

# Online Appendix I: Historical Background on Inflation-linked Debt in the US, UK and France

Here we offer some background on the experiences of three developed markets with inflation-protected bonds, the UK, France and the euro area, and finally, the US (which has become the largest index-linked market with over \$1300 billion outstanding at the end of 2017).

**The UK.** The UK program is the oldest program, with the UK government issuing inflation-indexed Gilts since March 1981. Importantly, the index-linked market is an important part of the total gilt market, representing over 30% of the total market at the end of 2017, making it the largest index-linked program in relative terms. Changes in UK financial regulation did prove critical in further boosting demand for indexed gilts. The Pension Act of 2004 requires pension funds to prove that they can meet their future liabilities, which has led to a strong demand for long-dated indexed gilts.

**The euro area and France.** France first introduced indexed Treasury bonds (the so-called OATis) in 1998. An issue of special interest in the euro area is to what inflation index these bonds should be indexed. France first used its local CPI, excluding tobacco. Later on, it started to issue bonds indexed to the HPIC (the Harmonized Index of Consumer Prices), again excluding tobacco, which is an euro-wide price index, regularly published by Eurostat. This index has now become the market benchmark in the euro area, with other countries issuing inflation-linked bonds indexed to that index (Italy, Greece and Germany) and financial products (swaps, futures) linked to it as well. The euro area government linked bond market has now overtaken the UK market to become the second largest linker market in the world behind the US, both in terms of

outstanding amounts and turnover (see Garcia and van Rixtel, 2007, for some relevant data).

**The US.** The US started issuing TIPS in January 1997. While the TIPS program in the US initially met with some enthusiasm (see Sack and Elsasser, 2004), the program grew rather slowly. The outstanding amount of TIPS, which grew from around \$150 billion at the end of the nineties to close to \$1300 billion at the end of 2017, representing only around 10% of the total medium- and long-term government debt outstanding. The Treasury affirmed its commitment to the program in 2002. It is often argued that during its infancy, up to around 2004, the TIPS market was very illiquid and even somewhat “unknown, inefficiently priced” (e.g., Sack and Elsasser, 2004, and Gürkaynak, Sack, and Wright, 2010).

## Online Appendix II: GMM Standard Errors

Suppose that  $\{y_{t,1}^n\}_{t=1:T}$  is the time series of yields in country 1 and  $\{y_{t,2}^n\}_{t=1:T}$  is the time series of yields in country 2. The GMM orthogonality conditions we use to obtain standard errors are:

$$\begin{aligned} \left[ \frac{1}{T} \sum_{t=1}^T y_{t,1}^n \right] - \mu_1 &= 0, \\ \left[ \frac{1}{T} \sum_{t=1}^T y_{t,2}^n \right] - \mu_2 &= 0, \\ \left[ \frac{1}{T} \sum_{t=1}^T (y_{t,1}^n - \mu_1)^2 \right] - \sigma_1^2 &= 0, \\ \left[ \frac{1}{T} \sum_{t=1}^T (y_{t,2}^n - \mu_2)^2 \right] - \sigma_2^2 &= 0, \\ \left[ \frac{1}{T} \sum_{t=1}^T (y_{t,1}^n - \mu_1)(y_{t,2}^n - \mu_2) \right] - \sigma_{12} &= 0, \end{aligned}$$

where  $\mu_1$  and  $\mu_2$  are averages,  $\sigma_1$  and  $\sigma_2$  standard deviations, and  $\sigma_{12}$  the covariance of the two series. The weighting matrix is, as usual, the inverse of an estimate of the spectral density at frequency zero of the orthogonality conditions, computed as in Newey and West (1987) with 12 lags. The variance covariance matrix is then the usual optimal GMM estimator. We obtain standard errors for correlations and betas from standard errors for standard deviations and covariances using the delta method. Standard errors for variance and correlation decompositions are also obtained by applying the delta method to variance and covariance standard errors obtained via GMM.

In order to compute the statistical significance of the changes in parameters across the two subsamples, we use a system similar to the system above, but estimate the difference between the parameters across the subsamples as a separate parameter. For instance, the conditions for averages become:

$$\begin{aligned} \left[ \frac{1}{T_1} \sum_{t=1}^{T_1} y_{t,1}^n \right] - \mu_{11} &= 0, \\ \left[ \frac{1}{T - T_1} \sum_{t=T_1+1}^T y_{t,1}^n \right] - (\mu_{11} + \mu_{1 \rightarrow 2}) &= 0, \end{aligned}$$

where  $T_1$  is the number of data points in the first subsample. The statistical significance of  $\mu_{1 \rightarrow 2}$  then determines the statistical significance of the parameter change across two subsamples. The conditions for other parameters follow the same approach.

# Online Appendix III: Alternative Expected Inflation Measures

## Online Appendix III.A: One Year Inflation Survey Forecasts

One Year Ahead Survey Expected Inflation. Data is quarterly. GMM standard errors computed using 4 Newey-West (1987) lags are in parentheses. For subsample 2 \*, \*\*, and \*\*\* indicate if statistics are different from subsample 1 at the 10%, 5%, and 1% significance level, respectively.

	Full sample: 2004Q4-2019Q4			Subsample 1: 2004Q4-2012Q2			Subsample 2: 2012Q3-2019Q4		
	France	UK	US	France	UK	US	France	UK	US
Average	1.58%	2.74%	2.12%	1.77%	2.59%	2.14%	1.40%***	2.89%*	2.11%
	(0.15%)	(0.09%)	(0.08%)	(0.12%)	(0.37%)	(0.35%)	(0.15%)	(0.06%)	(0.10%)
Standard deviation	0.34%	0.41%	0.26%	0.30%	0.45%	0.35%	0.27%	0.32%*	0.14%*
	(0.13%)	(0.05%)	(0.18%)	(0.24%)	(0.24%)	(0.18%)	(0.21%)	(0.18%)	(0.12%)
$\beta$ wrt US	0.78	-0.06	1.00	0.70	-0.18	1.00	0.95	0.96**	1.00
	(0.13)	(0.24)		(0.06)	(0.20)		(0.15)	(0.44)	
Correlation with US	0.60	-0.04	1.00	0.81	-0.14	1.00	0.49**	0.41**	1.00
	(0.10)	(0.15)		(0.07)	(0.16)		(0.08)	(0.19)	
Correlation with UK	0.03	1.00	-0.04	0.24	1.00	-0.14	0.40	1.00	0.41**
	(0.15)		(0.15)	(015)		(0.16)	(0.11)		(0.19)

## Online Appendix III.B: Yield Variance and Correlation Decompositions Using Alternative Long-term Expected Inflation Surveys

5 Year Zero-Coupon Yield Variance Decompositions Using Consensus Economics Survey Expected Inflation for All Countries. Data is monthly 2004M11-2019M12. Subsample 1 is 2004M11-2012M5. Subsample 2 is 2012M6-2019M12. GMM standard errors, computed using 12 Newey-West (1987) lags, are in parentheses. For subsample 2 \*, \*\*, and \*\*\* indicate if statistics are different from subsample 1 at the 10%, 5%, and 1% significance level, respectively.

Panel A: Nominal yield variance decomposition							US		
	France			UK					
	Whole sample	Subsample 1	Subsample 2	Whole sample	Subsample 1	Subsample 2	Whole sample	Subsample 1	Subsample 2
$\frac{Cov(\text{real yield}, \text{nominal yield})}{Var(\text{nominal yield})}$	77.29%	84.08%	75.06%	112.10%	115.29%	132.95%	75.87%	77.67%	99.58%
$\frac{Cov(\text{expected inflation}, \text{nominal yield})}{Var(\text{nominal yield})}$	(2.97%)	(7.84%)	(8.79%)	(3.91%)	(7.05%)	(12.97%)	(6.17%)	(7.06%)	(11.40%)
$\frac{Cov(\text{inflation risk premium}, \text{nominal yield})}{Var(\text{nominal yield})}$	6.77%	6.88%	9.86%	-19.65%	-23.21%	-2.92%*	7.49%	9.12%	1.57%**
$\frac{Cov(\text{liquidity premium}, \text{nominal yield})}{Var(\text{nominal yield})}$	(0.77%)	(2.90%)	(2.94%)	(2.64%)	(5.12%)	(9.13%)	(2.11%)	(3.81%)	(1.76%)
	15.94%	9.04%	15.08%	7.56%	7.92%	-30.02%**	16.64%	13.21%	-1.15%
	(2.59%)	(5.68%)	(7.43%)	(3.83%)	(7.18%)	(10.30%)	(4.74%)	(5.29%)	(10.37%)
Panel B: Inflation-linked yield variance decomposition									
	France			UK			US		
	Whole sample	Subsample 1	Subsample 2	Whole sample	Subsample 1	Subsample 2	Whole sample	Subsample 1	Subsample 2
$\frac{Cov(\text{real yield}, \text{inflation-linked yield})}{Var(\text{inflation-linked yield})}$	107.58%	104.18%	106.18%	105.28%	121.02%	108.86%	83.29%	86.86%	102.64%
$\frac{Cov(\text{liquidity premium}, \text{inflation-linked yield})}{Var(\text{inflation-linked yield})}$	(4.45%)	(12.76%)	(5.98%)	(5.85%)	(10.89%)	(7.36%)	(10.32%)	(13.61%)	(0.35%)
$\frac{Cov(\text{inflation risk premium}, \text{inflation-linked yield})}{Var(\text{inflation-linked yield})}$	-7.58%	-4.18%	-6.18%	-5.28%	-21.02%	-8.86%	16.80%	13.14%	-2.64%
	(4.45%)	(12.76%)	(5.98%)	(5.85%)	(10.89%)	(7.36%)	(10.32%)	(13.61%)	(0.35%)



5 Year Zero-Coupon Yield Variance Decompositions Using Consensus Economics Survey Expected Inflation for France and the UK and Blue Chip Survey Expected Inflation for the US. Data is monthly 2004M11-2019M12. Subsample 1 is 2004M11-2012M5. Subsample 2 is 2012M6-2019M12. GMM standard errors, computed using 12 Newey-West (1987) lags, are in parentheses. For subsample 2 \*, \*\*, and \*\*\* indicate if statistics are different from subsample 1 at the 10%, 5%, and 1% significance level, respectively.

Panel A: Nominal yield variance decomposition						
	France			UK		
	Whole sample	Subsample 1	Subsample 2	Whole sample	Subsample 1	Subsample 2
$\frac{Cov(\text{real yield}, \text{nominal yield})}{Var(\text{nominal yield})}$	77.75% (2.93%)	83.79% (7.67%)	75.78% (8.69%)	111.79% (3.85%)	114.73% (6.95%)	131.81% (12.99%)
$\frac{Cov(\text{expected inflation}, \text{nominal yield})}{Var(\text{nominal yield})}$	6.77% (0.77%)	6.88% (2.90%)	9.86% (2.94%)	-19.65% (2.64%)	-23.21% (5.12%)	-2.92%* (9.13%)
$\frac{Cov(\text{inflation risk premium}, \text{nominal yield})}{Var(\text{nominal yield})}$	15.48% (2.56%)	9.33% (5.49%)	14.36% (7.37%)	7.87% (7.97%)	8.48% (7.08%)	-28.89%** (10.29%)

Panel B: Inflation-linked yield variance decomposition						
	France			UK		
	Whole sample	Subsample 1	Subsample 2	Whole sample	Subsample 1	Subsample 2
$\frac{Cov(\text{real yield}, \text{inflation-linked yield})}{Var(\text{inflation-linked yield})}$	108.33% (4.26%)	104.53% (12.27%)	107.04% (5.88%)	105.09% (5.73%)	120.72% (10.64%)	108.21% (7.19%)
$\frac{Cov(\text{liquidity premium}, \text{inflation-linked yield})}{Var(\text{inflation-linked yield})}$	-8.33% (4.26%)	-4.53% (12.27%)	-7.04% (5.88%)	-5.09% (5.73%)	-20.72% (10.64%)	-8.21% (7.19%)







5 Year Zero-Coupon Yield Variance Decompositions. Data is monthly 2004M11-2019M12. Subsample 1 is 2004M11-2012M5. Subsample 2 is 2012M6-2019M12. GMM standard errors, computed using 12 Newey-West (1987) lags, are in parentheses. For subsample 2 \*, \*\*, and \*\*\* indicate if statistics are different from subsample 1 at the 10%, 5%, and 1% significance level, respectively.

Panel A: Nominal yield variance decomposition						
	France	Subsample 1	Subsample 2	Whole sample	Subsample 1	Subsample 2
$\frac{Cov(\text{real yield}, \text{nominal yield})}{Var(\text{nominal yield})}$	81.99% (3.48%)	86.09% (8.26%)	82.15% (8.32%)	112.82% (3.82%)	119.45% (8.24%)	132.09% (10.91%)
$\frac{Cov(\text{expected inflation}, \text{nominal yield})}{Var(\text{nominal yield})}$	6.29% (1.18%)	5.64% (2.87%)	14.44% (3.29%)	-19.65% (3.00%)	-23.21% (6.75%)	-2.92%* (2.44%)
$\frac{Cov(\text{inflation risk premium}, \text{nominal yield})}{Var(\text{nominal yield})}$	11.72% (2.62%)	8.28% (6.22%)	3.41% (6.42%)	6.83% (4.34%)	3.76% (8.56%)	-29.17%*** (12.42%)

Panel B: Inflation-linked yield variance decomposition						
	France	Subsample 1	Subsample 2	Whole sample	Subsample 1	Subsample 2
$\frac{Cov(\text{real yield}, \text{inflation-linked yield})}{Var(\text{inflation-linked yield})}$	114.02% (4.63%)	107.33% (14.22%)	112.92% (3.82%)	105.43% (7.05%)	124.42% (12.32%)	107.08% (9.17%)
$\frac{Cov(\text{liquidity premium}, \text{inflation-linked yield})}{Var(\text{inflation-linked yield})}$	-14.02% (4.63%)	-7.33% (14.22%)	-12.92% (3.82%)	-5.43% (7.05%)	-24.42% (12.32%)	-7.08% (9.17%)





5 Year Zero-Coupon Yield Variance Decompositions. Data is monthly 2004M11-2019M12. Subsample 1 is 2004M11-2012M5. Subsample 2 is 2012M6-2019M12. GMM standard errors, computed using 12 Newey-West (1987) lags, are in parentheses. For subsample 2 \*, \*\*, and \*\*\* indicate if statistics are different from subsample 1 at the 10%, 5%, and 1% significance level, respectively.

Panel A: Nominal yield variance decomposition						
	France	Subsample 1	Subsample 2	Whole sample	UK	US
$\frac{Cov(\text{real yield}, \text{nominal yield})}{Var(\text{nominal yield})}$	89.68% (4.10%)	93.61% (9.97%)	87.69% (9.85%)	117.75% (4.60%)	119.97% (8.95%)	138.67% (12.25%)
$\frac{Cov(\text{expected inflation}, \text{nominal yield})}{Var(\text{nominal yield})}$	6.29% (1.18%)	5.64% (2.87%)	14.44% (3.29%)	-19.65% (3.00%)	-23.21% (6.75%)	-2.92%* (2.44%)
$\frac{Cov(\text{inflation risk premium}, \text{nominal yield})}{Var(\text{nominal yield})}$	4.03% (3.19%)	0.75% (7.49%)	-2.12% (7.48%)	1.90% (5.10%)	3.24% (8.17%)	-35.75%*** (13.68%)

Panel B: Inflation-linked yield variance decomposition						
	France	Subsample 1	Subsample 2	Whole sample	UK	US
$\frac{Cov(\text{real yield}, \text{inflation-linked yield})}{Var(\text{inflation-linked yield})}$	123.96% (6.52%)	112.41% (18.19%)	121.34% (5.71%)	110.47% (6.59%)	125.19% (12.39%)	114.12% (7.36%)
$\frac{Cov(\text{liquidity premium}, \text{inflation-linked yield})}{Var(\text{inflation-linked yield})}$	-23.96% (6.52%)	-12.41% (18.19%)	-21.34% (5.71%)	-10.47% (6.59%)	-25.19% (12.39%)	-14.12% (7.36%)



## Online Appendix IV.B: Nominal Yield Correlation Decompositions into Inflation-linked Yield and Break-even Inflation Components

5 Year Zero-Coupon Nominal Yield Correlation Decompositions into Inflation-linked Yield and Breakeven Inflation Components. Data is monthly 2004M11-2019M12. Subsample 1 is 2004M11-2012M5. Subsample 2 is 2012M6-2019M12. GMM standard errors, computed using 12 Newey-West (1987) lags, are in parentheses. For subsample 2 \*, \*\*, and \*\*\* indicate if statistics are different from subsample 1 at the 10%, 5%, and 1% significance level, respectively.

	Full sample	Subsample 1	Subsample 2	Panel 1: Country 1 perspective	Full sample	Subsample 1	Subsample 2	Panel 2: Country 2 perspective	Full sample	Subsample 1	Subsample 2
<i>Cov(inflation-linked yield<sub>1</sub>, nominal yield<sub>2</sub>)</i>											
<i>SD</i> (nominal yield <sub>1</sub> ) <i>SD</i> (nominal yield <sub>2</sub> )	0.65 (0.04)	0.58 (0.07)	0.52 (0.06)	0.44 (0.10)	0.46 (0.14)	-0.40*** (0.14)	0.79 (0.08)	0.77 (0.15)	-0.33*** (0.12)		
<i>Cov</i> (break-even inflation <sub>1</sub> , nominal yield <sub>2</sub> )	0.28 (0.03)	0.31 (0.04)	0.09** (0.04)	0.23 (0.10)	0.30 (0.04)	0.01 (0.05)	0.06 (0.17)	0.17 (0.03)	0.41 (0.10)		
<i>SD</i> (nominal yield <sub>1</sub> ) <i>SD</i> (nominal yield <sub>2</sub> )											
<i>Cov</i> (inflation-linked yield <sub>2</sub> , nominal yield <sub>1</sub> )											
<i>SD</i> (nominal yield <sub>1</sub> ) <i>SD</i> (nominal yield <sub>2</sub> )	0.98 (0.07)	0.74 (0.09)	0.81 (0.30)	0.57 (0.12)	0.60 (0.16)	-0.67*** (0.15)	0.71 (0.08)	0.69 (0.17)	-0.05*** (0.09)		
<i>Cov</i> (break-even inflation <sub>2</sub> , nominal yield <sub>1</sub> )	-0.05 (0.06)	0.15 (0.08)	-0.20 (0.24)	0.10 (0.09)	0.17 (0.07)	0.28 (0.12)	0.14 (0.07)	0.24 (0.13)	0.13 (0.06)		
<i>SD</i> (nominal yield <sub>1</sub> ) <i>SD</i> (nominal yield <sub>2</sub> )											
Panel 3: Total correlation											
	0.93 (0.08)	0.89 (0.12)	0.61* (0.11)	0.67 (0.14)	0.76 (0.14)	-0.38*** (0.21)	0.85 (0.07)	0.93 (0.09)	0.08*** (0.08)		



yield curve fitting error measure as  $\sqrt{\frac{1}{N_t} \sum_{i=1}^{N_t} (y_{t,data}^i - y_{t,model}^i)^2}$ , where  $N_t$  is the number of bonds available at time  $t$ . Following Hu, Pan, and Wang (2013), we only use bonds with between 1 year and 10 years to maturity to compute the yield curve fitting error measure, although we use bonds with 1 month to 10 years to maturity to fit the yield curves. In the univariate regression with country-fixed effects (Spec 1), the Hu, Pan, and Wang (2013) measure has the economically expected negative sign and is statistically significant at the 10% level. However, the sign becomes positive and statistically insignificant when we augment the regression with the on-the-run spread Pflueger and Viceira (2016) use (Spec 2).

Inflation-linked Bonds Liquidity Premia Estimation with Hu, Pan, and Wang (2013) Yield Curve Fitting Error Measure. The data is monthly 2004M11-2019M12. The panel regression is  $y_{t,i} - y_{t,i}^{\text{IL}} - \pi_{t,i}^e = c_{1,i} + c_2' l_{t,i} + \epsilon_{t,i}$ , where  $y_{t,i}$  is zero-coupon yield in country  $i$  at time  $t$ ,  $\pi_t^e$  is expected inflation, and  $l_t$  is the vector of liquidity proxies, which are assumed to be uncorrelated with the inflation risk premium, and  $\epsilon_{t,i}$  is the error term. Regressions are for 5 year zero-coupon yields. Driscoll and Kraay (1998) standard errors computed with 12 lags are in parentheses. Asterisks \*, \*\*, and \*\*\* indicate if statistics are different from subsample 1 at the 10%, 5%, and 1% significance level, respectively.

	Spec 1	Spec 2	Spec 3
Hu, Pan, and Wang (2013) yield curve fitting measure	-0.73* (0.44)	0.19 (1.00)	0.24 (0.67)
Off-the-run premium		-2.96*** (0.57)	-0.42 (0.37)
Inflation swap spread			-1.78*** (0.30)
Log(share of inflation-linked debt)			0.48** (0.22)
Log(months since inception)			-0.61*** (0.09)
Country-fixed effects	Yes	Yes	Yes
Adjusted $R^2$	2.62%	10.57%	58.47%



5 Year Zero-Coupon Yield Variance Decompositions. The liquidity premium is estimated country-by-country using the inflation swap spread as the only explanatory variable. Data is monthly 2004M11-2019M12. Subsample 1 is 2004M11-2012M5. Subsample 2 is 2012M6-2019M12. GMM standard errors, computed using 12 Newey-West (1987) lags, are in parentheses. For subsample 2 \*, \*\*, and \*\*\* indicate if statistics are different from subsample 1 at the 10%, 5%, and 1% significance level, respectively.

Panel A: Nominal yield variance decomposition						
	France	Subsample 1	Subsample 2	Full sample	UK	US
$\frac{Cov(\text{real yield}, \text{nominal yield})}{Var(\text{nominal yield})}$	71.80%	80.50%	66.83%	111.55%	111.36%	70.90%
(3.52%)	(6.68%)	(7.64%)	(4.44%)	(8.62%)	(12.03%)	(7.27%)
$\frac{Cov(\text{expected inflation}, \text{nominal yield})}{Var(\text{nominal yield})}$	6.29%	5.64%	14.44%	-19.65%	-23.21%	-2.92%*
(1.18%)	(2.87%)	(3.29%)	(3.00%)	(6.75%)	(2.44%)	(2.75%)
$\frac{Cov(\text{inflation risk premium}, \text{nominal yield})}{Var(\text{nominal yield})}$	21.90%	13.87%	18.74%	8.11%	11.85%	-31.65%***
(2.64%)	(4.47%)	(5.32%)	(5.03%)	(6.88%)	(13.56%)	18.76%
Panel B: Inflation-linked yield variance decomposition						
	France	Subsample 1	Subsample 2	Full sample	UK	US
$\frac{Cov(\text{real yield}, \text{inflation-linked yield})}{Var(\text{inflation-linked yield})}$	100.37%	100.61%	98.81%	105.24%	117.69%	111.13%
(4.33%)	(12.01%)	(2.18%)	(5.34%)	(10.27%)	(6.66%)	(12.87%)
$\frac{Cov(\text{liquidity premium}, \text{inflation-linked yield})}{Var(\text{inflation-linked yield})}$	-0.37%	-0.61%	1.19%	-5.24%	-17.69%	-11.13%
(4.33%)	(12.01%)	(2.18%)	(5.34%)	(10.27%)	(6.66%)	(12.87%)



## IV.F: Controlling for Noise in Liquidity Premium Estimates

5 Year Zero-Coupon Nominal and Inflation-linked Yield Variance Decompositions Controlling for the Liquidity Premium Estimates Uncertainty. Liquidity proxies coefficients are sampled from the distribution given by the OLS estimation procedure and used recompute the liquidity premium. The new liquidity premium estimates are used to recompute the variance decompositions. 95% bootstrap confidence intervals in square brackets are computed by repeating the procedure 10,000 times. Data is monthly 2004M11-2019M12. Subsample 1 is 2004M11-2012M5. Subsample 2 is 2012M6-2019M12.  $irp$  stands for the inflation risk premium and  $lp$  for the liquidity premium. There are no confidence intervals for the expected inflation component, because it does not depend on the liquidity premium estimates.

Panel A: Nominal yield variance decomposition

	France		UK		US	
	Full sample	Subsample 1	Full sample	Subsample 1	Subsample 2	Subsample 1
$\frac{Cov(\text{real yield}, \text{nominal yield})}{Var(\text{nominal yield})}$	77.22%	84.80%	74.92%	112.67%	134.58%	77.68%
$\frac{Cov(\text{expected inflation}, \text{nominal yield})}{Var(\text{nominal yield})}$	[68.19%, 86.51%]	[75.79%, 93.67%]	[61.31%, 88.88%]	[98.55%, 134.65%]	[117.88%, 151.24%]	[68.85%, 86.76%]
$\frac{Cov(irp, \text{nominal yield})}{Var(\text{nominal yield})}$	6.29%	5.64%	14.44%	-19.65%	-23.21%	10.34%
$\frac{Cov(lp, \text{nominal yield})}{Var(\text{nominal yield})}$	-	-	-	-	-	0.80%
	16.49%	9.56%	10.64%	6.98%	6.48%	-
	[7.20%, 25.51%]	[0.69%, 18.57%]	[3.32%, 24.25%]	[0.67%, 13.24%]	[11.44%, 24.66%]	[48.31%, -14.96%]
			Panel B: Inflation-linked yield variance decomposition			
	France		UK		US	
	Full sample	Subsample 1	Full sample	Subsample 1	Subsample 2	Subsample 1
$\frac{Cov(\text{real yield}, \text{inflation-linked yield})}{Var(\text{inflation-linked yield})}$	107.30%	104.08%	105.77%	105.59%	121.94%	81.74%
$\frac{Cov(\text{expected inflation}, \text{inflation-linked yield})}{Var(\text{inflation-linked yield})}$	[94.85%, 120.02%]	[98.00%, 110.29%]	[92.49%, 119.20%]	[102.34%, 108.84%]	[109.47%, 134.21%]	[66.02%, 97.19%]
$\frac{Cov(irp, \text{inflation-linked yield})}{Var(\text{inflation-linked yield})}$	-7.30%	-4.08%	-5.77%	-5.59%	-21.94%	18.26%
$\frac{Cov(lp, \text{inflation-linked yield})}{Var(\text{inflation-linked yield})}$	[-20.02%, 5.15%]	[-10.29%, 2.00%]	[-19.20%, 7.51%]	[-8.84%, -2.34%]	[-34.21%, -9.47%]	[2.81%, 33.98%]





2 Year Zero-Coupon Yield Correlations. Data is monthly 2004M11-2019M12. Subsample 1 is 2004M11-2012M5. Subsample 2 is 2012M6-2019M12. GMM standard errors, computed using 12 Newey-West (1987) lags, are in parentheses. For the US, SPF only provides 1, 2, 3, and 4 quarters and then 5 and 10 year-ahead inflation expectations. Thus, we use the Aruoba (2020) 2 year expectations, which are interpolated from multiple surveys. Our results are robust to using alternative methodologies, such as interpolating 2 year inflation expectations from available SPF maturities or assuming that expected inflation for the second year is the same as 4 quarters or 5 years ahead expected inflation. For subsample 2 \*, \*\* , and \*\*\* indicate if statistics are different from subsample 1 at the 10%, 5%, and 1% significance level, respectively.

	Panel A: Nominal yield correlation decomposition									
	Full sample		France-Uk	Subsample 1	Subsample 2					
	Panel A1: Country 1 perspective					France-US				
$\frac{Cov(\text{real yield}_1, \text{nominal yield}_2)}{SD(\text{nominal yield}_1)SD(\text{nominal yield}_2)}$	0.70 (0.03)	0.80 (0.08)	0.36 (0.35)	0.48 (0.12)	0.70 (0.12)	-0.97*** (0.25)	0.97 (0.11)	1.15 (0.14)	-0.59*** (0.39)	
$\frac{Cov(\text{expected inflation}_1, \text{nominal yield}_2)}{SD(\text{nominal yield}_1)SD(\text{nominal yield}_2)}$	0.10 (0.02)	0.10 (0.04)	-0.03 (0.15)	0.08 (0.02)	0.08 (0.03)	0.10 (0.16)	-0.09 (0.03)	-0.10 (0.08)	0.34*** (0.16)	
$\frac{Cov(\text{inflation risk premium}_1, \text{nominal yield}_2)}{SD(\text{nominal yield}_1)SD(\text{nominal yield}_2)}$	0.13 (0.03)	0.02 (0.05)	-0.19 (0.11)	0.09 (0.04)	0.01 (0.05)	0.16 (0.15)	-0.03 (0.06)	-0.12 (0.11)	0.56** (0.20)	
	Panel A2: Country 2 perspective					UK-US				
$\frac{Cov(\text{real yield}_2, \text{nominal yield}_1)}{SD(\text{nominal yield}_1)SD(\text{nominal yield}_2)}$	1.06 (0.05)	1.08 (0.11)	0.98 (0.41)	0.41 (0.12)	0.51 (0.14)	-0.72*** (0.14)	0.54 (0.08)	0.58 (0.12)	0.33 (0.23)	
$\frac{Cov(\text{expected inflation}_2, \text{nominal yield}_1)}{SD(\text{nominal yield}_1)SD(\text{nominal yield}_2)}$	-0.12 (0.03)	-0.06 (0.05)	-0.07 (0.19)	0.04* (0.01)	0.09 (0.02)	-0.04* (0.03)	0.06 (0.01)	0.09 (0.12)	-0.04* (0.03)	
$\frac{Cov(\text{inflation risk premium}_2, \text{nominal yield}_1)}{SD(\text{nominal yield}_1)SD(\text{nominal yield}_2)}$	0.00 (0.03)	-0.10 (0.10)	-0.77*** (0.17)	0.20 (0.05)	0.19 (0.04)	0.24 (0.08)	0.24 (0.04)	0.25 (0.07)	0.02** (0.07)	
	Panel A3: Total correlation					UK-US				
	Panel B: Inflation-linked yield correlation decomposition		Panel B1: Country 1 perspective					Subsample 1		
	Full sample	Subsample 1	Subsample 2	Full sample	Subsample 1	Subsample 2	Full sample	Subsample 1	Subsample 2	UK-US
$\frac{Cov(\text{real yield}_1, \text{inflation-linked yield}_2)}{SD(\text{inflation-linked yield}_1)SD(\text{inflation-linked yield}_2)}$	0.97 (0.05)	0.94 (0.08)	0.71 (0.13)	0.67 (0.15)	0.80 (0.18)	-0.53*** (0.16)	0.80 (0.11)	0.90 (0.14)	-0.09*** (0.17)	
$\frac{Cov(\text{liquidity premium}_1, \text{inflation-linked yield}_2)}{SD(\text{inflation-linked yield}_1)SD(\text{inflation-linked yield}_2)}$	-0.06 (0.04)	-0.08 (0.06)	-0.05 (0.03)	-0.01 (0.05)	-0.02 (0.10)	0.09 (0.03)	-0.03 (0.05)	-0.07 (0.07)	0.05 (0.06)	
	Panel B2: Country 2 perspective					UK-US				
$\frac{Cov(\text{real yield}_2, \text{inflation-linked yield}_1)}{SD(\text{inflation-linked yield}_1)SD(\text{inflation-linked yield}_2)}$	0.96 (0.05)	0.97 (0.06)	0.79 (0.15)	0.51 (0.15)	0.69 (0.17)	-0.42*** (0.12)	0.63 (0.12)	0.77 (0.11)	-0.01*** (0.13)	
$\frac{Cov(\text{liquidity premium}_2, \text{inflation-linked yield}_1)}{SD(\text{inflation-linked yield}_1)SD(\text{inflation-linked yield}_2)}$	-0.05 (0.04)	-0.11 (0.04)	-0.13 (0.06)	0.15 (0.08)	0.09 (0.04)	-0.02 (0.06)	0.13 (0.06)	0.06 (0.06)	-0.02 (0.02)	
	Panel B3: Total correlation		Panel B1: Country 1 perspective					Subsample 1		
$\frac{Cov(\text{real yield}_1, \text{inflation-linked yield}_2)}{SD(\text{inflation-linked yield}_1)SD(\text{inflation-linked yield}_2)}$	0.91 (0.11)	0.86 (0.13)	0.65 (0.10)	0.66 (0.14)	0.78 (0.07)	-0.43*** (0.13)	0.77 (0.10)	0.83 (0.12)	-0.04*** (0.11)	





## Online Appendix VI: No-arbitrage Term Structure

### Model Estimation

We start by regressing the 1 month nominal short rate on our pricing factors to estimate  $\delta_0$  and  $\delta_1$  in (8). We then estimate  $\tilde{\mu}$  and  $\tilde{\Phi}$  in (8) using the seemingly unrelated regression approach of Adrian, Crump, and Moench (2013). This fast methodology not prone to local optima is based on the observation that one period excess nominal and inflation-linked bond returns are linear in  $\tilde{\Phi}$ . We use monthly excess returns on 1-10 year nominal bonds (10 return time series in total) and 2-10 year inflation-linked bonds (9 return time series in total) for the estimation of these parameters. For the UK we use 4-10 year inflation-linked bonds (7 return time series in total) in the estimation. Unfortunately, inflation-linked bond prices in (9) are quadratic in  $\pi_1$  preventing the estimation via the seemingly unrelated regression approach. We thus estimate  $\pi_0$  and  $\pi_1$  via minimizing the sum of squared deviations between annualized observed and model-implied inflation-linked zero-coupon yields given the values of  $\delta_0$ ,  $\delta_1$ ,  $\tilde{\mu}$ , and  $\tilde{\Phi}$  as estimated above. We use 2-10 year zero-coupon inflation-linked yields (9 time series in total) for France and the US and 4-10 year zero-coupon inflation-linked yields (7 time series in total) for the UK.

We report  $\tilde{\mu}$  and  $\tilde{\Phi}$  instead of  $\lambda_0$  and  $\lambda_1$ , because these are the primary output of our estimation procedure and used directly in pricing equations (8) and (9).  $\lambda_0$  and  $\lambda_1$  can be obtained from (7).

It is not possible to estimate the “WFX model” of Chernov and Creal (2019) through the seemingly unrelated regression approach of Adrian, Crump, and Moench (2013) due to international no-arbitrage restrictions. We estimate the model by







## Online Appendix VII: Expected Real Future Short Rates versus the Real Term Premium

We consider two approaches to decompose the real yield into the expected short rate and the term premium parts. The first approach is statistical. For each country separately, we estimate a quarterly small-sample adjusted VAR(2) process, which includes 3 month nominal short rate, realized quarterly inflation, and either one quarter (the US) or one year (France and the UK) ahead expected inflation. This allows us to construct expected 5 year ahead average 3 month nominal short rate. We then subtract 5 year ahead survey expected inflation from this estimate to construct expected 5 year ahead average 3 month real short rate. Using statistical (output of VAR(2)) expected inflation estimates doesn't substantially affect our results.

The second approach is the survey approach. For the US, we have expected 5 year ahead average 3 month nominal short rate survey forecast by Blue Chips Economic Indicators. For France and the UK such forecasts are not available. Thus, we follow Wright (2011) and regress the US survey forecasts on the US 5 year survey expected GDP growth (from Consensus Forecasts) and inflation and the statistical expected 5 year ahead average 3 month nominal short rate. This regression has  $R^2$  of 77.97%. As in Wright (2011), we assume that the regression coefficients are the same for France and the UK and construct expected 5 year ahead average 3 month nominal short rate "survey" forecasts for these countries using their 5 year survey expected GDP growth (from Consensus Forecasts) and inflation and the statistical expected 5 year ahead average 3 month nominal short rate.

The real yield variance and correlation decompositions are below.

5 Year Zero-Coupon Real Yield Variance Decompositions. Data is monthly 2004M11-2019M12. Subsample 1 is 2004M11-2012M5. Subsample 2 is 2012M6-2019M12. GMM standard errors, computed using 12 Newey-West (1987) lags, are in parentheses. For subsample 2, \*, \*\*, and \*\*\* indicate if statistics are different from subsample 1 at the 10%, 5%, and 1% significance level, respectively.

Panel A: Statistical term premium estimates						
	France	Subsample 1	Subsample 2	Full sample	UK	US
$\underline{Cov}(\text{expected short rate}, \text{real yield})$	59.06%	98.52%	36.63%***	71.65%	91.54%	11.66%***
$\underline{Var}(\text{real yield})$	(8.81%)	(6.55%)	(6.22%)	(7.15%)	(3.72%)	(13.09%)
$\underline{Cov}(\text{term premium}, \text{real yield})$	40.94%	1.48%	63.37%***	28.35%	8.46%	88.34%***
$\underline{Var}(\text{real yield})$	(8.81%)	(6.55%)	(6.22%)	(7.15%)	(3.72%)	(13.09%)

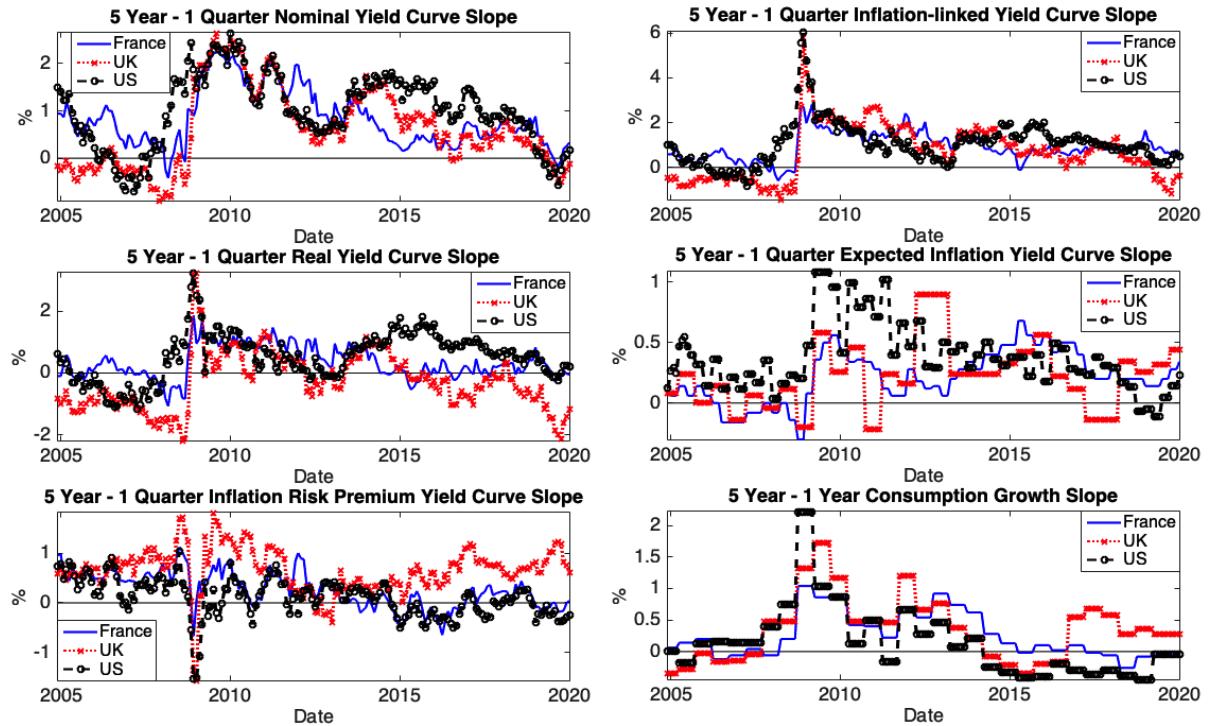
  

Panel B: Survey term premium estimates						
	France	Subsample 1	Subsample 2	Full sample	UK	US
$\underline{Cov}(\text{expected short rate}, \text{real yield})$	53.83%	90.68%	35.52%***	65.42%	84.61%	6.06%***
$\underline{Var}(\text{real yield})$	(8.10%)	(6.40%)	(5.67%)	(6.84%)	(3.41%)	(12.05%)
$\underline{Cov}(\text{term premium}, \text{real yield})$	46.17%	9.32%	64.48%***	34.58%	15.39%	93.94%***
$\underline{Var}(\text{real yield})$	(8.10%)	(6.40%)	(5.67%)	(6.84%)	(3.41%)	(12.05%)

5 Year Zero-Coupon Real Yield Correlation Decompositions. Data is monthly 2004M11-2019M12. Subsample 1 is 2004M11-2012M5. Subsample 2 is 2012M6-2019M12. GMM standard errors, computed using 12 Newey-West (1987) lags, are in parentheses. For subsample 2 \*, \*\*, and \*\*\* indicate if statistics are different from subsample 1 at the 10%, 5%, and 1% significance level, respectively.

Panel A: Statistical term premium estimates						
	France-UK	Subsample 1	Subsample 2	Full sample	France-US	Subsample 1
$\frac{Cov(\text{expected short rate}_1, \text{real yield}_2)}{SD(\text{real yield}_1)SD(\text{real yield}_2)}$	0.62 (0.07)	0.97 (0.07)	0.40** (0.10)	0.45 (0.13)	0.85 (0.14)	-0.14*** (0.15)
$\frac{Cov(\text{term premium}_1, \text{real yield}_2)}{SD(\text{real yield}_1)SD(\text{real yield}_2)}$	0.29 (0.07)	-0.16 (0.09)	0.35** (0.11)	0.09 (0.08)	-0.09 (0.07)	-0.37 (0.06)
$\frac{Cov(\text{expected short rate}_2, \text{real yield}_1)}{SD(\text{real yield}_1)SD(\text{real yield}_2)}$	0.62 (0.09)	0.75 (0.07)	-0.02*** (0.10)	0.30 (0.23)	0.59 (0.14)	-0.50*** (0.14)
$\frac{Cov(\text{term premium}_2, \text{real yield}_1)}{SD(\text{real yield}_1)SD(\text{real yield}_2)}$	0.29 (0.08)	0.06 (0.05)	0.77*** (0.11)	0.24 (0.09)	0.17 (0.16)	-0.01 (0.12)
				Panel A2: Country 2 perspective		
				0.30 (0.14)	0.59 (0.14)	0.45 (0.18)
				0.24 (0.09)	0.17 (0.16)	0.26 (0.09)
				0.17 (0.12)	-0.01 (0.16)	0.16 (0.17)
				Panel A3: Total correlation		
				0.75 (0.11)	0.54 (0.14)	-0.51*** (0.21)
					0.77 (0.14)	0.71 (0.07)
						0.90 (0.09)
						-0.20*** (0.08)
Panel E: Survey term premium estimates						
	France-UK	Subsample 1	Subsample 2	Full sample	France-US	Subsample 1
				Panel Bi: Country 1 perspective		
				0.40 (0.12)	0.78 (0.13)	-0.16*** (0.13)
				0.13 (0.08)	-0.01 (0.07)	0.56 (0.09)
				0.13 (0.10)	-0.35* (0.07)	0.74 (0.07)
					0.14 (0.05)	0.16 (0.06)
						0.16 (0.03)
				Panel B2: Country 2 perspective		
				0.65 (0.13)	0.62 (0.08)	-0.24*** (0.04)
				0.11 (0.11)	0.15 (0.09)	0.75 (0.11)
					-0.27** (0.11)	0.70 (0.10)
						0.01*** (0.05)
						0.20 (0.12)
						-0.41** (0.14)
				Panel B3: Total correlation		
				0.75 (0.11)	0.54 (0.14)	-0.51*** (0.21)
					0.77 (0.14)	0.71 (0.07)
						0.90 (0.09)
						-0.20*** (0.08)

## Online Appendix VIII: Yield Curve Slopes



Annualized Zero-coupon Yield Curve Slopes. Graphs are monthly. Consumption growth slopes are based on survey forecasts.

5 Year - 1 Quarter Zero-Coupon Yield Curve Slope Correlation Decompositions. Data is monthly 2004M11-2019M12. Subsample 1 is 2004M11-2012M5. Subsample 2 is 2012M6-2019M12. GMM standard errors, computed using 12 Newey-West (1987) lags, are in parentheses. For subsample 2 \*, \*\*, and \*\*\* indicate if statistics are different from subsample 1 at the 10%, 5%, and 1% significance level, respectively.

	Panel A: Nominal slope correlation decomposition					
	France-UK			France-US		
	Full sample	Subsample 1	Subsample 2	Full sample	Subsample 1	Subsample 2
Panel A1: Country 1 perspective						
$\frac{Cov(\text{real slope}_1, \text{nominal slope}_2)}{SD(\text{nominal slope}_1)SD(\text{nominal slope}_2)}$	0.63 (0.10)	0.77 (0.09)	0.32* (0.22)	0.51 (0.10)	0.04* (0.09)	0.69 (0.25)
$\frac{Cov(\text{expected inflation slope}_1, \text{nominal slope}_2)}{SD(\text{nominal slope}_1)SD(\text{nominal slope}_2)}$	0.18 (0.05)	0.23 (0.05)	0.14 (0.09)	0.18 (0.08)	0.31 (0.10)	0.04 (0.05)
$\frac{Cov(\text{inflation risk premium slope}_1, \text{nominal slope}_2)}{SD(\text{nominal slope}_1)SD(\text{nominal slope}_2)}$	-0.05 (0.13)	-0.10 (0.07)	0.02 (0.09)	0.00 (0.11)	-0.07 (0.04)	0.04 (0.13)
Panel A2: Country 2 perspective						
$\frac{Cov(\text{real slope}_2, \text{nominal slope}_1)}{SD(\text{nominal slope}_1)SD(\text{nominal slope}_2)}$	0.66 (0.11)	0.76 (0.10)	0.70 (0.31)	0.18 (0.14)	0.48 (0.28)	-0.12* (0.09)
$\frac{Cov(\text{expected inflation slope}_2, \text{nominal slope}_1)}{SD(\text{nominal slope}_1)SD(\text{nominal slope}_2)}$	0.04 (0.04)	0.10 (0.03)	0.06 (0.05)	0.26 (0.04)	0.28 (0.06)	0.07*** (0.05)
$\frac{Cov(\text{inflation risk premium slope}_2, \text{nominal slope}_1)}{SD(\text{nominal slope}_1)SD(\text{nominal slope}_2)}$	0.06 (0.11)	-0.29* (0.10)	0.10 (0.12)	-0.07 (0.09)	0.32*** (0.06)	-0.06 (0.09)
Panel A3: Total correlation						
	0.76 (0.14)	0.91 (0.07)	0.47*** (0.17)	0.55 (0.17)	0.69 (0.20)	0.27* (0.10)
Panel B: Inflation-linked slope correlation decomposition						
Panel Bi: Country 1 perspective						
	France-UK	Subsample 1	Subsample 2	Full sample	Subsample 1	Subsample 2
Full sample	Panel B1: Country 1 perspective	France-UK	Subsample 1	Full sample	Subsample 1	Subsample 2
Panel B2: Country 2 perspective						
	France-UK	Subsample 1	Subsample 2	Full sample	Subsample 1	Subsample 2
Full sample	Panel B2: Country 2 perspective	France-UK	Subsample 1	Full sample	Subsample 1	Subsample 2
Panel B3: Total correlation						
	Panel B3: Total correlation	Panel B3: Total correlation	Panel B3: Total correlation	Panel B3: Total correlation	Panel B3: Total correlation	Panel B3: Total correlation
$\frac{Cov(\text{real slope}_1, \text{inflation-linked slope}_2)}{SD(\text{inflation-linked slope}_1)SD(\text{inflation-linked slope}_2)}$	0.65 (0.07)	0.69 (0.06)	0.40 (0.20)	0.31 (0.12)	0.39 (0.10)	-0.15** (0.17)
$\frac{Cov(\text{liquidity premium slope}_1, \text{inflation-linked slope}_2)}{SD(\text{inflation-linked slope}_1)SD(\text{inflation-linked slope}_2)}$	0.17 (0.07)	0.22 (0.06)	-0.12*** (0.07)	0.20 (0.06)	0.25 (0.06)	-0.07** (0.04)
$\frac{Cov(\text{real slope}_2, \text{inflation-linked slope}_1)}{SD(\text{inflation-linked slope}_1)SD(\text{inflation-linked slope}_2)}$	0.55 (0.06)	0.61 (0.05)	0.22* (0.19)	0.33 (0.12)	0.45 (0.11)	0.33*** (0.16)
$\frac{Cov(\text{liquidity premium slope}_2, \text{inflation-linked slope}_1)}{SD(\text{inflation-linked slope}_1)SD(\text{inflation-linked slope}_2)}$	0.27 (0.03)	0.30 (0.03)	0.06*** (0.05)	0.19 (0.09)	0.18 (0.08)	0.11 (0.04)
	0.82 (0.09)	0.91 (0.08)	0.28*** (0.13)	0.52 (0.10)	0.63 (0.09)	-0.22*** (0.15)
					0.68 (0.08)	0.71 (0.09)
					0.51 (0.25)	0.51 (0.25)

# **Online Appendix IX: Additional International Evidence**

The liquidity premium is identified as in (3) except that the regression is run country-by-country, because a consistent set of liquidity proxies for all three countries is not available.

## **IX.A: Liquidity Proxies**

The liquidity proxies for Australia are the nominal off-the-run spread, the relative transaction volume of inflation-linked bonds, and the inflation swap spread. Annual bond transaction volumes were provided by Stephen Kirchner from Australian Financial Markets Association.

The liquidity proxies for Germany are the nominal off-the-run spread, the relative transaction volume of inflation-linked bonds, and the inflation swap spread. Semi-annual bond transaction volumes were provided by Christian Hirschfeld from Bundesrepublik Deutschland - Finanzagentur.

The liquidity proxies for Sweden are the nominal off-the-run spread, the relative transaction volume of inflation-linked bonds, and the 7 day STIBOR (Stockholm interbank Offered Rate) - Riksbank (Swedish Central Bank) repo rate spread. The monthly bond transaction volumes, STIBOR, and Riskbank repo rate are from Riskbank website.

## **IX.B: Expected Inflation**

For Australia, the available inflation expectations are 3 months ahead business inflation expectations, 1 and 2 year ahead union officials' inflation expectations, and 1 and 2 year ahead market economists' inflation expectations from Reserve Bank of Australia website. To extrapolate the inflation expectations, we use 1 and 2 year ahead market economists' inflation expectations. Using one and two year ahead union officials' inflation expectations doesn't affect the results. We estimate an AR(1) model of 1 year ahead inflation expectations. To compute inflation expectations for years 3-, we input the inflation expectations for the second year into the estimated AR(1) model and iterate forward.

German inflation expectations are Survey of Professional Forecasters mean estimates of 5 year ahead year on year percentage change of the Eurostat Harmonised Index of Consumer Prices from European Central Bank website. Swedish inflation expectations are All Interviewees' Median Expectations of 5 year inflation from TNS Sifo Prospera, an agency which conducts the inflation surveys for Riksbank, the Swedish Central Bank. Using mean instead of the median forecasts does not affect the results.

5 Year Zero-Coupon Yield Correlation Decompositions: Further International Evidence. Data is monthly 2011:M4-2019:M12. For Australia, Germany, and Sweden inflation-linked yields are decomposed into real yields and the liquidity premia in the same way as for France, the UK, and the US, except that breakeven inflation regressions are run separately for each country. Liquidity proxies are inflation swap spreads and log-share of inflation-linked debt. GMM standard errors, computed using 24 Newey-West (1987) lags, are in parentheses.

	Panel A: Nominal variance decomposition					
	Australia (AU)	Germany (GER)	Sweden (SWE)			
$\frac{Cov(\text{real yield}, \text{nominal yield})}{Var(\text{nominal yield})}$	63.68% (5.07%)	64.49% (4.91%)	101.34% (9.26%)			
$\frac{Cov(\text{expected inflation}, \text{nominal yield})}{Var(\text{nominal yield})}$	13.16% (2.12%)	13.34% (2.38%)	4.74% (7.13%)			
$\frac{Cov(\text{inflation risk premium}, \text{nominal yield})}{Var(\text{nominal yield})}$	23.16% (3.86%)	22.18% (4.55%)	-6.08% (2.84%)			
Nominal yield standard deviation	0.88% (0.08%)	0.68% (0.07%)	0.84% (0.08%)			
	Panel B: Nominal correlation decomposition					
	AU-FR	AU-GER	AU-SWE	AU-UK	AU-US	FR-GER
	Country 1 perspective					
$\frac{Cov(\text{real yield}_1, \text{nominal yield}_2)}{SD(\text{nominal yield}_1)SD(\text{nominal yield}_2)}$	0.55 (0.04)	0.57 (0.05)	0.53 (0.05)	0.46 (0.07)	-0.03 (0.03)	0.67 (0.05)
$\frac{Cov(\text{expected inflation}_1, \text{nominal yield}_2)}{SD(\text{nominal yield}_1)SD(\text{nominal yield}_2)}$	0.15 (0.02)	0.14 (0.02)	0.13 (0.02)	0.09 (0.03)	-0.11 (0.01)	0.11 (0.02)
$\frac{Cov(\text{inflation risk premium}_1, \text{nominal yield}_2)}{SD(\text{nominal yield}_1)SD(\text{nominal yield}_2)}$	0.21 (0.04)	0.22 (0.03)	0.23 (0.03)	0.20 (0.03)	-0.09 (0.04)	0.19 (0.04)
	Country 2 perspective					
$\frac{Cov(\text{real yield}_2, \text{nominal yield}_1)}{SD(\text{nominal yield}_1)SD(\text{nominal yield}_2)}$	0.63 (0.04)	0.59 (0.04)	0.88 (0.06)	0.80 (0.22)	-0.60 (0.08)	0.60 (0.05)
$\frac{Cov(\text{expected inflation}_2, \text{nominal yield}_1)}{SD(\text{nominal yield}_1)SD(\text{nominal yield}_2)}$	0.10 (0.02)	0.12 (0.02)	0.08 (0.06)	0.15 (0.06)	0.07 (0.04)	0.14 (0.03)
$\frac{Cov(\text{inflation risk premium}_2, \text{nominal yield}_1)}{SD(\text{nominal yield}_1)SD(\text{nominal yield}_2)}$	0.18 (0.04)	0.22 (0.04)	-0.07 (0.02)	-0.20 (0.13)	0.31 (0.09)	0.23 (0.04)
Total correlation	0.91 (0.09)	0.93 (0.07)	0.90 (0.12)	0.75 (0.18)	-0.23 (0.09)	0.97 (0.04)
	FR-SWE	GER-SWE	GER-UK	GER-US	UK-SWE	US-SWE
	Country 1 perspective					
$\frac{Cov(\text{real yield}_1, \text{nominal yield}_2)}{SD(\text{nominal yield}_1)SD(\text{nominal yield}_2)}$	0.67 (0.07)	0.61 (0.06)	0.57 (0.04)	-0.28 (0.13)	0.79 (0.23)	-0.79 (0.09)
$\frac{Cov(\text{expected inflation}_1, \text{nominal yield}_2)}{SD(\text{nominal yield}_1)SD(\text{nominal yield}_2)}$	0.12 (0.02)	0.14 (0.03)	0.04 (0.04)	-0.05 (0.05)	0.20 (0.07)	0.07 (0.04)
$\frac{Cov(\text{inflation risk premium}_1, \text{nominal yield}_2)}{SD(\text{nominal yield}_1)SD(\text{nominal yield}_2)}$	0.16 (0.06)	0.21 (0.06)	0.12 (0.07)	-0.01 (0.06)	-0.28 (0.11)	0.33 (0.12)
	Country 2 perspective					
$\frac{Cov(\text{real yield}_2, \text{nominal yield}_1)}{SD(\text{nominal yield}_1)SD(\text{nominal yield}_2)}$	0.93 (0.09)	0.94 (0.08)	0.81 (0.21)	-0.71 (0.08)	0.78 (0.07)	-0.58 (0.18)
$\frac{Cov(\text{expected inflation}_2, \text{nominal yield}_1)}{SD(\text{nominal yield}_1)SD(\text{nominal yield}_2)}$	0.09 (0.06)	0.08 (0.06)	0.16 (0.06)	0.06 (0.04)	-0.03 (0.07)	0.07 (0.06)
$\frac{Cov(\text{inflation risk premium}_2, \text{nominal yield}_1)}{SD(\text{nominal yield}_1)SD(\text{nominal yield}_2)}$	-0.07 (0.03)	-0.07 (0.02)	-0.24 (0.12)	0.30 (0.10)	-0.05 (0.02)	0.12 (0.03)
Total correlation	0.95 (0.11)	0.95 (0.12)	0.73 (0.20)	-0.35 (0.09)	0.70 (0.13)	-0.40 (0.09)