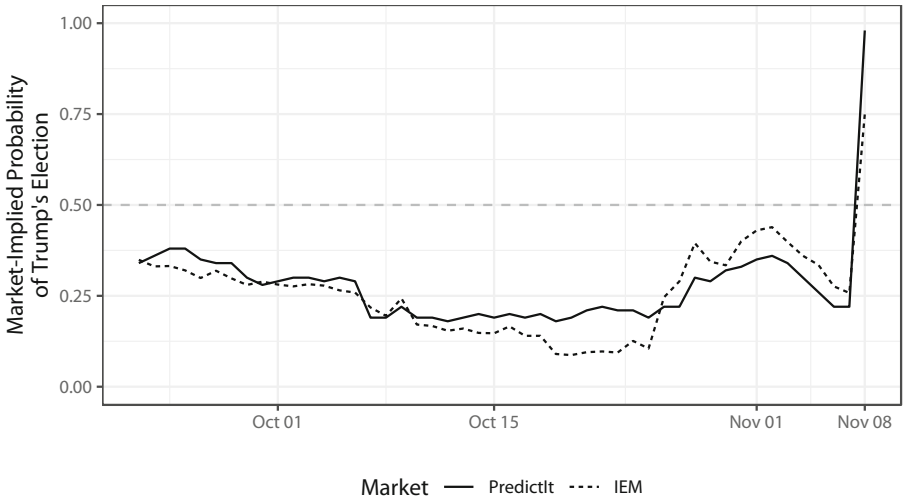

Fig. 1 Expected probability of Donald Trump's election according to prediction markets. The graph shows the market-implied probability of a Trump victory based on the price of contracts traded in two prediction markets—PredictIt and Iowa Electronic Markets

of the outcome in both cases allows us to properly identify the effect of these events on financial markets.

4 Global Banks and the 2016 US Presidential Election

An important assumption in our analysis is that the 2016 US election involved high stakes for the global banking industry. Given the election surprise, what policy differences between the Democratic and Republican candidates could have elicited large reactions from global financial markets?

The election represented a potential global shock along several dimensions. Differences on trade, immigration, and military alliances raised immediate concerns for foreign nations. The Republican candidate was outspoken about shifting US economic and foreign policy towards a more nationalistic stance, singling out trade partners and calling into question the viability of free trade agreements. He also questioned the value of US military alliances and defended that US allies should shoulder a larger share of their defense costs (Minkus et al., 2019; Copelovitch et al., 2020). A Democratic presidency, in contrast, was expected to continue hitherto liberal internationalist policies. As such, the election outcome represented a nationalist turn in US international economic policy. And in addition to risks associated with a nationalist turn, the election brought about greater policy uncertainty, given Donald Trump's often vague statements on economic policy.[8]

[8]"Donald Trump's Surprise Early Success Causes a Sell-Off in Equities and the Mexican Peso." *The Economist*, November 8, 2016.

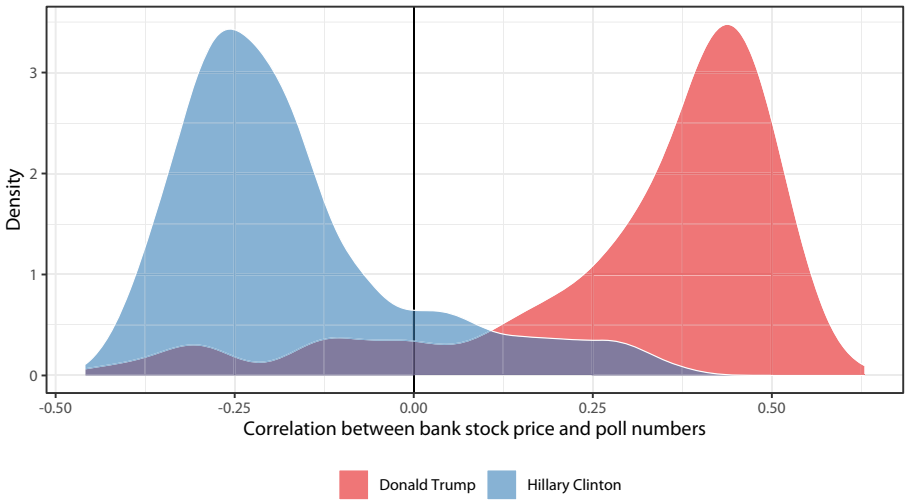

Fig. 2 Presidential polls and the performance of US bank stocks. The graph shows the distribution of correlations between daily stock prices for 408 financial institutions and polling numbers for Hillary Clinton and Donald Trump throughout the 2016 presidential campaign. Daily polling data from *FiveThirtyEight*

Among the starkest policy disagreements between the two campaigns was the regulation of the financial industry. Republicans promised to relax banking regulations, while Democrats ran on a status quo platform, promising to maintain and possibly tighten the regulatory regime established by the previous administration. Republicans aimed to undo the regulations that were introduced by the 2010 Dodd-Frank Act in response to the 2008-09 subprime crisis, while Democrats proposed to extend the reach of Dodd-Frank.[9] Democrats also defended breaking up large financial institutions that posed systemic risks to the economy.[10] In the eyes of investors and the financial industry, these policy differences appeared credible. In fact, markets saw financial regulation as a central issue in the campaign.[11] This is reflected in the correlations between banks' performance in the stock market and polling numbers during the campaign: as Fig. 2 shows, stocks from financial-sector companies moved closely with the Republicans' winning odds.

If the election created expectations of financial deregulation and weaker international regulatory enforcement, then markets would have expected a boost to global banks' operations and profitability. For one, by virtue of the scale and scope of their operations, global banks have the ability and resources to engage in global regulatory arbitrage. A distinctive advantage of global banks relative to domestic ones is

[9] "Clinton vs. Trump – Where They Stand on Wall Street." *The Wall Street Journal*, October 25, 2016. See also "Donald Trump Says He Would Dismantle Dodd-Frank Wall Street Regulation." *Fortune*, May 18, 2016.

[10] "Hillary Clinton: How I'd Rein In Wall Street." *The New York Times*, December 7, 2015.

[11] See BlackRock Investment Institute (2016). See also "Why Bank Stocks Have the Most to Lose in the U.S. Election." *Bloomberg*, November 1, 2016.

that the former can shift funds across jurisdictions to take advantage of differences in regulation (Houston et al., 2012). Second, as a direct result of this form of regulatory arbitrage, a move towards greater deregulation in the US could potentially trigger similar regulatory responses in other jurisdictions (Singer, 2004; Houston et al., 2012). Such regulatory spillovers further reinforce global banks' position to extract gains from arbitrage.

Third, because both domestic and international regulations have disproportionately affected larger and more interconnected banks (Akhigbe et al., 2016; Gao et al., 2018), a corresponding reduction in regulatory requirements should disproportionately benefit systemically important institutions. Thus, we expect a positive effect on global banks' stock valuations from the 2016 election shock, over and above any effects on the broader US financial industry.

Data We collect daily data on the stock price of 408 publicly-traded financial institutions listed on the New York Stock Exchange and Nasdaq. Bank stock prices were overall positively correlated with Trump's poll numbers and negatively correlated with Clinton's, suggesting that markets viewed a Republican victory as a positive development for the financial industry (Fig. 2).

Event study results We estimate the election effect on the financial sector using the aforementioned event study design. The results show that the election had a positive effect on US financial institutions. The average abnormal return (AAR) across all financial institutions was 2% on the day after the election (t-statistic = 5.78). The impact further increased on the following days, with a cumulative average abnormal return ($CAAR$) of 6% after three days ($t = 10.94$), 9% after two weeks ($t = 8.53$), and 16% through the end of 2016 ($t = 8.10$). Banks thus received a large stock market boost from the election.

Was there a differential effect on global banks? We use two measures to capture the global orientation of US banks. First, we examine institutions categorized as global systemically important banks (G-SIB) by the Financial Stability Board (*global bank*). Banks are classified as systemically important based on size, interconnectedness, global activity, and complexity (Basel Committee on Banking Supervision, 2013). For the purposes of our analysis, this classification scheme captures important dimensions such as banks' central position in international financial networks and their ability to engage in international regulatory arbitrage. Second, we use banks' ratio of foreign assets to total assets (for the third quarter of 2016) as a continuous measure of international presence (*international operations*). Data on banks' foreign exposure are from the Federal Financial Institutions Examination Council (FFIEC)'s Country Exposure Information Report (Form 009a).

Out of the 408 financial institutions in the sample, 19 qualified as a global bank according the the G-SIB criteria in 2016. In our sample, global banks have on average 12% of their total assets in the form of foreign assets ($sd = 15$ percentage points), while non-global banks are almost entirely domestically-oriented and have on average little to no foreign assets (Table S3).

Table 1 Regression analysis of the stock market performance of US banks in response to the 2016 US presidential election

	Dependent variable:	
	Abnormal Return on Bank's Stock	
	(1)	(2)
Global Bank	0.041***	
	(0.009)	
International Operations (Foreign/Total Assets)		0.086***
		(0.028)
Total Assets	−0.041***	−0.019***
	(0.008)	(0.006)
Market Value of Equity	0.196***	0.101
	(0.069)	(0.072)
Profitability	0.680***	0.622***
	(0.191)	(0.193)
Revenue Growth	−0.006	−0.007
	(0.009)	(0.009)
Leverage	−0.059***	−0.060***
	(0.017)	(0.017)
Taxes Paid (% Pretax Income)	−0.003	−0.003
	(0.003)	(0.003)
Constant	0.023***	0.024***
	(0.003)	(0.003)
Observations	403	403
R^2	0.136	0.114
F Statistic	8.899***	7.283***

Weighted least squares estimates with heteroskedasticity-robust standard errors in parentheses. The dependent variable is the abnormal return on the bank's stock on the day after the election (November 9, 2016). Observations are weighted by the inverse of the std. error of the abnormal return. $^{*}p < 0.1$; $^{**}p < 0.05$; $^{***}p < 0.01$

We regress banks' abnormal return (AR) on each measure of global orientation at a time, and adjust for bank size (total assets and the market value of equity), profitability (pre-tax income as a share of assets), revenue growth, risk as captured by leverage (short-term and long-term debt as a share of total assets), and taxes paid.

We find strong evidence that the expected policies under a Republican administration were perceived by markets as especially advantageous to global banks. Table 1 shows positive and statistically significant coefficient estimates for *global*

bank and *international operations*. Results from model 1 show that global systemically important banks experienced abnormal returns that were 4.1 percentage points higher than non-global banks on average—an economically significant difference. Similarly, estimates from model 2 show that banks with more foreign assets received a larger valuation boost. To interpret this effect size, notice that global systemically important banks hold on average 11% of their total assets in foreign assets, while domestically-oriented banks hold less than 1% in foreign assets. This difference in international exposure is associated with a 1 percentage point increase in abnormal returns on the day after the election.

The differential effect on global banks persists over time. Figure 3 shows coefficient estimates for *global bank* and *international operations* over increasing event windows. The election's differential effect on global banks remains largely stable through the end of 2016. Note that the confidence intervals in event studies widen over longer time horizons, as statistical power decreases with event window size (Campbell et al., 1997). But the persistence in coefficient size indicates that the election produced lasting change in the stock valuations of US global banks.

These results corroborate our claim that the 2016 election amounted to a favorable shock to policy expectations toward the US financial sector in general and toward US global banks in particular. In the next section, we assess whether countries with stronger banking ties to the US enjoyed corresponding positive spillovers from the election.

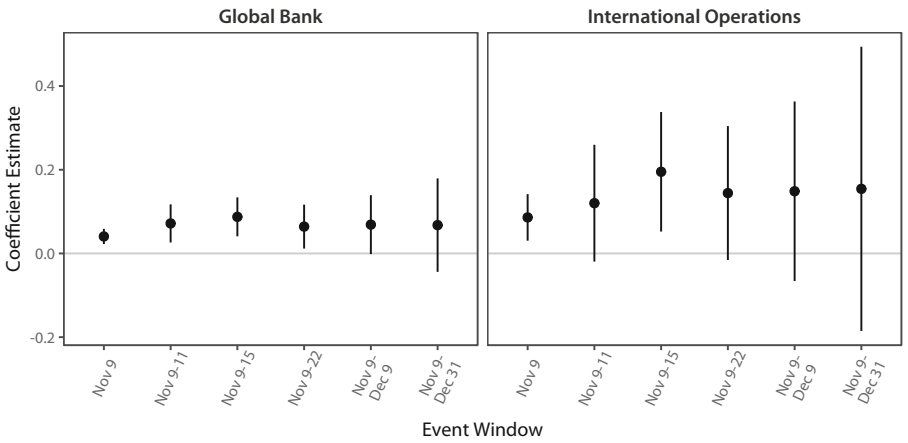

Fig. 3 Global banks and the 2016 US presidential election. Coefficient estimates for the two variables capturing the global presence of US banks, *global bank* and *international operations*, across event windows of increasing width. From left to right, abnormal returns on bank stocks are first estimated for the day after the election (Nov. 9), then cumulative abnormal returns are estimated for the three (Nov. 9–11), seven (Nov. 9–15), fourteen (Nov. 9–22), and thirty-one (Nov. 9–Dec. 9) days following the election, and lastly from the election until the end of the year (Nov. 9–Dec. 31). Vertical bars are 95% confidence intervals. Full model results appear in Tables S4 and S5 of the Supplementary Appendix

5 Cross-Border Banking and the Spillovers from the 2016 US Election

Data We estimate the effect of the election on third countries using data on single-country exchange-traded funds (ETFs). Exchange-traded funds are passive investment funds designed to track broad-based stock market indexes. They do so by holding a portfolio of stocks that replicates the benchmark index. Differently than conventional passively-managed mutual funds, ETFs trade like regular stocks in exchanges such as the New York Stock Exchange and Nasdaq. By buying and selling shares in an ETF, investors can trade an entire stock portfolio in a single transaction (Fuhr, 2001; Gastineau, 2001).

We focus on single-country ETFs, which track broad-based stock market indexes from individual countries (Pennathur et al., 2002; Levy & Lieberman, 2013). Country ETFs provide a simple, low-cost, high-liquidity vehicle for international investment, allowing market participants to take inexpensive positions in foreign stock markets. Country- and region-focused ETFs are among the most highly-demanded and highly-traded international securities (Pennathur et al., 2002; Blitz & Huij, 2012). As such, ETFs are key sources of foreign capital for emerging markets. In 2016, for example, three-quarters of capital flows to emerging-market investment funds were allocated through ETFs (BlackRock, 2017). ETF markets thus provide a favorable setting for studying the effect of US shocks on international markets. High liquidity and low transaction costs mean that country ETF prices tend to incorporate new information swiftly and efficiently. Changes in investor expectations of countries' future economic performance are readily reflected in country ETF prices. Country ETF prices therefore offer a useful measure of global investor expectations toward individual countries.

We compile a data set of daily prices for 143 single-country ETFs that cover 48 developing and developed countries.[12] Figure 4 shows the performance of a sample of country ETFs around the 2016 US election, as well as the S&P 500 index for reference. In general, country ETFs followed the broader US stock market closely in the run-up to the election. However, many of the funds departed from broader market trends following the announcement of the election results on the night of November 8, 2016. The funds for Germany, Mexico, and Turkey, for example, were adversely affected, while the funds for Ireland, Pakistan, Russia, and the UK showed only small responses, if any. The Mexico fund suffered the largest loss in the sample, consistent with the outsized attention that the country received during the election as a likely target for trade and immigration barriers.

Event study results Figure 5 shows event study estimates of the response of financial investors in global ETF markets. The graph shows the abnormal return on ETFs by country on the day after the election. For ease of visual interpretation, the graph aggregates individual funds by country to facilitate cross-national comparisons. Overall, we find that international markets responded negatively to the

[12] The full list of funds appears in Table S2 of the Supplementary Appendix.

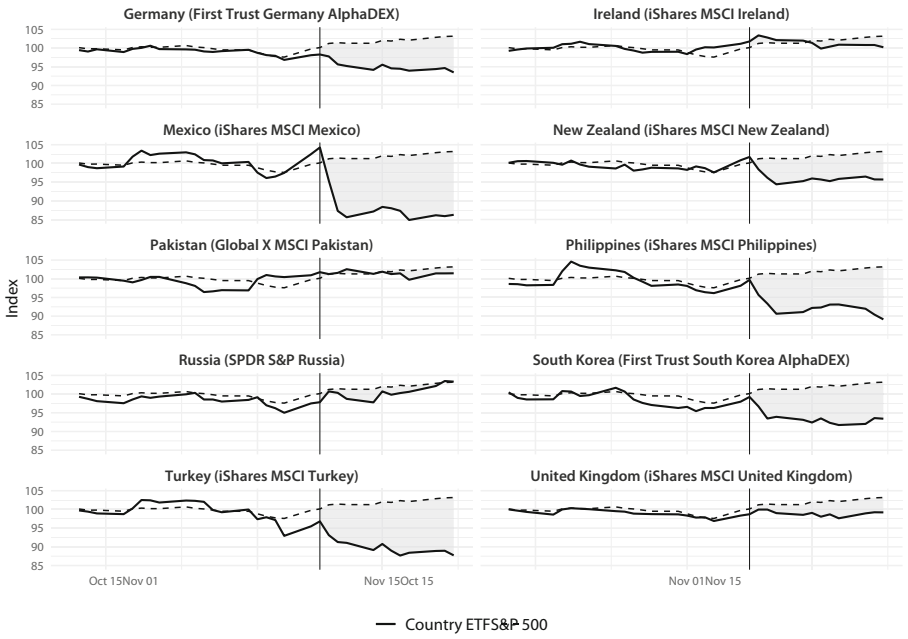

Fig. 4 Country exchange-traded funds around the 2016 US presidential election. The graph shows the performance of a sample of single-country ETFs relative to the S&P 500 index before and after the November 8 election. The fund price and the S&P 500 index are normalized to facilitate comparison

election. According to Fig. 5, in most cases investors revised downward their economic expectations for the analyzed countries. Mexico appears as an outlier with an abnormal return of -10% on the first day after the election—a very large effect by any standards. Still, the market response was substantively large in many cases. South Africa, the Philippines, Turkey, Malaysia, Indonesia, and Brazil experienced abnormal performances of -4% to -6%. In contrast, countries like the UK, Ireland, Saudi Arabia, and Russia have positive abnormal returns, though they cannot be statistically distinguished from zero. In all, Fig. 5 shows considerable cross-country variation in terms of the election's impact.

Importantly, we find that the election's effect on global equity markets was not transitory. Estimates of cumulative abnormal returns (CAR) indicate that investors continued to update return expectations in the days following the election, such that the total effect by the end of the election week was even larger for most countries (Table S7). Mexico ETFs, for example, closed the election week with an average cumulative abnormal return of -20%. Countries like Brazil, Colombia, Indonesia, Malaysia, the Philippines, and South Africa saw a -10% to -16% change on their equity ETFs; and countries like Argentina, Chile, India, New Zealand, Poland, Portugal, Turkey, and the United Arab Emirates showed an abnormal performance of -5% to -8%. These estimates suggest that the election shock was almost fully incorporated into global equity prices in the first few days after the election. For most

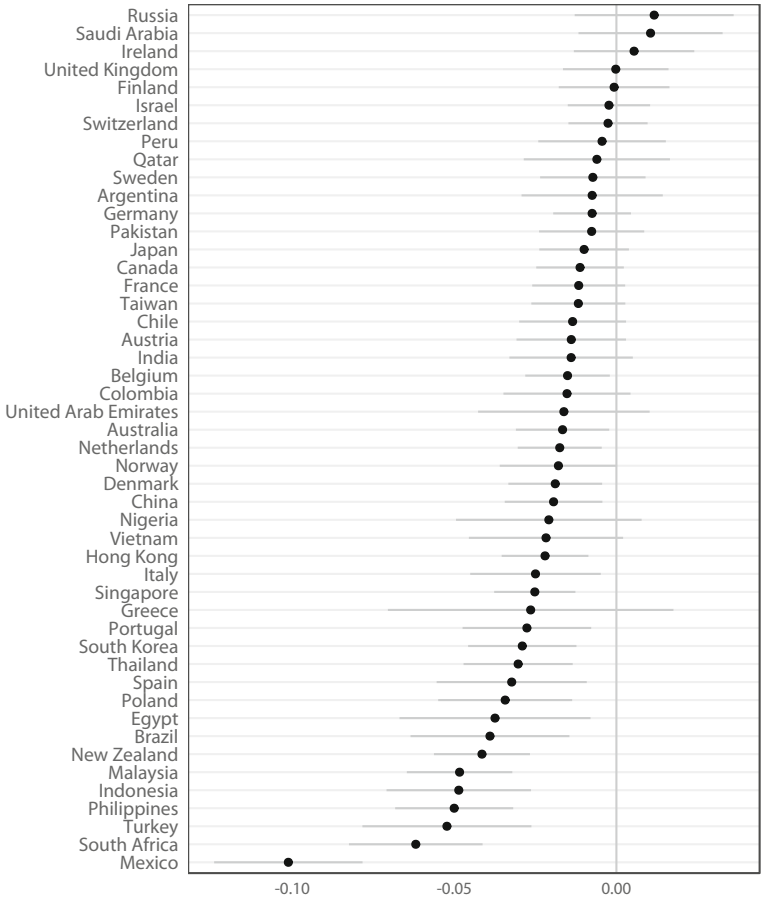

Fig. 5 Performance of country ETFs in response to the 2016 US presidential election. The graph shows the abnormal return on the equally-weighted portfolio of exchange-traded funds by country on the day after the election (November 9, 2016). Horizontal bars are 90% confidence intervals

countries, the accumulated effect remained stable through the end of 2016, indicating that the global financial spillovers did not just reflect short-term market reactions but rather investor reassessments of country fundamentals.

Decomposing the transmission channels of the election shock Abnormal returns provide a measure of the direction and magnitude of market reactions to the election. We analyze cross-sectional variation in abnormal returns in a regression framework to test hypotheses about transmission mechanisms. In particular, we assess whether funds from countries with stronger banking ties to the United States fared better in response to the election shock. The resulting model is represented as:

$$AR_{ik} = \beta_0 + \beta_1 \text{Banking Ties}_i + X\delta + Z\gamma + \epsilon_{ik},$$

where AR_{ik} is the abnormal return on exchange-traded fund k of country i; Banking Ties$_i$ is a measure of bilateral banking ties between country i and the US (more below); X is a vector of competing transmission mechanisms; Z is a vector of country-level controls; and ϵ_{ik} is a disturbance term. If markets indeed expected countries with stronger ties to the US banking system to perform better under a Republican administration, we should see $\beta_1 > 0$. We first present results using the abnormal return on the day after the election, since that is when most of the market adjustment to the election surprise should take place. We then gradually expand the event window up to the end of 2016 to determine the degree of persistence of the shock. Stable coefficient estimates over increasing event windows should provide evidence of a meaningful and lasting effect on international markets.

Our main regression analysis uses fund-level data. Because our dependent variable—the fund's abnormal return—is an estimated quantity, it is measured with varying uncertainty. Using fund-level data allows us to use information more efficiently by giving a larger weight to those funds whose responses to the election are estimated with greater precision. We weight observations by the inverse of the standard error of the abnormal return using weighted least squares (Lewis & Linzer, 2005; Romano & Wolf, 2017). Therefore, we explicitly incorporate information about the uncertainty with which the dependent variable is measured to obtain more efficient estimates. Because there are multiple funds per country, we cluster the coefficient standard errors at the country level to account for within-country error correlation.

The choice to use fund-level data, however, might raise the concern that countries that have more ETFs will have a disproportionate influence on the estimates. To assuage this concern, we also report country-level analyses, where we average daily ETF returns by country to estimate the abnormal return at the country level. While this approach loses information by aggregating fund-level returns, it allows us to show that our conclusions are not driven by countries that are overrepresented in the fund-level data.

The main independent variable is bilateral banking ties with the US. We measure banking ties using data from the Bank for International Settlements' Locational Banking Statistics. The BIS data provides a comprehensive view of cross-border bank activity by tracking assets held by banks from reporting countries in counter-party countries. We use the reported assets of US banks in third countries to capture the importance of US bank lending to these countries. Specifically, we use the ratio of total US bank assets (in the third quarter of 2016) to GDP (Avdjiev et al., 2015). We normalize US bank assets by GDP because our goal is to test the effect of banking ties on the country's overall expected economic performance. This measure directly captures the overall importance of US banks to the country's economy. It is possible, however, that the measure overweights countries with large financial sectors, in which case it would capture not only the importance of US banks to the national economy but also of other non-US foreign banks. We address this in two ways. First, we include a variable for non-US foreign bank assets/GDP (see the "placebo test" below). Second, we report robustness checks using two alternative measures: the ratio of US assets to all foreign bank assets and the ratio of US assets to total private credit by deposit money banks, the latter of which captures the importance of US banks to

the country's financial system. Figures S1 and S2 show the correlation among the different cross-border banking measures and how different countries rank along these dimensions.

We control for competing transmission mechanisms and country-level confounders. Because trade and financial flows are often correlated, we account for total bilateral trade with the United States as a share of GDP. To account for potential correlation between cross-border bank lending and foreign direct investment, we include the US FDI stock in the recipient country. Relatedly, we account for the quality of governance and the regulatory environment by including an index of macroprudential policy and an indicator of property rights protection. To capture countries' vulnerability to external financial shocks, we include the Chinn-Ito index of capital account openness. We use S&P sovereign credit ratings and an indicator of emerging market status to account for flight-to-safety dynamics. We also adjust for economic size and development (GDP and GDP per capita). Finally, because military allies often benefit from trade and financial relations (Mansfield & Bronson, 1997; Aklin & Kern, 2019), we include measures of political and security ties (US military alliance and liberal democracy). Data sources are listed in the Supplementary Appendix.

Placebo test To ensure that the results reflect the transmission of shocks through cross-border US banking ties, rather than simply countries' openness to capital flows or level of financial development, we also conduct a placebo test. We add a variable capturing all non-US foreign bank assets as a share of GDP. If US banks are indeed the transmission channel for the US election shock as we anticipate, then we should not observe a relationship between countries' abnormal returns and their ties to non-US banks. The absence of an effect from this "placebo treatment" should increase our confidence in the posited mechanism.

Regression analysis results Table 2 reports the results of the regression analysis of abnormal returns for country ETFs. To ensure that our conclusions are not driven by countries with many ETFs, we report both fund- and country-level regressions, as mentioned above. The dependent variable is the abnormal return on the day after the election, and the independent variable of interest is US bank assets/GDP.

We find a positive and statistically significant association between US bank assets and the country's performance in equity markets. While global markets showed an overall negative response to the election, countries with stronger banking ties to the United States performed better. The association is substantively significant, with an increase from the 25th to the 75th percentile of US bank assets/GDP ($\Delta = 0.076$) accounting for an increase in abnormal returns between 0.5 (model 1) and 1.6 (model 8) percentage point.

Results from the placebo test further support the US banking transmission mechanism. Models 2 and 6 in Table 2 replace US bank assets with non-US foreign bank assets, while models 3-4 and 7-8 include both variables. We find no association between country performance in ETF markets and banking ties to countries other than the US. The null result for the placebo boosts our confidence that the findings for US banks are not spurious and supports our hypothesis that US global banks played a distinct role in propagating the election shock.

Table 2 Regression analysis of the performance of country exchange-traded funds in response to the 2016 US presidential election

	Dependent Variable: Abnormal Return on Country ETF							
	Fund-Level Regressions				*Country-Level Regressions*			
[-1.8ex]	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
US Bank Assets/GDP	0.072***		0.071***	0.178***	0.096***		0.088**	0.244***
	(0.020)		(0.027)	(0.053)	(0.032)		(0.033)	(0.064)
Foreign Bank Assets (Non-US)/GDP		0.008	0.002	−0.022*		0.006	0.001	−0.025
		(0.006)	(0.006)	(0.012)		(0.005)	(0.005)	(0.018)
Trade with US/GDP				−0.107***				−0.139**
				(0.026)				(0.056)
US FDI Stock/GDP				0.018				0.021
				(0.014)				(0.019)
GDP Per Capita				−0.00004				0.0002
				(0.0002)				(0.0002)
GDP				−0.0002				−0.001
				(0.001)				(0.001)
Capital Account Openness				0.001				0.003
				(0.003)				(0.003)
Sovereign Credit Rating				0.001				0.001
				(0.001)				(0.001)
Emerging Market				−0.026**				−0.024*

Table 2 (continued)

	Dependent Variable: Abnormal Return on Country ETF							
	Fund-Level Regressions				*Country-Level Regressions*			
[-1.8ex]	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
				(0.011)				(0.013)
Macroprudential Policy Index				0.003***				0.003**
				(0.001)				(0.001)
Military Ally				−0.016**				−0.014*
				(0.006)				(0.007)
Liberal Democracy				0.020				−0.010
				(0.020)				(0.018)
Property Rights				−0.010*				−0.016***
				(0.006)				(0.005)
Constant	−0.021***	−0.020***	−0.022***	0.025	−0.023***	−0.023***	−0.024***	0.057*
	(0.003)	(0.003)	(0.003)	(0.036)	(0.003)	(0.004)	(0.004)	(0.028)
Observations	143	139	139	130	48	48	48	39
R^2	0.043	0.029	0.058	0.375	0.068	0.032	0.069	0.610
F Statistic	6.348**	4.082**	4.172**	5.344***	3.351*	1.541	1.655	3.003***

Weighted least squares estimates. Standard errors clustered by country (fund-level regressions) and heteroskedasticity-robust standard errors (country-level regressions) in parentheses. The dependent variable is the abnormal return on the country ETF on the day after the US election (November 9, 2016). $^{*}p < 0.1$; $^{**}p < 0.05$; $^{***}p < 0.01$

Fig. 6 Effect of US and non-US banking ties over time. Coefficient estimates for banking ties to the US (top panel) and for the placebo variable (banking ties to countries other than the US; bottom panel) across event windows of increasing size. From left to right, coefficient estimates using abnormal returns for the day after the election (Nov. 9), then cumulative abnormal returns for the three (Nov. 9–11), seven (Nov. 9–15), fourteen (Nov. 9–22), and thirty-one (Nov. 9–Dec. 9) days after the election, and lastly from the election through the end of the year (Nov. 9–Dec. 31). Vertical bars are 95% confidence intervals. Full model results in Table S10 of the Supplementary Appendix

A potential concern is that the market response to the election might reflect short-lived price movements that do not reflect changes in fundamentals. If the market response is based on country fundamentals—i.e. countries' actual susceptibility to US political shocks—then the effect of US banking ties should not dissipate quickly. Figure 6 shows the effect of US bank assets, as well as the placebo (non-US foreign bank assets), for event windows of increasing size. The coefficient estimates are persistent, thus indicating that the effect is not transient. The association between US bank assets and countries' abnormal returns becomes gradually stronger as the event window widens. Moreover, the placebo effect of non-US foreign banks remains statistically and substantively insignificant for any size of the event window. Again, note that the confidence intervals widen as the event window increases, as the statistical power of event studies decreases with the size of the event window. These results confirm that countries with greater exposure to the US banking system fared better in response to the election than countries with weak or no banking ties.

Robustness checks We submit these results to a series of robustness checks. First, we check alternative measures of US banking ties. US bank assets/GDP might overweight countries with large financial sectors, in which case it would capture not only the importance of US banks to the national economy but also of non-US foreign banks. We thus test two alternative measures: the ratio of US assets to all foreign bank assets and the ratio of US assets to total private credit by deposit money banks (Table S8). We also cross-check our results using data on US bank claims on foreign countries from the FFIEC's Country Exposure Lending Survey (Table S14); using these data, we include only US bank claims on local banks to mitigate concerns that our measure is a proxy for US FDI (Table S15). Our conclusions remain unchanged.

We control for additional economic, political, and security channels. We test alternative trade channels, including countries' trade surplus with the US instead of total trade, membership in the Trans-Pacific Partnership (TPP), and free trade agreements with the United States. For political and security relations, we control for NATO membership and similarity to the US in terms of voting patterns in the United Nations. In all tests, results for the US banking channel remain substantively unchanged (Table S13).

To mitigate concerns that the results might be specific to ETF markets or might be confounded by exchange rate effects (Benton & Philips, 2020), we analyze additional data on national stock markets for 97 developing and developed countries. Because US-based ETFs are denominated in US dollars, using national stock market indices denominated in local currency allows us to rule out the possibility that the observed effects are driven by exchange rate movements. Among the most adversely affected national stock markets were Japan, New Zealand, Mexico, Iran, and Taiwan, with abnormal returns of -1% to -3%, while some of the most positively affected were Luxembourg, Russia, Ireland, Bermuda, and Switzerland, with abnormal returns of 2-5% (Fig. S3). The regression analysis of abnormal returns for national stock indices is consistent with the analysis of ETF markets: US bank assets are positively and significantly associated with market responses at the 5%, while the placebo test for non-US foreign bank assets remains insignificant (Table S11).

We directly control for exchange rate effects in the ETF regression analysis by including the change in the exchange rate against the US dollar on the day after the election. The results show that the election affected country ETFs both through movements in stock valuations and exchange rates. Our findings about the banking transmission channel are robust to these adjustments (Table S12). We also check whether the results might be driven by Mexico, given that the country is an outlier in terms of abnormal returns, and obtain the same conclusions (Table S9).

6 Cross-Border Banking and the Spillovers from the Brexit Vote

To what extent are our results specific to the 2016 US presidential election? The Brexit referendum provides an additional opportunity to test the role of cross-border banking in transmitting political shocks. As the second largest global financial hub and largest financial center in Europe, the United Kingdom's banking industry provides third markets with ample credit and liquidity (Oatley et al., 2013). Cross-border

loans from UK-based banks totaled $4.5 trillion ($1.4 trillion of which to European Union companies and governments) around the time of the 2016 referendum (Bank for International Settlements, 2016, 30-2).

As in the case of the 2016 US election, the unanticipated victory of the Leave campaign allows us to identify the effect of the referendum on international financial markets. As previously discussed, the implied probability in British prediction markets of a Leave win stayed around 25–35% throughout the campaign period. As Fig. S4 shows, on the day before the referendum, prediction markets forecasted a Remain victory with 75% chance. In this respect, the Brexit referendum outcome was as much a surprise to markets as the result of the 2016 US election.

In addition to adding generalizability to our main claim beyond the 2016 US election, the Brexit case also adds variation in the direction of the shock for the financial industry, while holding constant aspects such as the nationalist orientation of the political outcome and the country's centrality in the international financial system. The Brexit outcome created uncertainty over the future of financial integration in Europe (Belke et al., 2018). In the worst case scenario, the UK's withdrawal from the European Single Market would mean a loss of market access for UK banks with negative consequences for the size and profitability of the British financial industry.[13] For the European Union, it would mean the potential loss of a major financial hub.

Given the United Kingdom's central position in the global financial system, cross-border banking should play a critical role in transmitting the Brexit shock to international markets. Unlike the 2016 US election, however, Brexit should represent a negative shock to cross-border banking activity with attendant negative consequences for credit provision in markets with a large participation of UK-based banks (Djankov, 2017; Hohlmeier & Fahrholz, 2018). We hypothesize that the anticipated negative effects of Brexit on the UK banking industry would lead financial market participants to expect negative consequences for the UK's role as a global financial hub accompanied by a decline in cross-border bank flows originating in the country. Accordingly, countries with stronger banking ties to the UK should be more negatively affected by the Brexit shock, all else constant.

Alternatively, it is possible that countries in the European Union that rely on credit and financial services from UK-based banks would be negatively hit by the Brexit shock, while countries outside of the EU would benefit from it, if UK banks were expected to shift their operations away from the EU in response to Brexit.[14] In this case, the Brexit shock could be a positive shock for non-EU countries. It is therefore important to disentangle the role of cross-border banking in transmitting the Brexit shock from competing transmission channels related to EU membership.

We conduct a similar analysis of the pricing of country exchange-traded funds in the context of the Brexit vote, estimating abnormal returns on country ETFs on the day after the referendum (June 24, 2016). We find that on average, the Brexit shock had a negative effect on global equity markets, with an average abnormal return of -2.7% ($t = -15.78$) in the sample. Figure 7 shows the abnormal return on ETFs

[13] "Banks Might Have Started Worrying About Brexit." *Bloomberg*, October 22, 2018.

[14] We thank an anonymous reviewer for making this point.

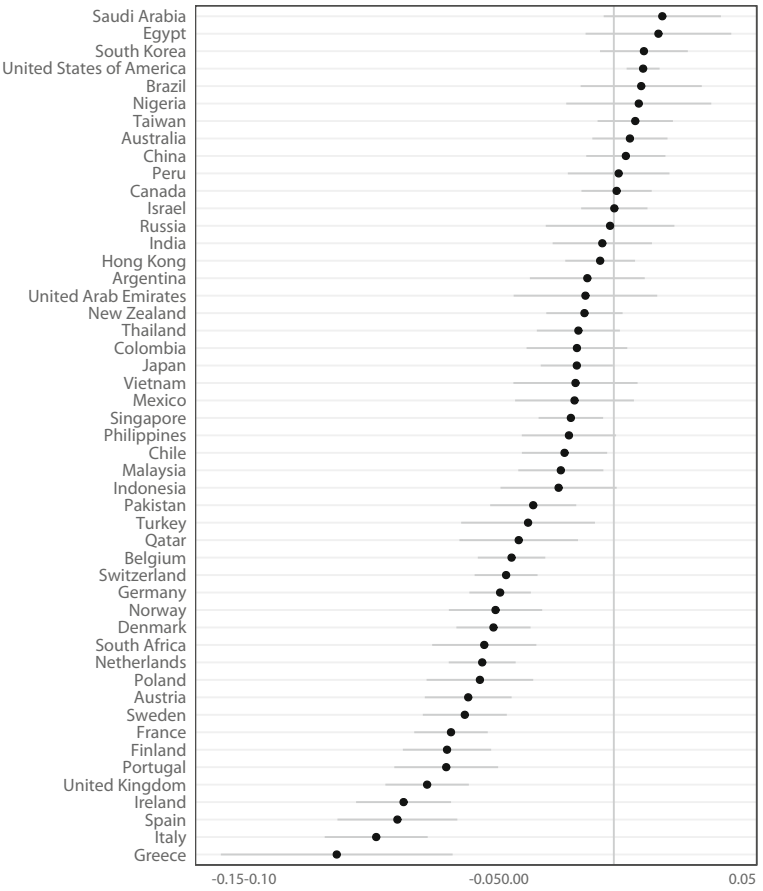

Fig. 7 Performance of country ETFs in response to the 2016 Brexit referendum. The figure shows the abnormal return on the equally-weighted portfolio of exchange-traded funds for a given country on the day after the referendum (June 24, 2016). Horizontal bars are 90% confidence intervals

by country on the day after the referendum. As in the case of the US election, most countries in the sample experienced negative abnormal returns from the Brexit shock. EU members were among the hardest hit: Greece, Italy, Spain, Ireland, Portugal, Finland, France, Sweden, Austria, and Poland experienced abnormal returns in the range of -5% to -11%. In contrast, we find that the Brexit shock had a positive effect on the United States, consistent with the idea that the US would capture some of the UK's global market share in financial services.[15]

To assess the role of cross-border banking in transmitting the Brexit shock, we regress the country ETF abnormal return (on the day after the referendum) on UK bank assets/GDP, foreign bank assets other than the UK/GDP, and European Union membership, controlling for competing economic and political channels. We report

[15] "New York Gains From the City of London's Pain." *Bloomberg*, January 22, 2021.

the full regression results in Table S16 of the Supplementary Appendix for brevity and focus here on our main variables of interest. Figure 8 shows coefficient estimates for UK bank assets, non-UK foreign bank assets, and the EU indicator for various event windows.

The coefficient on UK bank assets is negative across all event windows as expected. Although the coefficient is not statistically significant for the first few days after the Brexit vote, the effect of UK banking ties becomes clear within a week after the referendum. Moreover, the negative coefficient for UK banking ties persists across the different event windows, even increasing in magnitude as the window increases. Consonant with our posited mechanism, this indicates that countries receiving more bank flows from the UK were more negatively affected by the Brexit shock, controlling for EU membership and alternative transmission channels.

Additionally, we find that countries with stronger cross-border banking ties to banking centers other than the UK experienced positive abnormal returns following the Brexit shock. While we find no significant relationship on the day after the vote, the performance of countries with stronger financial ties outside of the UK gradually improves over time relative to that of countries with few or no outside financial

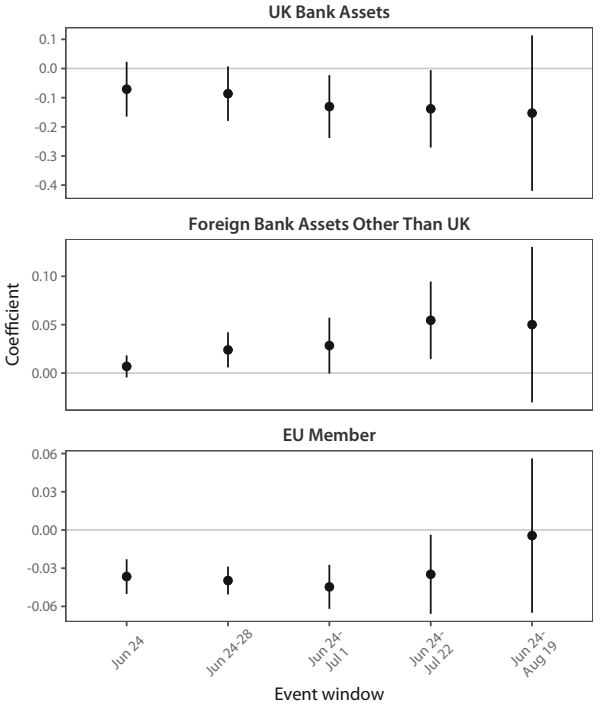

Fig. 8 Cross-border banking and the spillovers from Brexit. Coefficient for banking ties to the UK (top), banking ties to countries other than the UK (middle), and EU membership (bottom) across different event windows. From left to right, coefficients based on abnormal returns for the day after the referendum (Jun. 24, 2016); and cumulative abnormal returns for the three (Jun. 24–28), seven (Jun. 24–Jul. 1), fourteen (Jun. 24–Jul. 22), and thirty-one (Jun. 24–Aug. 19) days after the referendum. Bars are 95% confidence intervals

ties. These results suggest that while banking ties with the UK helped compound the negative spillovers from Brexit, banking ties with competing financial centers helped offset the negative shock. This is in line with our finding that the US experienced a positive shock from Brexit (Fig. 7), and it suggests that countries with close ties to competing financial hubs may have benefitted from Brexit's negative effect on the City of London.

Finally, we find that EU members experienced larger negative spillovers from Brexit, as indicated by the negative and statistically significant coefficient on the EU indicator from the day after the vote to two weeks after the event. However, the difference in abnormal returns between EU and non-EU members disappears after one month. This may be explained by investors' short-term reactions to the immediate adverse effects of Brexit on EU members. Alternatively, investors may have used EU membership as a heuristic to assess spillovers in the immediate aftermath of the unexpected outcome. The effect may have disappeared after investors had time to carefully assess the extent of the spillovers using more fine-grained indicators.

7 Conclusion

International political economy scholarship has placed an emphasis on portfolio and foreign direct investment flows when investigating the political and economic effects of capital flows. In this article, we identify cross-border banking as an important, if overlooked, channel through which political and policy shocks spread from core countries to the rest of the global economy. We start from the observation that global banks are central to global credit and liquidity provision. As such, we show that political shocks that directly affect the global banking industry spill over onto third nations through their effects on cross-border bank flows.

Our study leveraged the surprise outcome of the 2016 US election and the Brexit referendum to isolate the role of bank flows. These events represent "most likely" cases where a number of factors converged to produce large global spillovers. While this convergence of factors is analytically useful for identifying the effect of political shocks on global markets, the results also speak to questions beyond the context of these events. Where the financial industry is large and internationalized, financial policy is bound to be politically contentious (Chinn & Frieden, 2012; Maxfield et al., 2017). Therefore, the financial spillovers from political events in core countries are likely to be the norm rather than the exception.

Our results advance our understanding of to the interaction between domestic and international processes in the politics of bank regulation. A vibrant literature addresses the domestic distributive consequences of international regulations (Oatley & Nabors, 1998; Singer, 2004; Wilf, 2016). We highlight instead the global consequences of domestic regulatory politics. A key insight of our analysis is that political shocks affect economic outcomes in both senders and receivers of cross-border bank flows, a finding that is not well documented in existing distributive models of international financial regulation.

This study also contributes to the growing literature on complex interdependence that focuses on network and relational processes between states (Hafner-Burton et al.,

2009; Oatley et al., 2013; Farrell & Newman, 2016). We move this research forward by underscoring the heterogeneous effects of different modes of interconnectedness in the global political economy. Our results suggest, for example, that trade and financial flows do not necessarily move in tandem, nor do they always fulfill identical roles as transmission mechanisms.

These findings reinforce the importance of global financial integration in the study national and international politics. In light of increasing international capital flows, future research should further examine the complex effects of financial interdependence. Indeed, much remains to be investigated about the ways in which various forms of financial connectedness leave countries more or less vulnerable to different types of external shocks. Advancing our understanding of heterogeneity in financial interdependence represents a natural next step. In addition, scholars would do well to look beyond national elections to understand how other types of political shocks affect economic and political outcomes well beyond national borders.

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