The Global Credit Cycle

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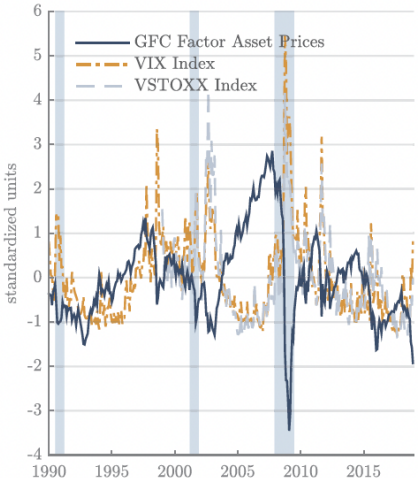
The Global Financial Cycle

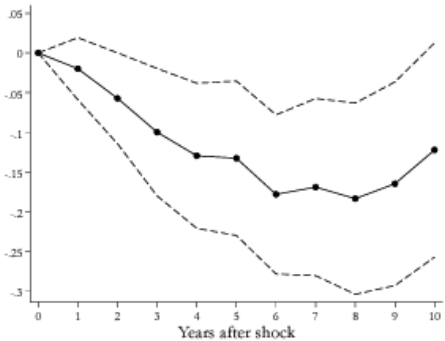


Source: Miranda-Agrippino and Rey (2022)

- GFC in world asset prices
  - One factor explains $\sim$40% of variation in asset prices
- Factor strongly correlated with the VIX
  - VIX captures risk aversion in equity markets
  - VIX proxies for banks' balance sheet constraints

$\Rightarrow$ GFC related to traditional sources of capital: equity and bank lending

Local Credit Cycle



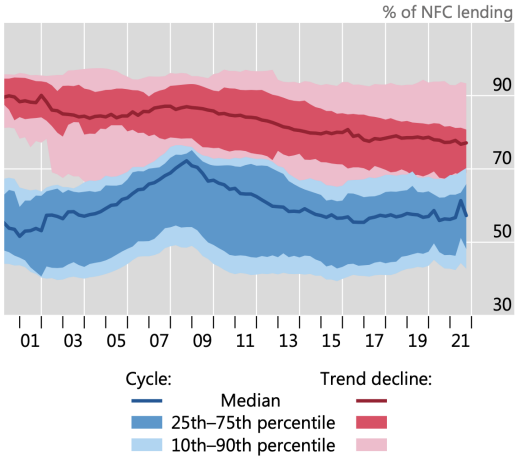
- Local credit variables predict real activity
  - Lower GDP growth
  - Higher probability of a financial crisis

Source: Verner (2022)

Question: How do the global financial cycle and the local credit cycle interact?

Fact: Declining importance of banks as providers of credit

Declining share of bank lending to NFCs[1]



Source: CGFS Papers N. 67 "Private sector debt and financial stability"

- Banks less important providers of credit $\leftrightarrow$ rising prominence of debt markets

$\Rightarrow$ banks' risk aversion has smaller weight in (debt) market risk aversion

$\Rightarrow$ potentially shifting roles for the GCC and the GFCy overtime

Fact: Debt market vs equity market returns

	U. S. equity		U. S. credit				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
VIX	0.15	-3.38***	0.21**	0.14			0.69
VIX^2		1.35***		-0.09			-0.33
VIX^3		-0.15***		0.02			0.05*
G-Z spread					0.15**	-1.58***	-1.62***
G-Z $spread^2$						0.51***	0.54***
G-Z $spread^3$						-0.04***	-0.05***
Adj. R-sqr.	0.01	0.05	0.03	0.05	0.03	0.06	0.08
N. of obs	405	405	405	405	405	405	405

- Non-linear relationship b/w returns and proxies for risk
- Distinct relationships for bond and equity returns $\rightarrow$ potential role for a GCC?

What we do: Is there a GCC?

For countries with bond-level returns:

- Factor construction
  - Monthly cross-country bond-level returns and country-level equity returns
  - Non-linear function of VIX, U. S. credit spreads and interactions between the two
  - Estimated via reduced-rank regressions for one-month asset return predictability
- Return predictability
  - Across countries, subsamples, horizons, asset classes ...
  - Monotonic factor loadings: across assets within a country, across countries
  - Flight-to-safety: low expected returns for safest, high expected returns for riskiest following credit factor tightening

What we do: How does GCC affect real activity locally?

For a bigger panel of countries:

- GCC in prices $\Rightarrow$ GCC in quantities of credit
  - Predict extreme debt capital flow events in particular
  - Predict declines in stock of private debt outstanding

$\Rightarrow$ Real activity predictability

  - Lower GDP growth
  - Higher probability of extreme GDP downturns

- Predictability in- and out-of-sample

Outline of talk

1. Data and methodology
2. Return predictability
3. Real activity predictability
4. Out-of-sample

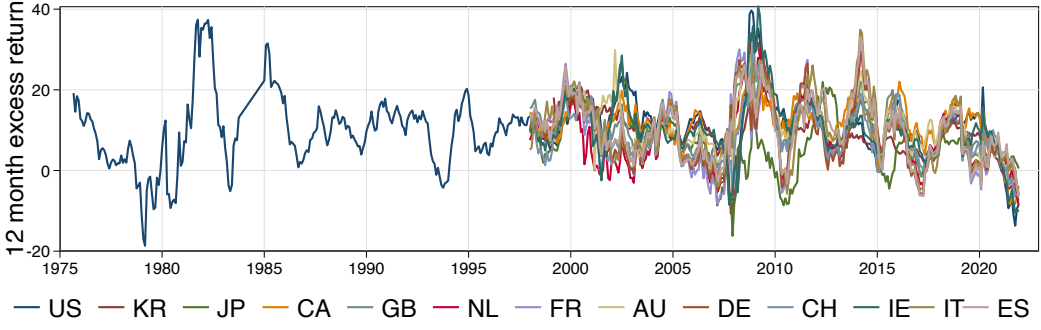
Data and methodology

Credit market data

1. Secondary market: quotes from
   - Lehman-Warga Fixed Income database: U. S. only, monthly, 1973 – 1998
   - ICE-BAML global corporate bond and global corporate bond high yield indices: international bonds issued in global currencies, 1997 – 2022
   - Use to construct bond-level excess returns from the perspective of U. S. investor
2. Firm-level expected default frequencies: Moody's KMV CreditEdge
   - Augmented Merton (1973) model
   - Use to construct bond-level default adjusted credit spreads (controls in return predictability)

Data details in Boyarchenko and Elias (2023): "The good, the bad, and the ugly of international debt market data"

Time-series average bond-market returns



- Large degree of comovement in global corporate bond returns

Factor construction: Basic idea

Corporate bond and equity expected returns related but distinct nonlinear functions of VIX and U. S. credit spreads

$$Rx_{i,t+h} = a_{i,h} + \varphi_{i,h}\left(\mathrm{VIX}_t, \mathrm{CS}_t\right) + \epsilon_{i,t+h}$$

- Approximate $\varphi_{i,h}\left(\mathrm{VIX}_t, \mathrm{CS}_t\right)$ as a cubic polynomial in VIX and credit spreads $\Rightarrow$

$$Rx_{i,t+h} = a_{i,h} + c_{i,h}X_t + \epsilon_{i,t+h}; \quad \underset{m\times 1}{X_t} = \left[CS_t, VIX_t, CS_t VIX_t, \ldots, VIX_t^3\right]$$

- Restrictions:
  - Common coefficients within a country-asset group: $c_{i,h} = c_{g,h}\ \forall i \in g$
  - Common factors across countries/assets: $c_h \equiv b_h \gamma_m'$, γ_m': $r \times m$, $r < m$
- Factors: $\gamma_m' X_t$
- Estimated via ranked-reduced regression

▸ Procedure details

Intuition

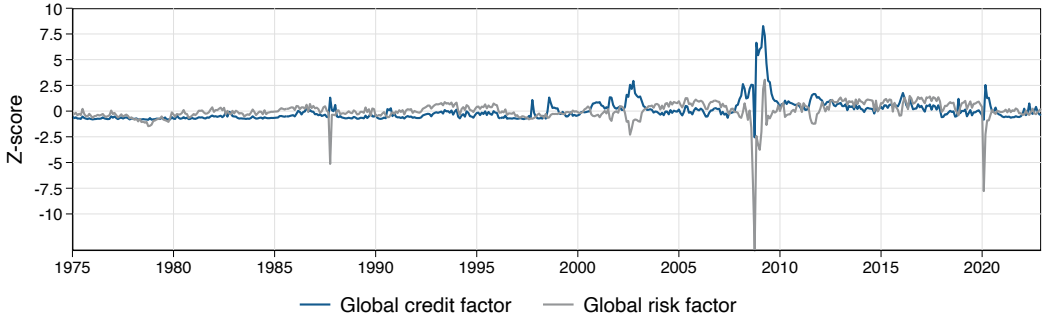
- Nonlinearity:
  - Theory: occasionally binding constraints for market participants (intermediaries)
  - Practical: nonlinearity in e.g. equity returns (Adrian et al. 2019)
- Two common factors:
  - Global intermediaries
  - But potentially different intermediaries for bonds and equities (e.g. NBFIs vs banks)

Implementation

- 22 countries: 13 AE, 9 EM
- 4 asset categories: above BBB-rated bonds, BBB-rated bonds, HY bonds, equities
- One-month ahead return predictability
- Bond-level returns; MSCI total index returns for equities
- Non-financial, senior corporate bonds only
  - Domicile based on ultimate parent
  - Non-financial based on ultimate parent
- Bond return predictability controls for:
  - Bond-level: duration-matched spread, duration, convexity, coupon, amount outstanding, callability, ...
  - Firm-level: expected default frequency, industry

▸ Data details

Global risk and credit factors



- Both large during the financial crisis and the pandemic
- Episodes with significant movement in global credit but not global risk (eg late 1990's)

▸ Correlations

Return Predictability

Return predictability

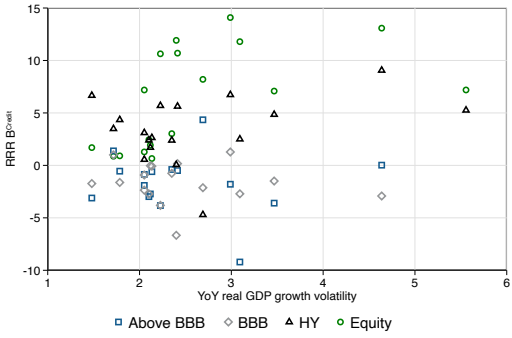
$$Rx_{i,t+1} = \beta_{c,r}^{credit} \text{global credit}_t + \beta_{c,r}^{risk} \text{global risk}_t + \gamma_i \text{Bond/firm controls}_t + \epsilon_{i,t+1}$$

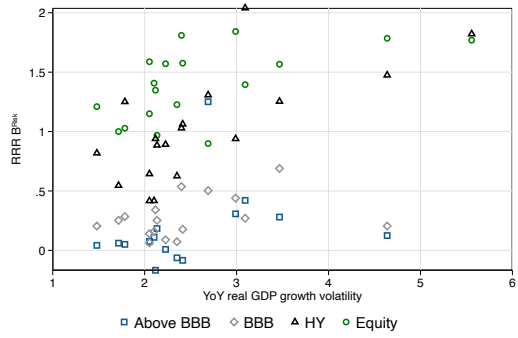
	AE			EM		
	US	AU	DE	CN	MX	BR
Above BBB:						
Global credit	1.32***	-3.63***	-2.80***	-0.96	-3.36***	-1.64***
Global risk	0.06***	0.01	0.11***	0.16***	0.28***	0.31***
	[331,569]	[5,424]	[20,867]	[2,651]	[1,307]	[312]
	[0.01]	[0.01]	[0.01]	[0.02]	[0.02]	[0.12]
BBB:						
Global credit	1.00***	-3.60***	-2.55***	-4.98***	-1.28	1.30*
Global risk	0.25***	0.09***	0.16***	0.21***	0.69***	0.44***
	[334,183]	[6,346]	[18,217]	[1,353]	[4,808]	[4,097]
	[0.03]	[0.01]	[0.01]	[0.02]	[0.13]	[0.06]
High yield:						
Global credit	3.42***	5.58***	2.37**	7.10**	4.86*	6.58***
Global risk	0.55***	0.89***	0.42***	0.64***	1.25***	0.94***
	[169,068]	[1,270]	[5,023]	[1,008]	[1,670]	[5,859]
	[0.07]	[0.12]	[0.03]	[0.04]	[0.05]	[0.13]
Equities:						
Global credit	1.03	10.41***	2.61	9.04***	7.04***	13.75***
Global risk	1.00***	1.57***	1.41***	1.21***	1.57***	1.84***
	[576]	[288]	[576]	[288]	[288]	[264]
	[0.10]	[0.24]	[0.10]	[0.09]	[0.15]	[0.13]

- $\beta_{US,BBB}^{credit} \equiv 1$; $\beta_{US,Eq}^{risk} \equiv 1$
- +ive $\beta \Rightarrow$ high global credit/risk factor $\rightarrow$ high expected excess return
- Flight to safety:
  - Within each country
    Above BBB $\leq$ BBB $<$ HY $<$ Equity
  - Across countries
- GCC distinct from GFC
  - e.g. AE equity mostly doesn't load on global credit factor

▸ Appendix

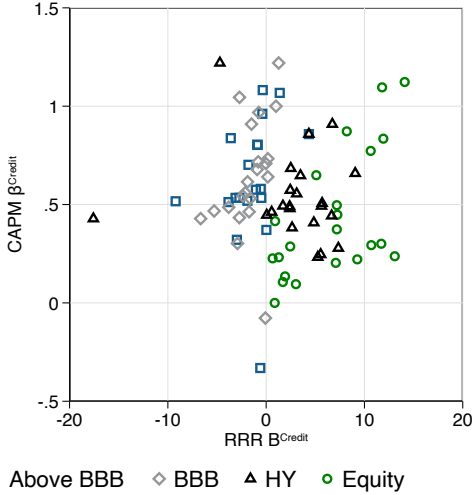
Higher factor loading for more volatile countries...

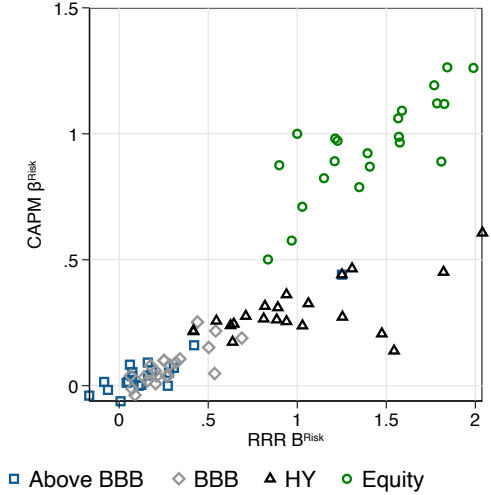




- Both β^{risk} and β^{credit} increasing in country volatility

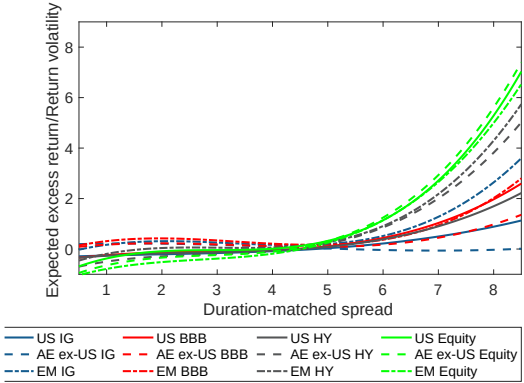
. . . and riskier assets

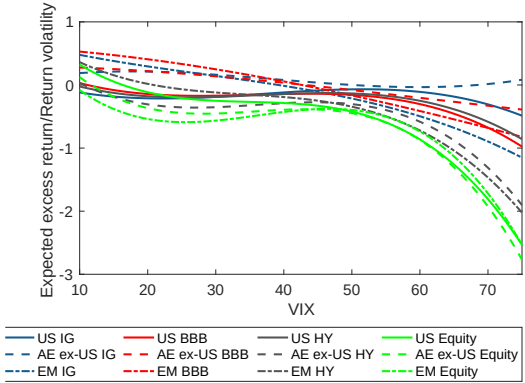




- Both β^{risk} and β^{credit} increasing in asset β

Flight-to-safety





- Higher credit spreads $\Rightarrow$ higher equity returns,. . . , lower above BBB returns
- Magnitudes: eg France HY vs above BBB
  - 1 sd dev increase in global credit factor $\rightarrow$ 9.38 pp increase in HY returns
  - 1 sd dev increase in global credit factor $\rightarrow$ 4.4 pp decrease in above BBB returns

Is return predictability driven by GFC/pandemic?

E.g.: Germany BBB

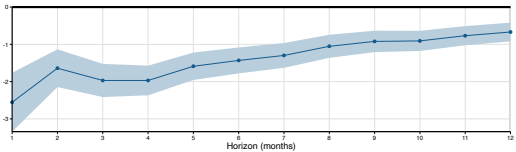
	Full sample	Normal	GFC	2020	2021 – 2022
Global credit	-2.72***	-3.26***	-7.15***	3.48***	-4.77***
Global risk	0.16***	-0.28***	0.16**	0.38***	1.21***
Adj. R-sqr.	0.01	0.01	0.05	0.13	0.03
N. of obs	18,217	10,825	1,009	2,336	4,046

- Normal: pre July 2007, Jan 2010 – Dec 2019
- Amplified during GFC but switches signs during the pandemic
- +ive β^{risk} driven by GFC and pandemic

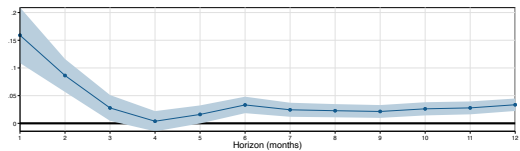
Return predictability - Horizons

E.g.: Germany BBB

Global credit factor



Global risk factor



- Return predictability up to 12 months out for both factors
- But magnitude of effect declining in horizon
  - 1 st dev increase in global credit factor $\rightarrow$ 1% decrease in 12 month exc return

Return predictability - 10y sovereign bonds

	US	KR	JP	CA	GB	FR	AU	DE	CH	IT	ES	MX	IN
Global credit	-0.23	-2.23**	-0.64	-2.83***	-2.29**	-1.47	-5.85***	-2.21**	-14.42	-22.01*	-10.02***	2.96***	0.17
Global risk	-0.20***	-0.75***	0.15*	-0.56***	-0.72***	0.07	-0.86***	-0.39**	-0.32	1.87	-1.20	-0.42***	-0.47***
Adj. R-sqr.	0.00	0.18	-0.00	0.08	0.08	-0.02	0.13	0.01	-0.01	-0.01	0.01	0.05	0.08
N. of obs	576	270	408	408	408	155	312	408	408	155	95	252	288

- Global credit and global risk factors predict returns even for assets not used in factor construction
- Loadings consistent with sovereign bonds safest in flight-to-safety ranking

Predicting real outcomes

Recap: Global credit cycle in asset prices

What about economic activity?

- Does a global credit cycle in asset prices translate into a credit cycle in credit quantities?
- Does a global credit cycle translate into a local business cycle?

Show in two steps:

1. GCC and international capital flows
2. GCC and local business cycles

Capital flow events

- Quarterly data on gross international capital flows disaggregated by
  - Type: total, debt portfolio, equity portfolio, bank/other
  - Residency of the asset: foreign vs domestic
  - Eg: debt portfolio flows by foreign investors
- Identify quarters of extreme flows as in Forbes and Warnock (2012, 2021): stops, surges, flights, retrenchments
- Complimentary log-log regression for event probability

$$\text{Prob}\left(e_{i,t}=1\right)=1-\exp\Big(-\exp\Big(\beta_e^{credit}\Delta\text{global credit}_{t-1}+\beta_e^{risk}\Delta\text{global risk}_{t-1}$$
$$+\beta_{t-1}^{Global}X_{t-1}^{Global}+\beta_t^{Contagion}X_t^{Contagion}+\beta_{i,t-1}^{Local}X_{i,t-1}^{Local}\Big)\Big)$$

Capital flow stops

	Full sample				Normal			
	Total	Debt portfolio	Equity portfolio	Bank/other	Total	Debt portfolio	Equity portfolio	Bank/other
L.ΔGlobal credit	0.31***	0.33***	0.29***	0.14***	0.21**	0.25***	0.06	-0.08
L.ΔGlobal risk	-0.18***	-0.11***	-0.12***	-0.12***	-0.07	0.00	-0.01	-0.08
L.Global liquidity	0.02*	0.02	0.01	0.03	-0.00	-0.00	-0.01	0.01
L.Global interest rates	0.06**	0.07**	0.11***	0.08***	0.10***	0.10***	0.14***	0.11***
L.Global GDP growth	-0.26***	-0.02	0.03	-0.32***	-0.18**	0.18***	0.13*	-0.31***
Regional contagion	0.53***	0.37***	0.25*	0.17	0.44***	0.33**	0.17	0.06
L.Local GDP growth	-0.08***	-0.01	-0.01	-0.09***	-0.09***	-0.02	-0.02	-0.10***
Log pseudolikelihood	-6211.94				-5297.39			
N. of obs	4,357				4,005			

- Full sample predictability across flow types
- Normal period predictability through predictability of debt portfolio stops only

$\Rightarrow$ GCC in asset prices translating into GCC in debt portfolio flows

- 1 st dev tightening in global credit factor $\rightarrow$ 2% increase in stop probability during normal times

Other types of capital flow events

- Surges: predictability *only* of debt portfolio and equity portfolio flows
- No predictability of flight episodes: loosening in global credit conditions do not induce investment abroad
- Retrenchment: full sample predictability $\rightarrow$ home bias during periods of elevated uncertainty

GCC and local business cycles

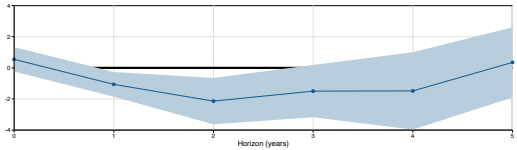
Global VAR intuition: local business cycles reflect local, foreign (trade partner), and global conditions

$$\Delta_h y_{i,t,t+h} = \alpha_h + \sum_{l=0}^{L} \beta^{(l)}_{credit,h} \text{Global credit}_{t-l} + \sum_{l=0}^{L} \beta^{(l)}_{risk,h} \text{Global risk}_{t-l}$$
$$+ \sum_{l=0}^{L} \beta^{(l)}_{y,h} \Delta y_{i,t-l+1,t-l} + \sum_{l=0}^{L} \beta^{*,(l)}_{y,h} \Delta y^{*}_{i,t-l+1,t-l}$$
$$+ \sum_{l=0}^{L} \beta^{(l)}_{r,h} \text{real rate}_{i,t-l+1} + \sum_{l=0}^{L} \beta^{*,(l)}_{r,h} \text{real rate}^{*}_{i,t-l+1} + \epsilon_{i,t}$$

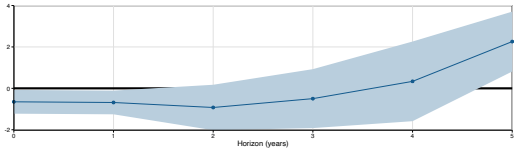
- Local projections for h year log real GDP growth, growth in private credit/GDP
- Local conditions $\Delta y_{i,t-1,t}$: domestic local real GDP growth, domestic growth in private credit/GDP
- Foreign conditions $\Delta y^{*}_{i,t-1,t}$: foreign growth in private credit/GDP = trade-weighted average of other countries' growth in private credit/GDP

Credit cycle in quantities

Global credit factor → Private credit growth



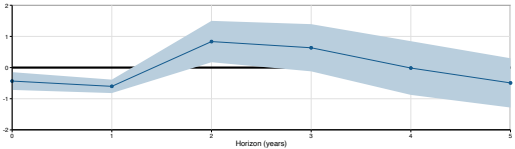
Global risk factor→ Private credit growth



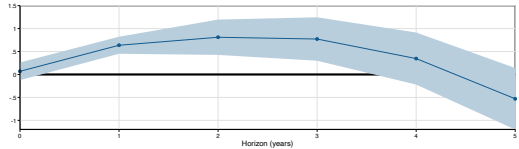
- Tightening in global credit factor → long-lived decline in stock of private credit
- Long lags of global risk factor tightening → credit quantities respond to GCC in the short run, GFCy in the long run
- 1 st dev tightening in global credit factor → 2 p.p. lower cumulative growth in private credit/GDP 2-3 years ahead

Global cycles and real activity

Global credit factor → real GDP growth



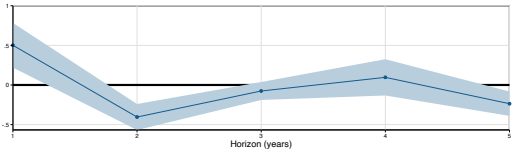
Global risk factor→ real GDP growth



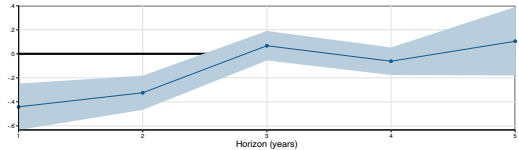
- Shorter-term effect of GCC on growth: 1 sd dev tightening → 2 p.p. lower two-years ahead cumulative growth
- Longer-term effect of GFCy on growth: 1 sd dev tightening → 1 p.p. lower three-years ahead cumulative growth

Predicting crises

Global credit factor → crisis probability



Global risk factor→ crisis probability



$$\text{Prob}\left(crisis_{c,t+h}=1\right)=1-\exp\left(-\exp\left(\beta_h^{credit}\Delta\text{global credit}_t+\beta_h^{risk}\Delta\text{global risk}_t\right.\right.$$
$$\left.\left.+\ \beta_h^{d}\Delta_3 d_{c,t}^{priv}+\beta_h^{d}\Delta_3 d_{c,t}^{priv,*}\right)\right)$$

- Crisis: YoY real GDP growth <-2% (5% of pre-pandemic observations)
- Tighter global credit factor → higher short and medium-term crisis probability
- 1 sd dev increase in GCC → 2.2% higher probability of crisis within a year

Local crisis predictability by a global credit price variable

Out-of-sample

Out-of-sample approach

Purpose: Conduct pseudo-out-of-sample evaluation of the predictive relationships

"Suppose we were conducting the predictive exercise in December 2016"

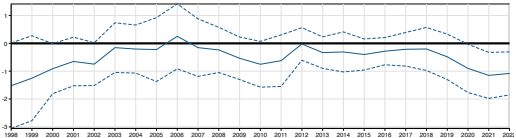
1. Use data on one-month-ahead returns, VIX, and credit spreads through November 2016 to estimate factor loadings (γ)

2. Construct December 2016 factor vintage using these loadings and VIX and credit spreads data through December 2016

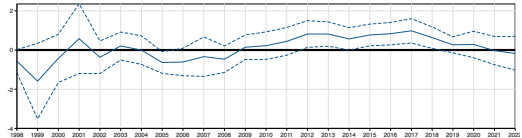
3. Estimate predictive regression as of December 2016 using the December 2016 factor vintage and macro data up to December 2016

Credit cycle in quantities: OoS

Global credit factor → Private credit growth



Global risk factor→ Private credit growth



- Each point corresponds to the coefficient from the one-year ahead predictive regression for a given factor vintage
  - E. g. 2016 coefficient uses December 2016 factor vintage
- Global credit factor has a stable relationship with future private credit growth across factor vintages
- Relationship between global risk factor and future private credit growth as expected only between 2011 – 2018
  - Declining role of the VIX as a proxy for the global financial cycle

Global cycles and real activity: OoS

Global credit factor → real GDP growth

Global risk factor→ real GDP growth

- Each point corresponds to the coefficient from the one-year ahead predictive regression for a given factor vintage
  - E. g. 2016 coefficient uses December 2016 factor vintage
- Global credit factor has a stable relationship with future real GDP growth across factor vintages
- Relationship between global risk factor and future real GDP growth as expected only between 2011 – 2018

Wrap-up

Conclusion

Investigate central role of global credit conditions in driving macroeconomic cycles around the world

- Global credit cycle in bond and equity returns
- Global credit cycle in *asset prices* translates into global credit cycle in *quantities*
- Tightenings in the global credit factor
  - → lower average real GDP growth
  - → lower average private credit growth
  - → higher probability of extreme growth contractions

Nexus between *global* pricing of credit and *local* conditions

Broader research agenda

Interaction between credit markets, firms' decisions, and real activity

- Use rich heterogeneity in debt capital structures across firms, countries, ...
- Elias (2021): "Capital flows and the real effects of corporate rollover risk"
  - Real effects of rollover risk during stop episodes
- Boyarchenko, Elias, and Mueller (2023): "Corporate credit provision"
  - Composition of firms' liabs and of fin sector affects the transmission of mon policy
- Boyarchenko and Elias (2024b): "Corporate debt structure over the GCC"
  - GCC drives firms' capital structure decisions
- Boyarchenko and Elias (2024c): "Financing firm-level growth through the GCC"
  - Changing credit market access through GCC drives firm-level growth

Boyarchenko and Elias (2023): dataset construction and stylized facts about primary market issuance, secondary market pricing, amounts outstanding,...

Appendix

Factor construction procedure

1. Estimate non-rank-restricted return predictability regression within each country-asset group g

$$Rx_{i,t+h} = a_{i,h} + \delta_{i,g} c_{g,h} X_t + F_{i,h} Z_{i,t} + \epsilon_{i,t+h},$$

where $\delta_{i,g}$ is an indicator of asset i belonging to country-asset group g

   - Output: $\hat{c}^{ols}_{g,h}$, $\widehat{Rx}^{e}_{i,t+h} = Rx_{i,t+h} - \hat{a}^{ols}_{i,h} - \hat{F}^{ols}_{i,h} Z_{i,t}$

2. Cross-sectional regression to estimate $\tilde{\gamma}_m$

$$\overline{Rx}^{e}_{g,t+h} = \sum_{l=1}^{r} \tilde{\gamma}_{m,l} \left(\hat{c}^{ols}_{g,h,(l)} X_t \right) + \epsilon_{g,t+h},$$

where $\overline{Rx}^{e}_{g,t+h} = \sum_{i \in g} w_i \widehat{Rx}^{e}_{i,t+h}$, $\hat{c}^{ols}_{g,h,(l)}$ l^{th} column of $\hat{c}^{ols}_{g,h}$, weight w_i: return volatility

3. Rotate to make factors $\hat{\gamma}'_m X_t$ orthogonal

$$\hat{\tilde{\gamma}}'_m = cov\left(\hat{\gamma}'_m X_t\right) \hat{\gamma}'_m$$

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What's different in our factor construction relative to GFCy?

1. Different set of assets: information from secondary bond market returns, rather than equity and sovereign debt market prices
2. Reduced rank regression (RRR) rather than dynamic factor model/PCA
   - Given set of variables X_t, both summarize information in a lower rank space

$$Y_t = C \times BX_t + \epsilon_t$$

   - RRR: choose B to maximize $cov\left(Y_t, BX_t\right)$
   - PCA: choose B to maximize $cov\left(BX_t\right) / var\left(X_t\right)$
3. Non-linear factors of pre-specified aggregate conditions vs linear latent factors (with pre-specified persistence)

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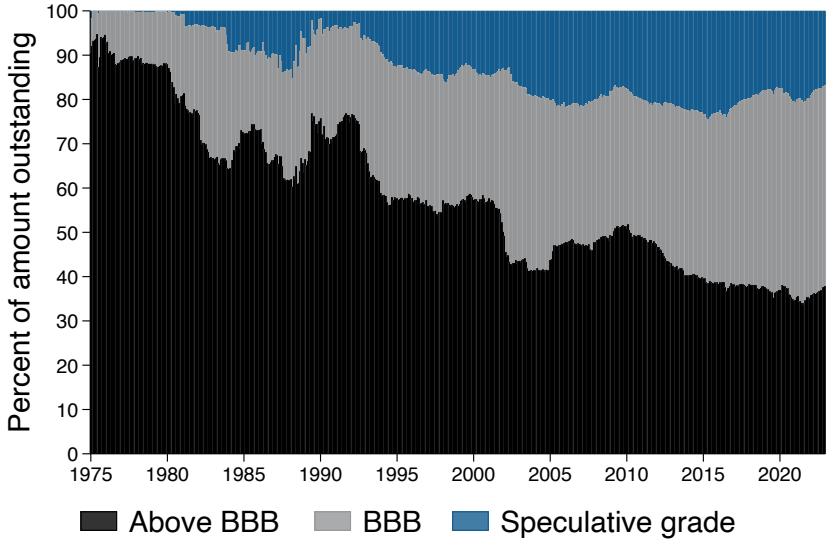
Bond return data composition



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Measuring credit spreads: U. S.

1. Compute duration-matched credit spread for each bond-date observation:

$$z_{b,t} = y_{b,t} - rf_t^{(\tau_{b,t})}$$

   - $\tau_{b,t}$: Duration of bond b at date t
   - $rf_t^{(\tau_{b,t})}$: risk-free (Treasury) yield with duration $\tau_{b,t}$

2. Estimate predicted credit spread:

$$\log z_{b,t} = \alpha + \beta \log \text{EDF}_{f,t} + \vec{\gamma}' X_{b,t} + \epsilon_{b,t}$$

   - $\text{EDF}_{f,t}$: 1 year EDF
   - $X_{b,t}$: bond and firm characteristics

3. Compute default-adjusted credit spread:

$$d_{b,t} = z_{b,t} - \exp\left(\widehat{\log z_{b,t}} + \frac{\sigma_\epsilon^2}{2}\right)$$

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Measuring credit spreads: International

1. Compute duration-matched credit spread for each bond-date observation:

$$z_{b,t} = y_{b,t} - rf_{c,t}^{(\tau_{b,t})}$$

   - $rf_{c,t}^{(\tau_{b,t})}$: sovereign yield for currency c with duration $\tau_{b,t}$

2. For each month, estimate cross-sectional regression of duration-matched credit spreads on currency, firm and rating fixed effects (as in Liao, 2020):

$$z_{b,t} = \alpha_{c,t} + \alpha_{f,t} + \alpha_{rating,t} + \epsilon_{b,t}$$

3. Compute currency-adjusted credit spreads:

$$z_{b,t}^{\$} = z_{b,t} - (\alpha_{c,t} - \alpha_{\$,t})$$

4. Estimate predicted credit spread using currency-adjusted credit spreads
5. Compute default-adjusted credit spread

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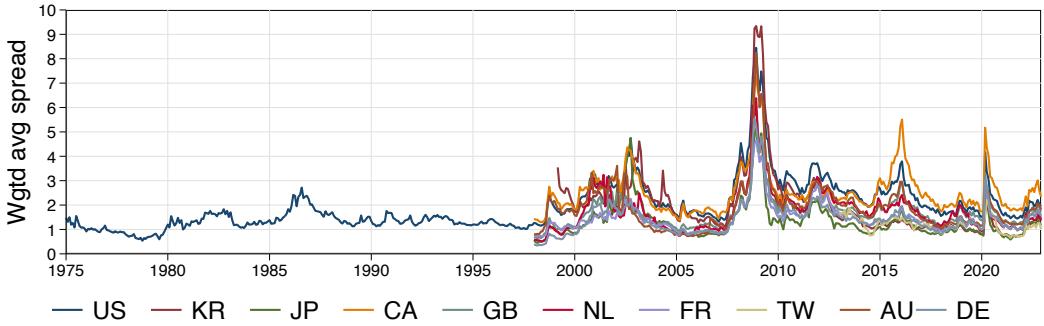
Time-series duration matched spread



- Large degree of comovement in global credit spreads

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Correlation with standard GFC proxies

	Full sample		Pre-crisis		Post-crisis	
	Global credit factor	Global risk factor	Global credit factor	Global risk factor	Global credit factor	Global risk factor
VIX	0.48***	-0.63***	0.47***	-0.66***	0.46***	-0.73***
VIX^3	0.42***	-0.62***	0.40***	-0.58***	0.45***	-0.65***
G-Z spread	0.83***	-0.25***	0.82***	0.06	0.79***	-0.45***
EBP	0.58***	-0.37***	0.41***	-0.15***	0.44***	-0.30***
USD TWI	-0.03	-0.09**	-0.26***	-0.09*	0.08	0.14
GFC (original)	-0.44***	0.18***	-0.21***	0.15**	-0.61***	0.20
GFC (updated)	-0.04	0.14***	0.13**	0.23***	-0.03	0.02
U. S. GS FCI	0.45***	-0.25***	0.20***	-0.21***	0.57***	-0.38***
Global GS FCI	0.59***	-0.43***	-0.43	-0.37	0.38***	-0.29***

- They are not the same as other factors

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Return predictability - controlling for other proxies of GFC

E.g.: Germany BBB

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
Global credit	-2.72***		-6.52***		-7.38***		-1.45***		-6.19***		-2.55***		-2.81***	-7.11***	-8.30***
Global risk	0.16***		0.23***		0.27***		-0.10*		0.12**		0.16***		-0.13***	0.18***	0.33***
G-Z spread		-1.01	9.41***											9.75***	
Predicted spread				-5.91***	1.92			-5.93***	0.83						-1.99
Default-adjusted spread				0.15	14.66***			3.51***	13.32***						13.14***
VIX						-4.66***	-6.59***	-5.28***	-3.76***					7.77***	9.48***
USD TWI										-0.28***	-0.20***			0.18***	-0.08
GFC (updated)												0.81*	0.12	1.21***	2.97***
Adj. R-sqr.	0.01	-0.00	0.02	-0.00	0.03	0.01	0.02	0.02	0.03	-0.00	0.01	-0.00	0.01	0.04	0.03
N. of obs	18,217	18,217	18,217	18,217	18,217	18,217	18,217	18,217	18,217	18,217	18,217	10,813	10,813	13,614	10,813

- Global credit and global risk factors robust predictors of excess returns

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References I

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