Essays on macroeconomic policies after the crisis

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Appendix A

Appendix to Chapter 2

A.1 Dataset Descriptive Statistics — Cross-border Portfolio Flows

Here we present some descriptive statistics of the EPFR investment fund flow database. Table A.1 reports the number, average size and share of equity as well as of exchange-traded funds by investment mandate. Global EM funds are by far the most numerous (about 67 percent of all funds). Asian and Latin American regional funds constitute another 10 percent, while, except for the BRIC countries (Brazil, Russia, India, China and South Africa), country-specific funds are relatively few. Figure A.1 shows the distribution of funds by assets. This is highly skewed to the right, with funds in the upper quartile capturing about 90 percent of all industry assets.

Table A.2 shows mean and standard deviation of fund flows and NAV changes during the different Fed's guidance regimes identified in Section 2.2.3. These statistics are reported for the entire fund sample as well as for both the bond versus equity and ETFs versus mutual funds sample splits. On average, funds recorded both the highest flows and NAV returns in the open-ended regime, while they displayed negative returns only in the normalization regime. The average ETF experienced more inflows than the average mutual fund throughout the entire sample except for the normalization period. This is confirmed also at the aggregate level. Figure A.2 depicts the evolution of total industry assets as well as the ETFs share. The latter increased more than 8 percentage points through the analysis period, from about 43 percent in March 2009 to a little over 51 percent in May 2018. The average ETF asset share was also higher than the ETF share of the total number of funds, indicating that ETFs were larger on average. The rising popularity of ETFs was much stronger among bond than equity funds (see Figures A.3 and A.4). Across the former, their share increased from less than 5 to more than 40 percent during the March 2009 to May 2018 period.

Table A.1: Number, mean size and other characteristics by investment mandate

Investment mandate	funds	Composition		Assets	
		% equity	% ETF	mean	s.d.
Africa	2	100.0	50.0	58.3	35.5
Argentina	2	100.0	100.0	47.2	63.1
Asia ex-Japan	54	88.9	25.9	639.5	1149.9
BRIC	4	100.0	75.0	419.2	301.8
Brazil	11	90.9	81.8	1028.7	2639.1
Chile	2	100.0	50.0	291.8	224.8
China	47	89.4	63.8	368.5	1173.2
Colombia	2	100.0	100.0	72.9	60.0
Egypt	1	100.0	100.0	45.1	21.2
Emerging Europe	8	100.0	25.0	187.4	195.7
Global Emerging Markets	502	71.5	15.3	933.2	3893.3
Greater China	27	100.0	/	194.5	299.5
India	22	100.0	50.0	424.4	723.1
Indonesia	3	100.0	66.7	253.3	191.1
Israel	6	100.0	50.0	54.6	43.4
Korea (South)	7	100.0	42.9	805.6	1388.5
Latin America	18	94.4	33.3	311.4	598.7
Malaysia	2	100.0	50.0	489.4	336.4
Mexico	3	100.0	33.3	778.5	850.2
Middle East & Africa	3	100.0	66.7	87.9	67.7
Middle East	2	100.0	100.0	18.4	12.1
Nigeria	1	100.0	100.0	29.7	22.4
Pakistan	1	100.0	100.0	25.0	22.0
Peru	1	100.0	100.0	277.6	135.3
Philippines	1	100.0	100.0	229.5	129.3
Poland	2	100.0	100.0	117.7	112.5
Qatar	1	100.0	100.0	44.6	7.6
Russia	10	100.0	50.0	343.2	642.5
Saudi Arabia	1	100.0	100.0	22.4	44.5
South Africa	1	100.0	100.0	478.2	96.4
Taiwan	3	100.0	33.3	1174.2	1406.4
Thailand	3	100.0	33.3	272.6	226.2
Turkey	2	100.0	50.0	275.2	229.1
United Arab Emirates	1	100.0	100.0	39.8	8.6
Vietnam	1	100.0	100.0	331.0	126.4
Total	753	79.3	25.5	745.4	3166.3

Notes: the Table reports descriptive statistics of investment funds that are legally domiciled in the U.S. and invest in emerging, frontier and other market economies (as defined by MSCI). The period considered goes from March 2009 to May 2018. The first column reports the country or region where funds invest (investment mandate). The second column reports the number of funds. The third and fourth columns report the percentage of all equity and exchange-traded-funds respectively. The fifth and sixth columns report the mean and standard deviation of funds' assets respectively (in U.S. $ million).
*Sources:* EPFR and own calculations.

Table A.2: Flows and NAV returns during different Fed's guidance regimes

			(A)		(B)		(C)		(D)	
			m.	s.d.	m.	s.d.	m.	s.d.	m.	s.d.
All funds	equity & bond	% flow	0.5	3.3	0.3	3.1	0.1	3.1	0.1	2.9
		% nav	0.5	3.3	0.1	3.1	-0.1	2.6	0.3	2.2
	equity	% flow	0.4	3.2	0.2	3.1	0.1	3.2	0.1	2.9
		% nav	0.5	3.5	0.1	3.4	-0.1	2.9	0.3	2.5
	bond	% flow	1.0	3.6	0.7	3.3	-0.1	2.9	0.1	2.8
		% nav	0.3	1.1	0.1	1.0	-0.1	1.1	0.1	0.9
Mutual funds	equity & bond	% flow	0.3	2.7	0.2	2.9	0.1	2.8	0.0	2.6
		% nav	0.5	3.1	0.1	2.8	-0.1	2.1	0.2	1.8
	equity	% flow	0.2	2.5	0.1	2.8	0.1	2.8	0.0	2.6
		% nav	0.5	3.4	0.1	3.1	-0.1	2.4	0.3	2.1
	bond	% flow	0.8	3.5	0.6	3.1	-0.1	2.8	0.0	2.6
		% nav	0.3	1.2	0.1	1.1	-0.1	1.1	0.1	0.9
ETFs	equity & bond	% flow	1.0	4.6	0.3	3.8	0.1	3.9	0.3	3.5
		% nav	0.4	3.7	0.0	3.9	-0.1	3.6	0.3	3.0
	equity	% flow	0.9	4.6	0.3	3.7	0.1	3.9	0.3	3.5
		% nav	0.4	3.8	0.0	4.1	-0.2	3.8	0.3	3.2
	bond	% flow	2.4	4.1	1.2	4.2	-0.1	3.4	0.3	3.6
		% nav	0.3	0.9	0.1	0.9	-0.1	1.0	0.1	0.9

Notes: the Table reports the mean (m.) and standard deviation (s.d.) of weekly flows and net asset value changes, both measured in percent of beginning of period assets. Descriptive statistics are reported for different categories of funds (either exchange-traded funds (ETFs), mutual funds) and different investment focus (equity or bond). All the investment funds considered are legally domiciled in the U.S. and that invest in emerging, frontier and other market economies (as defined by MSCI). Columns denoted by "(A)", "(B)", "(C)", and "(D)" report statistics for different Fed's guidance regimes: respectively the open-ended (March/18/2009 to August/8/2011), calendar-based (August/9/2011 to May/22/2013), normalization (May/23/2013 to December/12/2015) and post-liftoff (December/13/2015 to May/30/2018).
*Sources:* EPFR and own calculations.

Figure A.1: Mean asset distribution
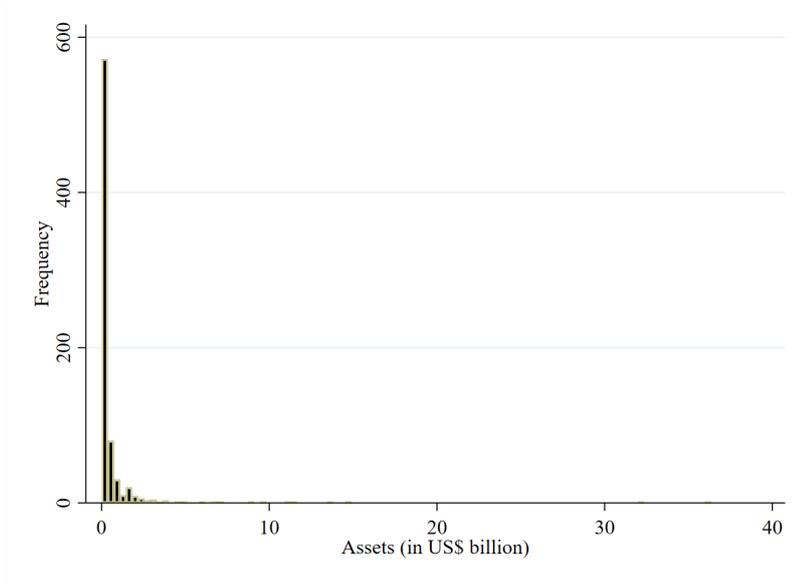
Notes: the Figure shows the distribution of funds by the average $ amount of assets held during the period March 2009 to May 2018. The funds considered are legally domiciled in the U.S. and invest in emerging, frontier and other market economies (as classified by MSCI).
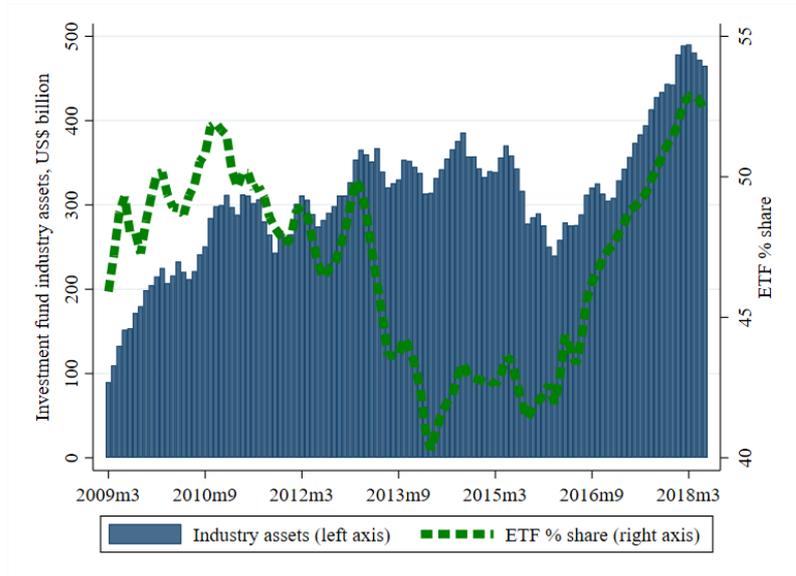*Sources:* EPFR and own calculations

**Figure A.2: Total industry assets and ETF share -
March 2009 to May 2018**
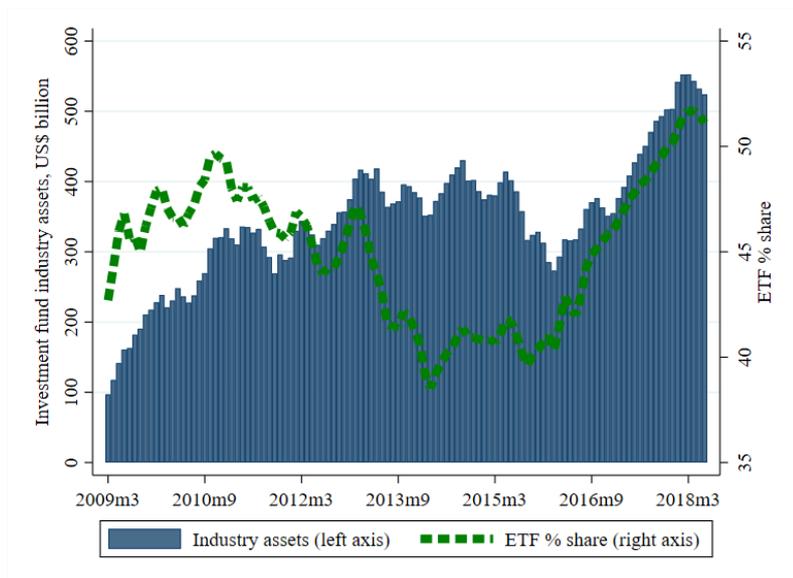
Notes: the Figure depicts the amount of assets held by all funds domiciled in the U.S. and investing in emerging, frontier and other market economies (as classified by MSCI), as well as the respective share of exchange-traded funds.
Sources: EPFR and own calculations

Figure A.3: Total industry equity assets and ETF share - March 2009 to May 2018

Notes: the Figure depicts the amount of equity assets held by all funds domiciled in the U.S. and investing in emerging, frontier and other market economies (as classified by MSCI), as well as the respective share of exchange-traded funds.
Sources: EPFR and own calculations.

Figure A.4: Total industry bond assets and ETF share - March 2009 to May 2018

Notes: the Figure depicts the amount of bond assets held by all funds domiciled in the U.S. and investing in emerging, frontier and other market economies (as classified by MSCI), as well as the respective share of exchange-traded funds.
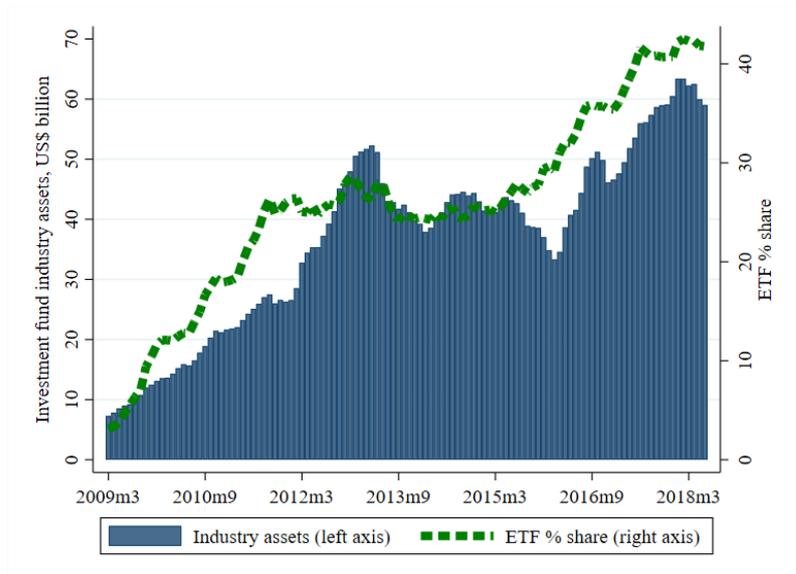*Sources:* EPFR and own calculations.

A.2 Dataset Descriptive Statistics — Macro News

Table A.3: Macroeconomic news

		m.	s.d	min	max	source
US	Non-farm payroll	-2.5	62.4	-123.0	175.0	Bloomberg
	Core CPI (MoM %)	0.0	0.1	-0.3	0.1	Datastream
	Unemployment rate	0.0	0.1	-0.5	0.3	Boomberg
	Retail sales	0.0	0.4	-1.5	1.8	Datastream
	ISM pmi index	0.4	1.7	-4.7	3.5	Datastream
U.K.	Markit pmi	0.3	1.8	-3.8	4.3	Investing
	Policy rate	0.0	0.0	0.0	0.3	Boomberg
	Jobless claims change	-3.8	13.5	-42.9	53.7	Boomberg
	GPD (YoY %)	-0.1	0.2	-0.6	0.4	Boomberg
Japan	Retail trade	0.1	1.1	-2.6	2.8	Boomberg
	Industrial production	-0.4	1.4	-4.7	3.8	Boomberg
	CPI (YoY %)	0.0	0.1	-0.2	0.3	Boomberg
	Jobless rate	0.0	0.2	-0.5	0.3	Boomberg
Germany	Markit pmi	0.1	0.5	-1.1	3.1	Investing
	Unemployment change	-5.1	17.2	-62.5	38.9	Boomberg
	Ifo business climate	0.3	1.1	-2.5	4.7	Boomberg
	Zew current situation	1.3	6.5	-31.5	20.3	Boomberg
	Zew expectations	0.3	7.4	-19.2	27.8	Boomberg
Eurozone	GPD (YoY %)	0.0	0.1	-0.2	0.2	Boomberg
	CPI (YoY %)	0.0	0.0	-0.1	0.1	Boomberg
	Consumer confidence	0.0	0.9	-4.1	5.0	Boomberg
	Markit pmi	0.0	0.2	-0.7	0.5	Investing

Notes: the Table reports descriptive statistics of macroeconomic announcement used for the analysis. The leftmost column reports the country or currency union concerned. The second leftmost column lists the name of the announcements. Column denoted by "m." reports the mean surprise (with a surprise being defined as the difference between the actual release and median forecast). Column denoted by "s.d." reports the surprise standard deviation. Columns denoted by "min" and "max" report the minimum and maximum values of the surprise. All statistics refer to the period March 2009 to May 2018. Column "source" reports the source from which data on actual release and news forecast are taken.
*Sources:* Bloomberg, Datastream, Investing.com and own calculations.

**Figure A.5: U.S. non-farm payroll employment change
and average hourly earnings growth - 2001 to 2018**
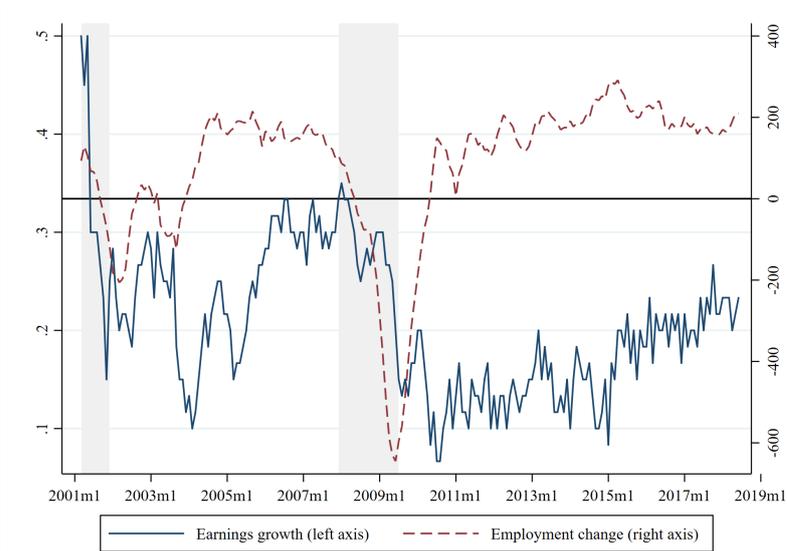
Notes: The Figure shows the net change in payroll employment and average hourly earnings growth in the U.S. over the period March 2011 to May 2018. The left (right) y-axis measures earnings growth (employment change). The x-axis reports dates. Shaded areas are periods of recessions as defined by the National Bureau of Economic Research.
Sources: Bloomberg, Datastream and National Bureau of Economic Research.

**Figure A.6: Non-farm payroll surprise series -
March/2009 to May/2018**
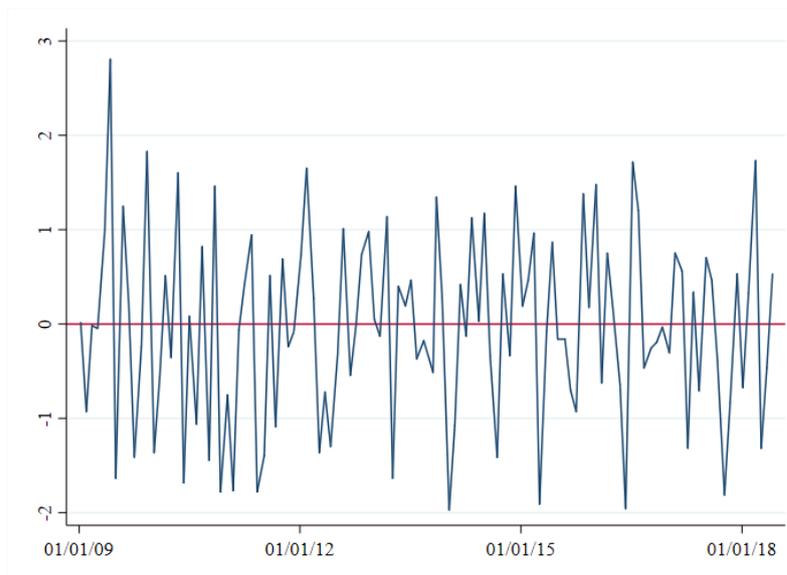
Notes: the Figure shows the standardized non-farm payroll surprise series. A surprise is defined as the difference between a macroeconomic news actual release and the median of analysts' forecast. To obtain a standardized measure, the surprise is divided by its standard deviation.
Sources: Bloomberg and own calculations.

A.3 Robustness Checks and Other Extensions on the Baseline Analysis

In this appendix we verify the robustness of the baseline results (those reported in Figure 2.2) to some alternative specifications. First, we check that our findings are not driven by NFP release outliers. We do so by re-estimating Equation 2.2 constraining the sample so as to exclude all observations associated with a specific NFP release. We repeat this process for each release and show the resulting estimates in Figure A.7, using as confidence bands those of the baseline analysis. Particularly for the calendar-based and normalization regimes, all IRFs obtained in this way are clustered around the baseline response and always fall within the original confidence bands, thus indicating that the results are not driven by outliers.

Second, we check that our findings do not depend on the way in which the NFP series is constructed. Results in Figure 2.2 are obtained weighting equally all releases. However, Pericoli and Veronese, 2015 show that macroeconomic announcements have smaller effects in instances in which forecaster disagreement is higher. We then construct two additional series. In the first one, observations below (above) the 25th (75th) percentile of the distribution of forecaster disagreement (measured by the forecast standard deviation) receive a weight equal to 1.5 (0.5), while all other observations have unit weight. In the second one, we give weight equal to 0.5 to observations above the 66th percentile (the same threshold used in Pericoli and Veronese, 2015), and weight equal to 1 to all the others.

These robustness check estimates are shown in Table A.4. The new IRFs are very similar to the baseline. The most notable differences occur when using the first alternative variable and, as expected due to the higher economic uncertainty, during the open-ended guidance period. The 4-week cumulated effect is estimated to be similar to that observed for the normalization period, and statistically different from 0. The new coefficients are also significant for the post-liftoff regime (at impact and in the second week after the release), but much smaller in absolute value. This exercise confirms the robustness of the baseline results and further indicates that the open-ended period was more similar to the normalization than the calendar-based guidance regime.

Next, we use alternative data sourced from the Institute of Internal Finance (IIF) to measure capital flows. The advantage of this database is that it covers all types of cross-border portfolio capital flows, as opposed to only those happening through allocations in investment funds. However, recipient countries are just a few EMs and countries of origin are not confined to the U.S. The other main limitation is that flows cannot be normalized to some reference value and are thus expressed in \$. Bearing in mind these differences, we again rely on the local projection method and

estimate the following specification:

$$\sum_{j=0}^{k} f_{t+j} = \sum_{r=1}^{4} \left(\alpha_k^r d_t^r + \kappa_k^r d_t^r x_t \right) + \sum_{l=1}^{12} \varphi_k^l f_{i,t-l} + \varepsilon_t \qquad (A.1)$$

where in this case f_t are net portfolio capital flows at week t; V_t is a vector containing twelve lagged values of f_t; and the rest of the notation follows from that of Equation 2.2.

The estimation is carried out through OLS. Standard errors are heteroskedasticity (white) robust. IRFs are shown in Figure A.8. The results are qualitatively very similar to the baseline analysis. This is especially true for the calendar-based and normalization guidance regimes. For the former period, the estimated 4-week cumulated response to a one standard deviation NFP surprise is equal to about $4 billion. For the normalization guidance regime, the response is smaller in absolute value and significant only 1 and 2 weeks after the release. However, considering that IIF data measure global flows, as opposed to flows stemming from the U.S., these results are in line with the baseline and suggest that fund flow data can be used as a relatively good proxy for overall net cross-border portfolio flows.

We also verify that the results do not depend on the particular date chosen to distinguish between the calendar-based and normalization guidance regimes. For the baseline, we used as cutoff the day in which Bernanke first hinted at the possibility of scaling down QE during his famous taper tantrum speech (May/22/2013). As alternatives, we employ the days in which (i) the FOMC switched between calendar- and threshold-based guidances (December/12/2012), and (ii) it officially announced the reduction of QE (December/8/2013).[1] The results are shown in Table A.5 in Appendix A.3 and are similar to the baseline. If anything, when relying on alternative (i), the estimated sensitivity for the calendar-based regime is about 25 percent larger. This highlights that portfolio capital flows behaved in a very peculiar way (relative to the other periods) exactly when the FOMC explicitly signaled low rates for a 2-to-3-year period, in what was the quintessence of time-based guidance.

We also show that the non-linear response of flows to macroeconomic announcements are not confined to employment news. We consider another major macroeconomic release, namely the monthly growth in retail sales and estimate Equation 2.2 using this instead of the NFP. Results are shown in Figure A.9. The responses for the open-ended, calendar-based and normalization guidance regimes are in line with those observed for NFP announcements. Furthermore, positive retail sales releases also induced outflows during the post-liftoff regime. This can be reconciled noticing a shift in the Fed's guidance happened after raising rates for the first time. The U.S. economic recovery in the post-GFC period was characterized by solid job growth but

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[1] For a review of the different forward guidance statements refer to Section 2.2.2.

stagnant wages, the latter being in contrast to previous historical episodes.[2] In this context, the FOMC signaled that its focus was shifting from employment to inflation (see Table 2.1 for the exact statement). This might have diminished the importance attached to employment data by market participants, while leaving unaffected that of retail sales, which is an indicator of consumer spending and thus a potential signal of inflationary pressures.

Among the existing literature, the paper by Fratzscher, 2012 is the only other one analyzing the sensitivity of capital flows to U.S. macroeconomic announcements.[3] This author focuses on the November 2005 to October 2010 period and also estimates coefficients of opposite sign, positive for the GFC period (August/2007 to March/2009) and negative for the rest of the sample. Fratzscher, 2012 explains this non-linearity arguing that in crisis times negative U.S. news reduce investors' risk tolerance and cause a flight-to-safety reaction, with capital fleeing EMs.

Although unlikely, since the August/2011 to May/2013 period does not coincide with a financial crisis in the U.S., we check whether the dynamic described above can also explain our results. If flight-to-safety behaviors indeed mattered, then negative surprises should be driving the result. We twist Equation 2.2 to allow for non-linear effects depending on the sign of the surprise by interacting the NFP series (x_t) with two dummy variables (d_t^p and d_t^n) for positive and negative surprises, and estimate the relevant coefficients.

The new IRFs are reported in Table A.6. A * indicates that positive and negative surprises are estimated to have statistically different effects. During the calendar-based regime (Column B) the impact response of flows is significantly stronger for positive than negative surprises. The latter have almost null effects, confirming the unsuitability of flight-to-safety explanations. On the other hand, estimates reported in Column C of Table A.6 (Appendix A.3) show that the response of fund flows to positive and negative surprises had roughly the same effects, which suggests that the dynamics just described also worked in reverse. That is, negative surprises delayed the expected timing of normalization, thus leading to positive inflows. In this sense, investors perceived the Federal Reserve to be 'data-dependent'. This interpretation is also consistent with the frequent references by the FOMC to labor market conditions as a crucial factor to decide the timing of normalization (see the discussion in Section 2.2.2).

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[2]   See Blanchard, Cerutti, and Summers, 2015 and Blanchard, 2016 for a discussion of the Phillips curve relationship in recent decades and refer to Figure A.5 in Appendix A.2 for a visual representation of employment changes and earnings growth in the 2001-2018 period).

[3]   Differently from the current analysis, Fratzscher, 2012 does not focus only on NFP announcements but rather constructs a variable made of a weighted average of major U.S. releases. Instead of fund-level data he uses data aggregated at the country level. Finally, he studies flows to EMs stemming from all funds, as opposed to those only domiciled in the US.

Table A.4: Employment surprise variable

		(A)	(B)	(C)	(D)
1-week	Equal weights (baseline)	0.03	**0.12**	**-0.09**	-0.03
	High/low weigth for low/high disag.	0.00	**0.12**	**-0.08**	**-0.04**
	Low weigth for high disag.	0.03	**0.14**	**-0.08**	**-0.04**
2-week	Equal weights (baseline)	0.00	**0.22**	**-0.13**	-0.03
	High/low weigth for low/high disag.	-0.05	**0.20**	**-0.12**	-0.04
	Low weigth for high disag.	-0.03	**0.23**	**-0.13**	-0.04
3-week	Equal weights (baseline)	**-0.10**	0.35	**-0.19**	**-0.07**
	High/low weigth for low/high disag.	**-0.20**	0.32	**-0.16**	**-0.08**
	Low weigth for high disag.	**-0.16**	0.41	**-0.19**	-0.08
4-week	Equal weights (baseline)	-0.09	**0.44**	**-0.18**	-0.06
	High/low weigth for low/high disag.	**-0.20**	0.38	**-0.15**	-0.07
	Low weigth for high disag.	-0.12	**0.49**	**-0.18**	-0.07

Notes: the Table shows results from a robustness check on the baseline analysis regarding the treatment of forecaster uncertainty in the construction of the non-farm payroll surprise variable. The numbers report the estimated responses of allocations into investment funds to a one standard deviation surprise in the U.S. non-farm payroll data release. The funds considered are legally domiciled in the U.S. and invest in emerging, frontier and other market economies (as defined by MSCI). Sensitivities are measured in percentage of beginning of period assets. Estimates are obtained from Equation 2.2. The leftmost column reports the horizon considered (k). The second leftmost column indicates the NFP variable that is used. "Equal weights" indicates that each NFP release is given equal weight. "High/low weight for low/high disag." indicates that observations for which forecaster disagreement is below (above) the 25th (75th) percentile of its distribution are given weight equal to 1.5 (0.5), and observations in between these threshold are given weight equal to 1. "Low weight for high disag." indicates that observations for which forecaster disagreement is above the 66th percentile of its distribution are given weight equal to 0.5 (all the others have weight 1). Columns denoted by (A), (B), (C), and (D) report estimates for different Fed's guidance regimes: respectively the open-ended (March/18/2009 to August/8/2011), calendar-based (August/9/2011 to May/22/2013), normalization (May/23/2013 to December/12/2015) and post-liftoff (December/13/2015 to May/30/2018). Bold numbers indicate statistical significance at the 90 percent confidence level, based on clustered standard errors (at the fund-level).
Sources: Bloomberg, Datastream, EPFR and own calculations.

Table A.5: Cutoff date used to distinguish between the calendar-based and normalization guidance periods

		(A)	(B)	(C)	(D)
1-week	Taper tantrum (baseline)	0.03	**0.12**	**-0.09**	-0.03
	Start of tapering	0.03	0.04	**-0.06**	-0.03
	Threshold-based guidance	0.03	**0.16**	**-0.07**	-0.03
2-week	Taper tantrum (baseline)	0.00	**0.22**	**-0.13**	-0.03
	Start of tapering	0.00	**0.11**	**-0.12**	-0.03
	Threshold-based guidance	0.00	**0.26**	**-0.11**	-0.03
3-week	Taper tantrum (baseline)	**-0.10**	0.35	**-0.19**	**-0.07**
	Start of tapering	**-0.10**	0.20	**-0.18**	**-0.07**
	Threshold-based guidance	**-0.10**	0.44	**-0.16**	**-0.07**
4-week	Taper tantrum (baseline)	-0.09	**0.44**	**-0.18**	-0.06
	Start of tapering	-0.09	**0.30**	**-0.19**	-0.06
	Threshold-based guidance	-0.09	**0.57**	**-0.15**	-0.06

Notes: the Table shows results from a robustness check on the baseline analysis regarding the cutoff date chosen to distinguish between the Fed's calendar-based and normalization guidance regimes. The numbers report the estimated responses of allocations into investment funds to a one standard deviation surprise in the U.S. non-farm payroll data release. The funds considered are legally domiciled in the U.S. and invest in emerging, frontier and other market economies (as defined by MSCI). Sensitivities are measured in percentage of beginning of period assets. Estimates are obtained from Equation 2.2. The leftmost column reports the horizon considered (k). The second leftmost column denotes the chosen cutoff date to distinguish between the calendar-based and normalization guidance. The wording "Taper tantrum (baseline)" denotes to estimates obtained using the day of Bernanke's taper tantrum (May/22/2013). The wording "Official start of tapering" denotes to estimates obtained using the day in which the FOMC announced the reduction in the monthly amount of asset purchases under the third round of QE (December/18/2013). The wording "Threshold-based guidance" denotes to estimates obtained using the day in which the FOMC switched from calendar-based to threshold-based forward guidance (December/12/2012). Columns denoted by (A), (B), (C), and (D) report estimates for different Fed's guidance regimes: respectively the open-ended (March/18/2009 to August/8/2011), calendar-based (August/9/2011 to May/22/2013), normalization (May/23/2013 to December/12/2015) and post-liftoff (December/13/2015 to May/30/2018). Bold numbers indicate statistical significance at the 90 percent confidence level, based on clustered standard errors (at the fund-level).
Sources: Bloomberg, EPFR and own calculations.

Table A.6: Positive and negative surprises

|		(A)	(B)	(C)	(D)
1-week	All surprises (baseline)	0.03	**0.12**	**-0.09**	-0.03
	Positive surprises	0.07	**0.24***	**-0.12**	0.03*
	Negative surprises	-0.01	0.01*	-0.06	**-0.09***
2-week	All surprises (baseline)	0.00	**0.21**	**-0.14**	-0.03
	Positive surprises	0.02	**0.25**	**-0.17**	0.02
	Negative surprises	-0.01	**0.18**	**-0.11**	-0.07
3-week	All surprises (baseline)	-0.09	**0.35**	**-0.19**	-0.07
	Positive surprises	**-0.2**	**0.38**	**-0.23**	0.00*
	Negative surprises	-0.02	**0.32**	**-0.16**	**-0.15***
4-week	All surprises (baseline)	-0.10	**0.44**	**-0.18**	-0.06
	Positive surprises	**-0.33***	**0.44**	**-0.20**	0.02*
	Negative surprises	0.09	**0.44**	**-0.18**	**-0.14***

Notes: the Table shows results from an extension on the baseline analysis regarding the effects of positive and negative surprises. The numbers report the estimated responses of allocations into investment funds to U.S. non-farm payroll data release. The funds considered are legally domiciled in the U.S. and invest in emerging, frontier and other market economies (as defined by MSCI). Sensitivities are measured in percentage of beginning of period assets. The leftmost column reports the horizon considered (k). The second leftmost column denotes the chosen cutoff date to distinguish between the calendar-based and normalization guidance. The second leftmost column denotes the type of the surprise. The wording "All surprises (baseline)" refers to the β_k^r coefficients estimated from Equation 2.2. The wordings "Positive surprises" and "Negative surprises" refer to the $\hat{\beta}_k^{p,r}$ and $\hat{\beta}_k^{n,r}$ coefficients estimated from the following regression: $100 * \frac{\sum_{j=0}^{k} f_{i,t+j}}{a_{i,t}} = \sum_{r=1}^{4} \left(\beta_k^{p,r} d_t^r d_t^p news_t + \beta_k^{n,r} d_t^r d_t^n news_t \right) + A_k D_t + B_k Z_{i,t} + \gamma_i + \varepsilon_{i,t}$, where d_t^p (d_t^n) is a dummy variable taking value 1 for positive (negative) NFP surprises and 0 otherwise, and the rest of the notation is as in Equation 2.2. A * indicates that the $\hat{\beta}_k^{p,r}$ and $\hat{\beta}_k^{n,r}$ coefficients are statistically different from each other at the 90 percent confidence level (from a Wald test). Columns denoted by (A), (B), (C), and (D) report estimates for different Fed's guidance regimes: respectively the open-ended (March/18/2009 to August/8/2011), calendar-based (August/9/2011 to May/22/2013), normalization (May/23/2013 to December/12/2015) and post-liftoff (December/13/2015 to May/30/2018). Bold numbers indicate statistical significance at the 90 percent confidence level, based on clustered standard errors (at the fund-level).
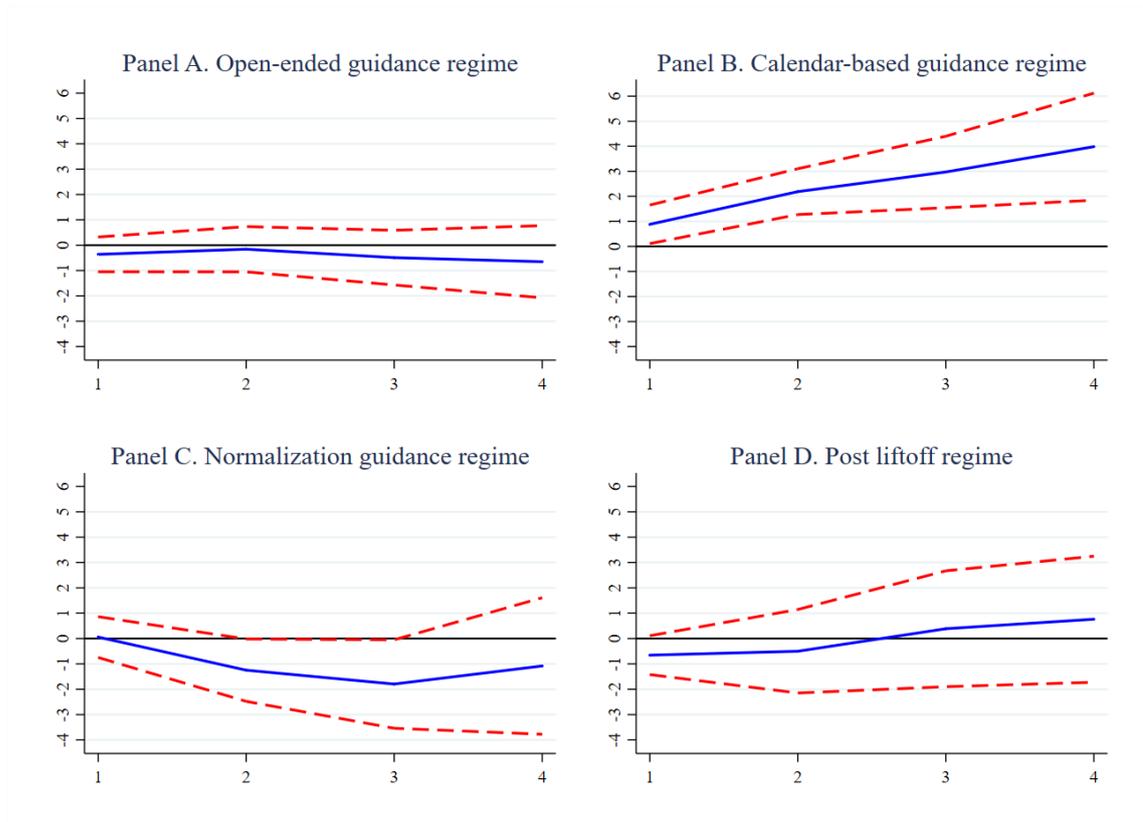*Sources:* Bloomberg, EPFR and own calculations.
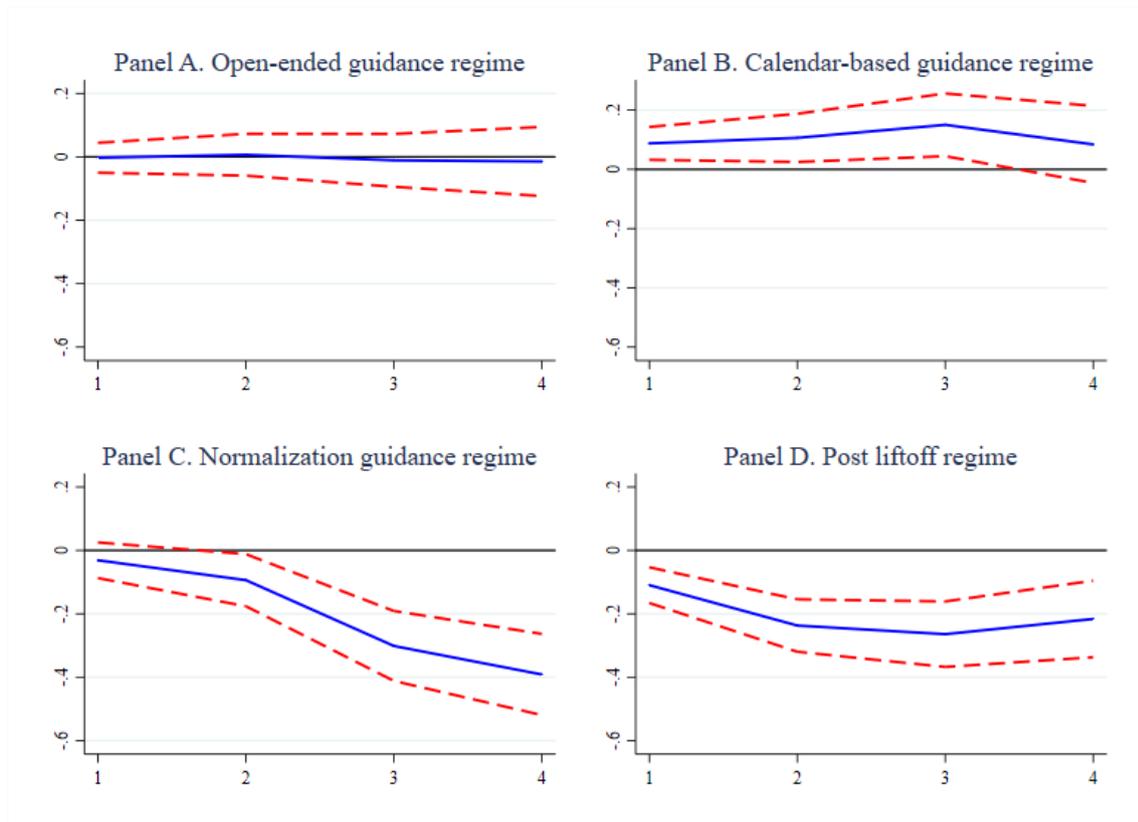
Figure A.7: Surprise outliers

Figure A.8: Variable used to measure capital flows
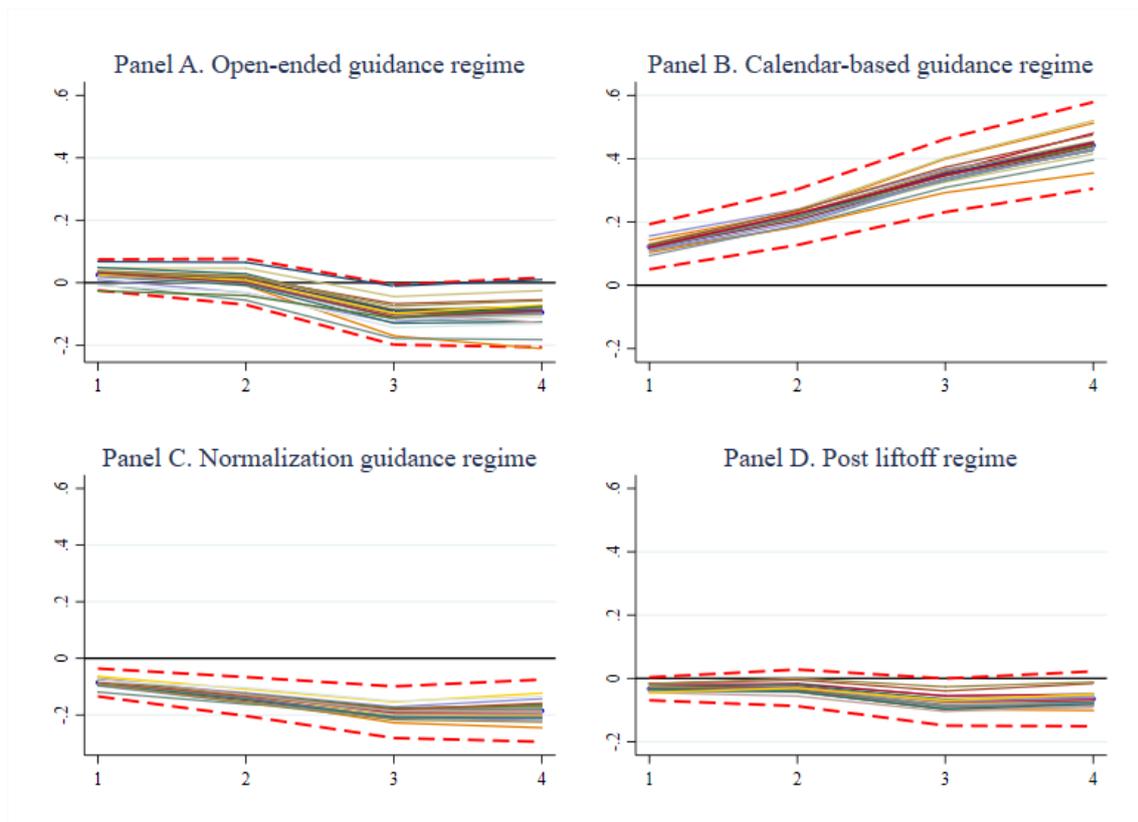
Notes: the Figure shows results from a robustness check on the baseline analysis regarding the variable used to measure portfolio capital flows. Solid line represents the response to a one standard deviation surprise in the non-farm payroll release of net portfolio capital flows to selected emerging market economies, in billion of U.S. dollar. Estimates are obtained from Equation A.1. The y-axis denotes the cumulated response. The x-axis denotes the horizon of the response (in weeks), with 1 being the week of the announcement. Red dotted lines are 90 percent confidence bands obtained using heteroskedasticity (white) robust standard errors. The open-ended guidance, calendar-based guidance, normalization guidance and post-liftoff regimes range, respectively, from March/18/2009 to August/8/2011, from August/9/2011 to May/22/2013, from May/23/2013 to December/12/2015 and from December/13/2015 to May/30/2018.
Sources: Bloomberg, Institute of International Finance and own calculations.

Figure A.9: Retail sales announcements

A.4 Robustness Checks and Other Extensions on the Role of ETFs

This appendix reports robustness checks on the differential response of flows to ETFs relative to mutual funds (Equation 2.3 in Section 2.5.3). The advantage of the diff-in-diff specification used to obtain the results is that it controls for all time varying unobserved factors as long as they impact flows into ETFs and mutual funds in the same way. Crucially, Converse, Levy-Yeyati, and Williams, 2018 show that flows into ETFs do not respond to local, country-specific, developments more than mutual funds. On the other hand, if ETFs responded more not only to employment releases but also to any kind of global shock, then it would still be possible that the results suffered from omitted variable bias. Although unlikely, since NFP surprises tend to behave as white noises (see Figure A.6, Appendix A.2), we check whether this is the case by estimating again Equation 2.3, this time including other macroeconomic surprises (also interacted with the ETF-dummy, $d_{i,t}^{E}$) to proxy for other shocks.

We consider other U.S. releases as well as the most important announcements stemming from the U.K., Germany, Japan and the Eurozone (all the news considered are listed in Table A.7, Appendix A.2). We estimate five additional specifications, each including all the releases from one of these countries or currency unions. The results from this sensitivity exercise, shown in Table A.7, are qualitatively similar and not statistically different from the baseline estimates.

Table A.7: Inclusion of other macroeconomic announcements

		(A)	(B)	(C)	(D)
1-week	Only NFP (baseline)	0.13	**0.26**	**-0.16**	-0.03
	Other U.S.	0.10	**0.24**	**-0.16**	-0.01
	U.K.	0.13	**0.25**	**-0.15**	-0.04
	Japan	0.12	**0.24**	**-0.15**	-0.03
	Germany	0.12	**0.24**	**-0.16**	-0.04
	Eurozone	**0.13**	**0.26**	**-0.18**	-0.02
2-week	Only NFP (baseline)	0.14	**0.35**	**-0.2**	0.09
	Other U.S.	0.13	**0.33**	**-0.21**	0.04
	U.K.	0.17	**0.35**	**-0.19**	0.08
	Japan	0.17	**0.34**	**-0.19**	0.08
	Germany	0.16	**0.31**	**-0.19**	0.07
	Eurozone	0.19	**0.38**	**-0.22**	0.1
3-week	Only NFP (baseline)	0.06	**0.35**	**-0.34**	0.17
	Other U.S.	0.04	0.3	**-0.37**	0.1
	U.K.	0.06	**0.33**	**-0.33**	0.17
	Japan	0.08	**0.33**	**-0.33**	0.15
	Germany	0.08	0.28	**-0.33**	0.15
	Eurozone	0.12	**0.41**	**-0.37**	0.17
4-week	Only NFP (baseline)	-0.04	**0.6**	**-0.28**	0.12
	Other U.S.	-0.04	**0.56**	**-0.3**	0.03
	U.K.	-0.07	**0.56**	**-0.26**	0.12
	Japan	0	**0.55**	**-0.26**	0.1
	Germany	-0.01	**0.5**	**-0.28**	0.1
	Eurozone	0.05	**0.6**	**-0.33**	0.11

Notes: the Table shows results from a robustness check on the difference-in-differences analysis regarding potential omitted variables biases. The numbers report the estimated differential responses to U.S. employment announcements of allocations into exchange-traded relative to mutual funds. The funds considered are legally domiciled in the U.S. and invest in emerging, frontier and other market economies (as defined by MSCI). Differential sensitivities are measured in percentage of beginning of period assets. Coefficients are estimated from Equation 2.3. Rows denoted by "Only NFP (baseline)" reports coefficients estimated leaving the Z_t vector empty. Rows denoted by "6-month fed fund future" report coefficients estimated including the 6-month ahead federal fund future rate in the Z_t vector. Rows denoted by "Other U.S." report coefficients estimated including other U.S. releases in the Z_t vector. Rows denoted by "U.K.", "Japan", "Germany" and "Eurozone" report coefficients estimated including respectively all releases from those countries in the Z_t vector. Refer to Table A.3 for a list of all releases considered. Columns (A), (B), (C), and (D) report estimates for the open-ended guidance, calendar-based guidance, normalization guidance and post-liftoff regimes respectively (see Sections 2.2.2 and 3.2.2 for a definition). Bold numbers indicate significance at the 90 percent confidence level, using clustered standard errors (at the investment fund-level).
Sources: Bloomberg, Investing.com, Datastream, EPFR and own calculations

Table A.8: Distinction by funds' size

		(A)	(B)	(C)	(D)
1-week	All funds (baseline)	0.03	**0.12**	**-0.09**	-0.03
	Small funds	-0.04	0.05	0.00	-0.01
	Medium-sized funds	0.04	**0.14**	-0.05	-0.06
	Large funds	0.02	**0.11**	**-0.19**	-0.01
2-week	All funds (baseline)	0	**0.22**	**-0.13**	-0.03
	Small funds	0.01	0.17	-0.03	-0.06
	Medium-sized funds	0.03	**0.20**	**-0.12**	-0.06
	Large funds	-0.04	**0.23**	**-0.2**	0.05
3-week	All funds (baseline)	**-0.10**	**0.35**	**-0.19**	**-0.07**
	Small funds	-0.27	**0.31**	-0.06	-0.13
	Medium-sized funds	-0.03	**0.34**	**-0.22**	**-0.14**
	Large funds	**-0.16**	**0.34**	**-0.2**	0.08
4-week	All funds (baseline)	-0.09	**0.44**	**-0.18**	-0.06
	Small funds	-0.20	**0.37**	-0.12	-0.07
	Medium-sized funds	-0.07	**0.47**	**-0.22**	**-0.17**
	Large funds	-0.12	**0.41**	-0.13	0.12

Notes: the Table shows results from an extension to the baseline analysis regarding non-linear effects depending on fund assets. The numbers report the estimated responses of allocations into investment funds to U.S. non-farm payroll data release. The funds considered are legally domiciled in the U.S. and invest in emerging, frontier and other market economies (as defined by MSCI). Sensitivities are measured in percentage of beginning of period assets. The leftmost column reports the horizon considered (k). The second leftmost column denotes the size of the funds considered. Rows denoted by "All funds (baseline)" report estimates for funds of all size, obtained from Equation 2.2. Rows denoted by "Small funds", "Medium-sized funds" and "Large funds" report respectively the $\hat{\beta}_k^{s,r}$, $\hat{\beta}_k^{m,r}$ and $\hat{\beta}_k^{l,r}$ coefficients obtained estimating the following regression: $\frac{\sum_{j=0}^{k} f_{i,t+j}}{a_{i,t}} = \sum_{r=1}^{4} \left(\alpha_k^r d_t^r + \left(\beta_k^{s,r} d_t^r d_i^s + \beta_k^{m,r} d_t^r d_i^m + \beta_k^{l,r} d_t^r d_i^l \right) x_t \right) + \sum_{l=1}^{12} \left(\varphi_k^l \frac{f_{i,t-l}}{a_{i,t-l}} + \vartheta_k^l \frac{n_{i,t-l}}{a_{i,t-l}} \right) + \gamma_i + \varepsilon_{i,t}$, where d_i^s and d_i^l are two dummy variables taking value one for funds in respectively the lower and upper quartile of the assets distribution and zero otherwise, d_i^m is a dummy variable taking value one when either d_i^s or d_i^l takes value zero, and the rest of the notation is as in Equation 2.2. A * (**) next to the $\beta_k^{s,r}/\beta_k^{m,r}/\beta_k^{l,r}$ coefficient indicates that this is statistically different from one of the other two (both others) at the 90 percent confidence level, according to a Wald test for equal coefficients. Columns denoted by (A), (B), (C), and (D) report estimates for different Fed's guidance regimes: respectively the open-ended (March/18/2009 to August/8/2011), calendar-based (August/9/2011 to May/22/2013), normalization (May/23/2013 to December/12/2015) and post-liftoff (December/13/2015 to May/30/2018). Bold numbers indicate statistical significance at the 90 percent confidence level, based on clustered standard errors (at the fund-level).
Sources: Bloomberg, EPFR and own calculations.

A.5 Additional Results Using Country-level Data

Here we explore the presence of heterogeneities in the sensitivity to developments in the U.S. at the aggregate country level. We make use of the EPFR country flow dataset — covering bilateral flows from the U.S. to a panel of 77 EMs — to estimate country-specific flow responses to U.S. employment releases.

To carry out the analysis at the macro level we use the EPFR country flow dataset. This aggregates fund-level information to provide data on bilateral flows from the U.S. to 77 EMs. Tables A.11 and A.12 provide a list of the countries covered as well as relevant descriptive statistics, including the incidence of U.S. funds in terms of assets held as a share of the local GDP.

We start by constructing a variable measuring fund flows as a share of recipient country GDP and regressing it on the NFP surprise series interacted with the Fed's regime dummies. We do this operation separately for each country at a time to obtain country-specific estimates of flow sensitivities to U.S. employment releases. Figures A.10 and A.11 below plot these estimates for the calendar-based and normalization regimes respectively (results for the other regimes are available upon request). Each bar represents the 1-week fund flow response as a share of the local GDP (in basis points) to a one standard deviation NFP surprise. Stars denote statistical significance at the 90 percent confidence level.

The coefficients display relatively large heterogeneity during the calendar-based regime, with a small group of countries even experiencing significant outflows. By contrast, the dispersion across country-specific responses is lower for the normalization regime. The higher heterogeneity observed for the calendar-based regime is confirmed even if the countries experiencing negative flows are dropped from the sample or when looking only at those displaying a statistically significant coefficient.

Not surprisingly, EMs where U.S. funds held on average a larger GDP share of assets seem to also have displayed a higher sensitivity to employment announcements. As an example, South Africa and Taiwan, the two countries with the largest asset share, were also the most sensitive. A standard deviation NFP surprise was associated with inflows (outflows) worth about 1 basis point of GDP during the calendar-based (normalization) regime. These are important figures, especially considering that they are calculated based on a fraction of all U.S. funds investing in EMs, possibly holding about half of the overall industry's assets.[4]

Next, we formally investigate whether country characteristics can account for the differences in sensitivity of flows across countries. We experiment with different sets of variables meant to proxy for a country's level of development, its macroeconomic management outcomes, its balance of payment and international investment positions, the bilateral trade and financial linkages with the US, as well as indicators of credit risk and institutional quality. A complete list, together with sources and country coverage is provided in Table A.13 in Appendix A.2.

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[4] Funds reporting to EPFR at the weekly frequency accounted for just 42.5 percent of all industry assets at the end of 2017.

Figure A.10: Country flows sensitivities during the calendar-based guidance regime
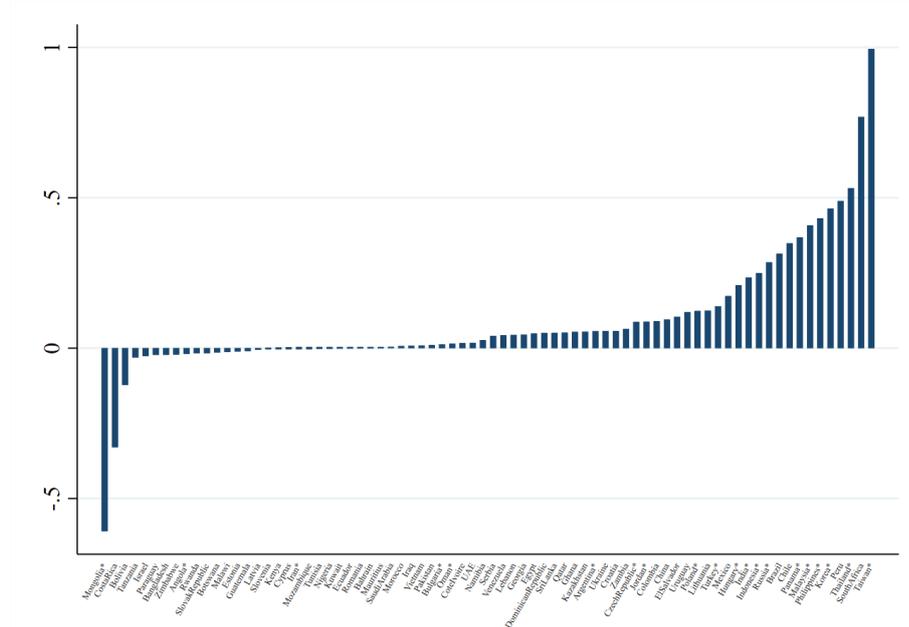
Notes: the Figure shows the estimated 1-week response to a one standard deviation surprise in the U.S. non-farm payroll data release of bilateral gross portfolio capital flows from the U.S. to a set of emerging, frontier and other market economies (as defined by MSCI) during the August/9/2011 to May/22/2013 period. Sensitivities are measured in basis points of the recipient country GDP. Estimates are obtained from the following regression: $10000 * \frac{F_t}{Y_t} = \sum_{r=1}^{4} \beta^r d_t^r news_t + A_k D_t + B_k Z_t + \varepsilon_t$, where F_t is the country flow variable, Y_t is GDP, Z_t is a vector containing 12 lags of the dependent variable, and the rest of the notation is as in Equation 2.2. The y-axis denotes the magnitude of the estimated effect. Blue bars show the $\hat{\beta}_k$ coefficients. The x-axis reports the country concerned. A * indicates that the estimate is statistically different from zero (using heteroskedasticity robust standard errors). *Sources:* Bloomberg, EPFR and own calculations.
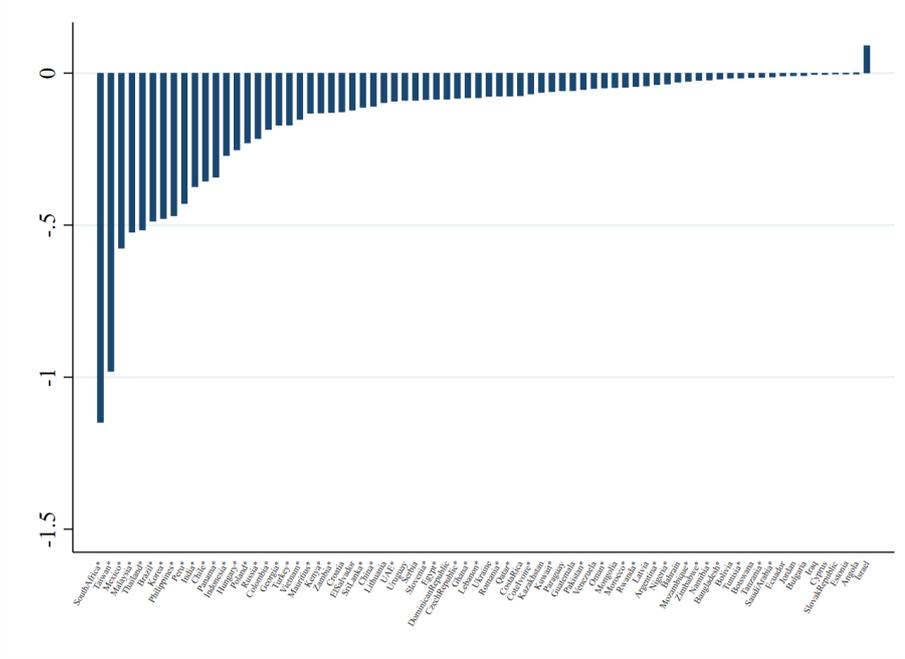
Since the variables we consider might be contemporaneously affected by capital flows, we instrument them with their lagged values to avoid reverse causality.[5] We also drop from the sample off-shore financial centers, which might have abnormal values in some of the variables we consider as pull factors, thus introducing noise in the analysis.[6]

We proceed estimating interaction models in which the NFP news variable is interacted with each country characteristic one at a time. A natural observation is that more financially developed countries are likely to display higher sensitivities. Therefore, we include the level of stock market capitalization as a share of GDP to

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[5]   In practice, for each variable we take the value recorded the year preceding the beginning of a new forward guidance regime. Hence, for the open-ended regime, we use 2008 values. For the calendar-based, normalization and post-liftoff regimes, we use 2010, 2012 and 2015 values respectively.

[6]   Precisely, we exclude the countries classified by the International Monetary Fund as offshore financial centers. These are Bahrain, Botswana, Cyprus, Mauritius, Panama and Uruguay.

Figure A.11: Country flows sensitivities during the normalization guidance regime

proxy for financial development.[7] In practice, we estimate the following specification:

$$10000 * \frac{F_{j,t}}{Y_{j,t}} = \sum_{r=1}^{4} \left(\beta_x^r d_t^r news_t cap_j^r + \kappa_x^r d_t^r news_t x_j^r + \varphi_x d_t^r cap_j^r + \phi_x d_t^r x_j^r \right) + \\ + A_x D_t + B_x Z_t + \tau_t \varepsilon_{j,t} \quad \text{(A.2)}$$

where $F_{j,t}$ are total flows for country j at time t; $Y_{j,t}$ is country j's GDP; cap_j^r is market capitalization as a share of GDP in regime r; x_j^r is the country characteristic considered, also in regime r; τ_t are time fixed effects; and the rest of the notation is as in Equation 2.2.[8] The term $\frac{F_{j,t}}{Y_{j,t}}$ is multiplied by 10000 to express basis point responses. The estimation is carried out through OLS. Standard errors are clustered at the country level.

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[7] The drawback is that due to limited data availability 12 countries are lost.

[8] The NFP surprise variable does not enter the regression on its own as it is absorbed by the time fixed effects.

In the interest of brevity, Table A.9 only reports the $\hat{\beta}_x^r$ and $\hat{\kappa}_x^r$ coefficients estimated for the calendar-based and normalization regimes. As expected, the stock market capitalization is always significant. It is estimated to be positive (negative) for the calendar-based (normalization) regime, meaning that inflows (outflows) following positive news were concentrated in countries with deeper financial markets.

Strikingly, only two other characteristics are significantly associated with country flows. These are the budget balance and the net portfolio position (NPP).[9] The former enters with a negative sign during the calendar-based regime, suggesting that capital inflows after positive news might have had a speculative nature (it is instead not significant during the normalization regime). This intuition is corroborated if considering equity flows only. Then also the current account balance is negative and significant (results available upon request). Turning to the NPP, this essentially measures how much, in net terms, a country's financial assets are owned by foreigners. The associated coefficient is negative (positive) for the calendar-based (normalization) regime. To better understand what drives this result, we decompose NPP into its equity and debt components and estimate Equation A.5 again using these two variables and allowing them to enter both separately and jointly.

Table A.10 below shows the results. These indicate that portfolio equity (debt) was more relevant during the calendar-based (normalization) guidance regime.[10] Countries with a higher share of foreign-owned equity might be better integrated in the global financial system. This would explain why they received more inflows during the calendar-based regime. Another possibility is that agents might have some degree of habit persistence in their investment decisions, thus tending to invest more in countries in which they already have an exposure. Finally, the net equity position might be capturing some other characteristics regarding the attractiveness of a country as investment destination that other variables fail to properly account for.

Turning to the normalization regime, EMs with more positive NPP debt positions experienced less outflows following better than expected U.S. employment news. The estimates suggest that a country with a NPP debt position equal to one standard deviation more than the average experienced less outflows for an amount equal to about one standard deviation of the distribution of country-specific flow sensitivities (Figure A.11). The importance of NPP debt is easily rationalized. Contrary to equity, debt liabilities need to be rolled over as they mature. Hence, countries with higher external debts are inherently more vulnerable to foreign capital withdrawals, which is indeed what the estimates in Table A.10 suggest. This is confirmed if considering debt flows only. Countries with higher external debts as a share of GDP and a higher stock of international bonds (that is, not issued on the domestic market)

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9   The net portfolio position measures domestic holdings of foreign bond and equity assets minus foreign holdings of domestic equity and bond assets as a share of the domestic country GDP.

10   Neither the NPP equity nor the NPP debt are significant when they enter the regression jointly for the calendar-based regime. However, the NPP equity has a much larger coefficient (in absolute value) and a lower p-value (this is 0.18 for NPP equity and 0.48 for NPP debt).

Table A.9: Local pull factors

	Calendar-based		Normalization			
	$news * c$	$news * x$	$news * c$	$news * x$	R^2	**Obs.**
Trade openness	**0.33**	3.54	**-0.46**	-1.62	0.55	26051
KA openness	**0.28**	-0.01	**-0.41**	0.01	0.56	24647
GDP	**0.31**	0.01	**-0.43**	-0.02	0.55	26051
Public debt	**0.33**	-0.01	**-0.46**	0.01	0.57	19933
Budget	**0.35**	**-0.67**	**-0.46**	0.25	0.55	23115
Inflation	**0.34**	-0.46	**-0.49**	-0.13	0.54	22891
CA balance	**0.34**	-0.31	**-0.46**	0.14	0.55	25699
Reserves	**0.28**	-0.05	**-0.43**	0.12	0.56	21772
External debt	**0.28**	-0.01	**-0.42**	-0.09	0.56	25583
NIIP	**0.32**	0.02	**-0.46**	0.01	0.55	22240
NPP	**0.26**	**-0.3**	**-0.38**	**0.39**	0.56	21420
Credit risk	**0.35**	0.1	**-0.47**	-0.08	0.55	24493
Financial links	**0.33**	0.01	**-0.42**	-0.15	0.55	24351
Trade links	**0.33**	0.14	**-0.45**	-0.24	0.55	25205
Rule of law	**0.34**	-0.01	**-0.46**	0.02	0.55	26051

Notes: the Table shows the relationship between country-specific fund flow sensitivities to U.S. employment announcements and country characteristics. Estimates are obtained from Equation A.5. The leftmost column lists the country characteristic considered, of which the estimated coefficient is reported in the column denoted by "κ". "Trade openness" is the sum of imports and exports as share of GDP. "KA openness" is an index measuring the degree of capital account liberalization. "GDP" is the log of GDP. "Public debt" is the the debt of the general government as a share of GDP. "Budget balance" is the difference between government revenues and expenditures as a share of GDP. "Inflation" is the yearly change in the CPI index. "CA balance" is the current account balance as a share of GDP. "Foreign reserves" are foreign currency holdings as a share of GDP. "External debt" is debt held by the private-sector foreign agents as share of GDP. "NIIP" (net international investment position) is the difference between domestic holdings of foreign assets and foreign holdings of domestic assets, as a share of GDP. "NPP" (net portfolio position) the difference between domestic holdings of foreign portfolio assets and foreign holdings of domestic portfolio assets, as a share of GDP. "Credit risk" is the inverse of the sovereign credit rating. "Financial links" is the sum of domestic holdings of U.S. portfolio securities and U.S. holdings of the country portfolio securities. "Trade links" is the sum of imports from and exports to the U.S. as share of GDP. "Rule of law" is an index capturing perceptions of the extent to which agents have confidence in and abide by the rules of society. The column "β" reports estimates for the level of stock market capitalization as a share of GDP. The columns "R^2" and "Obs." report the explanatory power of the regression and the number of observations respectively. The multicolumns "Calendar-based regime" and "Normalization regime" report estimates for the period August/9/2011 to May/22/2013 and May/23/2013 to December/12/2015 respectively. Bold numbers indicate statistical significance at the 90 percent confidence level, based on clustered standard errors.
Sources: Bloomberg, EPFR, own calculations and others (listed in Table A.13).

Table A.10: Portfolio positions

	Calendar-based			Normalization		
news ∗ cap	**0.29**	**0.27**	**0.29**	**-0.41**	**-0.40**	**-0.40**
news ∗ NPPdebt	**-0.30**		-0.12	**0.50**		**0.44**
news ∗ NPPequity		**-0.39**	-0.40		**0.36**	0.24
R^2	0.58	0.57	0.58	0.58	0.57	0.58
Obs.	18804	18885	17481	18804	18885	17481

Notes: the Table shows the relationship between country-specific fund flow sensitivities to U.S. employment announce-
ments and country characteristics. Estimates are obtained from Equation A.5. The leftmost column lists the variable
considered. "constant" is a constant term. "cap" is value of the domestic stock market. "NPP debt" is the difference
between domestic holdings of foreign bonds and foreign holdings of domestic bonds. "NPP equity" is the difference
between domestic holdings of foreign equity and foreign holdings of domestic equity. The variables are expressed as a
share of the domestic country GDP. Bold numbers indicate statistical significance at the 90 percent confidence level,
based on clustered standard errors. The columns "R^2" and "Obs." report the explanatory power of the regression and
the number of observations respectively. The multicolumns "Calendar-based" and "Normalization" report estimates for
the period August/9/2011 to May/22/2013 and May/23/2013 to December/12/2015 respectively.
Sources: Bloomberg, EPFR, IMF International Financial Statistics, Haver Analytics and own calculations.

experienced significantly more outflows following positive surprises (results available upon request).[11]

This appendix explored the presence of country-heterogeneities in the response of fund flows following U.S. employment surprises and sought to find potential determinants. The results uncovered a relatively large dispersion during the calendar-based regime. Inflows were generally concentrated in countries with a larger stock market capitalization. However, conditioning on the same level of capitalization, inflows were higher in countries running larger budget and current account deficits, which suggest that such flows had a speculative nature. During the normalization regime outflows were instead higher in countries with worse portfolio debt positions.

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[11] Other factors positively associated with debt outflows following positive news during the normalization regime were a country's current account deficit and sovereign credit risk. Outflows were also concentrated in smaller countries and countries with less financial linkages relative to the US. However, when all the variables enter the specification jointly, only the net portfolio position and the external debt ratio remain statistically significant.

Table A.11: Mean assets and other characteristics by recipient country (1)

	assets	% equity	% ETF	% of GDP
Angola	0.1	/	27.2	0.1
Argentina	4.0	68.5	29.1	0.7
Bahrain	0.1	6.5	27.7	0.2
Bangladesh	0.7	98.3	39.5	0.3
Bolivia	0.0	/	30.1	0.1
Botswana	0.0	100.0	51.8	0.2
Brazil	50.9	88.9	44.6	2.3
Bulgaria	0.0	14.3	25.0	0.1
Chile	4.9	81.9	40.6	2.0
China	84.5	98.2	42.4	0.9
Colombia	3.1	42.8	31.9	1.0
Costa Rica	0.4	/	26.1	0.6
Cote D'Ivoire	0.2	0.2	22.7	0.5
Croatia	0.5	3.7	21.5	0.9
Cyprus	0.0	59.7	23.3	0.1
Czech Republic	1.4	87.6	34.1	0.7
Dominican Republic	0.4	/	21.1	0.6
Ecuador	0.2	0.7	22.7	0.2
Egypt	1.6	87.4	39.9	0.5
El Salvador	0.2	/	22.4	0.9
Estonia	0.0	95.6	26.6	0.2
Georgia	0.2	67.3	34.8	1.1
Ghana	0.3	39.4	22.6	0.7
Guatemala	0.1	/	25.3	0.2
Hungary	3.1	40.5	26.8	2.3
India	36.2	97.7	42.2	1.8
Indonesia	13.0	73.1	35.5	1.5
Iran	0.0	37.2	42.8	0.0
Iraq	0.1	/	21.2	0.1
Israel	6.6	93.6	27.8	2.3
Jordan	0.2	106.4	35.3	0.4
Kazakhstan	1.2	32.7	26.5	0.7
Kenya	0.5	89.1	46.1	0.8
Korea	49.4	95.3	39.4	3.8
Kuwait	0.4	94.8	44.2	0.4
Latvia	0.2	/	23.6	0.6
Lebanon	0.2	27.4	26.9	0.5
Lithuania	0.5	2.1	18.4	1.1
Malawi	0.0	100.0	89.8	0.0

Notes: the Table provides information on the geographical distribution of investment funds assets. Funds considered are legally domiciled in the U.S. and invest in emerging, frontier and other market economies (as classified by MSCI). The period considered goes from March 2009 to May 2018. The leftmost column reports the country of investment. The column denoted by "assets" reports the mean U.S. $ amount invested in the particular country (in billion). The column denoted by "% equity" reports the share of equity assets. The column denoted by "% ETF" reports the share of assets held by ETFs. The column denoted by "% of GDP" reports the value of assets in terms of the country's GDP. Notice that Table A.12 report statistics for the remaining countries.
Sources: EPFR, IMF World Economic Outlook and own calculations.

Table A.12: Mean assets and other characteristics by recipient country (2)

	assets	% equity	% ETF	% of GDP
Malaysia	8.7	78.5	38.7	2.9
Mauritius	0.0	86.8	47.0	0.3
Mexico	22.3	70.5	36.6	1.9
Mongolia	0.1	/	30.5	0.6
Morocco	0.3	58.5	35.2	0.3
Mozambique	0.0	/	31.1	0.1
Myanmar	0.0	100.0	39.8	0.0
Namibia	0.0	2.6	27.7	0.3
Nigeria	1.1	78.9	37.9	0.2
Oman	0.2	72.9	39.2	0.3
Pakistan	1.1	90.1	36.3	0.4
Panama	1.0	52.4	28.7	2.2
Paraguay	0.2	/	28.4	0.5
Peru	3.6	59.5	36.3	1.9
Philippines	4.8	80.6	35.9	1.8
Poland	6.3	49.2	28.4	1.3
Qatar	1.0	43.1	29.9	0.6
Romania	0.8	37.6	30.5	0.4
Russia	24.6	83.0	40.2	1.4
Rwanda	0.0	9.3	41.1	0.2
Saudi Arabia	0.5	80.4	38.9	0.1
Serbia	0.3	6.1	19.1	0.7
Slovak Republic	0.0	/	28.7	0.0
Slovenia	0.3	37.4	23.4	0.6
South Africa	22.3	88.0	37.2	6.4
Sri Lanka	0.8	43.0	26.0	1.1
Taiwan	34.1	99.9	41.8	6.7
Tanzania	0.1	91.7	33.7	0.1
Thailand	10.8	93.0	38.6	2.7
Tunisia	0.0	23.8	36.4	0.1
Turkey	9.8	74.4	37.3	1.1
Ukraine	1.0	16.4	22.7	0.8
UAE	1.8	63.7	29.6	0.5
Uruguay	0.6	/	20.0	1.1
Venezuela	1.1	0.6	20.8	0.4
Vietnam	1.2	91.0	58.6	0.6
Zambia	0.2	42.5	36.8	0.6
Zimbabwe	0.0	100.0	54.1	0.1
Total	425.6	87.0	40.1	1.5

Notes: the Table provides information on the geographical distribution of investment funds assets. Funds considered are legally domiciled in the U.S. and invest in emerging, frontier and other market economies (as classified by MSCI). The period considered goes from March 2009 to May 2018. The leftmost column reports the country of investment. The column denoted by "assets" reports the mean $ amount invested in the particular country (in billion). The column denoted by "% equity" reports the share of equity assets. The column denoted by "% ETF" reports the share of assets held by ETFs. The column denoted by "% of GDP" reports the value of assets in terms of the country's GDP.
Sources: EPFR, IMF World Economic Outlook and own calculations.

Table A.13: Country characteristics

Variable	complied by	sourced from	#
Stock market (% of GDP)	WFE/NS/WEO	Haver/IMF	63
Trade openess (% of GDP)	NS	PWT	77
Financial openness index	Chinn and Ito, 2008	Haver	72
GDP (log)	NS/WEO	Haver/IMF	77
Government debt (% of GDP)	NS/WEO	Haver/IMF	56
Government balance (% of GDP)	NS/WEO	Haver/IMF	65
Inflation (%)	NS/WEO	Haver/IMF	67
Current account (% of GDP)	NS/WEO	Haver/IMF	72
Foreign reserves (% of GDP)	IFS	IMF	65
External debt (% of GDP)	IDS	BIS	76
NIIP (% of GDP)	IFS	IMF	66
NPP (% of GDP)	IFS	IMF	62
NPP - equity (% of GDP)	IFS	IMF	57
NPP - debt (% of GDP)	IFS	IMF	49
Credit risk (index)	OE	Datastream	68
Financial links U.S. (% of GDP)	IFS	IMF	74
Trade links U.S. (% of GDP)	NS	Haver	70
Rule of law (index)	WB/NRGI/Brookings	Haver	77

Notes: the Table describes the country characteristics considered in Appendix A.5. Column "#" indicates the number of countries covered. In the leftmost column, "NIP" and "NPP" stand respectively for net international investment position and net portfolio position. In the second leftmost column, "WFE", "NS", "WEO", "IFS", "IDS" "WB" and "NRGI" stand respectively for World Federation of Exchange, national sources, World Economic Outlook, International Finance Statistics, International Debt Statistics, World Bank and National Resource Governance Institute. In the third leftmost column "IMF", "PWT" and "BIS" stand respectively for International Monetary Fund, Penn World Tables and Bank of International Settlements.