# Carry trade and the real economy

## Switzerland and Brazil got carried away?

Bruno Thiago Tomio

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UGA Université Grenoble Alpes

CREg Centre de Recherche en Economie de Grenoble

FURB UNIVERSIDADE REGIONAL DE BLUMENAU

# General introduction

# Financialization of FX markets


**Figure 1.1:** Forex daily turnover (FDT) and ratio between FDT and the sum of daily trade and direct investment (DI), 1989-2019

*Source:* Bank for International Settlements (BIS) for the Forex daily turnover (FDT), using the net-gross basis. International Monetary Fund (IMF) for trade (sum of exports and imports of goods and services in U.S. dollars) and direct investment (sum of net acquisition of financial assets and net incurrence of liabilities in U.S. dollars).
*Notes:* Since FDT series are daily means for April, the sum of trade and DI are divided by 252, which is a rule of thumb for the number of trading days in a year (New York Stock Exchange 2021). See Appendix A.1 for more details. LHS and RHS are the abbreviations for left-hand axis and right-hand axis, respectively.

# Two key currencies involved

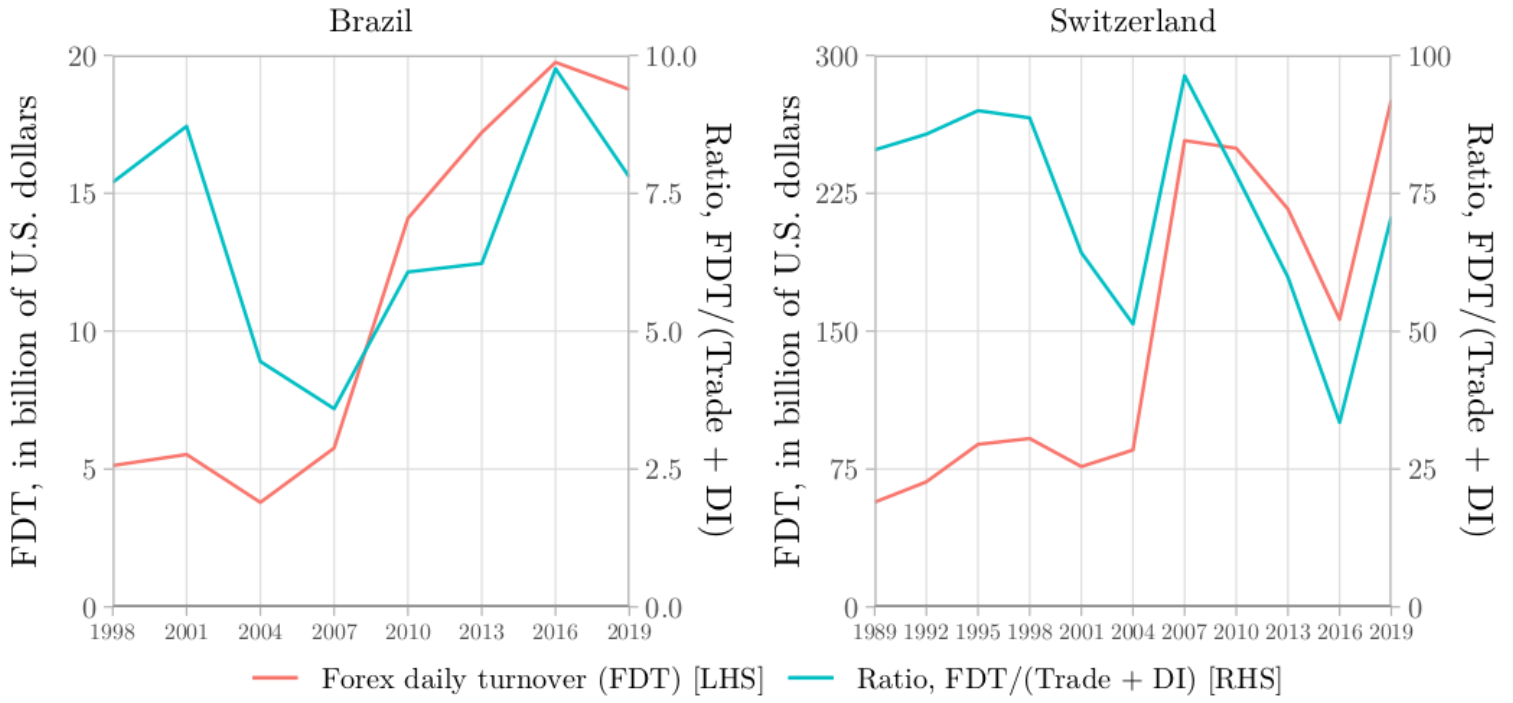


**Figure 1.4:** FDT and ratio between FDT and the sum of daily trade and DI, Brazil (1998-2019) and Switzerland (1989-2019)

*Notes:* See Figure 1.1 for more details.

# Lack of empirical studies

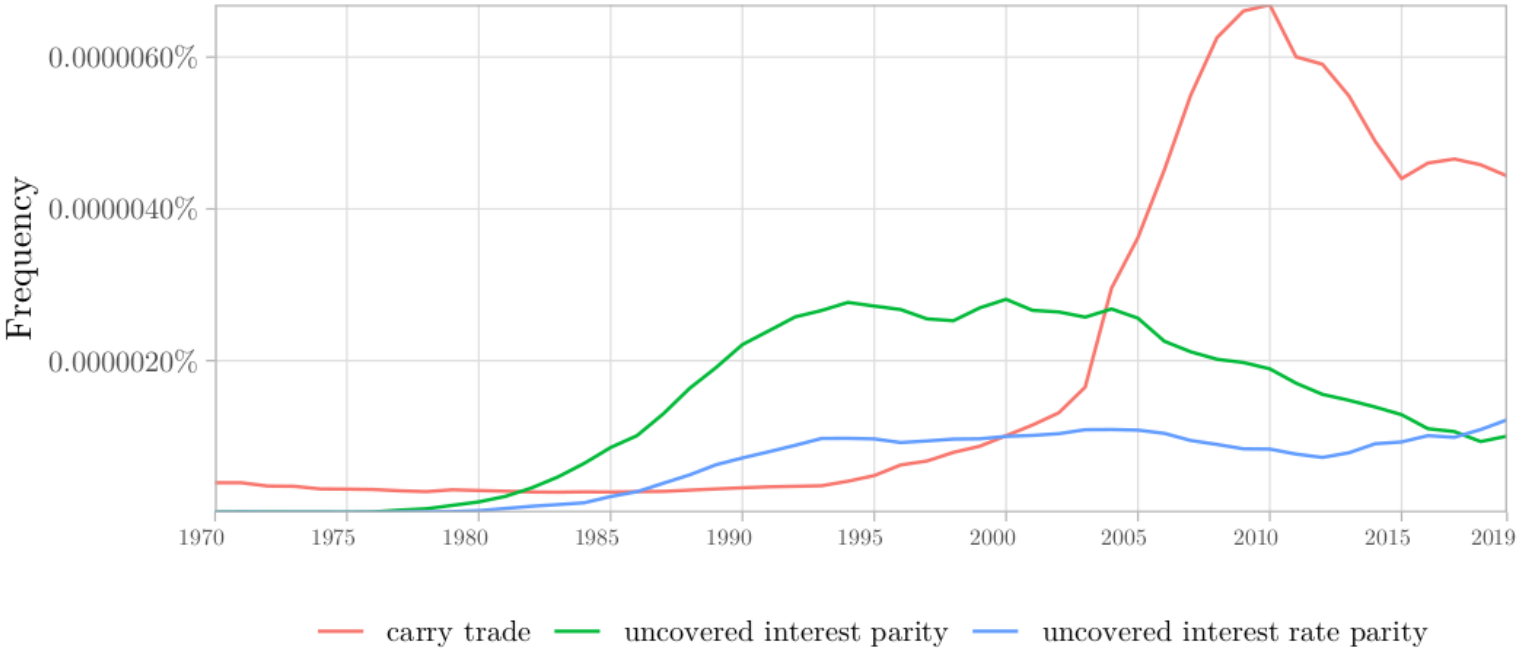


**Figure 1.5:** Frequency of appearance of the keywords *carry trade* and *uncovered interest (rate) parity*, 1970-2019
*Source:* Data obtained from Google Books Ngram Viewer (2021a).

# How does carry trade impact the real economy activity?

# Research design

# Carry trade definition

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- In this article, the carry trade is
    - Leveraged
    - Futures market
    - Short (funding) and Long (target)

# Data

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- Volume approach, instead of prices
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    - Small proportion
    - Classify traders, not activity
    - Short data range for Brazil

# Main results

- Reproducible research
  - R (manuscript, presentation and econometric procedures)
  - Check https://github.com/bttomio/UGA_thesisdown

# Empirical approach [I]

- World economy is proxied with 21 countries and the Euro area (84% of global nominal output)

Country coverage

| | |
|---|---|
| CFTC countries | Australia (AU), Brazil (BR), Canada (CA), Switzerland(CH), United Kingdom (GB), Japan (JP), Mexico (MX), New Zealand (NZ), Russia (RU), Euro area (U2)*, United States (US) |
| Global economy | China (CN), Czech Republic (CZ), Denmark (DK), Hungary (HU), India (IN), Korea, Rep. (KR), Norway (NO), Poland (PL), South Africa (ZA), Sweden (SE), Turkey (TR) |

*Notes*: Abbreviations follow the two-digit codes provided by IMF's database International Financial Statistics (IFS). South Africa (ZA) is excluded from the CFTC group due to lack of data.
* Changing composition.

# Empirical approach [II]

- Monthly and quarterly models (roughly)
- Two measures of global risk

List of variables

| Variable | Definition | Source | Model | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | *Quarterly* | | | | *Monthly* | | | |
| | | | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
| $GDP$ | Gross domestic product* | OECD | • | • | | | | | | |
| $C$ | Final consumption expenditure* | OECD | | | • | • | | | | |
| $GFCF$ | Gross fixed capital formation* | OECD | | | • | • | | | | |
| $X$ | Exports of goods and services* | OECD | | | • | • | • | • | • | • |
| $M$ | Imports of goods and services* | OECD | | | • | • | • | • | • | • |
| $RES$ | Official reserve assets and other foreign currency assets* | IMF | • | • | • | • | • | • | • | • |
| $IR$ | Policy interest rate | BIS | • | • | • | • | • | • | • | • |
| $ER$ | Nominal exchange rate* | BIS | • | • | • | • | • | • | • | • |
| $EQ$ | Equity (share) prices* | OECD | • | • | • | • | • | • | • | • |
| $NP$ | Net (long minus short) positions as a share of open interest contracts (carry trade proxy) | CFTC | • | • | • | • | • | • | • | • |
| $VIX$ | CBOE Volatility Index (VIXCLS)* | FRED | • | | • | | • | | • | |
| $GCF$ | Global common factor estimated from world-wide cross section of risky asset prices | Miranda-Agrippino (2021) | | • | | • | | • | | • |
| $IP$ | Industrial production excluding construction* | OECD | | | | | | | • | • |

*Notes*: See Table A.1 in A for more details.
* Variables in logarithmic transform.

# Empirical approach [III]

Time span for each model

| Country | Period | Observations | Global risk | Models |
|---|---|---|---|---|
| **Quarterly data** | | | | |
| Switzerland | 2006-Q2 to 2021-Q2 | 61 | $VIX$ | (1), (3) |
| | 2006-Q2 to 2019-Q1 | 52 | $GCF$ | (2), (4) |
| Brazil | 2012-Q2 to 2021-Q2 | 37 | $VIX$ | (1), (3) |
| **Monthly data** | | | | |
| Switzerland | 2006-06 to 2021-07 | 182 | $VIX$ | (5) |
| | 2006-06 to 2019-04 | 155 | $GCF$ | (6) |
| Brazil | 2014-01 to 2021-07 | 91 | $VIX$ | (5), (7) |
| | 2014-01 to 2019-04 | 64 | $GCF$ | (6), (8) |

*Notes*: Models (2) and (4) are not estimated for Brazil due to a lack of data, which leads to a sample of 27 observations. For Switzerland, models (7) and (8) are not estimated because there is no monthly data for industrial production.

# Empirical approach [IV]

- Bayesian global vector autoregressive model (BGVAR)

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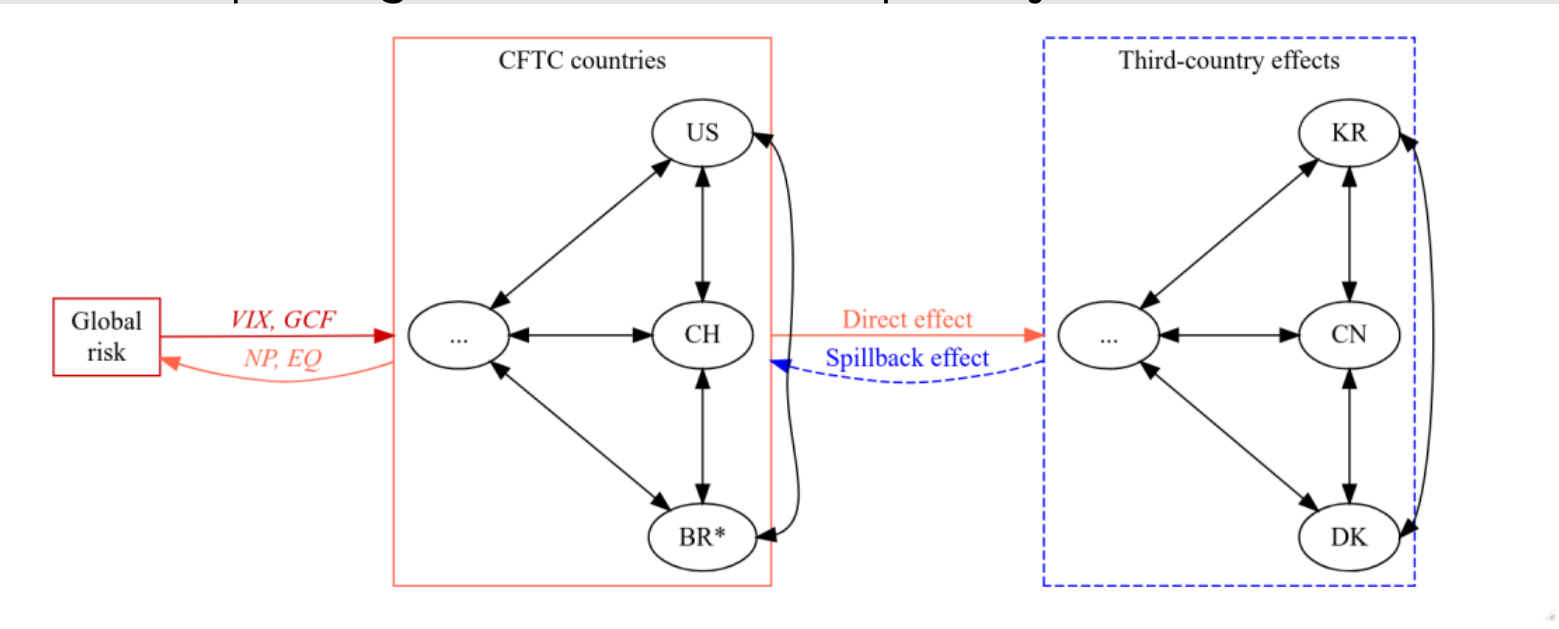
- Negative carry trade effects in both countries (main hypothesis)

GVAR setup with global risk modelled separately



# Main results [Switzerland]

## Negative shock on carry trade

| | | Model | | | | | |
|---|---|---|---|---|---|---|---|
| | | *Quarterly* | | | | *Monthly* | |
| Variable | Definition | $(1)^{\dagger}$ | $(2)^{\ddagger}$ | $(3)^{\dagger}$ | $(4)^{\ddagger}$ | $(5)^{\dagger}$ | $(6)^{\ddagger}$ |
| $GDP$ | Gross domestic product | $\circ$ | $\downarrow$ | | | | |
| $C$ | Final consumption expenditure | | | $\circ$ | $\Downarrow$ | | |
| $GFCF$ | Gross fixed capital formation | | | $\circ$ | $\downarrow$ | | |
| $X$ | Exports of goods and services | | | $\circ$ | $\circ$ | $\Downarrow$ | $\Downarrow$ |
| $M$ | Imports of goods and services | | | $\circ$ | $\circ$ | $\Downarrow$ | $\Downarrow$ |
| $RES$ | International reserves | $\circ$ | $\Downarrow$ | $\downarrow$ | $\Downarrow$ | $\Downarrow$ | $\Downarrow$ |
| $ER$ | Nominal exchange rate | $\Uparrow$ | $\Uparrow$ | $\Uparrow$ | $\Uparrow$ | $\Uparrow$ | $\Uparrow$ |
| $EQ$ | Equity (share) prices | $\circ$ | $\circ$ | $\circ$ | $\circ$ | $\Downarrow$ | $\uparrow$ |

*Notes*: See Figures D.19 and D.20 in Appendix D.9 for the responses of policy interest rates ($IR$), which do not present any statistical significant result.
*Symbols*: $\dagger$ ($VIX$), $\ddagger$ ($GCF$), $\Uparrow/\Downarrow$ (increase/decrease, statistically significant), $\uparrow/\downarrow$ (increase/deacrease, partially statistically significant), and $\circ$ (not statistically significant).

# Main results [Brazil]

## Positive shock on carry trade

| | | Model | | | | | |
|---|---|---|---|---|---|---|---|
| | | *Quarterly* | | *Monthly* | | | |
| Variable | Definition | $(1)^{\dagger}$ | $(3)^{\dagger}$ | $(5)^{\dagger}$ | $(6)^{\ddagger}$ | $(7)^{\dagger}$ | $(8)^{\ddagger}$ |
| $GDP$ | Gross domestic product | ∘ | | | | | |
| $C$ | Final consumption expenditure | | ∘ | | | | |
| $GFCF$ | Gross fixed capital formation | | ∘ | | | | |
| $X$ | Exports of goods and services | | ∘ | ∘ | ↑ | ∘ | ∘ |
| $M$ | Imports of goods and services | | ↓ | ↓ | ↓ | ↓ | ↓ |
| $RES$ | International reserves | ⇑ | ∘ | ⇑ | ⇑ | ⇑ | ⇑ |
| $ER$ | Nominal exchange rate | ↓ | $\Downarrow^{ST}, \uparrow^{LT}$ | ↓ | ∘ | ∘ | ↓ |
| $EQ$ | Equity (share) prices | ∘ | ∘ | ∘ | ∘ | ∘ | ∘ |
| $IP$ | Industrial production | | | | | ∘ | ↑ |

*Notes*: See Figures D.21 and D.22 in Appendix D.9 for the responses of policy interest rates ($IR$), which do not present any statistical significant result.
*Symbols*: † ($VIX$), ‡ ($GCF$), ⇑/⇓ (increase/decrease, statistically significant), ↑/↓ (increase/deacrease, partially statistically significant), ∘ (not statistically significant), and $^{ST}/_{LT}$ (short- and long-term).

# General conclusion

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- Central banks...
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- Central banks...
  - need more research to tame the negative spillovers of monetary policy
  - could follow the CFTC to create better datasets on futures market

# Thank you!

# Obrigado!


bttomio@furb.br

bttomio.github.io



UGA Université Grenoble Alpes

CREg Centre de Recherche en Économie de Grenoble

FURB Universidade Regional de Blumenau