Online Appendix to "Exchange rate shocks and asset prices: the role of currency denomination"

A. Identification of information effects shocks

The identification of monetary policy shocks for Switzerland is described in Koeniger et al. (2022). However, a formal identification of information effects shocks for Switzerland has not yet been published and deserves a more thorough description.

The identification follows the identification through heteroskedasticity approach of Bu et al. (2021) and Ciminelli et al. (2022). That is, movements in the shape of the sovereign yield curve are used to estimate a joint set of monetary and information shocks. The general idea is that interest rate movements can be decomposed into a monetary and non-monetary component. Because the variance of the monetary component is higher on MPA days than on days during which no monetary policy decision is announced, one can exploit identification through heteroskedasticity to recover the monetary policy shocks. Unexplained interest rate movements are then interpreted as information effects.

The identification procedure is in three steps. First, an instrumental variable approach regresses the entire yield curve (from one to thirty years) on a reference maturity (two years) on pairs of monetary/non-monetary interest rate returns. The instrument has a negative sign restriction. Second, the coefficients of the first step are regressed on the entire yield curve on MPA days only, which yields a series of monetary policy shocks. These two steps correspond to the Fama-MacBeth two-step regression and are a common way to estimate unobserved price factors. Last, monetary policy shocks are regressed on the reference yield, the residuals being the information effects or unexplained interest rate shocks.[1]

Formally, the three steps are as follows. Using maturities $i = \{1, 2, ..., 30\}$, T monetary announcement days t, T non-monetary day $t-5$, and the daily changes in interest rates $\Delta r_{i,t}$,

[1] See online appendix B of Bu et al. (2021) for a more detailed description of this approach.

we denote the matrices:

$$R := \begin{bmatrix} \Delta r_{1,t} & \cdots & \Delta r_{30,t} \\ \Delta r_{1,t-5} & \cdots & \Delta r_{30,t-5} \end{bmatrix}, \quad X := \begin{bmatrix} \Delta r_{2,t} \\ \Delta r_{2,t-5} \end{bmatrix}, \quad Z := \begin{bmatrix} \Delta r_{2,t} \\ -\Delta r_{2,t-5} \end{bmatrix}$$

The first step is an instrumental variable regression using Z as an instrument. The relevance and exogeneity criteria are fulfilled based on the assumption that the variance of monetary policy shocks increase in t but not the non-monetary variance. With a 2SLS notation:

$$X = \alpha + Z\beta + \epsilon$$
$$R = \theta + \hat{X}\gamma + \eta$$

which yields a series of 30 estimated coefficients in vector $\hat{\gamma}$. The second step regresses $\hat{\gamma}$ on MPA interest rate differentials:

$$\begin{bmatrix} \Delta r_{1,t} & \cdots & \Delta r_{30,t} \end{bmatrix}' = \delta + \hat{\gamma}\phi + \xi$$

which yields a series of T estimated coefficients in vector $\hat{\phi}$. These coefficients denote the monetary policy shocks. The last step is to regress the shocks on the original reference yield:

$$\Delta r_{2,t} = \mu + \hat{\phi}\sigma + \omega$$

where the residuals $\hat{\omega}$ estimate the T information effects shocks.

B. Computation of synthetic DID weights

Following Arkhangelsky et al. (2021), the synthetic control group weights $\hat{\omega}_{i,h}$ for each unit i are computed with the following minimization problem:

$$\{\hat{\alpha}_h, \hat{\omega}_{i,h}\}_{i \in I, h \in H} = \arg \min_{\alpha_h \in \mathbb{R}, \omega \in \Omega} \sum_{t \in M} \left(\alpha_h + \sum_{\text{untreated}} \omega_{i,h} \Delta p_{i,t+h} - \frac{1}{N_{\text{treated}}} \sum_{\text{treated}} \Delta p_{i,t+h} \right)^2 + \psi$$

where the synthetic control group is the average of all stock returns $\Delta p_{i,t+h}$ weighted by $\hat{\omega}_{i,h}$. The inclusion of a constant α_h in the problem allows for the control group to be parallel to the treated group instead of perfectly matching it. We compute these weights for cumulated stock returns up to 60 days since the SNB announcement days $t \in M$, that is $\forall h \in H = \{0, 1, ..., 60\}$. The regularization constant ψ increases the dispersion of the weights and ensures their uniqueness.[1] We divide the set of stocks $i \in I = \{1, 2, ..., 212\}$ into two mutually exclusive treated and untreated groups with size $\{N_{\text{treated}}, N_{\text{untreated}}\}$. The set of constraints Ω is such that the weights ω are positive ($\omega_{i,h} \in \mathbb{R}_+$), sum to one ($\sum_{\text{untreated}} \omega_{i,h} = 1$) and are constant for all treated units $\left(\omega_{i,h} = \frac{1}{N_{\text{treated}}} \text{ if } i \in \text{treated}\right)$ across all horizons h.

A similar minimization problem then computes the time weights $\hat{\lambda}_{t,h}$ for all announcement days t:

$$\left\{\hat{\gamma}_h, \hat{\lambda}_{t,h}\right\}_{t \in M, h \in H} = \arg \min_{\gamma_h \in \mathbb{R}, \lambda \in \Lambda} \sum_{i \in I} \left(\gamma_h + \sum_{\text{pre}} \lambda_{t,h} \Delta p_{i,t+h} - \frac{1}{T_{\text{post}}} \sum_{\text{post}} \Delta p_{i,t+h} \right)^2$$

where the set of constraints Λ is such that the weights λ are positive ($\lambda_{t,h} \in \mathbb{R}_+$), sum to one $\left(\sum_{\text{pre}} \lambda_{t,h} = 1\right)$ and are constant for all post-treatment periods $\left(\lambda_{t,h} = \frac{1}{T_{\text{post}}} \text{ if } t \in \text{post}\right)$ across all horizons h. These weights are such that the pre- and post-treatment exposures are balanced. The average pre-treatment stock return is thus equal to the average post-treatment stock return up to a constant. This weighting improves the precision of the SDID estimator by balancing extreme shocks, which is needed to counteract the two large shocks due to the introduction and discontinuity of the minimum exchange rate (namely, in September 2011 and January 2015).

C. Macroeconomic information

Monetary policy announcements may contain a variety of macroeconomic information that are not fully captured by our identification scheme, since the information effects shocks we use for our identification are a noisy signal of all macroeconomic news. In that case, part of the response of asset prices to our shocks would partly reflect news about the Swiss economy, instead of the currency denomination effect we aim to disentangle.

[1] Following Arkhangelsky et al. (2021), $\psi := \left((N_{\text{treated}} T_{\text{post}})^{1/4} \sqrt{\hat{\sigma}^2} \right)^2 T_{\text{pre}} \|\omega\|_2^2$, where announcement days are separated into pre- and post-treatment groups of size $T_{\text{pre}}, T_{\text{post}}$, and $\hat{\sigma}^2$ is the estimated variance of the pre-treatment $\Delta p_{i,t+h}$.

Here we present some evidence that this is not the case. First, we regress various asset returns on our identified shocks and present the results in Table A1. The first half of the table shows the response of equal-weighted portfolios grouping firms with similar shares of foreign sales to the purged exchange rate shocks. This corresponds to a more detailed version of Panel A of Figure 10. If our shocks were contaminated with macroeconomic news about Switzerland, one would expect a strong response of domestically-oriented firms. However, the clear opposite happens: only firms with large foreign sales show a significant response after 5 or more days, while domestic firms react weakly at impact and become insignificant in longer horizon.

The second half of the table shows the response of equal-weighted portfolios by sector, akin to Panel B of Figure 10. Again, if our shocks were contaminated with news about the Swiss economy one would expect a reaction from domestic-oriented sectors. Again, the opposite happens: the only truly domestic Swiss sector is energy, which shows no significant response at any interval. The other mostly-domestic sector is real estate, which only shows a significant (but weak in magnitude) response at impact which dies out after 5 days.

The last half of the table ensures that it is not contaminated by international macroeconomic news either. We regress U.S. stock prices and gold price on our purged shock and find no significant effect whatsoever.

An additional piece of evidence comes from short-term expectations. If there was indeed macroeconomic news contaminating our shocks, one would expect them to have some predictive power on the expected path of monetary policy. We thus regress the futures-implied policy surprises at larger horizon (1-3 quarters) on our purged shock, controlling for the current monetary policy shock (0 quarters) and information shock. We once again use the monetary surprises of Koeniger et al. (2022) for those. Table A2 shows the results of that regression; once again there is very little predictive power of our shock for expected future rates, with a R^2 of practically zero without control, and with no significant effect when including controls.

Table A1: Returns following SNB announcements

	Days after shock				
	0	1	5	10	20
By share of foreign sales:					
< 20% (41 firms)	12.17**	15.88**	9.17	14.23	12.55
	(4.81)	(7.12)	(11.6)	(15.09)	(24.81)
20 − 50% (25 firms)	35.16***	43.8***	28.96	41.68*	44.35
	(9.05)	(13.54)	(19.59)	(22.61)	(33.11)
50 − 75% (36 firms)	45.11***	49.77***	34.09*	49.5*	66.32*
	(9.15)	(12.44)	(18.99)	(25.26)	(37.62)
< 75 − 95% (35 firms)	46.79***	55.97***	59.1***	82.62***	79.33**
	(9.98)	(15.29)	(19.99)	(24.94)	(38.65)
> 95% (33 firms)	55.58***	65.85***	50.45**	60.33**	56.15
	(9.95)	(13.66)	(20.1)	(25.12)	(38.8)
By sector:					
Real estate (20 firms)	17.38***	25.15***	-8.71	9.73	-0.12
	(5.33)	(7.61)	(12.22)	(18.7)	(20.68)
Energy (4 firms)	4.05	0.53	19.01	31.68	60.95
	(10.61)	(16.03)	(20.6)	(24.22)	(38.04)
Bank (26 firms)	19.1***	22.28***	11.02	19.8	26.66
	(5.4)	(7.62)	(12.1)	(14.38)	(18.99)
Insurance-Fin (18 firms)	29.83***	31.3**	28.71	50.88	79.35*
	(10.08)	(14.79)	(23.37)	(34.09)	(46.62)
Services (12 firms)	29.44***	35.36***	27.45*	23.47	26.69
	(6.8)	(11.21)	(15.41)	(20.16)	(29.87)
Retail (21 firms)	41.55***	48.5***	47.69***	66.62***	48.33*
	(7.95)	(10.7)	(15.02)	(19.38)	(26.56)
Industrial (51 firms)	40.81***	46.89***	28.63	50.1*	54.74
	(8.56)	(12.24)	(18.59)	(25.33)	(40.12)
Tech (16 firms)	38.01***	52.95***	47.73**	63.84**	72.91
	(11.09)	(14.73)	(22.65)	(30.14)	(45.51)
Pharma (18 firms)	46.47***	60.46***	31.96	49.6	71.26
	(9.48)	(15.04)	(25.24)	(31.31)	(46.53)
Biotech (21 firms)	41.51***	50.68***	61.53***	75.14***	63.9*
	(9.32)	(13.58)	(21.04)	(24.49)	(37.63)
Tourism (5 firms)	31.55**	40.16*	36.88	30.68	76.05
	(15.18)	(22.53)	(41.45)	(51.14)	(70.1)
S&P 500	12.95	13.39	-10.66	22.96	5.63
	(11.06)	(16.38)	(20.5)	(25.68)	(33.4)
US Gold	8.95	-13.74	-26.2	-16.38	-22.94
	(11.79)	(13.57)	(21.5)	(22.42)	(30.47)

Notes: Regression of cumulated returns on purged shocks. 42 firms have no foreign sales data and are missing. Significance levels: $*\ p < 0.10$, $**\ p < 0.05$, $***\ p < 0.01$. Standard errors in brackets.

Table A2: Expected monetary policy path

	Futures-implied monetary surprise					
	1 quarter ahead		2 quarters ahead		3 quarters ahead	
	(1)	(2)	(1)	(2)	(1)	(2)
Exchange rate shock	0.08	0.08	0.26	0.26	0.33	0.33
	(0.68)	(0.20)	(0.64)	(0.26)	(0.61)	(0.29)
Monetary policy shock		0.84***		0.75***		0.68***
		(0.03)		(0.04)		(0.04)
Information shock		0.12**		0.14*		0.15*
		(0.06)		(0.08)		(0.09)
Constant	-0.021**	-0.004	-0.020*	-0.005	-0.018**	-0.004
	(0.009)	(0.003)	(0.009)	(0.004)	(0.009)	(0.004)
N	106	106	106	106	106	106
R^2	0.000	0.913	0.002	0.838	0.003	0.779

Notes: Regression of expected future monetary surprises on purged shocks (specification 1), controlling for current monetary and information shocks (specification 2). Significance levels: $* \; p < 0.10$, $** \; p < 0.05$, $*** \; p < 0.01$. Standard errors in brackets.

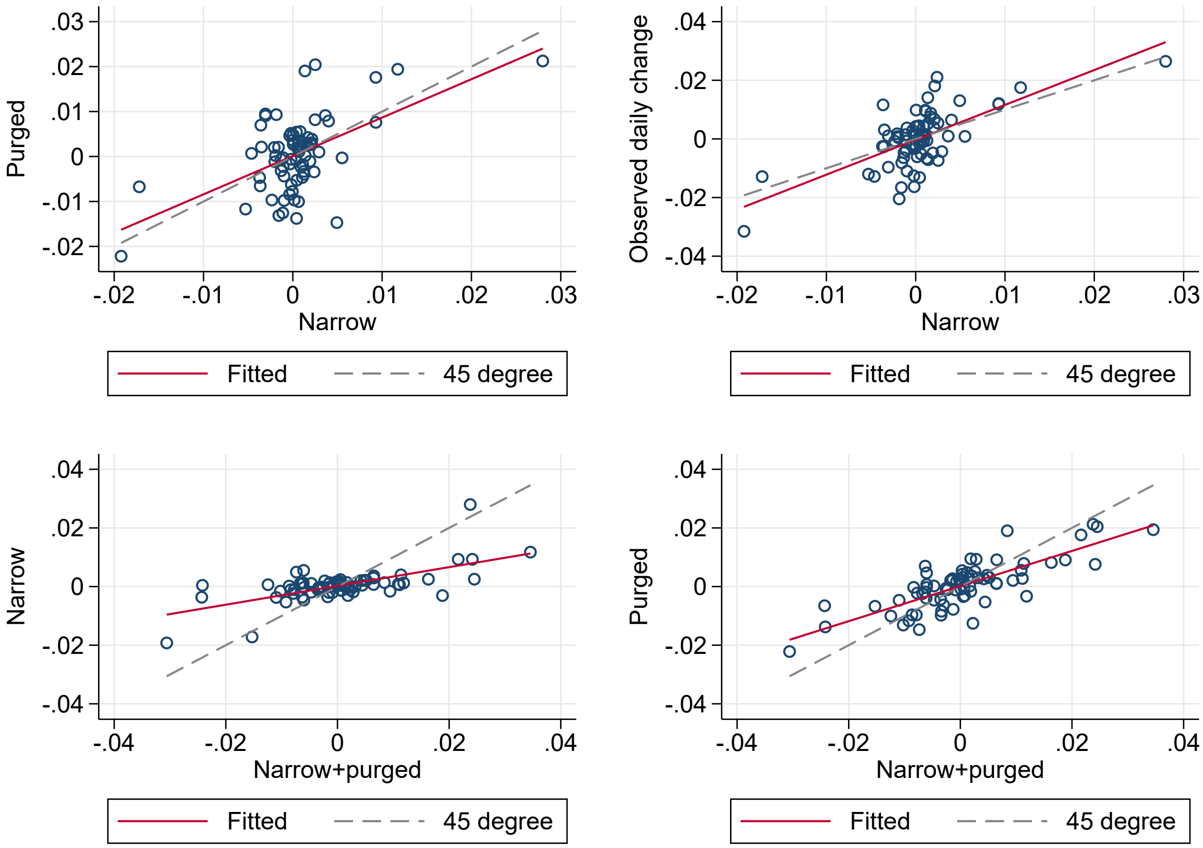
Lastly, we use narrow-window exchange rate differentials instead of 24-hours differentials, using the estimates of Boneva et al. (2026). Doing so eliminates the risk of any non-SNB macroeconomic news contamination from the same day. However, it does not eliminate the risk of contamination from monetary policy surprises or central bank information effects. We thus construct a narrow and purged version of the shocks, which corresponds to the residual of the regression of narrow-window observation on monetary policy and information effects. That is the same identification as our baseline shocks without the need to control for the daily NEER, since there can only be little USD movement in those narrow windows and since we do not have access to a high-frequency NEER series.

Figure A1 shows the relationship between our baseline purged shocks, the narrow-window observation, and the purged narrow-window shocks, omitting the two large 2011 and 2015 shocks for visualization purposes, due to their large size dominating all smaller shocks. The top right panel shows that narrow-window observations tend to be rather close and highly correlated with 24-hours observations, confirming that there must be little non-SNB news contaminating our shocks outside of the narrow-window. The bottom-left panel shows that purging these narrow-window observations of monetary and information effects does change them significantly. Finally, the bottom-right panel shows that our baseline purged shocks are highly correlated but not exactly similar to those narrow and purged shocks.

We then run our results using those purged-narrow shocks instead of our baseline purged shocks and show that they are qualitatively unchanged. Figure A2 shows the response of asset prices to purged and narrow shocks: as before, bonds react very little to it, stocks react somewhat positively, and gold prices react positively but noisily. The main difference worth noting is how persistent the stock price response is. In our baseline result, the reaction is about 40 bps on impact and remains strong for about 40 days before dying out. In this alternative control, the reaction is muted to about 25 bps on impact, lasts for about 30 days, and then becomes somewhat negative. That difference is real but does not alter our interpretation of the results: we simply attribute them to the narrower-window as being less powerful than full-day windows as they do not capture potential over-reaction and amplification to the SNB announcements that might happen during the rest of the day, which are nevertheless displayed in our measure of asset prices that is not intra-day.

Figure A3 shows that our various heterogeneity decompositions are almost identical to our

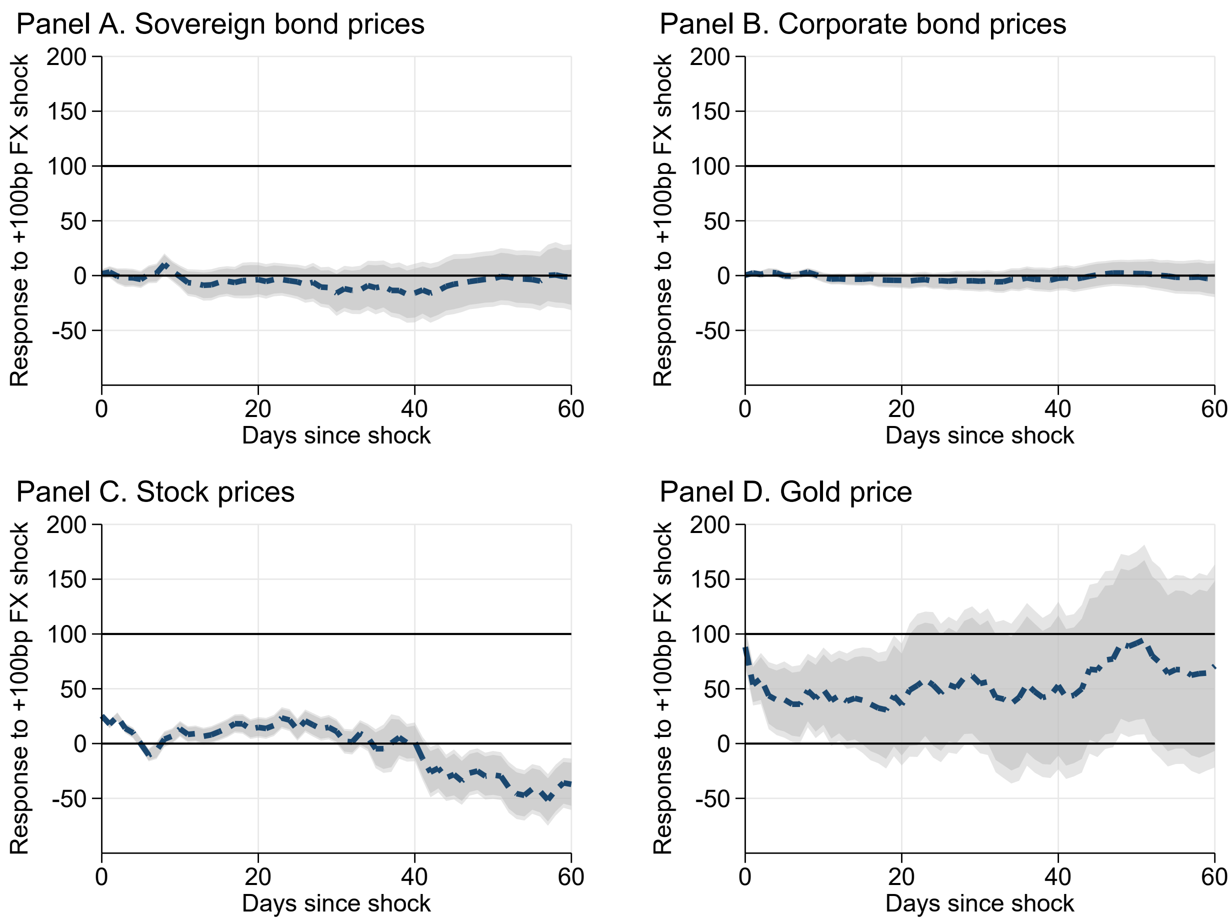
Figure A1: Correlation of purged, narrow, and narrow-purged series



Notes: Excluding the two largest shocks related to the introduction and end of the EUR/CHF floor.

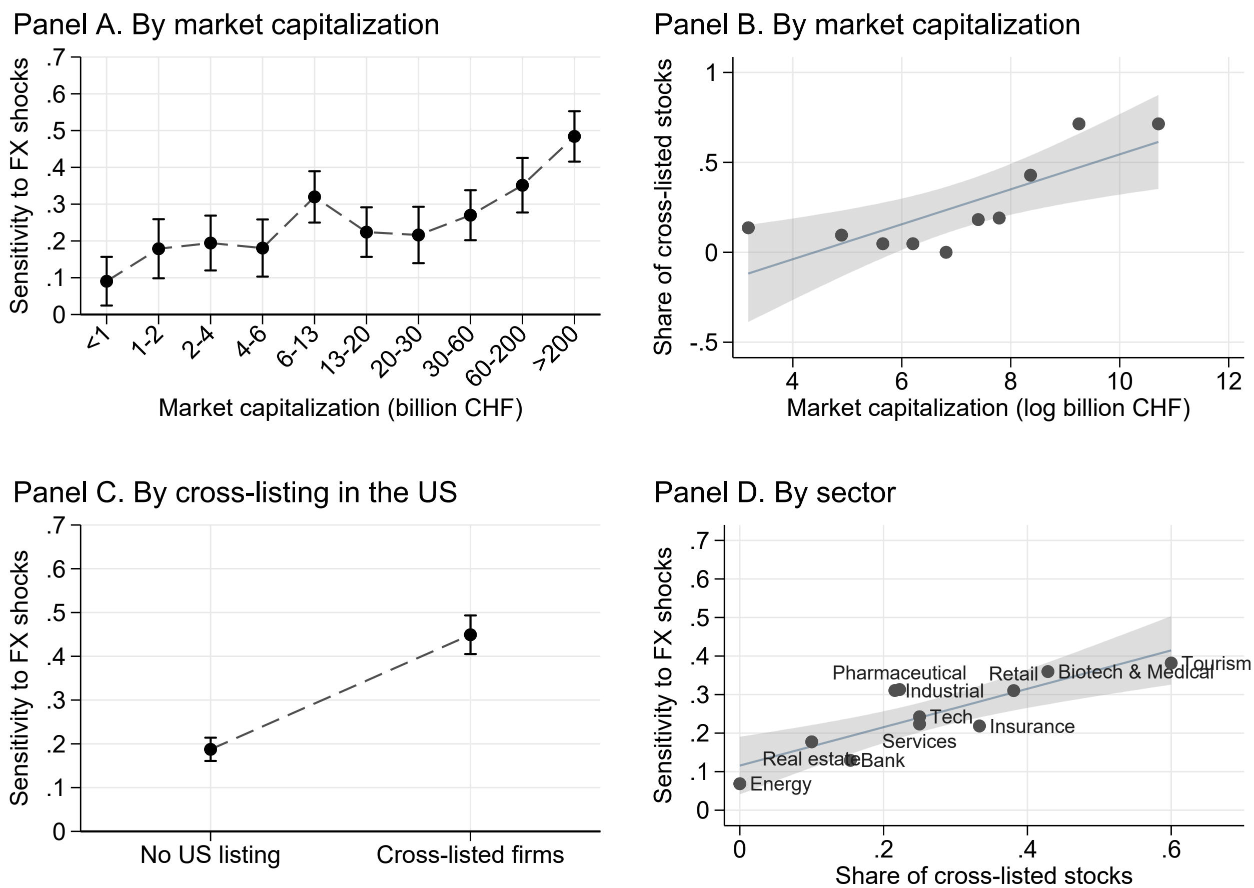
baseline results. That is, firms that are larger tend to react more strongly to the excange rate and to have larger market capitalization, cross-listed firms are more sensitive, and so are the same sectors as in the baseline results. The only different is that those results are slightly lower in magnitude (e.g. about 0.45 for the cross-listed firms versus about 0.61 in our baseline, and the highest market capitalization have about 0.49 sensitivity here versus 0.63 in our baseline) but still highly significant. The same similarity can be observed in the response to the share of foreign sales and to the comparison to Oktay (2022), as shown in Figure A4, as well as in our synthetic difference-in-difference results shown in Figure A5.

Figure A2: Response of domestic asset prices to a 100 basis point Swiss franc depreciation



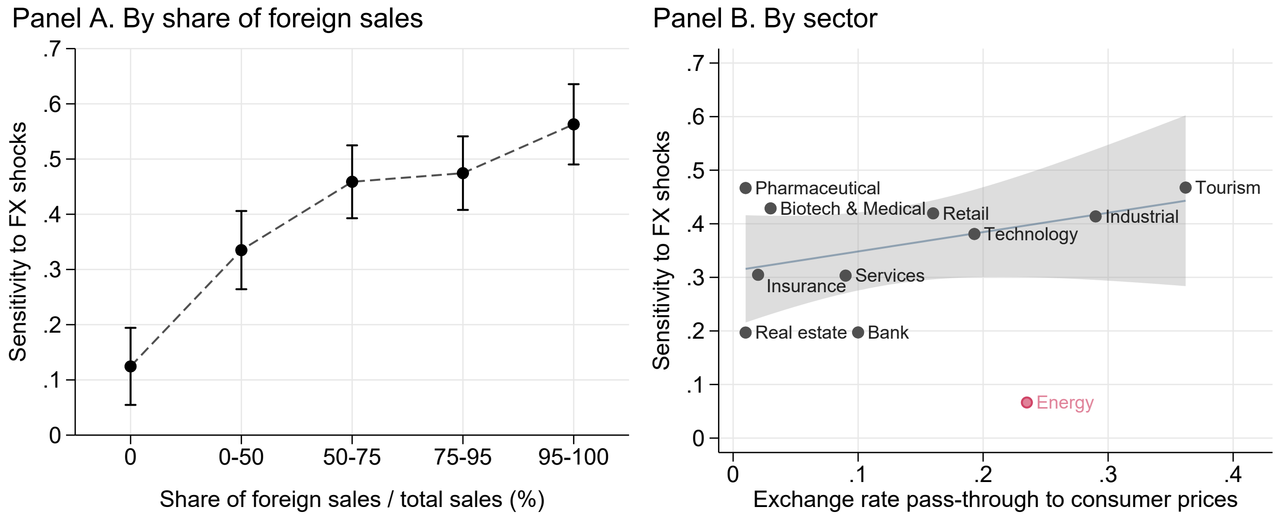
Notes: Responses in basis points to a purged USD/CHF shock of +100 basis points (CHF depreciation). Using specification 3, 90% (95%) confidence intervals in dark (light) grey area. Stock price responses use pooled regressions with the individual stocks. All prices are in CHF and traded in Switzerland.

Figure A3: Heterogeneity of international substitution



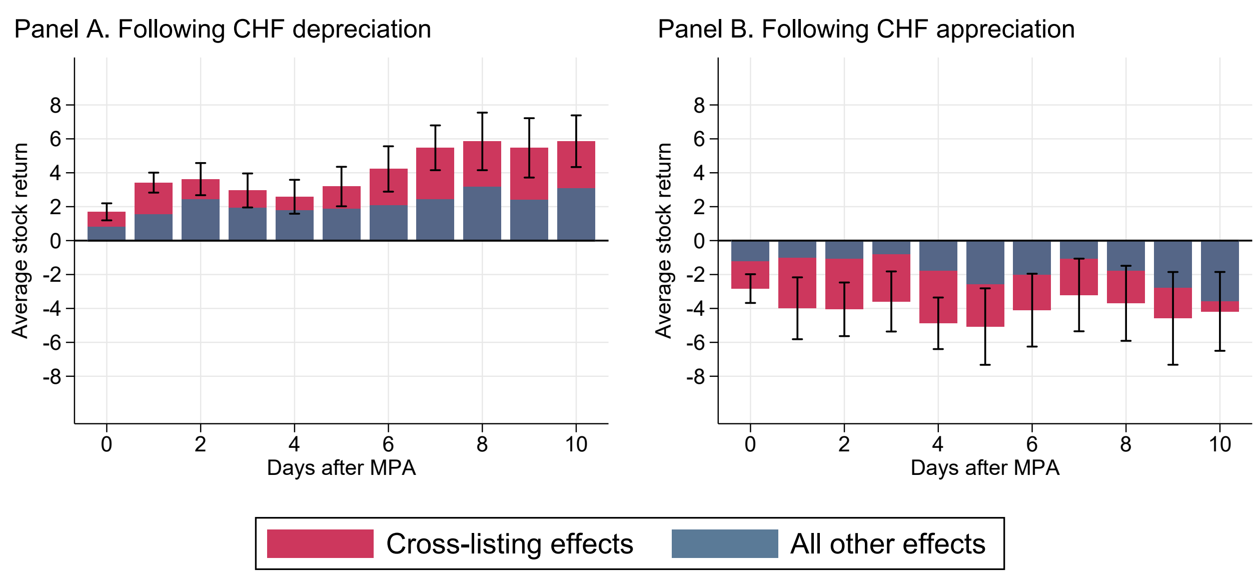
Notes: Using specification 6, 95% confidence intervals are given by whiskers (Panels A and C) and the grey area (Panels B and D). Sensitivity to FX shocks is an elasticity (hence a hundred times smaller than that reported in Figure 3). Market capitalizations and cross-listing shares as of December 2022.

Figure A4: Stock price responses and heterogeneity in cash flow denomination



Notes: Using specification 6, 95% confidence are intervals given by whiskers (Panel A) and the grey area (Panel B). Sensitivity to FX shocks is an elasticity (hence a hundred times smaller than that reported in Figure 3). Foreign sale ratios are as of December 2022. Exchange rate pass-through estimates for Switzerland are from Oktay (2022). As discussed in the text, the regression line in Panel B omits the energy sector. The coefficient of the slope in Panel B is 0.361 (p-value 0.206).

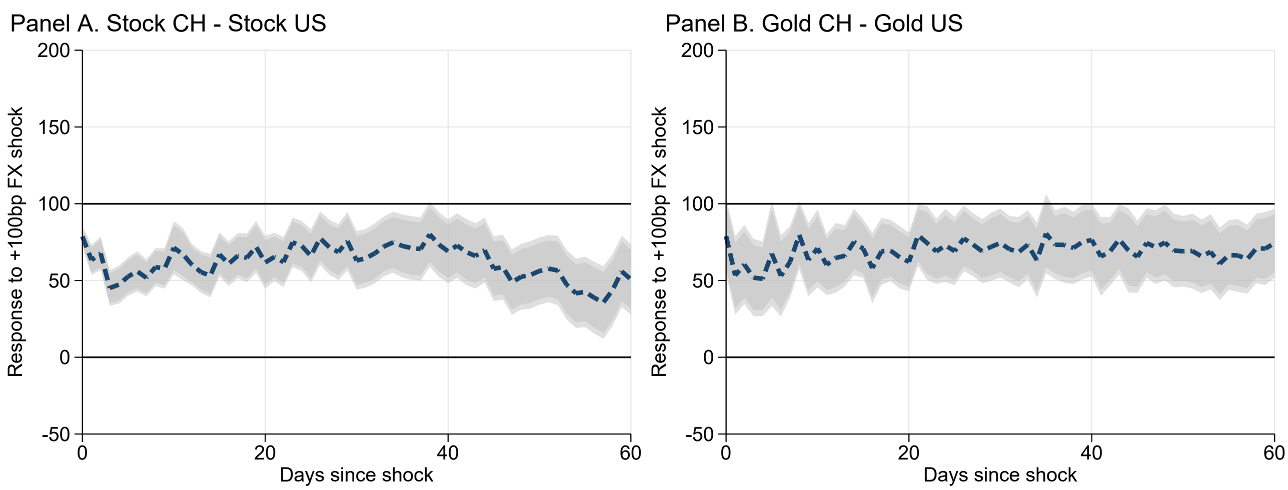
Figure A5: Effect of cross-listing on cumulated stock market returns



Notes: Cumulative average domestic stock return for cross-listed firms conditional on direction of exchange rate movement following the SNB announcement. Whiskers indicate 95% confidence intervals of the cross-listing contribution. All other effects is the difference between the average stock return and the cross-listing contribution.

We argue these lower magnitudes can be attributed to the mismatch between narrow exchange-rate measure and daily asset prices. Figure A6 shows the price parity check we previously showed in Figure 4. It is striking that the response is close but significantly below 1, contrary to our baseline result. One could misinterpret this as a failure of the law of one price or that arbitrage does not hold, which would be extremely surprising given the low frictions of both Swiss and U.S. financial markets. We instead interpret this as proof of the fundamental mismatch problem that arise with using narrow-window shocks in our setting: this specification regresses a full-day differential of asset prices on a narrow-window exchange rate shocks. As such, the asset prices differential is partially due to exchange rate movements that happen outside of the narrow-window that the narrow-window itself is unable to capture. This mismatch problem explains why the purged narrow-window estimates are lower in magnitude than our baseline, and justifies why we keep our simple daily purge as our baseline result.

Figure A6: Response of difference in currency returns to an exchange rate shock



Notes: Responses in basis points to a purged USD/CHF shock of +100 basis points (CHF depreciation). Using specification 3, 90% (95%) confidence intervals in dark (light) grey area. Stock price responses use pooled regressions with the individual stocks.

D. Alternatives sign separations

The DID and SDID section of our results separates positive and negative exchange rate movements that persist in sign for 15 days. We do so first to resolve the issue of pooling symmetric effects: if we were to instead estimate a single treatment effect on all shocks, pooling both positive and negative shocks would result in a false null if they are are balanced and symmetric in effect. An additional benefit of focusing on the subset of the larger, more persistent shocks is to reduce the noise from small shocks that may not carry true exchange rate information. We can thus estimate the impact of exchange rate shocks more precisely and on a larger horizon than if we were to separate on the impact shock only. Lastly, separating both types of shocks allows us to assess whether the reaction of stocks is symmetric in currency appreciations and depreciations. Such selection has a cost, however. It conditions on the subset of large and persistent shocks that are not necessarily representative of the average exchange rate shock. Here we provide some alternatives to this specification.

First one can separate samples on the impact-sign of the shock only, no matter how large or persistent they are. The results are shown in the first four columns of Table A3. As mentioned, this introduces the problem of including many small, noisy shocks. Consequently, the resulting DID and SDID coefficients have large error bands, are lower in magnitude, and are rarely significant, as could be expected given the inclusion of small shocks that do not include much true exchange rate information versus our baseline that relies on large, persistent, and clear exchange rate shocks. For instance the SDID ATET on-impact are 0.18 and -0.28 (versus 0.55 and -0.73 in our baseline). Two-days ahead is about 0.15 and -0.68 (versus 1.05 and -0.77 in our baseline). Nevertheless, almost all of the coefficients have the same sign as our baseline results, though they vary in significance. The exception is that of 20 and 40-days ahead positive exchange rate shocks, bit these are significant only for the DID and vastly loose any significance in the SDID, they are thus most likely spurious, especially at such a large horizon after small shocks.

Second, a more natural way to estimate those coefficients is to pool both positive and negative shocks (i.e. take the entire sample of shocks) and normalize their signs to ensure we are not pulling effects of opposite directions. We do so by multiplying stock returns by the sign of the purged shock, which thus flips the sign of returns when the shock is negative. We then

Table A3: Effect of cross-listing on cumulated stock market returns (impact separation)

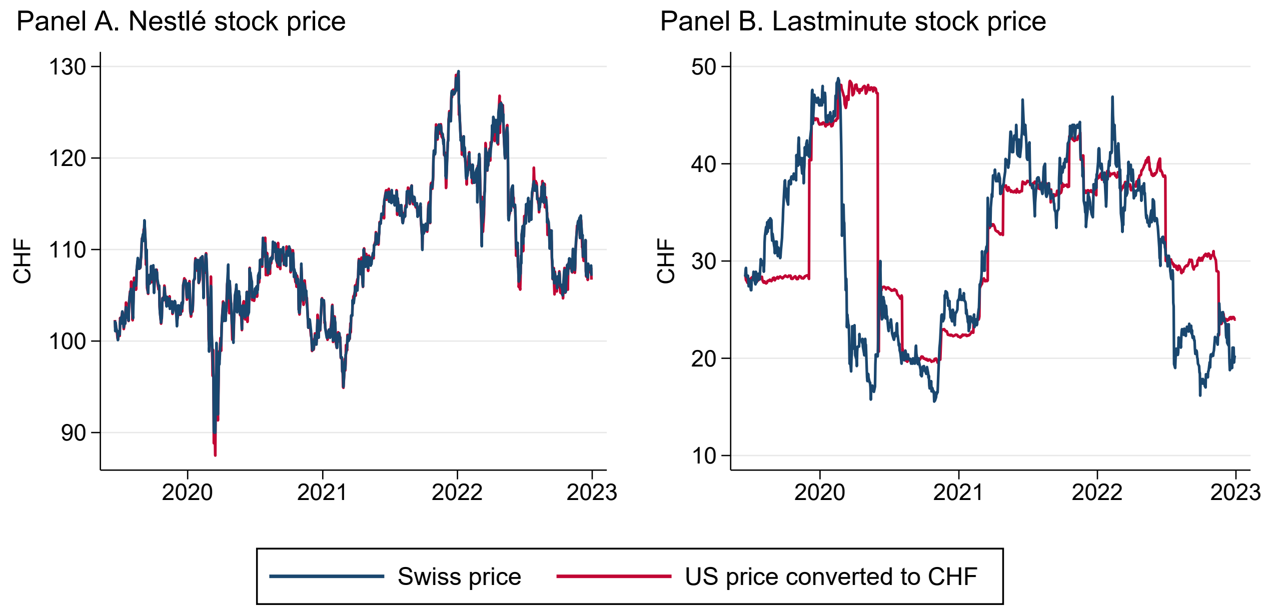
	Positive FX shocks		Negative FX shocks		Both shocks	
Days after MPA (h)	DID ATET	SDID ATET	DID ATET	SDID ATET	DID ATET	SDID ATET
0	0.35***	0.18	-0.21	-0.28*	0.13	0.23*
	(0.13)	(0.17)	(0.15)	(0.16)	(0.10)	(0.12)
1	0.11	0.05	-1.13***	-0.81***	0.20	0.43***
	(0.14)	(0.20)	(0.24)	(0.28)	(0.13)	(0.16)
2	0.17	0.15	-0.72***	-0.68*	0.48***	0.55**
	(0.19)	(0.19)	(0.27)	(0.36)	(0.16)	(0.24)
3	0.47**	0.36	-0.54*	-0.81*	0.35**	0.40
	(0.20)	(0.29)	(0.32)	(0.42)	(0.15)	(0.31)
4	0.72***	0.49	-0.39	-0.62	0.14	0.32
	(0.27)	(0.33)	(0.38)	(0.38)	(0.18)	(0.29)
5	0.45*	0.59*	-0.55	-0.82*	0.13	0.50**
	(0.24)	(0.31)	(0.35)	(0.43)	(0.19)	(0.22)
10	0.37	0.55	-0.89**	-1.03***	0.29	0.94**
	(0.30)	(0.45)	(0.38)	(0.38)	(0.25)	(0.37)
15	-0.28	0.38	-0.55	-0.80*	-0.04	0.91*
	(0.46)	(0.45)	(0.38)	(0.44)	(0.32)	(0.49)
20	-1.16***	-0.71	-0.19	-0.66	-0.25	0.27
	(0.42)	(0.54)	(0.39)	(0.44)	(0.28)	(0.48)
40	-1.35**	-1.01	-0.55	-0.94	-0.22	1.61*
	(0.58)	(0.77)	(0.81)	(1.44)	(0.42)	(0.82)

Notes: Significance levels: $*\ p < 0.10$, $**\ p < 0.05$, $***\ p < 0.01$. Standard errors in brackets.

run our baseline DID and SDID on this normalized return instead. The estimated treatment effect then captures the extra return that a cross-listed stock earns in the direction of the shock, pooling both appreciations and depreciations. The last two columns of Table A3 shows these estimates. The coefficients are now significant (since they take advantage of the whole sample) but, as expected, lower in magnitude than our baseline specification since they include many small noisy shocks. For instance the SDID ATET on-impact is about 0.23 (versus 0.55 and -0.73 in our baseline separated sub-samples). Two-days ahead is about 0.55 (versus 1.05 and -0.77 in our baseline).

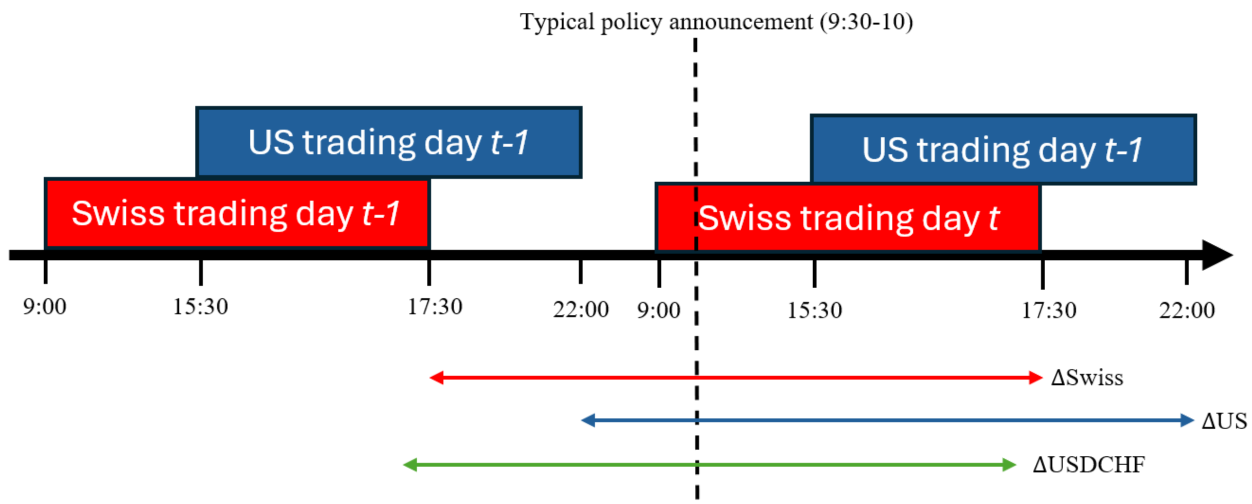
E. Additional tables and figures

Figure A7: Two cross-listed Swiss stock prices



Notes: The sample start corresponds to the introduction of the Lastminute ADR in 2019. Source: Refinitiv Datastream

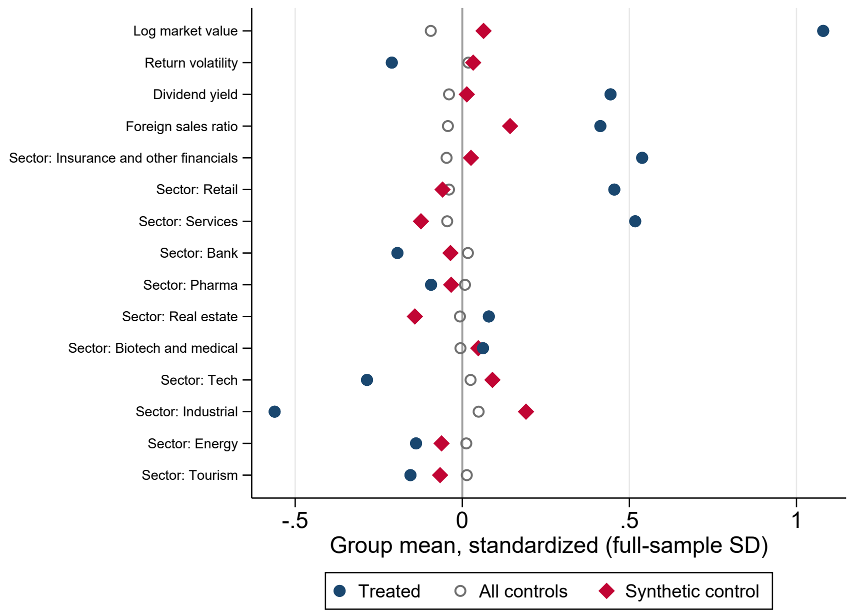
Figure A8: Timing of daily variations



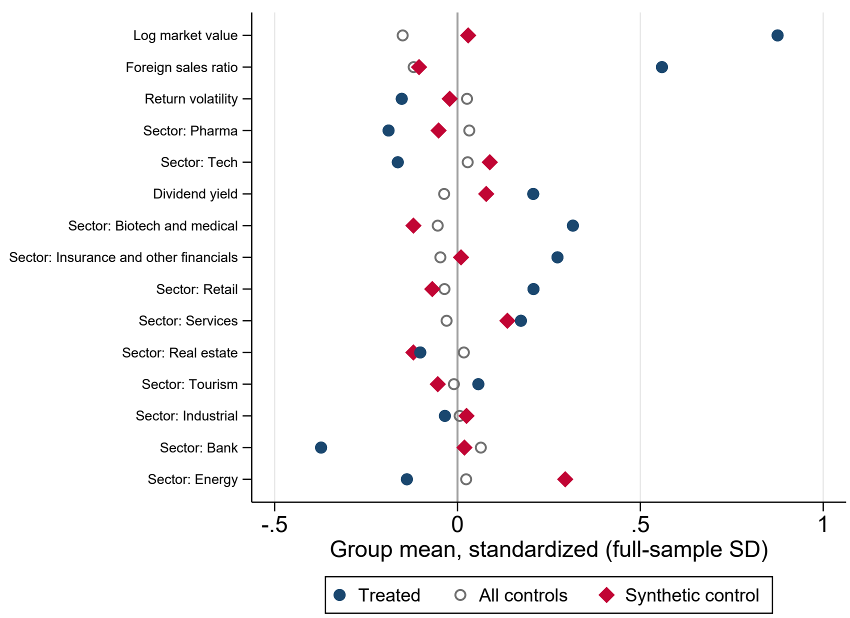
Notes: Time line is not to scale.

Figure A9: Balance table

Panel A: Subsample of shocks following CHF appreciation

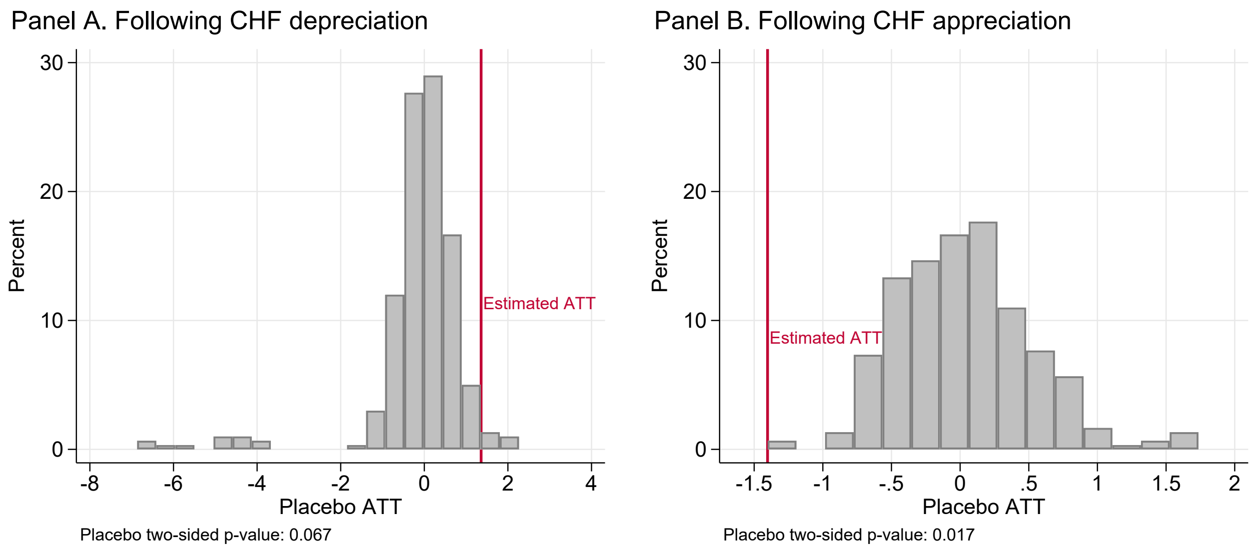


Panel B: Subsample of shocks following CHF depreciation



Notes: Firm characteristics standardized by full-sample standard deviation. Zero is the sample mean.

Figure A10: Placebo test



Notes: SDID of randomly assigned treatment dates on never-treated units. Implied p-value is the ratio of random observations above our real ATT estimate in absolute value.

Table A4: Purging exchange rate shocks on monetary policy announcement days

	(1)	(2)	(3)
USD NEER	1.37***	1.37***	1.19***
	(0.24)	(0.24)	(0.24)
Monetary policy shock		0.00	-0.01
		(0.01)	(0.01)
Information effects shock			0.08***
			(0.03)
Constant	0.00	0.00	0.00
	(0.00)	(0.00)	(0.00)
Observations	106	106	106
Adjusted R^2	0.23	0.23	0.27

Notes: Using specification 2. Purging daily USDCHF movements on SNB monetary policy announcement days from movements in the US dollar nominal effective exchange rate (NEER), Swiss monetary policy shocks from Koeniger et al. (2022), and Swiss information effects following the Bu et al. (2021) and Ciminelli et al. (2022) methodology. Significance levels: $* \ p < 0.10$, $** \ p < 0.05$, $*** \ p < 0.01$. Standard errors in brackets.

Table A5: Regression outputs of Swiss asset class prices to exchange rate shocks

	Days after MPA					
	0	1	5	10	30	60
Sovereign bonds						
Exchange rate shock	-0.37	-3.73	-8.87*	-5.06	-5.23	-6.30
	(2.68)	(3.18)	(4.93)	(6.40)	(11.96)	(15.84)
USDCHF	Omitted	-0.17***	-0.12***	0.00	-0.14***	-0.06
		(0.05)	(0.04)	(0.06)	(0.05)	(0.07)
NEER USD	Omitted	0.23**	0.14*	-0.00	0.17**	0.08
		(0.10)	(0.08)	(0.09)	(0.09)	(0.10)
Constant	0.00	0.04	0.07	0.10	0.22	0.22
	(0.04)	(0.04)	(0.07)	(0.09)	(0.17)	(0.22)
Corporate bonds						
Exchange rate shock	-0.32	0.54	-2.69	-0.29	2.45	2.84
	(1.41)	(1.58)	(2.40)	(3.20)	(5.91)	(9.60)
USDCHF	Omitted	-0.03	-0.06***	-0.06**	-0.07***	-0.03
		(0.03)	(0.02)	(0.03)	(0.02)	(0.04)
NEER USD	Omitted	0.00	0.07*	0.03	-0.03	-0.10*
		(0.05)	(0.04)	(0.04)	(0.04)	(0.06)
Constant	-0.00	0.00	-0.00	-0.03	0.07	0.03
	(0.02)	(0.02)	(0.03)	(0.04)	(0.08)	(0.13)
Stocks						
Exchange rate shock	34.61***	56.58***	42.48***	56.19***	44.07***	29.20**
	(1.48)	(2.12)	(3.44)	(4.42)	(6.97)	(12.71)
USDCHF	Omitted	0.75***	1.09***	0.61***	0.47***	0.61***
		(0.03)	(0.03)	(0.04)	(0.03)	(0.05)
NEER USD	Omitted	-1.49***	-1.97***	-1.48***	-1.29***	-1.54***
		(0.07)	(0.05)	(0.06)	(0.05)	(0.08)
Constant	-0.16***	-0.12***	-0.27***	-0.02	0.87***	1.50***
	(0.02)	(0.03)	(0.05)	(0.06)	(0.10)	(0.18)
Gold						
Exchange rate shock	100.82***	78.85***	73.28***	83.02***	48.68	70.47
	(9.06)	(13.34)	(21.66)	(27.61)	(41.68)	(54.41)
USDCHF	Omitted	1.11***	0.92***	1.46***	0.88***	0.89***
		(0.19)	(0.18)	(0.19)	(0.15)	(0.21)
NEER USD	Omitted	-1.22***	-1.31***	-1.88***	-1.27***	-0.93***
		(0.38)	(0.31)	(0.31)	(0.27)	(0.32)
Constant	0.02	0.27	0.14	0.26	1.03*	2.55***
	(0.13)	(0.18)	(0.30)	(0.38)	(0.58)	(0.75)

Notes: Using specification 3. Local projections of purged Swiss franc shocks on Swiss asset prices. The controls on impact are omitted since they are already included in the purge of the exchange rate shocks. Significance levels: $* \ p < 0.10$, $** \ p < 0.05$, $*** \ p < 0.01$. Standard errors in brackets.

Table A6: Heterogenous sensitivity of Swiss stocks to exchange rate shocks

	By share of foreign sales		By cross-listing in the US		By market capitalization	
	FE	Interaction	FE	Interaction	FE	Interaction
Group 1	Omitted	0.12***	Omitted	0.25***	Omitted	0.15***
		(0.04)		(0.02)		(0.04)
Group 2	0.02	0.34***	-0.12***	0.62***	-0.06	0.26***
	(0.07)	(0.04)	(0.05)	(0.03)	(0.1)	(0.05)
Group 3	-0.05	0.46***			-0.10	0.23***
	(0.07)	(0.03)			(0.09)	(0.05)
Group 4	-0.09	0.47***			-0.14	0.22***
	(0.07)	(0.03)			(0.09)	(0.05)
Group 5	-0.12	0.56***			-0.10	0.41***
	(0.07)	(0.04)			(0.09)	(0.05)
Group 6					-0.10	0.30***
					(0.09)	(0.04)
Group 7					-0.19**	0.31***
					(0.09)	(0.05)
Group 8					-0.18**	0.38***
					(0.09)	(0.04)
Group 9					-0.16*	0.52***
					(0.09)	(0.05)
Group 10					-0.16*	0.64***
					(0.09)	(0.04)
Constant	-0.14***		-0.13***		-0.04	
	(0.05)		(0.02)		(0.06)	

Notes: Using specification 6. The firms are grouped based on their share of foreign sales / total sales, by whether they are cross-listed in the US, and by market capitalization, all in December 2022 (end of sample). See figures 10 and 11 for the composition of the groups. The table shows the fixed effects (FE) and interaction of group with exchange rate shocks (Interaction) coefficients. The first fixed effect groups are omitted due to colinearity. Significance levels: $* \ p < 0.10$, $** \ p < 0.05$, $*** \ p < 0.01$. Standard errors in brackets.

Table A7: Regression outputs of cross-listed Swiss asset class prices to exchange rate shocks

	Days after MPA					
	0	1	5	10	30	60
Stock CH - Stock US						
Exchange rate shock	104.59***	96.75***	87.63***	105.25***	96.04***	86.21***
	(3.88)	(5.21)	(6.79)	(9.45)	(10.59)	(12.69)
USDCHF	Omitted	1.15***	1.16***	1.04***	0.87***	0.99***
		(0.08)	(0.07)	(0.09)	(0.04)	(0.06)
NEER USD	Omitted	-1.47***	-0.97***	-0.30**	-0.20**	-0.34***
		(0.17)	(0.11)	(0.15)	(0.08)	(0.08)
Constant	-0.05	0.04	0.07	-0.05	0.33**	0.38**
	(0.06)	(0.07)	(0.10)	(0.14)	(0.16)	(0.19)
Gold CH - Gold US						
Exchange rate shock	91.87***	68.36***	88.30***	91.81***	83.29***	82.15***
	(12.46)	(13.09)	(15.71)	(12.53)	(10.93)	(11.83)
USDCHF	Omitted	1.52***	1.18***	1.24***	1.02***	1.02***
		(0.20)	(0.14)	(0.11)	(0.05)	(0.05)
NEER USD	Omitted	-1.18***	0.03	-0.31*	-0.32***	-0.09
		(0.41)	(0.25)	(0.17)	(0.08)	(0.07)
Constant	-0.17	0.04	-0.21	-0.12	-0.29*	-0.17
	(0.17)	(0.17)	(0.22)	(0.17)	(0.15)	(0.16)

Notes: Using specification 3. Local projections of purged Swiss franc shocks on the difference between Swiss asset prices and their US counterpart (the firm's American Depositary Reiceipt and the New York quotation of Gold). The controls on impact are omitted since they are already included in the purge of the exchange rate shocks. Significance levels: $*\ p < 0.10$, $**\ p < 0.05$, $***\ p < 0.01$. Standard errors in brackets.

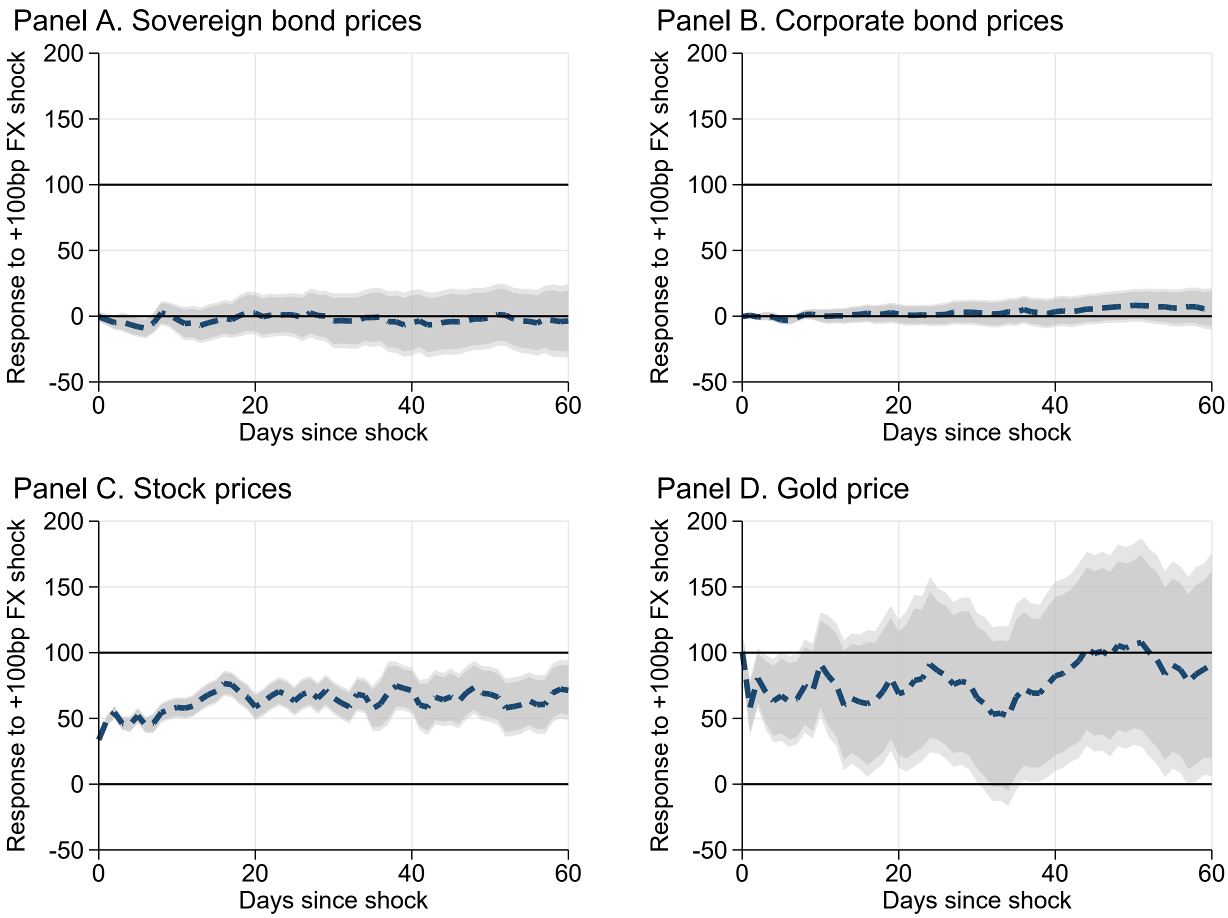
Table A8: Excess returns of Swiss stocks listed in the US

	Banks	Health	Industrial	Insurance	Pharma	Real estate	Retail	Services	Tech	Tourism	All sectors
Exchange rate shock	-0.45***	-0.69***	-0.30***	-0.33***	-0.29***	-0.36**	-0.42***	-0.60***	-0.81***	-0.35	-0.46***
	(0.09)	(0.09)	(0.1)	(0.09)	(0.1)	(0.14)	(0.06)	(0.08)	(0.25)	(0.29)	(0.03)
Constant	0.02	-0.56***	-0.29**	-0.03	-0.16	-0.15	-0.25**	-0.03	-0.51*	0.14	-0.23***
	(0.13)	(0.15)	(0.13)	(0.14)	(0.15)	(0.22)	(0.10)	(0.13)	(0.31)	(0.38)	(0.05)
Observations	325	280	411	352	284	142	517	183	163	66	2723

Notes: Using specification 7. Regressing excess returns of Swiss firms cross-listed in the US with respective to the relevant sectoral S%P500 index. The energy sector is omitted since none of these firms are cross-listed in the US. Significance levels: $*\ p < 0.10$, $**\ p < 0.05$, $***\ p < 0.01$. Standard errors in brackets.

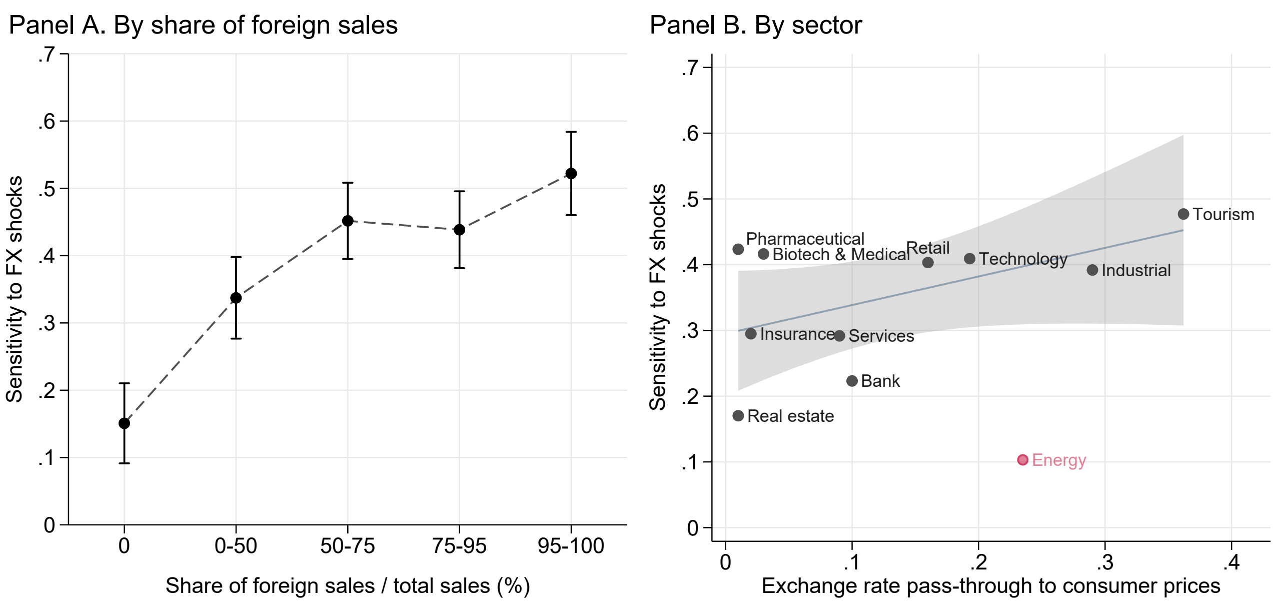
F. Robustness: Using the observed instead of the purged shocks

Figure A11: Response of domestic asset prices to a 100 bp Swiss franc depreciation.



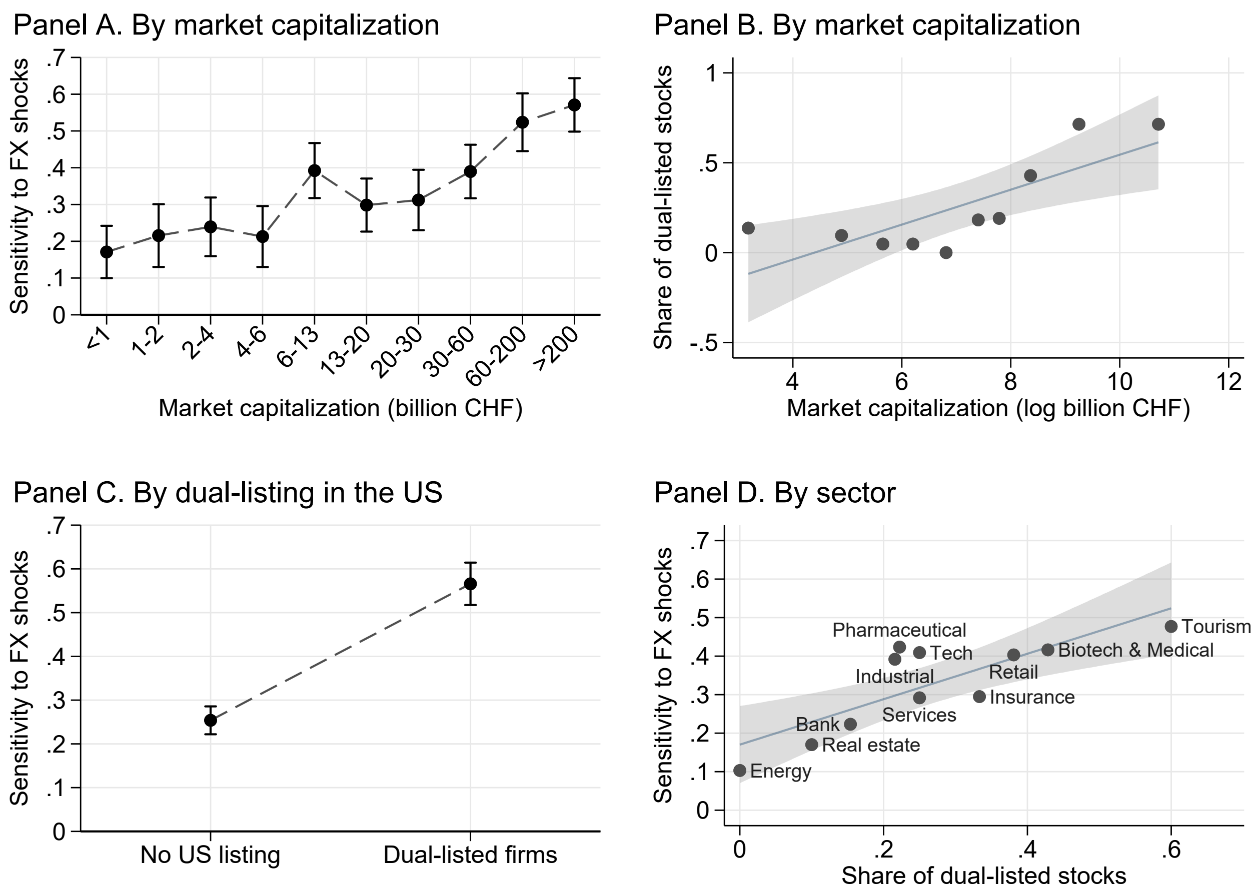
Notes: See the note of Figure 3. Using the observed shock series instead of the purged series. The controls used to purge the shocks are instead used as controls in the specification.

Figure A12: Heterogeneity in the cash flow denomination



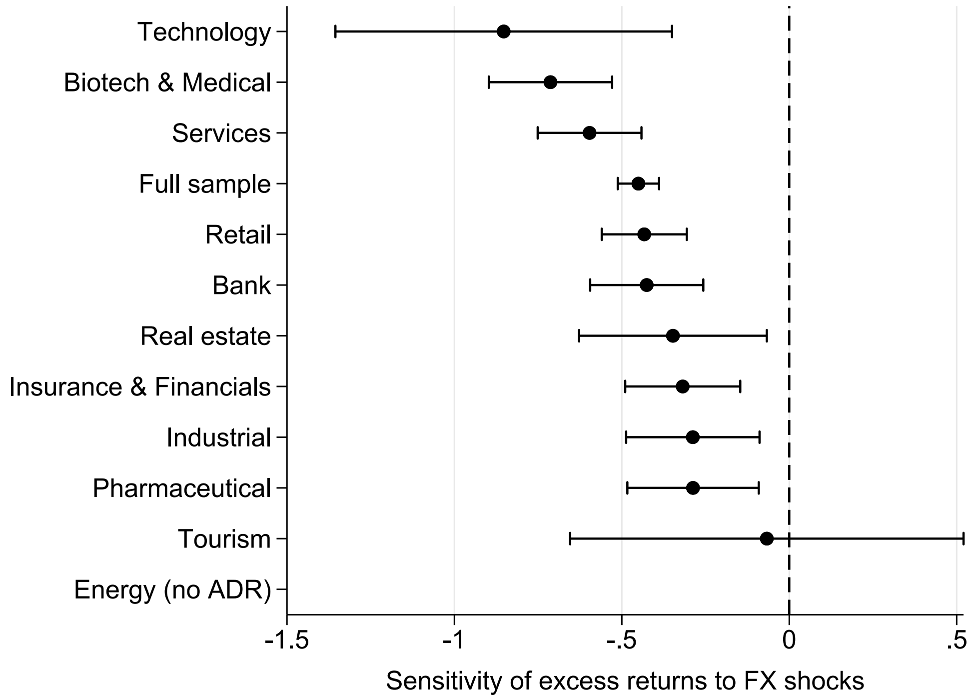
Notes: See the note of Figure 10. Using the observed shock series instead of the purged series. The controls used to purge the shocks are instead used as controls in the specification.

Figure A13: Heterogeneity of international substitution



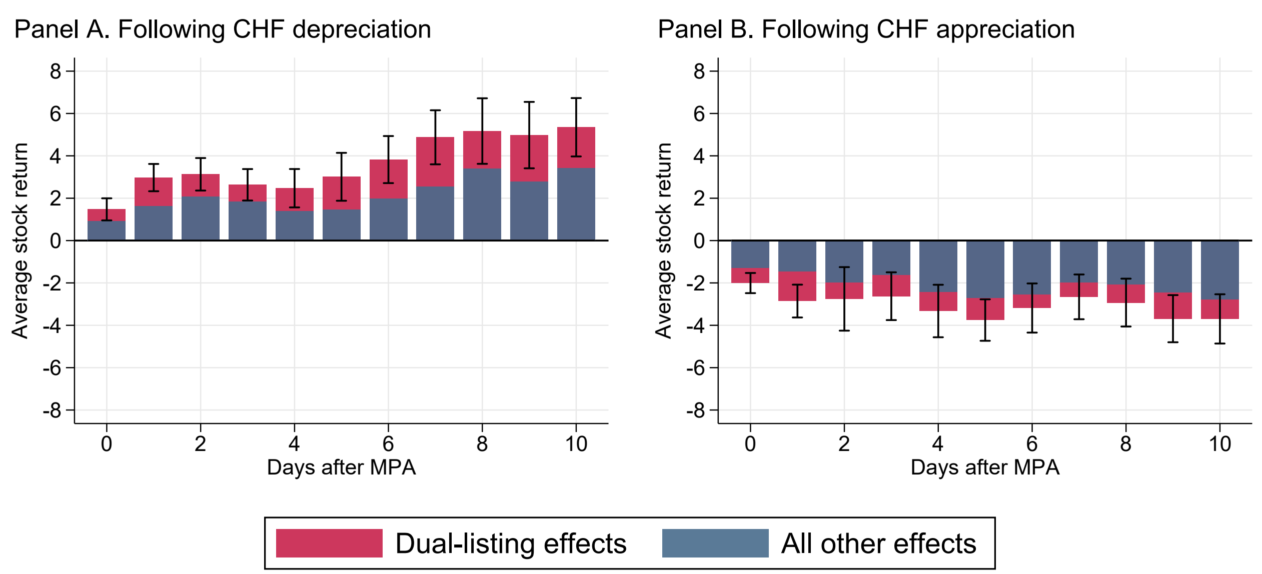
Notes: See the note of Figure 11. Using the observed shock series instead of the purged series. The controls used to purge the shocks are instead used as controls in the specification.

Figure A14: Excess returns of ADR listed in the US



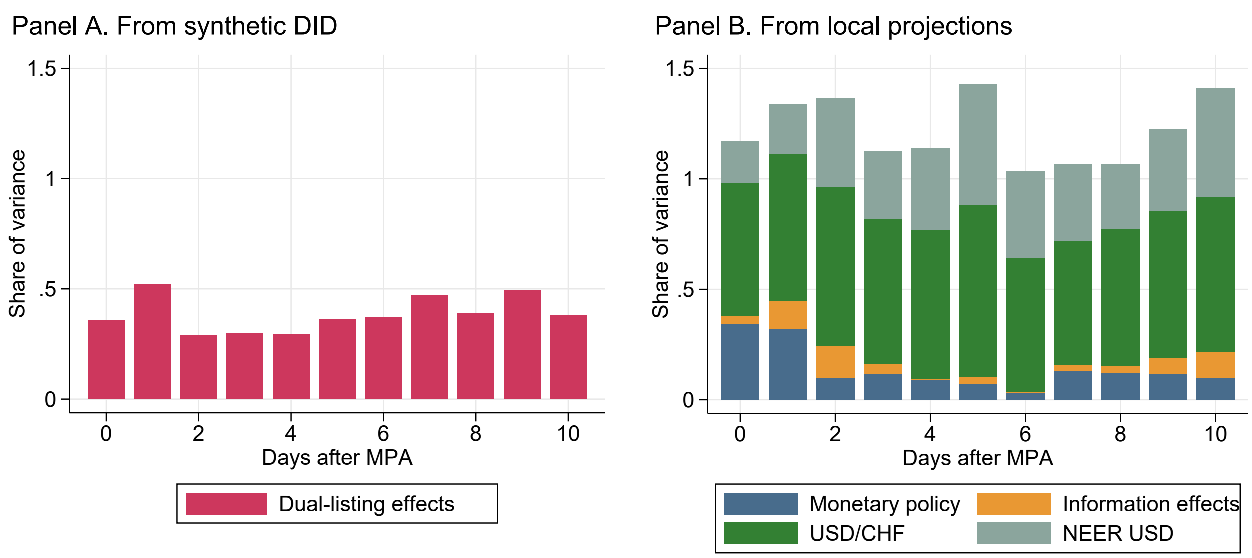
Notes: See the note of Figure 12. Using the observed shock series instead of the purged series. The controls used to purge the shocks are instead used as controls in the specification.

Figure A15: Effect of cross-listing on cumulated stock market returns



Notes: See the note of Figure 6. Using the observed shock series instead of the purged series. The controls used to purge the shocks are instead used as controls in the specification. Standard errors with 50 bootstrap replications.

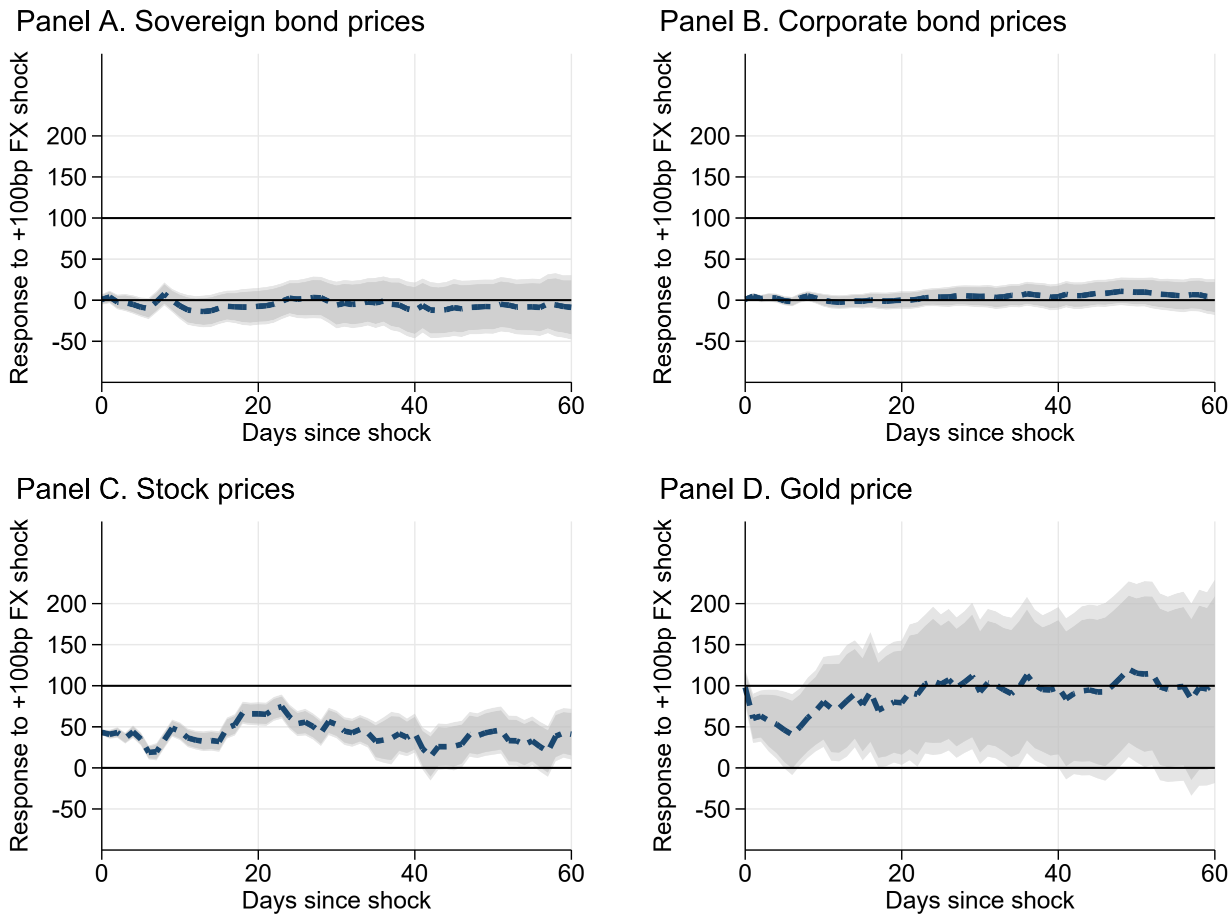
Figure A16: Variance decomposition of Swiss stock returns



Notes: See the note of Figure 7. Using the observed shock series instead of the purged series. The controls used to purge the shocks are instead used as controls in the specification.

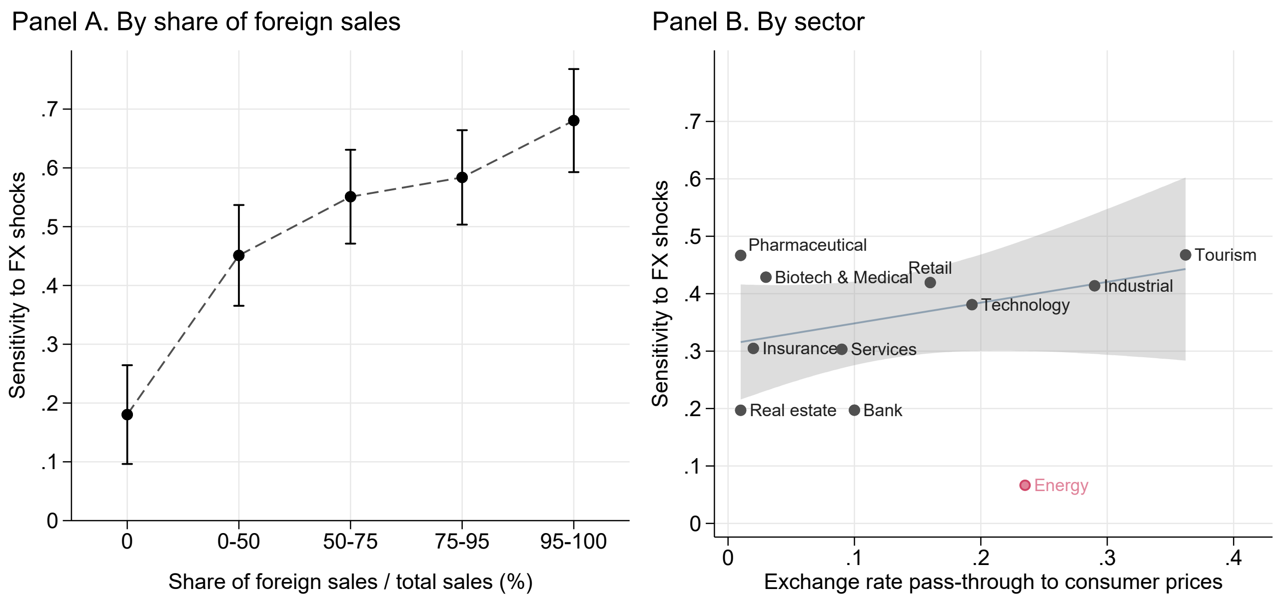
G. Robustness: Omitting the introduction or discontinuation of the Swiss franc floor

Figure A17: Response of domestic asset prices to a 100 bp Swiss franc depreciation.



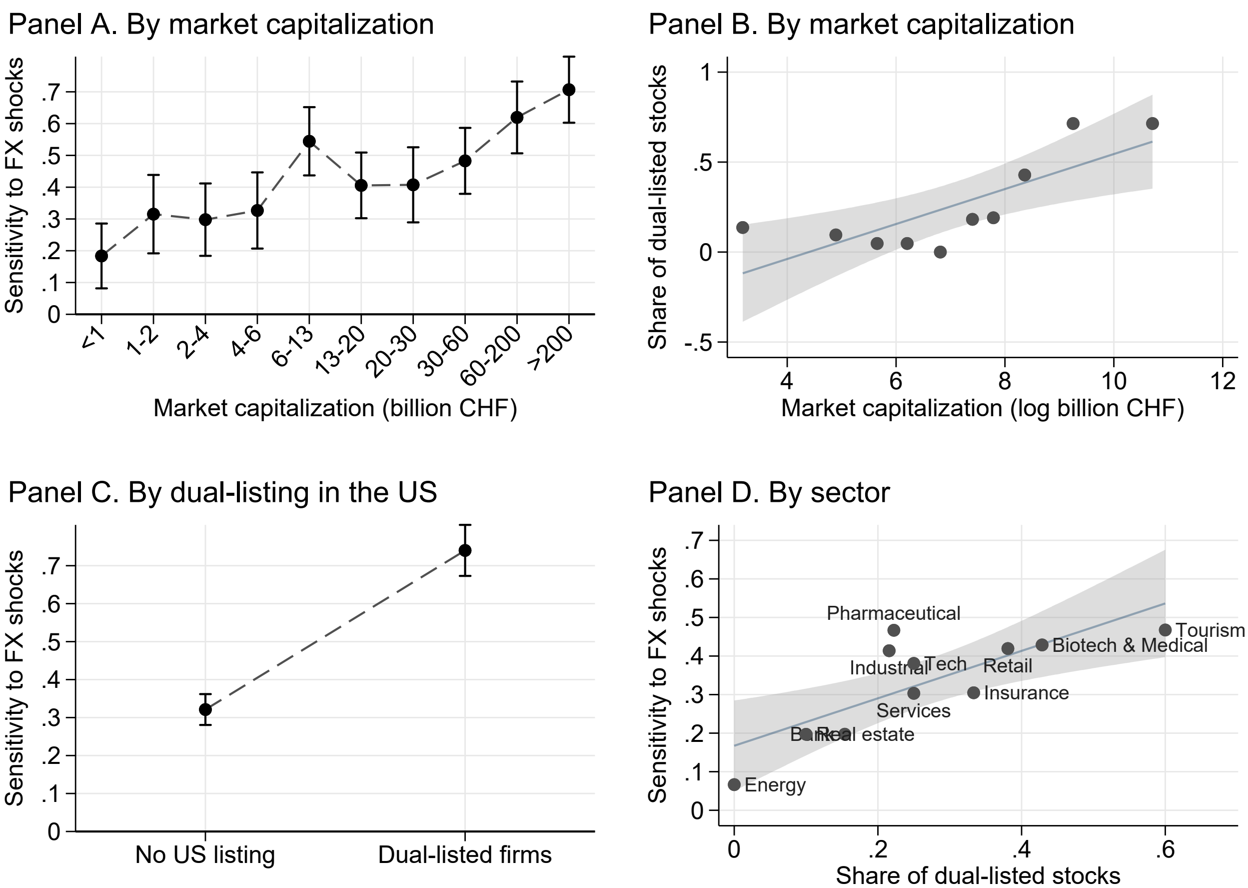
Notes: See the note of Figure 3. Omitting the shock of the Swiss franc floor introduction (in September 2011).

Figure A18: Heterogeneity in the cash flow denomination



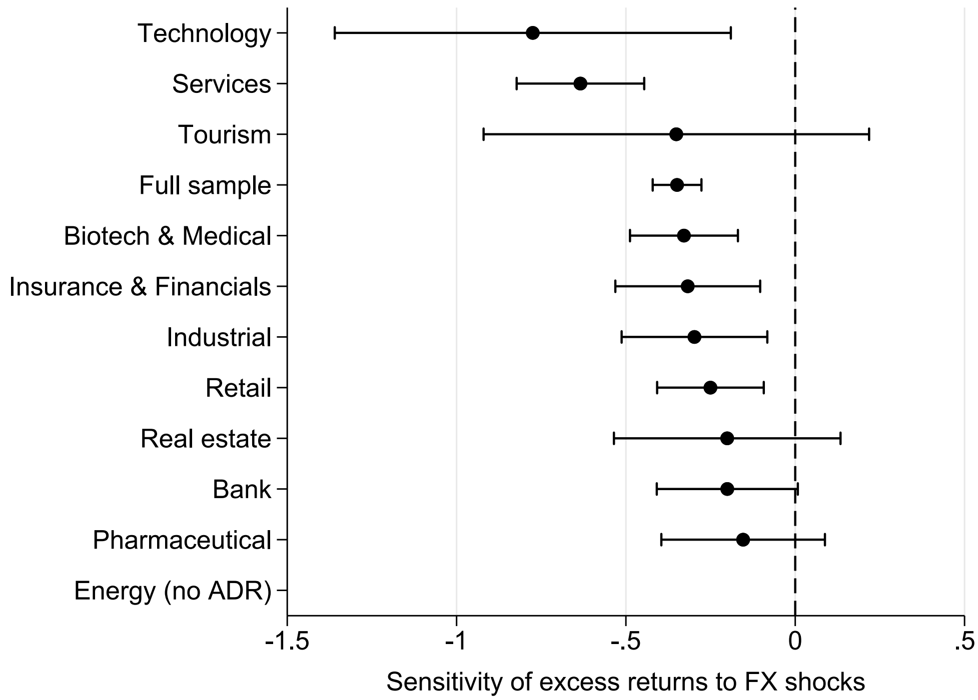
Notes: See the note of Figure 10. Omitting the shock of the Swiss franc floor introduction (in September 2011).

Figure A19: Heterogeneity of international substitution



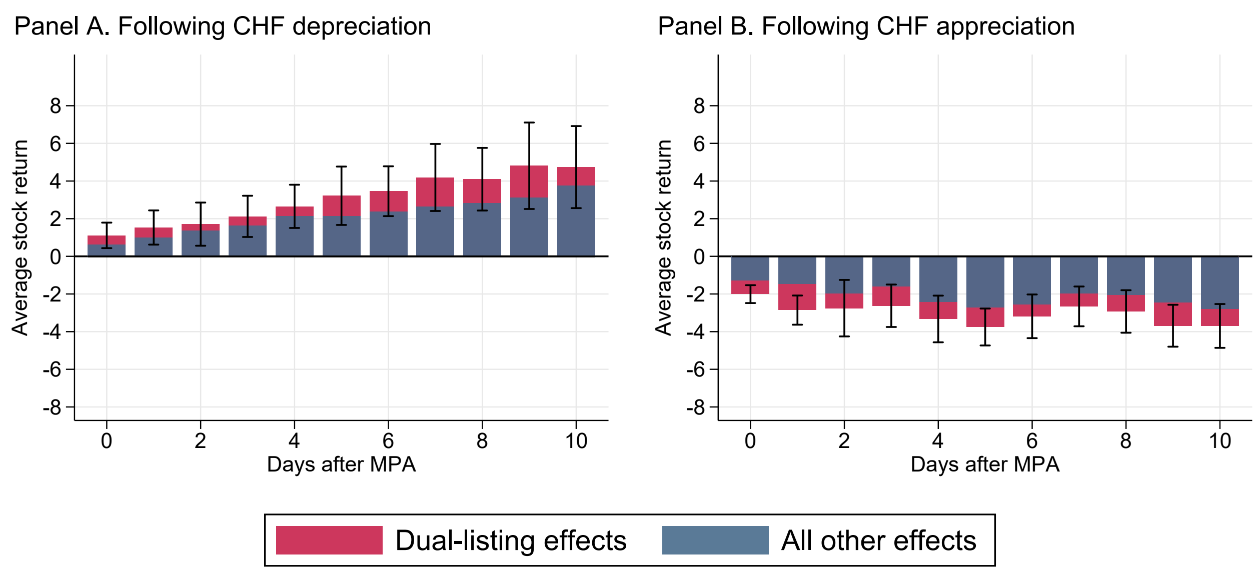
Notes: See the note of Figure 11. Omitting the shock of the Swiss franc floor introduction (in September 2011).

Figure A20: Excess returns of ADR listed in the US



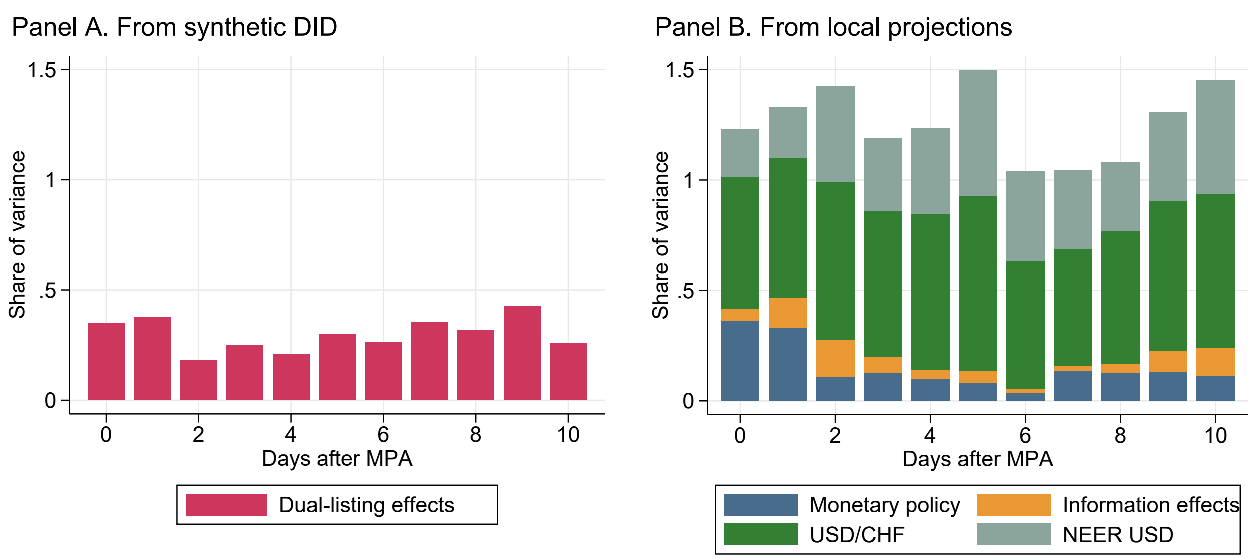
Notes: See the note of Figure 12. Omitting the shock of the Swiss franc floor introduction (in September 2011).

Figure A21: Effect of cross-listing on cumulated stock market returns



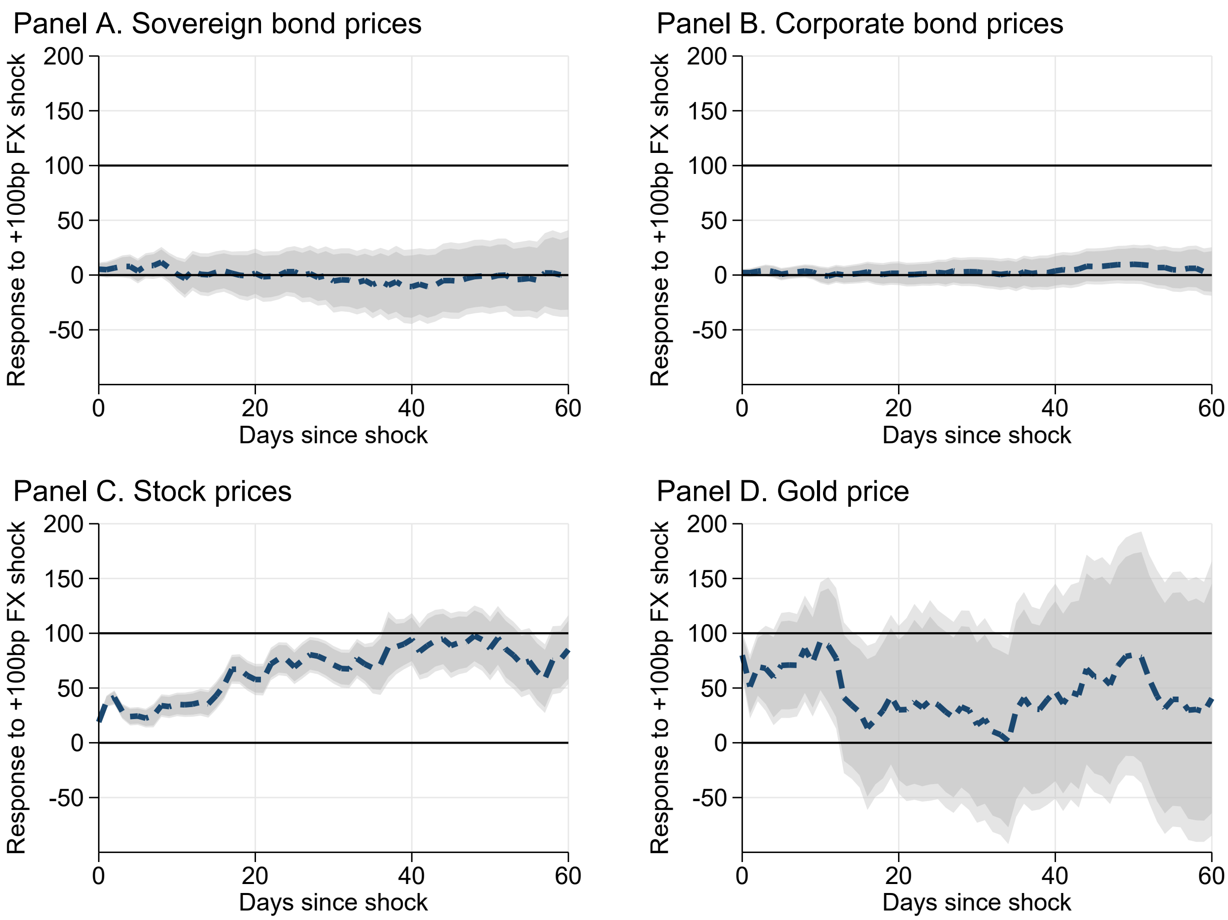
Notes: See the note of Figure 6. Omitting the shock of the Swiss franc floor introduction (in September 2011). Standard errors with 50 bootstrap replications.

Figure A22: Variance decomposition of Swiss stock returns



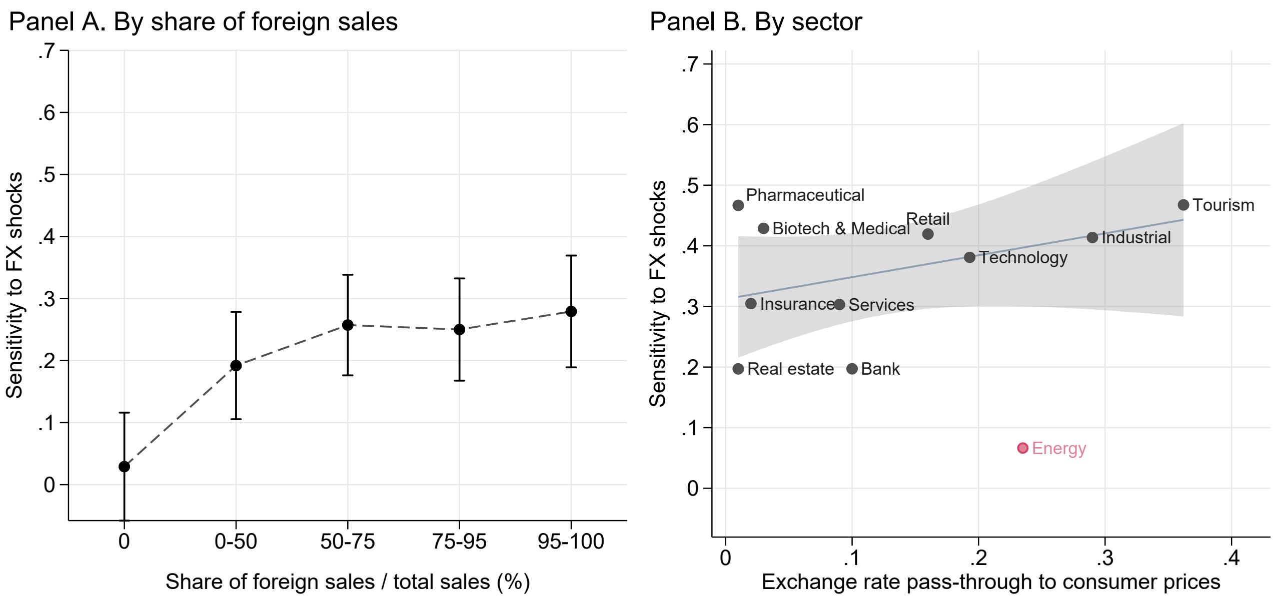
Notes: See the note of Figure 7. Omitting the shock of the Swiss franc floor introduction (in September 2011).

Figure A23: Response of domestic asset prices to a 100 bp Swiss franc depreciation.



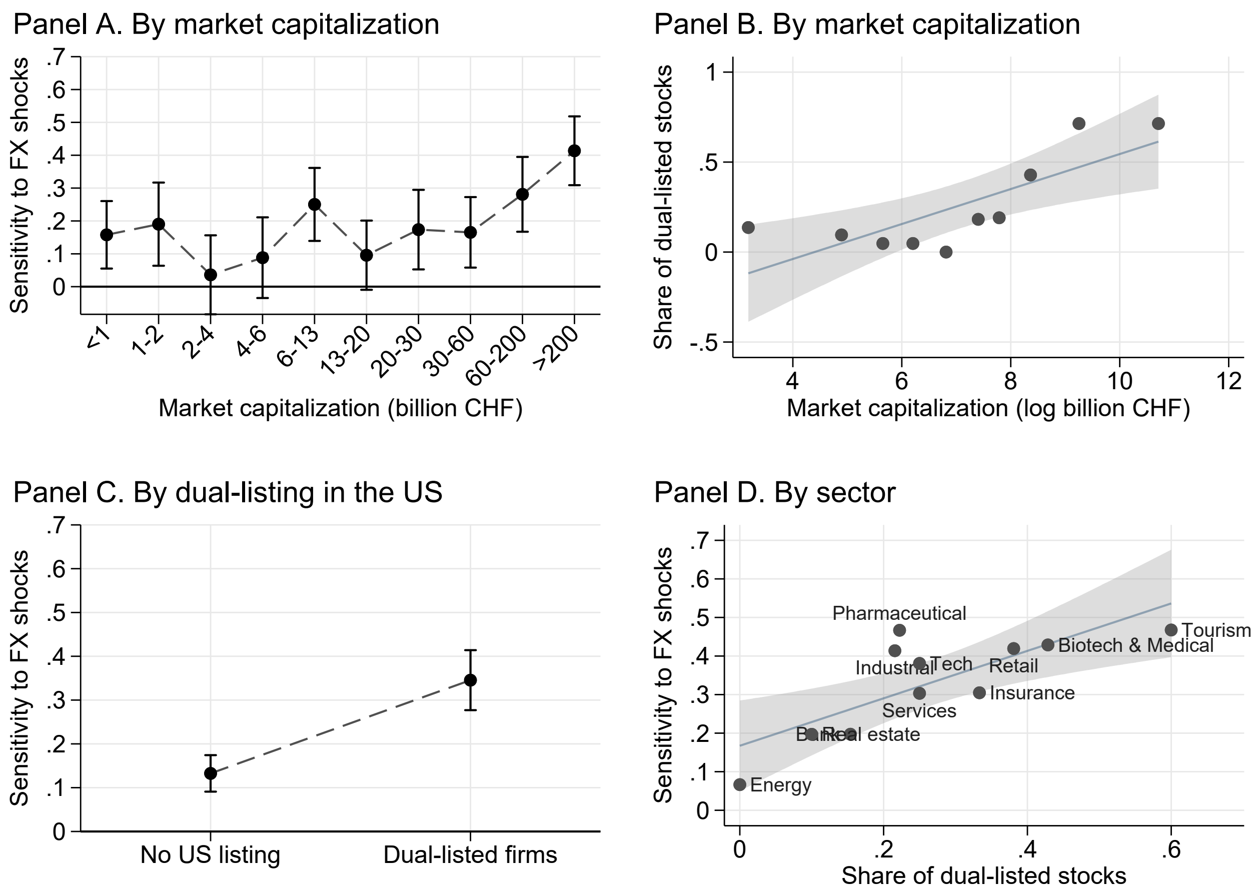
Notes: See the note of Figure 3. Omitting the shock of the Swiss franc floor introduction (in January 2015).

Figure A24: Heterogeneity in the cash flow denomination



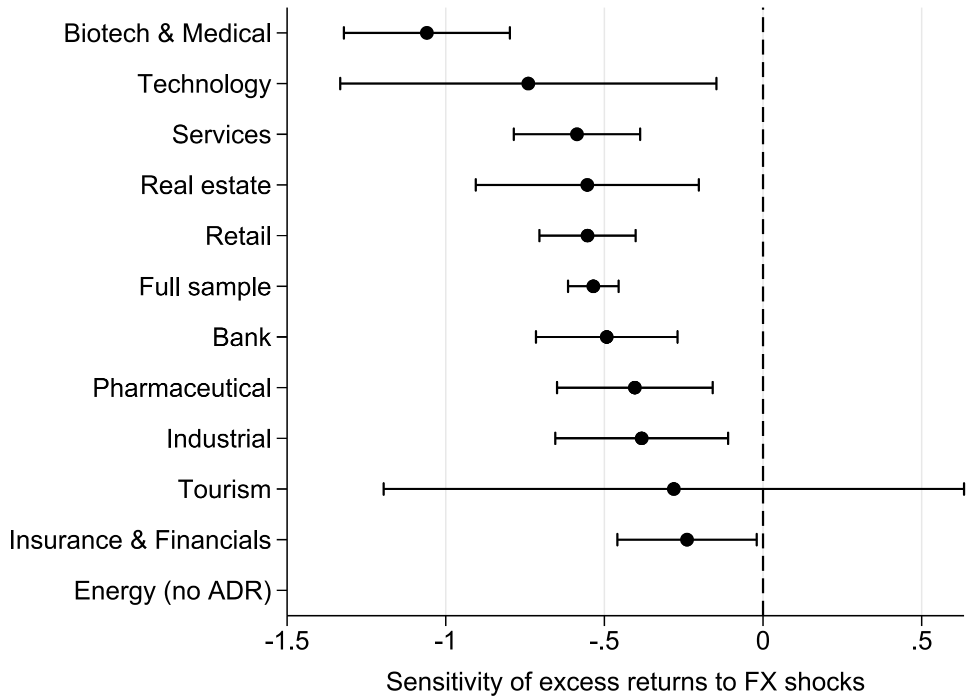
Notes: See the note of Figure 10. Omitting the shock of the Swiss franc floor introduction (in January 2015).

Figure A25: Heterogeneity of international substitution



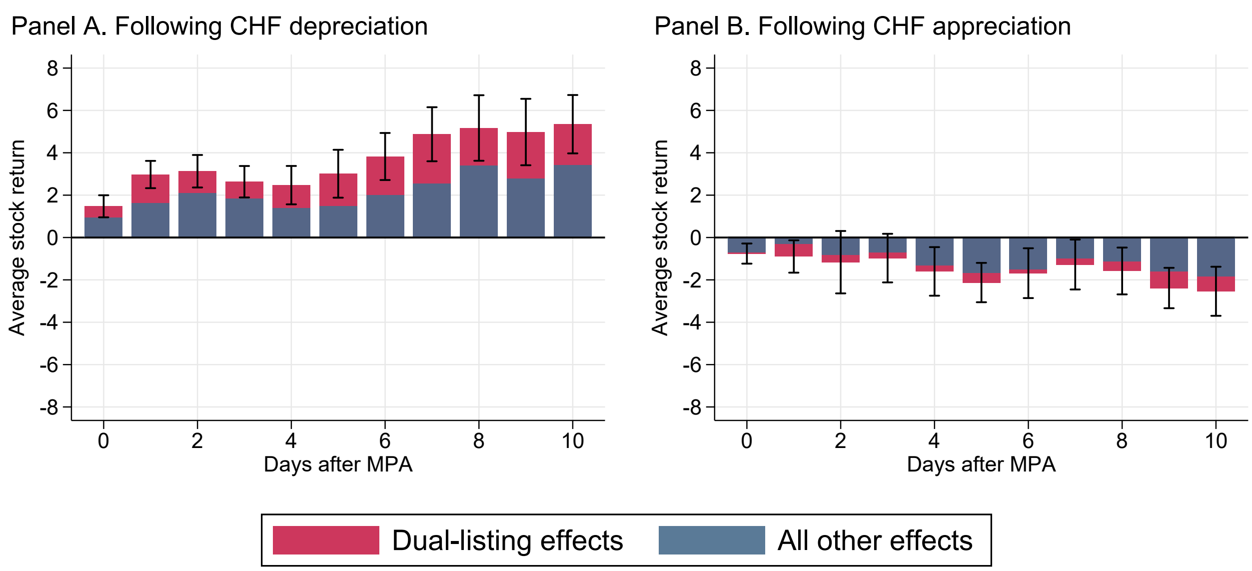
Notes: See the note of Figure 11. Omitting the shock of the Swiss franc floor introduction (in January 2015).

Figure A26: Excess returns of ADR listed in the US



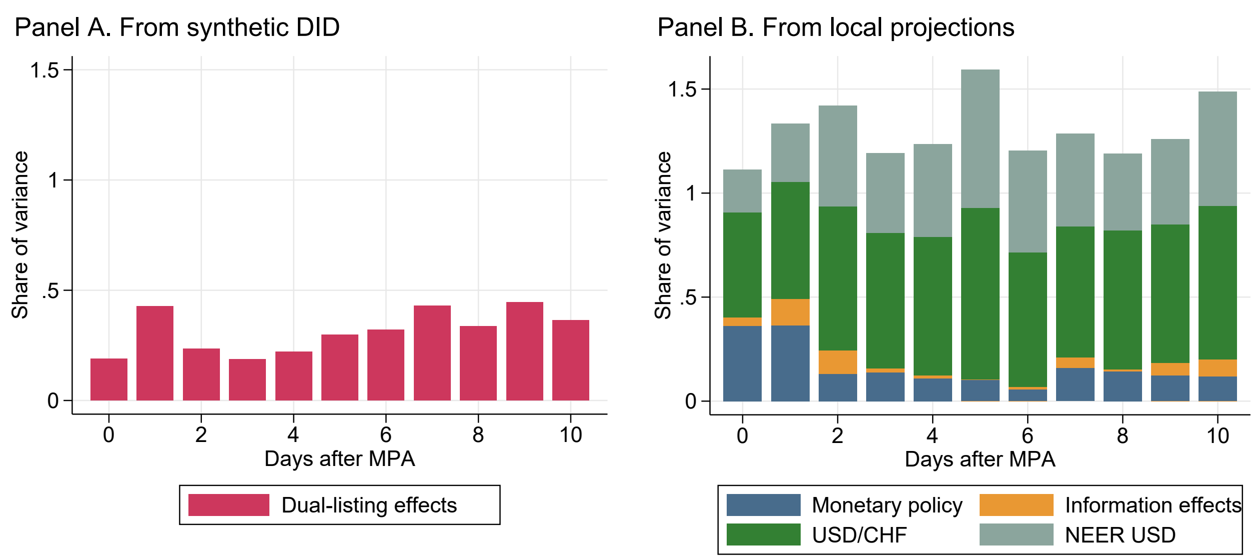
Notes: See the note of Figure 12. Omitting the shock of the Swiss franc floor introduction (in January 2015).

Figure A27: Effect of cross-listing on cumulated stock market returns



Notes: See the note of Figure 6. Omitting the shock of the Swiss franc floor introduction (in January 2015). Standard errors with 50 bootstrap replications.

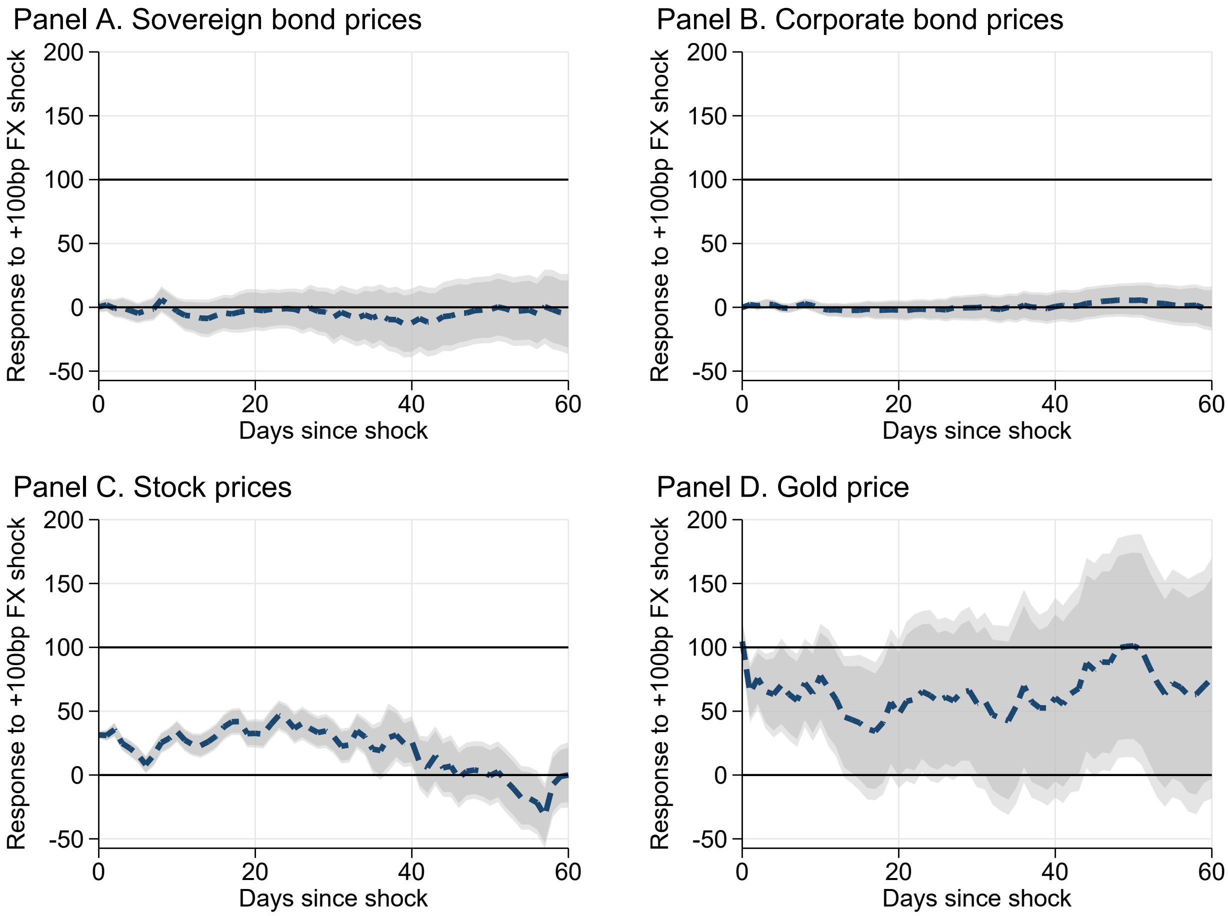
Figure A28: Variance decomposition of Swiss stock returns



Notes: See the note of Figure 7. Omitting the shock of the Swiss franc floor introduction (in January 2015).

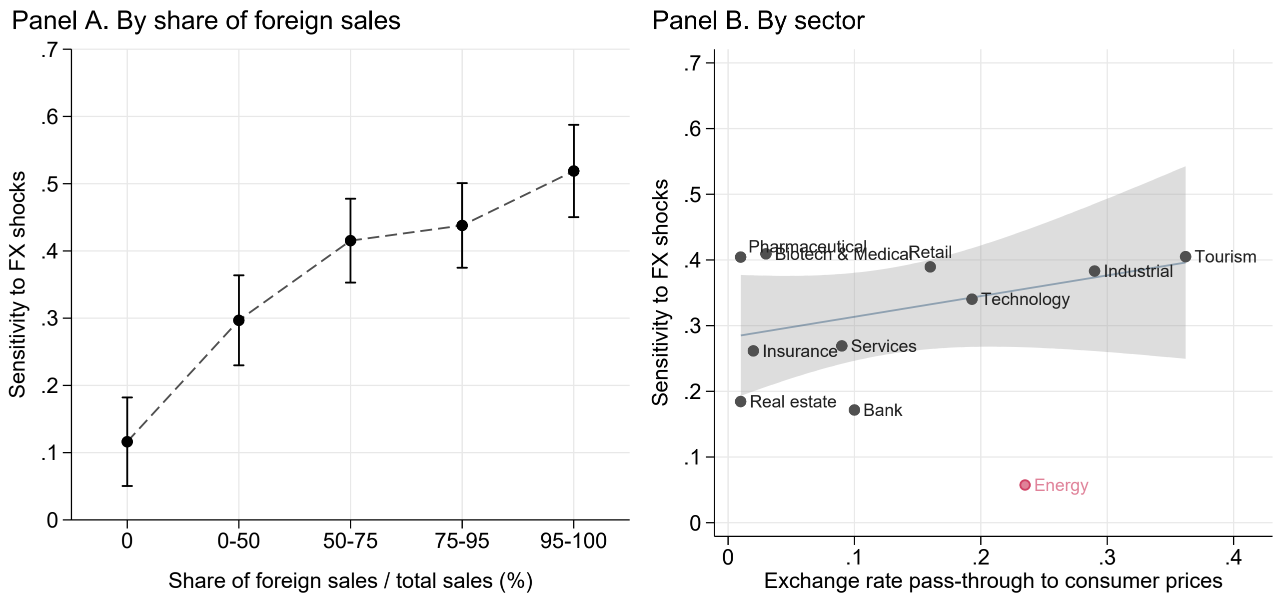
H. Robustness: Using Bu et al. (2021) monetary policy shocks

Figure A29: Response of domestic asset prices to a 100 bp Swiss franc depreciation.



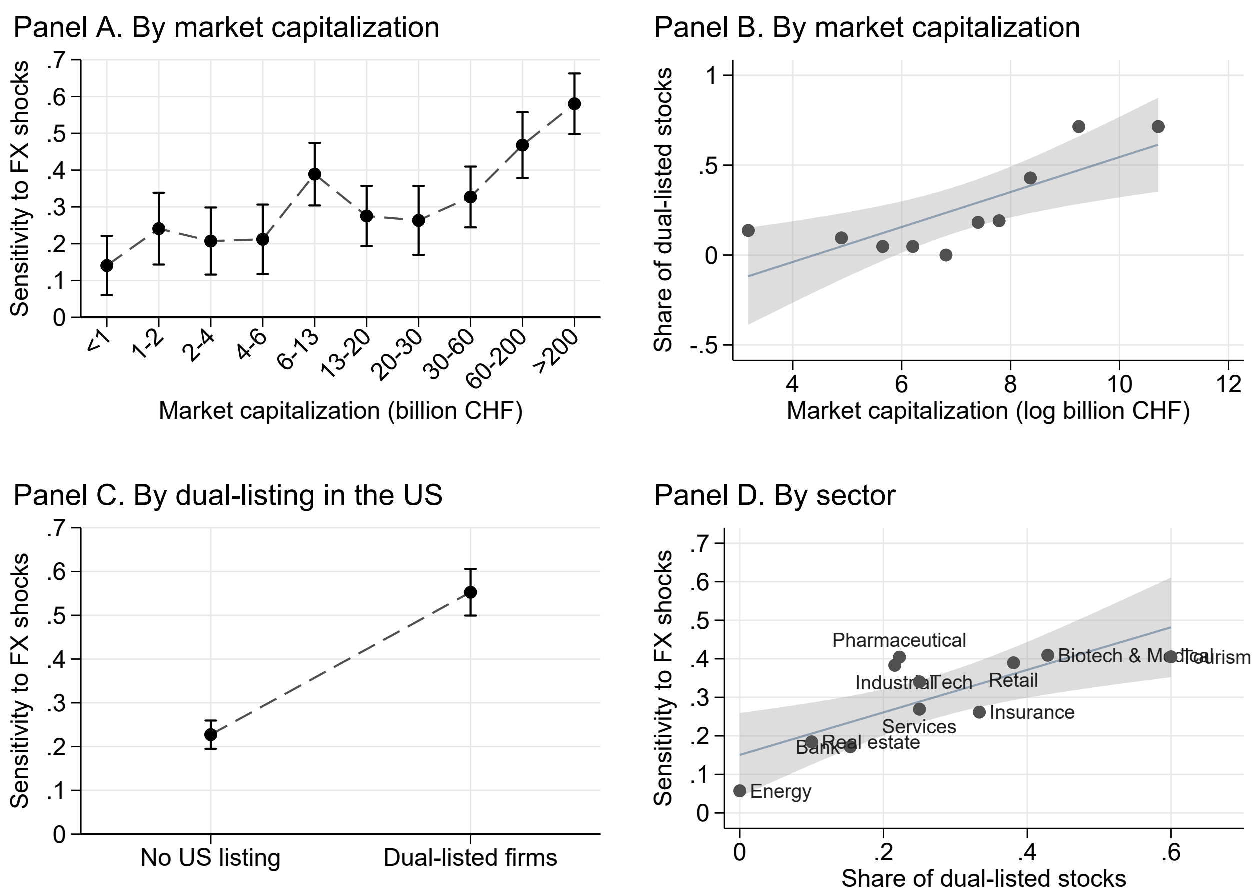
Notes: See the note of Figure 3. Replacing the monetary policy surprises of Koeniger et al. (2022) with the series of monetary policy shocks from the Bu et al. (2021) methodology to purge the shocks.

Figure A30: Heterogeneity in the cash flow denomination



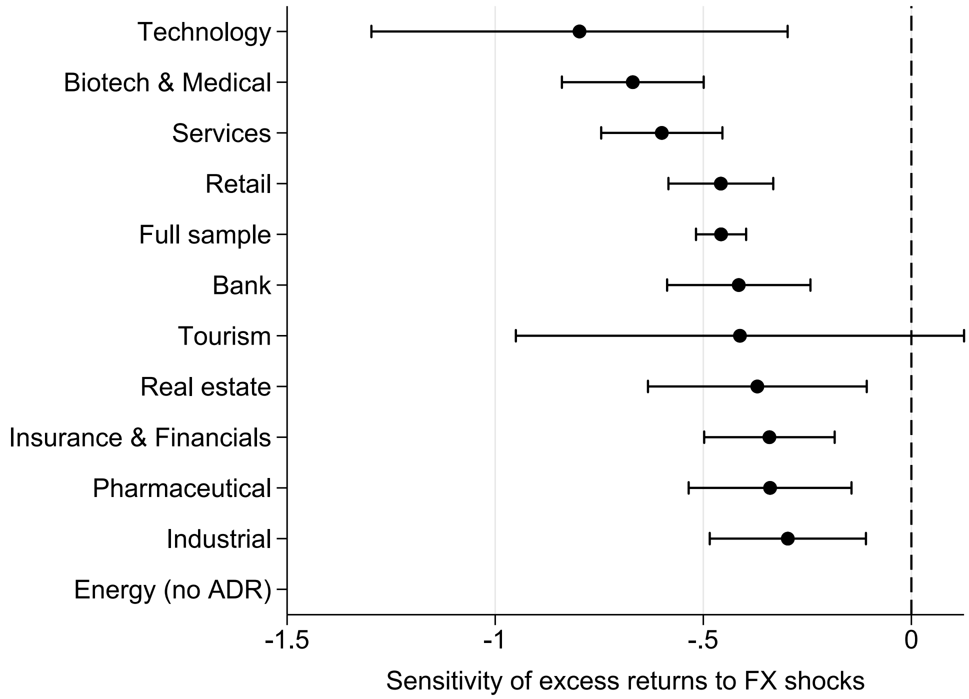
Notes: See the note of Figure 10. Replacing the monetary policy surprises of Koeniger et al. (2022) with the series of monetary policy shocks from the Bu et al. (2021) methodology to purge the shocks.

Figure A31: Heterogeneity of international substitution



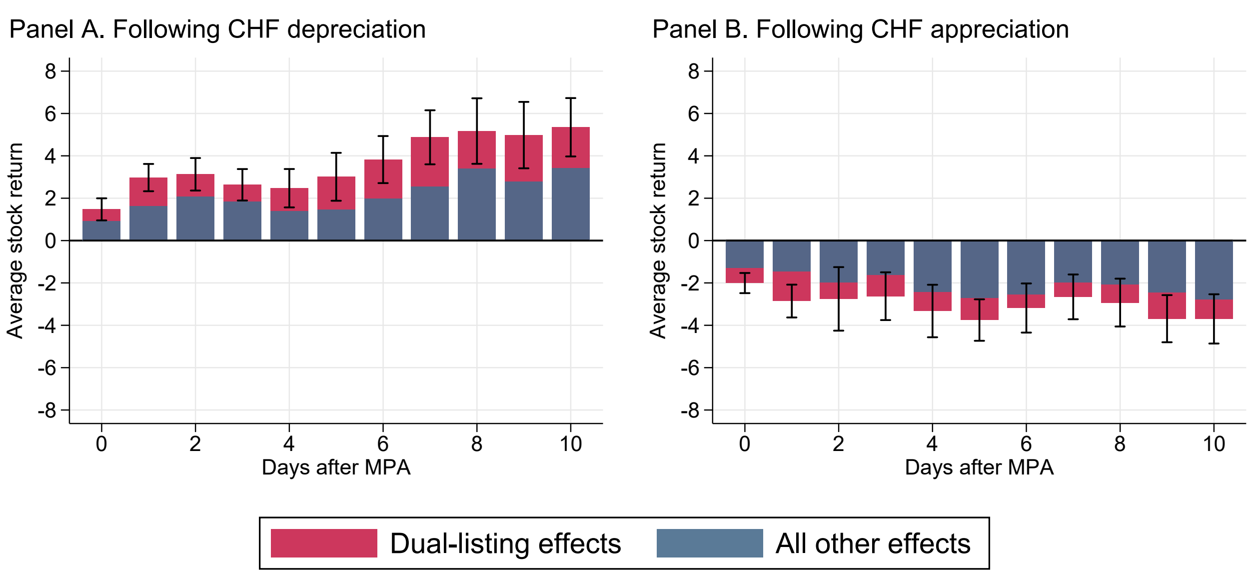
Notes: See the note of Figure 11. Replacing the monetary policy surprises of Koeniger et al. (2022) with the series of monetary policy shocks from the Bu et al. (2021) methodology to purge the shocks.

Figure A32: Excess returns of ADR listed in the US



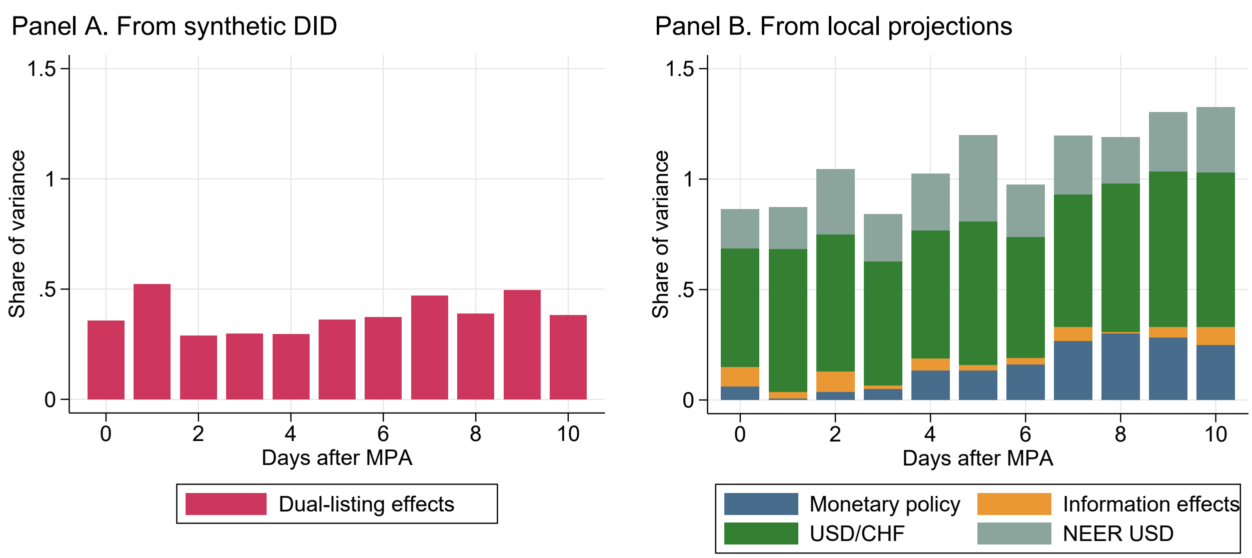
Notes: See the note of Figure 12. Replacing the monetary policy surprises of Koeniger et al. (2022) with the series of monetary policy shocks from the Bu et al. (2021) methodology to purge the shocks.

Figure A33: Effect of cross-listing on cumulated stock market returns



Notes: See the note of Figure 6. Replacing the monetary policy surprises of Koeniger et al. (2022) with the series of monetary policy shocks from the Bu et al. (2021) methodology to purge the shocks. Standard errors with 50 bootstrap replications.

Figure A34: Variance decomposition of Swiss stock returns



Notes: See the note of Figure 7. Replacing the monetary policy surprises of Koeniger et al. (2022) with the series of monetary policy shocks from the Bu et al. (2021) methodology to purge the shocks.