Contents

Introduction

On the 9th of April 2014 the IMF announced a downward revision of their annual growth forecast for South Africa (SA) from 2.7 to 2.3 percent of GDP; in this regard, policy uncertainty – "policy-related economic uncertainty" (Baker, Bloom & Davis, 2013:4) – was named as one of the key domestic factors stifling economic activity (Maswanganyi, 2014). These assertions come at a time when economic scholars with an empirical interest in policy uncertainty have become quite prolific, and a time when the gaps in this expanding literature still offer numerous avenues for research. For example, the policy uncertainty literature at present consists of a variety of means of quantifying policy uncertainty and its effects, but it contains little by way of any comprehensive commentary on the pros and cons of commonly-used policy uncertainty metrics, or indeed any critical discussion of their conceptual salience. There also remains substantial scope for the construction of measures of policy uncertainty for many of the world's economies.

The following study works to constructs a news-based policy uncertainty index, departing from the method pioneered by Baker, Bloom and Davis[1] (2013:1) to reduce these research gaps in several small respects. The first of these is that this study offers an explicit discussion of the applicability and conceptual salience of different policy uncertainty metrics so as to demonstrate the strengths of this news-based approach *vis-à-vis* other typical approaches used to quantify policy uncertainty. From this firm conceptual basis, this study expands on the policy uncertainty literature with the construction of a Stanford-Group-inspired SA policy uncertainty (SAPU) index, captured at monthly intervals from January 1994 till June 2014 and built to suit SA's unique post-Apartheid socio-economic-political context. This offering is additionally substantiated with both formal and informal robustness checks, the former consisting of a simple discussion of the events that the index captures and the latter of a simple econometric analysis of the correlation between this index and the SAVI index, as well as a brief empirical assessment of the relationship between policy uncertainty and SA government bond yields.

Section One: Measuring Policy Uncertainty

Appropriate metrics for quantifying abstract economic concepts can be quite elusive; even well-established metrics are often subject to subtle pragmatic issues that challenge their validity. For example, core CPI, a metric fairly robust to relative price movements and thus quite consistent with the definition of inflation, is subject to biases from sources such as advances in technology, pricing methods, and changes in consumer preferences (Bryan & Cecchetti, 1993:3-4). However, while these sources of bias are pragmatically inescapable their impact can be reduced through regular

[1] Hereafter 'the Stanford Group'.

updates to the index, and thus core CPI can still yield a reasonably close approximation of inflation as conceptualize by economists. On the other hand, some economic concepts, particularly those whose definitions are contentious or vague, are subject to much more severe quantitative issues. Consider for example 'systemic risk'. Systemic risk is a concept central to post-2008 economic discourse on financial stability. While it is widely understood that sound management of systemic risk is crucial to the stability of the financial system, economists have not yet converged on a widely accepted definition of this concept and have consequently thus far been unable to construct a generally accepted measure thereof (Liedtke, 2010:3; Bonollo, *et al*, 2014:5). In short, when quantifying the abstract, conceptual clarity is key to metric salience.

Much like systemic risk, policy uncertainty is beleaguered by impediments to measurement. In this regard, much of the difficulty in designing a satisfactory policy uncertainty metric emanates from the 'uncertainty' element of this concept; what is challenging here, Jurado, Ludvigson and Ng (2013:1) claim, is that "no objective measure of uncertainty exists". Despite the difficulties of finding an appropriate empirical counterpart to this abstract concept, the empirical policy uncertainty literature, which has expanded considerably since 2008, contains a variety of metrics and techniques employed in an attempt to quantify policy uncertainty. But what the post-2008 policy uncertainty literature does not contain is an extensive treatment of precisely what 'policy uncertainty' refers to or, consequently, any bold conjectures as to what an explicit, extensive definition of this concept would imply for the appropriateness of the different metrics employed in this literature. This section attempts to pursue precisely this agenda, by firstly offering careful scrutinising of the 'uncertainty' component of policy uncertainty in account of the phenomenological character of uncertainty and the Knightian distinction between uncertainty and risk, and by subsequently employing the insights obtained from this conceptual discussion to assess alternative commonly-used policy uncertainty metrics *vis-à-vis* a news-based index.

1.1 Policy Uncertainty – An Extensive Definition

There are at least two important points pertaining to uncertainty that, for the purposes of this study, merit consideration. The first of these important points pertains to the type of uncertainty that is of interest here. Strictly on the basis of logic, inductive reasoning is only justifiable from an appeal to inductive reasoning, and is therefore circular by necessity; thus one cannot logically infer what will happen on the basis of what has happened, and all future events must be uncertain (Harman & Kulkarni, 2006:560). This 'objective' uncertainty is highly relevant to economists in that it informs the scientific process – the occurrence of structural breaks in data, experienced with the Phillips curve for instance, and economists' weariness of uncorroborated statistical relationships demonstrates this relevance. This is however not the sort of uncertainty that is of interest here, as it

could hardly be thought that this sort of uncertainty causes economic agents to experience concern over the economic consequences of government policies or informs economic decision making and behaviour generally. Rather, the uncertainty that is of interest for this discussion is better characterized as phenomenological uncertainty. This is to say that it is subjective uncertainty, uncertainty that is brought to reality through an event of perception in which some policy event is *perceived* to entail unpredictable, economically relevant consequences, which is of interest here (Penrod, 2007:659). In brief, it is important for the subsequent analysis of various policy uncertainty metrics to note that uncertainty and specifically policy uncertainty is phenomenological in that it requires (1) an agent which (2) perceives a state of uncertainty.

In addition to the elements which must be present for uncertainty to take place, a second point worthy of consideration is the distinction between uncertainty and its conceptual sibling, risk. In this regard, Knight's (1921) seminal work, *Risk, Uncertainty and Profit*, wherein the definition of uncertainty as it is understood in Economics today was coined (Bloom, 2014:154), is particularly informative. In explaining the distinction between these concepts, Knight's (1921:233) proposes that: "The practical difference between the two categories, risk and uncertainty, is that in the former the distribution of the outcome in a group of instances is known (either through calculation *a priori* or from statistics of past experiences), while in the case of uncertainty this is not true, the reason being… [that] the situation dealt with is in a high degree unique."

A series of ten flips of a fair coin is thus an instance of risk, not uncertainty, in that prior to the event one can know the expected value of, say, the proportions of heads to tails and the variance of the series, and one can make use of this knowledge to make informed decisions and behave accordingly. Uncertainty in the Knightian sense pertains to situations in which the complexity or sheer uniqueness of the situation disallows the prospect of statistically mapping a probability distribution over all conceivable possible contingencies (Knight, 1921:233). Simply put, the more complicated or subject to unforeseeable or unpredictable contingencies an event is perceived to be, the more uncertain it is (Knight, 1921:226-227).

Knight (1921:242) acknowledges that events are however *de facto* never classifiable as strictly risky or uncertain: the roll of a die is aptly thought of as an event of risk because such an event is probabilistic in an *a priori* sense (Knight, 216-217), but the event may inspire a perception of uncertainty on the part of an observer in that the observer may, for instance, be doubtful of whether the die is in fact fair; on the other hand, policy events such as a (fictitious) decision on the part of the South African government to nationalize the South African Reserve Bank (SARB) would most aptly be thought of as an event of uncertainty in that this policy action *could* set a president that *could* lend to the nationalization of *some* other industries *or* select firms and *could* thus yield

varying degrees of adverse economic consequences, but regardless some observers might feel quite certain of what the particular outcomes will be. In a more complete sense then, Knightian uncertainty and risk are appropriately regarded as polar extremes that demarcate the boundaries of the continuum of limited epistemic positions. While the interplay between these concepts and their reliance on perception makes a metric that can isolate the 'strictly uncertain' component of all national policy events pragmatically impossible, a good policy uncertainty metric should pay heed to this distinction so far as is pragmatically possible.

1.2 Assessment of Common Policy Uncertainty Metrics

As has been stated, the research presented here is centred on a news-based index of policy uncertainty, constructed in the style of Bloom, Baker and Davis (2013:4-6). The compelling advantage of this approach as a measure of uncertainty is that news volume arguably reflects prevailing perceptions in that news informs and is informed by public opinion; thus a high volume of news pertaining to policy uncertainty is likely a reflection of the degree to which economic agents are experiencing policy uncertainty at a given point in time. There are, however, a range of empirical papers that discuss policy uncertainty which employ alternative means to assess the effects of policy uncertainty on economic variables. Given the availability of alternative empirical approaches in the policy uncertainty literature, further justification of the metric employed here *vis-à-vis* other available metrics is in order.

1.2.1 Event Studies

Event studies, particularly electoral event studies, are a commonly-used means of quantifying the effect of policy uncertainty on real and nominal economic variables. In accordance with the discussion on risk and uncertainty present in section 1.1, electoral results are not in themselves uncertain; elections generally present a well-defined set of possible incumbency outcomes, are thus to a reasonable extent predictable, and are therefore more aptly regarded as risky in a Knightian sense. However, as "[i]vestors and entrepreneurs arguably care more about the stability of a country's economic policies than the stability of the regime itself" (Ali, 2001:96) elections should only affect economic activity through introducing the possibility that a substantial shift in government policy may occur. In other words, policy uncertainty is induced by elections although election outcomes themselves are not appropriately regarded as uncertain.

Empirical evidence from the literature can be interpreted in support of this view. For instance, Julio and Yook (2010:28) employ a sample of 48 countries and 248 national elections in an electoral event study of policy uncertainty. Julio and Yook (2010:28) show that, controlling for relevant co-determinants of investment, aggregate corporate investment drops by an average of almost five percent in periods preceding elections, and, most importantly, that the severity of the decline in

corporate investment intensifies when elections are more closely contested (making a policy overhaul more likely) and when electoral contenders are not deemed 'market friendly' (making deviations from the prevailing policy programme potentially more severe and the consequences thus more uncertain).

Such event studies can thus provide a reliable estimate of the real economic *effects* of policy uncertainty, but the applicability of this approach in the empirical study of policy uncertainty is however limited in several respects. Firstly, by design, electoral event studies cannot provide an indication of the extent of policy uncertainty itself or its dynamics over a political incumbency. Secondly, electoral event studies may not be useful under certain socio-political circumstances. Different nations are characterized by different political climates and are subject to different degrees of electoral freedom, contestation and legitimacy, and so it is not clear that elections are in all instances perceived as posing a real threat to the policy status quo. This difficulty is surmountable in cross section studies at a country level; Durnev (2010:5) for instance controls for the degree to which national elections introduces policy uncertain by controlling for electoral spreads. However, this approach remains inappropriate for a study of policy uncertainty confined to individual nations wherein electoral turnover is unlikely or institutionally prohibited. This point is particularly relevant to contemporary SA, wherein the African National Congress (ANC) has enjoyed electoral dominance since 1994 (De Jager & Du Toit, 2012:149). Given SA's prevailing dominant party system, and the scope for policy continuity that this state of affairs offers (De Jager & Du Toit, 2012:17-18), it is not immediately clear that economic agents residing in a country such as SA would perceive elections as a source of policy uncertainty. Thus, the advantage of a news-base index *vis-à-vis* electoral event studies which makes it particularly tractable for SA is that a news-based index can (1) provide a continuous indication of the level of aggregate policy uncertainty in a specific country that is (2) sensitive to policy developments including and in addition to elections.

1.2.2 Time-Varying Volatility Series

There is however an alternative method to event studies that is very commonly found in the policy uncertainty literature which, similar to news-based indices, can offer a continuous indication of policy uncertainty which is not restricted to a limited number of political events. This time-varying volatility method is founded on an approach first followed by Aizenman and Marian (1991:3) who estimate AR(1) processes (autoregressive processes of order one) of the form:

$$(policy)_t = \beta_0 + \beta_1(policy)_{t-1} + \varepsilon_t$$

for several 'policy variables', including the respective ratios of government consumption expenditure, growth in government consumption expenditure, public investment and the budget

deficit to GDP, and the money stock growth rate and the rate of inflation. For this inter-country cross section study of the impact of policy uncertainty on growth, Aizenman and Marian (1991:3) interpret the standard deviation of the residual series ε_t as an indicator of policy uncertainty stemming from each policy variable; they find a negative relationship between policy uncertainty and GDP growth in each instance. Born and Peifer (2011:31) and Fernández-Villaverde *et al* (2012:2), where both studies explore policy uncertainty within a DSGE framework and extend Aizenman and Marian's (1991:3) methodology for use in a time series context by estimating policy uncertainty as the time-varying volatility of the residual series of a variety of similar autoregressive policy processes.

Time-varying volatility series offer the same advantage of continuity as news-based indices do *vis-à-vis* event studies; they are, however, also characterized by noteworthy shortcomings. The first of these is that, as they appear in the literature at present, the variation they capture may not be rightly regarded as 'uncertain'. This criticism, consistent with the Knightian distinction between risk and uncertainty as discussed in section 1.1, follows from a postulation made by Jurado, Ludvigson and Ng (2013:2) that "uncertainty in a series is *not* the same as the conditional volatility of the raw series where for example a constant mean is removed" and their subsequent argument that if one's intent is to capture uncertainty "it is important to remove the entire forecastable component" of the series.

This prescribed practice of removing all forecastable variation from a series where said series is meant to indicate uncertainty has not, as far as is known to this author,[2] been applied in any time-varying volatility study of policy uncertainty to date. Fernández-Villaverde's (*et al*, 2012:2) statement that in "following the literature, [they] use the term 'uncertainty' as a shorthand for what would more precisely be referred to as 'objective uncertainty' or 'risk'" indicates the likely source of this omission: It seem that 'policy uncertainty' has often been treated as a synonym for 'policy risk' in time-varying volatility studies of policy uncertainty. As there are scholars – Jurado, Ludvigson and Ng (2013:2), Ulrich (2013:44), Brogaard and Detzel (2012:2) and Bloom (2014:154) for example – who do acknowledge the Knightian conceptual distinction between risk and uncertainty, and as it is straight-forward enough to remove the forecastable component of a time-varying volatility series to obtain data that is more consistent with the concept of uncertainty in this Knightian sense, a change in either methodology or terminology is arguably in order here.

However, even with all forecastable information removed, time-varying volatility series are limited as policy uncertainty metrics. Inherently, time-varying volatility measures of policy uncertainty

[2] Jurado, Ludvigson and Ng (2013:2) cite the only two exceptions that they know of in the literature on economic uncertainty generally, neither of which concern policy uncertainty in particular.

implicitly assume that policy volatility and policy uncertainty occur contemporaneously. However, as demonstrated by Brogaard & Detzel (2012:4), and as conceded by Fernández-Villaverde's *et al* (2012:7), it could often be that policy uncertainty does not occur entirely contemporaneously with changes in specific policy variables. Forward-looking agents may in fact be uncertain up to the point at which a policy change or series thereof occurs, or may only become uncertain thereafter. Policy uncertainty could even be rampant throughout a period over which *no policy change actually occurs*, because all that is required for policy uncertainty to occur is a perception of economic uncertainty that is inspired by government policy.

Furthermore, and importantly, this policy uncertainty metric is inherently bound to policy that is straightforwardly quantifiable. But policy uncertainty could stem from policy pertaining to less-readily-quantifiable, institutional policy issues and events pertaining to property rights or other regulations that hamper business, or from doubts about the soundness of the composition or quality (as opposed to the mere numerical value) of policy variables such as the government's budget deficit; these and many more less-readily-quantifiable sources of policy uncertainty may be particularly relevant in SA. It is thus in its capacity to (1) better incorporate the dynamic quality of policy uncertainty and (2) to capture policy uncertainty emanating from a wider range of policies that, for an aggregate measure of policy uncertainty, a news-based index is theoretically a superior policy uncertainty metric to time-varying volatility series.

Section Two: A News-Based Policy Uncertainty Index for SA

Thus far it has been argued that, given the Knightian definition of uncertainty, a news-based index such as that of Baker, Bloom and Davis' (2013:4-6) is a better candidate for an aggregate policy uncertainty metric than other typical metrics found in the literature. Because economic agents are informed by news, articles which mention economic uncertainty as a product of beliefs that pertain to government policy can be assumed to indicate policy uncertainty experienced by economic agents *de facto*. It follows quite naturally then that the volume of news consistent with these criteria should provide a reasonable indication of the extent of policy uncertainty experienced at a given point in time. It is however pragmatically difficult to construct an index which is assuredly consistent with these simple criteria. The sheer volume of potentially relevant news articles necessitates a substantial degree of automation in the article selection process. Consistent with Baker, Bloom and Davis (2013:4), automated selection is achieved here by searching Sabinet's SA

Media[3] database for articles that contain elements from each of three sets of English and Afrikaans keywords pertaining to the categories 'economic', 'policy' and 'uncertainty' respectively.

Any such automated selection process is however open to a range of criticisms. The choice of keywords and the structure of the Boolean restrictions on them is for instance potentially contentions: Keyword sets that are too narrow will likely result in a downward bias at points in the final index, while sets that are too wide or are not properly augmented with appropriate Boolean restrictions will produce an index susceptible to attenuation bias and unwarranted spikes arising from the inclusion of 'false positives' – articles that mention words from all three keyword sets but which do not actually pertain to policy uncertainty. It is in recognition of the potential for contention which may arise from doubts about the rigour of the article selection process that this section details this selection process and the means used to control for sources of bias.

2.1 Key Words

To collect their primary data, the Stanford Group search the databases of ten large US newspapers for articles that contain at least one element from each of three groups of keywords pertains to the economy, uncertainty and US government policy: grouped respectively, these keywords are (1) 'economy' or 'economic', (2) 'uncertainty' or 'uncertain', and (3) "regulation, deficit, legislation, Congress, white house, Federal Reserve, the Fed, regulations, regulatory, deficits, congressional, legislative, and legislature" (Baker, Bloom & Davis, 2013:5). The intuition behind group (1), that an article must make mention of the economy or economic issues to qualify for inclusion in the index, is quite straightforward; no modifications to group (1) were made here.

There is however some scope to argue for a broadening of group (2). Brogaard and Detzel (2012:9-10) take this liberty without argument in constructing their own news-based policy uncertainty index, but there is a reasonable degree of intuition here: terms such as 'unsure', 'ambiguous' and 'undecided', particularly when they pertain to the complex environment of public policy, indicate instances wherein there is *cause* for uncertainty, and should thus be regarded as indicators of uncertainty within this context. This intuitively appealing but seemingly liberal alteration to the Stanford Group's original methodology should do more than merely expand the scope of potential positive articles; the inclusion of these additional terms that indicate cause for uncertainty should also make the final index more robust to changes in the style of media discourse. It may be the case, for instance, that over time the phrase 'economic uncertainty' has become increasingly widely used to describe situations of economic uncertainty, whereas at other times it may have been more common to describe the source of uncertainty without explicitly stating that the event has caused

[3] This extensive database contains articles from over 120 printed SA media publications; for more information, see http://reference.sabinet.co.za.ez.sun.ac.za/.

'economic uncertainty'. If this or similar shifts in media discourse have occurred over the course of 1994 to 2014 then augmenting group (2) should improve the fit of the index to actual aggregate policy uncertainty.

It is with regard to group (3) that the search terms used here differ most markedly from those employed by the Stanford Group in their original work. Many of the changes and additions to group (3) do however follow quite straightforwardly from the Stanford Group's original criteria: for instance, the search criteria used here expands on and contextualizes terms such as 'Congress', 'white house' and 'the Fed' by replacing them with 'Parliament', 'President Zuma/Mbeki/Mandela', 'SARB' and relevant permutations thereof.

Other more substantial deviations have also been made, but additional terms are included on the grounds that they are consistent with the stated intention of Baker, Bloom and Davis (2013:4) "to capture uncertainty about *who* will make economic policy decisions, *what* economic policy actions will be undertaken and *when* they will be enacted, the economic *effects* of past, present and future policy actions, and uncertainty induced by policy inaction." In this regard, some additions reflect SA's particular socio-political context; for instance, given the ANC's status as SA's dominant political party and subsequent role as SA's primary policy machine (De Jager & Du Toit, 2012:149), articles that mention 'ANC's decision', where the decision is depicted as a cause of uncertainty and as exuding economic relevance, seem apt as indicators of policy uncertainty. Other additions follow from the theoretical literature of Political Science and the Policy Cycle literature; the inclusion of terms such as 'judiciary' for instance follows from the fact that the judiciary is (1) a government institution (Mahler, 2013:110) that (2) participates in the policy process in accordance with its mandate to interpret and uphold policy decisions of the legislature (Howlett, Ramesh & Perl, 2009:161-162). This and many other actors and institutions that participate in the process of creating, enacting and upholding public policy can contribute to policy uncertainty, a point also implicitly recognized by Brogaard and Detzel (2012:4), and thus the expanded set of search criteria featured here is apt in reflecting the nuances of the policy process.[4]

2.2 Controlling for Sources of Bias

Even without incorporating expansions to the Stanford Group's original search criteria, the problem of false positives poses a significant threat to the validity of this index. Some precautions were taken at the level of the automated search to avoid false positives: 'budget' for instance was restricted so as to only indicate a positive hit for group (3) if it appears in an article that also contains 'ANC'. However, the complexity of language offers innumerable instances in which an

[4] See Appendix A for a full list of the search criteria used here.

article that fits the search criteria used here could in fact be a false positive. While less obviously problematic with terms from group (1) and (3), the false positives problem could be particularly acute with regards to the group (2) 'uncertainty' keywords. These terms may regularly appear in articles that discuss policy conducted in response to economic uncertainty or conducted against a backdrop of economic uncertainty, particularly given the current state of the global economy. Moreover, SA's media may frequently report on policy events in other nations which are not directly relevant to economic activity in SA. Failing to control for these and other potential systematic sources of bias would almost certainly compromise the integrity of this index.

The Stanford Group's solution to this problem is indeed the only solution that is unquestionably robust; they employ an audit team to physically review a sample of the articles that they obtain via their automated search in accordance with a strict set of identification criteria (Baker, Bloom & Davis, 2013:11-12). Absent the resources required to conduct a human audit of this scale, an alternative means of controlling for false positives was pursued here. All of the 15160 articles that meet with the search criteria used here were downloaded and converted to searchable PDFs.[5] The searchable articles were then uploaded onto Atlas.TI, a textual analysis software package typically used for the application of Grounded Theory. Atlas.TI allows a user to construct 'codes' that span multiple documents, where each code consists of a collection of quotes, each pertaining to a particular concept or idea that defines the code. The coding process can be automated such that all sentences that contain a keyword or set thereof are added to a designated code. In order to control of 'obvious' false positives, all 15154 articles were coded along three broad dimensions, these being 'UNCERTAINTY', 'FALSE POSITIVE' and 'SA RELEVANT', where: 'UNCERTAINTY' contains all of the group (2) keywords; 'SA RELEVANT' terms include terms such as 'SA', 'South Africans', 'Province', 'ANC' and 'DA'; and 'FALSE POSITIVE' contains phrases that indicate straightforward negations of uncertainty (such as 'no uncertainty' or 'not ambiguous'), responses to uncertainty ('responded to uncertainty' or 'response to uncertain'), resolutions of uncertainty ('resolution to uncertainty' or 'uncertainty was resolved') and incidental uncertainty (such as 'global economic uncertainty'). Article that do not mention at least one group (2) 'uncertainty' keyword that is not also captured under 'FALSE POSITIVE' as well as at least one 'SA RELEVANT' term were excluded from the index, reducing the final positives count to 10252 articles.

Regardless of the efforts taken here to reduce the problem of false positives it is inevitable that some must have been missed. That this is the case is an inherent pragmatic drawback of this approach, one that, even with the care awarded it by the Stanford Group, cannot be entirely

[5] Six articles were inaccessible and were hence omitted, reducing the total sample of articles to 15154.

mitigated. However, as long as all remaining false positives are randomly selected into the index at daily intervals from an identically and independently distributed (i.i.d.) process – which they should be if the criteria under 'FALSE POSITIVES' is extensive enough to control for systematically reoccurring false positives – then false positives will add noise to the index which may reduce the amount of information it conveys through attenuation bias but should not lead to any other systematic bias (Wooldridge, 2009:320). Furthermore, and consistent with the work of the Baker, Bloom and Davis (2013:5), this index is constructed at monthly intervals, where for each month the number of positives is weighted by the number of articles containing the words 'today' or 'vandag' in the respective month.[6] The weighting of this index makes it robust to bias stemming from changes in the overall volume of news and, under the i.i.d. assumption, aggregating the number of positives at monthly intervals should further reduce the impact of false positive noise by making their numbers more consistent over each interval. No further steps are taken here to correct for false positives or other systematic sources of bias.

Section Three: Robustness Checks & Economic Significance

If the index constructed here is indeed a reliable indicator of policy uncertainty it should fulfil certain expectations. Spikes in the index should for instance be correlated with important policy issues and events; this can be confirmed or denied by simply referring back to the articles that came up positive for the period in question. The index should also be found to relate to other relevant macroeconomic variables that are affected by economic uncertainty, such as the SAVI implied volatility index and yields on government bonds. Essentially, if it is to be treated as a reliable policy uncertainty metric, the index must be shown to contain pertinent information.

3.1 Basic Description of the Data

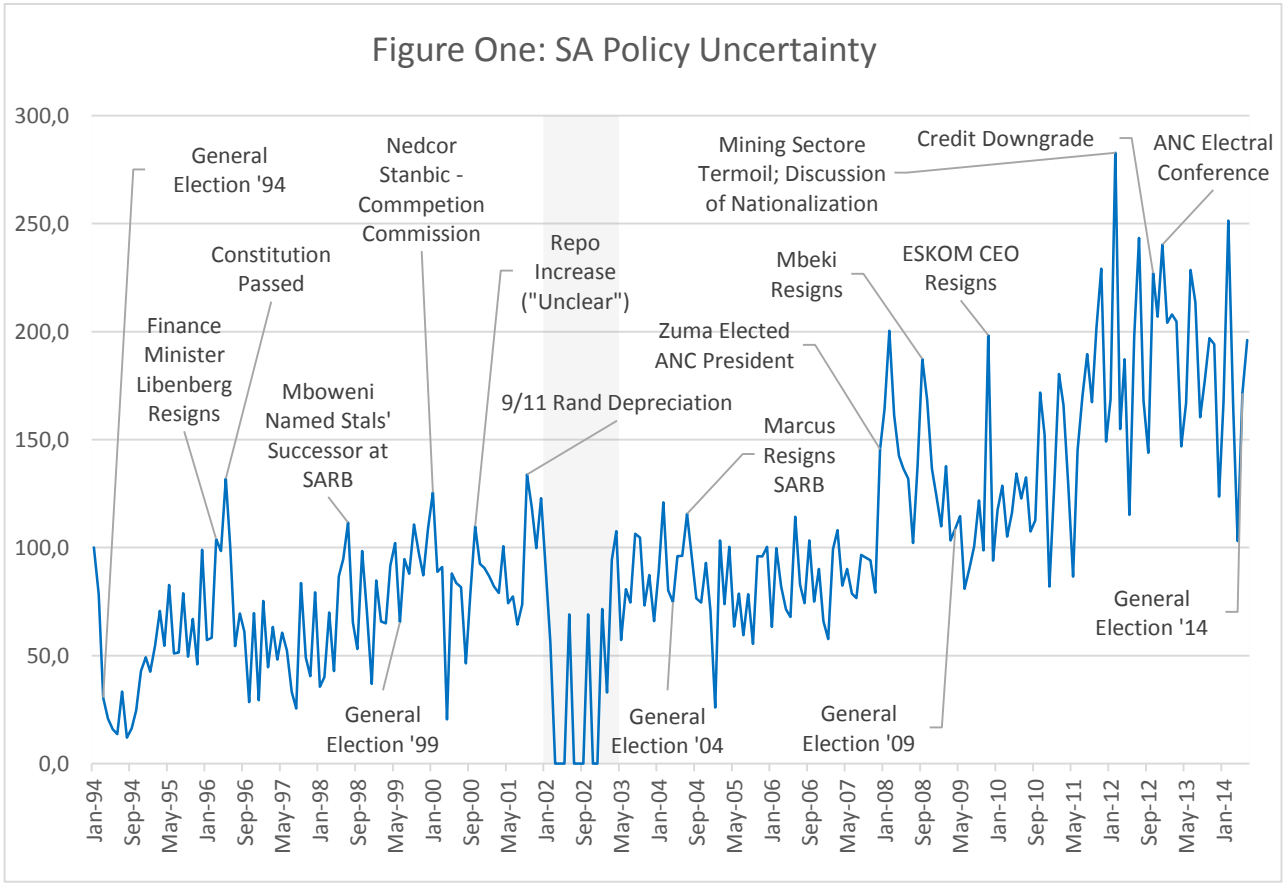
Figure One displays the SAPU index and indicates events that correspond to its prominent spikes.[7] The results uncovered with this informal robustness check are quite encouraging. SAPU is seen to experience sustained spikes *prior* to foreseeable major policy events such as the finalization of the Constitution of South Africa, where worries that this document would not sufficiently safeguard property rights ran high ('The product of SA's struggle', 1996:2). It is also seen to spike *after* unforeseen sources of policy uncertainty, such as the announcement that Tito Mboweni, the then Minister of Labour who at the time was perceived as a controversial figure by financial markets (Cohen, 1998:6), would take over from Dr. Stals as head of the SARB. This index thus appears to

[6] The index was also scaled by a factor such that January of 1994 corresponds 100.

[7] A problem with the quality of some of the data was uncovered through the construction of the monthly news volume weighting index; Sabinet's SA Media database exhibits a sudden substantial decline in the volume of news uploaded onto the database from February 2002 till approximately May 2003. For this period, shaded in grey in Figure One, the index does not provide a reliable measure of SA policy uncertainty.

capture uncertainty generated by essentially qualitative policy events and also gives an indication of the dynamic character of policy uncertainty that is consistent with the nature of sources thereof, which suggests that this index is indeed conveying pertinent information that would not have been captured by other typical policy uncertainty metrics.

Also in accordance with expectations, this index ostensifies policy uncertainty trends and idiosyncrasies that seem consistent with South Africa's particular socio-economic-political context. For instance, given the ANC's dominant part party status, one would expect internal party politics to offer a legitimate source of policy uncertainty in SA. That the index captures this can been seen in that the election of Jacob Zuma (who at the time still faced charges of corruption, expressed populist sentiments, and was strongly aligned with Cosatu and the SACP (Mafu & Khanylle, 2007:25)) as president of the ANC in December 2007 precedes a protracted spike in the index, whereas no such disturbance is seen to correspond with the 2009 general election. In fact, no general election, barring that of 1994, seems to correspond to any substantial increase in policy uncertainty, a result that is again consistent with the certainty that the ANC will retain national power. As for trends, the uptick in policy uncertainty toward the end of the series is consistent with increasing government debt and multiple credit rating agency downgrades (Theunissen, 2012:6), increasing turmoil in the mining sector (Sathekge, 2012:15), official discussion of prospects for the nationalization of the mining sector or selected mines (Tabane, 2012:1) and general doubt in

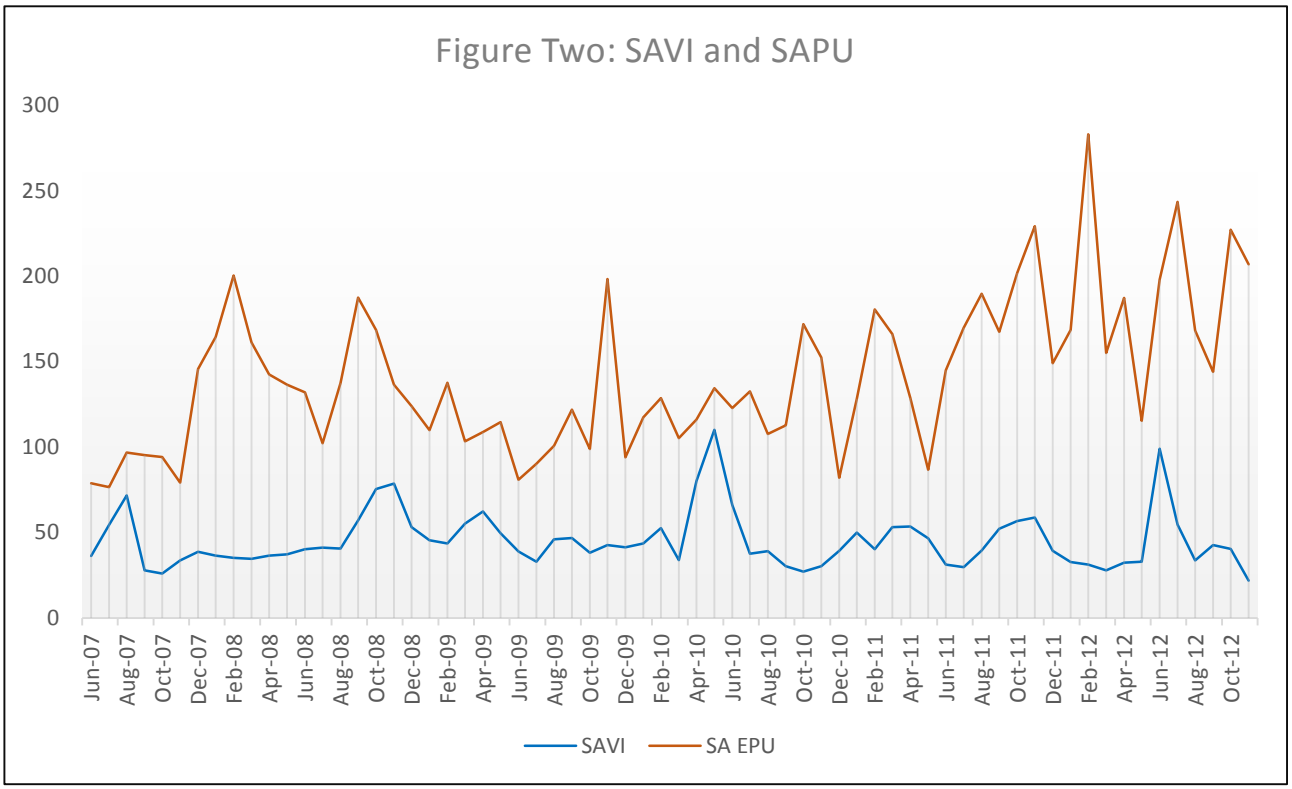


Zuma's Government's capacity to deliver policy outcomes and uphold sound governance (Sparks, 2012:13). Overall, these findings seem consistent with what one would expect this index to deliver.

3.2 Policy Uncertainty and the SAVI Index

As a robustness check, Baker, Bloom and Davis (2013:18-19) assess the relationship between their US policy uncertainty (USPU) index and the Chicago Board of Options and Exchange's VIX index, a market based measure of economic uncertainty. Their findings suggest substantial correlation between the VIX and policy uncertainty; they report a correlation coefficient of 0.578. The Johannesburg Stock Exchange's (JSE) SAVI index is a similarly constructed market based measure of expected equity market volatility which captures economic uncertainty in South African asset markets. Based on the Stanford Group's finding, one would expect there to be a degree of correlation between the SAVI and SAPU.

Data on the SAVI index used here, displayed in Figure Two, was obtained from Bloomberg (2014). The data consists of thirty day averages of SAVI index volatility, plotted at monthly intervals. Due to data availability, the SAVI index sample is limited to the period of June 2007 till November 2012. Figure Two juxtaposes the SAVI against SAPU. An informal visual assessment suggests that there is some, but not substantial, evidence of correlation between these indices: spikes in both indices appear to occur contemporaneously during the second half of 2008 and in June of 2012, whereas a pronounced spike in the SAVI in March of 2010 appears to occur independently of SAPU.



The initial results of a formal assessment of the correlation between these indices are however less than encouraging. Correlation between the SAVI and SAPU is negligible at 0.013, far less than the correlation of 0.578 between the VIX and policy uncertainty as reported by the Stanford Group. While disappointing, this result is not inexplicable. As discussed in Section 2.2, the SAPU index constructed here is restricted to articles that contain references to SA, but as SA is a small, open economy with deep financial markets, JSE movements are highly vulnerable to international developments (Hassan, 2013:2). Given these features of SA's economy one would expect substantial correlation between the Stanford Group's USPU index and the SAVI. However, the correlation between the Stanford Group's USPU index, obtained from the Stanford Group's Economic Policy Uncertainty website (2014), and the SAVI over the same sample period is a mere 0.117, admittedly far greater than the correlation of 0.013 between the SAVI and SAPU, but also far less than the correlation of 0.578 between the VIX and the Stanford Group's policy uncertainty index. Perhaps the lack of significant correlation between SAPU and the SAVI is thus a reflection of SA equity markets' tendency to deviate substantially from fundamentals (Hassan, 2013:5) and is not a reflection of the robustness of the index constructed here.

Furthermore, additional statistical assessments of the relationship between SAPU and the SAVI yield more encouraging results. Taking the first difference of all three of these series to account for the unit root in SAPU,[8] the correlation between the first differences of SAPU and the SAVI is a more substantial 0.177 while correlation between the first difference of USPU and the SAVI is a mere 0.096. This suggest that changes in SAVI volatility are at least more correlated with changes in SAPU uncertainty than with changes in policy uncertainty stemming from a major international source of policy uncertainty.

TABLE ONE

Model:	1.1 OLS	1.2 OLS
VARIABLES	*SAVI FD*	*SAVI FD*
SAPU FD	0.0685	0.0656
	(0.0485)	(0.0459)
	0.163	0.158
USPU FD		0.0554
		(0.0736)
		0.455
Observations	65	65
R-squared	0.031	0.038

Reported statistics from top to bottom: Coefficient, Robust Standard Error, P-Value.

As an additional test of this relationship, consider Table One. Model 1.1 reports the results of an ordinary least squares (OLS) regression of the first difference of the SAVI (*SAVI FD*) on the first difference of SAPU (*SAPU FD*), and Model 1.2 augments Model 1.1 by adding the first difference of the Stanford

[8] See Appendix C for Augmented Dickey-Fuller test results which indicate that we cannot reject the hypothesis that this series contain a unit root at even a ten percent level of significance, while we can reject the hypothesis that the first difference thereof contains a unit root at a one percent level of significance.

Group's US policy uncertainty index (*USPU FD*) as a covariate. While the coefficient on *SAPU FD* is not statistically significant at any of the traditionally acceptable levels of significance, the p-value of the coefficient on *SAPU FD*, which is close to fifteen despite the small sample of only 65 observations and is even slightly improved when controlling for *SGPU FD*, provides inconclusive but encouraging evidence of a positive and statistically significant relationship between these series. It is also worth noting also that the Stanford Group find a greater degree of correlation between their USPU index and implied volatility indices that they construct for assets at longer maturities (Baker, Bloom & Davis, 2013:19); possible corroboration of this with the SAPU index for SA presents an avenue for further research here. In sum however, the results obtained here thus far are mixed; they do not conclusively confirm the robustness of this measure of SAPU, but they do provide some degree of encouragement in this regard.

3.3 Policy Uncertainty and SA Government Bond Yields

With regards to the economic significance of policy uncertainty, much of the policy uncertainty literature focuses on the relationship between policy uncertainty and investment in fixed capital or GDP growth (see for instance Bernanke (1983), Aizenman and Marian (1991), Rodrik (1991) or Higgs (2006)). There is however also a growing literature which extends the scope of discussion pertaining to the economic significance of policy uncertainty to equity risk premiums. Though the theoretical and empirical literature in this regard is as of yet sparse, theory and statistical evidence uncovered thus far suggests a positive relationship between equity risk premiums and policy uncertainty (Pástor & Veronesi, 2011:5-6). Even sparser however is the literature pertaining to the relationship between policy uncertainty and risk premiums on government bonds. Ulrich (2013:1) is as of yet the only instance of a study of the relationship between Knightian policy uncertainty and bond yields, and this study pertains exclusively to policy uncertainty that stems from fiscal policy.

By way of expanding on this developing literature, this section presents an empirical assessment of the relationship between policy uncertainty and government bond yields at short and long maturities. Given the lack of guidance available in the literature, the empirical work presented here is of modest ambition; no attempt to definitively establish a causal relationship between policy uncertainty and risk premiums on government bond yields at different maturities or to precisely quantify any such relationship is made. The core aim here is merely to show that there is evidence of a relationship between SAPU and SA government bond yields which is consistent with the intuition that policy uncertainty should increase risk premiums.

Monthly data on the yields of SA government bonds at short maturities (of between zero and three years) and at long maturities (of ten or more years) was obtained from the SARB website (2014). Monthly data on the SARB's repo rate was also obtained from the SARB website, and monthly

year-on-year CPI data was obtained from Bloomberg (2014). Data on financial analysts' inflation expectations was obtained from the Bureau of Economic Research (2014), and was adjusted by Reid[9] (2012:278) to reflect expectations at a horizon of one year. This data was however only available at quarterly intervals. In order to maintain a substantial number of observations, this data series was extrapolated from quarterly to monthly intervals with Excel's 'Fill Series' function, using a growth trend to account for acceleration and deceleration in the series. As one would expect inflation expectations to exhibit substantial persistence, stretching the data in this manner should yield reasonably accurate monthly data on inflation expectations.

TABLE TWO

Model:	2.1	2.2	2.3	2.4	2.5
	OLS LPM	OLS LPM	OLS LPM	OLS LPM	OLS LPM
VARIABLES	*Binary Yield 0-3*	*Binary Yield 0-3*	*Binary Yield 0-3*	*Binary Yield 0-3*	*Binary Yield 0-3*
Log of SAPU	-0.146	-0.414***	-0.294*	-0.319**	-0.293*
	(0.106)	(0.152)	(0.171)	(0.159)	(0.177)
Repo		-0.0661*	-0.0764**	-0.0311	-0.0352
		(0.0344)	(0.0347)	(0.0361)	(0.0369)
CPI		-0.0204	-0.0161	-0.0311	-0.0297
		(0.0338)	(0.0336)	(0.0292)	(0.0297)
Inflation Exp.		0.202**	0.209**	0.162*	0.166*
		(0.0911)	(0.0897)	(0.0903)	(0.0905)
Repo FD				0.293***	0.281***
				(0.0908)	(0.0960)
CPI FD				0.0835	0.0808
				(0.0837)	(0.0845)
Inflation Exp. FD				0.320*	0.303
				(0.187)	(0.191)
Log of USPU			-0.280*		-0.0697
			(0.151)		(0.164)
Constant	1.160**	1.891***	2.652***	1.478**	1.686*
	(0.505)	(0.717)	(0.843)	(0.731)	(0.856)
Observations	131	131	131	131	131
R-squared	0.014	0.063	0.086	0.168	0.169

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

For all regressions featured in Table Two, the dependent variable *Binary Yield 0-3* is a binary variable that takes on a one if the first difference of the yield of short term government bonds is positive and a zero otherwise. The dependent variable for all of the regressions presented in Table Three, *Binary Yield 10+*, is similarly constructed, but for the yields of long maturity government

[9] A special thanks to Dr. Reid for her provision of this adjusted data.

bonds. Consistent with Li *et al* (2013:10) the SAPU and USPU indices are transformed by the natural log to reduce heteroscedasticity. All regressions presented in this section are OLS linear probability models (LPM),[10] and are performed for a sample of 131 monthly observations that span from June 2003 to April 2014.[11]

Table Two below presents substantial evidence of an economically and statistically significant statistical relationship between the yield on short maturity SA government bonds and SAPU. Model 2.1, a naïve regression of the *Binary Yield 0-3* on *Log of SAPU* (the natural log of SAPU), does not indicate a statistically significant relationship between the probability of observing an increase in yields at the short end of the yield curve and SAPU. However, controlling for other relevant bond yield determinants, including the SARB's repo rate (*Repo*), year-on-year CPI (*CPI*) and inflation expectations (*Inflation Exp.*), Model 2.2 indicates a negative relationship between *Log of SAPU* and the probability of observing an increase in the short end of the yield curve that is statistically significant at a one percent level of significance. As for the economic significance of this result, given the log-level form of this LPM regression, a coefficient of -0.414 indicates that a one-hundred percent increase in SAPU – a scenario that occurs on multiple occasions in the data – reduces (increases) the probability observing an increase (a decrease) in yields at the short end of the yield curve by approximately forty percent.

For robustness, Models 2.4 and 2.5 incorporate first differences (*FD*) for the covariates *Repo*, *CPI* and *Inflation Exp.*, as it is conceivable that the period on period change in these variables may affect yields independent of the level thereof, and Models 2.3 and 2.5 incorporate the Stanford Group's USPU index (*Log of USPU*) to control for policy uncertainty affecting international asset markets more generally. Even in the most restrictive regression, Model 2.5, the coefficient on *Log of SAPU* remains negative, economically significant, and statistically significant at a ten percent level. On the basis that Models 2.4 and 2.5 are nested and that Model 2.5 leads to a reduction in the adjusted R-squared from 0.1199 to 0.1138, Model 2.4, which attributes *Log of SAPU* a coefficient of -0.319 significant at a five percent level of significance, is taken to be the best estimate of the magnitude of this coefficient.

[10] Each regression was also estimated using maximum likelihood (ML) probit estimator. However, as the results obtained via probit estimation did not result in substantial changes in the statistical significance of the variables of interest, and as the OLS LPM yields results that are more readily interpretable, probit estimation results were excluded from the main text. To see these results, refer to Appendix C.

[11] The period and length of the sample was determined at the earliest boundary by the unreliability of the SAPU index between February 2002 and approximately May 2003, and at the latest boundary by the availability of inflation expectations data.

TABLE THREE					
Model:	3.1	3.2	3.3	3.4	3.5
	OLS LPM	OLS LPM	OLS LPM	OLS LPM	OLS LPM
VARIABLES	*Binary Yield 10+*	*Binary Yield 10+*	*Binary Yield 10+*	*Binary Yield 10+*	*Binary Yield 10+*
Log of SAPU	0.0466	0.139	0.185	0.245	0.226
	(0.110)	(0.164)	(0.179)	(0.161)	(0.176)
Repo		0.0377	0.0338	0.0750**	0.0782**
		(0.0352)	(0.0359)	(0.0369)	(0.0377)
CPI		-0.0260	-0.0244	-0.0245	-0.0256
		(0.0310)	(0.0313)	(0.0307)	(0.0309)
Inflation Exp.		0.0337	0.0365	-0.0330	-0.0359
		(0.0897)	(0.0906)	(0.0924)	(0.0918)
Repo FD				-0.0547	-0.0455
				(0.124)	(0.130)
CPI FD				0.0453	0.0474
				(0.101)	(0.101)
Inflation Exp. FD				0.740***	0.753***
				(0.198)	(0.194)
Log of USPU			-0.108		0.0530
			(0.162)		(0.171)
Constant	0.313	-0.460	-0.167	-0.872	-1.030
	(0.524)	(0.756)	(0.883)	(0.718)	(0.870)
Observations	131	131	131	131	131
R-squared	0.001	0.021	0.025	0.124	0.125
Robust standard errors in parentheses					
*** p<0.01, ** p<0.05, * p<0.1					

Results for regressions of *Binary Yield 10+*, presented in Table Three, are less impressive. Adding the same covariates featured in Table Two do improve the economic and statistical significance of *Log of SAPU* when compared to the naïve Model 3.1, but none of the regressions presented here show *Log of SAPU* to be statistically significant at even a ten percent level of significance. The most encouraging result, Model 3.4, indicates a coefficient of 0.245 on *Log of SAPU*, with a (unreported) p-value of 0.134.[12] That none of these models produce a significant result could be a product of high standard errors stemming from the inherent noisiness of news-based indices, but it must nevertheless be concluded then that there is some but not substantial evidence of a positive relationship between SAPU as measured here and the probability of observing an increase in yields at the long end of the yield curve.

While the statistical evidence of a relationship between SAPU and SA government bond yields presented here is not conclusive, it does provide some evidence of a relationship between these

[12] Model D.2.4 featured in Appendix D, a ML probit model estimated with the same covariates as Model 3.4, does yield a coefficient on *Log of SAPU* that is positive and significant at a ten percent level of significance, indicating that the results presented in Table Three may also be somewhat overly pessimistic.

variables which is theoretically and empirically consistent. The negative and positive coefficient on *Log of SAPU* for *Binary Yield 0-3* and *Binary Yield 10+* respectively provides evidence that an increase in policy uncertainty supresses the short end and possibly lifts the long end of the yield curve. Theoretically, this is consistent with a scenario in which heightened economic uncertainty, in this case stemming from policy developments, causes some investors to transfer funds away from riskier assets to less-risky assets, producing an increase in the risk premium for holding riskier investment positions. Furthermore, this result is empirically consistent with Ulrich (2013:49), who finds that an increase in fiscal policy uncertainty steepens the slope of the yield curve. Thus the results presented here, while not conclusive, are satisfactory in that they are suggestive of a relationship which is in line with other theoretical and empirical insights.

Conclusion

This study has covered substantial ground. It has shown that, for the purpose of quantifying aggregate national policy uncertainty, a news-based index boasts notable advantages over other commonly-used means to quantify policy uncertainty presently in the literature. The news-based index constructed here does incorporate substantial extensions to the search criteria employed by the Stanford Group, but these extensions, it has been argued, are justified given the Stanford Group's stated aims, and in account of SA's socio-economic-political context and the nuances of the policy process generally. Furthermore, the combined results of an informal assessment of the 'policy uncertainty story' that this index tells, moderate evidence of a correlation between this SAPU index and the SAVI index, and a modest but theoretically and empirically consistent display of evidence of a relationship between SAPU and SA government bond yields serve to corroborate this index. These findings provide reasonably strong grounds to argue that this SAPU index does indeed seem to capture and convey information on the extent to which policy uncertainty has been experienced in SA over the course of the last twenty years.

The scope for extensions to this study alone is extensive. For instance, following the Stanford Group, it would be a worthwhile endeavour to construct implied volatility indices in the style of the SAVI for put and call options at longer maturities and to check for signs of an increasingly strong relationship between this SAPU index and these indices. Further, more rigorous econometric work aimed to precisely quantify the relation between SA government bond yields and SAPU also presents a valuable avenue for continued research. There are also respects in which this SAPU index could itself be improved on. For instance, its accuracy could be improved by a more rigorous set of checks against false positives than the limited automated means used here. There is also scope for, say, the construction of a composite policy uncertainty index wherein this SAPU is added to a

weighted index otherwise composed of time-varying volatility series; this approach would give more sway to the policy variables more readily brought to mind when economists think of policy but would continue to incorporate a representation of the dynamic features of policy uncertainty and of policy uncertainty stemming from more qualitative policy issues. All of these and many more extensions to this study would provide further valuable contributions to the policy uncertainty literature.

References

Aizenman, J. & Marion, N. 1991. Policy Uncertainty, Persistence and Growth. NBER Working Paper, No 3848.

Ali, A.M. 2001. Political Instability, Policy Uncertainty, and Economic Growth: An Empirical Investigation. *American Economic Journal*, 29(1):87-106.

Baker, S.R., Bloom, N. & Davis, S.J. 2013. Measuring Economic Policy Uncertainty [Online]. Available: http://www.policyuncertainty.com/research.html [2014, February 5].

Bernanke, B.S. 1983. Irreversibility, Uncertainty, and Cyclical Investment. *The Quarterly Journal of Economics*, 98(1):85-106.

Bloom, N. 2014. Fluctuations in Uncertainty. *The Journal of Economic Perspectives*, 28(2):152-176.

Bonollo, M., Crimaldi, I., Flori, A., Pammolli, F. & Riccaboni, M. 2014. Systemic Importance of Financial Institutions: regulation, research, open issues, proposals. IMT Lucca EIC Working Paper, No. 02/2014:1-50.

Born, B. & Peifer, J. 2011. Policy risk and the business cycle. Bonn Econ Discussion Papers, No. 06/2011.

Brogaard, J. & Detzel, A. 2012. The Asset Pricing Implications of Government Economic Policy Uncertainty [Online]. Available: http://www.darden.virginia.edu/web/uploadedFiles/Darden/Faculty_Research/Research_Seminars/ifc/5_Detzel_paper.pdf [2014, March 1].

Bryan, M.F. & Cecchetti, S.G. 1993. The Consumer Price Index as a Measure of Inflation. NBER Working Paper, No. 4505.

Cohen, T. 1998. Appointment could make things worse, say foreign analysts. *Business Day*, 6 July:6.

De Jager, N. & Du Toit, P. 2012. *Friend or Foe? Dominant Party Systems in Southern Africa*. Cape Town: UCT Press.

Durnev, A. 2010. The Real Effects of Political Uncertainty: Elections and Investment Sensitivity to Stock Prices [Online]. Available: http://papers.ssrn.com/sol3/_papers.cfm?abstract_id=1549714 [2014, March 1].

Fernández-Villaverde, J., Guerrón-Quintana, P. & Kuester, K. 2012. Fiscal Volatility Schocks and Economic Activity [Online]. Available: https://econresearch.uchicago.edu/sites/econresearch.uchicago.edu/files/Fernandez-Villaverde.pdf [2014, March 1].

Harman, G. & Kulkarni, S.R. 2006. The Problem of Induction. *Philosophy and Phenomenological Research*, 72(3):559-575.

Hassan, S. 2013. South African Capital Markets: An Overview. SARB Working Paper, No. WP/13/04.

Higgs, R. 2006. *Depression, War and Cold War*. New York: Oxford University Press.

Howlett, M., Ramesh, M. & Perl, A. 2009. *Studying Public Policy: Policy Cycles and Policy Subsystems*. New York: Oxford University Press.

Julio, B. & Yook, Y. 2010. Political Uncertainty and Corporate Investment Cycles [Online]. Available: http://www.lse.ac.uk/fmg/events/capitalMarket/pdf/Political%20uncertainty%20and%20corporate%20investment%20ctcles.pdf [2014, March 1].

Jurado, K., Ludvigson, S.C. & Ng, S. 2013. Measuring Uncertainty. NBER Working Paper, No. 19456.

Knight, F. 1921. Risk, *Uncertainty and Profit*. New York: Sentry Press.

Li, X., Balcilar, M., Gupta, R. & Chang, T. 2013. The Causal Relationship between Economic Policy Uncertainty and Stock Returns in China and India: Evidence from a Bootstrap Rolling-Window Approach. University of Pretoria, Department of Economics Working Paper, No. 2013-45.

Liedtke, P.M. The Lack of an Appropriate Definition of Systemic Risk. *Insurance and Finance*, No. 6:1-3.

Mafu, T. & Khanylle, S. 2007. Zuma's win has analysts guessing: Policy shift may dent rating. *Star*, 20 December:25.

Malher, G. 2012. *Principles of Comparative Politics*. Boston: Pearson Inc.

Maswanganyi, N. 2014. *IMF's cut of SA's growth forecasts not surprising, say economists* [Online] Available: http://www.bdlive.co.za/economy/2013/02/19/uncertainty-makes-firms-reluctant-to-invest-in-south-africa-survey-shows [2014, July 7].

Pástor, L. & Veronesi, P. 2011. Political Uncertainty and Risk Premia. NBER Working Paper, No. 17464.

Penrod, J. 2007. Living With Uncertainty: Concept Advancement. *Journal of Advanced Nursing*, 57(6):658-667.

Reid, M. 2012. Inflation Expectations of the Inattentive General Public. Economic Research Southern Africa Working Paper, No. 278.

Rodrik, D. 1991. Policy uncertainty and private investment in developing countries. *Journal of Development Economics*, 36(1):229-243.

Sathekge, B. 2012. Labour regulation issues still top priority. *The New Age*, 25 July:15.

Sparks, A. 2012. Ideological fixation holds SA back, despite clearer policies. *Business Day*, 29 February:13.

Tabane, R. 2012. The politics of perception and uncertainty. *Mail & Guardian*, 16 February:38.

The product of SA's struggle. 1996. *The Natal Witness*, 24 April:2.

Theunissen, G. 2012. SA at risk of further downgrades. *Finweek*, 11 October:6.

Ulrich, M. 2013. How does the Bond Market Perceive Government Interventions?. Colombia Business School Research Paper, No. 12/42.

Wooldridge, J.M. 2009. *Introductory Econometrics: A Modern Approach*. Cincinnati: South-Western, Cengage Learning.

Bloomberg. 2014. SAVI Index 30 Day Volatility [2014, December 15].

Bloomberg. 2014. Monthly Year on Year CPI Data for South Africa [2014, December 15].

Bureau of Economic Research. 2014. Inflation Expectations Survey. Available: http://www.ber.ac.za/runtime/popcontentrum.aspx?pageidref=18248documenttype=inflation%20expectations [December 15].

SARB. 2014. Yield on Stock Exchange Traded SA Government Bonds, 0 – 3 Years. Available: https://www.resbank.co.za/Research/Statistics/Pages/Statistics-Home.aspx [2014, December 15].

SARB. 2014. Yield on Stock Exchange Traded SA Government Bonds, 10 Years or Over. Available: https://www.resbank.co.za/Research/Statistics/Pages/Statistics-Home.aspx [2014, December 15].

SARB. 2014. Bankrate (Lowest Rediscount Rate at SARB). Available: https://www.resbank.co.za/Research/Statistics/Pages/Statistics-Home.aspx [2014, December 15].

Appendix A: Key Words

GROUP (1): 'Economic' Keywords

economic OR economy OR ekonomies OR ekonomie

GROUP (2): 'Uncertainty' Keywords

uncertain OR uncertainty OR unsure OR ambiguous OR ambiguity OR indecision OR indecisive OR incoherent OR inconclusive OR unresolved OR unconfirmed OR unsettled OR undecided OR onseker OR onsekerheid OR onduidelik OR dubbelsinnig OR dubbelsinnigheid OR besluiteloos OR besluitloosheid OR onsamehangende OR onbeslis OR onopgeloste OR onbevestigde OR onafgehandelde OR onvoorspelbaar

GROUP (3): 'Policy' Keywords

GENERAL: policy OR policies OR legislature OR legislative OR legislation OR law OR regulation OR regulations OR regulatory OR "red tape" OR beleid OR beleide OR reguleering OR regulasies OR regulatoriese OR wetgewer OR wetgewende OR wetgewing OR wet

FISCAL POLICY: "government expenditure" OR "government spending" OR fiscal OR (budget AND ANC) OR tax OR taxes OR taxation OR staatsbesteding OR owerheidsbesteding OR fiskaal OR (begroting AND ANC) OR heffing OR belasting

IMPORTANT POLICY ACTORS AND INSTITUTIONS: ("President" AND (ANC OR Mandela OR Mbeki OR Zuma)) OR ("Minister of" AND (government OR ANC)) OR "National Executive Committee" OR NEC OR "ANC agenda" OR "ANC's agenda" OR "ANC decision" OR "ANC's decision" OR Parliament OR judiciary OR judicial OR "Constitutional Court" OR "Supreme Court of Appeal" OR "High Court" OR "Labour Court" OR "Land Claims Court" OR ("Minister van" AND (owerheid OR ANC)) OR "Nasionale Uitvoerende Komitee" OR NUK OR "ANC agenda" OR "ANC se agenda" OR "ANC besluit" OR "ANC se besluit" OR Parlement OR regsbank OR geregtelike OR "Konstitusionele Hof" OR Appèlhof OR Hooggeregshof OR Arbeidshof OR Grondeisehof

MONETARY POLICY ACTORS AND INSITUTIONS: "Monetary Policy Committee" OR MPC OR "repo rate" OR "policy rate" OR (SARB AND "interest rate") OR "South African Reserve Bank" OR SARB OR "Central Bank" OR "Reserve Bank" OR ("open market operations" AND SARB) OR "Monetêre Beleid Komitee" OR MBK OR "repo koers" OR "beleidskoers" OR (SARB AND "rentekoers") OR ("Suid Afrikaanse Reserwe Bank") OR "Sentrale Bank" OR "Reserwe Bank" OR ("ope-mark transaksies" AND SARB)

TRADE AND INDUSTRIAL POLICY: tariff OR tariffs OR quota OR quotas OR "trade restriction" OR "trade restrictions" OR "regulate trade" OR "barrier to trade" OR "barriers to trade" OR "capital controls" OR subsidy OR subsidise OR "anti-dumping" OR "quantitative restrictios" OR "export-led growth" OR "picking winners" OR "import substitution" OR "development bank" OR "state-owned enterprise" OR "state-owned enterprises" OR parastatal OR parastatals OR tarief OR tariewe OR kwota OR kwotas OR handelsbeperking OR handelsbeperkings OR handelsreguleering OR handelsgrens OR handelsgrense OR "kapitaal kontrole" OR subsidie OR subsidiëer OR "kwantitiewe beperkings" OR "Uitvoer gedrewe groei" OR "kies wenners" OR "invoer substitusie" OR "ontwikkeling bank" OR "staatsbesitte instelling" OR "staatsbesitte instellings" OR semistaatsinstelling OR semistaatsinstellings

ECONOMIC POLICY: RDP OR "Reconstruction and Development Program" OR GEAR OR "Growth Employment and Redistribution" OR ASGISA OR "Accelerated and Shared Growth Initiative for South Africa" OR MTFS OR "The Medium Term Strategic Framework" OR NGP OR "New Growth Path" OR IPAP OR "Industrial Policy Action Plan" OR "Heropbou- en Ontwikkelingsprogram" OR "Groei Werkverskaffing en Herverdeling" OR "Versnelde en Gedeelde Groei-inisiatief vir Suid-Afrika" OR "Die Mediumtermyn Strategiese Raamwerk" OR "Nuwe Groeipad" OR "Industriele Beleids Aksie Plan"

CONTENTIOUS SOCIAL POLICY ISSUES: "nationalization" OR "nationalize" OR "land reform" OR "land redistribution" OR "Black Economic Empowerment" OR BEE OR "Broad-Based Black Economic Empowerment" OR BBBEE OR "transformation" OR nasionalisering OR nasionaliseer OR grondhervorming OR "herverdeling van grond" OR "Swart Ekonomiese Bemagtiging" OR "SEB" OR "Breëbasis Swart Ekonomiese Bemagtiging" OR BBSEB OR "transformasie"

Note: Thank you to George Ott for assistance with all Afrikaans translations, and to Professor Rankin for suggestions for Trade and Industrial Policy keywords.

Appendix B: Augmented Dickey Fuller Tests of SAPU

FIGURE B.1: ADFT SA Policy Uncertainty

Augmented Dickey-Fuller test for unit root — Number of obs = 59

	Test Statistic	1% Critical Value	5% Critical Value	10% Critical Value
		Interpolated Dickey-Fuller		
Z(t)	-2.192	-4.130	-3.491	-3.175

MacKinnon approximate p-value for Z(t) = 0.4942

FIGURE B.2: ADFT SA Policy Uncertainty, First Differenced

Augmented Dickey-Fuller test for unit root — Number of obs = 58

	Test Statistic	1% Critical Value	5% Critical Value	10% Critical Value
		Interpolated Dickey-Fuller		
Z(t)	-4.909	-4.132	-3.492	-3.175

MacKinnon approximate p-value for Z(t) = 0.0003

Note: All Augmented Dickey Fuller tests conducted at six lags and account for a trend.

Appendix C: Probit Regression Outputs

TABLE D.1

Model:	D.1.1	D.1.2	D.1.3	D.1.4	D.1.5
	ML, Probit	ML, Probit	ML, Probit	ML, Probit	ML, Probit
VARIABLES	*Binary Yield 0-3*	*Binary Yield 0-3*	*Binary Yield 0-3*	*Binary Yield 0-3*	*Binary Yield 0-3*
Log of SAPU	-0.372	-1.091**	-0.780*	-0.820*	-0.771
	(0.276)	(0.430)	(0.462)	(0.469)	(0.495)
Repo		-0.174*	-0.207**	-0.0820	-0.0940
		(0.0931)	(0.0976)	(0.110)	(0.115)
CPI		-0.0519	-0.0440	-0.0987	-0.0962
		(0.0860)	(0.0853)	(0.0826)	(0.0830)
Inflation Exp.		0.524**	0.562**	0.453*	0.467*
		(0.245)	(0.248)	(0.266)	(0.268)
Repo FD				1.103**	1.066*
				(0.527)	(0.544)
CPI FD				0.264	0.256
				(0.254)	(0.255)
Inflation Exp. FD				1.035	0.985
				(0.643)	(0.646)
Log of USPU			-0.767*		-0.162
			(0.413)		(0.456)
Constant	1.682	3.697*	5.812**	2.424	2.943
	(1.316)	(1.982)	(2.358)	(2.141)	(2.572)
Observations	131	131	131	131	131

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

TABLE D.2					
Model:	D.2.1	D.2.2	D.2.3	D.2.4	D.2.5
	ML, Probit	ML, Probit	ML, Probit	ML, Probit	ML, Probit
VARIABLES	*Binary Yield 0-3*	*Binary Yield 0-3*	*Binary Yield 0-3*	*Binary Yield 0-3*	*Binary Yield 0-3*
Log of SAPU	0.117	0.359	0.478	0.769*	0.682
	(0.276)	(0.418)	(0.456)	(0.462)	(0.491)
Repo		0.0974	0.0868	0.238**	0.259**
		(0.0903)	(0.0915)	(0.106)	(0.109)
CPI		-0.0684	-0.0643	-0.0669	-0.0716
		(0.0817)	(0.0818)	(0.0850)	(0.0849)
Inflation Exp.		0.0884	0.0972	-0.0981	-0.120
		(0.229)	(0.230)	(0.262)	(0.261)
Repo FD				-0.179	-0.141
				(0.342)	(0.355)
CPI FD				0.125	0.134
				(0.273)	(0.272)
Inflation Exp. FD				2.412***	2.544***
				(0.743)	(0.751)
Log of USPU			-0.276		0.276
			(0.407)		(0.460)
Constant	-0.471	-2.484	-1.743	-4.396**	-5.282**
	(1.317)	(1.961)	(2.254)	(2.146)	(2.544)
Observations	131	131	131	131	131

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1