Three familiar themes

1. Credit booms and busts
2. The trilemma
3. Reserves
1. Credit booms and busts

Figure 3: Private nonfinancial (household and nonfinancial corporate) debt, % GDP

Figure 4: Private nonfinancial (household and nonfinancial corporate) debt, % GDP

Source: Bank for International Settlements (BIS) as of March 2018

1. Credit booms and busts

Jordà, Schularick, and Taylor, Macrohistory Database (http://macrohistory.net)
1. Credit booms and busts

Panel A. Domestic credit (percent of GDP)

Graphs by region and crisis type

Pierre-Olivier Gourinchas and Maurice Obstfeld, Stories of the Twentieth Century for the Twenty-First, AEJM 2012.
1. Credit booms and busts

Real GDP per capita (% deviation by year)

- Normal recessions (conditional):
  Average & excess credit =
  + 1,2,3 %GDP/year

- Financial recessions (conditional):
  Average & excess credit =
  + 1,2,3 %GDP/year

Jordà, Schularick, and Taylor, When Credit Bites Back, JMCB
1. Credit booms and busts

Impulse Responses from a Recursive VAR in Real GDP, Nonfinancial Firm Debt, and Household Debt

This figure presents impulse responses from a three variable VAR in log real GDP, firm debt to lagged GDP, and household debt to lagged GDP. The left panel shows the household debt response to a household debt shock. The middle panel presents the real GDP response to a household debt shock. The right panel shows the real GDP response to a firm debt shock. The shocks are identified using a Cholesky decomposition with the ordering $(y_{it}, d_{F_{it}}, d_{HH_{it}})$. The VAR is estimated in levels with country fixed effects on the 30-country sample. The reduced-form VAR coefficients are corrected for Nickell bias using an iterative bootstrap procedure. Dashed lines represent 95% confidence intervals that account for contemporaneous cross-country residual correlation and are computed by resampling cross-sections of residuals using the wild bootstrap.

After a shock to itself, household debt continues expanding for three years until peaking, and then it reverts. The reversion is substantial, with household debt returning to its initial level by five years after the peak of the boom. Given that household debt increases for three to four years after a shock, the single equation analysis we employ below focuses on the rise in household debt over a three-year period.

The middle panel shows the response of real GDP to a positive shock to household debt. An increase in household debt initially increases GDP. But the boost to GDP proves to be short-lived, as GDP eventually declines just as household debt begins to decline. Five years after the original shock, GDP has returned to the same level.

Many other researchers have used a three- to four-year horizon of private credit changes to examine the effect of credit expansion on outcomes, for example, King (1994), Mian and Sufi (2014), Jordà, Schularick, and Taylor (2014a), Baron and Xiong (2017). We believe we are the first to justify this horizon in a VAR setting.
1. Credit booms and busts

Impulse response coefficients can be interpreted as the change in the forecast due to a +1 standard deviation (s.d.) shock in the corresponding regressor. For reference, in the sample used here D3CREDGDP has a mean of 3.77% and an s.d. of 8.82%.

Exhibit 1 displays the impulse responses for bonds and equities, using the forecast model on the post-1950 advanced economy panel. In these charts, the solid line shows the response out to a five-year horizon for cumulative USD total returns for a +1 s.d. shock to D3CREDGDP, with confidence intervals of ±1 and ±2 s.d. shown by dashed and dotted lines, respectively. Similar results are obtained for equity and bond local currency returns and also for equity and bond returns expressed in USD as an excess over three-month Treasury bills.

The key test here is whether the coefficient on D3CREDGDP is statistically significant. We are also interested in whether it has the expected sign. The null hypothesis is clearly rejected, and the coefficient on D3CREDGDP is statistically significant at Years 1–5 for equities but not for bonds. (As can be inferred from the exhibits, if, as a robustness check, we use the credit variable lagged one year to allow for delayed data releases, this produces similar responses.)

We find that larger credit booms measured by D3CREDGDP go hand in hand with USD return underperformance in equities relative to bonds. In the first three years, given a +1 s.d. shock to D3CREDGDP, the forecast USD total equity returns drop by an average of about 250 to 300 bps per year, but the forecast USD total bond returns are virtually flat.

These results provide further support for a leverage-based portfolio tilt approach, and by adding controls we can be further reassured. We now see that, from a forecasting perspective, leverage signals contain distinct predictive information about asset returns that is not already summarized in macro data or in standard factors like momentum and value.

CROSS-SECTIONAL PERFORMANCE GAINS WITH A GLOBAL PORTFOLIO SORT BACKTEST

The first test of whether leverage signals can improve asset allocation is a pure cross-section test in the form of a simple high-minus-low sort. We refer to this as a sort on a leverage factor (L).

We ask: Do global portfolios weighted more toward low credit boom economies and less toward high credit boom economies outperform? Can such sorts also outperform other sorts based on traditional factors, such as a value factor (V) and a momentum factor (M)?

Josh Davis and Alan M. Taylor, Credit Cycles and Asset Returns, PIMCO 2019.
2. Trilemma

Further information on the BIS global liquidity indicators is available at [www.bis.org/statistics/about_gli_stats.htm](http://www.bis.org/statistics/about_gli_stats.htm).

Amounts outstanding for the latest available data.
2. Trilemma

FIGURE IV

De Facto Exchange Rate Arrangements, Coarse Classification, 1946–2016: Share of World GDP in Each Group
2. Trilemma

Number of countries weighted by their share in world GDP, 1950–2015, excludes freely falling cases

- UK pound
- French franc and German DM (1950–1998) and euro
- US dollar

Figure II
Post–World War II Major Anchor Currencies
2. Trilemma

*Figure VI*
Share of Independent Countries with Dual, Multiple, or Parallel Exchange Rates, January 1950–September 2016

*All independent countries*

- Share of countries (solid line)
- Share weighted by GDP (dashed line)
2. Trilemma

Obstfeld Taylor work in progress
2. Trilemma

Real GDP

CPI inflation

Obstfeld Taylor work in progress
2. Trilemma

Obstfeld Taylor work in progress
2. Trilemma

Obstfeld Taylor work in progress
2. Trilemma

Equity prices (100x log)

Months
0 3 6 9 12 15 18 21 24 27 30 33 36

USD float
USD peg

Obstfeld Taylor work in progress
3. Reserves

Volume of reserves

USD trn

- China
- Other EMEs
- Japan
- Other advanced economies
3. Reserves

Reserves relative to GDP

Per cent

HK SG SA DZ TH CN MY EM PE CZ HU IL KR PH RU PL IN BR CL MX CO ID ZA TR AR

3. Reserves

Nominal exchange rates: GFC, taper tantrum and turmoil in Argentina and Turkey

Reserves in 2006 and changes in credit during the GFC

Reserves and three-month borrowing costs

- $y = 46.15 -7.30\ln(x)$, where $R^2 = 0.398$
- $y = 30.63 -7.60\ln(x)$, where $R^2 = 0.302$
- $y = 28.33 -7.01\ln(x)$, where $R^2 = 0.425$
- $y = 4.73 +0.432x$, where $R^2 = 0.187$
- $y = 24.732 -6.1\ln(x)$, where $R^2 = 0.4924$
3. Reserves

Reserves are in most cases higher than traditional benchmarks\(^1\)

\(^1\) Data from 2017.
3. Reserves

**Net foreign currency assets as a percentage of exports**

In percentages

<table>
<thead>
<tr>
<th>Latin America²</th>
<th>Asia, larger economies³</th>
</tr>
</thead>
<tbody>
<tr>
<td>96 98 00 02 04 06 08 10 12 14</td>
<td>96 98 00 02 04 06 08 10 12 14</td>
</tr>
<tr>
<td>150 100 50 0 -50 -100</td>
<td>150 100 50 0 -50 -100</td>
</tr>
<tr>
<td>Other Asia⁴</td>
<td>Other emerging market economies⁵</td>
</tr>
<tr>
<td>96 98 00 02 04 06 08 10 12 14</td>
<td>96 98 00 02 04 06 08 10 12 14</td>
</tr>
<tr>
<td>25 0 -25</td>
<td>25 0 -25</td>
</tr>
</tbody>
</table>

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¹ Net foreign currency assets are foreign currency assets minus foreign currency liabilities.

² Latin America includes Central America, the Caribbean, and Central South America.

³ Asia, larger economies include Japan, South Korea, Singapore, and Hong Kong, China.

⁴ Other Asia includes Australia, China, Malaysia, and Thailand.

⁵ Other emerging market economies include countries with emerging market economies.
3. Reserves

Net foreign currency assets of non-government as a percentage of exports

In percentages

<table>
<thead>
<tr>
<th>Latin America²</th>
<th>Asia, larger economies³</th>
</tr>
</thead>
</table>

| Other Asia⁴   | Other emerging market economies⁵ |

Graph 6
Argentina: Failed stabilization attempt

Veronica Rappoport

UC Berkeley. November 16th, 2019
## Argentina: Failed stabilization attempt

### GDP growth (%)

<table>
<thead>
<tr>
<th>Region</th>
<th>2012-2015</th>
<th>2016-2019</th>
</tr>
</thead>
<tbody>
<tr>
<td>Emerging and developing Asia</td>
<td>6.9</td>
<td>6.4</td>
</tr>
<tr>
<td>Emerging market and developing economies</td>
<td>4.9</td>
<td>4.4</td>
</tr>
<tr>
<td>Sub-Saharan Africa</td>
<td>4.5</td>
<td></td>
</tr>
<tr>
<td><strong>World</strong></td>
<td><strong>3.5</strong></td>
<td><strong>3.5</strong></td>
</tr>
<tr>
<td>Middle East and Central Asia</td>
<td>3.4</td>
<td>2.7</td>
</tr>
<tr>
<td>Emerging and developing Europe</td>
<td>2.2</td>
<td>2.6</td>
</tr>
<tr>
<td>Latin America and the Caribbean</td>
<td>1.9</td>
<td>2.5</td>
</tr>
<tr>
<td>Advanced economies</td>
<td>1.8</td>
<td>2.0</td>
</tr>
<tr>
<td>Major advanced economies (G7)</td>
<td>1.7</td>
<td>1.9</td>
</tr>
<tr>
<td>Euro area</td>
<td>0.6</td>
<td>1.9</td>
</tr>
<tr>
<td><strong>Argentina</strong></td>
<td><strong>0.4</strong></td>
<td><strong>-1.2</strong></td>
</tr>
</tbody>
</table>

Source: IMF.
### Argentina: Failed stabilization attempt

**Inflation (% end of period)**

<table>
<thead>
<tr>
<th>Region</th>
<th>2012-2015</th>
<th>2016-2019</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Argentina</strong></td>
<td>29.2</td>
<td>41.4</td>
</tr>
<tr>
<td>Middle East and Central Asia</td>
<td>7.4</td>
<td>8.1</td>
</tr>
<tr>
<td>Emerging and developing Europe</td>
<td>7.2</td>
<td>5.9</td>
</tr>
<tr>
<td>Sub-Saharan Africa</td>
<td>7.1</td>
<td>6.2</td>
</tr>
<tr>
<td>Emerging market and developing economies</td>
<td>5.0</td>
<td>4.6</td>
</tr>
<tr>
<td>Latin America and the Caribbean</td>
<td>5.0</td>
<td></td>
</tr>
<tr>
<td>Emerging and developing Asia</td>
<td>3.7</td>
<td>2.6</td>
</tr>
<tr>
<td><strong>World</strong></td>
<td>3.3</td>
<td>3.3</td>
</tr>
<tr>
<td>Advanced economies</td>
<td>1.1</td>
<td>1.7</td>
</tr>
<tr>
<td>Major advanced economies (G7)</td>
<td>1.0</td>
<td>1.6</td>
</tr>
<tr>
<td>Euro area</td>
<td>0.8</td>
<td>1.3</td>
</tr>
</tbody>
</table>

Source: IMF.
2015: The starting point
Twin Deficits: Fiscal Balance

Increase in size of public sector

% of GDP


Primary Fiscal Deficit 2015:

- Official figure: 3.8%
- Unreported expenditure of 1.5%

Public debt commitments:

- Holdouts: 2.6%
- Paris Club: 1.7%

Source: Treasury – SPNF (national).
Twin Deficits: External Accounts

Source: INDEC; IMF.
Price Distortions: FX

The starting point

Source: Central Bank of Argentina.
Monetary Overhang

The starting point

Monetary Aggregates

% of GDP; s.a.

Source: Central Bank of Argentina.
What was the path chosen in 2016?
The adjustment was gradual on expenditure but abrupt on sources

**Current revenues and expenditures**

- **% of GDP**
- **Revenues**
- **Expenditures**

- **2015**
- **2016**
- **2017**
- **2018**
- **2019**

**Primary fiscal deficit**

- **% of GDP**
- **2015**
- **2016**
- **2017**
- **2018**
- **2019**

*2019 projected
Source: Treasury – SPNF (national).

2015* includes non-registered expenditures; **2019 projected
Source: Treasury – SPNF (national).

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10
Introduction of Inflation Targeting Regime

Source: Central Bank of Argentina; Central Bank of Chile; Central Bank of Peru.
Removal of Exchange Rate Control

Real Exchange Rate

Source: Central Bank of Argentina and INDEC.

Public services
Prices relative to CPI

Gas
Electricity
Water
Transport
Inflation Targeting

Source: Central Bank of Argentina.
LEBACs to absorb monetary overhang

Central Bank remunerated liabilities

% of GDP

- Net repos
- LEIQ
- LEBAC

Source: Central Bank of Argentina.
Twin balances

External accounts

% of GDP

Current account balance
Exports (right axis)

Sudden stop

Index 2004=100

2019* 2020*

*2019 and 2020 projected
Source: INDEC; 2020 National Budget Bill.
Monetary Aggregates
(% of GDP s.a.)

Source: Central Bank of Argentina
Lack of consensus and confidence crisis
Lack of consensus and confidence crisis

Source: Central Bank of Argentina; Bloomberg.

Confidence crisis
Competitive FX, but FX controls

Confidence crisis

Exchange rate and FX controls

Source: Central Bank of Argentina.
Some policy issues for debate
The adjustment was gradual on expenditure but abrupt on sources

Source: Treasury; Central Bank of Argentina.
Peso-denominated Debt

Policy Issues

Private Roll-over rate of Treasury Bills (LETE)

%

Jan-11 70 114
Jan-25 90 119
Feb-08 69 93
Mar-15 53 41
Mar-29 65
Apr-12 109
Apr-26 79
May-10 114
May-24 134
Jun-14 80
Jun-28 5
Jul-19 0
Jul-26
Aug-16 5
Aug-28

Source: Treasury.
IMF agreements do not always work as intended

Argentina sovereign spread

Source: Bloomberg.

EMBI+ Argentina

Agreement with the IMF
Thank you.
UC Berkeley
Conference on Global Economic Issues

Investing in Emerging Markets

Dr. Calvin Ho, Ph.D.
November 16, 2019
Expanding Opportunities in Emerging Market Bonds

Number of EM Countries with Investable Bond Markets
As of March 2019

For illustrative and discussion purposes only.
Emerging Markets have Experienced Sizeable Growth

Emerging-Market Debt Outstanding
As of October 31, 2019

For illustrative and discussion purposes only.
Source: JPM, Bloomberg as of 10/31/19.
Local Currency Debt rating has improved since 2018

Average Credit Ratings: Emerging-Market Sovereign Debt over the Past 5-Years
October 31, 2014 – October 31, 2019

For illustrative and discussion purposes only.
Greater Liquidity has Increased Investor Demand

Number of US Active EM Funds
As of September 30, 2019

For illustrative and discussion purposes only.
Source: J.P. Morgan, EPFR Global, Bloomberg
Greater Liquidity has Increased Investor Demand

**EM Bond Flows by Currency**
As of September 30, 2019

For illustrative and discussion purposes only.
Source: J.P. Morgan, EPFR Global, Bloomberg
Foreign Ownership of EM Local Currency Government Bonds
As of August 31, 2019

For illustrative and discussion purposes only.
Source: J.P. Morgan, EPFR Global, Bloomberg
Emerging Markets Fixed Income has Outperformed Since the Early 2000’s

Relative EM vs. Developed Markets Total Return
Hedged and Unhedged
As of October 31, 2019

Average Annual Relative EM vs. Developed Markets Total Return
12/31/2003 – 10/31/2019

For illustrative and discussion purposes only.
Source: J.P. Morgan as of 10/31/19
## Estimated Fixed Income Flows into China from Benchmark Inclusion

<table>
<thead>
<tr>
<th>Index</th>
<th>Est. AUM ($bn)</th>
<th>Est. Weight</th>
<th>Est. Flows ($bn)</th>
</tr>
</thead>
<tbody>
<tr>
<td>GBI-EM Global Div</td>
<td>202</td>
<td>10%</td>
<td>20</td>
</tr>
<tr>
<td>GBI-EM Series</td>
<td>24</td>
<td>10-20%</td>
<td>2 - 4</td>
</tr>
<tr>
<td>Crossover Global IG (Bloomberg Barclays Global Aggregate)</td>
<td>2,000</td>
<td>6%-7%</td>
<td>120-140</td>
</tr>
<tr>
<td>Crossover Treasury IG (FTSE World Government Bond Index)</td>
<td>2,000-2,500</td>
<td>5%-6%</td>
<td>114-143</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>4,000-4,500</strong></td>
<td></td>
<td><strong>250-300</strong></td>
</tr>
</tbody>
</table>

For illustrative and discussion purposes only.
Source: J.P. Morgan Index Research Team. Note: Bloomberg Barclays has started China’s inclusion since April 2019, so inflows may have occurred already. China inclusion into J.P. Morgan’s GBI-EM GD will start February 28, 2020. FTSE has not made any announcements of formal China inclusion, so US$114-143bn estimated inflows are contingent on FTSE index decisions.
Foreigners are Moving into China

Number of Bond Connect Accounts
As of September 30, 2019

Foreigners Share of RMB Market
As of August 31, 2019

For illustrative and discussion purposes only.
Source: J.P. Morgan Index Research Team
For illustrative and discussion purposes only.
Source: Citigroup Inc., MTS Markets as of 10/31/19