

# Liquidity in the Liquidity Crisis

What can we learn from country level liquidity in the EMU?

Makram El-Shagi, Logan Kelly

# Outline

- 1 Motivation
- 2 Divisia Monetary Aggregates
- 3 Data
- 4 Signaling crises
- 5 Forecasting monthly GDP

# Motivation

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- **Potential Reason:** Monetary aggregates commonly used do not capture liquidity

→ **Our solution:** Using Divisia monetary aggregates to capture liquidity

# Our Contributions

- Providing liquidity proxies for several countries in the Euro area

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- Improving Divisia aggregation in times of financial turmoil
- Showing that properly measured liquidity measures contain valuable information

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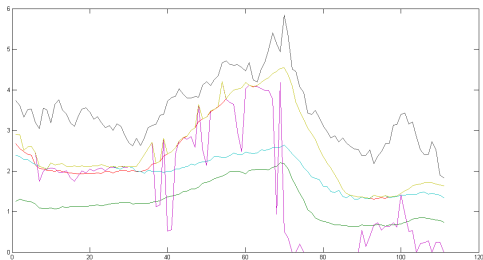
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- Weighting based on revealed preferences. I.e. how much do people pay for the liquidity provision.
- Cost of liquidity is measured as opportunity cost through the loss of interest compared to asset with same risk

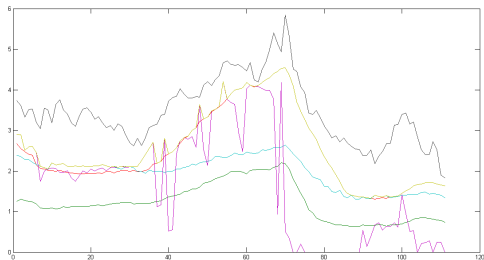
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- Interest rate of completely illiquid, risk free asset



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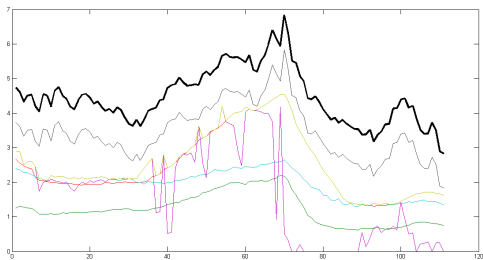
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- **Problem:** We do not have such an asset





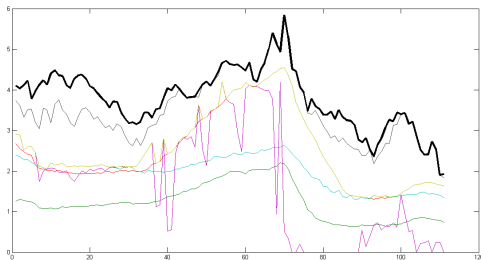
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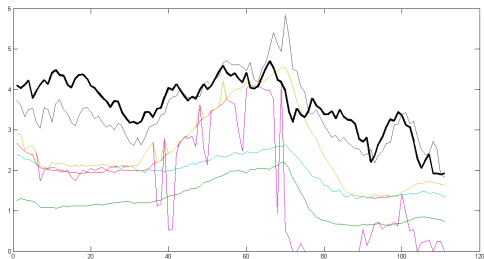
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- **Common approximation 2:** Upper envelope curve including 10yr bond



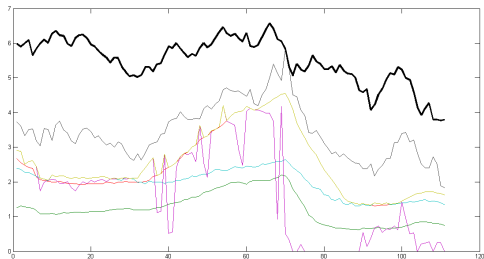
# Our alternatives

- **Alternative 1: 10 yr bond**



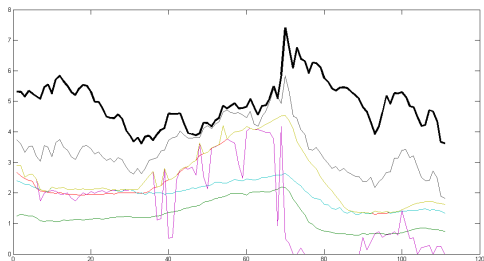
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- **Alternative 3:** Time variant liquidity premium



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# Sample selection

- EMU12 - Luxembourg
- 2003M1 - 2013M3

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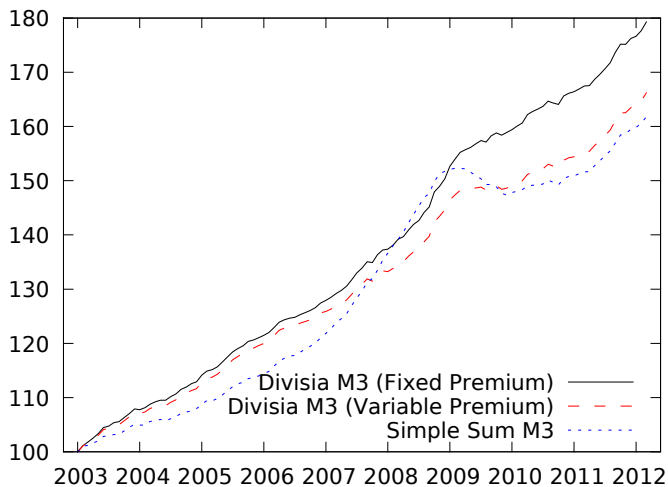
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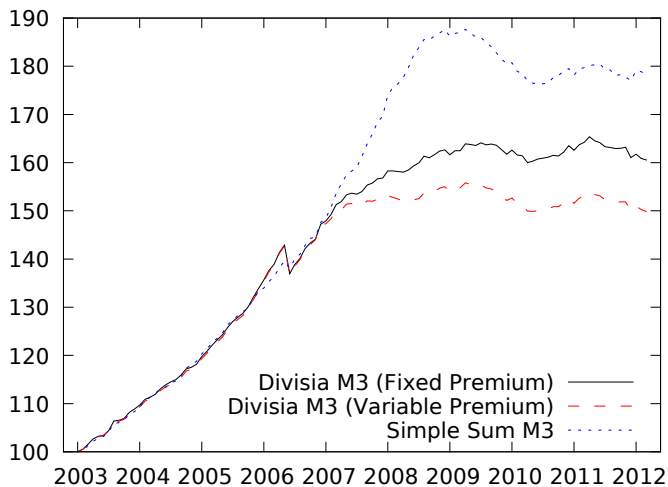
# Liquidity in Europe

## Germany



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## Spain



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# Crisis prediction

- Embed our liquidity indicator(s) in a simple crisis prediction

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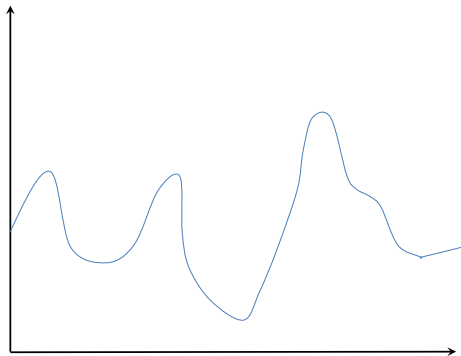
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- Signals approach by Kaminsky/Reinhart(1999) AER
- Extension by Bussiere/Fratscher(2006) JIMF

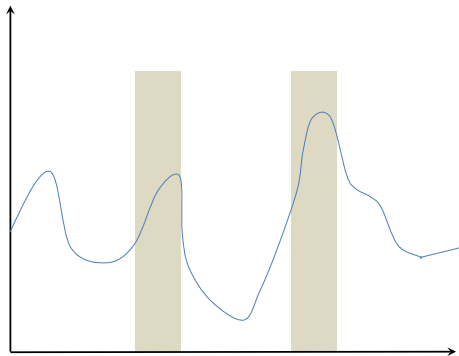
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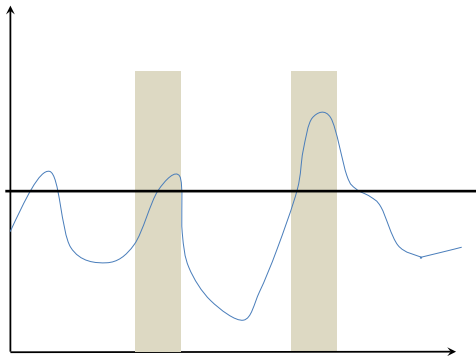
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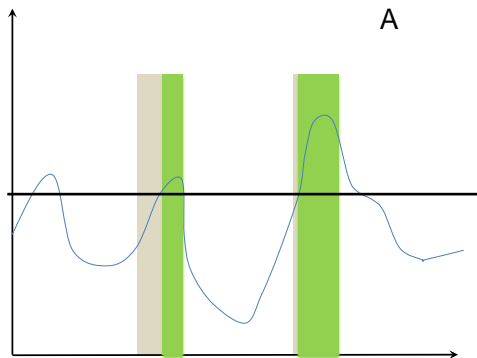
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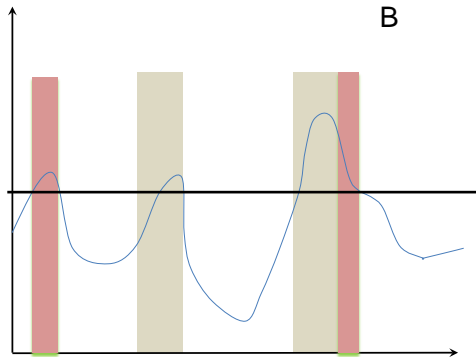
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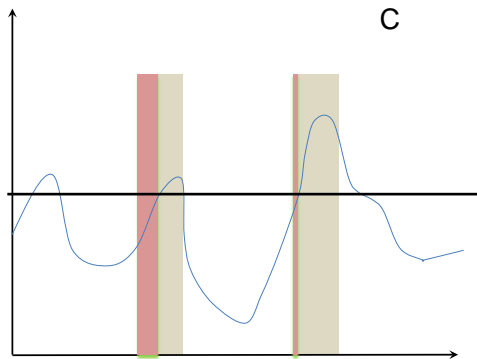
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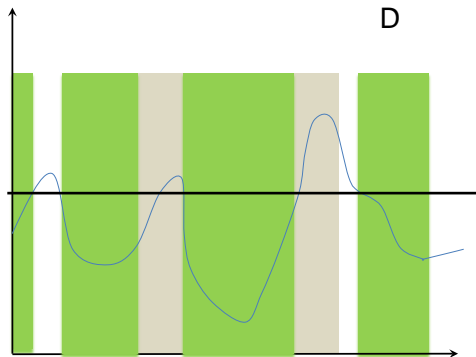
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# Maximization problem

Bussiere/Fratscher(2006) JIMF

Utility:

$$U(\theta) = \min(\theta, 1 - \theta) - \theta \frac{C}{A + C} - (1 - \theta) \frac{B}{B + D}. \quad (1)$$

# Interpretation

## Significance and excess utility

### Assessing significance

- Traditional signals approach does not include a measure of significance
- Following El-Shagi/Knedlik/von Schweinitz (JIMF 2013) we use a **bootstrap** to resample data with the same dynamic properties and cross sectional correlation based on a **factor augmented panel model**.

### Excess utility

- Bootstrap distribution of **observed utility - utility under the null**

## Results

Indicator	Excess Utility			Total Utility
	Lower Bound	Median Estimate	Upper Bound	
DomDem	0.09	0.24	0.28	0.25
GovDef	0.07	0.19	0.36	0.36
<b>Divisia (EC-TVLP)</b>	<b>0.06</b>	<b>0.18</b>	<b>0.28</b>	<b>0.25</b>
Unempl	0.02	0.18	0.32	0.30
<b>Simple Sum</b>	<b>0.03</b>	<b>0.17</b>	<b>0.24</b>	<b>0.21</b>
<b>Divisia (EC-FLP)</b>	<b>0.04</b>	<b>0.16</b>	<b>0.25</b>	<b>0.22</b>
<b>Divisia (Bond)</b>	<b>0.00</b>	<b>0.14</b>	<b>0.25</b>	<b>0.23</b>
<b>Divisia (Bond Shift)</b>	<b>0.01</b>	<b>0.14</b>	<b>0.23</b>	<b>0.20</b>
LabPart	0.01	0.14	0.21	0.18
<b>Divisia (EC-Bond)</b>	<b>-0.01</b>	<b>0.14</b>	<b>0.25</b>	<b>0.23</b>
PrivDebtH	0.06	0.13	0.14	0.27
WorldTrade	-0.01	0.11	0.17	0.14
PrivDebt	0.05	0.10	0.11	0.18



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# The model

Backward looking IS curve (Rudebusch, 2002; Nelson 2002)

$$\Delta y_{i,t-1+h} = \alpha_i + \sum_{p=1}^k \beta_{i,p} \Delta y_{t-p} + \sum_{p=1}^k \gamma_{i,p} \dot{i}_{t-p} + \sum_{p=1}^k \phi_{i,p} \Delta \ell_{t-p} + u_{i,t} \quad (2)$$

# Monthly GDP

Monthly GDP is interpolated using a **state space model** describing GDP as **ARMAX(1,1)** process that is augmented using monthly data on **industrial production**.

$$\Delta y_t^Q = \Delta \bar{y}_t^M + \Delta \bar{y}_{t-1}^M + \Delta \bar{y}_{t-1}^M \quad (3)$$

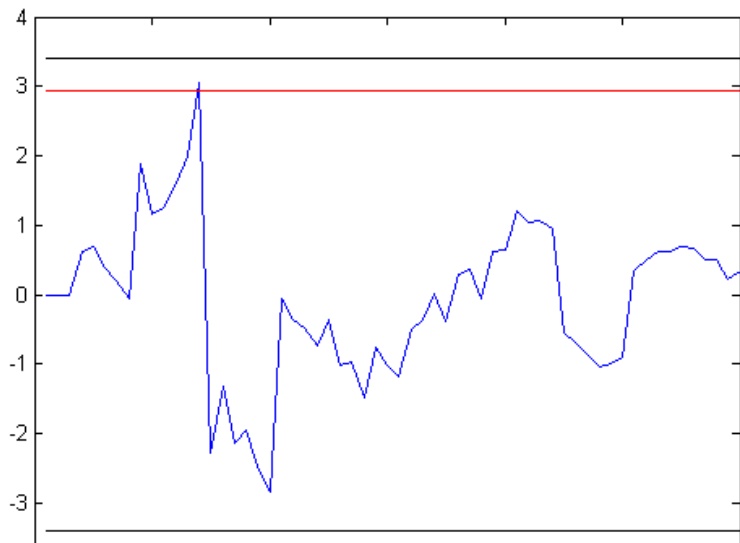
$$\Delta \bar{y}_t^M = \alpha_0 + \alpha_1 \bar{y}_{t-1}^M + \alpha_2 \Delta p_t^M + v_t \quad (4)$$

$$v_t = \beta v_{t-1}, \quad (5)$$

# Forecast comparison

- It is established that money/liquidity is not a good predictor of real activity
  - However, it is acknowledged that liquidity provision plays a major role for real activity
- We need to test whether liquidity **sometimes** adds information
- **Giacomini/Rossi(2010)-test** on time variant relative forecast performance.

# An Example - Germany



## Results

Horizon	1	1	1	3	3	3	6	6	6
Lagorder	1	4	6	1	4	6	1	4	6
Germany	1.27	1.13	2.73	3.12*	0.99	1.13	1.49	1.18	2.42
Belgium	1.52	3.73**	1.83	3.82**	2.87	3.53**	3.74**	4.00**	3.47**
Spain	3.09*	2.94*	3.04*	3.35**	3.76**	3.58**	2.83	3.54**	3.41**
Finland	3.75**	1.99	3.16*	3.64**	0.48	0.79	1.38	3.36**	3.91**
France	1.10	1.62	2.48	3.19**	2.86	1.94	1.07	1.38	2.24
Greece	3.73**	4.19**	3.88**	3.87**	3.68**	3.80**	3.70**	3.83**	4.034**
Ireland	2.19	2.45	2.42	2.05	3.52**	2.87	3.24**	2.95*	2.78
Italy	3.01*	3.06*	2.04	0.93	1.49	2.27	0.60	2.31	2.26
Netherlands	0.90	1.82	1.79	0.46	1.24	1.84	2.34	3.19**	2.99*
Austria	0.97	2.43	2.27	3.58**	2.65	3.04*	2.66	2.92	2.83
Portugal	3.31**	3.08*	3.09*	1.59	2.61	2.65	2.80	3.40**	2.25
Total significant (5%)	3	2	1	6	3	3	3	6	4
Reverse $H_0$ TS	5	3	1	1	2	1	2	1	0

Thank you very much for your attention!