

Global Liquidity, Market Sentiment and Financial Stability Indices

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Introduction

- **Our theoretical and empirical comprehension** of the essence of **global liquidity** and its effects is **still at an early stage** and the workable applications for oversight are still unfolding.
- **Bank for International Settlements (BIS)** defines **global liquidity** as the **ease of funding** across countries and shows that its drivers are major determinants of **financial stability**.
- **Liquidity distress:** net need for liquidity may become almost endless, so that **buffers and reserves** can not fully ensure the **protection** of financially open country against a systemic distress.



Introduction

- The main issue is to **detect empirically helpful indicators of global liquidity** that have robust conceptual foundations.
- **Key determinants of global liquidity (Cerutti et al. 2014, 2015):**
 - *Funding conditions for international banks (Ted Spread);*
 - *Money aggregates (M2);*
 - *Uncertainty and risk aversion (VIX);*
 - *Monetary policy in the G4 countries (Interest rates and Slope of yield curve).*



Literature Precursors

- **Calvo et al. (1993)** are among the first researchers who distinguished between 'push' (common) and 'pull' (country-specific) factors for capital flows.
- **Landau report (2011)** raises the importance of banking flows across countries in transferring of financial conditions. Later on **Landau (2013)** argues that global liquidity is a cyclical issue seeking a structural resolution.
- **Rey (2015)** stresses the importance of a common global financial cycle in driving cross-border capital flows. Monetary conditions in major financial centres (US) which are highly correlated with the VIX index drive this cycle.
- In contrast, **Cerutti et al. (2014)** point out that cyclicality and level of inflows across borders also relies on the characteristics of borrowing countries (pull factors).



- **Empirical Hypothesis 1.** Global and financial market factors affect more on global liquidity than country-specific factors.
- **Empirical Hypothesis 2.** Market Sentiment and Financial Stability Indices are significantly connected to the magnitude of global liquidity across countries.



- **My contribution** is to provide a novel empirical evidence on the main determinants of global liquidity across countries:
 - **global push factors** (the US and UK monetary and financial conditions, e.g. the US Prime rate of Banks and the US Treasury Yield);
 - **financial market factors** (Stock market turnover ratios, the VIX CBOE);
 - in addition to **country specific pull factors** (GDP deflator, Inflation, government debt, government revenue and expenditure).

- However, I am particularly interested in **the link between Financial Stability and Market Sentiment Indices and global liquidity**:
 - the VIX CBOE Index (uncertainty);
 - Bloomberg China Financial Conditions Index and US & EU Bloomberg Financial Conditions Indices;
 - FRED and Euro area, Systemic Stress Composite Index (CISS);
 - the US Conference Board Leading Economic Index, US TIPP Economic Optimism Index and KBW Index.



Key Findings

- I provide empirical evidence that **global factors prevail over country-specific factors** as determinants of banking sector capital flows.
- Results confirm that **bank conditions** and **monetary policy** in important financial centres, **in particular the USA** remain **highly significant** in determining cross-border bank flows.
- **The UK monetary policy** (UK target rate) and **financial conditions** (slope of the UK yield curve) are also important in determining changes in global liquidity.



Key Findings

- **Bloomberg Financial Stress Indices** are more powerful in explaining global liquidity **than FRED Financial Stress Indices** and **Euro area Systemic Stress Composite Indicator (CISS)**.
- **Bloomberg Financial Stress Indices** use **equal weights method** while **FRED Financial Stress Indices** use **principal components analysis as the index construction methodology**.
- Both Market Sentiment Indices, namely **the US Conference Board Leading Economic Index** and **US TIPP Economic Optimism Index** are economically and statistically **significant** on cross-border bank flows.



Model Specification

To analyze the impact of different global factors, financial market and country-specific factors on **Global Liquidity**, I estimate the following panel model:

$$\begin{aligned} \Delta GlobalLiquidity_{j,t} = & \beta_0 + \beta_1 Stockratio_t + \beta_2 LnVIX_t + \beta_3 \Delta Inflation_{j,t} + \\ & \beta_4 LnGDPdeflator_{j,t} + \beta_5 \Delta Govdebt_{j,t} + \beta_6 \Delta Govexp_{j,t} + \beta_7 LnGovrevenue_{j,t} + \\ & \beta_8 \Delta M2(US)_t + \beta_9 GrowthofDomesticUSCredit_t + \beta_{10} \Delta USTreasuryBill_t + \gamma_j + \varepsilon_{jt} \end{aligned}$$

- **Panel regressions** with country fixed effects and standard errors clustered at the country level comprise a sample of **149 countries** from 2000-2016.
- Generalized Method of Moments (**GMM**) according to **Arellano and Bover (1995)** and Maximum likelihood (**MLE**) are utilised.



Model Specification

To analyze the impact of **NOMURA CHINA STRESS INDEX** on Global Liquidity in the sample of **149 countries**, the following **panel regression with country fixed effects** and standard errors clustered at the country level is proposed:

$$\begin{aligned} \Delta GlobalLiquidity_{jt} = & \beta_0 + \beta_1 Stockratio_t + \beta_2 LnVIX_t + \beta_3 \Delta Inflation_{jt} + \beta_4 LnGDPdeflator_{jt} + \\ & \beta_5 \Delta Govdebt_{jt} + \beta_6 \Delta Govexp_{jt} + \beta_7 LnGovrevenue_{jt} + \beta_8 FinStressChina_t + \\ & \beta_9 \Delta M2(US)_t + \beta_{10} GrowthofDomesticUSCredit_t + \gamma_j + \varepsilon_{jt} \end{aligned}$$

- where *Global Liquidity* - measured as cross-border Claims on Banks (BIS Locational Statistics).
- *FinStressChina* - Bloomberg China Financial Stability Index (Bloomberg: CHBGRISK) or the Nomura China Stress Indicator (Bloomberg: NMEICSI).

Table 1 Regression Results for Cross-Border Claims to Banks, for period 2000-2016

Variables	Panel Regression	Maximum Likelihood	Dynamic panel GMM	Dynamic panel GMM
Stockturnover	0.0045*** (0.0017)	0.0043** (0.0017)		
FinStressChina				-0.0067*** (0.0021)
VIX CBOE	-0.0057*** (0.0020)	-0.0057*** (0.0020)	-0.0103*** (0.0030)	-0.0087*** (0.0031)
Δ Govexp	-0.2366 (0.3505)	-0.2116 (0.3418)	-0.4548 (0.3780)	-0.4689 (0.3761)
Δ GovDEBT	-0.0019** (0.0009)	-0.0008 (0.0006)	-0.0046*** (0.0013)	-0.0021 (0.0015)
Ln GDPdeflator	-0.0404** (0.0172)	-0.0368** (0.0165)	-0.0797*** (0.0185)	-0.0499** (0.0209)
Ln Govrevenue	-0.0067 (0.1119)	0.0516 (0.0461)	0.0026 (0.0029)	0.0117*** (0.0044)
Δ M2 (US)	0.0129*** (0.0037)	0.0125*** (0.0037)	0.0047 (0.0040)	0.0055 (0.0041)
Inflation	-0.0139** (0.0055)	-0.0091** (0.0040)	-0.0175* (0.0090)	-0.0059 (0.0094)
Growth of USCredit	0.0128** (0.0052)	0.0123** (0.0052)	0.0202*** (0.0068)	0.0174** (0.0068)
Δ Claims33 L1. lag (2 2)			0.1286*** (0.0297)	0.1165*** (0.0296)
Stockturn L1. lag (2 2)			0.0022** (0.0011)	0.0019* (0.0010)
US Treasury Bill 3m	0.0146*** (0.0047)	0.0140*** (0.0046)	-0.0062 (0.0082)	-0.0037 (0.0082)
Observations	2,533	2,533	2,384	2,384
R-squared	0.0182			

Table 2 Regression Results for Cross-Border Claims to Banks, for period 2000-2016

Variables	(1)	(2)	(3)	(4)
	Panel Regression	Maximum Likelihood	Panel Regression	Maximum Likelihood
Stockturnover	0.0048*** (0.0017)	0.0045*** (0.0016)	0.0028* (0.0015)	0.0027* (0.0015)
KBW	0.0004*** (0.0001)	0.0004*** (0.0001)		
Vanguard Emerg Market Stock Index			-0.0017 (0.0025)	0.0025 (0.0025)
VIX CBOE	-0.0047** (0.0020)	-0.0046** (0.0019)	-0.0064*** (0.0023)	-0.0062*** (0.0023)
Δ Govexp	-0.2248 (0.3507)	-0.2124 (0.3422)	-0.2347 (0.3504)	-0.2118 (0.3418)
Δ GovDEBT	-0.0013 (0.0009)	-0.0005 (0.0006)	-0.0019* (0.0010)	-0.0007 (0.0006)
Ln GDPdeflator	-0.0366** (0.0170)	-0.0340** (0.0164)	-0.0402** (0.0172)	-0.0366** (0.0165)
Ln Govrevenue	-0.0406 (0.1113)	0.0429 (0.0460)	-0.0009 (0.1126)	0.0517 (0.0461)
Δ M2 (US)	0.0097*** (0.0033)	0.0095*** (0.0033)	0.0058* (0.0032)	0.0058* (0.0032)
Inflation	-0.0148*** (0.0055)	-0.0095** (0.0040)	-0.0140** (0.0055)	-0.0092** (0.0040)
Growth of Domestic US Credit	0.0167*** (0.0047)	0.0158*** (0.0046)		
Δ Real US Credit			0.0089** (0.0036)	0.0088** (0.0035)
Δ USTREASURYIELD			0.0137*** (0.0042)	0.0134*** (0.0041)
Constant	-0.6203 (0.4092)	-0.9632*** (0.2068)	-0.5013 (0.4151)	-0.7864*** (0.2224)
Country Fixed Effect	Y		Y	
Observations	2,533	2,533	2,533	2,533
R-squared	0.0175		0.0178	
Number of countries	149	149	149	149

Table 5 Regression Results for Cross-Border Claims to Banks, for period 2000-2016

Variables	(1)	(2)	(3)	(4)
	Panel Regression	Maximum Likelihood	Panel Regression	Maximum Likelihood
Stockturnover	0.0059*** (0.0021)	0.0057*** (0.0021)	0.0029* (0.0015)	0.0029* (0.0015)
VIX CBOE	-0.0105*** (0.0021)	-0.0103*** (0.0021)	-0.0046* (0.0024)	-0.0047** (0.0024)
Δ Govexp	-0.1622 (0.3495)	-0.1429 (0.3410)	-0.2445 (0.3500)	-0.2170 (0.3413)
Δ GovDEBT	-0.0022** (0.0009)	-0.0009 (0.0006)	-0.0021** (0.0009)	-0.0008 (0.0006)
Ln GDPdeflator	-0.0380** (0.0171)	-0.0342** (0.0164)	-0.0430** (0.0173)	-0.0389** (0.0166)
Ln Govrevenue	0.0091 (0.1120)	0.0561 (0.0460)	0.0112 (0.1119)	0.0561 (0.0460)
Δ M2 (US)	0.0084** (0.0034)	0.0081** (0.0034)	0.0101*** (0.0035)	0.0098*** (0.0035)
Inflation	-0.0122** (0.0054)	-0.0083** (0.0040)	-0.0126** (0.0054)	-0.0084** (0.0040)
USTIPP Economic OptimIndex	0.0132** (0.0059)	0.0121** (0.0058)		
USConf.BoardLeadingEconInd			0.0068*** (0.0023)	0.0066*** (0.0023)
Δ US Treasury Yield	0.0140*** (0.0039)	0.0137*** (0.0038)	0.0202*** (0.0034)	0.0194*** (0.0033)
Constant	-1.1877** (0.5076)	-1.3919** (0.3620)	-1.3814*** (0.5024)	-1.5954*** (0.3538)
Country Fixed Effect	Y		Y	
Observations	2,533	2,533	2,533	2,533
R-squared	0.0167		0.0182	
Number of countries	149	149	149	149

Country-specific factors: an extended analysis

This model specification includes two country-specific lagged explanatory variables:

$$\Delta GlobalLiquid_{jt} = \beta_0 + \beta_1 Stockratio_t + \beta_2 LnVIX_t + \beta_3 \Delta Inflation_{jt} + \beta_4 LnGDPdeflator_{jt} + \beta_5 \Delta Govdebt_{jt} + \beta_6 \Delta Govexp_{jt} + \beta_7 LnGovrevenue_{jt-1} + \beta_8 Current\ account_{jt-1} + \beta_9 \Delta M2(US)_t + \beta_{10} GrowthofDomesticUSCredit_t + \beta_{11} \Delta US\ Treasury\ Yield_t + \gamma_j + \varepsilon_{jt}$$

- where *Current account* - current account balance in percent of GDP. This variable shows the impact of foreign trade on current conditions in the countries.

Table 6 Panel Regression Results for Cross-Border Claims to Banks, for period 2000-2016

Variables	(1)	(2)	(3)	(4)
Stockturnover	0.0051** (0.0022)	0.0051*** (0.0019)	0.0067*** (0.0023)	0.0067** (0.0026)
EuroareaSYS			-0.0062* (0.0034)	
USTIPP Econom OptimIndex				0.0136** (0.0061)
VIX CBOE	-0.0039* (0.0021)	-0.0071*** (0.0020)	-0.0025 (0.0031)	-0.0108*** (0.0021)
Δ Govexp	-0.3798 (0.3579)	-0.2124 (0.3539)	-0.3340 (0.3579)	-0.1829 (0.3603)
Δ GovDEBT	-0.0019* (0.0010)	-0.0016* (0.0009)	-0.0019* (0.0011)	-0.0018* (0.0010)
Ln GDPdeflator	-0.0490*** (0.0176)	-0.0433** (0.0174)	-0.0505*** (0.0176)	-0.0388** (0.0176)
Δ M2 (US)	0.0074** (0.0036)	0.0092*** (0.0033)	0.0091** (0.0038)	0.0084** (0.0034)
Inflation	-0.0118** (0.0059)	-0.0148** (0.0058)	-0.0125** (0.0060)	-0.0118** (0.0059)
Growth of Domestic US Credit	0.0207*** (0.0056)	0.0179*** (0.0046)	0.0117* (0.0069)	
ΔUKTargetrate			0.0420** (0.0180)	0.0534*** (0.0120)
ΔEffective Federal Funds Rate	0.0091* (0.0049)			
Current account Lag 1		-0.0067* (0.0037)	-0.0046 (0.0038)	-0.0048 (0.0038)
Govrevenue Lag 1	-0.0038 (0.0044)	-0.0009 (0.0041)	-0.0036 (0.0045)	-0.0025 (0.0045)
ΔUS Treasury Yield		0.0114** (0.0046)		0.0152*** (0.0044)
Constant	-0.5525** (0.2181)	-0.7225*** (0.1879)	-0.5570** (0.2202)	-1.1538*** (0.4000)
Country Fixed Effect	Y	Y	Y	Y
Observations	2,384	2,432	2,384	2,384
R-squared	0.0109	0.0155	0.0117	0.0104

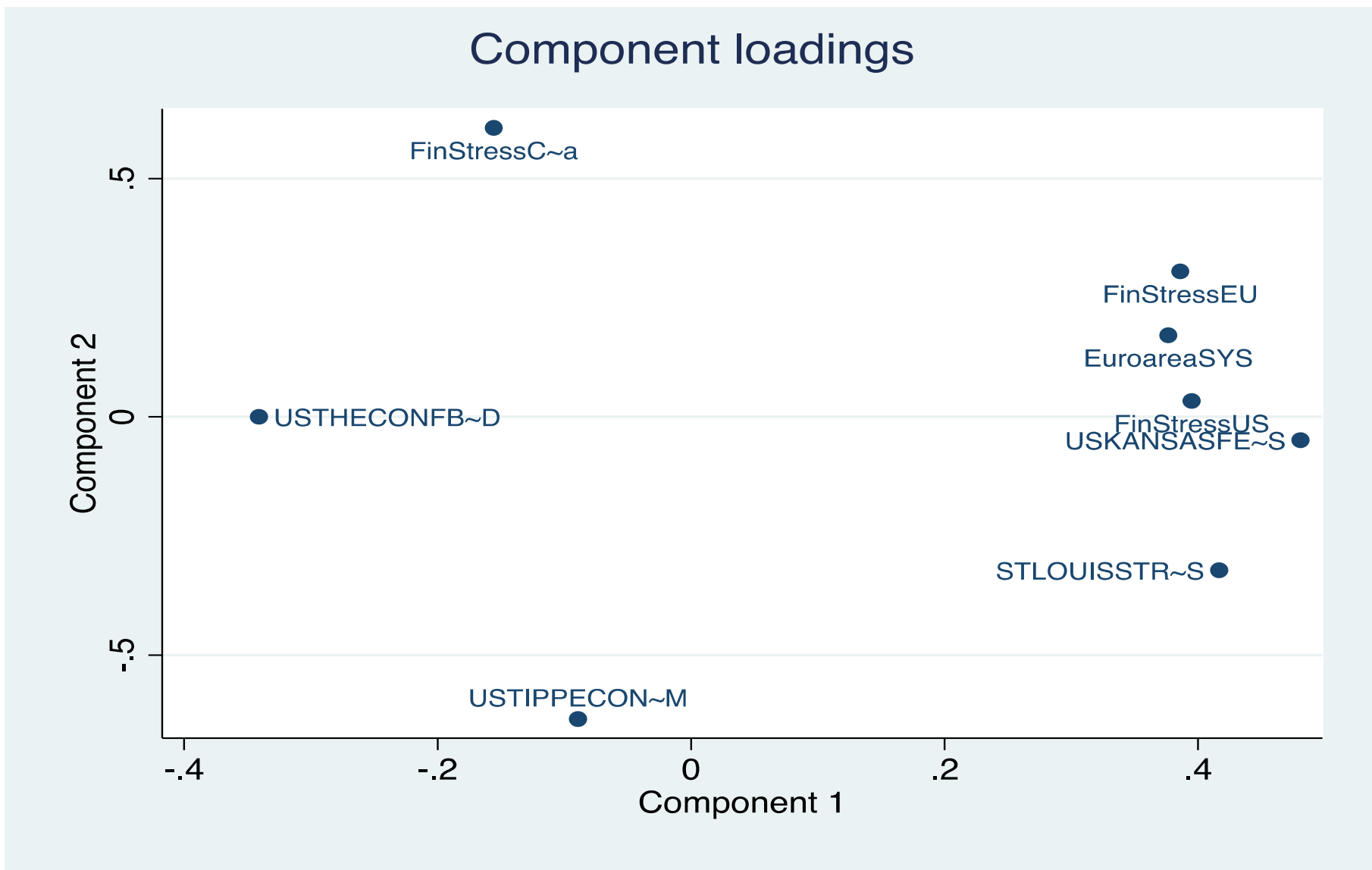
Conclusion:

- My model contributes to the previous research by assessing the main determinants of global liquidity. The **main contribution** is to test the link between a variety of Market Sentiment and Financial Stability Indices and Global liquidity.
- Empirical results show that Financial Stability and Market Sentiment Indices reflect how cross-border bank flows react to the global shocks.
- Some Indices are more powerful in explaining cross-border global liquidity than others (Bloomberg Financial Stress Indices, the US Conference Board Leading Economic Index and US TIPP Economic Optimism Index).



THANK YOU

Principal Component Analysis

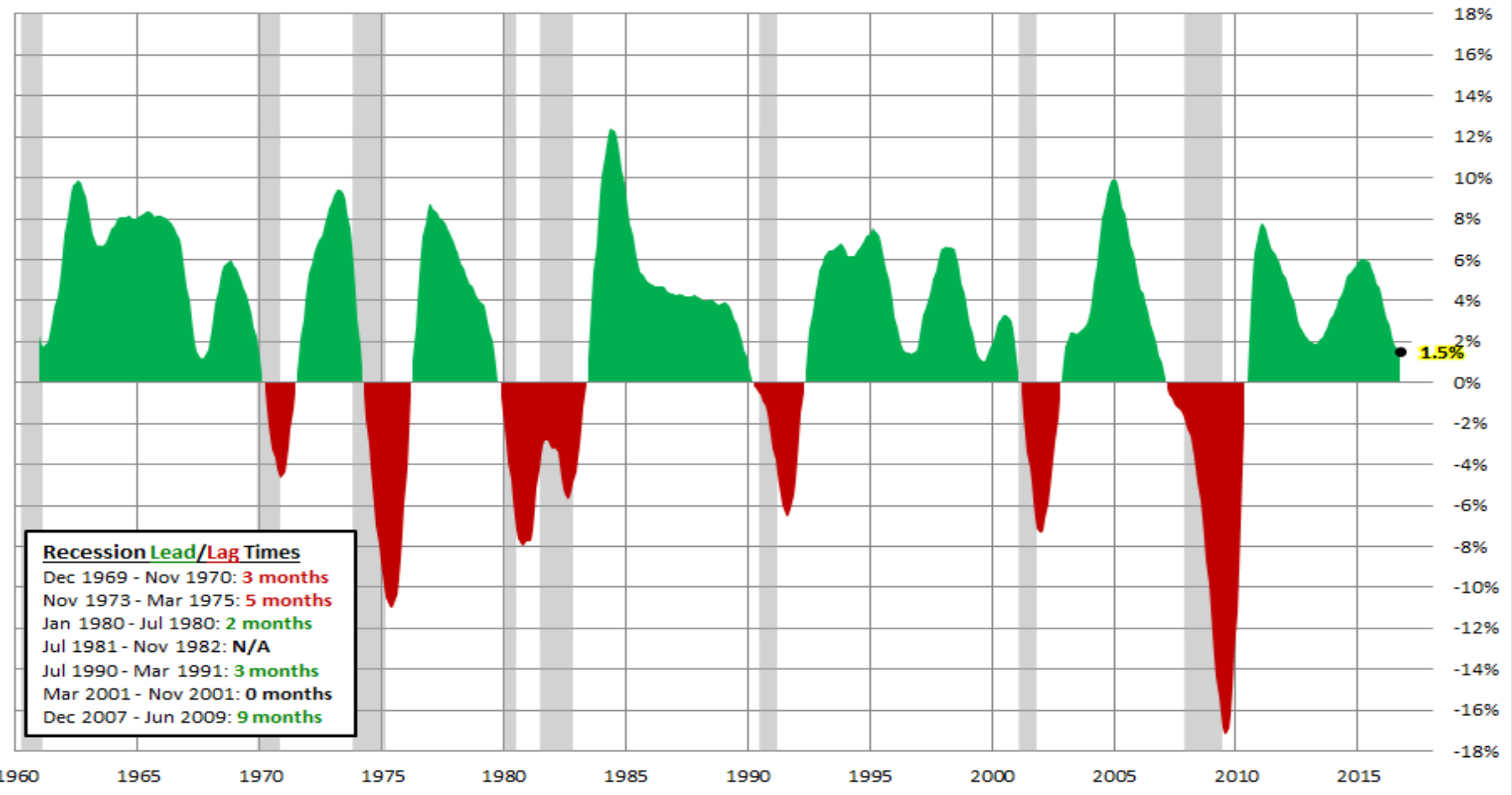


US Conference Board LEI

Conference Board Leading Economic Index
12-Month Moving Average of the 12-Month Rate of Change

dshort.com
 October 2016
 Data through
 September

■ Recessions ■ Positive Change ■ Negative Change ● Latest value: 1.5%



Recession Lead/Lag Times
 Dec 1969 - Nov 1970: 3 months
 Nov 1973 - Mar 1975: 5 months
 Jan 1980 - Jul 1980: 2 months
 Jul 1981 - Nov 1982: N/A
 Jul 1990 - Mar 1991: 3 months
 Mar 2001 - Nov 2001: 0 months
 Dec 2007 - Jun 2009: 9 months