

PROOF COVER SHEET

Author(s): Iain McMenamin

Article Title: Comparative politics and quasi-rational markets

Article No: CNPE1183114

Enclosures: 1) Query sheet
2) Article proofs

Dear Author,

1. Please check these proofs carefully. It is the responsibility of the corresponding author to check these and approve or amend them. A second proof is not normally provided. Taylor & Francis cannot be held responsible for uncorrected errors, even if introduced during the production process. Once your corrections have been added to the article, it will be considered ready for publication.

Please limit changes at this stage to the correction of errors. You should not make trivial changes, improve prose style, add new material, or delete existing material at this stage. You may be charged if your corrections are excessive (we would not expect corrections to exceed 30 changes).

For detailed guidance on how to check your proofs, please paste this address into a new browser window: <http://journalauthors.tandf.co.uk/production/checkingproofs.asp>

Your PDF proof file has been enabled so that you can comment on the proof directly using Adobe Acrobat. If you wish to do this, please save the file to your hard disk first. For further information on marking corrections using Acrobat, please paste this address into a new browser window: <http://journalauthors.tandf.co.uk/production/acrobat.asp>

2. Please review the table of contributors below and confirm that the first and last names are structured correctly and that the authors are listed in the correct order of contribution. This check is to ensure that your name will appear correctly online and when the article is indexed.

Sequence	Prefix	Given name(s)	Surname	Suffix
1		Iain	McMenamin	
2		Michael	Breen	
3		Juan	Muñoz-Portillo	

Queries are marked in the margins of the proofs, and you can also click the hyperlinks below. Content changes made during copy-editing are shown as tracked changes. Inserted text is in **red font** and revisions have a red indicator **▲**. Changes can also be viewed using the list comments function. To correct the proofs, you should insert or delete text following the instructions below, but **do not add comments to the existing tracked changes**.

AUTHOR QUERIES

General points:

1. **Permissions:** You have warranted that you have secured the necessary written permission from the appropriate copyright owner for the reproduction of any text, illustration, or other material in your article. Please see <http://journalauthors.tandf.co.uk/permissions/usingThirdPartyMaterial.asp>.
2. **Third-party content:** If there is third-party content in your article, please check that the rightsholder details for re-use are shown correctly.
3. **Affiliation:** The corresponding author is responsible for ensuring that address and email details are correct for all the co-authors. Affiliations given in the article should be the affiliation at the time the research was conducted. Please see <http://journalauthors.tandf.co.uk/preparation/writing.asp>.
4. **Funding:** Was your research for this article funded by a funding agency? If so, please insert ‘This work was supported by <insert the name of the funding agency in full>’, followed by the grant number in square brackets ‘[grant number xxxx]’.
5. **Supplemental data and underlying research materials:** Do you wish to include the location of the underlying research materials (e.g. data, samples or models) for your article? If so, please insert this sentence before the reference section: ‘The underlying research materials for this article can be accessed at <full link>/ description of location [author to complete]’. If your article includes supplemental data, the link will also be provided in this paragraph. See <<http://journalauthors.tandf.co.uk/preparation/multimedia.asp>> for further explanation of supplemental data and underlying research materials.
6. The **CrossRef database** (www.crossref.org/) has been used to validate the references. Changes resulting from mismatches are tracked in **red font**.

QUERY NO.	QUERY DETAILS
AQ1	Please provide a short biography of all the authors.
AQ2	The year for “Keynes, 1948” has been changed to “Keynes, 1948[1921]” to match the entry in the references list. Please confirm this is correct and provide revisions if needed.
AQ3	The year for “Edwards, 1980” has been changed to “Edwards, 1980[1968]” to match the entry in the references list. Please confirm this is correct and provide revisions if needed.
AQ4	The reference “DiGiuseppe and Shea, 2015” is cited in the text but is not listed in the references list. Please either delete in-text citation or provide full reference details following journal style.
AQ5	The year for “Hay, 2006” has been changed to “Hay, 2005” to match the entry in the references list. Please confirm this is correct and provide revisions if needed.

QUERY NO.	QUERY DETAILS
AQ6	The reference “Brooks et al., 2014” is cited in the text but is not listed in the references list. Please either delete in-text citation or provide full reference details following journal style.
AQ7	The year for “Duch et al., 2015” has been changed to “Duch et al., 2014” to match the entry in the references list. Please confirm this is correct and provide revisions if needed.
AQ8	The reference “Henisz, 2000” is cited in the text but is not listed in the references list. Please either delete in-text citation or provide full reference details following journal style.
AQ9	The year for “Keefer and Stasavage, 2003” has been changed to “Keefer and Stasavage, 2002” to match the entry in the references list. Please confirm this is correct and provide revisions if needed.
AQ10	The reference “McGann and Latner, 2012” is cited in the text but is not listed in the references list. Please either delete in-text citation or provide full reference details following journal style.
AQ11	The reference “Hall and Soskice, 2001” is cited in the text but is not listed in the references list. Please either delete in-text citation or provide full reference details following journal style.
AQ12	The reference “Whitten and Williams, 2015” is cited in the text but is not listed in the references list. Please either delete in-text citation or provide full reference details following journal style.
AQ13	The reference “Sandler and Sandler, 2012” is cited in the text but is not listed in the references list. Please either delete in-text citation or provide full reference details following journal style.
AQ14	The reference “Bechtel and Schneider, 2010” is cited in the text but is not listed in the references list. Please either delete in-text citation or provide full reference details following journal style.
AQ15	The year for “Campbell et al., 1997” has been changed to “Campbell et al., 1996” to match the entry in the references list. Please confirm this is correct and provide revisions if needed.
AQ16	The reference “Kuttner and Posen, 2010” is cited in the text but is not listed in the references list. Please either delete in-text citation or provide full reference details following journal style.
AQ17	Please spell out “RILE and IMF” in full at first mention.
AQ18	The reference “Spyros et al., 2007” is cited in the text but is not listed in the references list. Please either delete in-text citation or provide full reference details following journal style.
AQ19	The sense of the sentence “The statistical significance of...” is not clear. Please check that it reads correctly or supply a revised version.
AQ20	Please provide missing volume number and page numbers for the “Bølstad and Elhardt, 2015” references list entry.

QUERY NO.	QUERY DETAILS
AQ21	Please provide missing page numbers for the “Ginsburg, 2015” references list entry.
AQ22	The reference “Kahneman and Tversky, 1979” is listed in the references list but is not cited in the text. Please either cite the reference or remove it from the references list.
AQ23	The reference “Klossner et al., 2012” is listed in the references list but is not cited in the text. Please either cite the reference or remove it from the references list.
AQ24	The reference “Lewis and Linzer, 2005” is listed in the references list but is not cited in the text. Please either cite the reference or remove it from the references list.
AQ25	The reference “McGann and Latner, 2015” is listed in the references list but is not cited in the text. Please either cite the reference or remove it from the references list.
AQ26	If “Rommerskirchen, forthcoming” has been published, please give details for references list following journal style.
AQ27	The reference “Spyrou et al., 2004” is listed in the references list but is not cited in the text. Please either cite the reference or remove it from the references list.
AQ28	Please provide missing page numbers for the “Williams and Whitten, 2015” references list entry.
AQ29	The captions of Appendices 2, 3 and 4 have been changed for better readability. Please check the change conveys the intended meaning or amend.
AQ30	Please replace “Table N” with appropriate Table number.

How to make corrections to your proofs using Adobe Acrobat/Reader

Taylor & Francis offers you a choice of options to help you make corrections to your proofs. Your PDF proof file has been enabled so that you can edit the proof directly using Adobe Acrobat/Reader. This is the simplest and best way for you to ensure that your corrections will be incorporated. If you wish to do this, please follow these instructions:

1. Save the file to your hard disk.
2. Check which version of Adobe Acrobat/Reader you have on your computer. You can do this by clicking on the “Help” tab, and then “About”.

If Adobe Reader is not installed, you can get the latest version free from <http://get.adobe.com/reader/>.

3. If you have Adobe Acrobat/Reader 10 or a later version, click on the “Comment” link at the right-hand side to view the Comments pane.
4. You can then select any text and mark it up for deletion or replacement, or insert new text as needed. Please note that these will clearly be displayed in the Comments pane and secondary annotation is not needed to draw attention to your corrections. If you need to include new sections of text, it is also possible to add a comment to the proofs. To do this, use the Sticky Note tool in the task bar. Please also see our FAQs here: <http://journalauthors.tandf.co.uk/production/index.asp>.
5. Make sure that you save the file when you close the document before uploading it to CATS using the “Upload File” button on the online correction form. If you have more than one file, please zip them together and then upload the zip file.

If you prefer, you can make your corrections using the CATS online correction form.

Troubleshooting

Acrobat help: <http://helpx.adobe.com/acrobat.html>

Reader help: <http://helpx.adobe.com/reader.html>

Please note that full user guides for earlier versions of these programs are available from the Adobe Help pages by clicking on the link “Previous versions” under the “Help and tutorials” heading from the relevant link above. Commenting functionality is available from Adobe Reader 8.0 onwards and from Adobe Acrobat 7.0 onwards.

Firefox users: Firefox’s inbuilt PDF Viewer is set to the default; please see the following for instructions on how to use this and download the PDF to your hard drive: http://support.mozilla.org/en-US/kb/view-pdf-files-firefox-without-downloading-them#w_using-a-pdf-reader-plugin

Comparative politics and quasi-rational markets

Iain McMenamin^a, Michael Breen^a and Juan Muñoz-Portillo^b

^aSchool of Law and Government, Dublin City University, Dublin, Ireland; ^bThe Department of Politics and International Studies, University of Cambridge, Cambridge, UK

ABSTRACT

This article synthesises psychology, economics and political science theories that can explain market reaction to elections. In order to test the theories, we conduct event studies of the impact of elections on the interest rates on government bonds for 122 elections in 19 countries. The efficient market hypothesis states that rational markets immediately incorporate all information relevant to asset prices. According to psychology, human decision-making is quasi-rational. Market actors should be slow to accept evidence that conflicts with previously held opinions, leading them to under-react to new information. We show that markets under-react to elections and that under-reaction is greater in majoritarian countries because they provide more information to the market. Assuming fully rational markets underestimates the impact of elections and variations in impact across political systems. Most of the literature on market constraint assumes rational markets and may thus be underestimating the extent of market pressure in the aftermath of elections and its distribution across different types of electoral systems. Our results suggest that markets can calculate risk around elections, but are slow to do so, thereby suggesting that the role of uncertainty and the resort to heuristics is relatively minor.

ARTICLE HISTORY

Received 1 April 2015
 Accepted 1 April 2016

AQ1

KEYWORDS

Elections; political economy; democracy; behavioural economics; financial markets

Introduction

Economics assumes rational actors, while psychological research suggests decision-making is quasi-rational. We synthesise both approaches with comparative politics and test their ability to explain market reactions to elections. The efficient market hypothesis (EMH) states that rational markets immediately incorporate all public information relevant to asset prices. The comparative politics of democracy has shown that some political systems are more constrained than others. In majoritarian systems, the executive is relatively free to change policies, but in consensual systems policy change requires the agreement of several veto players. Election results in majoritarian countries convey more information to markets about the value of investments than do elections in consensual countries. Therefore, the less constrained the political system, the greater should be an efficient market's reaction to an election. Psychologists have discovered a large range of 'mindbugs', which hamper rational decision-making. One such limitation is conservatism, defined as the under-weighting of new information, especially when conflicting with previously held opinions. Finance researchers have shown under-reaction to be pervasive in relation to public information about company stocks. If markets are quasi-rational, the incorporation of election results into asset prices should be delayed. Conservatism should also interact with comparative politics. Since majoritarian elections produce more new information than consensual elections, the less constrained the political system the greater should be the under-reaction. This has important implications for several political economy

literatures. For example, the literature on market constraint tends to assume rational markets and, therefore, may have underestimated the extent of market pressure in the aftermath of elections and its distribution across political systems. Recently some have emphasised how markets cannot always calculate risk and must resort to heuristics in situations of uncertainty. Our results suggest this phenomenon is rare. Risk is calculated but more slowly than in efficient market models.

We conduct event studies on 122 elections from 19 countries, focusing on 10-year government bonds, the asset that is most closely associated with national political systems. An event study compares changes in value after the event to a counterfactual derived from the previous performance of the asset in question. The results provide more evidence in support of the quasi-rational theory. Asset prices display under-reaction, as the impact of the election continues to increase after the election. Interest rate changes following majoritarian elections are much greater than those following elections in consensual systems. Moreover, comparative politics can also explain variations in under-reaction. Behavioural economics has hitherto had a substantial, but uneven, impact on political science (Wilson 2011). Quasi-rational markets have important implications for the study of political science, as well as for how politicians, finance professionals, journalists and citizens think about the relationship between elections and financial markets.

The article proceeds conventionally. The next section reviews the relevant literatures from political science, finance and psychology and then presents our theory and hypotheses. Then we explain our methodology with a particular emphasis on event studies. The analysis section evaluates each hypothesis and presents robustness tests. Finally, we conclude and mention some of the academic and practical implications of our work.

Theory

The efficient market hypothesis

The EMH states that markets should immediately and rationally react to new information relevant to asset prices (Fama 1970, Malkiel 2003). This hypothesis rules out psychological biases.¹ Efficient markets 'price in' the probability of relevant developments. If traders are sure that an event will happen, for example that a particular party will win an election, then no impact will be observable around the date of the election itself. The combination of efficient markets and gradual information release makes it difficult to estimate the impact of events. Nonetheless, 'pricing in' is a revision of a probability estimate and this should always be less than one until the event itself has happened. Indeed, if markets really do process information rationally, they should attach probabilities of much less than one to any predictions on which they base their investments. Thus, even if an event is anticipated, some impact should be observable.

The EMH can potentially be criticised on several grounds. It assumes that markets can and do price risk. However, in some situations markets may be so uncertain that they do not know how to relate information to prices and instead resort to heuristics. This distinction between risk and uncertainty can be useful in understanding unusual situations such as the global financial crisis when existing models ceased to be relevant (Knight 1921, Keynes 1948[1921], Nelson and Katzenstein 2014, Paudyn 2014). In cases such as these, market actors are aware of the failure of efficiency. We deal with a more normal situation and one in which investors are unaware of departures from rationality. In other words, we stay in the conventional world of risk, but argue that risk is initially miscalculated.

Conservatism and under-reaction

Psychological experiments have discovered a range of heuristics and biases that hamper rational decision-making.² Behavioural economists have adapted this branch of psychology to explain and predict behaviour that is regarded as anomalous according to the rational choice paradigm. Prospect theory has proved particularly popular with economists, as its predictions accurately deal with

variations in probability and losses and gains in decision-making. A recent and promising suggestion is that the apparently diverse range of biases can be explained by noise in the memory-based link between evidence and decisions (Hilbert 2012). One such bias is conservatism in processing of evidence. Decades of experiments have shown that humans revise probabilities in proportion to calculations from Bayes' theorem, but in insufficient amounts. Here is a classic experiment that demonstrates conservatism:

This bookbag contains 1,000 poker chips. I started out with two such bags, one containing 700 red and 300 blue chips, the other containing 300 red and 700 blue. I flipped a coin to determine which to use. Thus, ... your probability at the moment that this is the predominantly red bookbag is 0.5. Now you sample, randomly, with replacement after each chip. In 12 samples, you get 8 reds and 4 blues ... [W]hat is the probability that this is the predominantly red bag? ... If you are like a typical subject, your estimate fell in the range 0.7 to 0.8 [even though the answer is] 0.97. (Edwards 1980 [1968], 361)

AQ3

The conservatism of responses depends on the 'diagnosticity' of the stimulus. Diagnosticity refers to the extent to which a given item of data can answer the question being posed (Wells and Luus 1990: 511). In other words, it depends on the extent to which the stimulus differs from the benchmark estimate. Since the benchmark estimate is 0.5, the more unequal the distribution of the random sample of chips, the more helpful that particular sample will be in deciding which bag is predominantly red. In the example above, the greater the surplus of reds over blues, the more conservative the reaction. Crucially, at low levels of diagnosticity, that is, when the new information only suggests a subtle change to the original estimate, subjects do not respond conservatively. Instead, they over-react. When the sample of chips suggests a probability of 0.55 that this is the predominantly red bag, which was hardly any change on the starting point of 0.5, respondents over-weighted the new information (Edwards 1980 [1968], 364–5).

Subjects eventually arrive at the right probability, but only after two to five as many observations as required by a fully rational actor (Edwards 1980 [1968], 359). Conservatism has also been demonstrated when reacting to more complex social stimuli (Zuroff 1989: 894, Fiedler 1991). Training reduces, but by no means eliminates, the tendency towards conservatism (Messick and Campos 1972: 336). In the context of financial markets, this delay is termed under-reaction because the initial price change is too small:

Conservatism fits the under-reaction story well. Investors subject to conservatism might disregard the full information content of [a public] announcement because they tend to cling, at least partially, to their prior estimates of earnings rather than update their estimates based on the new information contained in the ... announcement. (Choi and Kim 2001: 1)

In spite of initial considerable controversy, a large literature tends towards the conclusion that financial markets generally under-react to public information on a timescale greater than a day and less than a year (De Bondt and Thaler 1985, Fama 1998, Shefrin 2002, Lasfer *et al.* 2003). Figure 1 depicts the difference between the EMH and under-reaction in relation to a price-relevant event.

Elections are a good test of rational and quasi-rational theories as the results are both public and well publicised. By contrast, much of government formation happens in secret negotiations between parties. Publicity is a condition of the EMH of immediate incorporation of new information. It is also necessary for the analogy to experiments in which subjects receive identical information. Sovereign bonds are the asset most directly associated with government policy. Decisions to borrow and to repay debts are inescapably political (Tomz 2007, Stasavage 2011) and the debt market influences the fates of politicians and regimes (DiGiuseppe and Shea 2015).

AQ4

Comparative politics

In this section, we discuss the uneven influence of the psychological literature on heuristics and biases on political science, in particular noting its relative absence in political science in general

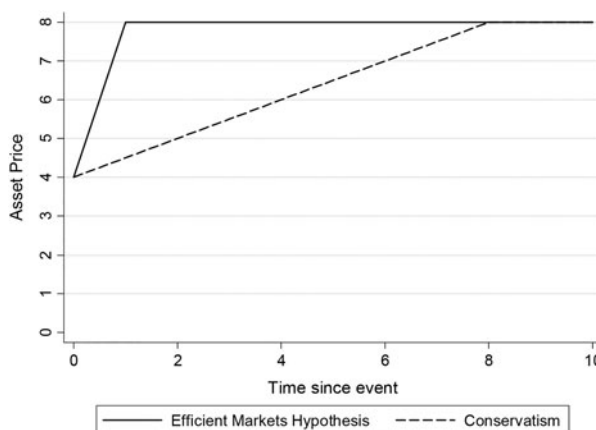


Figure 1. Predictions of the EMH and conservatism.

and comparative democracy in particular. In spite of this lacuna, we argue that there is an appealing fit between comparative politics and psychological biases in decision-making and that it can produce interesting and testable hypotheses. Thus, as well as presenting our hypotheses, we also establish their originality. At our most general, we concentrate on the two specific literatures of the heuristics and biases school from psychology and economics and the comparative democracy literature from politics. Of course, we acknowledge the massive influence of psychology on a whole swathe of topics in political science.

The study of comparative democratic institutions reflects the dominance of new institutionalism over the last four decades. It is famous for its many warring varieties. Sociological, historical (Hall and Taylor 1996) and discursive institutionalists (Hay 2005) have been, often rightly, critical of the rational choice approach for abstracting from the normative and historical contexts that give institutions their meaning and much of their power to structure behaviour. The strength of this critique, of course, varies according to the research problem at hand. We see at least two reasons why these thick, qualitative institutionalisms are less appropriate for studying financial market reactions to elections in different countries. If bond markets were national, they might be embedded in institutional norms and cultures. By contrast, they are international and investors are therefore not always, or even usually, socialised into the culture of the country whose bonds they are trading. Moreover, investors are not politicians, nor are they often political specialists. Their interest in the politics of a specific country tends to be fleeting. Therefore, it is not surprising to see that the EMH has been assumed by almost all studies of financial market reactions to political developments. However, the speed and globalisation of markets do not undermine a behavioural approach. The quick and rare calculations made by markets on the basis of politics make it likely that market participants are likely to resort to heuristics or will not have the time to battle strong psychological biases. Indeed, some interesting recent research suggests that investors group countries together in regional or stereotypical categories that are not justified by financial and economic data (Gray 2013, Brooks *et al.* 2014, Brazys and Hardiman 2015).

However, there does not appear to be much, or even any, research on how psychological biases interact with comparative political institutions. Therefore, it goes without saying that there has been little or no research on how psychological biases might influence financial market reactions to elections conditional on political institutions. In spite of the suitability of behavioural economics to our subject, the absence of an extant literature is not only explained by the appropriateness and dominance of the EMH. The introduction of ideas from psychology to economics was a major challenge to some of the core assumptions of that discipline. Many of the ideas and methods of behavioural economics have found their way into political science. However, this route into political science reflects

the microeconomic basis of much of behavioural economics and the methodology of psychology. Behavioural economists have used psychological insights to reorient game theory and experimental tests of its conclusions, and political scientists have revelled in similar opportunities (Wilson 2011, Duch *et al.* 2014). Indeed, this reflects psychology's long-standing commitment to the interplay between theory and careful experimentation. Behavioural economists have been much keener on leaving the lab. The elite and popular hit *Nudge* (Thaler and Sunstein 2008) exemplifies its profound influence on thinking about public policy. The laboratory is a new and exciting prospect for political scientists, but the insights of the heuristics and biases literature are now joining older psychological inspiration in core political science concerns such as electoral studies (Bendor *et al.* 2011) and political economy (Mosley 2003, Brooks *et al.* 2015). Nevertheless, this set of ideas has yet to engage substantially with the massive literature on comparative democracy.

We follow the fruitful approach of the behavioural economists by beginning with the canonical literature on our topic and deriving new hypotheses by introducing psychological bias where there was previously an efficient market. We mean comparative democracy in a highly specific sense, but one which is perhaps dominant in the literature. We refer to approaches that summarise the differences and similarities between the political institutions of established democracies. This question is studied in two ways: one institution-centred and another actor-centred. The former focuses on important rules such as presidentialism versus parliamentarism (Cheibub *et al.* 2014) and majoritarian versus proportional representation electoral systems (Gallagher and Mitchell 2005). While it can be argued that specific rules or institutions are logically linked to certain incentives or behaviours, political systems are complex, and the interaction of institutions makes it difficult to make clear predictions (Ginsburg 2015: 109). Much of the institutional literature feeds into the actor-centred approach, which argues that the major differences between democracies can be summarised by differences in the number of relevant actors, or more rigorously, the number of veto players (Henisz 2000, Powell 2000, Armingeon 2002, Keefer and Stasavage 2002, Tsebelis 2002, Lijphart 2012). The genesis of Lijphart's classification dates back to his monograph on the Netherlands published in the 1968 (Lijphart 1968), but remains central to political science debates today (Colomer 2006: 224, Ganghof 2010). Its main challenger has been the veto-players theory of Tsebelis (McGann and Latner 2012), which nevertheless shares a concern with counting actors instead of naming institutions and a prediction that the larger the number of actors, the more difficult it is to make policy changes. Lijphart coined the useful distinction between consensual and majoritarian democracies (Lijphart 2012). Systems with many relevant actors are commonly called 'consensual' because decisions typically require a consensus beyond a plurality or a majority and those with few relevant actors are termed 'majoritarian' because a majority can usually take most significant decisions without further bargaining or consultation. The UK, where the prime minister and cabinet traditionally dominated the political system, was the archetype of majoritarianism. By contrast, in consensual Switzerland, the government consists of several parties and the executive must take into account the legislature, as well as the cantons, and citizen referenda.

The veto-players approach of Tsebelis begins with the same intuition that the number of relevant decision-makers is the vital dimension in distinguishing between stable democracies. The notion of a veto player is easier to identify reliably; works well for both presidential and parliamentary systems and allows the application of game theory to policy-making. Indeed, Tsebelis began with variations in policy stability and worked his way backwards to veto players (Tsebelis 2002: 6). Here we use the term consensual to denote a political system with relatively many veto players and majoritarianism to denote a system with relatively few veto players. Research on the advantages and disadvantages of different patterns of democracy initially tended to focus not only on democratic accountability and representation, but also on general socio-economic outcomes such as inequality and economic growth as well as policies in specific sectors (Hall and Soskice 2001, McMenamin 2004, Koss 2011, Szakonyi and Urpelainen 2013). This includes banking as credit-based financial systems have been associated with consensual politics and stock-market-based finance has been associated with majoritarianism (Zysman 1983, Howarth and Quaglia 2015: 459–61).

AQ7

AQ8
AQ9

AQ10

AQ11

Majoritarian elections provide more information than consensual elections in terms of policy-making, the identity of the new government and the speed of government formation. Policy-making in majoritarian countries is dominated by a powerful government, whereas in a consensus system the government is constrained by other actors. Under majoritarianism, the election determines the new government, but in a consensus democracy the coalition government often does not reflect the election result. In a majoritarian country, the identity of the new government is obvious when the election result is known. By contrast, in consensus democracies coalition formation can continue for weeks or months.

These three differences underpin the hypothesis that the less constrained the political system, the greater the impact of the election on prices in a rational market. This analysis is very reminiscent of research on how political institutions can condition accountability and voter behaviour (Powell and Whitten 1993, Anderson 2000, Whitten and Williams 2015). Indeed, the existing literature on financial markets and elections presents arguments about how differences in political institutions can explain variations in uncertainty about, and associated with, market volatility (Hays *et al.* 2003: 209–10, Bernhard and Leblang 2006, Goldbach and Fahrholz 2011, Philips 2014). Earlier research on the impact of partisanship (Herron 2000) has been supplemented by research which shows that institutions mediate the impact of partisan shifts (Bechtel 2009, Campello 2013, Sattler 2013). This is consistent with other strands of political economy research that emphasise the importance of credible commitments by policy-makers (North and Weingast 1989, Hallerberg *et al.* 2009, Saeigh 2009, Breen and McMenemy 2013). This is the also the theoretical basis of the much-debated ‘democratic advantage’ in the sovereign debt market (Biglaiser and Staats 2012, DiGiuseppe and Shea 2015).

We go further and derive a hypothesis from the synthesis of comparative politics and the conservatism bias. We are not aware of any other attempt to do this. Psychological research has demonstrated that ‘as diagnosticity increases, conservatism increases also’ (Edwards 1980 [1968], 364). In other words, the more informative the event, the greater should be the under-reaction. The issue bond markets are trying to diagnose is the extent to which an election will influence the value of the country’s sovereign bond. An election in a majoritarian country is more informative about the value of its government bond than an election in a consensual country. Therefore, the less constrained the political system, the greater the predicted under-reaction. In consensual countries, elections often provide only very indistinct cues about possible changes in public policy and informed observers will know that change is rare and slow in consensus democracies. Indeed, in highly consensual systems, as in experiments with stimuli of low diagnosticity, there should be no under-reaction. Table 1 summarises our hypotheses.

Similarly to our theory, our methodology combines techniques from finance and political science that are described in the next section.

Methodology

We estimate the impact of elections on bond yields using the classic, or finance, event-study methodology (Corrado 2011: 220, Sandler and Sandler 2012: 3). We do not measure simple changes in yields before and after elections. Instead, the essence of this technique is to posit the counterfactual: the yield of the bond if the election had not happened. In event studies, this is known as the normal return. Abnormal return, then, is the difference between the actual yield and the normal return. We establish a normal return by regressing the yield of the bond in question on the yield for US and German bonds (Brazys and Hardiman 2015: 32). These are regarded as the safest and most liquid

Table 1. Hypotheses.

	Finance	Comparative politics
Rational	1. New information incorporated immediately	3. Greater impact in majoritarian countries
Quasi-rational	2. New information incorporated slowly: under-reaction	4. Greater under-reaction in majoritarian countries

bonds and exert a very strong influence over the market for bonds from other countries. Some event studies use more variables to predict the normal return (Bechtel and Schneider 2010). However, Campbell, Lo, and Mackinlay observe that extra factors tend to add little to the model's predictive performance (Campbell *et al.* 1996: 151). Bond yields are non-stationary in that they tend to drift away from the mean over time. In order to ensure that our data are stationary, we use the first difference of the interest rates. So, the estimation equation for each election is

$$\Delta y_t = \alpha + \beta_1 \Delta US_t + \beta_2 \Delta GER_t + u_t. \quad (1)$$

The period for which we regress the bond of interest on its American and German counterparts is called the estimation window. For each election in our data set, the estimation window consists of the period between one month and six months before the election. This amounts to 100 trading days in most cases. We exclude the last month before the election to reduce contamination from the campaign. Our counterfactual needs to reflect a period of normal politics, rather than one of intense campaigning, frequent polling and speculation about the result and its consequences. We then cumulate the abnormal returns day by day to get the cumulative abnormal return (CAR). Comparison of CARs in the days after the election allows us to test the EMH versus the conservatism hypothesis. Following the finance literature, we assume the 'correct' reaction to be that at which the market stabilises, that is, $t + n$. Therefore, we can calculate the percentage under-reaction as

$$\text{Under - reaction}_t = \left(\frac{\text{CAR}_{t+n} - \text{CAR}_t}{\text{CAR}_{t+n}} \right) * 100. \quad (2)$$

We estimate the CAR using daily yields on 10-year benchmark bonds from Datastream (Kuttner and Posen 2010: 360). Benchmark bonds are the latest issue, so there is no problem with time to maturity. Ten-year bonds tend to be the most liquid and, therefore, the quickest to react to new information. Moreover, they reflect the market's view of a government better than short-term interest rates, which are driven by the interest rate policies of central banks. Many studies use credit default swaps. Unfortunately, they are a relatively recent innovation and anyway there is very little variation for rich countries like those we study. For some countries, we lengthen the time series somewhat by using another long-term bond that we can show correlates at over 0.97 with the benchmark bond. Due to constraints on the availability of a time series of benchmark bonds, our sample consists of Austria, Australia, Belgium, Canada, Finland, France, Germany, Ireland, Italy, Japan, the Netherlands, New Zealand, Norway, Portugal, Spain, Sweden, Switzerland and the UK. The earliest election is 1975 (Switzerland) and there are several in 2007. Later elections are excluded due to the absence of ideology measures. There are 12 Australian elections (due to three-year parliamentary terms and early adoption of a benchmark bond) and only 4 for Finland, Italy, Portugal and Spain (late availability of benchmark bonds). Full details are contained in the appendix. We exclude the USA because no other country's bond can predict its interest rate and because the candidate-centred elections in its presidential system are very different from the party-centred legislative election in our other cases. The USA is the only regressor for Germany³ and for two Swiss elections, which predate Germany's benchmark bond. The mean R^2 of the estimation equations is 0.34.

We are not interested in market sentiment in relation to elections, but rather the magnitude and speed of their reaction. Therefore, we use the absolute CAR as our dependent variable. We employ several variables to explain variation in the impact of elections. The first is political constraints, which measures the 'extent to which a change in preferences of any one actor may lead to a change in government policy' (Henisz 2002: 363). Specifically, we use POLCONIII which is restricted to the executive and legislative branches, the control of which is contested in elections. In contrast to the CHECKS variable from the World Bank's Database of Political Institutions, the addition of further veto players provides a diminishing increase in the level of constraints. We hypothesise that the less constrained the political system, the greater is the impact of the election and greater is the under-reaction to the election. However, psychological experiments have shown that this relationship changes at low levels of

AQ14

AQ15

AQ16

diagnosticity, that is, where the new information is not so useful in answering the question at issue. In other words, the effect is non-linear. In order to test for this, we include the square of political constraints, too. To proxy the extent to which the election result is a surprise, we measure the closeness of the election. Since the number of parties varies across our elections, we need a flexible measure of closeness. We use the competitiveness index (Endersby *et al.* 2002: 614–15). Close elections should be associated with greater impacts since the result is less likely to have been anticipated and ‘priced in’. Next we proxy the amount of political change produced by the election. To do so, we measure the change in the ideological composition of the lower house of the legislature, that is, the one to which the government is responsible. Our ideological measure comes from the Comparative Manifesto Project (CMP). Expert surveys have some important advantages as measures of party ideology. However, the CMP has vastly better coverage of our country-election observations. We use RILE (Budge *et al.* 2001: 21), a well-known measure of the left–right position of parties; weight it by the parties’ seat shares and enter changes in this variable in our data set. Since our dependent variable is the absolute CAR and we are not testing for direction, we use the absolute value of ideological change, whether to the right or the left. Finally, there is a dummy for weekend elections because that indicates a rather different informational environment from a weekday election. Investors will have had more time to process the news about the election. Media reports when trading begins will be less prominent, more considered and more accurate than those for weekday elections.

In our main analysis, we do not include economic controls, as there are no announcements in relation to these variables over the event window. To include macroeconomic indicators would be to mix levels of analysis. Normal return already contains the market’s evaluation of available economic and fiscal data. In Appendix 2, we show that the main macroeconomic variables neither predict the absolute CAR, nor substantially change the effect of our political variables. We also considered whether liquidity influenced patterns of under-reaction. The smaller the absolute debt of a country, the less liquid is its government bond. Therefore, where the debt is smaller and more thinly traded, investors may not have the opportunity to immediately take into account new information. This hypothesis is also rejected in the appendix. It is plausible that our political variables do not capture all country-specific effects; so, in Appendix 3, we ran our analyses with dummy variables for countries and Australia as the reference category. While some of the country dummies are significant, our basic results stay the same. Finally, we tested whether the direction of ideological change affected our results. Appendix 4 shows that it did not. Table 2 summarises our dependent and political variables.

Since the dependent variable is an absolute value, we need a model that will predict a minimum of zero. Ordinary least squares (OLS) and OLS with a logged dependent variable are unsuitable for this sort of data (King 1988: 839). We use a Poisson regression, with standard errors clustered by country. Poisson models were originally designed for count data and are common in international relations, where the counting of conflicts is a major research programme (Bremer 1992). It is not essential for a Poisson model to have a dependent variable in the form of a count if robust standard errors are used (Wooldridge 2010: 728). Our data meet the assumptions of the Poisson model. The variance of the dependent variables is less than the mean. A comparison with a negative binomial model suggested no problem with overdispersion. Indeed, the models were virtually indistinguishable. Goodness-of-fit tests also gave us no reason to think that the Poisson model was inappropriate. We study short-term

Table 2. Descriptive statistics.

	Mean	Std. dev.	Min.	Max.
Absolute CAR (day 1)	0.051	0.081	0	0.631
Absolute CAR (day 15)	0.164	0.199	0.0005	0.978
Political constraints	0.487	0.096	0.249	0.718
Closeness	0.194	0.193	0.0006	0.94
Abs. ideological change	1.444	1.307	0.019	6.176
Weekend election	0.7	0.46	0	1

reactions to events that are years apart. Therefore, there is no potential for autocorrelation. The comparative equation for election i on day t is written as follows:

$$|CAR_{it}| = \exp(\alpha + \beta_1 \text{Constraints}_i + \beta_2 \text{Constraints}_i^2 + \beta_3 \text{Closeness}_i + \beta_4 \text{Ideological Change}_i + \beta_5 \text{Weekend}_i + u_{it}). \quad (3)$$

Results

In order to test the EMH against under-reaction, Figure 2 simply plots the evolution of the absolute CAR in the days after the election for the full sample. We present a three-week window because, as will be shown later, the impact of our main independent variable stabilises within this time frame.⁴ The size of the impact grows steeply in the first week; briefly dips at the beginning of the second week, and thereafter continues to mount, albeit more slowly. The under-reaction implied by the data is 69 per cent: the impact on day one is 31 per cent of the impact on day 15. This graph is very reminiscent of many figures from the finance literature on various types of stock market announcements (Bernard and Thomas 1989: 3, 10, 12, 13, Kadiyala and Rau 2004: 374, Spyros *et al.* 2007: 228–9). According to the EMH, there should be an immediate price change followed by price stability. The data clearly favour quasi-rational markets over the EMH.

Model 1 in Table 3 presents results for the day after the election in the whole sample, while Model 2 uses the same independent variables to explain the CAR on day 15. The coefficient on political constraints is negative in both equations, signifying lower impacts in more constrained political systems as predicted by hypothesis three. We can also see preliminary evidence for hypothesis four: the coefficient on political constraints doubles in size across the three trading weeks. This indicates that the difference between the majoritarian and consensual systems grows over time. In other words, markets initially under-reacted to the difference between the political systems. The coefficient on the square of political constraints also increases. As happened in the psychological experiments, the observations with very low 'diagnosticity', those that do not provide much price-relevant information, modify the relationship between political constraints and market reactions. However, since we are testing a quadratic relationship, it is not advisable to interpret the coefficients and associated significance tests. Instead, we derived marginal predictions according to values of political constraints and jointly tested the significance of political constraints and its square. Figure 3 plots the marginal predictions of political constraints for day one in a solid line. As predicted by hypothesis three, and consistent with a substantial literature, the more constrained the political system, the lower the

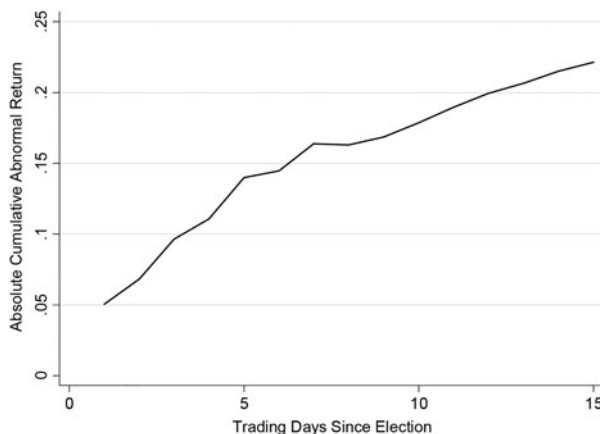


Figure 2. Under-reaction in government bond interest rates after elections.

Table 3. Predicting the impact (absolute CAR) of elections using Poisson regression.

	(1)	(2)	(3)	(4)	(5)	(6)
Day	1	15	1	15	1	15
Sample	All	All	Excluding euro	Excluding euro	Excluding cointegration	Excluding cointegration
Political constraints	−6.368047 (9.057793)	−12.70493 (8.115724)	−8.576438 (9.128136)	−15.29428 (8.725651)+	−7.053033 (10.02614)	−11.31342 (8.306493)
Political constraints squared	3.575616 (9.316015)	9.367309 (8.735514)	6.948496 (9.871246)	13.25537 (9.62682)	4.341634 (10.46194)	8.023945 (9.053475)
Closeness of elections	0.0683664 (0.4945046)	0.0343279 (0.4864681)	0.0354337 (0.5353441)	0.0006101 (0.4497953)	−0.163555 (0.5718714)	−0.190405 (0.4925873)
Ideological change	0.181336 (0.0853064)*	0.1791478 (0.0859494)*	0.1848958 (0.0960001)+	0.1856448 (0.0814111)*	0.1987234 (0.0931497)*	0.1951435 (0.0729726)**
Weekend	−0.4616264 (0.347301)	−0.4335055 (0.2083802)*	−0.4225007 (0.3421203)	−0.4029658 (0.2106706)	−0.4685671 (0.3963055)	−0.3658409 (0.2369167)
Constant	−0.9060004 (2.046471)	1.972568 (1.818886)	−0.5038624 (1.960406)	2.433452 (1.872623)	−0.679202 (2.197392)	1.689478 (1.823668)
Wald χ^2	22.64**	27.76**	29.38**	28.13**	22.13**	28.02**
Observations	122	122	97	97	101	101
Countries	19	19	19	19	19	19

Note: Robust standard errors clustered by country.

*Significant at 5%.

**Significant at 1%.

+Significant at 10%.

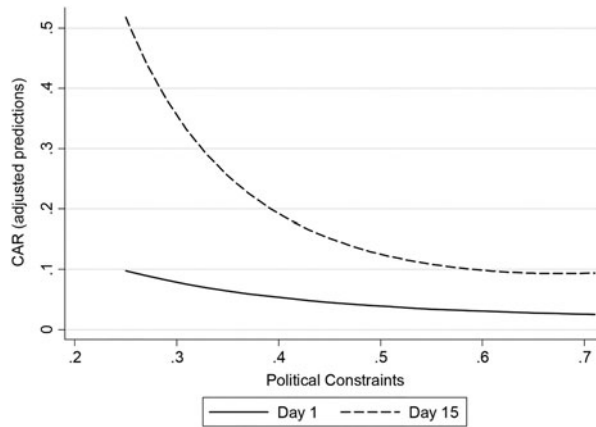


Figure 3. Under-reaction and political constraints. Note: Adjusted predictions for levels of political constraints from models 1 and 2 in Table N, holding all other variables at their mean.

AQ30

impact of the election on the price of the government's bond. However, the relationship is weak and statistically insignificant, so this cannot be counted as evidence for hypothesis three that markets react rationally and immediately to differences in the volume of information produced by elections, according to the number of relevant actors in the political system.

The same relationship is plotted in a broken line for day 15. Now the effect is very strong and significant at 1 per cent. There is also a much stronger curve to the line, with the impact decreasing at higher levels, and actually reversing very slightly for the most constrained observations in our sample. The really interesting aspect of this graph is that the gap between the impact for day 1 and day 15 decreases with political constraints. This is a measure of under-reaction. It is easy to see that there is a much bigger difference between the initial and the eventual reaction for unconstrained political systems. The implied under-reaction for a political constraints score of 0.25 is 42 per cent, while for a score of 0.69 it is 6.7 per cent. For 0.71, the under-reaction is slightly larger at almost 6.9 per cent. Appendix 5 notes the coefficients on political constraints and its square as well as a test for the joint significance of the coefficients for all 15 days. The coefficients are volatile in the first week, with a range of 16 for political constraints and 18 for its square. By contrast, thereafter the coefficients are quite stable. For the succeeding two weeks, the range on political constraints is six and constraints squared has a range of eight. Thus, we interpret the results at the end of this three-week period as the eventual impact of the election. Sometimes event studies are used to calculate long-term impacts. We think the event study is a short-term technique. The longer the event window, the less likely it is that the estimation window establishes a good counterfactual and the more likely it is that events other than the one under investigation drive the CAR.

The constant captures much of the under-reaction as it increases from -0.9 on day 1 to 1.97 on day 15. The other two political variables are also in the predicted direction. The closeness of the election has little impact on day 1. However, the coefficient increases massively on day 2. It is between 18 and 20 times bigger than on the first day for the next seven days and significant at 1 per cent. Thereafter, it gradually decreases and loses statistical significance. Indeed, on day 14, the coefficient turns negative. This suggests that markets initially over-react to close elections. Ideological change displays a more stable pattern than political constraints or closeness. It is always in the predicted direction and the size of the coefficients is relatively stable, except for a dip on days 2 and 3. The mean of 0.17 is not appreciably different from the impact on the first day. The statistical significance of the coefficients does vary considerably: four days at 1 per cent, six days at 5 per cent, one at 10 per cent; and four are insignificant.

AQ19

Columns four to seven present robustness checks to one substantive and one statistical issue. The substantive issue is the euro. Government policy can affect the value of bonds through two principal mechanisms: default risk and inflation risk (Rommerskirchen 2015). Evidently, the advent of the euro fundamentally altered the nature of both in the countries that adopted it. Ambiguity about how the euro had affected default risk featured prominently in the recent crisis. Inflation is more straightforward. Euro member governments now have little or no control over the value of the currency in which their debt is dominated. We removed all Eurozone elections since 1999. The statistical issue is co-integration. The estimation equations for 17 per cent of our elections showed evidence of co-integration,⁵ that is, when two or more non-stationary variables move together over time. Since this is a property of a minority of our observations, it was appropriate to proceed with first-differenced OLS. However, to be sure this issue is not affecting our conclusions, we dropped the co-integrated observations and ran the regressions again. The contrast between day 1 and day 15 in the whole sample is clearly echoed in the equations (models 4–6 of Table 3) that exclude the euro and co-integrated observations. Table 4 computes under-reaction, derived from marginal predictions, for each sample. The sample that removes co-integration is virtually indistinguishable from the whole sample. The sample that excludes the euro predicts noticeably more under-reaction. However, the range across sample values of political constraints is almost the same. These robustness tests do not qualify our conclusion. If anything, they present stronger results. In principle, our independent variables should interact with each other. Empirically, such interactions cause problems with multi-collinearity, but have little impact on the implied impact of political institutions on under-reaction. Therefore, we do not report interaction effects.

We can now summarise the evidence in relation to our hypotheses. Hypothesis one, the EMH, is not a good description of bond market reactions to elections. Instead, the data support hypothesis two: markets under-react to elections, consistent with psychological experiments on conservatism and finance research on equities. Hypothesis three was that markets embrace the comparative politics distinction between elections in consensual and majoritarian countries. Consistent with the broad approach of much of political economy, the bond markets tend to react more strongly to elections in majoritarian countries, but the evidence that they do so immediately is weak. Most interestingly, hypothesis four is also consistent with the evidence. Political institutions explain variations in under-reaction. Markets tend to under-react to elections in majoritarian countries more than they do to elections in more constrained polities.

Conclusions

This article has presented a theoretical synthesis of comparative politics with both the rational-actor model of mainstream economics and the quasi-rational actor of psychology. It has also shown how combinations of comparative politics with psychology and traditional economics, respectively, can be tested against each other in a single empirical framework. The empirical tests produced definite and interesting results. The brute impact of elections on government bonds favours the psychological theory of conservatism over the EMH. In the weeks after an election, markets continue to register an increased reaction to the election result. Rational actors should incorporate new information immediately. Instead, the observed under-reaction is consistent with psychological experiments, which show that humans are slow to update previously held opinions. Our finding that variation in the strength of this psychological bias can be explained by variation in democratic political institutions is a new one. Financial markets are information-rich and a most likely case for rational action and were an

Table 4. Comparison of under-reaction (%) across samples.

Political constraints	Full sample	Excluding euro	Excluding cointegration
0.25	42	47	42
0.69	6.7	12	7
0.71	6.9	13	7

appropriate test for our theory. Nonetheless, it is easy to imagine further applications: does public opinion also under-react more to new information from less constrained political systems?

While we think that our findings are primarily interesting from an academic point of view, they also have interesting implications for politicians, finance professionals, journalists and citizens. The impact of elections on financial markets is usually reported on the day of the results, not weeks afterwards. Therefore, it appears that, acting under the assumption of an immediate reaction, we are substantially underestimating the impact of elections. Moreover, if we are underestimating the reaction of markets to elections, then we are probably also underestimating the extent to which markets constrain and condition political choice (Rommerskirchen 2015, Leerse and Seelkopf 2016). Of course, elections are not the only, or even the most important, political effect on financial markets. Budgets (McMenamin *et al.* 2015) and government formation are two other processes that come to mind. However, the precise timing of public information release about these two is much harder to identify. Moreover, as the principal mechanism of representative democracy, elections have an obvious normative importance.

There is also very strong evidence that financial markets understand comparative politics quite well. In general, they are not plagued by uncertainty and can use basic political information to calculate risk. They do not need to resort to heuristics. Each of our three political variables is consistently in the right direction. Ideological change and the closeness of the election are somewhat weak and/or volatile depending on how many days after the election the analysis is conducted. The most subtle variable, political constraints, is strong and consistent. The idea that policy change is more difficult in constrained political systems is a staple of comparative politics. A clear corollary is that elections in constrained polities should have less impact on asset prices. The synthesis of comparative politics and the EMH receives substantial support. Finally, our models also explain variations in under-reaction. We find that the fewer the political constraints, the greater the under-reaction. This conclusion is consistent with a series of classic psychological experiments and much of the literature on behavioural finance. The literature on comparative democracy has proven its worth to political economists in recent decades (Persson and Tabellini 2005). Our research suggests that it can also be enlightening for psychologists. Of course, this also means that there is an opportunity for political scientists to combine psychological theories and financial econometrics in their own work on patterns of democracy.

Notes

1. The uncertain information hypothesis (Brown *et al.* 1988) generates different predictions from a rationalist perspective. Since it is a less prominent theory and receives no support from our data, we do not elaborate it here.
2. Bounded rationality includes consideration of limited information and time, as well as cognitive limitations (Simon 1955). We study only the latter.
3. We exclude Germany because we cannot have identical dependent and independent variables.
4. There is no theoretical approach to the identification of the event window, so we follow others in adopting an empirical approach (Bølstad and Elhardt 2015: 9).
5. We conducted the Engle and Granger (1987) test for co-integration using the critical values of McKinnon (2010).

Disclosure statement

No potential conflict of interest was reported by the authors.

References

- Anderson, Christopher J. (2000), 'Economic Voting and Political Context: A Comparative Perspective', *Electoral Studies*, 19, pp. 151–70.
- Armington, Klaus (2002), 'The Effects of Negotiation Democracy: A Comparative Analysis', *European Journal of Political Research*, 41 (1), pp. 81–105.
- Baldacci, Emanuele and Kumar, Manmohan S. (2010), *Fiscal Deficits, Public Debt, and Sovereign Bond Yields*, IMF Working Paper WP/10/184.
- Bechtel, Michael (2009), 'The Political Sources of Systemic Investment Risk: Lessons from a Consensus Democracy', *The Journal of Politics*, 71 (2), pp. 661–77.

- Bendor, Jonathan, *et al.* (2011), *A Behavioral Theory of Elections* (Princeton, NJ: Princeton University Press).
- Bernard, Victor L. and Thomas, Jacob K. (1989), 'Post-earnings Announcement Drift: Delayed Price Response or Risk Premium', *Journal of Accounting Research*, 27, pp. 1–36.
- Bernhard, William and Leblang, David (2006), *Democratic Processes and Financial Markets: Pricing Politics* (Cambridge: Cambridge University Press).
- 655 Biglaiser, Glen and Staats, Joseph L. (2012), 'Finding the "Democratic Advantage" in Sovereign Bond Ratings: The Importance of Strong Courts, Property Rights Protection, and the Rule of Law', *International Organization*, 66 (3), pp. 515–35.
- Bølstad, Jørgen and Elhardt, Christoph (2015), 'To Bail Out or Not to Bail Out? Crisis Politics, Credibility, and Default Risk in the Eurozone', *European Union Politics*.
- 660 Brazys, Samuel and Hardiman, Niamh (2015), 'From 'Tiger' to 'PIIGS': Ireland and the Use of Heuristics in Comparative Political Economy', *European Journal of Political Research*, 54, pp. 23–42.
- Breen, Michael and McMenamin, Iain (2013), 'Political Institutions, Credible Commitment, and Sovereign Debt in Advanced Economies', *International Studies Quarterly*, 57 (4), pp. 842–54.
- Bremer, Stuart (1992), 'Dangerous Dyads', *Journal of Conflict Resolution*, 44 (5), pp. 653–85.
- Brooks, Sarah, Cunha, Raphael and Mosley, Layna (2015), 'Categories, Creditworthiness, and Contagion: How Investors' Shortcuts Affect Sovereign Debt Markets', *International Studies Quarterly*, 59 (3), pp. 587–601.
- 665 Brown, Keith C., Harlow, W.V. and Tinic, Seha M. (1988), 'Risk Aversion, Uncertain Information and Market Efficiency', *Journal of Financial Economics*, 22, pp. 355–85.
- Budge, Ian, *et al.* (2001), *Mapping Policy Preferences. Estimates for Parties, Electors, and Governments: 1945–1998* (Oxford: Oxford University Press).
- Campbell, John Y., Lo, Andrew W. and Mackinlay, Craig (1996), *The Econometrics of Financial Markets* (Princeton, NJ: Princeton University Press).
- 670 Campello, Daniela (2013), *Globalization and Democracy: The Politics of Market Discipline in Latin America* (Cambridge: Cambridge University Press).
- Cheibub, José Antonio, Elkins, Zachary and Ginsburg, Tom (2014), 'Beyond Presidentialism and Parliamentarism', *British Journal of Political Science*, 44 (3), pp. 515–44.
- Choi, Wonseok and Kim, Jung-Wook (2001), *Underreaction, Trading Volume, and Post-earnings Announcement Drift*. Available from SSRN: <http://ssrn.com/abstract=287817>
- 675 Colomer, Josep M. (2006), 'Comparative Constitutions', in R.A.W. Rhodes, Sarah Binder and Bert A. Rockman (eds), *The Oxford Handbook of Political Institutions* (Oxford: Oxford University Press), pp. 217–39.
- Corrado, Charles J. (2011), 'Event Studies: A Methodological Review', *Accounting and Finance*, 51 (1), pp. 207–34.
- De Bondt, Werner and Thaler, Richard (1985), 'Does the Stock Market Overreact?', *The Journal of Finance*, 40 (3), pp. 793–805.
- Duch, Raymond, Przepiorka, Wojtek and Stevenson, Randolph (2014), 'Responsibility Attribution for Collective Decision Makers', *American Journal of Political Science*, 59 (2), pp. 372–89.
- 680 Edwards, Ward (1980) [1968], 'Conservatism in Human Information Processing', in Daniel Kahnemann, Paul Slovic and Amos Tversky (eds), *Judgement Under Uncertainty: Heuristics and Biases* (Cambridge: Cambridge University Press), pp. 359–69.
- Endersby, James W., Galatas, Steven E. and Rackaway, Chapman B. (2002), 'Closeness Counts in Canada: Voter Participation in the 1993 and 1997 Federal Elections', *The Journal of Politics*, 64 (2), pp. 610–31.
- Engle, R.F. and Granger, C.W.J. (1987), 'Co-integration and Error Correction: Representation, Estimation and Testing', *Econometrica*, 55, pp. 251–76.
- 685 Fama, E. (1970), 'Efficient Capital Markets: A Review of Theory and Empirical Work', *The Journal of Finance*, 25 (2), pp. 383–417.
- Fama, E. (1998), 'Market Efficiency, Long-term Returns, and Behavioral Finance', *Journal of Financial Economics*, 49, pp. 283–306.
- Fiedler, Klaus (1991), 'The Tricky Nature of Skewed Frequency Tables: An Information Loss Account of Distinctiveness-based Illusory Correlations', *Journal of Personality and Social Psychology*, 60 (1), pp. 24–36.
- 690 Gallagher, Michael and Mitchell, Paul, eds. (2005), *The Politics of Electoral Systems* (Oxford: Oxford University Press).
- Ganghof, Steffen (2010), 'Democratic Inclusiveness: A Reinterpretation of Lijphart's Patterns of Democracy', *British Journal of Political Science*, 40, pp. 679–92.
- Ginsburg, Tom (2015), 'Constitutions as Political Institutions', in Jennifer Gandhi and Rubén Ruiz-Ruino (eds), *The Routledge Handbook of Comparative Political Institutions* (London: Routledge).
- 695 Goldbach, R. and Fahrholz, C. (2011), 'The Euro Area's Common Default Risk: Evidence on the Commission's Impact on European Fiscal Affairs', *European Union Politics*, 12 (4), pp. 507–28.
- Gray, Julia (2013), *The Company States Keep: International Economic Organization and Sovereign Risk in Emerging Markets* (Cambridge: Cambridge University Press).
- Hall, Peter A. and Taylor, Rosemary (1996), 'Political Science and the Three New Institutionalisms', *Political Studies*, 44, pp. 936–57.
- Hallerberg, Mark, Strauch, Rolf Rainer and von Hagen, Juergen (2009), *Fiscal Governance in Europe* (Cambridge: Cambridge University Press).
- 700 Hay, Colin (2005), 'Constructivist Institutionalism', in Rod Rhodes, Sarah Binder and Bert Rockman (eds), *The Oxford Handbook of Political Institutions* (Oxford: Oxford University Press), pp. 56–74.

AQ20



AQ21



- Hays, J., Freeman, J. and Nesseeth, H. (2003), 'Exchange Rate Volatility and Democratization in Emerging Market Countries', *International Studies Quarterly*, 47 (2), pp. 203–28.
- Henisz, Witold (2002), 'The Institutional Environment for Infrastructure Investment', *Industrial and Corporate Change*, 11 (2), pp. 335–89.
- Herron, Michael (2000), 'Estimating the Economic Impact of Political Party Competition in the 1992 British Election', *American Journal of Political Science*, 44 (2), pp. 326–37.
- Hilbert, Martin (2012), 'Towards a Synthesis of Cognitive Biases: How Noisy Information Processes Can Bias Human Decision Making', *Psychological Bulletin*, 138 (2), pp. 211–37.
- Howarth, David and Quaglia, Lucy (2015), 'The Political Economy of the Euro Area's Sovereign Debt Crisis', *Review of International Political Economy*, 22 (3), pp. 457–84.
- Kadiyala, Padmaja and Rau, P. Raghavendra (2004), 'Investor Reaction to Corporate Event Announcements: Under-reaction or Overreaction?', *The Journal of Business*, 77 (2), pp. 357–86.
- Kahneman, Daniel and Tversky, Amos (1979), 'Prospect Theory: An Analysis of Decision Under Risk', *Econometrica*, 7 (2), pp. 263–92.
- Keefer, Philip and Stasavage, David (2002), 'The Limits of Delegation: Veto Players, Central Bank Independence, and the Credibility of Monetary Policy', *American Political Science Review*, 97 (3), pp. 407–23.
- Keynes, John M. (1948) [1921], *A General Treatise on Probability* (New York: Macmillan).
- King, Gary (1988), 'Statistical Models for Political Science Event Counts: Bias in Conventional Procedures and Evidence for the Exponential Poisson Model', *American Journal of Political Science*, 32 (3), pp. 838–63.
- Klossner, S., Becker, M. and Friedmann, R. (2012), 'Modelling and Measuring Intraday Overreaction of Stock Prices', *Journal of Banking and Finance*, 36 (4), pp. 1152–63.
- Knight, Frank (1921), *Risk, Uncertainty, and Profit* (New York: Houghton Mifflin).
- Koss, Michael (2011), *The Politics of Party Funding: State Funding to Political Parties and Party Competition in Western Europe* (Oxford: Oxford University Press).
- Lasfer, M.A., Melnik, A. and Thomas, D.C. (2003), 'Short-term Reactions of Stock Markets in Stressful Circumstances', *Journal of Banking and Finance*, 27, pp. 1959–77.
- Leerse, Hannah and Seerkopf, Laura (2016), 'Room to Manoeuvre: International Financial Markets and the National Tax State', *New Political Economy*, 21 (1), pp. 145–65.
- Lewis, Jeffrey B. and Linzer, Drew A. (2005), 'Estimating Regression Models in Which the Dependent Variable Is Based on Estimates', *Political Analysis*, 13, pp. 345–64.
- Lijphart, Arend (1968), *The Politics of Accommodation: Pluralism and Democracy in the Netherlands* (Berkeley: University of California Press).
- Lijphart, Arend (2012), *Patterns of Democracy: Government Forms and Performance in Thirty-six Democracies* (New Haven, CT: Yale University Press).
- Malkiel, Burton G. (2003), 'The Efficient Market Hypothesis and Its Critics', *Journal of Economic Perspectives*, 17 (1), pp. 59–82.
- McGann, Anthony J. and Latner, Michael (2015), 'The Calculus of Consensus Democracy: Rethinking Patterns of Democracy Without Veto Players', *Comparative Political Studies*, 46 (7), pp. 823–50.
- McKinnon, James G. (2010), *Critical Values for Cointegration Tests*. Working Paper 1227. Economics Department, Queen's University.
- McMenamin, Iain (2004), 'Varieties of Capitalist Democracy: What Difference Does East-Central Europe Make?', *Journal of Public Policy*, 24 (3), pp. 259–74.
- McMenamin, Iain, Breen, Michael and Muñoz-Portillo, Juan (2015), 'Austerity and Credibility in the Eurozone', *European Union Politics*, 16 (1), pp. 45–66.
- Messick, David and Campos, Francis (1972), 'Training and Conservatism in Subjective Probability Revision', *Journal of Experimental Psychology*, 94 (3), pp. 335–37.
- Mosley, Layna (2003), *Global Capital and National Governments* (Cambridge: Cambridge University Press).
- Nelson, Stephen C. and Katzenstein, Peter J. (2014), 'Uncertainty, Risk, and the Financial Crisis of 2008', *International Organization*, 68 (2), pp. 361–92.
- North, Douglass and Weingast, Barry (1989), 'Constitutions and Commitment: The Evolution of Institutions Governing Public Choice in Seventeenth-century England', *Journal of Economic History*, 49 (4), pp. 803–32.
- Paudyn, Bartholomew (2014), *Credit Ratings and Sovereign Debt: The Political Economy of Creditworthiness Through Risk and Uncertainty* (London: Palgrave Macmillan).
- Persson, Torben and Tabellini, Guido (2005), *The Economic Effects of Constitutions* (Cambridge: Massachusetts Institute of Technology Press).
- Philips, Lauren (2014), *Reform and Volatility: The Political Sources of Financial Market Volatility in Brazil and Mexico, 1991–2002* (London: London School of Economics and Political Science).
- Powell, G. Bingham (2000), *Elections as Instruments of Democracy: Majoritarian and Proportional Visions* (New Haven, CT: Yale University Press).
- Powell, G. Bingham and Whitten, Guy (1993), 'A Cross-national Analysis of Economic Voting: Taking Account of Political Context', *American Journal of Political Science*, 37 (2), pp. 391–414.
- Rommerskirchen, Charlotte (Forthcoming), 'Debt and Punishment: Market Discipline in the Eurozone', *New Political Economy*.
- Saiegh, Sebastian (2009), 'Coalition Governments and Sovereign Debt Crises', *Economics and Politics*, 21 (2), pp. 1342–56.

AQ22

AQ23

AQ24

AQ25

AQ26

Sattler, Thomas (2013), 'Do Markets Punish Left Governments?', *Journal of Politics*, 75 (2), pp. 877–902.

Shefrin, Hersh (2002), *Beyond Greed and Fear: Understanding Behavioral Finance and the Psychology of Investing* (Oxford: Oxford University Press).

Simon, Hebert (1955), 'A Behavioral Model of Rational Choice', *The Quarterly Journal of Economics*, 69 (1), pp. 99–118.

Spyrou, Spyros, Kassimatis, Konstantinos and Galariotis, Emiliios (2004), 'Short-term Overreaction, Under-reaction and Efficient Reaction: Evidence from the London Stock Exchange', *Applied Financial Economics*, 17, pp. 221–35.

Stasavage, David (2011), *States of Credit: Size, Power, and the Development of European Politics* (Princeton, NJ: Princeton University Press).

Szakonyi, David and Urpelainen, Johannes (2013), 'Veto Players and the Value of Political Control: A Theory with Evidence from Energy Privatization', *Comparative Political Studies*, 47, pp. 1384–415.

Thaler, Richard H. and Sunstein, Cass R. (2008), *Nudge: Improving Decisions about Health, Wealth, and Happiness* (New Haven, CT: Yale University Press).

Tomz, Michael (2007), *Reputation and International Cooperation: Sovereign Debt Across Three Centuries* (Princeton, NJ: Princeton University Press).

Tsebelis, G. (2002), *Veto Players: How Political Institutions Work* (Princeton, NJ: Princeton University Press).

Wells, Gary L. and Luus, C.A. Elizabeth (1990), 'The Diagnosticity of a Lineup Should Not Be Confused with the Diagnostic Value of Nonlineup Evidence', *Journal of Applied Psychology*, 75 (5), pp. 511–16.

Williams, Laron and Whitten, Guy (2015), 'Don't Stand So Close to Me: Spatial Contagion Effects and Party Competition', *American Journal of Political Science*, 59 (2).

Wilson, Rick (2011), 'The Contribution of Behavioral Economics to Political Science', *Annual Review of Political Science*, 14, pp. 201–23.

Wooldridge, Jeffrey (2010), *Econometric Analysis of Cross Section and Panel Data*, 2nd ed. (Cambridge: MIT Press).

Zuroff, David (1989), 'Judgments of Frequency of Social Stimuli: How Schematic Is Person Memory?', *Journal of Personality and Social Psychology*, 56 (6), pp. 890–98.

Zysman, John (1983), *Governments, Markets, and Growth* (Ithaca, NY: Cornell University Press).

AQ27

AQ28

Appendix 1. Sample composition

Table A1. Elections in the sample.

	No. of elections	First election	Last election
Australia	12	1977	2007
Austria	6	1990	2006
Belgium	6	1987	2007
Canada	8	1980	2006
Denmark	8	1987	2007
Finland	4	1995	2007
France	6	1986	2007
Germany	8	1980	2005
Ireland	6	1987	2007
Italy	4	1992	2006
Japan	6	1990	2005
Netherlands	7	1981	2006
New Zealand	7	1987	2005
Norway	5	1985	2001
Portugal	4	1995	2005
Spain	4	1993	2004
Sweden	6	1988	2006
Switzerland	8	1975	2003
United Kingdom	7	1979	2005

Appendix 2. Robustness of macroeconomic variables

As mentioned earlier, we did not expect macroeconomic variables to influence our results as they do not vary over the event window. Nonetheless, we checked their effect on market reactions to elections. We tested five variables, all of which we sourced from the IMF's most recent set of World Economic Outlook data. They are the fiscal balance as a percentage of GDP, GDP growth, inflation, debt as a percentage of GDP and relative absolute debt. The first four are regarded as the key macroeconomic variables affecting the value of sovereign bonds (Baldacci and Kumar 2010). The last is a bit more unusual. It

records the share of each country in the overall annual debt of the sample countries in constant US dollars. It is used to test the liquidity hypothesis that the less liquid the debt market, the greater the under-reaction. The debt figures are missing for most of our older elections. To minimise the loss of observations, models 1 and 2 of Table A2 add the fiscal balance, GDP growth and inflation to our familiar political models. The macroeconomic variables are never statistically significant. Even though including these factors loses 12 observations, there is little change in the models. Adding either of the debt variables loses another 9 observations (models 4–6). In doing so, the strong increase in the effect of political constraints between day 1 and day 15 disappears. However, this is almost entirely due to the influence of the famous unexpected victory of the conservatives in the 1992 British election. If it is excluded, the familiar pattern of under-reaction to majoritarian elections appears once again.

Table A2. Predicting the impact (absolute CAR) of elections using Poisson regression.

	(1)	(2)	(3)	(4)	(5)	(6)
Day	1	15	1	15	1	15
Political	−6.062	−9.265	−10.224	−9.124 (8.633)	−10.007	−7.055
constraints	(10.077)	(8.099)	(8.097)		(8.021)	(9.385)
Political		constraints2	3.011 (10.341)	5.888 (8.918)	6.875 (8.847)	6.506 (9.834)
	6.319 (8.309)	3.634 (10.069)				
Closeness of	0.037	−0.145 (0.531)	0.116 (0.610)	0.050 (0.444)	0.085 (0.600)	−0.008 (0.485)
elections	(0.654)					
Ideological	0.231	0.190 (0.082)*	0.197 (0.098)*	0.148 (0.083) ⁺	0.214 (0.111) ⁺	0.176 (0.090) ⁺
change	(0.100)*					
Weekend	−0.609	−0.370 (0.213) ⁺	−0.154 (0.479)	−0.214 (0.198)	−0.146 (0.490)	−0.198 (0.240)
	(0.384)					
Fiscal	0.039	−0.057 (0.097)	−4.631 (8.623)	−14.704 (7.726) ⁺	−1.860 (6.421)	−9.443 (7.394)
balance	(0.136)					
GDP growth	−0.109	−0.036 (0.049)	−0.003 (0.102)	0.046 (0.069)	−0.006 (0.116)	0.026 (0.066)
	(0.098)					
Inflation	0.006	0.039 (0.035)	0.020 (0.039)	0.046 (0.033)	0.027 (0.042)	0.047 (0.040)
	(0.038)					
Debt/GDP			−0.002 (0.007)	−0.00 (0.008)		
Debt share					1.943 (1.660)	−0.519 (2.371)
Constant	−0.636	1.109 (1.731)	−0.197 (2.184)	0.827 (1.901)	−0.374 (2.027)	0.091 (2.167)
	(2.267)					
Wald χ^2	50.19**	97.09**	102.81**	39.81**	68.41**	26.44**
Observations	110	110	101	101	101	101
Countries	19	19	19	19	19	19

Note: Robust standard errors clustered by country.

*Significant at 5%.

**Significant at 1%.

⁺Significant at 10%.

Appendix 3. Robustness of country effects

Table A3. Predicting the impact (absolute CAR) of elections using Poisson regression.

	(1)	(2)
Day	1	15
Political constraints	-10.933 (17.556)	-18.978 (15.379)
Political constraints ²	7.749 (21.211)	15.318 (16.980)
Closeness of elections	-0.305 (0.612)	0.577 (0.601)
Ideological change	0.206 (0.113) ⁺	0.243 (0.080)**
Weekend	-0.260 (0.302)	-0.702 (0.258)**
Austria	-1.528 (0.177)**	-1.669 (0.120)**
Belgium	-0.666 (1.656)	-1.103 (1.129)
Canada	-0.703 (0.155)**	-0.594 (0.177)**
Denmark	0.545 (0.411)	0.290 (0.298)
Finland	-0.829 (0.328)*	0.679 (0.268)*
France	-1.299 (0.259)**	0.128 (0.312)
Germany	-0.935 (0.235)**	0.054 (0.136)
Ireland	-1.283 (0.199)	-0.031 (0.215)
Italy	-0.003 (0.234)	-0.735 (0.187)**
Japan	0.045 (0.443)	0.362 (0.330)
Netherlands	-0.888 (0.552)	-0.477 (0.336)
New Zealand	-0.074 (0.197)	-0.110 (0.320)
Norway	-0.430 (0.328)	0.398 (0.262)
Portugal	-0.666 (0.361) ⁺	0.113 (0.218)
Spain	0.452 (0.361)	0.413 (0.272)
Sweden	0.103 (0.214)	0.561 (0.196)**
Switzerland	-1.081 (0.863)	0.846 (0.674)
Constant	0.487 (3.515)	3.496 (3.33)
Wald χ^2	-	-
Observations	122	122
Countries	19	19

Notes: Robust standard errors clustered by country.

It is impossible to compute the Wald statistic because there are too many parameters in the model relative to the number of clusters for standard errors. However, the purpose of this exercise was to see whether the inclusion of country dummies would change the result for political constraints and the coefficients are not affected by this degrees of freedom issue. The UK has been dropped due to collinearity.

*Significant at 5%.

**Significant at 1%.

⁺Significant at 10%.

Appendix 4. Robustness of ideological swing

We reran our usual models, but distinguishing between swings to the left and to the right. This distinction does not change our principal result of under-reaction increasing as political constraint decreases. There is some evidence of heterogeneous ideological effects. The rightward swing is statistically significant and almost three times the size of its leftward equivalent on day 1. However, we find the opposite for day 15. Left swing is significant at 1% and is four times the size of a swing to the right. The equations suggest that markets under-react to leftward swings and over-react to rightward swings. This seems strange but may be worthy of further investigation.

Table A4. Predicting the impact (absolute CAR) of elections using Poisson regression.

	(1)	(2)
Day	1	15
Political constraints	-7.934 (9.443)	-11.111 (7.149)
Political constraints ²	5.073 (9.69)	7.830 (7.887)
Closeness of elections	-0.211 (0.42)	0.326 (0.454)
Left swing	0.092 (0.095)	0.239 (0.075)**
Right swing	0.261 (0.128)*	0.059 (0.098)
Weekend	-0.441 (0.348)	-0.456 (0.206)*
Constant	-0.477 (2.160)	1.564 (1.565)
Wald χ^2	20.55**	37.98**
Observations	122	122
Countries	19	19

Note: Robust standard errors clustered by country.

*Significant at 5%.

**Significant at 1%.

+Significant at 10%.

Appendix 5. Different event windows

Table A5. Political constraints coefficients across event windows.

Days since election	Political constraints	Political constraints squared	Joint significance (χ^2)
1	-6.368047	3.575616	4.03
2	4.361237	-8.039756	10.17**
3	12.6964	-15.71342	9.20*
4	10.55155	-14.01795	10.14**
5	1.554503	-5.551133	9.99**
6	-12.63892	8.843343	17.65**
7	-12.34953	9.373381	12.49**
8	-15.54882	12.79132	16.84**
9	-8.771182	5.966565	10.14**
10	-8.394363	5.788785	12.01**
11	-6.618319	4.436127	8.78*
12	-9.889899	7.584578	14.22**
13	-11.59326	9.106946	16.77**
14	-11.44269	8.210004	20.08**
15	-12.70493	9.367309	22.51**

Notes: Rows 1 and 15 are derived from models 1 and 3 of Table 3. The other rows are from identical models run with different dependent variables, increasing the number of days used to calculate the CAR.