Annex 1. Actions of Select Central Banks to Support Markets during March 2020 Turmoil

Annex Table 1.1. Selected Central Bank Facilities to Support Funding Markets

	Money Markets and Government Securities	Corporate Bond Market	Other Markets
Bank of Canada	**Government of Canada Bond Purchase Program** Purchases of Government of Canada bonds in the secondary market to support market functioning and provide monetary stimulus. **Bankers' Acceptance Purchase Facility** Purchases of eligible bankers' acceptances to maintain credit to small- and medium-sized businesses. **Provincial Money Market Purchase Program** Purchases of provincial money market securities in the primary market. **Provincial Bond Purchase Program** Purchases of provincial bonds in the secondary market to support the liquidity and efficiency of these markets. **Commercial Paper Purchase Program** Purchases of eligible commercial paper in the primary and secondary markets to maintain the smooth flow of credit to corporations.	**Corporate Bond Purchase Program** Purchases of corporate bonds in the secondary market to support liquidity and market functioning.	**Canada Mortgage Bond Purchase Program** Purchases of CMBs in the secondary market to support market functioning and the ability of financial institutions to finance mortgage lending to Canadian homeowners.
Bank of England	**Asset Purchase Facility** A £200 billion increase in the central bank's holdings of UK government bonds and sterling nonfinancial investment-grade corporate bonds to a total of £645 billion. **COVID Corporate Financing Facility** For 12 months the central bank and Treasury will purchase commercial paper of maturities up to one year issued by companies making a material contribution to the UK economy.		
Bank of Japan	**Measures to Facilitate Corporate Financing** Increased the upper limit of holdings of corporate bonds and commercial paper and introduced special funds-supplying operations to facilitate corporate financing. **Active purchase of Japanese Government Bonds (JGBs)** Conducted additional outright purchases of JGBs. **Additional measures to maintain stability of the repo market** Relaxed the conditions of its Securities Lending Facility (SLF). Conducted sales of Japanese Government Securities (JGS) with repurchase agreements intended to provide the market with JGS.		**Purchase of Exchange Traded Funds and Real Estate Investment Trusts** A doubling in the pace of exchange-traded fund purchases.
European Central Bank	**Pandemic Emergency Purchase Programme** Purchases of private and public sector securities, until the end of 2020, up to a total amount of €750 billion.		
US Federal Reserve	**Primary Dealer Credit Facility** Provide credit to primary dealers in exchange for a broad range of collateral for term funding with maturities up to 90 days. **Commercial Paper Funding Facility** Purchases from eligible issuers, via a Special Purpose Vehicle (SPV), of three-month US dollar-denominated commercial paper. **Money Market Mutual Fund Facility** Provision of liquidity to eligible money market mutual funds.	**Primary Market Corporate Credit Facility** Purchase bonds from eligible issuers, via a SPV, and make loans to eligible borrowers. **Secondary Market Corporate Credit Facility** Purchases of investment grade corporate bonds in the secondary market from eligible issuers.	**Term Asset-Backed Securities Loan Facility** Loans to holders of certain AAA-rated asset-backed securities based on newly and recently originated consumer and small business loans.

Sources: National central banks. See hyperlinks for more details

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Annex 2. MMF Reforms after the GFC

United States

The SEC adopted a first series of amendments to its rules on MMFs in 2010 that were designed to make these funds more resilient by reducing the interest rate, credit, and liquidity risks of their portfolios. Although the reforms improved MMF resilience, the SEC said at the time that it would continue to consider whether further, more fundamental changes to MMF regulation might be warranted. After further review, in July 2014 the SEC adopted more fundamental structural changes to the regulations of MMFs. These reforms required non-government institutional MMFs to "float their NAV" (no longer maintain a stable price) and provided non-government MMF boards with new tools—liquidity fees and redemption gates—to address runs. Although these measures were adopted before the last US FSAP, they did not take effect until October 2016. MMFs that qualify as "government MMFs" and "retail MMFs" are still permitted to use the amortized cost method and/or penny rounding method of pricing to seek to maintain a stable share price. A government MMF is defined as any MMF that invests 99.5 percent or more of its total assets in cash, government securities, and/or repurchase agreements that are collateralized fully by government securities or cash and meet certain other regulatory requirements with respect to value and custody. A retail MMF is defined as a MMF that has policies and procedures reasonably designed to limit all beneficial owners of the MMF to natural persons. The broad reasoning behind this approach is that, for government MMFs, the safety of the eligible portfolio securities is such that a stable NAV is justified, while for retail MMFs the more patient holding strategy of the investors (who, according to historical holding patterns, are less likely to "run" during periods of stress) means that a stable NAV continues to be appropriate.

European Union (EU)

In the EU, the MMF Regulation (MMFR) took effect in July 2018. The new framework distinguished between three types of MMF: VNAV MMFs; public debt constant net asset value MMFs (public debt CNAV); and low volatility net asset value MMFs (LVNAV MMFs). VNAV can either be set up as short-term MMF or standard MMF which are subject to different portfolio rules, whereas public debt CNAV MMF and LVNAV MMF may only be set up as short-term MMF. The MMFR applies alongside the two cornerstones of EU investment fund regulation, the UCITS Directive and the Alternative Investment Fund Managers Directive.

Asia

Originally all MMFs in China were CNAV MMFs. A set of reforms that began in 2014 limited the types of asset in which MMFs can invest, strengthened requirements around liquidity risk management and sought to improve disclosures. The reforms also led eventually to the establishment of a pilot VNAV MMF in August 2019. In Japan, there were historically two categories of MMF vehicle: the Money Management Fund (JMMF) launched in 1992, and the Money Reserve Fund (MRF) launched in 1997. JMMFs and MRFs take the form of investment trusts which invest primarily in MMIs as well as government and corporate bonds with limited maturities according to the relevant legal provisions. In terms of AuM, JMMFs historically represented approximately one third of the combined MRF and JMMF TNA in 2010. JMMF have nevertheless progressively reduced in size and market share. Since May 2017, there are no longer any JMMFs in Japan. MRFs are used by broker-dealers in Japan for the purpose of settlement and pooling of cash, given the prohibition on broker-dealers accepting deposits. Given this specific purpose, MRFs are CNAV MMFs.

Annex 3. Detailed Presentation of MMF Policy Options

Annex 3. Detailed Presentation of MMF Policy Options

Policy Option	Key Features	Pros	Cons
Decouple liquidity thresholds from fees and gates	This option allows funds to impose fees or gates when doing so is in the best interests of the fund.	Decreases incentives for redemptions and reduces the likelihood of gates	In absence of formal threshold, investors may apply their own threshold
Reform of conditions for imposing redemption fees/gates	Funds required to obtain permission from regulatory authorities prior to imposing fees/gates	Supervisor able to intervene to secure best interests of investors	May lead to undue delays in application of fees/gates Supervisors may not have sufficient data to allow informed decision on permitting/denying imposition of fees/gates
Minimum balance at risk (MBR)	A portion of each shareholder's recent balances in a MMF is available for redemption only with a time delay to ensure that redeeming investors remain partially invested in the fund over a certain time period	Decrease incentives for redemptions and potential for fire sales Reduces likelihood of suspensions Changes investor perception of MMF as cash-like MBR could be higher for institutional investors	Swing pricing and/or capital buffers may have similar beneficial effects with less complexity.
Liquidity buffer	New, stricter requirements on liquid assets imposed (higher thresholds and/or shorter durations for less liquid assets)	More stringent requirements on WLA would increase availability of liquidity during periods of market stress	More liquid assets is good per se from regulatory (c.f. commercial) perspective but may not suffice in period of extreme stress
Countercyclical liquidity buffer	Liquidity buffer rises or falls automatically in certain circumstances, such as when net redemptions are large	Addresses problems associated with minimum thresholds of WLA	Complex calibration required Depending on precise approach adopted, subject to reliability of stress tests
Floating NAVs for all nongovernment MMFs	Nongovernment MMFs required to move to become VNAV MMFs; NAVs move in line with market prices	Removes first-mover advantage Risks borne by investors clearer	Nongovernment MMFs would no longer be cash-equivalent
Swing pricing	MMF adjusts the dealing price for inflows or outflows to take into account the costs of purchasing or selling assets of the fund	Reduces redemption requests under stressed conditions Reduces first mover advantage Concrete evidence of positive effects on OEFs Legal basis already exists in major jurisdictions (EU/US)	Choice between full and partial swing and calibration of swing can be complex Not possible for CNAV Successful implementation depends on availability of data on spread and cost information for MMIs (but introduction of swing pricing could encourage efforts to improve that data)
Macroprudential swing pricing	Regulators impose and calibrate swing pricing ex ante	Removes stigma effect for MMFs Takes account of systemic risk Less extreme than other LMTs, for example, suspensions	Calibration of tools requires significant data set on inflows/outflows and portfolio liquidity Could act as disincentive to investors in MMFs generally Full disclosure of trigger thresholds could strengthen run incentives
Capital buffer	Dedicated resources within or alongside fund to absorb losses	Allows losses to be absorbed without recourse to extraordinary CB intervention Reduces incentives for redemption by limiting risks of large losses to shareholders and first-mover advantage	Not clear where resources for buffer would come from Application to VNAV MMFs would require calibration (for example only when NAV drops by large amount)

(continued)

Policy Option	Key Features	Pros	Cons
Centralized external support (liquidity exchange bank)	Centralized and pre-funded facility for MMFs to transact with during a crisis	Gives greater confidence to market that all MMF types able to withstand crisis scenario Could reduce first mover advantage	Would need to be applied across all major MMF jurisdictions to prevent arbitrage between covered and non-covered funds
Sponsor support	Prohibition of, or clarification of permissibility of, support from sponsor or related party	Outright prohibition would be neater solution Allows greater predictability in crisis scenario	If sponsor support allowed, may unduly favor MMFs that belong to large banking groups
Adjust liquidity buffers according to the share of funds' institutional investors	Liquidity buffers adjusted according to funds' structural exposure to funding risk (institutional investors more likely to run)	Reduces first-mover advantage by recognizing greater propensity of institutional investors to run	Implementation more complex for funds with both retail and institutional investor base Data on liability side may be insufficient Burden on regulators to set increase/decrease of buffer
Greater transparency on MMIs	Improved data on issuance and outstanding amount of MMIs in primary and secondary markets	May increase market liquidity and facilitate price discovery	No cons as such (greater transparency is always +ve)
Enhance MMF reporting framework	More harmonized, detailed and frequent reporting from MMFs to authorities	Gives authorities—both central banks and securities regulators—better overview of industry	No cons as such (greater transparency is always +ve) but market participants often argue that regulators do not use reporting data sufficiently to justify the extra costs involved
Abolish nongovernment MMFs	MMFs limited to government MMFs only	Clean, neat solution—reduces credit and liquidity risks significantly	Short-term bond funds not plausible alternative due to lack of cash-equivalence
Liquidity-based redemptions deferrals	MMF portfolio holdings are classified according to their liquidity; redemption is aligned with the fund's liquidity profile	Reduces liquidity mismatch Less risk of fire sales Introduces clearer link between asset and liability side	May be some complexities in calibration
Limits on eligible assets for non-government MMFs	Stricter requirements on holdings of illiquid assets	Reduces liquidity mismatch	Issues around cash equivalence definition Defining liquid vs. ineligible assets may be challenging
MMF investor concentration limits	Limits on percentage of MMF shares held by a given investor	Reduces likelihood of suspension triggered by small number of investors	Application depends on quality of data on liabilities
Improved disclosure on STFM investor base	Holdings of main categories of investor made available per type of issuer, currency, and maturity	Aids regulators' oversight of market	No cons per se; may be complex to implement
Stress testing by managers	More frequent and sophisticated stress tests undertaken according to parameters specified by authorities	Allows early identification of vulnerabilities Useful information for supervisors Strengthens IOSCO Recommendation 8	Discretion on parameters left to MMF managers
Stress testing by authorities	Systemwide stress testing of entire MMF sector	Same as for previous option but allows for regulators to prescribe more rigorous approach Gives genuine sector-wide picture	Dependent on access to/quality of data Follow-up of stress tests results depends on regulatory approach
Removal of stable NAV	All MMFs required to have floating NAV	Removes threshold effects Investors should become more aware of market risk	Removes important category of cash management vehicles
Prohibition on daily dealing for nongovernment MMFs	Only government MMFs allowed to offer daily redemptions	Addresses liquidity mismatch in prime MMFs Removes link between MMF withdrawals and margin calls (but risk potentially displaced elsewhere for example if MMF investors chose to rely instead on lines of credit for immediate cash needs).	Reduced appetite for MMFs could lead to loss of funding source for MMI issuers
Redemptions in kind	Institutional investors receive share of portfolio securities instead of cash	Reduces first-mover advantage and incentives for large redemptions in times of stress	Cannot be used with retail investors Some funds currently do not allow redemption in kind proportionate to investor holdings in fund

Annex 4. Recent Developments on International Standards for OEFs

International standards on financial stability issues relating to OEFs have been further developed in recent years. There has been significant work by the FSB and IOSCO devoted to developing policy on relevant OEF areas that has translated into enhanced standards on a number of areas.

The FSB issued policy recommendations to address structural vulnerabilities from asset management activities in 2017, focused on four areas: (i) liquidity mismatch between investments and redemption terms and conditions; (ii) leverage within funds; (iii) operational risk and challenges at asset managers in stressed conditions; and (iv) securities lending activities of asset managers and funds.

IOSCO issued two important documents in 2018 and 2019 covering LRM and leverage.

- Recommendations for LRM for Collective Investment Schemes (2018), build on the 2012 Principles, elaborating on issues like suitability of dealing frequency of funds' units to better align assets and liabilities; disclosure of funds' liquidity profiles; operability of liquidity management tools; and fund level stress testing. The document also includes new recommendations on contingency planning.
- Recommendations for a framework to assessing leverage in investment funds (2019) develop a two-step framework to facilitate more meaningful monitoring, using measures of leverage to first identify and analyze funds that may pose financial stability risks, followed by further analysis of such funds. IOSCO is expected to collect leverage data from its membership to implement step 1.

IOSCO's work on OEFs goes beyond what is summarized here.

While IOSCO's work on LRM and leverage offers significant guidance, its recommendations may not prove fully effective in addressing potential financial stability issues. Due to the complexity and diversity of the sector and numerous important differences in national legal frameworks, the recommendations necessarily remain high-level, leaving a number of key issues open to discretion. Moreover, a number of recommendations are applicable only to the extent that regulatory frameworks permit which also weakens their effectiveness.

Providing supplementary guidance to supervisors on specific areas relevant to financial stability would greatly improve international standards. While obtaining consensus on every regulatory and supervisory item around OEFs is overly complex and unnecessary, reaching agreement on the key areas that impact for how OEFs behave in relation to systemic risk will prove very beneficial. Some of these, where we believe more concrete guidance is necessary are flagged in Chapter 4 of this paper, including aligning liquidity and frequency of redemptions at the design phase, widening the availability of LRM tools and broader use of swing pricing.

References

Adrian, T., N. Boyarchenko, and O. Shachar. 2017. "Dealer Balance Sheets and Bond Liquidity Provision." *Journal of Monetary Economics* 89 (C): 92–109.

Adrian, T., P. Colla, and H. Shin. 2012. "Which Financial Frictions? Parsing the Evidence from the Financial Crisis of 2007–9." Working Paper 18335. National Bureau of Economic Research, Cambridge, MA.

Anadu, K., M. Kruttli, P. McCabe, and E. Osambela. 2020. "The Shift from Active to Passive Investing: Risks to Financial Stability?" Working Paper SRA 18–04, Federal Reserve Bank of Boston, Boston.

Ambrose, B., N. Cai, and J. Helwege. 2008. "Forced Selling of Fallen Angels." *Journal of Fixed Income* 18: 72–85.

Arslanalp, S., D. Drakopoulos, R. Goel, and R. Koepke. 2020. "Benchmark-Driven Investments in Emerging Market Bond Markets: Taking Stock." Working Paper 20/192, International Monetary Fund, Washington, DC.

Bao, J., M. O'Hara, and X. Zhou. 2018. "The Volcker Rule and Corporate Bond Market Making in Times of Stress." *Journal of Financial Economics* 130 (1): 95–113.

Brandão-Marques, L., G. Gelos, and N. Melgar. 2018. "Country Transparency and the Global Transmission of Financial Shocks." *Journal of Banking and Finance* 96 (1): 56–72.

Broner, F., G. Gelos, and C. Reinhart. 2006. "When in Peril, Retrench: Testing the Portfolio Channel of Contagion." *Journal of International Economics* 69 (1): 203–30.

Cai, F., S. Han, D. Li, and Y. Li. 2016. "Institutional Herding and its Price Impact: Evidence from the Corporate Bond Market." *Finance and Econom-*

ics Discussion Series 2016–091, Board of Governors of the Federal Reserve System, Washington, DC.

Capponi, A., P. Glasserman, and M. Weber. Forthcoming. "Swing Pricing for Mutual Funds: Breaking the Feedback Loop Between Fire Sales and Fund Runs." *Management Science*.

Chen, Sally, D. Drakopoulos, and R. Goel. 2019, "China Deepens Global Finance Links as It Joins Benchmark Indexes." *IMFBlog,* June 19.

Chernenko, S., and A. Sunderam. 2019. "Do Fire-Sales Create Externalities?" *Journal of Financial Economics* 135 (3): 602–28.

Chernenko, S., and A. Sunderam. 2020. "Measuring the Perceived Liquidity of the Corporate Bond Market." NBER Working Paper Series, No. 27092, National Bureau of Economic Research, Cambridge, MA.

Choi, J., and M. Kronlund. 2018. "Reaching for Yield in Corporate Bond Mutual Funds." *Review of Financial Studies* 31 (5): 1930–65.

Cortes, F., and L. Sanfilippo. 2020. "Do Multi-Sector Bond Funds Pose Risks to Emerging Markets?" Working Paper 20/152, International Monetary Fund. Washington, DC:

Coval, J., and E. Stafford. 2007. "Asset Fire Sales (and Purchases) in Equity Markets." *Journal of Financial Economics* 86 (2): 479–512.

Cremers, M., and A. Petajisto. 2009. "How Active is Your Fund Manager? A New Measure that Predicts Performance." *Review of Financial Studies* 22 (9): 3329–65.

Diamond, D., and P. Dybvig. 1983. "Bank Runs, Deposit Insurance and Liquidity." *Journal of Political Economy* 91 (3): 401–19.

Ellul, A., C. Jotikasthira, and C. Lundblad. 2011. "Regulatory Pressure and Fire-Sales in the Corporate Bond Market." *Journal of Financial Economics* 101: 596–620.

Ellul, A., C. Jotikasthira, A. Kartasheva, C. Lundblad, and W. Wagner. 2018. "Insurers as Asset Managers and Systemic Risk." Working Paper 12849, Centre for Economic Policy Research. London.

Eom, Y., J. Helwege, and J-Z. Huang. 2004. "Structural Models of Corporate Bond Pricing: An Empirical Analysis." *Review of Financial Studies* 17: 499–544.

European Securities Markets Association (ESMA). 2020. *Performance and Costs of EU Retail Investment Products 2021*. Paris.

Financial Stability Board. (FSB) 2020a. *Holistic Review of the March Market Turmoil*. Basel.

Financial Stability Board (FSB). 2020b. *Global Monitoring Report on Non-Bank Financial Intermediation*. Basel.

Financial Stability Board. (FSB) 2021. *Policy Proposals to Enhance Money Market Fund Resilience: Consultation Report*. Basel.

Gale, D. 1995. "Dynamic Coordination Games." *Economic Theory* 5 (1): 1–18.

Gelos, G., and S. Wei. 2003. "Transparency and International Investor Behavior." EFA 2003 Annual Conference Paper No. 325, Chattanooga, TN, February 10

Gerlach, P., and R. Maurer. 2020. "The Growing Importance of Secondary Market Activities for Open-End Real Estate Fund Shares in Germany." *Schmalenbach Business Review* 72 (1): 65–106.

Goldstein, I., and C. Huang. 2016. "Bayesian Persuasion in Coordination Games." *American Economic Review: Papers and Proceedings* 106 (5): 592–6.

Hespeler, F., and F. Suntheim. 2020. "The Behavior of Fixed Income Funds during the COVID-19 Market Turmoil." Global Financial Stability Notes, International Monetary Fund, Washington, DC.

Huang, J-Z., Z. Sun, T. Yao, and T. Yu. 2020. "Liquidity Premium in the Eye of the Beholder: An Analysis of the Clientele Effect in the Corporate Bond Market." *Management Science* 66 (2): 932–57.

International Monetary Fund (IMF). 2014. "Risk Taking, Liquidity, and Shadow Banking: Curbing Excess While Promoting Growth." *Global Financial Stability Report*. Washington, DC, April.

International Monetary Fund (IMF). 2015. "The Asset Management Industry and Financial Stability." Chapter 3 of *The Global Financial Stability Report*, Washington, DC, October.

International Monetary Fund (IMF). 2016a. "The Insurance Sector—Trends and Systemic Risk Implications." Chapter 3 of *The Global Financial Stability Report*, Washington, DC, April.

International Monetary Fund. 2016b. *Ireland Financial Sector Stability Assessment Technical Note – Asset Management and Financial Stability*. Country Report 16/132, Washington, DC.

International Monetary Fund. 2016c. *United Kingdom Financial Sector Stability Assessment*. Country Report 16/167, Washington, DC.

International Monetary Fund. 2017a. *Luxembourg Financial Sector Stability Assessment Technical Note – Risk Analysis*. Country Report 17/261, Washington, DC.

International Monetary Fund. 2017c. "Growth-at-Risk and Financial Stability." Chapter 3 of *The Global Financial Stability Report*, Washington, DC, October.

International Monetary Fund. 2018a. *Brazil Financial Sector Stability Assessment Technical Note – Stress Testing and Systemic Risk Analysis*. Country Report 18/344, Washington, DC.

International Monetary Fund. 2018b. "A Decade after the Global Financial Crisis: Are We Safer?." Chapter 2 of The Global Financial Stability Report, Washington, DC, October.

International Monetary Fund. 2019. *The Global Financial Stability Report*, Washington, DC, April and October.

International Monetary Fund. 2020a. *The Global Financial Stability Report*, Washington, DC, April and October.

International Monetary Fund. 2020b. *Canada Financial Sector Stability Assessment Technical Note – Stress Testing and Financial Stability Analysis*. Country Report 20/16, Washington, D.C.

International Monetary Fund. 2020c. *United States Financial Sector Stability Assessment Technical Note – Risk Analysis and Stress Testing the Financial Sector*. Country Report 20/247, Washington, D.C.

International Monetary Fund. 2020d. *A Conceptual Model for the Integrated Policy Framework*. Working Paper 20/121, Washington, D.C.

International Monetary Fund. 2020e. *A Quantitative Model for the Integrated Policy Framework*. Working Paper 20/122, Washington, D.C.

International Monetary Fund. 2021a. "Preempting a Legacy of Vulnerabilities." Chapter 1 of The Global Financial Stability Report, Washington, DC, April.

International Organization of Securities Commissions (IOSCO). 2012. *Final Report on Recommendations for Money Market Funds*. November.

International Organization of Securities Commissions (IOSCO). 2018. *Open-ended Fund Liquidity and Risk Management—Good Practices and Issues for Consideration.* February.

International Organization of Securities Commissions (IOSC). 2020. *Money Market Funds during the March-April Episode*. November.

Jeanne, O., and R. Rancière. 2008. "The Optimal Level of International Reserves For Emerging Market Countries: A New Formula and Some Applications." Discussion Paper 6723, Centre for Economic Policy Research, London.

Jin, D., M. Kacperczyk, J. Kahraman, and F. Suntheim. 2019. "Swing Pricing and Fragility in Open-End Mutual Funds." Working Paper 19/227, International Monetary Fund, Washington, DC.

Kamenica, E., and M. Gentzkow. 2011. "Bayesian Persuasion." *American Economic Review* 101 (6): 2590–615.

Kose, A., E. Prasad, and M. Terrones. 2009. "Does Financial Globalization Promote Risk Sharing?" *Journal of Development Economics* 89 (2): 258–70.

Li, L., Y. Li, M. Machiavelli, and X. Zhou. 2020. "Liquidity Restrictions, Runs and Central Bank Interventions: Evidence from Money Market Funds." *Review of Financial Studies*

Miguel, A., and D. Su. 2019. "Explaining Differences in the Flow-Performance Sensitivity of Retail and Institutional Mutual Funds—International Evidence." *Theoretical Economics Letters* 9 (7): 2711–31.

Miyajima, K., and I. Shim. 2014. "Asset Managers in Emerging Markets Economies." *BIS Quarterly Review* (September) 19–34.

Raddatz. C., S. Schmukler, and T. Williams. 2017. "International Asset Allocations and Capital Flows: The Benchmark Effect." *Journal of International Economics* 108 (C): 413–30.

Surti, J. 2004. "Rational Speculation, Financial Crises and Optimal Policy." IMF Working Paper 04/25, International Monetary Fund, Washington, DC.

Sushko, V., and G. Turner. 2018. "The Implications of Passive Investing for Securities Markets." *BIS Quarterly* (March) 113–31.

US Department of the Treasury. 2020. *Report of the President's Working Group on Financial Markets: Overview of Recent Events and Potential Reform Options for Money Market Funds*. Washington, DC.

Zeng, Y. 2018. "A Dynamic Theory of Mutual Funds and Liquidity Management." Working Paper, University of Washington, Seattle.