Term Premia in Emerging Markets

Pavel Solís

Johns Hopkins University

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Motivation

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  - ⇀ Expected nominal short-term interest rate
  - ⇀ Risk premium

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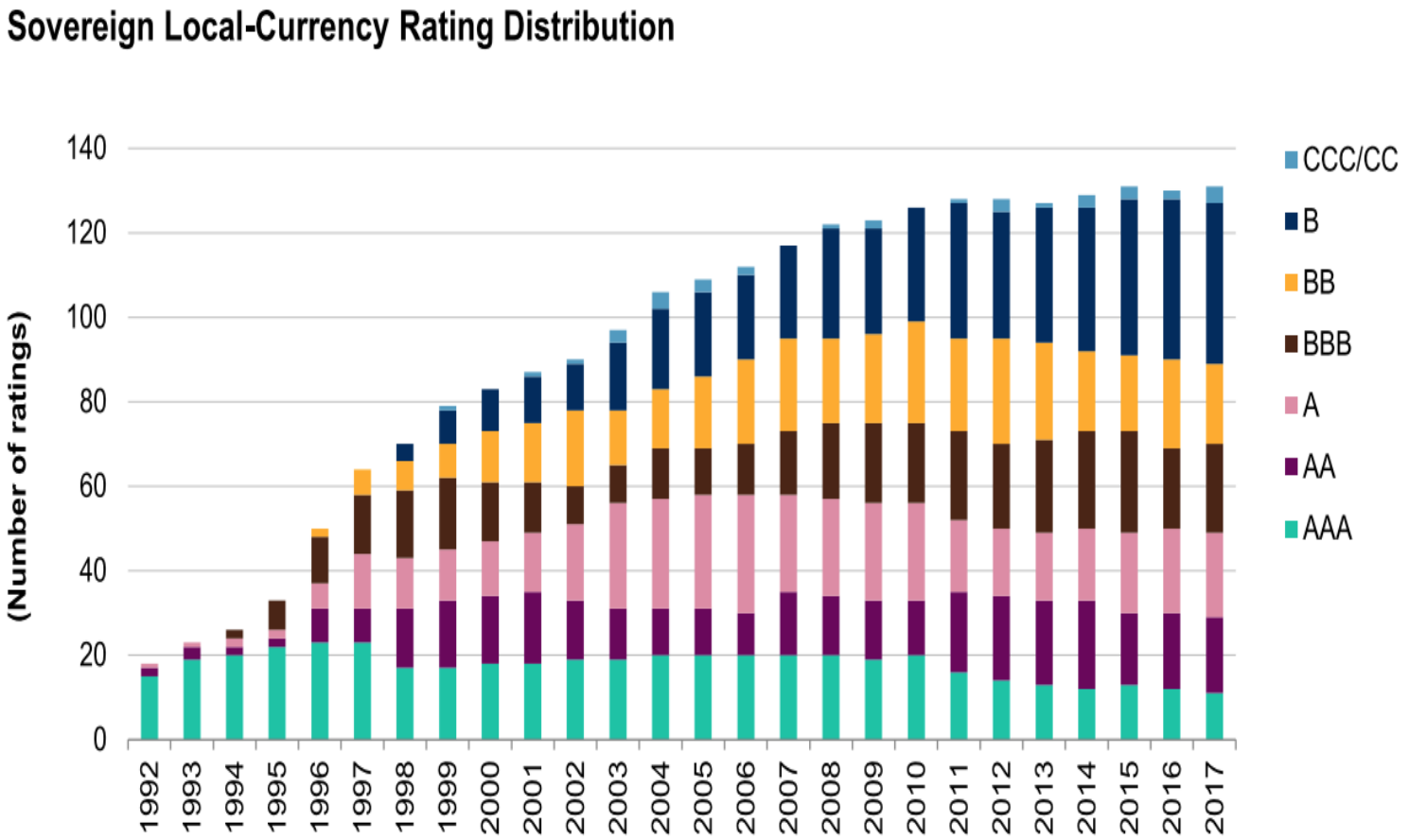
  - ⇀ Expected nominal short-term interest rate
  - ⇀ Risk premium
- Sovereign debt of advanced economies is considered risk-free
- **Problem:** Debt of emerging markets (EMs) is *not* risk-free
  - ⇀ Credit risks embedded in local currency (LC) debt

Motivation



Source: S&P Global Fixed Income Research.

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  - ⇀ Analyze components, especially the term premium
- **Main idea:** Use synthetic zero-coupon yield curves
  - ⇀ Swap US Treasury bonds into LC using cross-currency swaps
  - ⇀ What if the US issue debt in other currencies?

Why Is This Important?

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  - ⇀ Market expectations about monetary policy
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- Global financial cycle
  - ⇀ EMs vs advanced economies
- Testing asset pricing theories in EMs
  - ⇀ Buraschi, Piatti & Whelan (2018)

What Has Been Done?

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- Few papers make decompositions of EM yield curves
  - ⇀ Blake, Rule & Rummel (2017)

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  - ⇀ Blake, Rule & Rummel (2017)
- Synthetic yield curves
  - ⇀ LC credit spread (Du & Schreger, 2016)
  - ⇀ Convenience yield (Du, Im & Schreger, 2018)

Methodology

- Construction of synthetic yield curves
- Estimation of affine term structure model
- Analysis of the components

Synthetic Yield Curves

- LC risk-free yield curve
  - ⇀ US yield curve
  - ⇀ Cross-currency swaps (from USD to LC)
- At every date, fit a curve
  - ⇀ Nelson & Siegel (1987)

Affine Term Structure Model

- Standard ATSM
- Intuition:
  - ⇀ A set of stochastic factors drive the dynamics of the term structure.
  - ⇀ No-arbitrage restrictions ensure consistency in the cross section and time series of bond yields
  - ⇀ Yields are affine functions of the set of pricing factors

(Preliminary) Estimation

- Treat state variables as observables
  - ⇀ Principal components (PCA)
- Estimate the law of motion of the state variables
  - ⇀ VAR
- Expectation of short-term interest rates n-periods ahead
- Estimate the term premium

Data

- 15 EM countries
  - → Brazil, Colombia, Hungary, Indonesia, Israel, Korea, Malaysia, Mexico, Peru, Philippines, Poland, Russia, South Africa, Thailand, Turkey

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  - → Starting date: Earliest Jan 2000, latest Dec 2006

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  - → Brazil, Colombia, Hungary, Indonesia, Israel, Korea, Malaysia, Mexico, Peru, Philippines, Poland, Russia, South Africa, Thailand, Turkey
- End-of-month data until May 2018
  - → Starting date: Earliest Jan 2000, latest Dec 2006
- Maturities (in years): 1, 2, . . . , 10
  - → US yield curve from Gürkaynak, Sack & Wright (2007)
  - → Cross-currency swap curves from Bloomberg

Benchmark

Benchmark

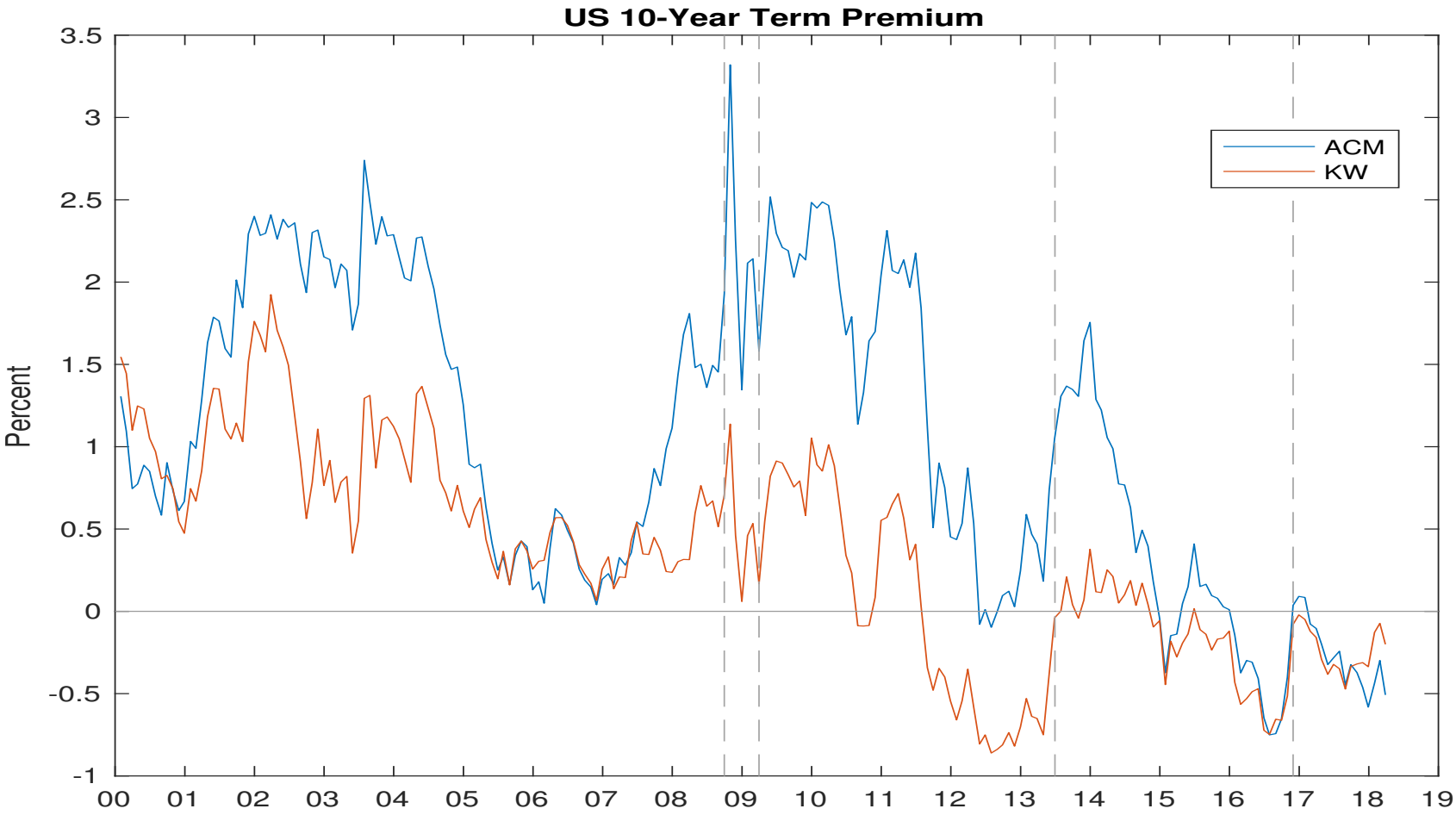

Figure: 10-Year US Term Premium.

Term Premium Estimates

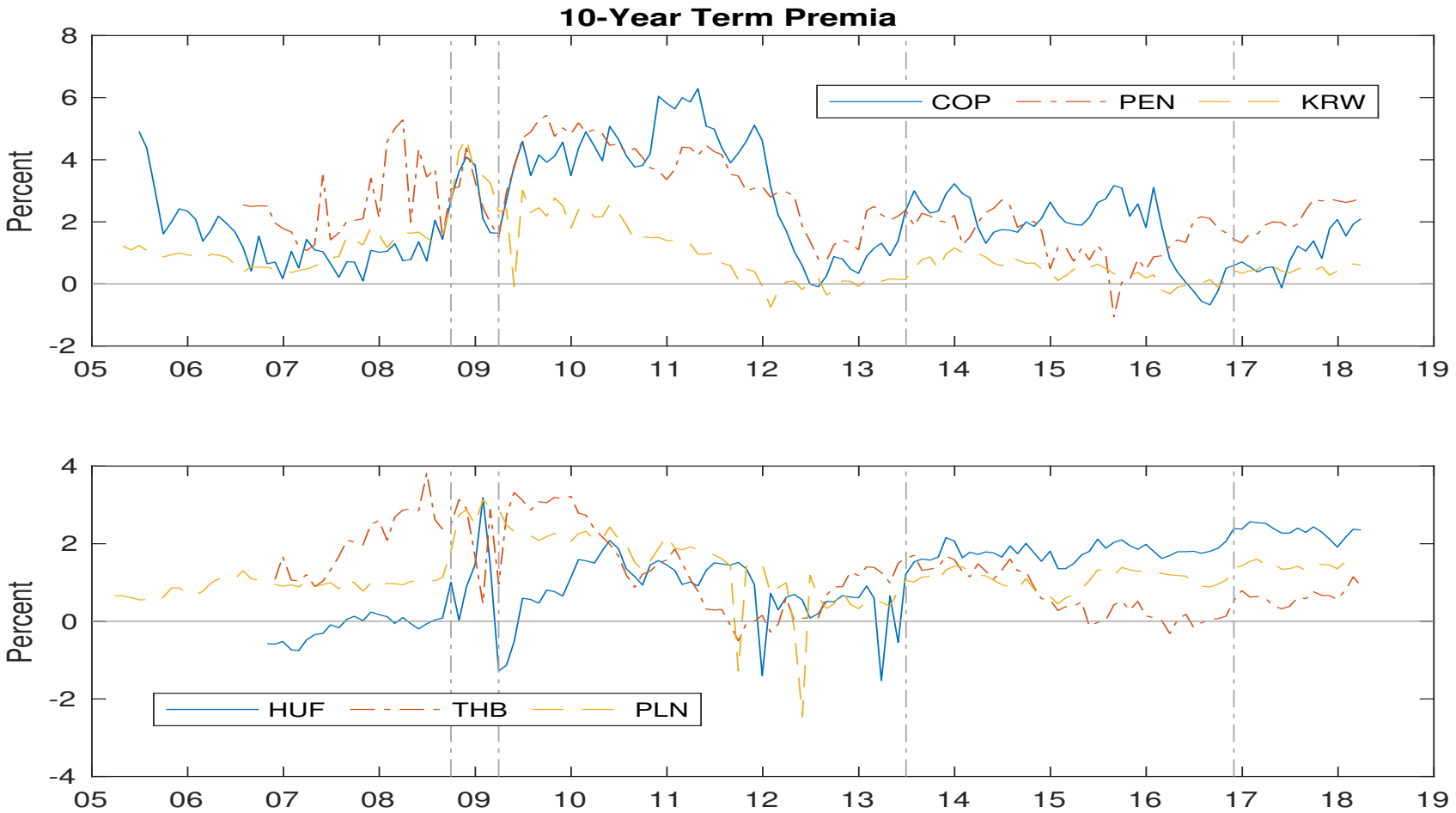

Figure: Estimated 10-Year Term Premia.

B

Term Structure of Term Premia

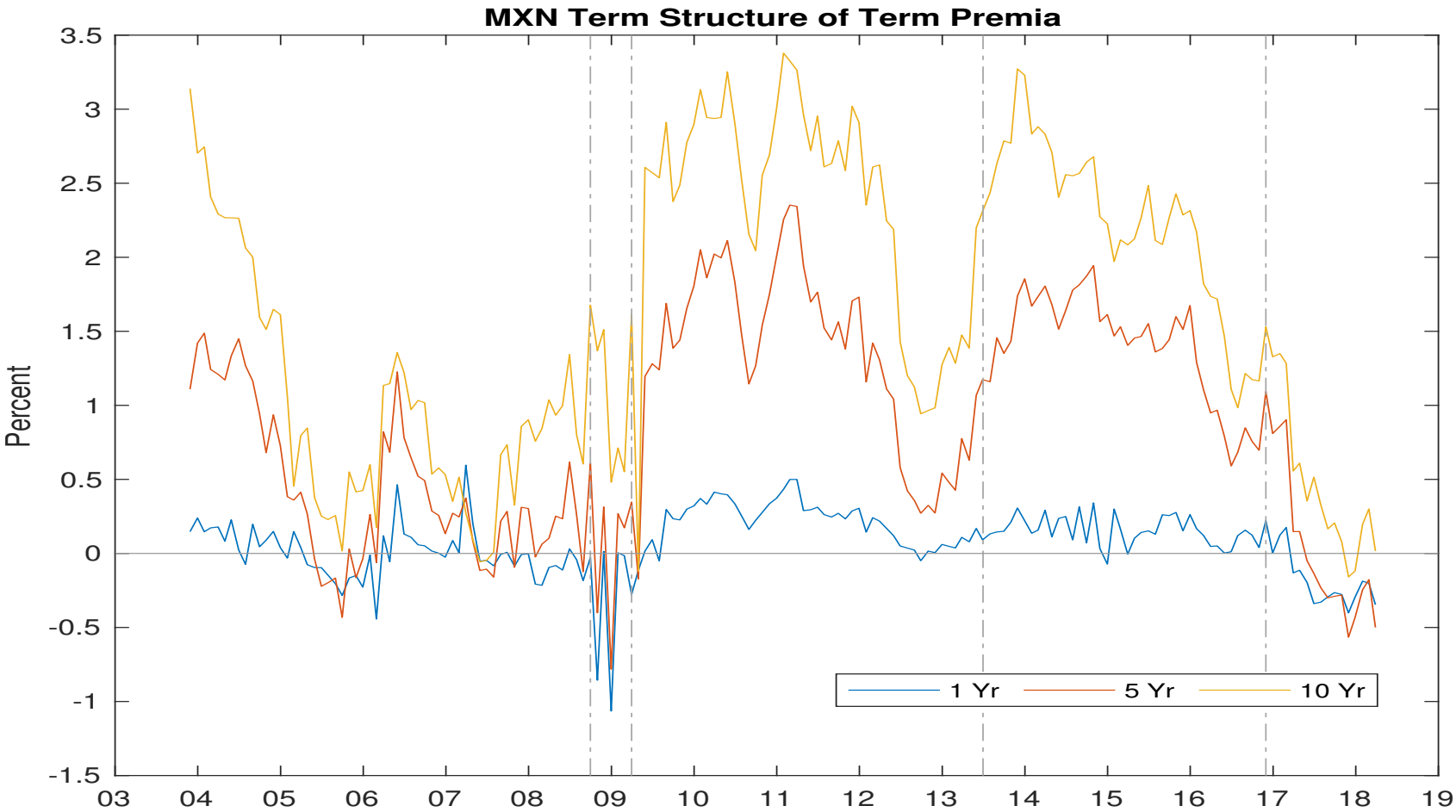

Figure: Estimated 1-, 5- and 10-Year Term Premia.

Gains from 'Adjusting' for Default Risk

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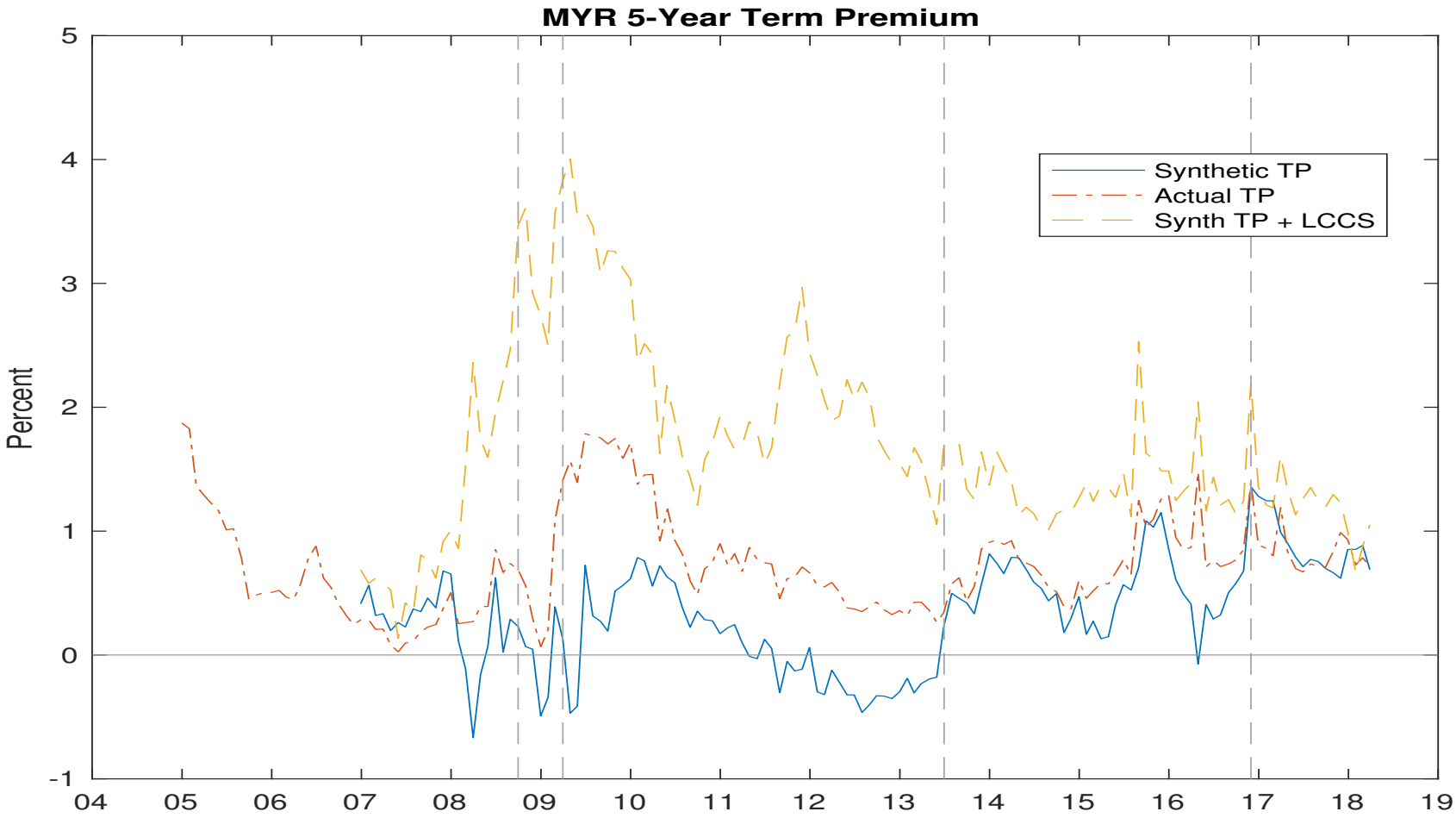

Figure: Estimated Term Premium: Synthetic vs Actual.

	N	Actual	Synthetic	Expected	TP	LCCS
BRL	141	-	8.55	7.00	1.55	-
COP	154	8.82	7.09	4.90	2.19	1.06
HUF	138	6.60	4.45	3.33	1.12	1.54
IDR	205	9.36	9.31	8.39	0.92	0.73
ILS	146	4.61	3.45	1.46	2.00	0.75
MXN	173	7.51	7.00	5.36	1.64	0.33
PEN	141	6.00	5.47	2.94	2.53	0.46
PHP	219	7.94	7.41	5.57	1.84	0.76
PLN	157	5.75	3.89	2.66	1.23	0.79
TRY	155	10.97	10.34	10.87	-0.53	0.57
KRW	219	4.60	3.54	2.48	1.06	1.03
MYR	136	4.24	3.21	2.33	0.88	0.77
RUB	144	8.38	8.24	8.11	0.13	0.07
THB	137	4.08	2.94	1.73	1.20	0.63
ZAR	218	9.10	8.83	7.80	1.03	0.21

Table: LC Decomposition, 10-Year: Average Values.

Correlations

- Comparison with US term premium
- LC credit spread (Du & Schreger, 2016)
- Uncertainty indexes (Baker, Bloom & Davis, 2016)

	US TP	LCCS	EPU
BRL	0.38	-	-0.29
COP	0.67	0.09	0.13
HUF	0.01	-0.27	-
IDR	0.36	-0.21	-
ILS	0.75	-0.16	-
MXN	0.72	0.20	-0.05
PEN	0.63	-0.34	-
PHP	0.49	-0.22	-
PLN	0.58	-0.12	-
TRY	0.76	-0.16	-
KRW	0.59	0.02	-0.07
MYR	0.23	-0.53	-
RUB	0.46	-0.46	-0.47
THB	0.57	-0.76	-
ZAR	0.21	0.15	-

▸ 5YR

Table: Correlations of 10-Year Term Premia.

Common Factors in EM Term Premia

	EM TP		Residual	
	5 YR	10 YR	5 YR	10 YR
(15) Dec-06	67.40	71.67	62.99	58.25
(8) Jul-05	79.57	82.65	74.36	76.40
(4) Latam	95.43	94.96	94.01	92.47
(5) Asia	90.19	91.43	88.52	87.98
(4) Europe	97.38	95.25	97.15	93.38

Table: Percent of Total Variance Explained by First 3 PCs.

Drivers of EM Term Premia

- Panel regressions per maturity
- Global financial variables
- Domestic variables

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- Panel regressions per maturity
- Global financial variables
  - ⇀ VIX, Fed funds rate, S&P, oil price
- Domestic variables
  - ⇀ Macro: Inflation, unemployment rate, industrial production
  - ⇀ Financial: FX, stock market

Panel Regression: 10-Year TP

5YR

log(VIX)	0.021	-0.195		0.538***	0.513***
	(0.33)	(0.32)		(0.15)	(0.14)
FFR	-0.198***	0.009		-0.149*	0.109
	(0.08)	(0.08)		(0.08)	(0.09)
USTP10		0.546***			0.639***
		(0.06)			(0.06)
SPX	-0.001***	-0.000		-0.001***	
	(0.00)	(0.00)		(0.00)	
INF			-0.090	-0.136**	-0.150**
			(0.07)	(0.06)	(0.05)
UNE			0.160	0.047	0.029
			(0.12)	(0.10)	(0.09)
IP			-0.008	0.002	-0.001
			(0.01)	(0.01)	(0.01)
Country FE	Yes	Yes	Yes	Yes	Yes
Observations	2483	2483	1757	1757	1757
Countries	15	15	15	15	15
Within R^2	0.15	0.23	0.07	0.26	0.38

Work in Progress

- Given potential for small sample problems, use survey forecasts to discipline the model
  - ⇀ Key factor explaining differences in term premium estimates (Li, Meldrum & Rodriguez, 2017)
- Better characterization of EM term premia relative to AEs

Work Ahead

- Full implementation of ATSM to refine TP estimation
- Compare EMs with SOE AEs (Australia, NZ, Canada)
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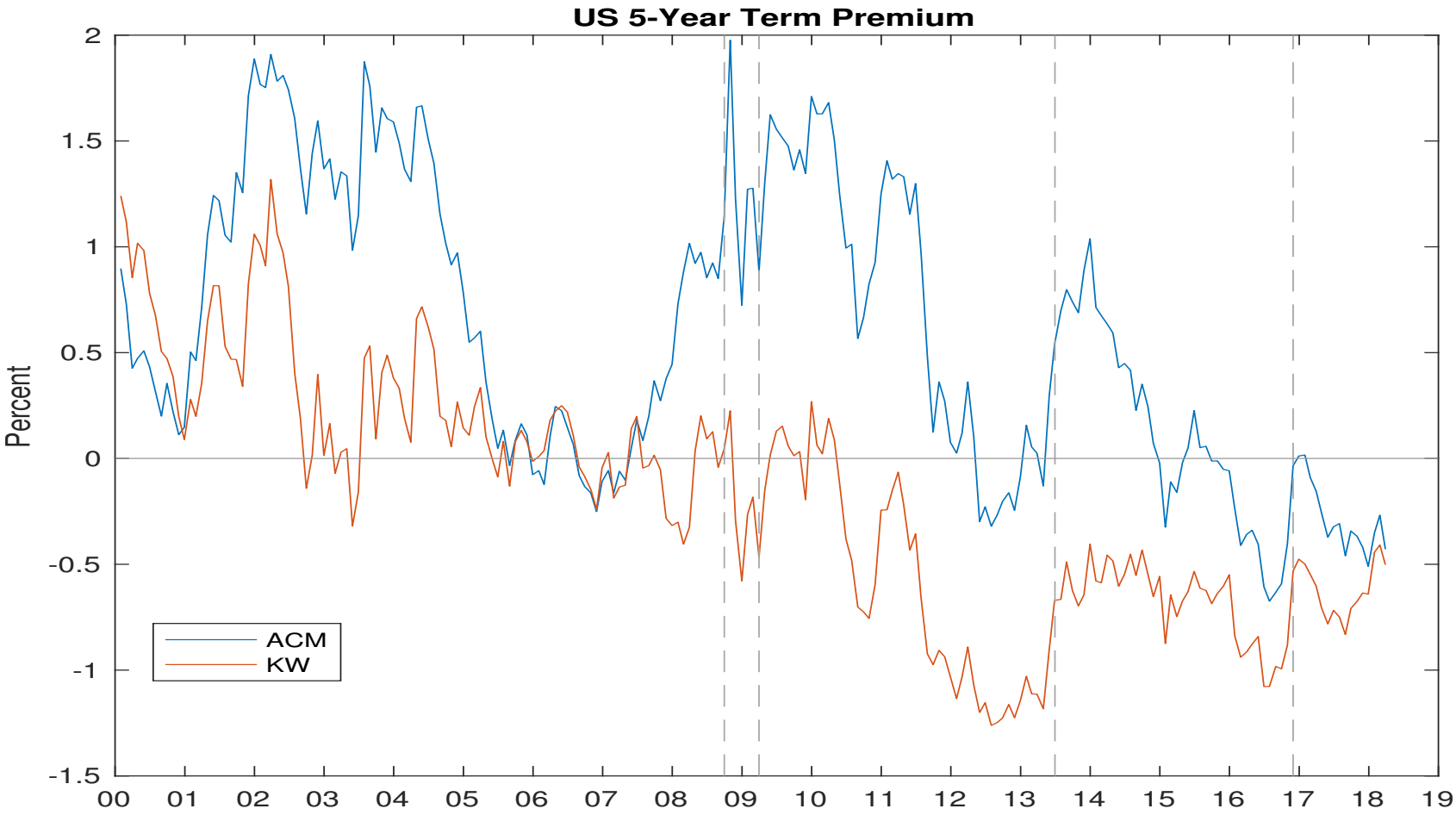
- Related work:
  - ⇀ Role of capital flows: negative EM TP?
  - ⇀ Role of FC yield curve: π and FX expectations?
  - ⇀ High-frequency effects of MP on EM *risk-free* yields

Conclusions

- 'Clean' EM TP estimates using synthetic LC yield curves
  - ⇀ Gains from 'adjusting' for credit risk
  - ⇀ In EMs, risk premium $\neq$ term premium
  - ⇀ More disaggregated decomposition of LC yield curves
- Properties of EM term premia
- Many potential extensions

Appendix

Benchmark



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Term Premium Estimates

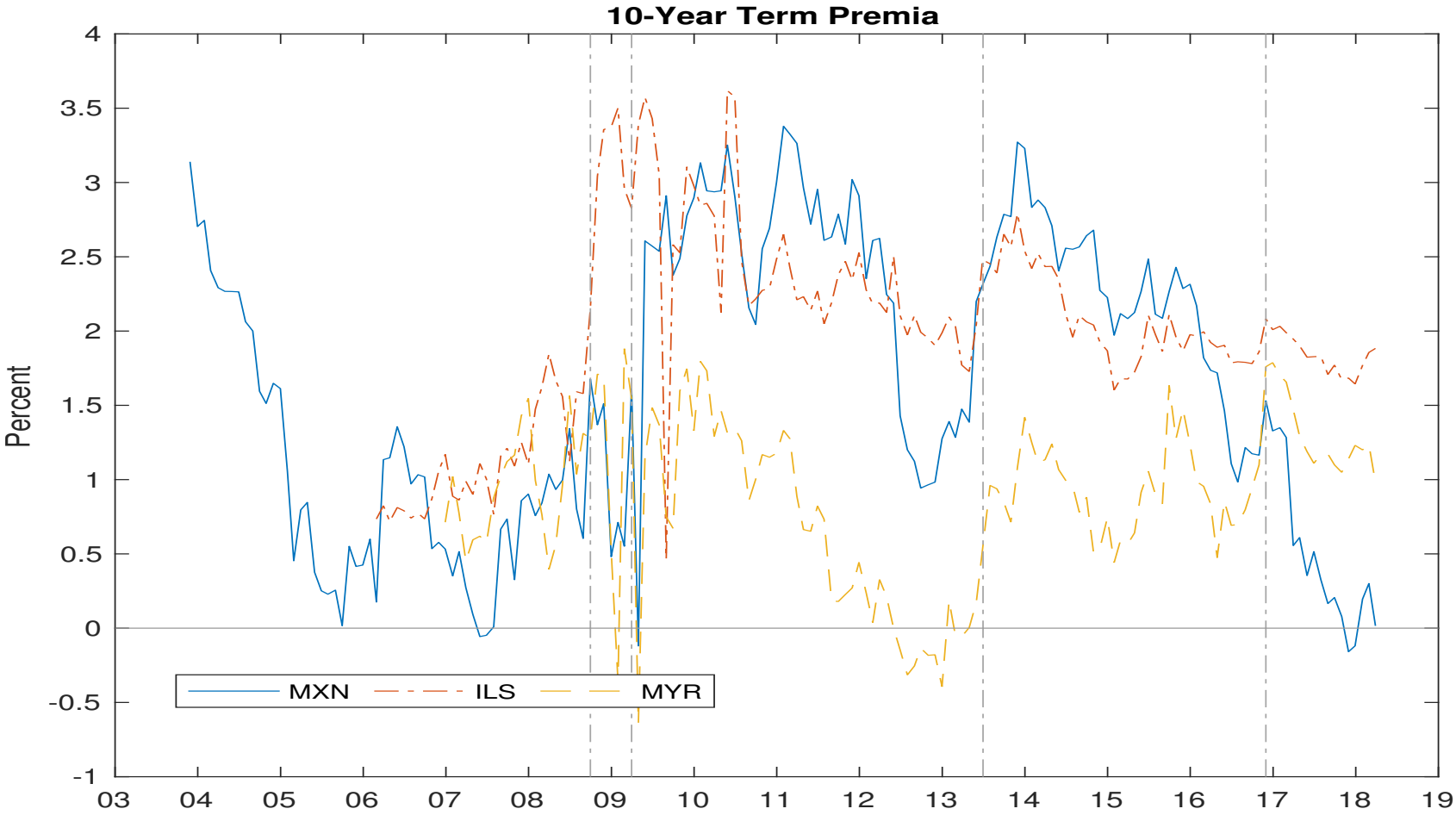

Figure: Estimated 10-Year Term Premia (cont.).

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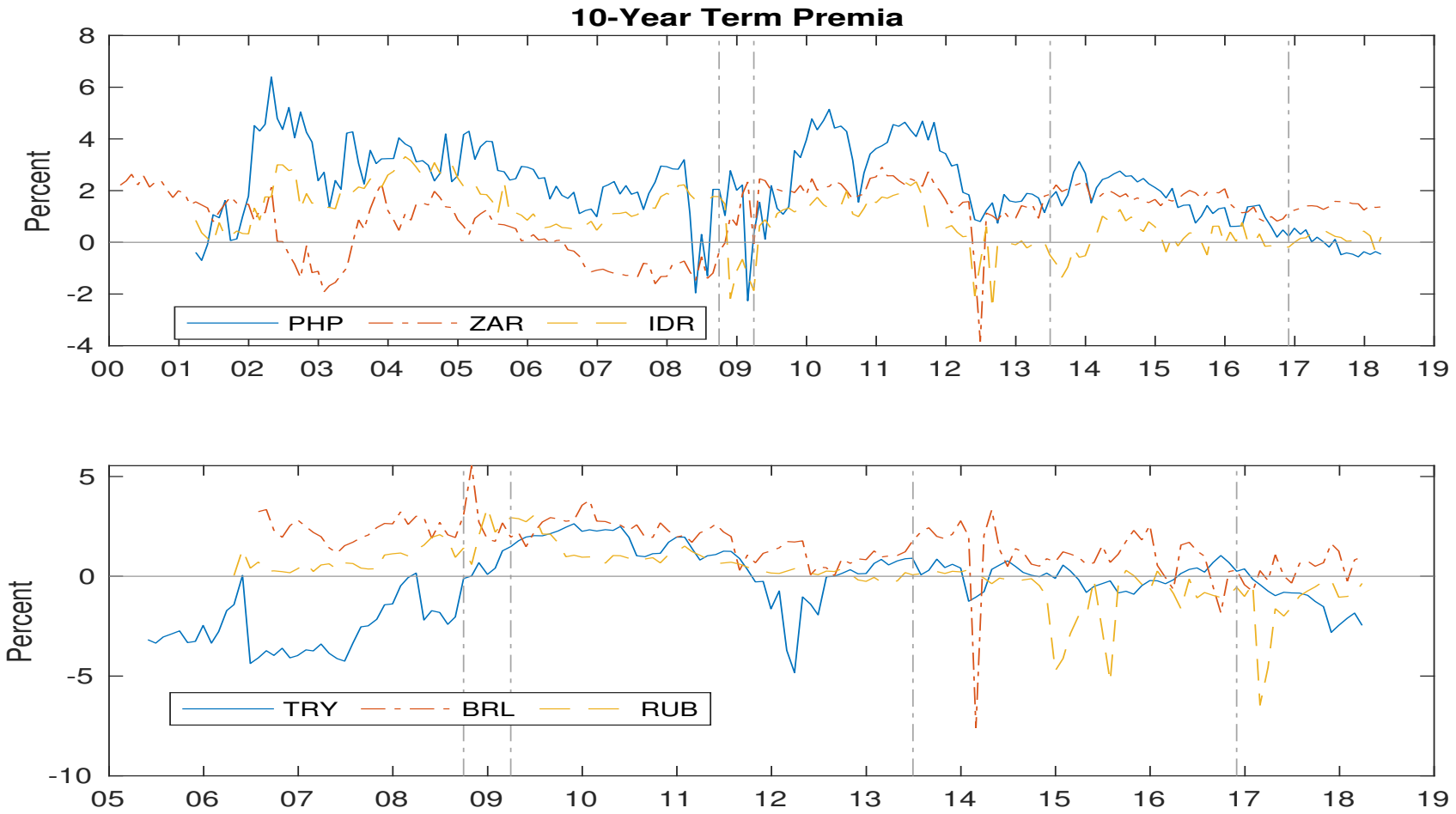

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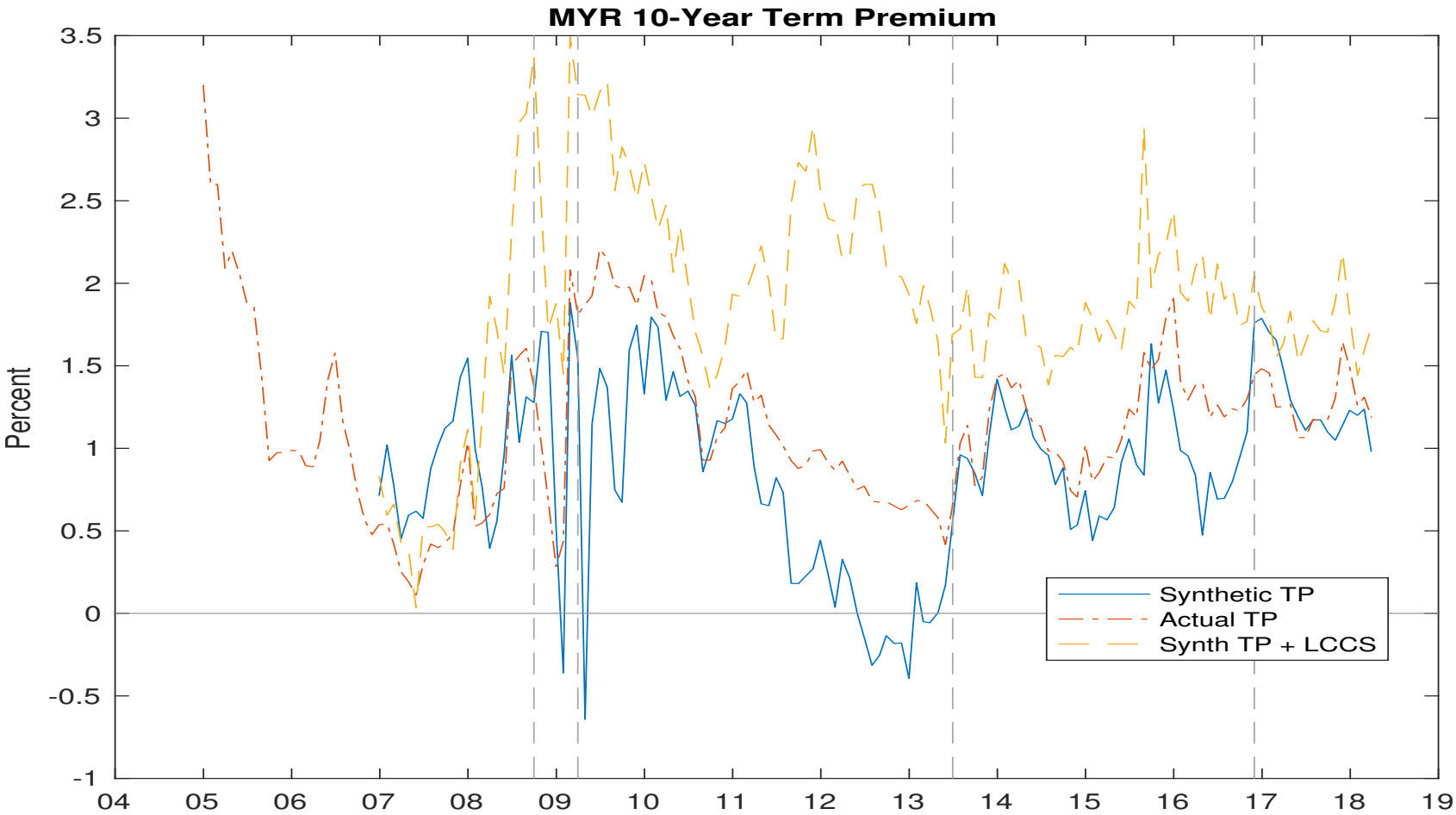
Gains from 'Adjusting' for Default Risk



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	US TP	LCCS	EPU
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HUF	0.10	-0.46	-
IDR	0.17	0.35	-
ILS	0.26	-0.05	-
MXN	0.62	0.15	-0.14
PEN	0.49	0.06	-
PHP	0.40	0.17	-
PLN	0.41	0.03	-
TRY	0.79	-0.26	-
KRW	0.49	0.30	-0.07
MYR	0.07	-0.62	-
RUB	0.12	-0.32	-0.46
THB	0.53	-0.35	-
ZAR	0.20	0.21	-

Table: Correlations of 5-Year Term Premia.

Panel Regression: 5-Year TP

10YR

log(VIX)	-0.284	-0.337		0.299**	0.481**
	(0.32)	(0.31)		(0.14)	(0.19)
FFR	-0.157*	-0.024		-0.061	0.135
	(0.08)	(0.08)		(0.08)	(0.08)
USTP5		0.499***			0.754***
		(0.06)			(0.08)
SPX	-0.001*	-0.000		-0.001***	
	(0.00)	(0.00)		(0.00)	
INF			-0.096*	-0.138**	-0.136***
			(0.05)	(0.05)	(0.04)
UNE			0.153	0.069	0.072
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