Brexit or Bremain ? Evidence from bubble analysis

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Abstract

We applied the Johansen-Ledoit-Sornette (JLS) model to detect possible bubbles and crashes related to the Brexit/Bremain referendum scheduled for 23rd June 2016. Our implementation includes an enhanced model calibration using Genetic Algorithms. We selected a few historical financial series sensitive to the Brexit/Bremain scenario, representative of mutiple asset classes.

We found that equity and currency asset classes show no bubble signals, while rates, credit and real estate show super-exponential behaviour and instabilities typical of bubble régime. Out study suggests that, under the JLS model, equity and currency markets do not expect crashes or bursts following the referendum results, thus supporting a Bremain scenario. Instead, rates and credit markets consider the referendum a risky event, expecting either a Bremain scenario or a Brexit scenario edulcorated by central banks intervention. In the case of real estate, a crash is expected, but its relationship with the referendum results is questionable.

1. Brexit or Bremain ?

On Dec. 17, 2015 the Parliament of the United Kingdom approved the European Union Referendum Act 2015 to hold a referendum on whether the United Kingdom should remain a member of the European Union (EU).

The referendum will be held* on Jun. 23, 2016, with the following Q&A:

- Q: "Should the United Kingdom remain a member of the European Union or leave the European Union?
  - A1: "Remain a member of the European Union"
  - A2: "Leave the European Union"

In case of Brexit decision, there is no immediate withdrawal. Instead, a negotiation period begins to establish the future relationship between UK and EU. The negotiation length is two years, extendible. For example, the agreements between EU and Switzerland took 10 years of negotiations.

Referendum campaigning has been suspended on 16th June 2016

following the shooting of Labour MP Jo Cox. This event has had a strong impact on the public opinion, rapidly changing the opinion polls and possibly the attitude of the country.

Forecasting the results of the 23rd June 2016 referendum is clearly a very challenging task. There exist at least three sources of forecast data:

- Opinion polls [5] [7]
- Bookmakers betting odds [6]
- Market data [7]

In this paper we recur to a different forecasting approach, described in the next section.

2. Methodology

We applied a forecasting methodology based on the Johansen-Ledoit-Sornette (JLS) model, developed since the 90s at ETHZ by D. Sornette and co-authors [1][2]. The JLS model is extensively applied to detect bubbles, crashes and crisis analysis in many fields. For applications in finance see e.g. the Financial Crisis Observatory [3].

The JLS model assumes that, during a bubble régime, the asset mean value follows a super-exponential path showing log-periodic instabilities, the so called Log-Periodic Power-Law function, up to a critical time t_c, representing the most probable time for a possible crash event,

$$LPPL(t) = A + B\,(t_c - t)^m + C\,(t_c - t)^m \cos(\omega \log(t_c - t) + \varphi).$$

The seven JLS parameters $(A, B, C, m, \omega, \varphi, t_c)$ must be calibrated to fit the asset's historical series.

Our implementation of the JLS model is based on JLS papers [1][2], enhanced with robust global optimization methods, i.e. Genetic Algorithms for model calibration [4].

We applied the JLS model to a selection of historical financial series sensitive to the current Brexit/Bremain scenario. For each series, we have run multiple model calibrations with different calibration windows, to ensure the stability of the observed results.

3. Results

The results are reported in the following figures Figure 1Figure 8, and the comments are included in their corresponding captions.
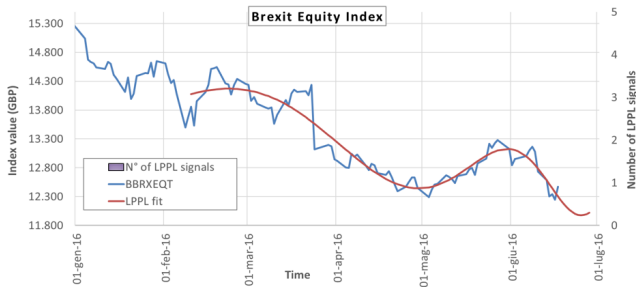
Figure 1

- **Source**: Brexit Equity Index (Bloomberg BBRXEQT Index), basket of 10 UK stocks designed to reflect British exposure to the EU across different sectors. Data up to Friday 17th June 2016.

- **Comments**: the historical series shows a decreasing trend, but no super-exponential behaviour and instabilities typical of bubble régime. In fact, the JLS model (LPPL fit) does not propose valid bubble and crash signals.

- **Interpretation**: market participants are currently suspicious about UK stock market, but do not actually fear either a crash following Brexit or a burst following Bremain.
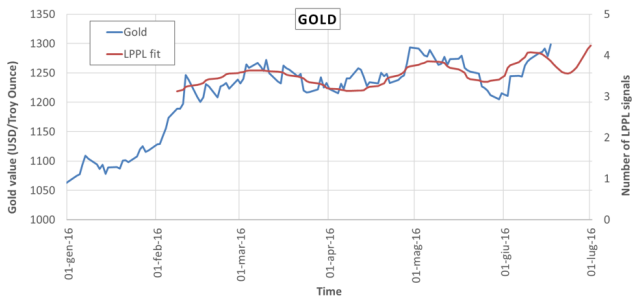
Figure 2

- **Source**: gold prices (Bloomberg XAU BGN Crncy). Data up to Friday 17th June 2016.

- **Comments**: the historical series shows an increasing trend, but no super-exponential behaviour and instabilities typical of bubble régime. In fact, the JLS model (LPPL fit) does not propose valid bubble and crash signals.

- **Interpretation**: market participants are currently refuging into gold, but do actually fear neither a burst following Brexit nor a crash following Bremain. This result is consistent with the BBRXEQT and GBPUSD FX rate observations.
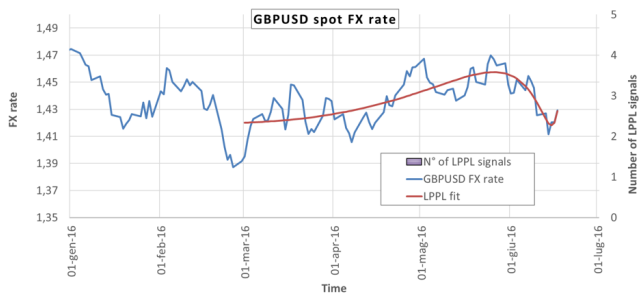
Figure 3

- **Source**: GBP/USD FX rate (Bloomberg GBPUSD BGN Crncy). Data up to Friday 17th June 2016.

- **Comments**: the historical series shows an erratic trend, no super-exponential behaviour and instabilities typical of bubble régime. In fact, the JLS model (LPPL fit) does not propose valid bubble and crash signals.

- **Interpretation**: market participants but do not actually fear either a crash following Brexit or a burst following Bremain. This result is consistent with the BBRXEQT and GBPUSD FX rate observations.
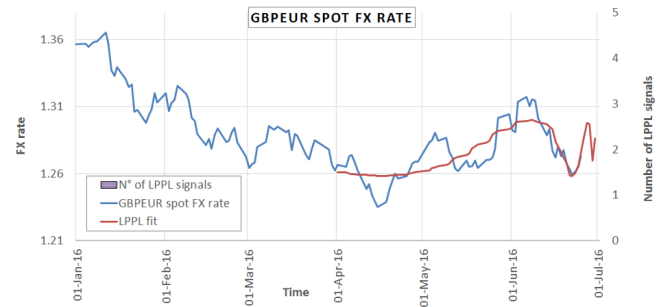
Figure 4

- **Source**: GBP/EUR FX rate (Bloomberg GBPEUR BGN Crncy). Data up to Friday 17th June 2016.

- **Comments**: as for GBP/USD
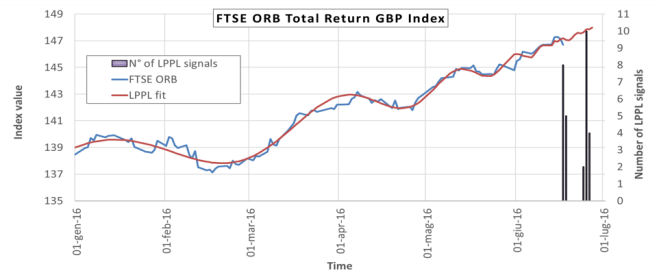
- **Interpretation**: as for GBP/USD.

Figure 5

- **Source**: FTSE ORB Total Return GBP Index (Bloomberg TFTSEORB Index), includes GBP fixed coupon Corporate bonds trading on LSE across different industry sectors and maturity bands. Data up to Friday 17th June 2016.

- **Comments**: the historical series shows an upward trend (due to the overall lowering discount rates, driven by lowering GBPLibor w.r.t. increasing GBP credit spreads) and super-exponential growth and instabilities typical of bubble régime. In fact, the JLS model (LPPL fit) propose several valid crash signals around 23th June.

- **Interpretation**: market participants consider the referendum a risky event for corporate bonds, expecting either a Bremain scenario or the BoE intervention in case of Brexit.
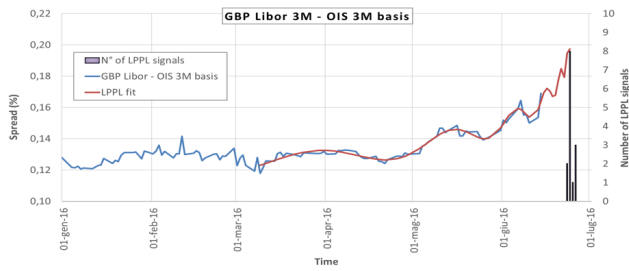
Figure 6

- **Source**: GBPLibor3M vs GBP OIS 3M (Bloomberg BP003M Index – BPSWSC Crncy). Measures the London interbank credit and liquidity risk on 3M time horizon relative to overnight horizon. Data up to Friday 17th June 2016.
- **Comments**: the historical series shows super-exponential behaviour and instabilities typical of bubble régime. In fact, the JLS model (LPPL fit) does propose valid bubble and crash signals around 24th June.
- **Interpretation**: market participants expect that the basis spread will crash back to lower values, corresponding to lower credit and liquidity risk in the London interbank market. This result is consistent with the FTSE ORB observations.
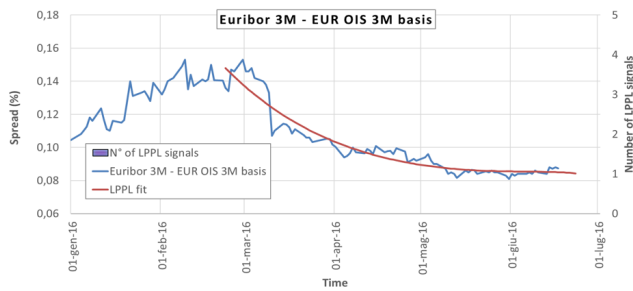

Figure 7

- **Source**: Euribor3M vs EUR OIS 3M (Bloomberg EUR003M Index – EUSWEC Crncy). Measures the EUR interbank credit and liquidity risk on 3M time horizon relative to overnight horizon. Data up to Thursday 16th June 2016.
- **Comments**: the historical series shows a decreasing trend but no super-exponential behaviour and instabilities typical of bubble régime. In fact, the JLS model (LPPL fit) does not propose valid bubble and crash signals.
- **Interpretation**: market participants but do not actually fear either a crash following Brexit, also because the expected ECB intervention, or a burst following Bremain.
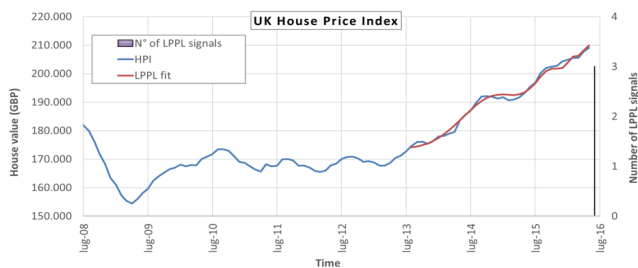

Figure 8

- **Source**: UK house price index 8. Data up to April 2016 (this data is updated with delay).
- **Comments**: the historical series shows an increasing trend with super-exponential behaviour and instabilities typical of bubble régime. In fact, the JLS model (LPPL fit) does propose valid bubble and crash signals around June.
- **Interpretation**: the trend remembers those observed during the 2008 subprime crisis. Market participants expect a crash, but its relationship with the referendum is questionable, since the growth régime started before the current Brexit/Bremain context, and more recent UK HPI data would be needed to to establish a relationship.

#	Asset class	Historical series	JLS bubble signals
1	Equity	Bloomberg Brexit Equity Index	NO
2		Gold	NO
3	Currency	GBPUSD Spot FX Rate	NO
4		GBPEUR Spot FX Rate	NO
5		FTSE ORB Total Return GBP Index	YES
6	Rates and credit	GBP Libor - GBP OIS 3M basis	YES
7		Euribor - EUR OIS 3M basis	NO
8	Real estate	UK House Price Index	YES

Table 1: summary of JLS bubble signals (col. 4) from figures Figure 1Figure 8.

4. Conclusions

We applied a forecasting methodology based on the Johansen-Ledoit-Sornette (JLS) model, developed since the 90s by D. Sornette at ETHZ and co-authors [1][2], and extensively applied to detect bubbles, crashes and crisis analysis in many fields [3]. Our implementation includes an enhanced model calibration using robust global optimization methods, i.e. Genetic Algorithms [4].

We applied the JLS model to a selection of historical financial series sensitive to the current Brexit/Bremain scenario, representative of equity (BBRXEQT), currency (Gold, GBPUSD and GBPEUR fx), rates and credit (FTSE ORB, GBP and EUR Libor – OIS basis), and real estate (UK HPI) asset classes.

We found the following evidence:

- equity and currency asset classes show no bubble signals,
- rates, credit and real estate show super-exponential behaviour and instabilities typical of bubble régime, with the exception of Euribor-EUR OIS basis.

Out study suggests that, under the JLS model, the following interpretations can be drawn:

- equity and currency: market participants coherently do not expect crashes or bursts following the referendum results, thus supporting a Bremain scenario.
- Rates and credit: market participants coherently consider the referendum a risky event for the London market, expecting either a Bremain scenario or a Brexit scenario edulcorated by central banks intervention.
- In the case of real estate, market participants expect a crash, but its relationship with the referendum results is questionable.

[1] D. Sornette, "*Dragon-kings, black swans and the prediction of crises*", Swiss Finance Institute Research Paper, no. 09–36, 2009.

[2] A. Johansen, O. Ledoit, and D. Sornette, "*Crashes as critical points*", International Journal of Theoretical and Applied Finance, vol. 3, no. 02, pp. 219–255, 2000.

[3] ETHZ Financial Crisis Observatory

[4] A. Salvatori, "*Stochastic Models for Self-Organized Criticality in Financial Markets*", Msci Physics Thesis, Università degli Studi di Milano, Mar. 2016.

[5] Opinion polls: see e.g. Wikipedia

[6] Bookmakers betting odds: see e.g. Oddschecker

[7] Bloomberg, Brexit watch indicators

[8] UK house price index

6. Disclaimer and acknowledgments

Disclaimer

Solvency II: consultazione IVASS sulle modifiche alle disposizioni in materia di redazione dei documenti contabili

21/06/2016 21:15

L'IVASS ha pubblicato il Documento di consultazione n. 11/2016 riguardante le proposte di modifica alla disciplina di bilancio delle imprese di assicurazione in recepimento della disciplina Solvency II. In particolare, il documento propone la modifica ai seguenti Regolamenti:

- Regolamento ISVAP n. 22 del 4 aprile 2008 concernente le disposizioni e gli schemi per la redazione del bilancio di esercizio e della relazione semestrale delle imprese di assicurazione e di riassicurazione;

- Regolamento ISVAP n. 7 del 13 luglio 2007 concernente gli schemi per il bilancio delle imprese di assicurazione e di riassicurazione che sono tenute all'adozione dei principi contabili internazionali.

La consultazione avrà termine il 31 agosto 2016.

Documento di consultazione IVASS n. 11/2016

Pubblicate valutazioni del Comitato di Basilea sull'implementazione delle disposizioni in materia di SIB

21/06/2016 21:13

Il Comitato di Basilea per la vigilanza bancaria ha pubblicato le valutazioni sullo stato dei lavori di recepimento delle normative riguardanti le banche di rilevanza sistemica globale e domestica (rispettivamente G-SIB e D-SIB). In particolare, il Comitato ha esaminato l'attività svolta nelle 5 giurisdizioni di appartenenza delle istituzioni G-SIB: Cina, Unione Europea, Giappone, Svizzera e Stati Uniti.

Per quanto riguarda la normativa G-SIB, in generale il responso dell'analisi è stato positivo. L'implementazione del quadro normativo è ritenuta "compliant" (si tratta del più alto tra i 4 possibili livelli di valutazione) in tutte le giurisdizioni oggetto di studio.

Per la disciplina sulle D-SIB, le evidenze mostrano che gli impianti normativi istituiti dalle singole giurisdizioni sono in gran parte allineati ai principi dettati dal Comitato. Alcune differenze, però, sono state riscontrate nelle previsioni riguardanti i requisiti addizionali e le politiche da adottare nei confronti delle istituzioni D-SIB. Data la natura "principles-based" della disciplina D-SIB, non è stata attribuita alcuna valutazione in merito all'applicazione da parte delle giurisdizioni membri.

L'analisi rientra nelle attività svolte dal Comitato ai sensi del programma RCAP (Regulatory Consistency Assessment Programme), volto a valutare l'applicazione da parte delle giurisdizioni membri degli standard regolamentari approvati.

Comunicato stampa   Report Cina   Report Unione Europea Report Giappone Report Svizzera Report Stati Uniti

MAR: pubblicato Parere ESMA sugli obblighi informativi

21/06/2016 21:10

L'ESMA ha pubblicato un Parere in seguito alla proposta della Commissione Europea di modifica delle disposizioni tecniche (Implementing Technical Standards o ITS) in materia di comunicazione delle informazioni privilegiate (inside information) ai sensi della disciplina MAR (Market Abuse

Regulation).

Gli ITS in questione specificano le metodologie tecniche per la diffusione delle informazioni privilegiate da parte degli emittenti di strumenti finanziari e dei partecipanti al mercato delle quote di emissione (EAMP). In particolare, le disposizioni richiedono che le informazioni siano esplicitamente identificate come privilegiate e attivamente diffuse tramite i mezzi di comunicazione.

La proposta di modifica della Commissione prevede di considerare sufficiente, per gli intermediari rientranti nel perimetro REMIT (Regulation on Energy Markets Integrity and Transparency), il rispetto degli obblighi di informativa previsti dalla normativa REMIF e di esentarli, dunque, dalle misure previste dagli ITS.

È opinione dell'ESMA, però, che tale previsione possa ridurre significativamente il livello di protezione degli investitori fronte di una riduzione modesta dei costi sostenuti dagli emittenti.

Comunicato stampa Parere ESMA

IVASS: presentata relazione annuale 2015

21/06/2016 21:08

L'IVASS ha pubblicato la relazione sull'attività svolta nell'anno 2015. Il documento è accompagnato dalle Considerazioni del Presidente dell'Istituto (e Direttore Generale della Banca d'Italia), Salvatore Rossi.

Grande attenzione, come prevedibile, è stata posta sull'analisi dell'attuale condizione di persistenza di tassi di interesse bassi (o negativi) e sull'attività di adeguamento alla disciplina Solvency II.

Per quanto riguarda il mercato assicurativo italiano, la domanda complessiva di polizze assicurative è aumentata lo scorso anno raggiungendo i 150 miliardi di euro (e segnando un +2.5% rispetto all'anno precedente). Di questi, oltre il 75% è attribuibile al comparto delle assicurazioni sulla vita. La redditività delle imprese assicurative è considerato soddisfacente e si attesta, per il quarto anno consecutivo, sui livelli – in termini di ROE – del 10% per il comparto vita e 7% per il comparto danni.

Relazione annuale IVASS Considerazioni del Presidente IVASS