Figure 4, which graphs 1992 data on the Sveriges Riksbank's foreign exchange reserves [panel(a)] and net forward position in foreign currencies [panel (b)], reflects a story quite different from that behind panel (c) of figure 2 (1). Sweden's foreign exchange reserves were trendless (or slightly increasing) through early June, dropping only slightly by early August. There was virtually no net central-bank forward intervention in this period. Starting July 24, the Riksbank began to raise the marginal interest rate it charges the domestic banks.

At the height of the August-September attack the Riksbank intervened heavily in the krona's defense, borrowing reserves for this purpose in the second week of September. The resulting reserve shifts are apparent in figure 4. Most intervention took the form of spot foreign-currency sales, although the Riksbank also intervened in the forward market. After the initial storm had passed, however, total central-bank assets rose, interest rates fell, and reserves rose—until, quite suddenly, the ECU peg collapsed in mid-November.

A model to illuminate these events must encompass many more variables than simply the level of Sweden's foreign exchange reserves. Sweden was in recession in the summer of 1992; its unemployment rate jumped sharply from a 1982-91 average of 2.4 percent to 5.3 percent over all of the following year. In addition, the government's budget deficit had recently surged from an average surplus of 2.5 percent of GDP over 1987-91 to a deficit of 7.1 percent of GDP in 1992. Nonetheless, the legislature seemed far from agreement on a deficit reduction package. A troubled domestic banking system, unable to tolerate high interest rates, was straining the public finances. Finally, the krona had appreciated sharply in real terms since the end of 1990, and Sweden's switch from a trade-weighted basket peg to an ECU peg in the spring of 1991 made it more vulnerable to the dollar's depreciation over 1992.

In these circumstances, Sweden's maintenance of the krona's ECU peg was possible only at the cost of considerable short-term pain; and the conservative government naturally found its popularity falling. The perceived benefits from holding on were twofold. First, even though inflationary pressures were, for the moment, at bay, the government believed its long-term credibility would be damaged by a retreat from its announced nominal-anchor rule. Second, Sweden wished to demonstrate its readiness for EC membership by successfully pegging to the ECU—a strategy also followed by Norway and Finland.

This second motivation was crucial, for it implied that any event that made devaluation more "excusable" in the eyes of EC members, or that lessened the expected benefits of EC membership, would shake the government's resolve to tolerate further pain. The Danish vote, which made European unification look less likely for the near term, was the first shock: it signaled that the costs of abandoning an ECU peg, not only for Sweden, but for *de jure* Exchange Rate Mechanism members, might turn out lower than previously reckoned. To counter these impressions and restore stabilizing expectations France, on June 3, announced a September 20 referendum on the Maastricht Treaty. But this tactic soon backfired as French public opinion shifted against Maastricht.

Finland, which had devalued last at the end of 1991, was the first country to come under pressure. Once the markka was floated on September 8, Sweden's resolve was put to the test and its fierce, and temporarily successful, defense of the krona began in earnest; by September 16 the Riksbank had been forced to increase its overnight lending rate to 500 percent per annum, an act that placed strain on private-sector balance sheets as well as on the government's. After a subsequent political agreement to cut public expenditure, the foreign-exchange market stabilized and the Riksbank began to lower interest rates and regain foreign reserves. The central bank simultaneously increased its exposure in the forward market, perhaps to signal its resolve.

Surprisingly, in light of their painful struggle with the markets only two months earlier, the Swedish authorities floated the krona on November 19 without an aggressive interest-rate defense like the one in September. Instead, the response to renewed speculation was a strategy of limited

(1) Reserve data come from the *Riksbank's Assets and Liabilities: Weekly Statement*, various issues. Forward position data are reported in the *Riksbank's Quarterly Review*, 1993:4, table 28; they do not appear on the bank's balance sheet. Note that an official forward sale of foreign currency effectively reduces the net supply of domestic-currency bonds in private hands while increasing that of foreign-currency bonds; there are no monetary-base effects. The forward sale thus is equivalent to a sterilized spot sale of foreign reserves. Forward positions can be rolled over upon maturity through a swap of domestic for foreign currency.