**Entitlements in the crosshairs: How sovereign credit ratings assess the welfare state in advanced industrial countries**

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*Paper for the Biennial Conference of the European Union Studies Association*

*May 9-12th, 2019. Denver, Colorado*

**Abstract:** How do sovereign credit ratings assess the welfare state in advanced market economies (AMEs)? Many worry that market pressures make it hard for AMEs to retain their welfare-arrangements, but the role of ratings in generating such pressures remains unstudied, despite their well-known influence on governments’ funding costs. Analyzing credit rating agencies’ (CRAs) official communications, we postulate that CRAs assign lower ratings to countries with large spending commitments that are difficult to promptly change in response to adverse economic shocks, as a long-term insurance strategy against drastic negative corrections (‘rating-failures’), so they can forgo frequent updates to ratings as new information arises. Our panel-analysis of ratings from Standard and Poor’s, Moody’s and Fitch awarded to 23 AMEs between 1995 and 2014 demonstrates that (famously inflexible) entitlement spending is systemically associated with lower ratings, while discretionary spending on public employment and social services is not. Error-correction models show that penalties on entitlements are longer-term phenomena, substantiating the claim that they represent a long-term insurance strategy. Our results highlight the role of CRAs’ business incentives in generating negative market reactions against entitlements, particularly since our panel-analysis of bond-spreads reveals that spreads are neutral to entitlements once the effect of ratings is controlled for.

**1. Introduction**

The European debt crisis of the last decade called renewed attention to the influence that sovereign credit ratings exercise over countries’ access to funding and – ultimately – their fiscal viability. Strikingly, the crisis highlighted how vulnerable even developed countries are to changes in their credit ratings. Despite the growing significance of ratings in sovereign credit markets in the past three decades and despite the intensifying interest of scholars in ratings it remains remarkably opaque how sovereign ratings assess policies associated with the welfare state. Exploring whether, how and why the welfare state might affect sovereign ratings helps to gauge the extent to which credit ratings constrain policy choices in developed countries. Scholars in international political economy (IPE) have repeatedly warned against the constraining influence of international markets on governments (Strange 1996, Rodrik 2001, Streeck 2014), but the relevance of such concerns for developed countries has been disputed (Mosley 2003), while the role of credit ratings in mediating such constraints has not been explored at all. With developed countries more indebted – and thus more vulnerable to market sentiments – than ever since the Second World War, it is imperative to know whether certain welfare policy choices elicit lower ratings and, as a consequence, higher interest on outstanding debt. Ultimately, this is key to better understanding the extent to which sovereign ratings interfere with the ability of developed countries to preserve their characteristic welfare arrangements.

We contend that, *ceteris paribus,* credit rating agencies (CRAs) assign lower ratings to countries with large public spending commitments that are difficult to change in the short term as an insurance mechanism against large negative corrections in ratings (so-called ‘rating-failures’) while eschewing frequent rating changes to keep ratings stable. We derive this thesis from CRAs’ official communications, which stress the importance of evaluating a country’s debt and deficit position in conjunction with the ‘fiscal flexibility’ afforded by certain spending patterns, to better assess a governments’ ability to adjust its spending in the face of unforeseen adverse economic developments. The documents reveal that the focus on ‘fiscal flexibility’ arises from CRAs’ desire to reliably warn investors against all downside risks while avoiding frequent updates to ratings as new information becomes available. Forgoing updates is important, because investors – whose decisions are bound by public and private regulations based on ratings – prefer ratings to be stable in the short and medium term in order to limit the transaction costs associated with mandatory portfolio changes triggered by changes in ratings. In the three-player oligopolistic rating market, a rating agency that generates too high transaction costs for investors might find its ratings less frequently used by investors to document compliance with regulations. This makes an agency’s ratings less influential and, consequently, less attractive to issuers who pay for ratings. Thus, in order to keep their ratings competitive, CRAs have to refrain from frequent adjustments, while simultaneously avoiding large negative surprises that would undermine their credibility.

Therefore, we postulate that CRAs insure inert ratings against ‘rating failures’ by awarding lower ratings to countries whose public finances they deem more vulnerable to changes in economic conditions, due to their inflexible spending structures. In the context of the welfare state, this implies that *entitlement spending* – the item that is hardest to change in the short term, and which often endogenously increases at times of economic hardship – is likely to elicit lower ratings. At the same time, other types of spending associated with the welfare state that are more flexibly adjustable – such as *government services in-kind* or *public employee compensation –* are less likely to induce rating penalties.

We employ a three-pronged estimation strategy to test these hypotheses and the theory behind them. First, we use a (Tobit) panel-analysis of ratings issued by Fitch, Moody’s and Standard and Poor’s (S&P) to 23 OECD countries from 1995 to 2014, to investigate the effects of entitlements (measured both in terms of spending as a per cent of GDP, and via a series of entitlement-generosity indicators), in-kind social services (such as housing, education and healthcare), and the public sector wage bill on ratings. Our results indicate that rating penalties on the welfare state are selective: while entitlement programs cause sizeable losses in a country’s rating score, *ceteris paribus,* other significant spending items (in-kind social services or the public sector wage bill) are not systemically associated with lower ratings across CRAs.

Second, we explore the extent to which ratings’ approach to entitlements is influenced by investor sentiments about the impact of welfare policies on creditworthiness. We replicate our previous panel analysis of rating scores, but we include spreads as a control variable in this second empirical step. Then, we repeat the same analysis with bond spreads as our dependent variable and ratings as a control variable. Our results suggest that CRAs’ aversion to entitlements is independent of the markets’ approach to the welfare state. The analysis demonstrates that ratings show significant negative association with entitlements even when we control for spreads, but bond spreads themselves are not moved by entitlements once we control for ratings.

Third, we use an error-correction model (ECM) to investigate whether lower ratings for countries with generous entitlements indeed serve as long-term insurance against negative surprises, by testing the hypothesis that entitlements affect ratings in the long-, rather than the short-run. Our ECM results largely confirm this hypothesis. For S&P’s, the penalties on entitlements are exclusively a long-run phenomenon. In the case of Fitch and Moody’s, our ECM results indicate a (statistically significant) short-run ratings penalty for entitlement expansion, but this short-run penalty is dwarfed by the long-run reduction in ratings associated with larger entitlement spending. In fact, the magnitude of short-run penalties is so small that their practical significance is negligible.

Our paper proceeds in three steps. The next section analyzes CRAs’ official communications to underline how important the twin objectives of rating stability and the absence of rating failures are for CRAs’ business viability. It hypothesizes that since entitlements are politically, institutionally and administratively very hard to adjust (especially in the short term), they are most likely to be penalized by CRAs as a way to insure their ratings against large negative surprises while forgoing frequent adjustments to ratings. The empirical section applies the three-pronged estimation strategy described above to (1.) test our hypotheses about the link between fiscal inflexibility and rating penalties, (2.) ascertain whether CRAs’ penalties on entitlements are motivated by factors extraneous to other market actors’ assessment of creditworthiness, and (3.) test whether the negative effect of entitlements on ratings is a long-term phenomenon as suggested by our theory about long-term insurance against rating failures. The conclusion spells out the importance of our findings for policy and core debates in IPE (about market constraints on democratic choice as well as about the relative influence of interests and ideas on the ways in which markets assess risk) and in comparative political economy (about welfare reform).

**2. The welfare state and ratings: an analysis of CRAs’ official communications**

Although there is little doubt that sovereign credit ratings exercise systematic and significant influence on the market price of sovereign debt (Brooks et al. 2004; IMF, 2010; De Haan and Amtenbrink, 2011, Afonso et al 2015), we know little about how CRAs assess policies associated with the welfare state in advanced market economies. Studies of the determinants of ratings explored the importance of macroeconomic conditions (e.g. Cantor and Packer, 1996; Afonso, 2003; Afonso et al, 2007), and broad institutional features of governance, such as regime type, political stability or central bank independence (e.g. Haque et al, 1998; Archer et al, 2007; Beaulieu et al, 2012; Biglaiser and Staats, 2012, Bodea and Hicks 2017), but ratings’ reaction to politically sensitive policy choices, like the ones associated with the welfare state received no attention. Although two studies found evidence of distinct partisan preferences in sovereign ratings, plausibly rooted in policy preferences towards ideologically loaded policy areas, neither study explored such policy preferences (Vaaler et al., 2006; Barta and Johnston 2017). It is has been assumed that CRAs impose a neoliberal policy agenda on governments through their sovereign ratings (Paudyn, 2014), but this claim has not been tested.

Official communications of CRAs offer a useful starting point for exploring how CRAs approach policies associated with the welfare state. CRAs publish and regularly update methodologies and other detailed ancillary documentation to explain concepts, definitions and criteria they use. These documents represent more than window dressing and truly reveal the considerations that influence ratings because of the crucial role they play in establishing the utility of ratings for users, which is a key factor in a credit rating agency’s business success. Although rating agencies are paid by the issuers of debt, it is the users of ratings that agencies’ have to compete for if they want to retain their share in the three-player oligopolistic rating market[[3]](#footnote-3). It has been suggested that CRAs seek to maximize market share by inflating ratings (Becker and Milbourn, 2010), but a CRAs’ long-term market share depends on sustained influence on investment decisions throughout the market because even the most favorable rating is useless for a bond issuer if it does not induce investors to hold the bond. Even though the systemic influence of ratings on investors’ decisions arises from private and public prudential regulations that mandate the use of ratings as indicators of credit risk to govern portfolio composition (Partnoy, 1999, Sinclair 2005, IMF 2010, Abdelal and Blyth 2015), the individual influence of each credit rating agency hinges on its success in wooing portfolio managers to use its ratings (rather than those of the competitors) when implementing public and private financial governance directives. Thus, the primary objective of CRAs’ official communications is to convince portfolio managers that the given agency’s ratings allow for optimal portfolio management. As a result, CRAs take pains to provide evidence that their ratings represent the most accurate measurement of creditworthiness (by clarifying what factors influence ratings, how and why), as well as to address other aspects of ratings unrelated to creditworthiness that bear on the profitability of credit portfolios (like the stability of ratings, discussed below).

While official communications scarcely mention policies associated with the welfare state (such as spending on entitlements, public employment and social services) directly, they provide indication that CRAs are far from indifferent to the spending commitments countries make. Sovereign rating methodologies extensively discuss how economic, monetary and political-institutional structures and current macroeconomic and fiscal performance affect ratings, but they devote practically no attention to specific policies[[4]](#footnote-4) creating the impression that – in contrast to economic, monetary, institutional, macroeconomic and fiscal factors – spending choices matter little to CRAs’ assessment of countries’ creditworthiness. Yet, methodologies of all three agencies consistently emphasize how important *fiscal flexibility[[5]](#footnote-5)* is for a country’s rating. Fiscal flexibility – defined as a country’s ability to “reduce general government expenditures in the near term despite the economic, social or political effect […to provide…] governments with the ‘room to maneuver’ to mitigate the effect of economic downturns or other shocks and to restore its fiscal balance” (S&P 2011, p25) – hinges on governments’ spending commitments and on their political will and institutional-administrative ability to reverse those commitments for the sake of fiscal balance[[6]](#footnote-6). This implies that – despite professing little interest in the substance of policies – CRAs are keenly interested in the flexibility of countries’ spending structures. They are wary of spending items that are hard to adjust in the short term to counteract negative fiscal effects of economic shocks and, therefore, make countries susceptible to large swings in their fiscal performance as economic conditions change. So much so, that they assign lower ratings than what would arise from the assessment of creditworthiness of a country based on all currently available information if they believe that the country would have trouble adjusting to (hypothetical) shocks[[7]](#footnote-7), even when they think such shocks are unlikely[[8]](#footnote-8) (S&P 2010, p2, S&P 2014 p2).

CRAs explain that their aversion to the possibility of large swings in fiscal performance is motivated by their desire to best serve investors who use their ratings[[9]](#footnote-9) (S&P 2010, p2). They emphasize their awareness of the fact that “[m]arket participants have a strong preference for credit ratings that are not only accurate but also stable [..] because rating changes have real consequences – due primarily to ratings based portfolio governance rules and rating triggers – that are costly to reverse” (Moody’s 2006, p2)[[10]](#footnote-10). CRAs also note[[11]](#footnote-11), that limiting transaction costs associated with mandatory portfolio changes is particularly important for investors in the higher rating ranges[[12]](#footnote-12), which are typical of developed countries.

The urge to keep ratings stable explains CRAs’ motivation to assign lower ratings to countries whose spending structure makes them susceptible to large swings in their fiscal performance as economic conditions change. If ratings are to stay stable, CRAs have to be judicious about updating ratings as new information arises, to make sure to only act upon lasting changes. Given that data on economic, monetary, fiscal etc. trends often lags behind actual underlying developments, forgoing rating adjustments when data becomes available exposes ratings to the risk that they fall significantly behind large shifts in economic, monetary and fiscal conditions. If a country’s spending structure is not flexibly adjustable, adverse shifts cause large deterioration of fiscal performance, which requires ratings to be abruptly and drastically adjusted when the full consequences of the changes in conditions reveal themselves. Abrupt multi-notch downgrades (so-called ‘rating failures’; Bhatia 2000 and IMF 2010) impose very sizeable and often conspicuous losses on investors, and undermine the credibility and authority of a CRA’s ratings for the long term. Assigning permanently lower ratings to such countries than their present creditworthiness justifies provides a long-term buffer or insurance mechanism against rating failures.

What the foregoing analysis implies for CRAs’ attitude towards the welfare state is impossible to say in general without considering the impact of different spending items on fiscal flexibility separately. While CRAs’ official communications profess no epistemic or ideological convictions about the substantive effect of welfare policies on creditworthiness, they do make clear that policies associated with the welfare state influence ratings insofar as they affect a country’s fiscal flexibility. *Spending that is hard to adjust in the short term to counteract negative fiscal effects of economic and other shocks is likely to negatively affect ratings, but flexibly adjustable items are unlikely to trigger a rating penalty.* Therefore, we generate separate hypotheses about the impact of each of the three main policy components of the welfare state – entitlements, public employment and social services in kind – by contemplating the political and institutional obstacles that might make it difficult for governments to adjust the associated spending items in the face of adverse circumstances.

*Entitlements* – such as pensions, sickness and unemployment benefits or poverty relief – are quintessentially inflexible spending items, buttressed by a number of legal-institutional and political factors. From a budgeting standpoint, they constitute ‘mandatory’ spending, safeguarded by legal commitments that prevent adjustment by executive fiat (Wildavsky and Caiden 2004). Major changes to these spending items require explicit legislative action, often subject to additional institutional hurdles (such as co-decision by social partners). Beyond their institutional entrenchment, however, the inertia of entitlements primarily arises from the strength of vested interests in these programs. Sometimes referred to as the ‘third rail of politics’, entitlement programs regularly command the support of electoral majorities (Pierson 1996), which make major reforms politically highly risky. Since entitlements are often set up as ‘social insurance’ systems, the attachment of current and future beneficiaries to these programs is further bolstered by a sense of entitlement arising from decades of earmarked contributions paid into the system. Indeed, entitlement regimes have historically proven remarkably resilient (Clayton and Pontusson 1998). Exacerbating the institutional and political inflexibility of entitlements is the fact that entitlement spending is likely to grow in recessions – since economic hard times increase the share of eligible population for entitlements like unemployment benefit or poverty relief and induce others to fall back on income from pension or sickness insurance, or retire prematurely – which amplifies the impact of entitlements on the budget in times of economic shocks. All these aspects point to the conclusion that CRAs are likely highly wary of the potential of entitlement systems to wreak havoc in fiscal performance in adverse economic conditions. Since the level of such spending fluctuates with economic conditions, we expect that CRAs consider not only the level of spending, but also the overall generosity of the entitlement programs when assessing the long-term effect of entitlements on fiscal flexibility. Thus we form two hypotheses about the reactions of ratings to entitlement systems:

* ***Hypothesis 1a****: Ceteris paribus, higher entitlement spending decreases credit ratings.*
* ***Hypothesis 1b:*** *Ceteris paribus, greater entitlement generosity decreases credit ratings.*

*Spending on in-kind social services* is more flexibly adjustable. While many governments in AMEs have a general commitment to housing, child- and elderly care and health services[[13]](#footnote-13), spending on such services is easier to restrain in the near term by reducing the quantity and/or quality of goods and services provided or by implicitly limiting eligibility (e.g. by instituting waiting lists), all of which are possible to do by governmental fiat. Scholars have argued that such retrenchment by stealth also makes retrenchment in this area politically more feasible because it helps policy makers obfuscate and avoid blame. Furthermore, once the reduction in quality and eligibility results in mass opt-outs of public services by the middle classes, the vested interests behind these policy items become too weak to resist further cuts (Clayton and Pontusson 1998). Indeed, social services are the part of the welfare state that has historically been most prone to retrenchment (*ibid*). Finally, the relative ease with which eligibility can be adjusted can also help to counteract the increase of claimants in means-tested services as the result of economic hardships. Therefore, we hypothesize that spending on in-kind social services has no effect on credit ratings.

* ***Hypothesis 2:*** *Ceteris paribus, higher in-kind social spending does not affect credit ratings.*

The degree to which the *public sector wage bill* is flexibly adjustable is more difficult to predict. In principle, as a discretionary spending item, it can be adjusted by executive fiat and it need not be affected by economic cycles. However, multi-year collective bargaining contracts in the public sector may temporarily limit governments’ ability to implement pay cuts until these wage agreements expire. Furthermore, high levels of spending on this item imply a strong constituency behind public employment (often represented by strong public sector unions), which makes it politically more difficult to significantly cut this type of expenditure. Finally, large public sector employment makes it potentially more likely that public employment is used as a buffer in times of economic hardship (see Rodrik, 1998). Therefore, even though the impact of public employment on fiscal flexibility is ambiguous, we hypothesize that CRAs might view public sector pay negatively.

* ***Hypothesis 3:*** *Ceteris paribus, higher spending on public employment decreases credit ratings.*

Finally, since we argued that the motivation for penalties on inflexible spending elements of the welfare state – like entitlements and, possibly, public employment – arises from the urge of CRAs to ensure themselves against rating failures in the long term, we also hypothesize that any significant negative correlation we detect between ratings and spending items that ratings agencies view negatively would arise in the long, rather than the short term.

* ***Hypothesis 4:*** *The correlation between low ratings and inflexible policy items arise in the long, not the short term.*

In sum, we hypothesize that CRAs have a differentiated attitude towards the welfare state: while some elements of the welfare state (entitlements) are very likely to be systematically penalized, others (social services in kind) likely elicit a neutral reaction, whereas the impact of public employment is ambiguous. Underlying these hypotheses is a theory that centers on the business interests and business strategies of CRAs. Our theory contradicts alternative assumptions about the motivations of CRAs in their approach to policies, like the claim that CRAs enforce a neoliberal paradigm on governments (Paudyn, 2014) or that CRAs simply mimic market behavior, allowing ratings to “codify what the market already knows” (Abdelal and Blyth, 2015, p40). Since the observable implications of our theory differ from those flowing from earlier assumptions, testing our hypotheses also provides a test of competing theories. A blanket neoliberal aversion to the welfare state would imply that ratings penalize all types of welfare spending, whereas the ‘market-mimicking’ theory would require that CRAs’ and investors’ reactions to the different policy areas would be aligned. The next section offers an empirical strategy that allows for exploring every aspect of the theoretical framework constructed here and for testing its explanatory capacity relative to other theories.

**3. The impact of the welfare state on sovereign credit ratings: Evidence from the OECD**

We test the above hypotheses and the theory behind them via a panel analysis of sovereign credit ratings issued by S&P, Moody’s and Fitch for 23 OECD countries[[14]](#footnote-14) from 1995-2014. The years since 1995 represent a period when AMEs came to rely more uniformly on international credit markets (Davis and Steil, 2004: pp 5-7) and all three CRAs’ sovereign portfolio included all AMEs.[[15]](#footnote-15) We examine the ratings of each of the Big Three separately to capture any potential variation in their reactions to our policy variables.[[16]](#footnote-16)

We use a three-pronged estimation strategy. First, we execute a Tobit analysis to determine how ratings react to specific policies associated with the welfare state. Then, we complement this analysis with an exploration of the relative importance of welfare policies for ratings and sovereign bond spreads to better understand the extent to which CRAs’ reaction to these policies aligns with general market sentiments towards the welfare state. In the absence of suitable instrumental variables to capture the mutual endogeneity between ratings and bond spreads via simultaneous equations (a problem which we discuss below), we carry out the identical analysis twice, with ratings and bond spreads swapping roles as dependent and explanatory variables. Finally, we employ an error-correction model to determine whether CRAs’ reactions to policy identified in the first step are a short- or long-term phenomenon, in an effort to test our theory that these policies matter because of their impact onlonger*-*term ratings stability and risk of rating failure. (Due to space constraints, we present our main results only visually in Figures 1 and 2, while we exhibit the results of the robustness checks in Table 1 and the results of the error correction models in Table 2 below. Full tables of coefficients can be found in Appendix B-H.)

*3a. How ratings respond to policies associated with the welfare state (Tobit analysis)*

The model:

To investigate the impact of welfare policies on ratings, we use a Tobit model, rather than OLS or ordered probit models common in empirical work examining the economic and political determinants of credit ratings (see Afonso et al, 2007)[[17]](#footnote-17), because of significant clustering at the top end of the rating scale. Notable AAA-clustering amongst AMEs creates “ceiling effects”, which lead to inaccurate predictions of the dependent variable and inaccurate identification of independent variables with OLS and ordered response models (see Huang et al, 2008). Tobit estimators have been found to be particularly effective at limiting bias in data with notable ceiling effects (see Wang et al, 2009), which is why we employ this estimator here. Tobit models estimate the predicted value of y, not y itself (Greene, 2003; 764). While Tobit results can be interpreted like those for OLS, Tobit relies more crucially on the assumptions of homoskedasticity and normality than OLS. When these are violated, beta coefficients will be inconsistent in Tobit (Wooldridge, 2002; 533-534). Consequently, we also estimate our model with OLS as a robustness check.

Our baseline model can be summarized as follows:

= + + + + (Eq. 1)

is the (expected) rating score on sovereign debt bestowed by rating agency j, on country i, in year t. In the event that a country experiences a change in its rating score (via an upgrade or downgrade), its rating score is the (monthly weighted) average within that particular year.[[18]](#footnote-18) The credit rating score is coded on a 17-point ordinal scale (devised by Afonso et al, 2007). Ratings of CCC+ or below receive a coding of 1, and the ordinal value increases by one for each rating notch above CCC+, reaching a maximum value of 17 at AAA (see Table A.1 in Appendix A for the numerical codes for each rating category).

is a vector of spending items for country i at time t. Due to high collinearity, we incorporate each of the policy variables in separate regressions. Data for all spending items stem from the Annual Macroeconomic Database (AMECO) of the European Commission’s Directorate General for Economic and Financial Affairs (2017). We start our analysis with total government spending as a percentage of GDP (full results are presented in Model I in Tables B.1, B.2 and B.3 in Appendix B). We then turn our attention to fiscal components more closely associated with the welfare state. The public wage bill is captured by the AMECO item “compensation of public employees” as a percentage of GDP (Model II in Tables B.1, B.2 and B.3 in Appendix B). Spending on social services in-kind corresponds to the AMECO item “social transfers in kind” as a percentage of GDP and denotes goods and services that are provided to households free of charge or heavily subsidized (Model III in Tables B.1, B.2 and B.3 in Appendix B). Finally, entitlement spending as a percentage of GDP, labeled as “social benefits other than social transfers in kind” in AMECO, consists of cash transfers and social insurance (Model IV in Tables B.1, B.2 and B.3 in Appendix B).

Since entitlement spending levels fluctuate with the state of the economy (unemployment insurance payments and means-tested entitlements tend to be higher in downturns), we also investigate how social insurance generosity, independent of spending levels, impacts ratings scores. Therefore, also includes Scruggs et al’s (2017) entitlement generosity indices, which gauge the generosity of replacement rates, qualification requirements, the retirement age (for pension insurance), benefit duration and coverage rates for three major social insurance programs: pensions, unemployment and sickness insurance. Higher values for these indices indicate higher generosity. Model V in Tables B.1, B.2 and B.3 in Appendix B includes the total social insurance generosity score (which is the combined score of pension, unemployment and sickness insurance generosity), while Models VI, VII and VIII separately examine the generosity of a country’s pension, unemployment and sickness insurance scheme, respectively. Table A.2 in Appendix A provides descriptive statistics for each of these policy variables.

is a vector of political variables that may influence rating scores. Because the credit rating literature has found that ratings are significantly impacted by partisanship, we incorporate executive partisan dummies, measuring whether country i’s executive is ruled by a Social-Democratic, Christian-Democratic or Conservative/Liberal party at year t (Conservative/Liberal executives serve as the excluded baseline category). For multi-party executives, partisanship is distinguished by the party of the prime minister. We opt for a three-way comparison between Christian-Democratic, Social-Democratic and Conservative/Liberal rather than a simple left-right dichotomy as done in previous studies, because in contrast to other right parties, Christian-Democratic parties champion generous, status-preserving social insurance schemes that generate the largest entitlement commitments (see Esping-Andersen, 1990). Indeed, Christian-Democratic executives preside over the most generous social insurance schemes in our sample. We anticipate ratings to be lower for Social Democratic and Christian Democratic governments, than for Conservative/Liberal governments. also includes a series of dummies for government type (whether a government is ruling in majority coalition, minority or single-party majority, the latter of which serves as the baseline category below), and whether a country is experiencing a general election at time t (1 if yes, 0 if no). Government partisanship, type and election data stem from Armingeon et al (2017)[[19]](#footnote-19).

is a vector of fiscal and macroeconomic controls that CRAs declare in their sovereign methodologies to be important in their assessments of creditworthiness. These include a country’s annual net public lending (as a percentage of GDP; positive values indicate fiscal surplus, negative values indicate fiscal deficit), public debt (as a percentage of GDP), the unemployment rate, inflation, (real) GDP growth and the trade balance (as a percentage of GDP). Given high collinearity between net public lending and public debt, we do not include these variables in the same model. Rather, we prioritize net public lending as our fiscal control in Tables B.1-B.3 in Appendix B and demonstrate how the use of debt as the primary fiscal indicator impacts our results in Table 1, which presents our modeling robustness checks. Data for economic controls stems from AMECO (2017) and the OECD (2017).

is a vector of (n-1) country fixed effects, that control for omitted variables that vary across country but are constant over time. Fixed effects help control for (institutional) variables that impact creditworthiness that changed very little over time within our sample countries between 1995 and 2014 (for example, the degree of checks and balances, legal traditions that impact property rights, central bank independence, restrictions on the capital account, etc.). Fixed effects also control for longstanding membership in international organizations (for example, none of the countries within our sample acceded to the European Union between 1995 and 2014, meaning that fixed effects will perfectly correlate with EU membership). Fixed effects can also partially control for membership in the Economic and Monetary Union (EMU), for which 12 countries in our sample display variation in membership between 1995 and 2014. When we control for EMU separately from fixed effects, our results in Tables B.1-B.3 in Appendix B do not change.

is a vector of (n-1) time dummies that control for omitted time shocks (and hence would account for years with high default risk contagion across the developed world, such as those in the late 2000s). is a vector of (n-1) path dependency dummies that control for whether credit rating agency j imposed a downgrade (1 if yes, 0 if no), worsened outlook (1 if yes, 0 if no), improved outlook (1 if yes, 0 if no), or upgrade (1 if yes, 0 if no) on country i *in the last three years*. We opt for ratings changes dummies to model path dependency rather than the prior year’s rating score, given the latter’s strong correlation with current ratings scores.[[20]](#footnote-21) Finally, in order to rectify biases in our errors that are driven by heteroskedasticity, we incorporate observed information matrix (OIM) robust standard errors into all of our Tobit models.

Results:

Figure 1 summarizes the average predicted effects of our eight policy variables for each of the Big Three rating agencies. The results are *standardized* in the figure to make it possible to compare the magnitude of effects on ratings across our eight policy variables[[21]](#footnote-22). Predicted effects should be read as the rating score change, in notches, that results from a one *standard deviation* increase in the respective policy variable. The dots indicate the predicted effect, while the horizontal lines are the 90% confidence intervals of those predictions. Confidence intervals that touch/straddle zero (vertical black line) indicate an insignificant effect.

**Figure 1: Predicted Effect of Policy Variables on Rating Scores (S&P, Moody’s and Fitch)**



Predicted effects based on output from Tables B.1-B.3 in Appendix B (policy variables are standardized). SD indicates standard deviation.

Although higher public spending in general is associated with lower ratings scores for both S&P and Fitch, (there is no systematic impact on ratings scores from Moody’s), the results for the sub-categories of public spending highlight that this penalty arises from aversion to certain, but not all, spending items. Public sector wage bills demonstrate no relationship with rating scores for Moody’s and Fitch, while higher spending on public employees is associated with significantly *higher* rating scores from S&P. This result may be indicative of the fact that countries with the largest public employment shares in the OECD (the Scandinavian states) are also those with the cleanest governments and most efficient public bureaucracies (see Rothstein and Uslaner, 2005, for a discussion of the link between higher public sector employment rates and good governance). Likewise, CRAs do not appear to be systematically critical of higher levels of expenditure on social services in-kind. Though higher spending on social services in-kind is associated with lower ratings scores for Fitch, it has no impact on ratings scores for S&P, and is associated with higher ratings scores for Moody’s.

In contrast, higher levels of spending on entitlements are consistently and significantly associated with lower ratings scores for each of the Big Three. A one standard deviation rise in benefits spending, is associated with a 1.4 notch credit rating drop for S&P, a 1.83 notch drop for Fitch, and a 2 notch drop (i.e. from AA+ to AA-, see Figure 1) for Moody’s. This aversion to entitlements is also present when examining social insurance generosity rather than the amount spent on benefits. Higher levels of social insurance generosity (i.e. systems with higher replacement rates, greater benefits duration, smaller waiting periods to receive benefits, etc.) are associated with significantly lower ratings scores from each of the Big Three, although the magnitude of the drop in ratings score is less dramatic than it is for entitlement spending. A one standard deviation increase in total social insurance generosity is associated with a 0.79, 0.54, and 0.93 notch drop in credit ratings from S&P, Moody’s and Fitch, respectively (see Figure 1). Breaking down social insurance generosity by program, each of the Big Three appear to be particularly critical of generous unemployment and sickness insurance schemes – higher levels of generosity for these two programs are associated with lower ratings scores from S&P, Moody’s and Fitch. Pension insurance generosity, however, is significantly associated with lower ratings for Fitch only.

Notably, our findings about the negative impact of generous entitlements on ratings are bolstered by the effect of partisanship on ratings in our results (see Tables B.1-B.3 in Appendix B). In line with previous literature, our models show that left governments are significantly more likely to be given lower ratings scores than right-wing executives (these results are significant in at least six, or in the case of Fitch all, of the eight models shown in Appendix B for each CRA), although the scale of this discrimination never reaches a full letter rating (beta coefficients for Social-Democratic executives are consistently under one). Christian-Democratic executives also receive significantly lower rating scores than Conservative/Liberal executives, and the magnitude of the ratings penalty for Christian-Democratic governments (in some models exceeding a full ratings notch) is even higher than it is for Social-Democrats.[[22]](#footnote-23) These results are significant in six of the eight models for S&P and Fitch, and seven of the eight models for Moody’s (see Appendix B).

Robustness checks:

We conduct a series of robustness checks to determine if our policy results are consistent under three alternative model specifications. First, since we had to exclude debt as a fiscal control due to collinearity with net public lending, we re-estimated our models using debt rather than annual net public lending as a fiscal control. Second, given that Tobit relies more crucially on assumptions about homoskedasticity and normality than OLS, we check the results of our Tobit model by estimating it with OLS. We employ panel corrected standard errors and a panel-specific first order auto-regressive term to rectify bias in the standard errors that stem from heteroskedasticity and first order serial correlation (see Beck and Katz, 1995). In our third alternative specification, we exclude the years of the European debt crisis (2009-2014) to ascertain that our results are not driven exclusively by atypical years of turmoil. Table 1 presents the beta coefficients, and their significance, for our policy variables under different model specifications. (Appendices C, D and E have the full results, including those for government partisanship, for S&P, Moody’s and Fitch, respectively). To provide an overall assessment of general robustness, we report the number of alternative model specifications (out of a total of three) under which our original results continue to hold in the final column of Table 1.

Table 1 shows that the significant relationship between higher levels of entitlement spending and lower ratings scores is very robust to alternative model specifications from all three CRAs. For S&P and Moody’s, higher entitlement *spending* remains significantly correlated with lower ratings scores for two of the three alternative specifications, only losing significance once the years of the European debt crisis are excluded from the sample. Fitch’s entitlement spending results survive all three robustness checks. Our results for entitlement *generosity* are slightly less robust. Total social insurance generosity retains its sign and significance for one, none and all three of the alternative specifications for S&P, Moody’s and Fitch, respectively. In contrast, unemployment insurance generosity retains its sign and significance for all three robustness checks for S&P’s and Fitch, and two of the alternative specifications for Moody’s. Sickness insurance generosity’s robustness is weakest, losing significance for all three robustness checks for Moody’s and Fitch, and for two of the three alternative model specifications for S&P’s. Finally, Fitch’s aversion to higher pension generosity survives all three robustness checks.

Our results for general government expenditure’s (negative) impact on ratings are robust for Fitch but not S&P (in Moody’s original ratings scores models, government expenditure lacked significance). Higher government spending is associated with *higher* ratings when debt is used as the primary fiscal control for S&P’s, while it loses significance if an OLS estimator is used, or if we exclude the years of the European debt crisis. In contrast, government expenditure’s correlation with lower ratings scores survives two of the three robustness checks for Fitch. Higher public sector employment compensation remains significantly associated with higher ratings scores from S&P in all of the alternative model specifications, while Moody’s approval of higher levels of social services in-kind (associated with higher ratings scores from this CRA) survives two of the three robustness checks (spending on services in-kind are associated with lower ratings from Moody’s in the years preceding the European debt crisis). Fitch’s aversion to higher levels of spending on social services-in kind is weakly robust – in only one of the three alternative model specifications are higher levels of spending associated with significantly lower ratings scores

**Table 1: Robustness checks for alternative model specifications (beta coefficients of relevant results shown)**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | **Original Model** | **Debt as fiscal control** | **OLS estimator** | **Pre-debt crisis years (1995-2008)** | **General robustness (of original results)** |
| **STANDARD AND POOR'S** |  |  |  |  |  |
| Government spending | -0.148\*\*\* | 0.072\*\*\* | -0.022 | 0.017 | 0 out of 3 |
| Public employee compensation | 0.469\*\*\* | 0.508\*\*\* | 0.161\* | 0.437\*\* | 3 out of 3 |
| Social services in-kind spending | Non-significant |  |  |  |  |
| Entitlements Spending | -0.391\*\*\* | -0.232\*\* | -0.165\*\*\* | -0.109 | 2 out of 3 |
| Social insurance generosity | -0.124\*\* | -0.062 | -0.060\*\*\* | -0.015 | 1 out of 3 |
| Pension insurance generosity | Non-significant |  |  |  |  |
| Unemployment insurance generosity | -0.767\*\*\* | -0.518\*\*\* | -0.269\*\*\* | -0.405\*\*\* | 3 out of 3 |
| Sickness insurance generosity | -0.298\*\* | -0.057 | -0.139\*\* | 0.025 | 1 out of 3 |
| **MOODY'S** |  |  |  |  |  |
| Government spending | Non-significant |  |  |  |  |
| Public employee compensation | Non-significant |  |  |  |  |
| Social services in-kind spending | 0.307\*\* | 0.396\*\*\* | 0.228\*\*\* | -0.334\*\* | 2 out of 3 |
| Entitlement Spending | -0.554\*\*\* | -0.368\*\*\* | -0.194\*\*\* | -0.129 | 2 out of 3 |
| Social insurance generosity | -0.085\*\* | -0.047 | -0.007 | -0.061 | 0 out of 3 |
| Pension insurance generosity | Non-significant |  |  |  |  |
| Unemployment insurance generosity | -0.532\*\*\* | -0.361\*\*\* | -0.192\*\*\* | -0.147 | 2 out of 3 |
| Sickness insurance generosity | -0.318\*\* | -0.121 | 0.015 | 0.014 | 0 out of 3 |
| **FITCH** |  |  |  |  |  |
| Government spending | -0.235\*\*\* | -0.012 | -0.069\*\*\* | -0.205\*\*\* | 2 out of 3 |
| Public employee compensation | Non-significant |  |  |  |  |
| Social services in-kind spending | -0.310\* | 0.058 | 0.114 | -1.176\*\*\* | 1 out of 3 |
| Entitlement Spending | -0.509\*\*\* | -0.284\*\*\* | -0.213\*\*\* | -0.361\*\*\* | 3 out of 3 |
| Social insurance generosity | -0.146\*\*\* | -0.094\*\* | -0.063\*\* | -0.130\*\* | 3 out of 3 |
| Pension insurance generosity | -0.231\*\* | -0.251\*\*\* | -0.106\*\* | -0.284\*\* | 3 out of 3 |
| Unemployment insurance generosity | -0.677\*\*\* | -0.357\*\*\* | -0.199\*\*\* | -0.372\*\*\* | 3 out of 3 |
| Sickness insurance generosity | -0.378\*\*\* | -0.051 | -0.103 | -0.163 | 0 out of 3 |

Alternative model specifications based upon those in Tables B.1-B.3. \*, \*\* and \*\*\* indicate significance on a 90%, 95% and 99% confidence interval. General robustness indicates the number of alternative model specifications for which the original results remain significant.

*3b. Penalties on entitlement in ratings versus sovereign bond spreads (Auxiliary analysis)*

The analysis in the previous section highlighted the robust (negative) connection between ratings and entitlements, and the neutral (or in the case of S&P and public employment spending positive) relationship between other policies associated with the welfare state. While this pattern of correlation is consistent with our theory about CRAs’ motivation to penalize some, but not all, major public spending items in an effort to stabilize its ratings and avoid large negative surprises in the longer term, it does not rule out other motivations. In this section we explore the possibility that CRAs penalize certain policies associated with the welfare state because investors themselves view entitlements as detrimental to creditworthiness. Just as ratings affect bond spreads, bond spreads are likely to affect ratings, not only because they influence the affordability of debt, but also because they reflect general market sentiments about a country’s creditworthiness, allowing CRAs to align their opinions with those of the markets.

Ideally, a simultaneous equations model would be most suitable to test whether entitlements demonstrate similar effects on ratings scores and bond spreads, while controlling for the endogeneity of both variables. However, in the case of ratings for developed countries, it is hard to identify instrumental variables that simultaneous equation models require, given the strong degree of path dependency in ratings for this group of countries. In the empirical literature on ratings scores, lagged levels of the dependent and independent variables are commonly used as instruments (see Block and Vaaler, 2004, who use this approach for developing countries). However, the use of lagged ratings scores as instruments for developed countries is problematic because ratings for these countries are subject to low variability. Hence stronger levels of path dependency in ratings scores would compromise the exclusion restriction requirement for instrument selection.

As a second-best option, we run two identical auxiliary regressions. In the first regression, we re-estimate our (Eq. 1) model of the determinants of rating scores above (using the same Tobit estimator), but add government bond spreads (relative to the 10 year US Treasury Bill[[23]](#footnote-24)) as a control variable to examine whether the impact of our policy variables persists even after controlling markets’ opinion of creditworthiness (the full tables of these results for each CRA are presented in Appendix F). In the second regression, we use bond spreads as our dependent variable, while controlling for ratings, to assess whether bond spreads react similarly to policies associated with the welfares state as ratings do (for our bond spreads models, we use OLS, with panel corrected standard errors and a panel specific first order auto-regressive term, rather than Tobit because our spreads variable possesses a normal distribution and does not suffer from top- or bottom-end censoring; full table of results are provided in Appendix G).

The independent variables in our auxiliary rating-score models are identical to those in Eq. 1, except for the addition of bond spreads as a control variable. We also use the same independent variables from Eq 1 in our bond spreads models, with one exception: rather than incorporating the four rating-change path dependency dummies, we incorporate the average rating score of a country in year t across the Big Three as an independent variable, enabling us to determine how credit ratings themselves impact bond spreads. Data on nominal interest rates for long-term treasury securities stems from the OECD (2017). Due to space constraints, we only present our policy variable results for the re-specified rating-score models for each credit rating agency and for the bond spreads models visually[[24]](#footnote-25) in Figure 2. As in Figure 1, we standardize the policy variables for all models, which enable us to compare the magnitude of their effects on ratings for each CRA as well as on bond spreads (results in Appendix F and G are not standardized).

**Figure 2: The Predicted Effect of Policy Variables on Ratings (controlling for spreads) and Bond Spreads (controlling for ratings)**

****

Predicted effects based on output from Appendices F and G (policy variables are standardized). SD indicates standard deviation. Dots indicate the predicted effect, while the lines are the 90% confidence intervals of those predictions. Confidence intervals that touch/straddle zero (vertical black line) indicate an insignificant effect.

As can be seen by comparing the policy variable results for each CRA in Figure 2 to those in Figure 1, only two policy variables lose their significance when bond spreads are controlled for: in-kind social services spending loses significance for Moody’s ratings (originally, it demonstrated a significant positive effect on ratings for this agency) as does pension generosity’s (negative) impact on Fitch’s rating scores. All other results – including those for entitlement spending, social insurance generosity, and unemployment and sickness insurance generosity – *remain significant even after controlling for bond spreads.* Thisimplies that ratings assign systematic penalties to entitlements independently of other, market-based, indicators of sovereign creditworthiness, which in turn suggests that CRAs incorporate considerations extraneous to factors that guide investors’ assessment of sovereign risk. In contrast, *bond spreads do not display a systematic response to policies when credit ratings are controlled for*. After controlling for rating scores, spreads are not significantly affected by most types of government spending, except by public sector pay, which significantly increases spreads, indicating higher perceived credit risk. The same spending item either had no impact on credit ratings (for Moody’s and Fitch), or it was associated with better creditworthiness (for S&P). Policy domains that ratings are systematically negatively associated with (entitlements and social insurance generosity) do not *directly* move bond spreads. At the same time, our analysis of bond spreads also shows – reinforcing earlier evidence – a persistently significant negative correlation with sovereign ratings. A one notch drop in a country’s credit rating is associated with a rise of 57.4 to 94.2 basis points in the country’s spreads (see Appendix G), suggesting that entitlements can *indirectly* lead to higher interest rates *through their negative effect on ratings*.

*3.c Short- and long-run effects of entitlement spending on ratings (Error-correction model)*

While our results above suggest that ratings penalize entitlements for reasons that are at least partially unrelated to the factors influencing investors’ assessment of sovereign risk, they are insufficient to evaluate our theory that CRAs are wary of entitlements because they represent higher risk of negative fiscal surprises if CRAs keep ratings steady. If aversion to entitlements had to do with the longer-term risk of negative surprises, we would expect that the penalties would largely be revealed in the long-run rather than short-run. Therefore, we explore whether entitlements exercise their impact on ratings predominantly in the short or the longer run using an error correction model (ECM)

Error correction models rest upon three primary assumptions: a dependent and set of independent variables are co-integrated[[25]](#footnote-26); *first-differences* of the dependent and (non-dummy based) independent variables are stationary[[26]](#footnote-27); and the dependent variable and (a set of) independent variables have a long-run (equilibrium) relationship that can be upset by short-run disturbances (Keele and De Boef, 2004; Box-Steffensmeier et al, 2014). In an ECM based upon a first-order auto-regressive distributive lag model, the dependent variable is first-differenced, and the independent variables (with the exception of dummy variables), are included “twice” in the model – once as a first-difference (which reflects an independent variable’s short run effect on ratings changes) and once as the lagged level (which along with the beta coefficient on the error correction, reflects an independent variable’s long-run effect on ratings).

Our baseline ECM is as follows:

= (Eq. 2)

is the first difference of country i’s credit rating, bestowed by rating agency j in year t. the lagged credit rating score for country i, bestowed by credit rating agency j, is the error correction, the process by which our independent and dependent variables move back to equilibrium. In order for an error-correction model to be justifiable (i.e. to have a long-run adjustment process back to equilibrium), has to be significant, and between -1 and 0. is a vector of the first differences in our entitlement policy variables and other economic controls (net public lending, unemployment, inflation, real GDP growth and the trade balance), and consequently measures the *short-run* impact of these variables on a country’s credit rating. is a vector of the lagged levels of our entitlement variables and other economic controls, and hence reflects the long-run effect of these variables on ratings. However, the total long run effect of these variables is not only determined by , but also the beta on the error correction (); the total long run effect of our entitlement policy variables can be computed by the negative ratio of to (Vlandas, 2018: 539). Because the long-run effect of the policy and economic variables is composed of two beta coefficients, so too will its standard error, which we compute with the “nlcom” command in STATA. In the event that the error-correction is non-significant, there is no viable long-run effect (because there is no long-run adjustment). The remaining vectors of controls – , and – are the political controls, country fixed effects and time effects, respectively, used in Equation 1 (because all of our political variables are dummies, we do not take their first differences). Table 2 presents our ECM results for our entitlement variables for each of the Big Three (just like in our Tobit analysis, we include these variables in separate models to avoid multicollinearity). Due to space constraints, we present only the results for the short run effects and long run effects of our (entitlement) policy variables (the full table of results can be found in Appendix H).

**Table 2: The short and long-run effects of entitlements on credit ratings**

|  |  |  |
| --- | --- | --- |
|  | **Short-Run effect** | **Long-run effect** |
| **STANDARD AND POOR'S** |  |  |
| Social Benefits Spending | -0.062 | -0.425\*\* |
| Social insurance generosity | -0.037 | -0.306\*\* |
| Pension insurance generosity | -0.052 | -0.712\* |
| Unemployment insurance generosity | -0.046 | No viable long run effect |
| Sickness insurance generosity | -0.039 | No viable long run effect |
| **MOODY'S** |  |  |
| Social Benefits Spending | -0.101\*\* | -0.461\*\*\* |
| Social insurance generosity | -0.080\*\*\* | -0.119\*\* |
| Pension insurance generosity | 0.063 | -0.194 |
| Unemployment insurance generosity | -0.135\* | No viable long run effect |
| Sickness insurance generosity | -0.185\*\* | No viable long run effect |
| **FITCH** |  |  |
| Social Benefits Spending | -0.065\* | -0.633\*\*\* |
| Social insurance generosity | -0.006 | -0.129\* |
| Pension insurance generosity | -0.01 | -0.371\*\*\* |
| Unemployment insurance generosity | 0.006 | -0.965\*\* |
| Sickness insurance generosity | -0.125 | -1.205\*\*\* |

Results from Tables H.1-H.3. \*, \*\* and \*\*\* indicate significance on a 90%, 95% and 99% confidence interval. Long-run effects are computed by the (negative) ratio of the beta coefficient on the lagged level of the entitlement variable and the beta coefficient on the error correction. No viable long-run effect indicates that the beta coefficient on the error correction term is non-significant

Most of our models had significant error correction terms between -1 and 0 (except for the short and long run effects of unemployment insurance generosity and sickness insurance generosity in S&P’s and Moody’s case) justifying the use of the ECM estimator and pointing to the presence of a significant long-run adjustment process back to equilibrium (see Appendix H). In the case of S&P, the impact of entitlement spending and generosity on ratings is exclusively a long-run phenomenon (the beta coefficients on the short-run first-difference of the entitlement variables are non-significant, whereas all the long-run beta coefficients are significant). *Ceteris paribus*, an increase in entitlement spending by 2.35 percentage points (of GDP) leads to a full notch lower ratings score in the long run (this can be computed by dividing 1 by the long-run beta coefficient on social benefits spending for S&P’s in Table 2). While pension generosity was non-significant in S&P’s original Tobit models, the ECM also demonstrates a negative long-run effect. In the case of Fitch, the impact of social insurance, pension, unemployment insurance and sickness insurance generosity on ratings also arises only in the long run. While Fitch’s ratings are also significantly impacted by rises in entitlement spending in the short-run, this effect is comparatively small relative to the long run effect. In the short run, a country’s entitlement spending would have to increase by over 15 percentage points (of GDP) in one year (an increase of this magnitude is not present within our sample) in order to elicit an immediate one-notch drop in their credit rating from Fitch. In contrast, a mere 1.6 percentage point increase in social benefits spending elicits a one-notch drop in a country’s credit rating from Fitch in the long run. Moody’s results indicate that increases in entitlement spending and social insurance generosity decrease a country’s credit rating in the short and long-run. (Pension generosity does not move ratings from Moody’s in the short or long run). However, just like in the case of Fitch, the short-run effects of entitlement spending on ratings are dwarfed by the long-run effects. Entitlement spending would need to rise by nearly 10 percentage points (of GDP) to trigger a short-run one-notch drop in Moody’s credit ratings. In contrast, an entitlement spending rise by as little as 2.2 percentage points of GDP elicits a one-notch ratings drop in the long-run.

In sum, our ECM results confirm our expectations that aversion to entitlements is a long-term phenomenon. This finding is consistent with our theory that credit rating agencies assign lower ratings to governments with generous entitlement systems as a long term insurance mechanism against large negative rating corrections, in case spending structures cannot swiftly adjust to unforeseeable economic shocks. This insurance mechanism enables CRAs to forgo frequent adjustments to ratings as new information arises, which in turn helps them keep ratings stable, and hence attractive to use for bond investors.

**4. Discussion and conclusion**

Although our analysis reveals minor variation among CRAs’ approaches to some policies associated with the welfare state, our results show that all three of the Big Three credit rating agencies consistently penalize entitlements. A one-standard-deviation rise in entitlement spending is associated with a 1.4 notch credit rating drop for S&P, a 1.83 notch drop for Fitch, and a 2 notch drop for Moody’s. This distaste for entitlements is also present when examining social insurance generosity rather than the amount spent on benefits. These penalties are significant not only in the statistical, but also in the practical sense. Given that a one-notch decrease in ratings leads to roughly a 57-94 basis point increase in spreads (see Appendix G), the indirect effect of a one-standard-deviation increase in entitlement spending on spreads via ratings can range from 80 to up to 188 basis points. These results confirm that some of the politically most sensitive (welfare-state) decisions of democratically elected governments incur sizable pecuniary penalties from market actors.

Moreover, our results highlight that these penalties originate from CRAs, rather than from investors. Our analysis reveals that rating penalties on entitlements arise independently of how investors view the impact of entitlements on creditworthiness. The strong negative effect of entitlements on ratings persists when bond spreads are included among the determinants of ratings. In contrast, entitlement spending or generosity do not directly affect government bond spreads once credit ratings are controlled for. These results underpin our claim that the penalties on entitlements are motivated by the peculiar incentives that CRAs face within an oligopolistic rating business, rather than by market conventions about the impact of welfare policies on creditworthiness. Indeed, our finding that entitlements impact ratings in the long run lends support to our theory that CRAs assign lower ratings to countries with large entitlement systems as a long-term insurance strategy against rating failures while forgoing frequent adjustments to ratings as new information arises, both of which are key to making a CRA’s rating attractive for investors and, thus, in retaining market share in the rating business.

Our findings contribute to several literatures in IPE. First, they speak to a core debate about the constraints that globalized markets place on governments’ policy choice. Scholars have recurrently warned that markets would place governments in a ‘golden straightjacket’, making funding conditional upon investors preferred policy choices (Strange 1996, Rodrik 2001 and 2011, Streeck 2014). However, the relevance of such concerns for AMEs has been disputed by Mosley (2000, 2004 and 2005), who produced extensive interview evidence to show that while investors worry about macroeconomic, monetary and fiscal indicators, they care much less about supply-side policies in the case of AMEs. At the same time, Mosley’s own quantitative analysis showed that a number of politically sensitive supply-side policy variables are systematically correlated with the interest paid on government debt, albeit their impact is minor compared to the impact of headline macroeconomic and fiscal indicators. Our results provide tangible evidence of market penalties on entitlements, and highlight the independent role that sovereign ratings play in generating such penalties, offering a potential solution to the puzzle created by the contradictory evidence about investors’ indifference to supply-side policies and the systematic effect of such policies on prices.

In this context, our results also point to a fruitful avenue for further research. The literature on welfare retrenchment in the age of global finance has sought to capture the constraining effect of financial markets on policy by examining the impact of indicators of investor behavior, like interest rates on government bonds and FDI flows (Mosley, 2000 and 2003, Garrett and Mitchell, 2001). Our results suggest that the welfare state literature also needs to consider the constraining influence of credit rating agencies. Since anecdotal evidence suggests that governments care about their sovereign credit ratings[[27]](#footnote-28) exploring the relationship between the evolution of a country’s ratings and changes in its welfare commitments can shed new light on the way market pressures shape the welfare state.

Second, our findings shed light on the role CRAs’ business interests play in shaping market behavior. Since the function of CRAs is to acquire and digest extensive information and compress it into a single indicator, it is plausible to assume that ratings’ substantive content depends most strongly on the ideological filters and epistemic models CRAs employ in the process (Brooks et al, 2015), and some have argued that CRAs enforce a neoliberal policy agenda (Paudyn, 2014). However, our results show that CRAs’ approach towards governments’ spending on welfare is more differentiated than a coherent neoliberal agenda would allow and, instead, point to the importance of business incentives, rather than ideational factors in inducing market penalties for entitlements.

Our results also have stark policy implications, because they shed new light on the role that prudential regulatory systems play in the generation of market penalties against generous entitlements, not only in terms of empowering CRAs to influence the price of government debt, but also in terms of creating incentives for CRAs to penalize entitlements. Scholars have pointed out that national and international regulations have elevated credit ratings to the position of supreme risk indicators in the overwhelming majority of public and private financial governance systems, and showed that this position is central to the influence of ratings on market prices (Partnoy, 1999, Sinclair 2005, IMF 2010, Abdelal and Blyth 2015). What this paper sheds new light on is that these prudential systems also create peculiar incentives for CRAs that shape *how* *CRAs assign ratings.* By forcing investors to incur transaction costs upon rating changes, these regulatory systems make rating stability a key factor in retaining market share in the rating business. This induces CRAs to forgo regular adjustments to their ratings as new information arises and instead seek long-term insurance against rating failures by incorporating factors into their ratings that have less to do with the given country’s creditworthiness than with the potential for fiscal volatility. From a perspective of democratic accountability, it is objectionable that a public regulatory framework contributes to pecuniary penalties and rewards for politically sensitive policy choices. From a perspective of financial stability, the danger is that systematically lower ratings for countries with large entitlement systems relative to countries with small entitlement systems leads to the systematic mispricing of sovereign debt market-wide. Finally, from a prudential point of view, it is worrisome that indicators of risk at the center of capital adequacy regulations incorporate considerations extraneous to creditworthiness.

While IPE scholars have long been attuned to the impact of the preferences of technocratic and removed international financial institutions (Ban and Gallagher, 2015, and Clift, 2018) and domestic financial regulators (Singer, 2004) on creating and upholding the global financial system, these actors’ preferences and behaviors do not directly hold the profit motives that CRAs do. CRAs’ privileged position in international and national financial regulatory frameworks is therefore additionally problematic because their mission and organizational objectives do no rest on broader public service goals, but rather the self-interested desire to maintain or enhance their market share. Consequently, understanding how CRAs’ business strategies transmit politics and policy choice into financial markets has the potential to inform renewed efforts to reduce the role of ratings in prudential regulatory systems[[28]](#footnote-29).

**References**

Abdelal, R. and M. Blyth. (2015). [Just Who Put You in Charge? We Did: Credit Rating Agencies and the Politics of Ratings.](http://www.hbs.edu/faculty/product/46401) in [*Ranking the World: Grading States as a Tool of Global Governance*](http://www.cambridge.org/us/academic/subjects/politics-international-relations/international-relations-and-international-organisations/ranking-world-grading-states-tool-global-governance), edited by Alexander Cooley and Jack Snyder, 39–59. Cambridge: Cambridge University Press

Archer, C.C., Biglaiser, G., & DeRouen, K. (2007). Sovereign bonds and the “democratic advantage”: Does regime type affect credit rating agency ratings in the developing world? *International Organization*, *61*, 341-365.

Afonso, A. (2003). Understanding the Determinants of Sovereign Debt Ratings. *Journal of Economics and Finance* 27(1): 56-74

Afonso, A., Arghyrou, M.G and Kontonikas, A. (2015). The Determinants of Sovereign Yield Spreads in EMU. *ECB Working Paper* No. 1781

Afonso, A., Gomes, P.M., and Rother, P. (2007). What ‘Hides’ Behind Sovereign Debt Ratings? *ECB Working Paper Series*, Number 711.

Armingeon, K., Wenger, V. Wiedemeier, F., Isler, C., Knöpfel, L., Weisstanner, D. and Engler, S. (2017) Comparative Political Data Set 1960-2015. Bern: Institute of Political Science, University of Berne.

Ban, C., & Gallagher, K. (2015). Recalibrating policy orthodoxy: The IMF since the great recession. *Governance*, *28*(2), 131-146.

Barta, Z., & Johnston, A. (2017). Rating Politics? Partisan Discrimination in Credit Ratings in Developed Economies. *Comparative Political Studies*, DOI: 0010414017710263.

Beaulieu, E., Cox, G.W., & Saiegh, S. (2012). “Sovereign debt and regime type: Reconsidering the democratic advantage”. *International Organization*, *66*, 709-738.

Beck, N. and Katz, J. (1995). What to do (and not to do) with Time-Series Cross-Section Data. *American Political Science Review*. 89(3): 634-647.

Becker, B., & Milbourn, T. (2010, September). *How did increased competition affect credit ratings?* (NBER Working Paper 16404). Cambridge, MA: National Bureau of Economic Research.

# 

# Bhatia, A.V. (2002). Sovereign Credit Ratings Methodology: An Evaluation. *IMF Working Paper* WP/02/170

Biglaiser, G., & Staats, J.L. (2012). Finding the “democratic advantage” in sovereign bond ratings: The importance of strong courts and the rule of law. *International Organization*, *66*, 515-535.

BIS (2015) *Basel Committee on Banking Supervision Consultative Document: Standards, Revisions to the Standardised Approach for credit risk*. (Retrieved from: <http://www.bis.org/bcbs/publ/d347.htm>

Block and Vaaler (2004). "The price of democracy: sovereign risk ratings, bond spreads and political business cycles in developing countries." *Journal of International Money and Finance* 23(6).

Bodea, C and Hicks, R. (2017). Sovereign Credit Ratings and Central Banks: Do Analysts Pay Attention to Institutions? Available at SSRN: or [http://dx.doi.org/10.2139/ssrn.2916334](https://dx.doi.org/10.2139/ssrn.2916334)

Box-Steffensmeier, J., Freeman, J., Hitt, M., & Pevehouse, J. (2014). “Cointegration and Error Correction Models”. In *Time Series Analysis for the Social Sciences*. Cambridge: Cambridge University Press. Pg: 150-172

Brooks, R., Faff, R.W., Hillier, D., & Hillier, J. (2004). The national market impact of sovereign rating changes. *Journal of Banking & Finance*, *28*, 233-250.

Brooks, S.H., Cunha, R. and Mosley, L. (2015). Categories, Creditworthiness, and Contagion: How Investors’ Shortcuts Affect Sovereign Debt Markets. *International Studies Quarterly* 59, 587–601

Cantor, R., & Packer, F. (1996). Determinants and impact of sovereign credit rating. *Economic Policy Review*, *2*(2), 37-53.

Clayton, R. and Pontusson, J. (1998) Welfare-State Retrenchment Revisited: Entitlement Cuts, Public Sector Restructuring, and Inegalitarian Trends in Advanced Capitalist Societies, *World Politics,* 51(1)

Clift, B. (2018). *The IMF and the Politics of Austerity in the Wake of the Global Financial Crisis*. Oxford University Press.

Davis, E.P., & Steil, B. (2004). *Institutional investors*. MIT press.

de Haan, J., & Amtenbrink, F. (2011, January). *Credit rating agencies* (Working Paper No. 278). Amsterdam, The Netherlands: De Nederlandsche Bank

Esping-Andersen, G. (1990) *The Three Worlds of Welfare Capitalism*. Wiley Blackwell Publishing, Cambridge UK.

European Commission's Directorate General for Economic and Financial Affairs, (2015). *Annual macro-economic database (AMECO)* Available at <http://ec.europa.eu/economy_finance/ameco/user/serie/SelectSerie.cfm>.

Fitch Ratings (2002). *Sovereign Ratings Rating Methodology*.

Fitch Ratings (2009). *Master Criteria Report - Sovereign Rating Methodology*

Fitch Ratings (2011). *Sovereign Rating Methodology - Master Criteria*

Fitch Ratings (2016). *Sovereign Rating Methodology - Master Criteria*

Garrett, G. and Mitchell, D. (2001). ‘Globalization, government spending and taxation in the OECD. *European Journal of Political Research*, 39: 145-177.

Greene, W. (2003) *Econometric Analysis*. Prentice Hall, Upper Saddle River, New Jersey.

Hall, R. (2010) “Why does the economy fall to pieces after financial crisis?”, *Journal of Economic Perspectives*. 24(4): 3-20.

Haque, N.U., Mathieson, D.J., & Mark, N.C. (1998, April). *The relative importance of political and economic variables in creditworthiness ratings* (IMF Working Paper No. WP/98/46.9846). Washington, DC: International Monetary Fund.

Huang, I., Frangakis, C., Atkinson, M., Willke, R., Leite, W., Vogel W.B. and Wu, A.W. (2008) Addressing ceiling effects in health status measures, *Health Services Research*, 43(1): 327-339.

IMF (2010). “The Uses and Abuses of Sovereign Credit Ratings”. in *Global Financial Stability Report*

Keele, L. and De Boef, S. (2004) “Not just for co-integration: Error correction models with stationary data”, Working Paper, Department of Political Science and International Relations, Nuffield College, Oxford University. <https://www.nuffield.ox.ac.uk/politics/papers/2005/Keele%20DeBoef%20ECM%20041213.pdf>

Moody’s. (2006). *Analyzing the tradeoff between ratings accuracy and stability*. New York, NY: Moody’s Investor Service.

Moody’s. (2008). *Rating Methodology: Sovereign Bond Ratings*

Moody’s. (2013). *Rating Methodology: Sovereign Bond Ratings*

Moody’s (2017) *White Paper: Capital calculations under the revised securitization framework*

Mosley, L. (2000). Room to move: International financial markets and national welfare states. *International Organization*, *54*, 737-773.

Mosley, L. (2004). Government–financial market relations after EMU: New currency, new constraints? *European Union Politics*, *5*, 181-209.

Mosley, L. (2005). Globalisation and the state: Still room to move? *New Political Economy*, *10*, 355-362.

OECD (2017) *Main Economic Indicators*, OECD. <http://stats.oecd.org/mei/>

Partnoy, F. (1999). “The Siskel and Ebert of Financial Markets? Two Thumbs Down for Credit Rating Agencies”. *Washington University Law Review*. 77(3)

Paudyn, B. (2014). *Credit Ratings and Sovereign Debt: The Political Economy of Creditworthiness through Risk and Uncertainty*. Springer

Pierson, P. (1996). The new politics of the welfare state. *World politics*, *48*(2), 143-179.

Rodrik, D. (1998). “Why do more open economies have bigger governments?” *Journal of Political Economy*, *106*(5), 997-1032.

Rodrik, D. (2000). How far will international economic integration go? *Journal of Economic Perspectives*, *14*, 177-186.

Rodrik, D. (2011). *The Globalization Paradox: Why Global Markets, States, and Democracy Can't Coexist*. Oxford: Oxford University Press

Rothstein, B. and Uslaner, E. (2005) All for all: Equality, Corruption and Social Trust, *World Politics*. 58(1): 41-72.

Scruggs, L., Jahn, D. and Kuitto, K. (2017) “Comparative Welfare Entitlements Dataset 2. Version 2017-09.” University of Connecticut & University of Greifswald.

Sinclair, T. J. (2005). *The new masters of capital*. Ithaca, NY: Cornell University Press.

Singer, D. A. (2004). Capital rules: The domestic politics of international regulatory harmonization. *International Organization*, *58*(3), 531-565.

Standard and Poor’s. (2006). *Sovereign Credit Ratings: A Primer*

Standard and Poor’s. (2008). *Sovereign Credit Ratings: A Primer*

Standard and Poor’s. (2009). *Understanding Standard & Poor's Rating Definitions*

Standard and Poor’s. (2010). *Methodology: Credit Stability Criteria*

Standard and Poor’s. (2011). *Sovereign Government Rating Methodology And Assumptions*

Standard and Poor’s. (2013). *Sovereign Government Rating Methodology And Assumptions*

Streeck, W. (2014). *Buying time: The delayed crisis of democratic capitalism*. London and Brooklyn: Verso Books.

Vaaler, P., Schrage, B. and Block, S. (2006) “Elections, Opportunism, Partisanship and Sovereign Ratings in Developing Countries”, *Review of Development Economics.* 10(1): 154-170.

Wildavsky, A and Caiden, N. (2004) *The New Politics of the Budgetary Process.* Pearson/Longman

Wooldridge, J. (2002) *Econometric Analysis of Cross Section and Panel Data*. MIT Press, Cambridge, Massachusetts.

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2. Associate Professor, Oregon State University. Contact details: [Alison.Johnston@oregonstate.edu](mailto:Alison.Johnston@oregonstate.edu) [↑](#footnote-ref-2)
3. While there are over 100 credit rating agencies worldwide, Standard & Poor’s, Moody’s and Fitch capture 95 percent of the market (De Haan and Amtenbrink 2011). [↑](#footnote-ref-3)
4. Moody’s and Fitch practically do not mention anything related to spending priorities at all. S&P’s 2006 and 2008 methodologies do allude to the need to evaluate how governments spend, but this is framed in terms of good governance, rather than in terms of prescriptions on how much should be spent on specific policy areas. These references to how governments allocate spending disappear in later editions of S&P’s methodology. [↑](#footnote-ref-4)
5. The exact terminology varies slightly among different editions of the methodologies, but the definition of the concept is congruent among the three different agencies. [↑](#footnote-ref-5)
6. S&P’s methodology explains that “expenditure flexibility can be determined by looking at the level and trend of public sector wages and entitlement expenditures (pensions and health care), its mix of operating and capital expenditures, and the government's track-record and policy with regard to implementing expenditure cuts when needed” (S&P 2011, p25-26; S&P 2013, p25-26). [↑](#footnote-ref-6)
7. “When assigning and monitoring ratings, we consider whether we believe an issuer or security has a high likelihood of experiencing unusually large adverse changes in credit quality under conditions of moderate stress […],(for example, recessions of moderate severity, such as the U.S. recession of 1982 and the U.K. recession in the early 1990s or appropriate sector-specific stress scenarios).” (S&P 2010, p2) [↑](#footnote-ref-7)
8. “These credit-quality transitions do not reflect our view of the expected degree of deterioration that rated issuers or securities could experience over the specified time horizons. Nor do they reflect the typical historical levels of deterioration among rated issuers and securities. In fact, instances of credit deterioration of this magnitude and speed have been relatively uncommon. These criteria do not imply that we believe that issuers or securities should become – or are likely to become – less stable.” (S&P 2010, p3) [↑](#footnote-ref-8)
9. “By explicitly recognizing stability as a factor in [the] ratings, [S&P] intend[s] to align their meanings more closely with our perception of investors' desires and expectations” (S&P 2010, p4, see also 2008, 2014 and 2016). [↑](#footnote-ref-9)
10. It is sometimes assumed that CRAs can mitigate the transaction costs associated with mandatory portfolio adjustments triggered by changes in their ratings, via alerting investors to imminent changes in a country’s credit quality by changing ‘outlooks’ and issuing ‘credit watches’. However, given that such signals are regularly followed by actual rating changes, investors react to signals instead of waiting for the rating action to trigger a mandatory change (IMF 2010). [↑](#footnote-ref-10)
11. “Responses to our July 16, 2008, Request For Comment on this subject reinforce our belief that investors generally   prefer high ratings to be more stable than low ratings. High ratings should connote high stability.” (S&P 2010, p4) [↑](#footnote-ref-11)
12. It is often assumed that only transitions over the investment-grade and ‘junk’ boundary matter in this respect, but in fact, financial governance rules and regulations are often granular enough to trigger portfolio adjustments upon smaller changes within the investment-grade half of the rating spectrum. For illustration: the revised Basel III rules for the weighting of exposure to sovereigns operate with five rated categories, three within the investment-grade range (BIS 2015). For securitized credit, the new Basel III framework prescribes separate weights for *each* rating notch (i.e. for a transition from AAA to AA+ or from AA+ to AA etc., Moody’s 2017). [↑](#footnote-ref-12)
13. In most AMEs, where health care is publicly provided or health care prices are fully controlled by the government, health care qualifies as an in-kind service. In relatively rare cases, like in the US, where market-provided health services are reimbursed at prices that are difficult to control in the short run, health spending does not count as a ‘social transfer in kind’, and is as rigid as other entitlement spending. [↑](#footnote-ref-13)
14. Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Japan, Luxembourg, the Netherlands, New Zealand, Norway, Portugal, Spain, Switzerland, Sweden, the UK and the US. [↑](#footnote-ref-14)
15. S&P and Moody’s gradually extended their portfolios from the 1970s to the mid-1990s, while Fitch did not issue its first ratings until 1994. [↑](#footnote-ref-15)
16. Though S&P, Moody’s and Fitch have been shown to stay within one to two notches of one another (Afonso 2003), significant differences have been documented in the temporal patterns of upgrades and downgrades among CRAs (IMF 2010), indicating that CRAs do not always act in lockstep. [↑](#footnote-ref-16)
17. Top-end clustering is less problematic when examining the determinants of ratings of developing countries, because there is wider variation in rating scores particularly at the lower end of the ratings scale, i.e. the distribution of rating scores is closer to normal (Afonso et al, 2007, Block and Vaaler, 2004). [↑](#footnote-ref-17)
18. For example if a country is upgraded from AA+ to AAA in April, its total rating score for that year would be 16\*(4/12) + 17\*(8/12) = 16.67. [↑](#footnote-ref-18)
19. Armingeon et al (2017) detail in their methodology which political parties belong to the left, Christian democratic, and right party family. In the event that a country lacks a Christian Democratic Party (i.e. the US or UK), their Christian Democratic dummy will always be zero. [↑](#footnote-ref-19)
20. For S&P, Moody’s and Fitch, a country’s rating score in the previous year on its own explains 95%, 89%, and 94%, of the variation in its current rating score, respectively. In contrast, rating changes dummies explain 37%, 43% and 43% of the variation in countries’ rating scores from S&P, Moody’s and Fitch respectively. [↑](#footnote-ref-21)
21. Comparing a marginal unit increase, rather than a standard deviation increase, between the policy variables would be misleading, because they have different ranges – for example, a 1 unit increase would constitute a much larger proportion of the range of unemployment insurance generosity (range of 3.6 to 14.5) than it will of total government spending as a percentage of GDP (range of 30.88 to 65.65). [↑](#footnote-ref-22)
22. Post-estimation tests of equivalence in beta coefficients between the Social-Democratic and Christian-Democratic executive dummy indicate that the latter is significantly larger than the former in models where both are significant. [↑](#footnote-ref-23)
23. Higher spreads reflect greater concerns about creditworthiness, as investors demand higher interest on bonds whose default risk is elevated. We use US Treasury securities as our spread benchmark, because US treasury bills are one of the most secure investments from default and often serve as a safe-haven during flights to quality (Hall, 2010: pg 14). Using spreads relative to US treasury bills, rather than nominal interest rates on bonds on their own, allows us to (partially) remove the noise in nominal interest rates that stem from global shocks rather than changed market assessments in creditworthiness. However, due to using US nominal interest rates for spreads, the US is dropped from our sample in this model specification. [↑](#footnote-ref-24)
24. In Appendix F/G, Column I presents the results for the impact of general government expenditure on ratings/spreads. Columns II, III and IV provide results for the impact of the three major sub-categories of government spending (the public sector wage bill, social services in-kind, and entitlement benefits, respectively) on ratings/spreads. Column V shows the results for the impact of total social insurance generosity on ratings/spreads, while Columns VI, VII and VIII examine the impact of pension, unemployment and sickness insurance generosity, respectively, in isolation. [↑](#footnote-ref-25)
25. While our baseline models (Model I) in Tables B.1-B.3 do not fulfill the co-integration assumption, Keele and De Boef (2004) highlight that ECMs are still a worthwhile estimator to use in the event that a researcher wants to estimate the long and short-run effects of an independent variable separately, rather than combining these processes into one variable. Keele and De Boef (2004) also find that ECM estimates do not notably differ from a (first-order) auto-regressive, distributive lag model. Hence, despite the violation of the co-integration assumption in our models, we still employ an ECM for these theoretical reasons. [↑](#footnote-ref-26)
26. Fisher-type unit root tests indicate that the first difference in credit ratings for S&P’s, Moody’s and Fitch are stationarity. [↑](#footnote-ref-27)
27. For example, UK Chancellor of the Exchequer George Osborne repeatedly cited the need to maintain the UK’s prestigious AAA credit rating as justification for his austerity budgets early in the 2010 UK coalition government’s tenure. Wintour, P. (2012) “George Osborne warned: protecting AAA credit rating is lost cause”, *The Guardian*. December 6th, 2012. <https://www.theguardian.com/politics/2012/dec/06/george-osborne-credit-rating-lost-cause> [↑](#footnote-ref-28)
28. The global economic and financial crisis sparked European and American initiatives to reduce the role of credit ratings in prudential regulations. However, these initiatives eventually failed to significantly change the role that ratings play in sovereign risk assessment. In the 2010 Dodd-Frank Wall Street Reform and Consumer Protection Act, US policy-makers increased the scope of regulation over CRAs and the scrutiny of their methodologies. The EU contemplated launching its own, Europe-based rating agency, but plans for a public CRA never materialized. [↑](#footnote-ref-29)