KF*: A natural level of capital flows

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NBER SI IFM Data Sources

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KF* Papers and Datasets

Burger, J., F. Warnock, and V. Warnock, 2022. A Natural Level of Capital Flows. Journal of Monetary Economics (forthcoming).

Burger, J., F. Warnock, and V. Warnock, 2018. Benchmarking Portfolio Flows. IMF Economic Review 66(3): 527–563.

Burger, J., F. Warnock, and V. Warnock, 2022b. KF* and Portfolio Flows After the Pandemic Shock.

Burger, J., F. Warnock, and V. Warnock, 2022c. KF* and Portfolio Inflows: A Focus on Latin America

Annual and quarterly data, 2000-2021, for almost 200 countries (all that are in the Lane and Milesi-Ferretti EWN dataset) are at https://sites.google.com/view/francis-warnock/kfstar. Will be updated annually.

KF*, A Natural Level of Capital Flows

- KF*, a new supply-side estimate of the natural level of capital flows, is a level to which <u>portfolio flows</u> converge in the medium term (1-2 years).

- KF* is essentially the portfolio growth flows of Tille and van Wincoop (2010, henceforth TvW): the gross flows that result when savings—the supply of new funds available for capital flows—is invested in line with zero-order portfolio shares.
    - Zero-order weights in theory: the weights absent any shocks to expected returns and expected risk.
    - Zero-order weights in practice: we (and Meng and van Wincoop 2020) use lagged actual portfolio weights as a proxy.

KF* Construction

Simply put, KF* is a annual supply-side construct: <u>current period ROW private savings</u> ($S_{ROW,t}$) times a <u>lagged portfolio weight</u> (5yr moving average).

$$KF^*_{d,t} = (\frac{1}{5} \sum_{i=1}^{5} \omega_{ROW,d,t-i}) S_{ROW,t}$$

ROW weight on a country's equities and bonds is the stock of that country's portfolio liabilities (that is, ROW holdings of its equities and bonds) divided by ROW wealth.

Required data are easily obtained:
Flow of private savings, constructed as national saving minus government saving, is from the IMF WEO dataset.
Portfolio weights are calculated by scaling a country's portfolio equity and portfolio debt liabilities by ROW wealth.
     ROW portfolio holdings in country *d* are from Lane and Milesi-Ferretti (2018) External Wealth of Nations II dataset.
   ROW wealth are from Davies, Lluberas, and Shorrocks Credit Suisse data on household wealth.
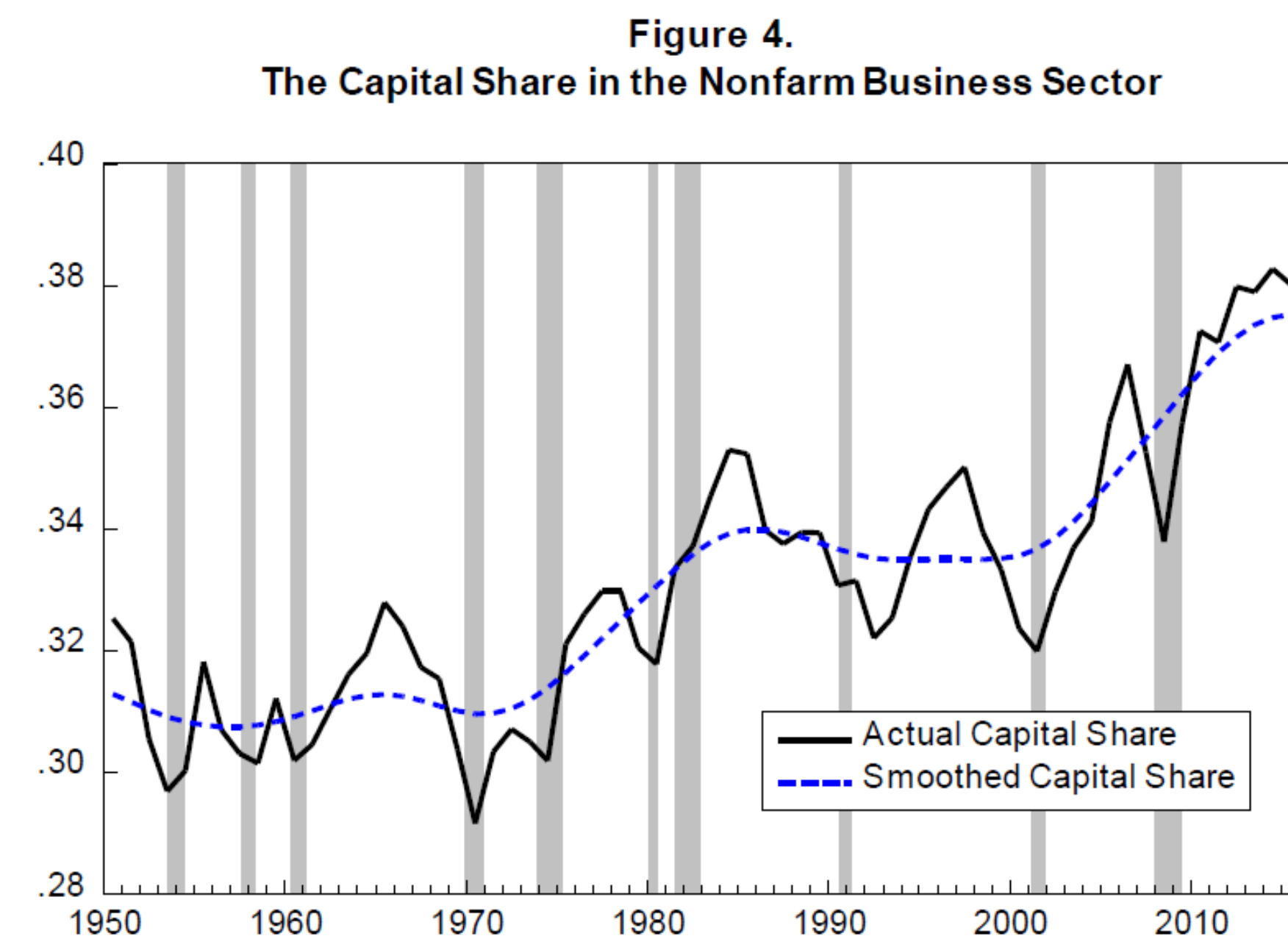 We can create KF* for 191 countries (including many that don't have flow data).

Lag length and smoothing don't seem to matter.

Our choice to smooth lagged weights is similar to the CBO's choice to smooth the capital share when computing potential GDP.

KF* for LatAm with lags of 5 to 1 years
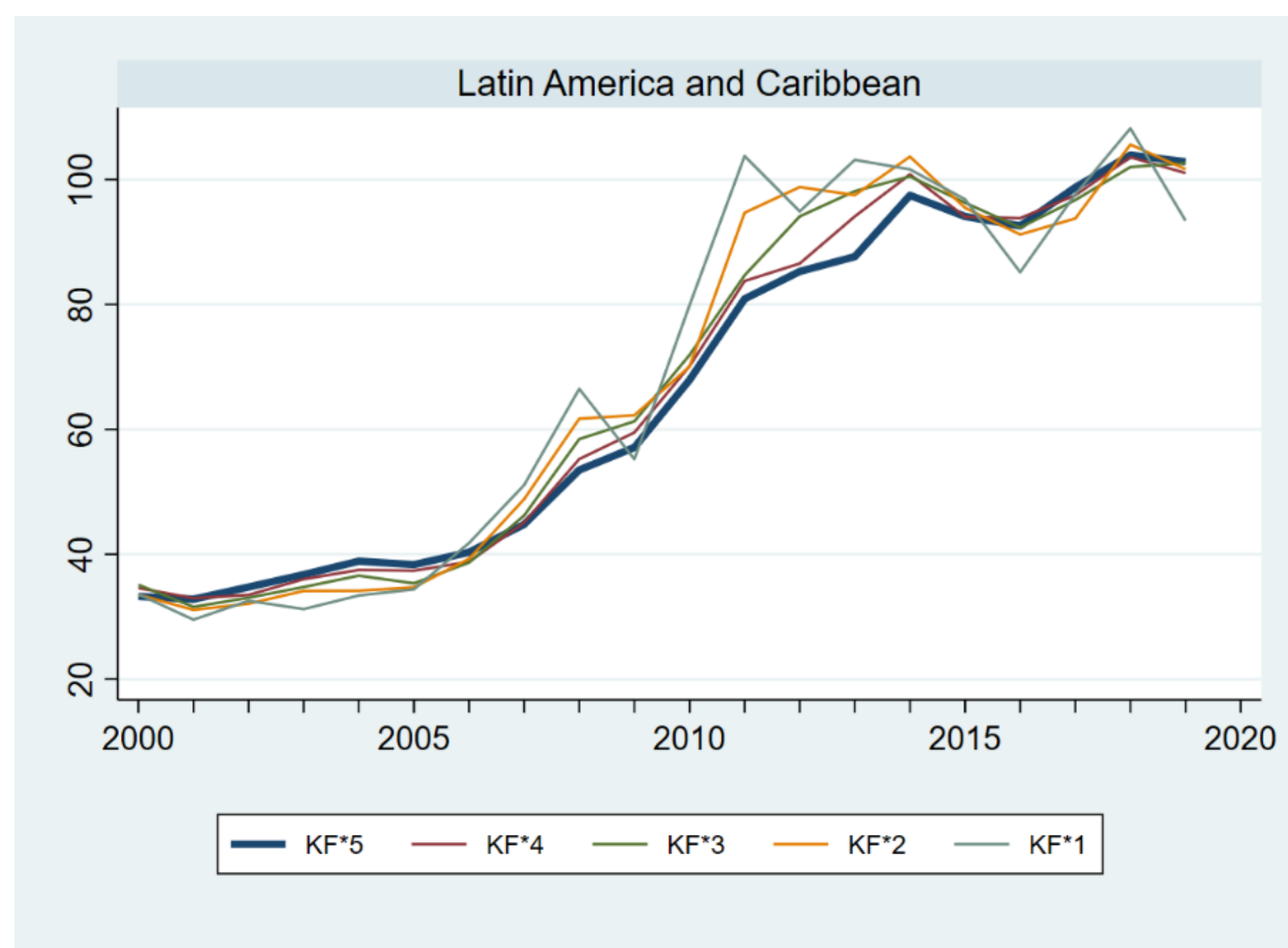
CBO's smoothed and actual capital share

For KF*, the choice of lag impacts pictures <u>but not empirical results</u>.
Units are the amount (in billions of USD) of BOP portfolio (ie debt+equity) inflows.

Shackleton, R., 2018 "Estimating and projecting potential output using CBO's forecasting growth model" CBO Working Paper 2018-03.

Question KF* can help answer: Was the 2015/16 sharp decrease in EME portfolio inflows temporary or likely to persist?
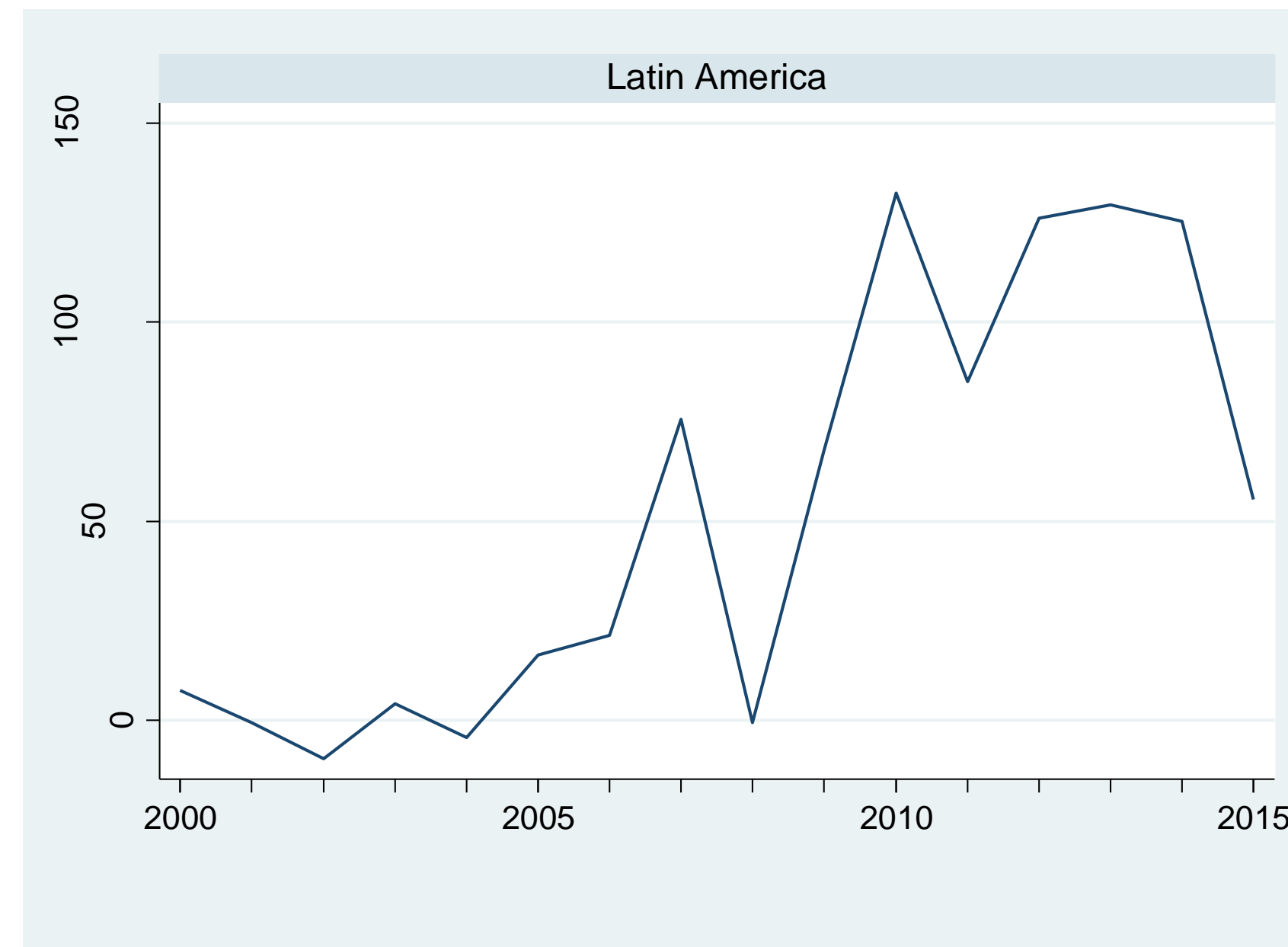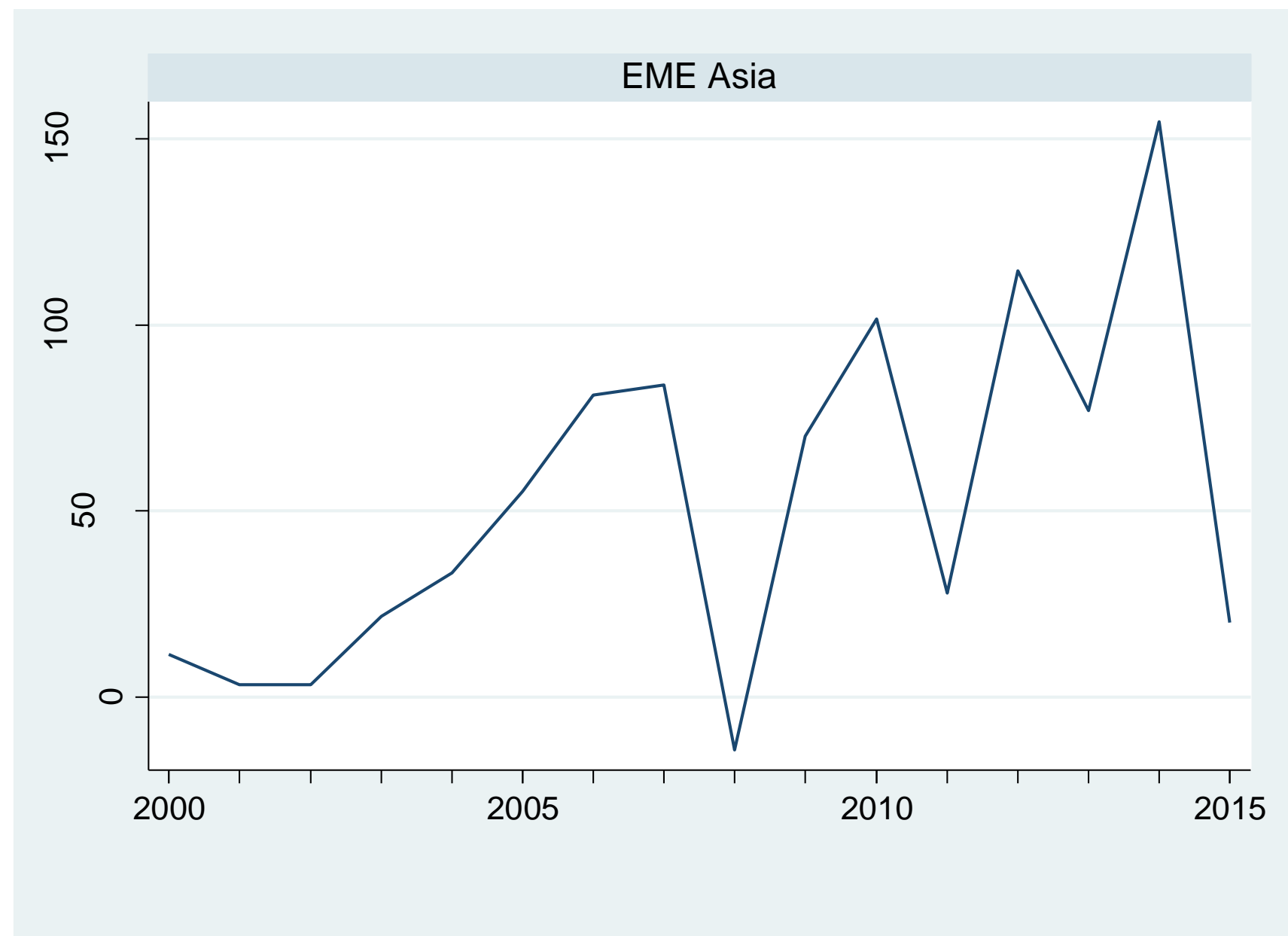
Note: The data in this graph are the annual amount (in billions of USD) of BOP portfolio (ie debt+equity) inflows.

How does one actually go about assessing whether the 2015/16 decrease—or any sharp change in capital flows—was an aberration or the new normal?

Ans: KF* allows us to differentiate sharp changes **toward the natural level** from movements **away from the natural level** (which should be temporary).
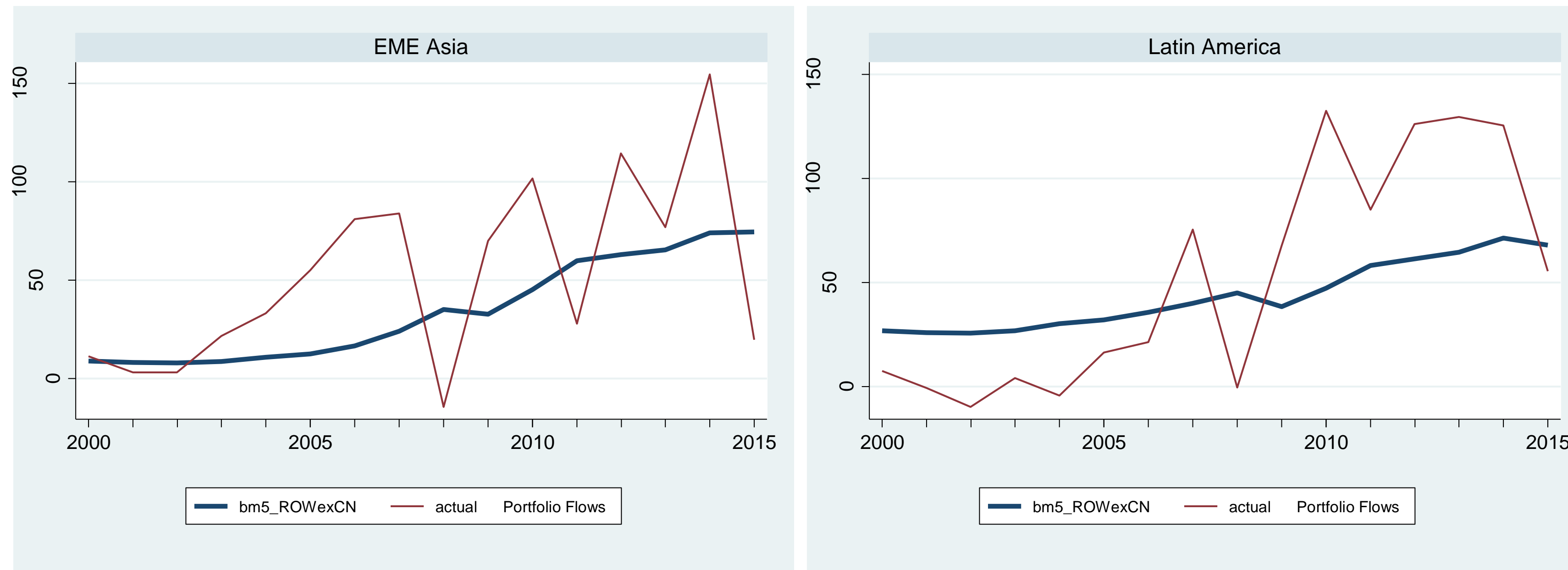
KF* indicated that the 2015 decline in EME Asia's inflows overshot and that inflows there should increase thereafter. In contrast, the decline in Latin America's inflows was a return to normal levels.

Empirically, there is a significant in-sample long-run relationship between actual portfolio flows and KF* (with flows adjusting to KF*) and KF*gap (actual inflows minus KF*) predicts the direction of one-year-ahead changes in inflows about two-thirds of the time.

TURNING TO VOLATILE QUARTERLY FLOWS…CAN WE PREDICT FUTURE INFLOWS?
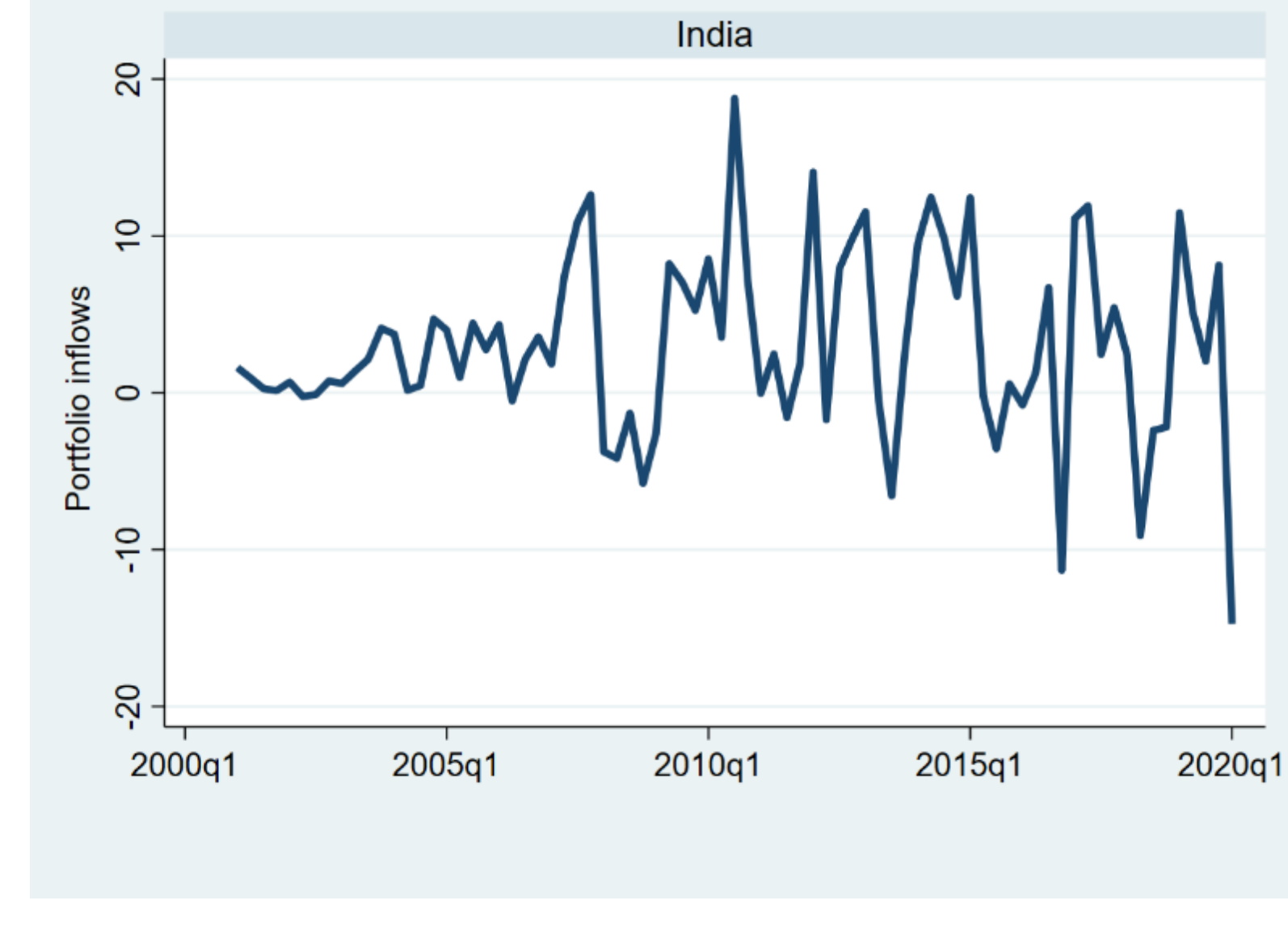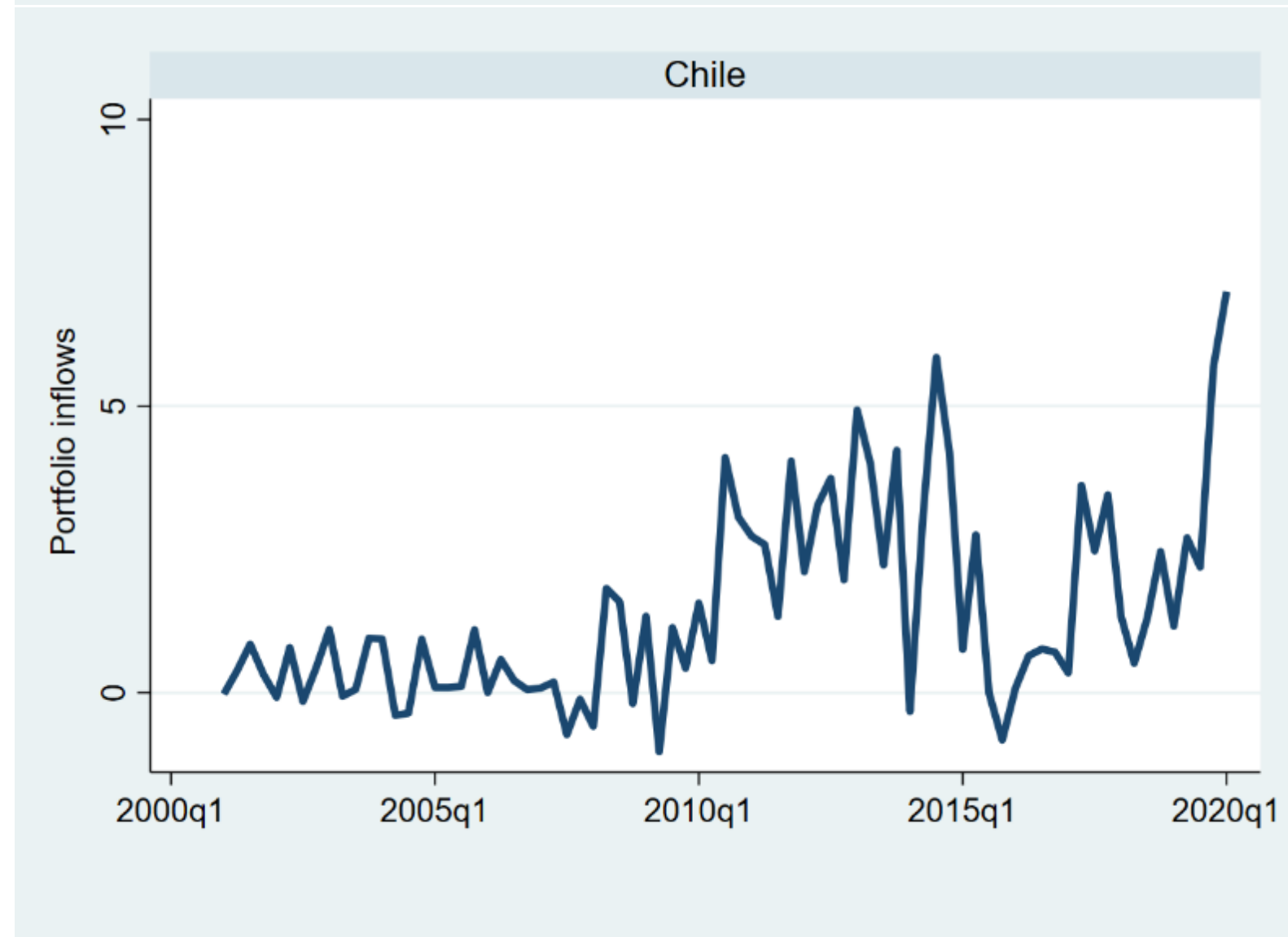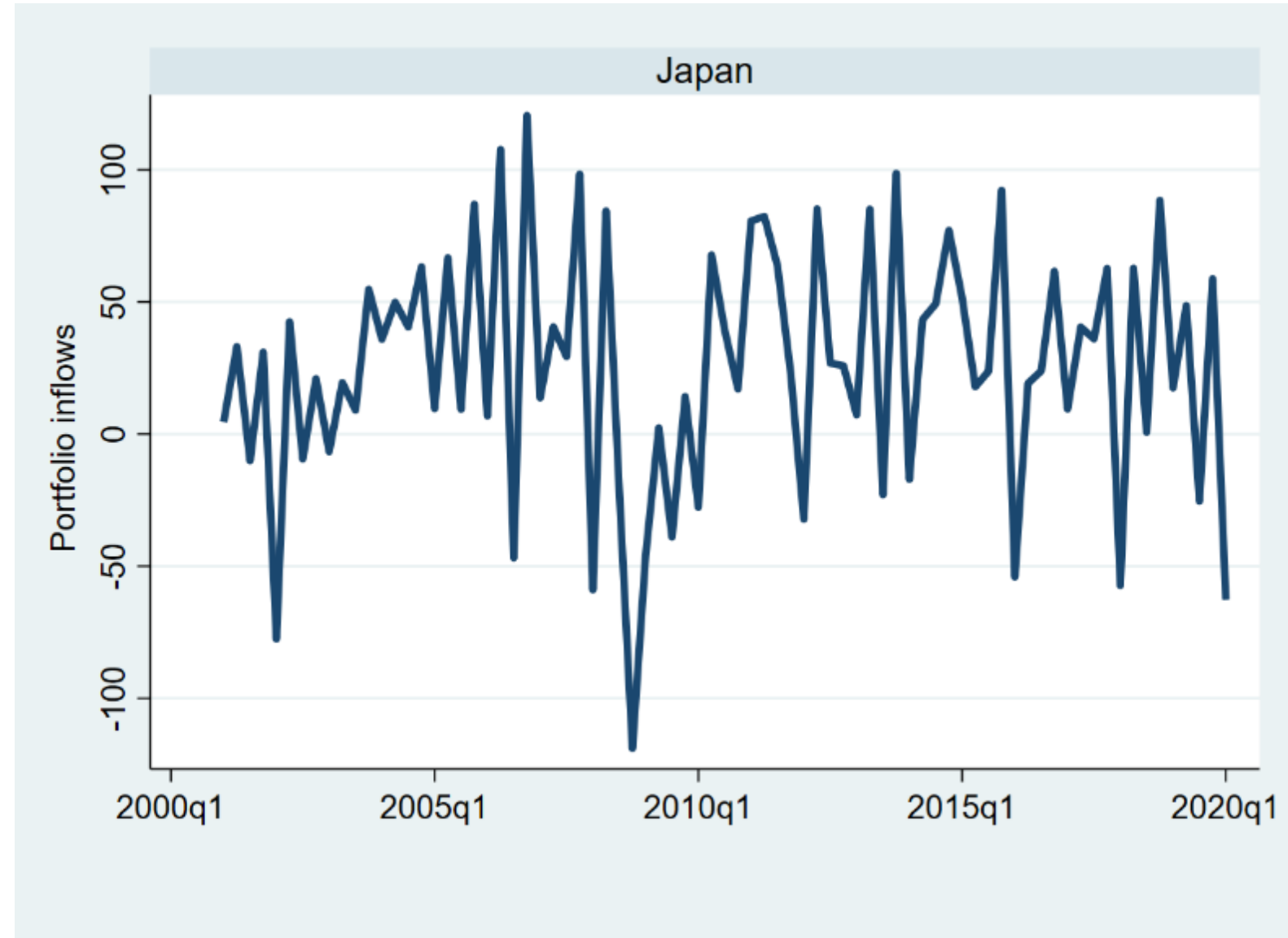
Quarterly portfolio inflows, billions of USD

USES OF KF* AND KF*GAP (FROM BWW 2022)

- Predict portfolio inflows over the next 1-2 years.

  - Portfolio inflows oscillate around KF*. Deviations of actual flows from KF* are transitory.

    - Flows revert strongly to KF* over 1-2 year horizon.

    - The explanatory power of KF* -- it explains about 40% of the medium-run variation in portfolio flows -- is substantially greater than traditional push/pull factors.

    - KF* also outperforms various univariate filtering techniques and performs about as well as the in-sample Hamilton (2018) linear projection explicitly designed to make such predictions.

- Predict sudden stops and next year's equity returns.

- Predict flows following big global shocks such as GFC and pandemic.

    - Predicts both the scope for sustained declines in portfolio flows (are many countries' inflows already above KF* pre-shock?) and which countries will likely experience sharper declines.

KF* Datasets

Annual and quarterly data, 2000-2021, for almost 200 countries (all that are in the Lane and Milesi-Ferretti EWN dataset) are at https://sites.google.com/view/francis-warnock/kfstar. Will be updated annually.

-- Annual KF* for 191 countries

-- Quarterly KF* (formed by linear interpolation) for 191 countries, as well as

 KF*gap (actual inflows minus KF*) for 125 countries (limited by quarterly flow data)

 KF*gap/GDP for 88 countries (limited by quarterly nominal GDP data)

Possible Improvements

▪ A limitation: We wanted to form a consistent reasonably large and long panel dataset from common publicly available sources. If we didn't have that limitation:

For any particular country, might be able to form a more precise measure. For example, if know the geography of creditors, can build KF* using a bilateral (e.g., bilateral holdings and creditor-specific savings) rather than ROW approach.

A China adjustment – due to the disconnect between its savings and outward investment – is necessary early in the sample. Shouldn't be as necessary going forward.

In general, there can be a difference between the best consistent historical dataset and our best guess of a country's current KF*.

▪ Bring in other types of flows.

▪ The title starts with an indefinite article, making the subtle but important point that there could be other natural levels.

Summary

KF* represents a natural level of portfolio inflows.

- Easily constructed from publicly available data.

- Useful characteristics

  - Quarterly flows are quite volatile – but they oscillate around KF*.

  - Deviations of actual flows from KF* are transitory: Flows revert strongly to KF* over 1-2 year horizon.

  - The tendency of the transitory element in quarterly flows to dissipate over time grants KF* significant explanatory power over medium-run.

  - KF* performs well against various filter methods, even in-sample ones.

  - KF* gap predicts 6-quarters-ahead sudden stops and next year's equity returns, predicted the countries that had the largest declines in portfolio inflows during the GFC and pandemic, and predicted that there wouldn't be many sudden stops during the pandemic.
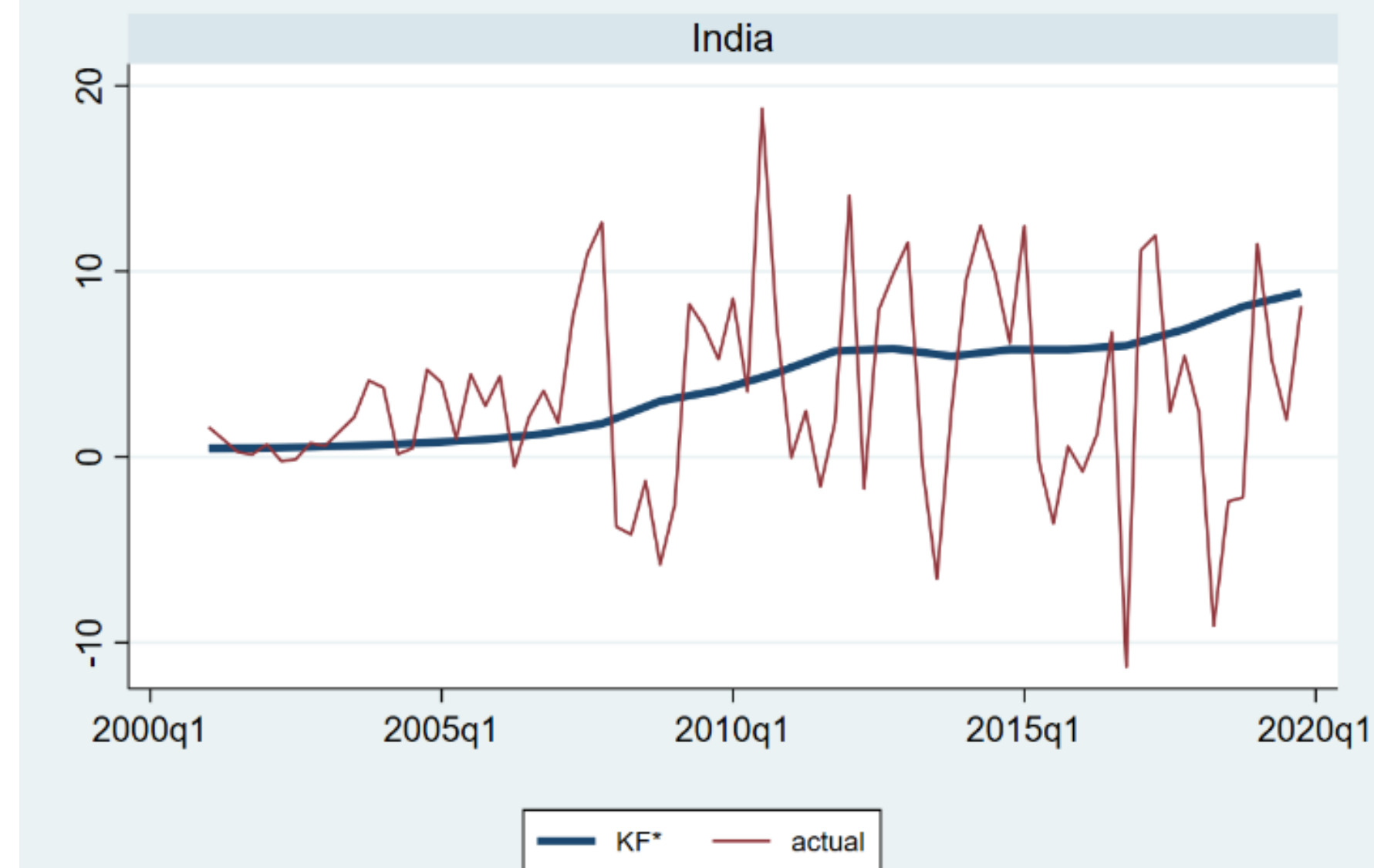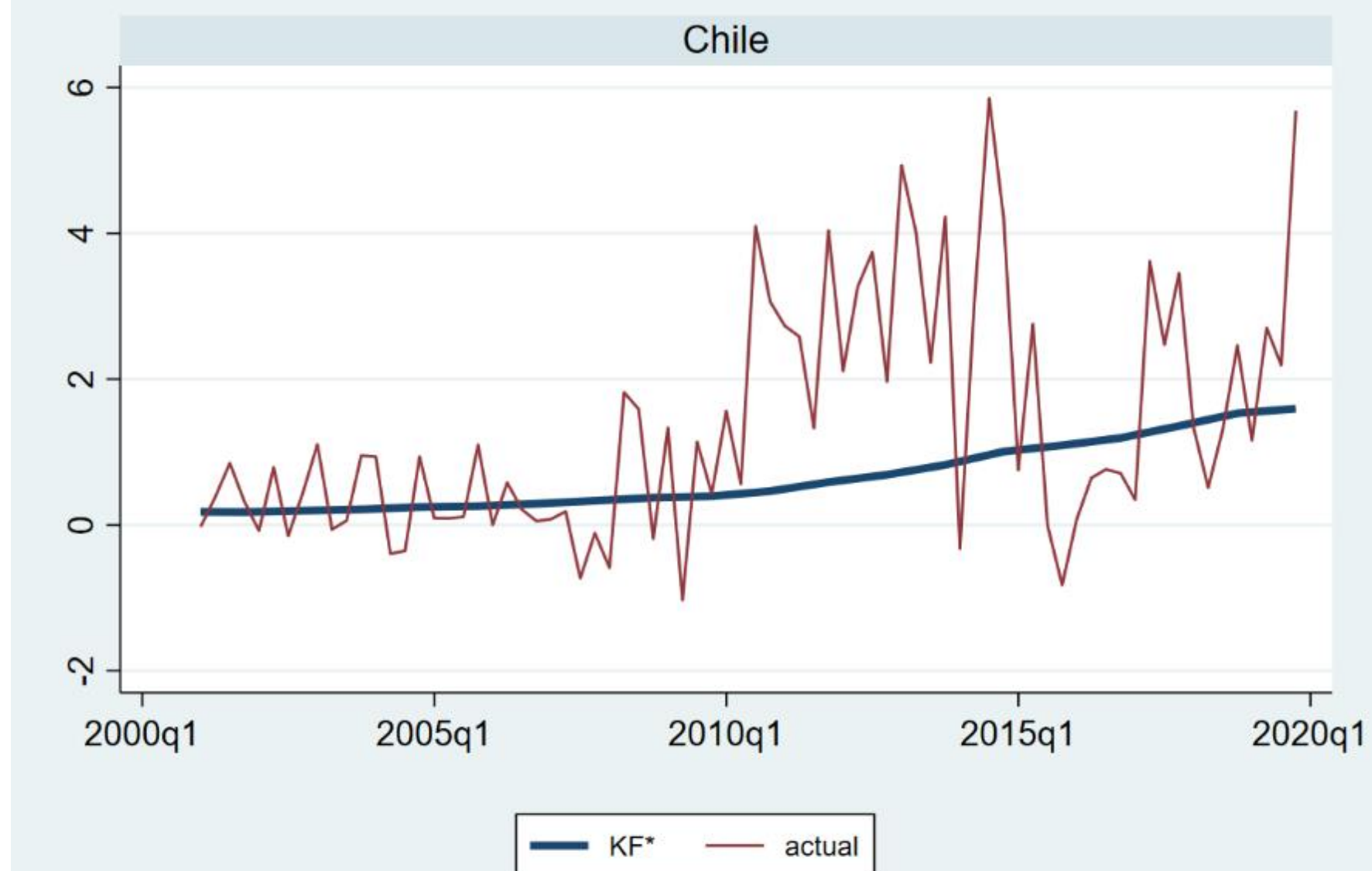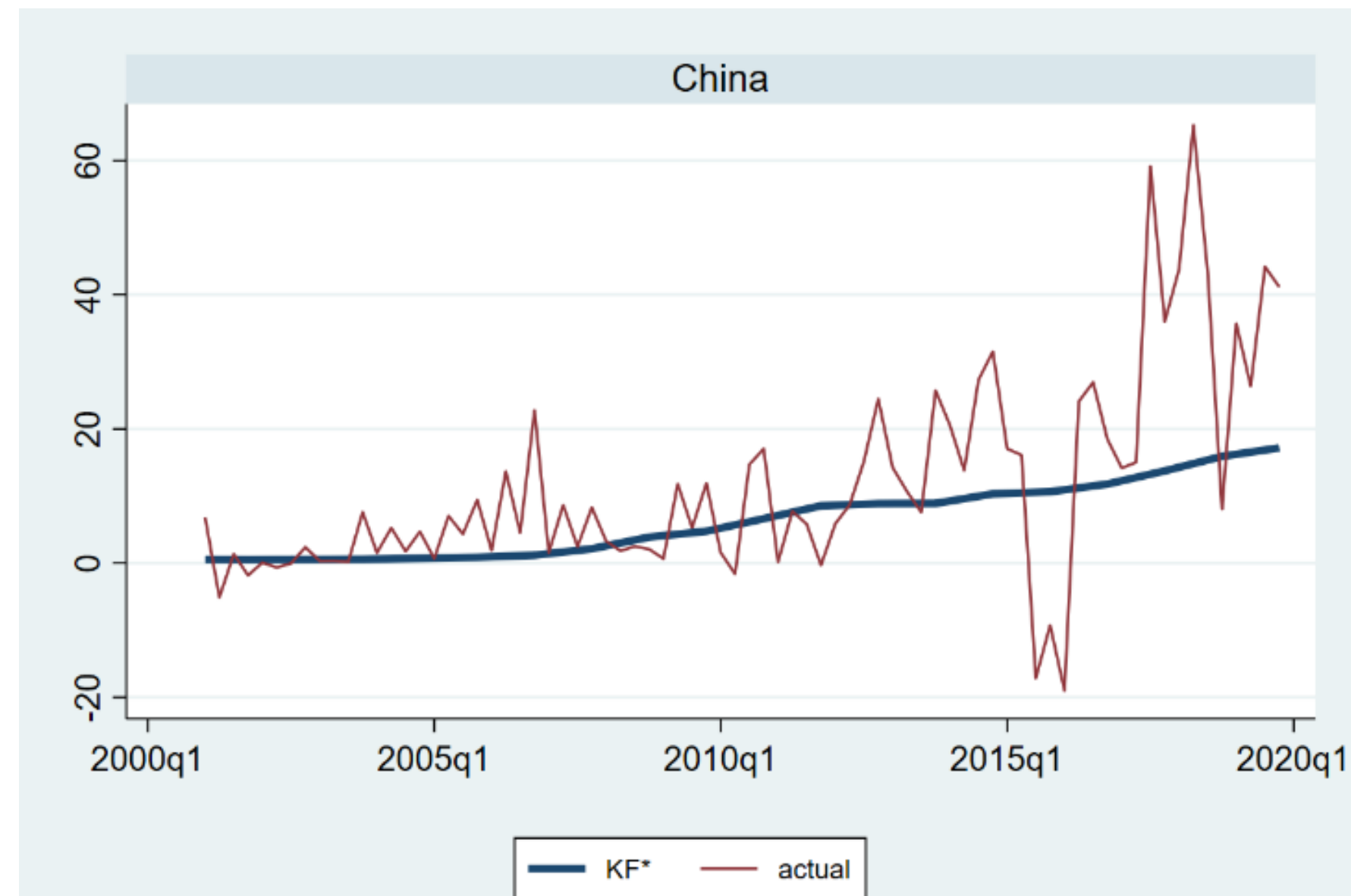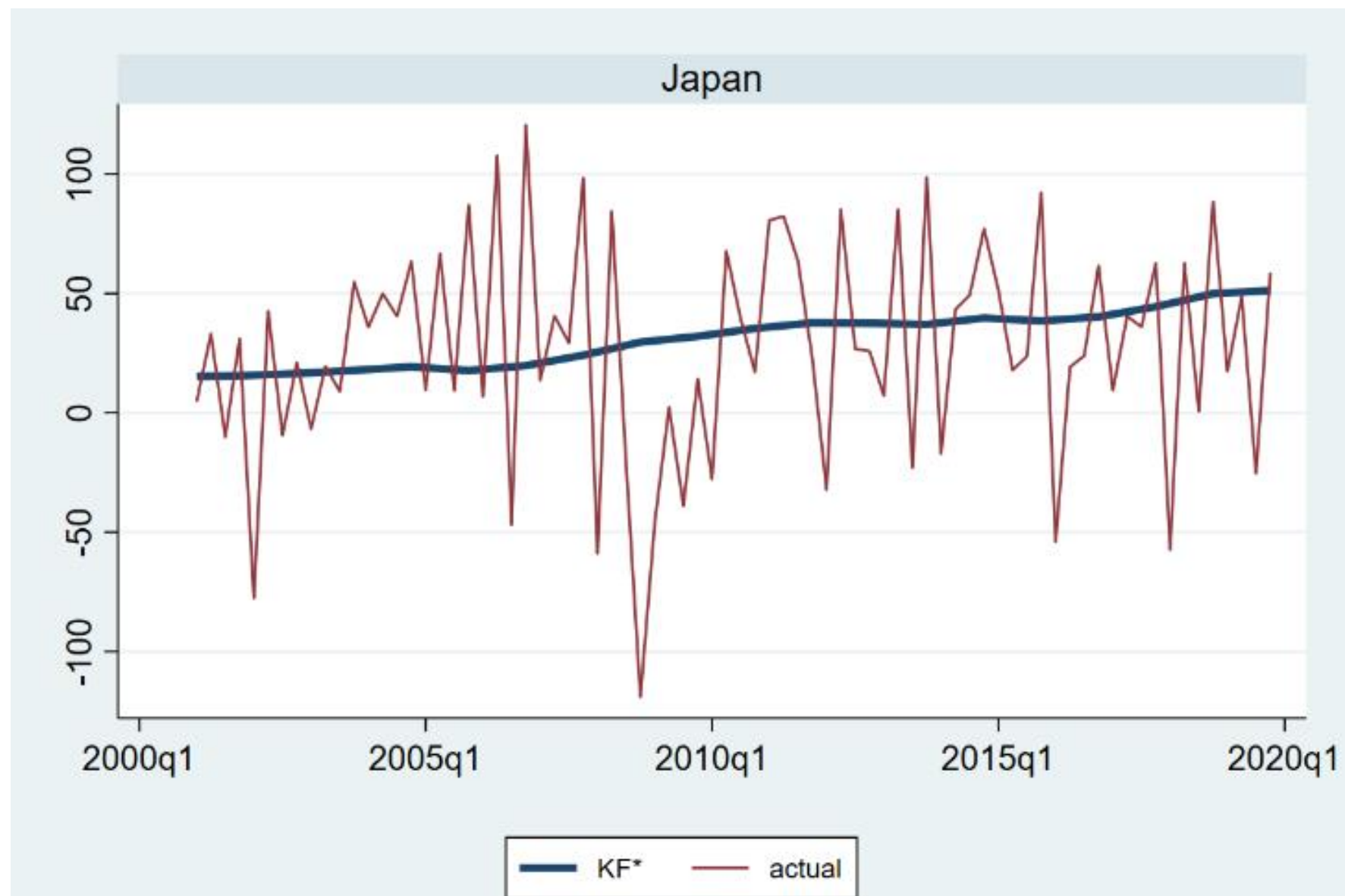
KF*, A NATURAL LEVEL OF CAPITAL FLOWS

KF*
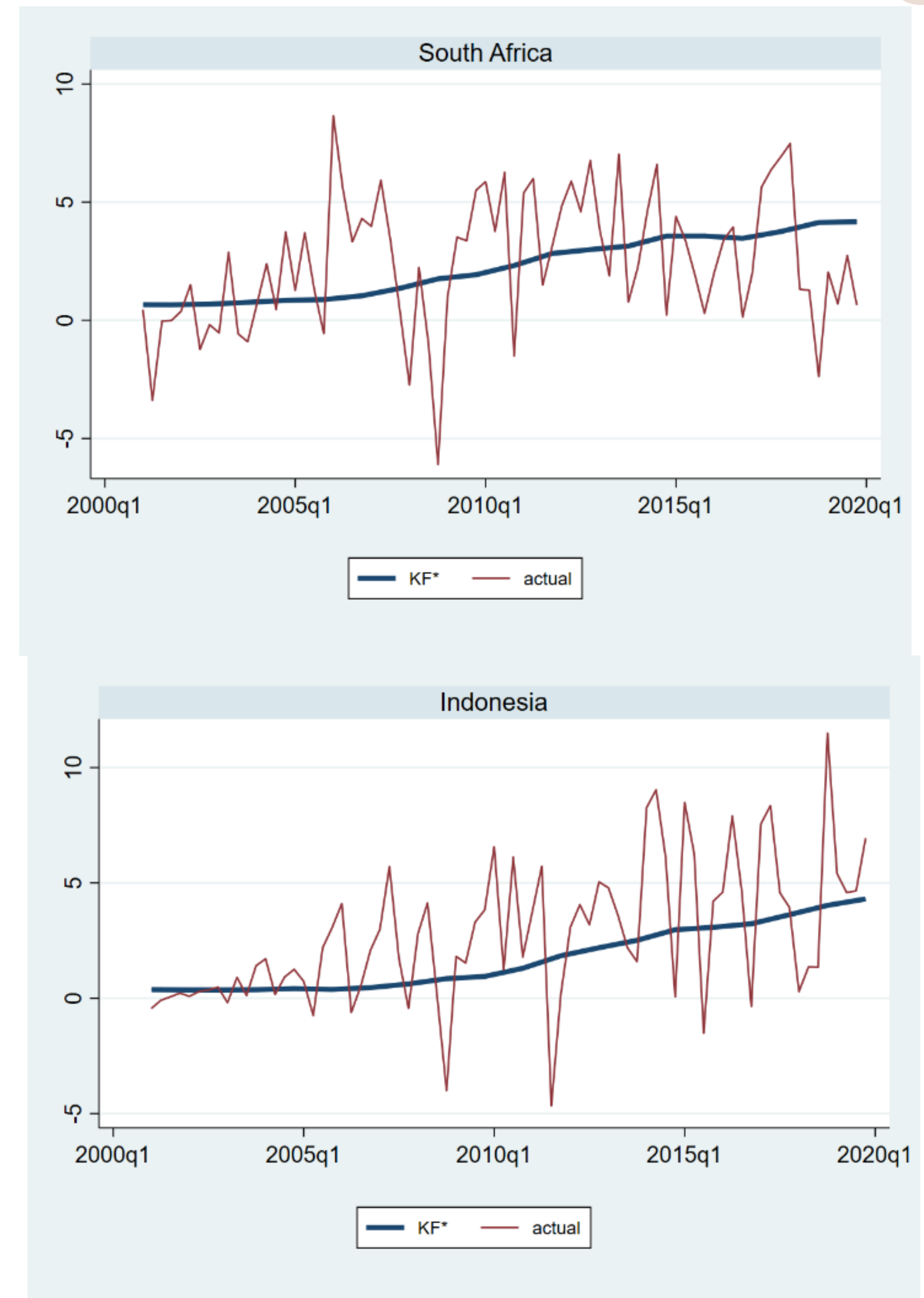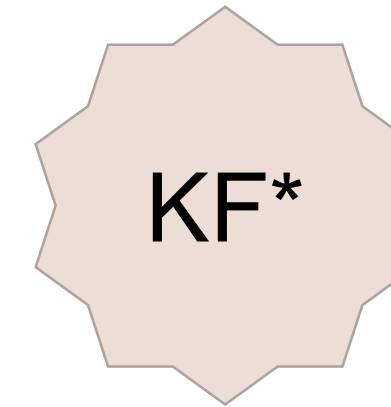
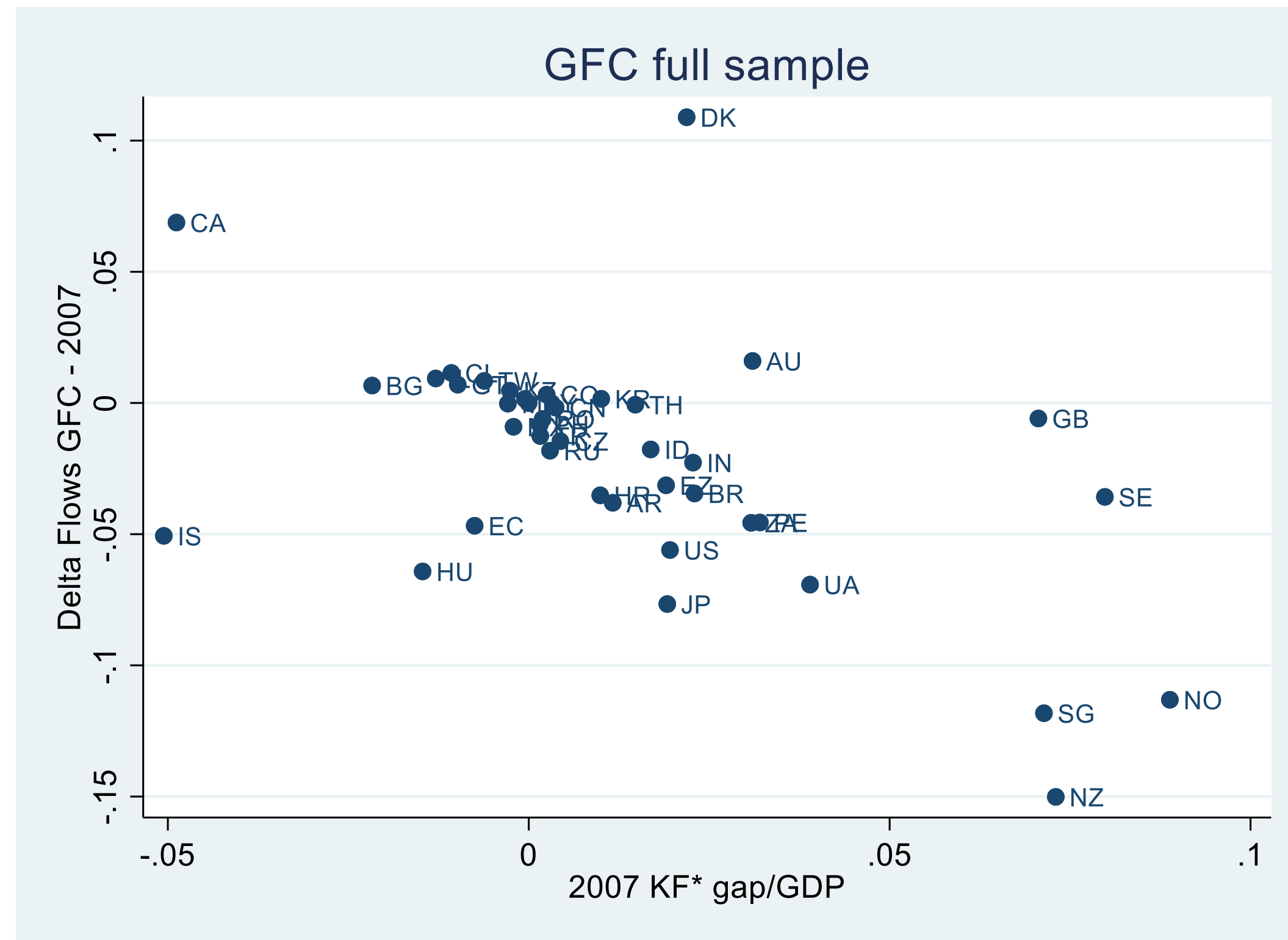# Thank you!

JOHN, FRANK, VERONICA

PORTFOLIO INFLOWS OSCILLATE AROUND KF*

It's apparent from the graphs and, as we show in BWW (2022), empirically.

KF* DURING CRISES (GFC AND PANDEMIC)

Countries with a larger KF*gap/GDP in 2007 had larger declines during the GFC period (2008Q4-2009Q3).

Note that many countries had positive KF* gap in 2007, suggesting there was much room for portfolio flows to fall. And they did.

At the eve of the pandemic, very few countries had positive KF* gaps (and those gaps were pretty small).
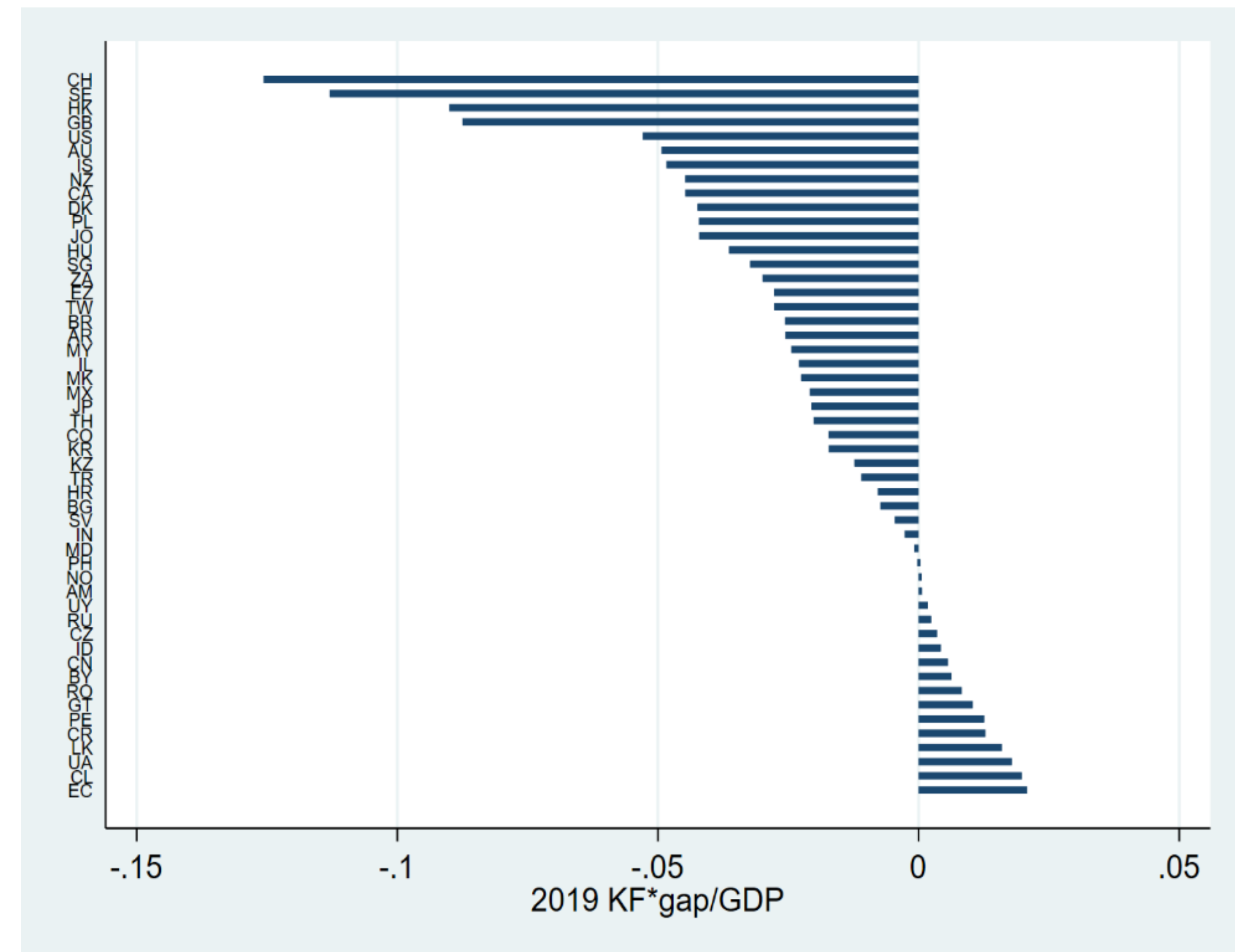

We wrote early in the pandemic that in 2020/21 (i) flows had less room to fall as many countries were below KF* at the eve of the pandemic shock, (ii) for most countries any drop in flows experienced during the crisis would likely to be temporary as a rebound toward KF* should be expected in the intermediate term, and (iii) a few countries (Ecuador, Chile, and Ukraine) seemed more vulnerable than others.

KF* DURING PANDEMIC SHOCK

At the eve of the pandemic, very few countries had positive KF* gaps (and those gaps were pretty small), suggesting medium-term flows wouldn't drop sharply. Evidence for 2020 suggests that was correct.

We didn't see a massive number of sudden stops in 2020 or 2021.
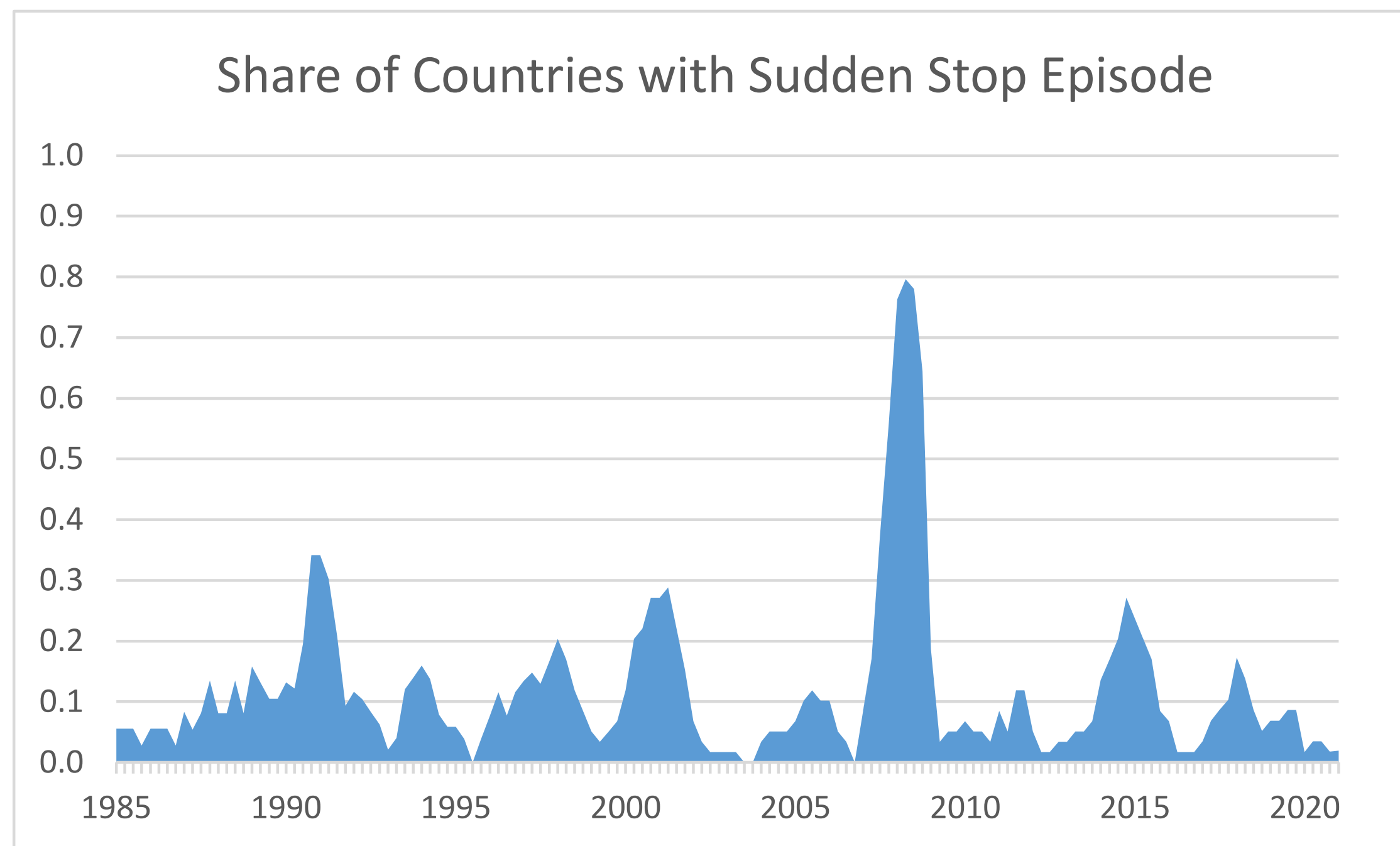
And countries with higher pre-pandemic KF* gaps had larger outflows.

Share of Countries with Sudden Stop Episode

Covid full sample
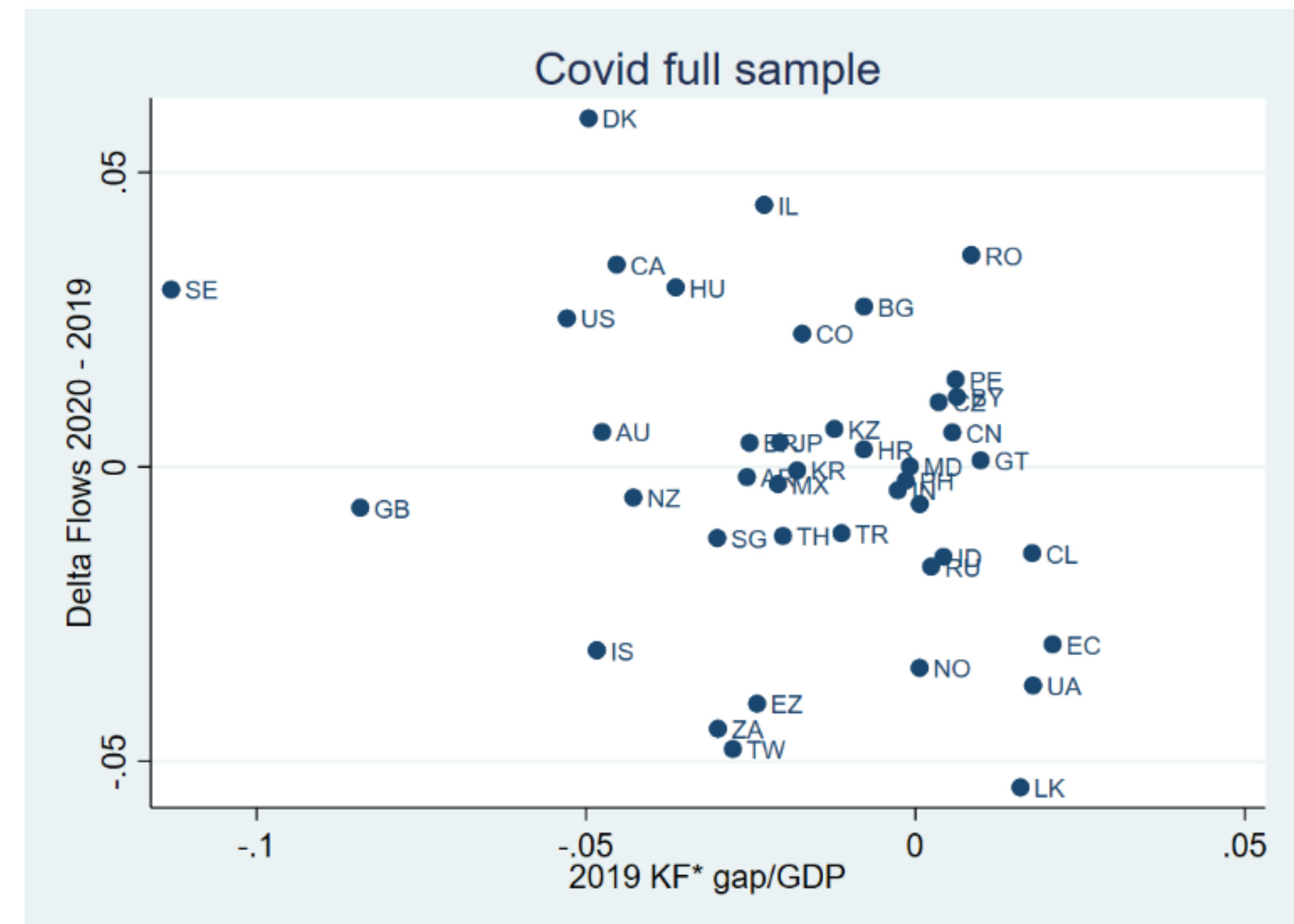
KF* AFTER THE INITIAL PANDEMIC SHOCK AND BEYOND

Countries with more positive pandemic (i.e., 2020H1) KF* gaps had larger outflows 2020H2 and 2021.

And estimated (in progress) 2021 gaps should predict portfolio inflows for 2022 and 2023.