interest-rate increases and mostly sterilized intervention, a strategy that led to massive reserve losses (see the two panels of figure 4)[1]. But these losses were a symptom, and not the cause, of the krona peg's political and economic unsustainability[2].

What explains the Swedish government's surrender? Economic pain has a cumulative effect: the government had taken all it could during the August-September crisis and had little stomach for more. Furthermore, the indefinite exit of England and Italy from the ERM on "Black Wednesday", September 16, coupled with the Spanish devaluation, left Sweden with little more to prove concerning its convergence to EC policies. These events and the French *petit oui* on Maastricht left the future of the EMS itself in doubt.

What lessons does the Swedish example teach? In general governments have several options that can be exercised in defense of an exchange parity, including borrowing foreign reserves, raising interest rates, reducing government borrowing requirements and, as was the case for some ERM members, tightening or imposing exchange controls. These strategies, if followed to the limit, have some chance of success. But they are painful, especially when unemployment is high and the public and private sectors are acutely vulnerable to high *ex post* real rates of interest. Governments therefore will balance the costs of such defenses against the benefit of resisting realignment pressures; and often they will conclude that the pain is not worth the gain. Any economic event that raises the market's estimation of the government's susceptibility to pain, or that lowers the perceived gains from a successful parity defense, can trigger a speculative attack. There need be no long prologue to such an attack; market sentiment can shift almost overnight. Table 1 illustrates how little markets anticipated the autumn 1992 crisis by showing the losses a German investor in some devaluing currencies would have made by rolling over one-month deposits from the announcement or tightening of an ECU peg through the month of collapse.

Table 1

RETURN, IN DEUTSCHEMARKS, ON COMPOUNDED ONE-MONTH DEPOSITS OF OTHER EUROPEAN CURRENCIES

(annualized percent rates)

Currency	Dates of Investment	Return	Comparable Return on DEM
Lira	January 1990-October 1992	6.42	9.22
Krona	June 1991-December 1992	– 0.12	9.73
Pound sterling	October 1990-October 1992	1.67	9.56

Source: DRI data.

If governments determine the extend of their resistance through a cost-benefit analysis, however, self-fulfilling crises become likely in situations where economic distress already places the government under pressure. The reason is that the cost of resisting an attack depends in part on endogenous variables. If markets expect devaluation, for example, domestic interest rates will rise, thus creating an incentive to devalue. Similarly, expectations of devaluation may be incorporated in wage demands, raising authorities' incentive to accommodate. These processes are circular: thus their timing is basically arbitrary and they can be bought into play by seemingly minor events.

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(1) Hörngren and Lindberg recount that the Riksbank sold over 160 billion kronor in six days. The kronor magnitudes in figure 4 have not been revalued to reflect the currency's depreciation starting on November 19.

(2) Figure 4 gives the impression that the sum of the Riksbank's foreign reserves and net forward position was around zero when the krona collapsed in November—an apparent confirmation of Krugman's (1979) assumption that total reserves are driven to zero in a collapse. This appearance is an artifact of intra-government accounting conventions. Offsetting the Riksbank's large foreign reserve acquisition in early September [panel (a)] was a corresponding balance-sheet liability to Sweden's National Debt Office, which itself borrowed intervention reserves for the Riksbank in the foreign exchange market. The resulting "domestic" liability on the Riksbank's balance sheet thus reflected a foreign liability of the Swedish government. Arguably, Sweden's foreign reserves were below zero at the end of November 1992.