The Impact of East Asian Reserves Accumulation on U.S. Interest Rates

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I have been asked to focus my testimony on the impact of foreigners' participation in U.S. fixed income markets on the current and prospective level and shape of the yield curve. I will say little, if anything, about the exchange rate implications, as other testimonies focus on these implications.

The Level of Foreign Participation in U.S. Bond Markets

In terms of sheer foreign participation rates, it is instructive to think of two extremes. The first extreme—which characterized U.S. and other industrial country bond markets thirty years ago—has negligible participation by foreign investors. In the second extreme—which characterizes emerging market countries' foreign borrowing—foreigners are the 800-pound gorilla, perhaps benevolent and lowering borrowing costs while resident, but causing great disruptions when leaving.

The U.S. bond market has evolved from the first extreme to something approaching, but perhaps not quite reaching, the second. Thirty years ago foreigners held only 4 percent of the U.S. bond market (Table 1). In such a setting, U.S. policy makers did not have to spend much time thinking about the actions of foreign investors. But this has changed. As of last summer, foreigners held one-quarter of outstanding bonds issued by U.S. entities of all types and over half of the Treasury bond market. Clearly, foreign participation in U.S. bond markets is now extensive enough that we must at least consider the impact of the gorilla, both what he has done to affect recent borrowing costs and what might occur were he to exit abruptly.

The Impact of Foreign Participation on Current Borrowing Costs

The surge in foreigners' acquisitions of U.S. bonds has had a tangible impact on the borrowing costs of the U.S. government as well as of U.S. households and corporations. Reasonable estimates of the impact on long-term U.S. interest rates range from about a full percentage point to one-and-a-half percentage points.[1] That is, foreign buying has kept long-term U.S. interest rates about one to one-and-a-half percentage points lower than otherwise. This can have a profound impact on our economy, funding a housing boom and economic activity in general, but it does not come without a cost. For example, many believe that the low U.S. rates

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[1] See Warnock and Warnock (2006) and the survey of estimates in ECB (2006).

have also left the United States (and the world) awash in liquidity, increasing the probability of bubbles and their disorderly resolution.

Foreigners also operate in shorter-term debt securities, but those markets are deeper, and their prevailing rates are much more closely tied to Federal Reserve policy. Thus, the scope for foreign influence on the shorter end of the U.S. yield curve is more limited. Putting together the differential impacts on the short and long ends of the yield curve, it is clear that foreign buying has been behind some of the flattening (and inversion) of the U.S. yield curve.

Prospects Going Forward: Higher Rates and Steeper Yield Curve?

Given that, on their way to accumulating one-quarter of the U.S. bond market, foreigners have helped to keep down long-term U.S. interest rates and flatten the yield curve, it follows that a slowing or cessation of those accumulations would result in an increase in long-term rates and a steepening of the yield curve. The one to one-and-a-half percentage points mentioned above assumes that foreigners merely cease their purchases but hold onto what they have already accumulated. If they were to reverse course and begin selling their accumulated holdings, U.S. interest rates could easily increase by as much as three percentage points.

This analysis is true, but only as far as partial equilibrium analysis can take us. That is, in a standard workhorse international macroeconomic model that takes into account the impact of various factors on interest rates (such as current fiscal and monetary policies, inflation expectations, and risk premiums), it has been shown empirically (Warnock and Warnock, 2006) that *all else equal* reduced foreign buying would result in higher long rates and a steeper yield curve.

But we do not live in a partial equilibrium world. All else is not equal. Actions by one economic actor beget reactions by others. In this case, we have our own 800-pound gorilla that can more than offset the actions of foreign investors. That gorilla, the Federal Reserve, and the fact that foreigners buy dollar-denominated U.S. bonds (that is, we do not have to issue bonds denominated in yen or euros or renminbi to attract foreign investors) is what separates the United States from most other countries.

The Fed has at least two choices if and when foreigners pull out of U.S. bonds. It could stand pat and watch events unfold. In that case we would have short-term interest rates of about 5 percent and longer-term rates at perhaps 7 percent. Economic activity would slow. Why

would the Fed allow that? Were they to, it would only be because it is optimal for them to do so. That is, were the Fed to want the economy to slow (perhaps because of building inflationary pressures), they would likely watch foreigners move into other markets and shrug their shoulders. Foreigners would, in that case, be implementing exactly the policy the Fed wants.

Consider another scenario in which the Fed was already satisfied with the shape of the yield curve and then, subsequently, foreigners pulled out. In this case the Fed thinks that, given current economic conditions, a flat yield curve with short and long rates at roughly 5 percent is optimal. Foreigners sell, which all else equal puts upward pressure on long-term U.S. rates. If the Fed does not like what that does to long-term rates—or the rate at any point on the yield curve—they can step in and buy. The Fed has the financial girth to step in and purchase what foreigners are selling. They might prefer not to, and clearly some of the buying would be done by other market participants attracted by higher yields, but they can. The Fed may well run into its self-imposed limits on the portion of any single U.S. Treasury bond that it can hold, but in that case they can move into near substitutes such as U.S. government agency debt.[2] U.S. debt markets are linked closely enough that one does not have to operate solely in the Treasury market to impact Treasury yields.

Thus, from the perspective of U.S. interest rates, in my opinion the actions of East Asian governments is a non-issue. It is important that we know the partial equilibrium effect—that, all else equal, if foreigners cease accumulating U.S. bonds or begin to sell current holdings, U.S. long rates will increase—but the Fed has the strength and size to respond. If they allow the partial equilibrium effect to occur, it would be because they see it optimal to do so. Otherwise, they will step in.

I should note the importance of our deep and well functioning capital markets. Were we an emerging market with less developed bond markets and had to result to borrowing in foreign currencies, our central bank could not ameliorate the potential damage done were foreigners to sell our bonds. But foreigners are willing to hold dollar bonds, and the Fed has the power to offset disruptions in the dollar yield curve.

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[2] The Federal Reserve Bank of New York (FRBNY), who manages the Federal Reserve System's portfolio of Treasury securities, caps *for any given issue* the amount of the System Open Market Account's (SOMA) holdings at 35 percent for Treasury bills, at 25 percent Treasury two-year notes, and on a graduated scale down to 15 percent for coupon securities with maturities of 10 years or more.

It is worth repeating. Foreigners find our capital markets as attractive places to store and accumulate wealth. Most countries do not have this privilege. This owes to at least two reasons. First, contrary to many countries, our markets are built on investor protections that enable outsiders (be they small retail investors, institutions, or foreigners) to have a fair chance against the insiders. Second, our economic policy is generally stable enough that it does not destroy wealth.

The Role of China and East Asia

I was asked to comment specifically on China. When analyzing reserves accumulation, I prefer to lump China together with Japan, Hong Kong, Taiwan, and Korea. At the risk of offending someone, I will call this group East Asia. Why treat these countries as one entity? Because if China breaks its tight link to the dollar, and hence no longer has a need to accumulate U.S. bonds, the others will likely follow suit. Each has accumulated an uncomfortably large reserves position in order to stave off currency appreciations. The latest IMF figures put Chinese reserves at over $900 billion, with Japan's roughly the same amount, and Hong Kong, Taiwan, and Korea at another (combined) $600 billion, or about $2.3 trillion as a group. If China allows the renminbi to appreciate, the others will likely take it as an opportunity to allow for some currency appreciation against the dollar, which would help to cool down their economies. There are signs that each of these economies could potentially overheat, so the appreciation would not necessarily be unwelcomed by policy makers.[3] And the tension associated with managing an economy while accumulating vast foreign reserves would be lessened.[4]

Figure 1, from Warnock and Warnock (2006), shows the size of East Asian accumulation compared with the accumulation of all other countries (both expressed as a share of U.S. GDP). The bottom graph depicts the impact East Asian accumulation has had on long-term U.S. interest rates. Both the accumulation and the impact have been sizeable but declining since August 2004, when Japanese accumulations ceased.[5] As noted above, were East Asia as a group to cease buying our bonds and were U.S. rates to increase, this could be offset by the Fed. It is

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[3] Annual economic growth in China and Hong Kong has been running at 11 percent. Growth is slower, but still substantial in Korea and Taiwan (each about 5 percent per annum), and growth is picking up sharply in Japan.
[4] On the pros and cons of large reserves positions, see Higgins and Klitgaard (2004).
[5] Data in Figure 1 are through May 2005. Flows from East Asia since then have been steady to increasing. Thus, today's magnitudes are slightly greater (in absolute value) than the last point on the graph.

important to understand the amount of the accumulation and the likely effect were it to cease, but only so that the Fed understands the appropriate response (or non-response).

An Aside: The Quality of Treasury and BEA Data

 I was also asked to comment on whether the data collected by the Treasury and Commerce Departments are well suited to assess the impact of a foreign country on U.S. capital markets.

 There are well-known and well-documented issues with U.S. data on capital flows and international holdings that can preclude an analysis of the impact of *a particular country* on U.S. capital markets.[6] Note that this is a discussion about whether U.S. data can accurately allocate flows and positions across foreign countries.[7] Because this can be confusing, I will talk separately about holdings and flows.

Benchmark Survey Data on Foreign Holdings of U.S. Securities

 Warnock and Cleaver (2003) and Griever, Lee, and Warnock (2001) documented the *custodial center bias* in U.S. data on foreign holdings of U.S. securities. U.S. benchmark surveys see only the first foreign address of the foreign holder. Thus, if a German holds a U.S. bond through his account at Euroclear in Luxembourg, the U.S. data will report this holding as being from Luxembourg. To the extent that investors (and governments, such as those from oil exporting countries or elsewhere) utilize custodians that do not reside (i) in their countries or (ii) in the United States, the custodial center bias will remain a prominent feature of the current data collection process. Countries and investors vary in their desire to utilize home-country and U.S. custodians, so the custodial center bias will vary across countries in ways that are not perfectly knowable, making the analysis of U.S. liabilities fraught with uncertainty.

 Table 2, from Warnock (2006), shows one manifestation of the custodial center bias. It shows the impact (in percentage points of the foreign country's GDP) on foreigners' portfolios of an unanticipated 10 percent drop in U.S. bonds, equities, and the dollar. Foreigners' portfolios

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[6] As instructed, I will focus on what I call *inbound* capital flows and U.S. *liabilities*. Outbound flows (that is, U.S. purchases of foreign securities) suffer from the same problems as inbound capital flows (although somewhat less severe). In contrast, data on U.S. assets (U.S. holdings of foreign securities) are pretty solid; with security-level data and a database of global securities, the biases that occur in flows data and in data on U.S. liabilities are not present.
[7] This is distinct from another question of whether the U.S. data accurately measures the overall amount of flows and positions.

are from U.S. liabilities data. The custodial center bias is evident for Luxembourg. We do not really believe that a 10 percent shock to U.S. financial markets would result in losses to Luxembourg investors that amount to 255 percent of Luxembourg GDP. It is just that investors from around the world use custodians in Luxembourg. So, yes, holdings at Luxembourg custodians will drop in value by an amount equal to 255 percent of Luxembourg GDP, but the vast majority of those holdings must be of foreigners, not Luxembourgers. The problem with the current system is that we are unable to quantify "vast". How much of Luxembourg's holdings are actually those of the Chinese government? We do not know.[8]

As mentioned in footnote 4, U.S. asset surveys (of U.S. holdings of foreign securities) are not subject to the custodial center bias. *The best way to get accurate cross-border holdings data is for every country to conduct comprehensive, security-level benchmark asset surveys.* The US already does that, but very few other countries do. Roughly 70 countries now provide assets data to the IMF through its CPIS (Coordinated Portfolio Investment Surveys) data collection system. However, for most countries the data are subject to the custodial center bias because best practices are not followed (IMF, 2000). Custodians have a geographic identifier for the investor (that is, the have an address or, better, a tax ID that identifies the investors' country) and a standard identifier for the security (CUSIP, ISIN, or SEDOL) that identifies the country of the issuer. If custodians provide this information to data collection officials—as they do annually in the United States—then there is no scope for a custodial center bias in assets data. The best way to get accurate cross-border holdings data is for every country to conduct comprehensive, security-level benchmark asset surveys.

Capital Flows Data on Foreign Flows into U.S. Securities

The capital flows data have their own bias, a *financial center bias* that is even more severe than the custodial center bias. The idea is the same as for holdings data, but for capital flows data the trade must only be placed through a third country to confound the data. A home country or U.S. custodian could be used, but if the trade goes through a London broker, it will show up as a U.K. purchase in the U.S. capital flows data. The very severe financial center bias in bilateral capital flows data renders the data incapable of accurately allocating capital flows

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[8] Table 2 makes another point. Because foreigners' positions are so large, they stand to suffer substantial losses if and when they liquidate.

across countries. The overall amount of recorded capital flows might be accurate, but the amounts attributed to individual countries are not.

Solutions to Data Collection Issues

First, it should be noted that the U.S. is no worse than other countries in the accuracy of its international capital flows and cross-border positions data. In fact, it has a world class system for collecting holdings data, and its capital flows data are as good as any other large industrial country. The problems described above are in some sense just a function of the way the global financial system works.

That said, there are ways the data collection system can be improved. One is global, and mentioned above. Countries should follow best practices and collect security-level data on their residents' holdings of foreign securities.[9] The second solution is domestic. One easy solution is for Treasury to relax its very conservative interpretation of the nondisclosure aspects of the *International Investment and Trade in Services Survey Act* (22 U.S.C. 3101 et seq., [the Act]) of 1977. At a simplistic level, Treasury's interpretation of the Act means that the security composition of foreigners' holdings is considered confidential information. That is, France's holdings of Microsoft common stock is treated as though Microsoft had a right to keep who holds its stock in confidence. Microsoft has none such right, except in Treasury's interpretation of the Act. Making these data public would help along many dimensions. It would improve the data quality as researchers would analyze the data and undoubtedly find (probably minor) mistakes in the data; these errors could then be quickly remedied in subsequent surveys. More importantly, it would aid bilateral comparisons with other countries that do security-level claims surveys. Currently, Treasury's interpretation means that the security-level data cannot be shared with the U.S. Commerce Department or the Bank for International Settlements (BIS), let alone foreign countries. As mentioned above, the sharing and comparing of security-level assets and liabilities data is an easy way to alleviate the custodial center bias. U.S. data on capital flows and international holdings could be improved by more bilateral data sharing, but the current Treasury interpretation of the rules forestalls all such efforts.

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[9] See the "Problem Areas and Improvement Initiatives" section of Bertaut and Griever (2004) for more on potential international solutions.

Conclusion

The accumulation of reserves by East Asian countries has put downward pressure on U.S. long-term interest rates and caused some of the flattening of the U.S. yield curve. If this accumulation were to cease or reverse, U.S. long-term rates would increase. The Fed would either allow this increase (to help slow the economy) or step in to alleviate it.

The analysis of the impact of any one country on U.S. capital markets is difficult because of known problems with capital flows and cross-border holdings data. While I believe that compared to almost any other country the United States does an excellent job collecting quality data, I have mentioned some dimensions along which data quality can be improved.

I believe that one day we will have a much better data collection system that will entail having global custodians provide their data to government statistical agencies on a regular basis. Custodians track information on the investor and securities held. Were they to deliver such data to data collection officials, we would not have the biases we currently see. Of course, there will always be offshore centers that will not opt into such an arrangement.

Figure 1: Decomposition of Foreign Flows

(a) Flows decomposed into those originating from East Asia* (thick line) and elsewhere.

East Asian and Other Flows into U.S. Government Bonds
(as a percent of lagged GDP)
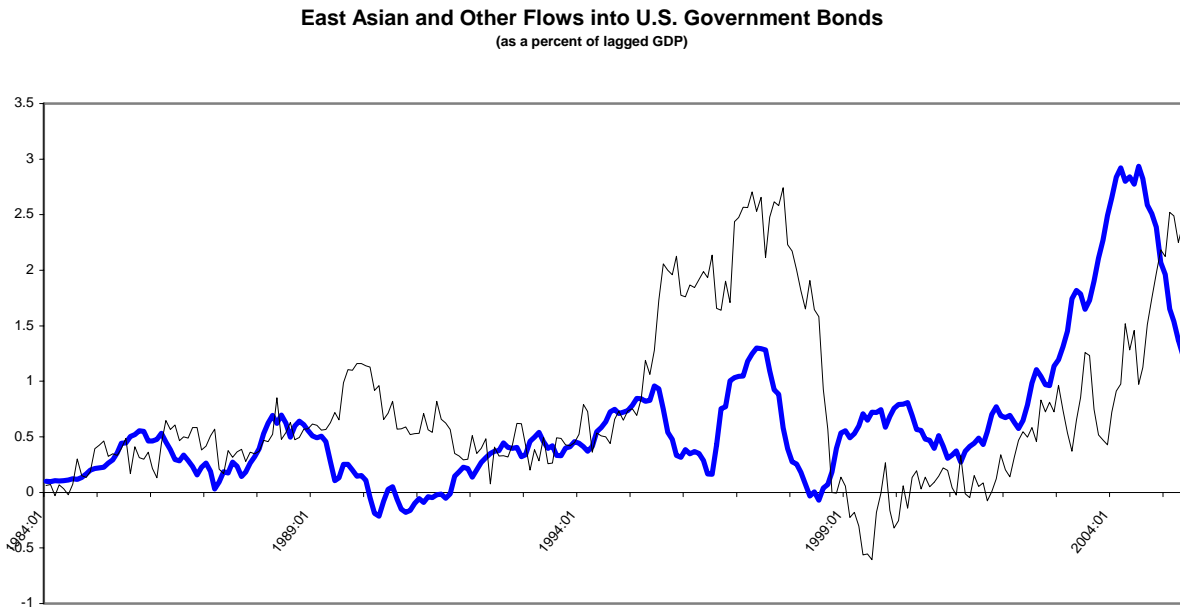
(b) Impact of East Asian* (thick line) and other inflows.

Impact of East Asian and Other Flows on 10-year Treasury Yield
(in basis points)
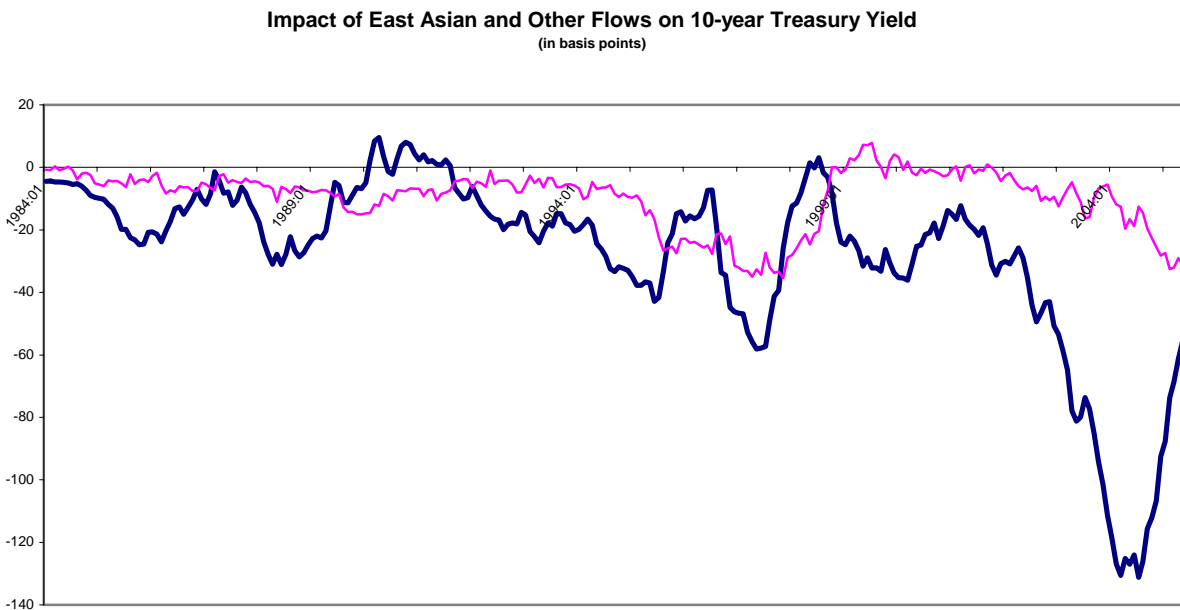
* In this exhibit, East Asia refers to Japan, China, Hong Kong, Taiwan, and Korea. Data are through May 2005.
Flows from East Asia have been steady to increasing since then, so today's magnitudes are slightly greater (in absolute value) than the last points on these graphs.
Source: Warnock and Warnock (2006)

Table 1. Foreign Holdings of Long-term U.S. Debt Securities ($ billions)

Issuer:		December 1978	December 1994	March 2000	June 2005
Treasury	Outstanding	326	2,392	2,508	3,093
	Foreign Owned	39	464	884	1,599
	% Foreign Owned	12.0%	19.4%	35.2%	51.7%
Agencies	Outstanding	180	1,982	3,575	5,591
	Foreign Owned	5	107	261	791
	% Foreign Owned	2.8%	5.4%	7.3%	14.1%
Corporates	Outstanding	715	3,556	5,713	8,858
	Foreign Owned	7	276	703	1,729
	% Foreign Owned	1.0%	7.8%	12.3%	19.5%
All U.S. Issuers	Outstanding	1,221	7,930	11,796	17,542
	Foreign Owned	51	847	1,848	4,119
	% Foreign Owned	4.2%	10.7%	15.7%	23.5%

Source: Table 2 of Department of Treasury et al. (2005, 2006).

Table 2. Impact on Wealth of Unanticipated Shocks, 2004 (In percent of GDP) 1/

	Total Holdings	Equities	Impact on Foreign Holdings of U.S. Long-term Securities			
			Bonds			
			Total	Treasury	Agency	Corporate
Developed countries	**-3.9**	**-1.7**	**-2.3**	**-1.0**	**-0.3**	**-0.9**
Euro Area	**-3.1**	**-1.3**	**-1.9**	**-0.4**	**-0.3**	**-1.2**
Austria	-1.3	-0.8	-0.5	-0.1	-0.2	-0.2
Belgium	-18.0	-1.2	-16.8	-0.9	-2.9	-13.0
Finland	-0.9	-0.6	-0.3	-0.1	-0.1	-0.2
France	-1.1	-0.7	-0.4	-0.2	0.0	-0.2
Germany	-1.5	-0.6	-0.8	-0.4	-0.2	-0.3
Greece	-0.3	-0.1	-0.1	-0.1	0.0	0.0
Ireland	-14.5	-6.8	-7.7	-1.1	-1.8	-4.8
Italy	-0.7	-0.5	-0.3	-0.2	0.0	-0.1
Luxumbourg	-255.3	-98.2	-157.2	-26.5	-20.7	-110.0
Netherlands	-7.5	-5.0	-2.5	-0.9	-0.6	-1.1
Portugal	-0.6	-0.3	-0.3	-0.2	-0.1	-0.1
Spain	-0.4	-0.2	-0.2	-0.1	0.0	-0.1
Other Europe	**-5.6**	**-3.3**	**-2.3**	**-0.8**	**-0.3**	**-1.2**
Denmark	-3.3	-1.9	-1.4	-0.6	-0.4	-0.5
Iceland	-1.5	-1.2	-0.3	-0.1	-0.1	-0.1
Norway	-5.1	-2.6	-2.5	-1.3	-0.3	-0.9
Sweden	-4.7	-3.1	-1.6	-0.9	-0.2	-0.4
Switzerland	-11.5	-7.5	-4.0	-2.1	-0.7	-1.3
Great Britain	-5.0	-2.8	-2.2	-0.5	-0.2	-1.5
Other developed	**-4.2**	**-1.5**	**-2.8**	**-2.0**	**-0.4**	**-0.4**
Australia	-2.5	-1.8	-0.7	-0.2	-0.3	-0.2
Canada	-6.3	-4.9	-1.4	-0.4	-0.1	-0.9
Japan	-4.1	-0.8	-3.3	-2.6	-0.4	-0.3
New Zealand	-1.8	-1.5	-0.3	-0.2	-0.1	-0.1
Emerging markets	**-4.3**	**-1.2**	**-3.0**	**-1.6**	**-0.7**	**-0.7**
Latin America	**-1.1**	**-0.3**	**-0.8**	**-0.6**	**-0.1**	**-0.1**
Argentina	-1.0	-0.4	-0.6	-0.3	-0.2	-0.2
Brazil	-0.6	0.0	-0.6	-0.5	0.0	0.0
Chile	-2.4	-0.9	-1.5	-1.0	-0.3	-0.2
Colombia	-1.6	-0.2	-1.4	-0.9	-0.2	-0.3
Mexico	-1.2	-0.3	-0.9	-0.8	0.0	-0.1
Peru	-0.3	-0.2	-0.1	0.0	0.0	-0.1
Venezuela	-1.4	-0.4	-0.9	-0.5	-0.2	-0.3
Uruguay	-6.4	-1.8	-4.5	-2.5	-1.2	-0.8
Emerging Asia	**-3.1**	**-0.1**	**-3.0**	**-1.9**	**-1.0**	**-0.2**
China	-4.3	0.0	-4.3	-2.7	-1.4	-0.2
India	-0.4	0.0	-0.4	-0.4	0.0	0.0
Indonesia	-0.7	0.0	-0.6	-0.4	-0.2	0.0
Korea	-2.6	0.0	-2.5	-1.4	-1.0	-0.1
Malaysia	-1.9	-0.2	-1.7	-1.4	-0.2	0.0
Pakistan	0.0	0.0	0.0	0.0	0.0	0.0
Philippines	-1.3	-0.2	-1.0	-0.8	-0.2	-0.1
Thailand	-0.5	0.0	-0.4	-0.4	0.0	0.0
Taiwan POC	-8.1	-0.6	-7.5	-4.5	-2.4	-0.5
Financial centers	**-14.2**	**-7.6**	**-6.6**	**-11.6**	**-5.8**	**-17.9**
Hong Kong SAR	-8.3	-2.9	-5.4	-3.6	-1.2	-0.6
Singapore	-24.2	-15.5	-8.7	-5.3	-0.9	-2.5
Caribbean financial centers 2/	--	--	--	--	--	--
Emerging Europe	**-0.5**	**0.0**	**-0.5**	**-0.4**	**-0.1**	**0.0**
Czech	-0.6	-0.1	-0.5	-0.3	-0.2	0.0
Hungary	-0.2	0.0	-0.2	-0.1	0.0	-0.1
Poland	-0.8	0.0	-0.8	-0.7	-0.1	0.0
Russia	-0.4	0.0	-0.4	-0.1	-0.3	0.0
Turkey	-0.7	0.0	-0.7	-0.7	0.0	0.0
Other emerging	**-2.7**	**-1.7**	**-1.0**	**-0.6**	**-0.2**	**-0.2**
Israel	-2.7	-0.9	-1.8	-1.2	-0.2	-0.4
Morocco	0.0	0.0	0.0	0.0	0.0	0.0
South Africa	-0.3	-0.2	0.0	0.0	0.0	0.0
African oil exporters 3/	-0.2	-0.1	-0.1	0.0	0.0	0.0
Middle East oil exporters 4/	-4.6	-3.1	-1.5	-0.9	-0.3	-0.2
World	**-4.0**	**-1.5**	**-2.5**	**-1.2**	**-0.4**	**-0.9**
Of which: Reserves	-1.1	-0.1	-1.0	-0.8	-0.2	0.0

Source: Author's calculations based on datasets described in the text.

1/ The shock is based on a simultaneous and unanticipated 10 percent decline in the value of the dollar, 10 percent fall in equity prices, and 10 percent fall in bond prices. It is assumed that 77 percent of Agency and Corporate bond holdings are in U.S. dollars, with the rest in foreign currency. Aggregates include only those countries listed individually.
2/ Bahamas, Bermuda, British Virgin Islands, Cayman Islands, Netherlands Antilles, and Panama.
3/ Algeria, Gabon, Libya, and Nigeria.
4/ Bahrain, Iran, Iraq, Kuwait, Oman, Qatar, Saudi Arabia, and the United Arab Emirates.

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