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ABSTRACT

When Stage III of EMU begins on January 1, 1999, member countries will irrevocably lock exchange rates, and interbank payments in euros will commence. Will the ensuing respite from Stage II instabilities be permanent or only the eye of the storm? Can Stage III itself be subject to an attack that forces a realignment of the "irrevocably fixed" exchange rates and breakup of the system?

The key question for this paper is how the infrastructural arrangements designed to underpin the monetary union will emerge to determine capital flow dynamics in a crisis and accentuate potential cross-border flows. The answer lies in the details of the TARGET payment system, which can provide the inter-central bank credit necessary to fund an attack.

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The European System of Central Banks (ESCB) led by the European Central Bank (ECB) will become operational when Stage III of EMU begins on January 1, 1999. Member countries will irrevocably lock exchange rates, and interbank payments in euros will commence. There will be respite from the Stage II instabilities: bilateral currency markets will no longer exist to batter policy goals.

Is this respite permanent or only the eye of the storm? Can Stage III itself be subject to an attack that forces a realignment of the "irrevocably fixed" exchange rates and a breakup of the system? The received wisdom is that the answer to these questions is no. The Maastricht Treaty, Stability Pact, and legal changes surrounding the organization of the ECB all set the fixed rates in concrete; and a collapse in Stage III is equivalent to the withdrawal of an EMU member from its treaty commitments.

However, a realistic view of the centrifugal forces pulling against monetary union produces a less definitive answer. Sovereign regions at loggerheads over monetary policy could threaten monetary union. They would be affected differently by the economic shocks of business cycles and thus have different preferences for secular inflation.[1] Such divergences of view could be strong enough that a country chooses to bear even the costs of unilateral withdrawal from the group.

For example, finance ministers and central bank officials might be unable to reconcile excessive unemployment in one region--particularly in the absence of major new inter-EMU redistributive mechanisms--or might face nationalistic political platforms. Financial markets would

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[1]This lack of synchronization of desired policies provided sufficient reason for not having a currency area in Mundell (1961).

start moving funds from more to less inflation-tolerant regions, betting on a dissolution of the system. The key question for this paper is how the infrastructural arrangements designed to underpin the union will then emerge to determine capital flow dynamics in a crisis and, indeed, to accentuate potential cross-border flows. The answer to this question lies in the details of the TARGET payment system, which can provide the inter-central bank credit necessary to fund an attack. Such funding is similar in nature to that provided by the Very Short Term Financing Facility (VSTFF), which backstops the currently operating Exchange Rate Mechanism. That inter-central bank financing through the VSTFF was not unstinting in the ERM crisis of 1992 provides an indicator of how the players on the TARGET system might respond to a Stage III crisis.

How the VSTFF Operated

The VSTFF is a facility to be used if serious intervention is necessary to preserve official bilateral bands in the Exchange Rate Mechanism. Under the Basle-Nyborg agreement, the weak currency central bank is to intervene in the exchange markets to prevent the exchange rate from breaching the band. The strong currency central bank is responsible for providing credit to the weak currency central bank through the VSTFF, theoretically in unlimited amounts but in fact limited by the effect on the strong currency central bank's monetary policy.

Table 1 depicts such a credit operation, assuming that Italy is the weak currency country and Germany is the strong currency country. Table 1 is constructed on the assumption that the exchange rate between DM and ECU is DM2/ECU. Also, the assets and liabilities of the VSTFF are denominated in ECU. Initially, the balance sheet of the VSTFF is empty, but on entering the crisis in the ERM, Italy intervenes by selling DM10 billion for lira. To acquire the DM that it is now obliged to deliver, the Banca d'Italia approaches the VSTFF to borrow ECU 5 billion. The VSTFF

borrows ECU 5 billion from the Bundesbank, which in turn creates a deposit of DM10 billion for the VSTFF. The VSTFF exchanges the DM10 billion for the ECU 5 billion it lent to the Banca d'Italia. These operations produce the balance sheet changes organized in Table 1.

Note first that the operation increases the ECU denominated assets of the Bundesbank along with its DM liabilities. *Any depreciation of the ECU relative to the DM will result in an immediate loss to the Bundesbank.* Second, when the Banca d'Italia delivers the DM10 billion due from its market intervention, the German monetary base will increase, requiring *either a large sterilization operation by the Bundesbank or a loss of monetary control.* For both reasons, the Bundesbank commitment of credit through the VSTFF was limited in the 1992 crisis: the Bundesbank was determined not to lose control of the monetary base and not to run large losses. Although it was obligated under the provisions of the Basle-Nyborg agreement, it would not provide unlimited credit to the other members of the exchange rate mechanism to defend their currencies.[2] Indeed, it was this ultimate lack of willingness to provide unlimited credit--and the market's realization that the credit would not be forthcoming--that was a necessary condition for the attack.

If, contrary to the event, the Bundesbank had been willing to provide unlimited credit through the VSTFF, the lira need not have fallen through the exchange rate band, and monetary policy in Germany would have been relaxed to support the ERM.

How Will an Anticipated Crisis Play Out under the ESCB?

EMU is intended to remove the costs that are perceived from currency transactions between

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[2]The supply of credit by the strong currency central bank was always subject to the proviso that the provision of credit in a crisis should not undermine the monetary policy of the strong currency central bank.

members of the European Union and to create a currency area on a scale that can generate liquidity comparable to that in the US dollar zone. Equally important, EMU, once completed, is expected to eliminate the possibility of a speculative attack of the sort that crippled the ERM.

At the start of Stage III on January 1, 1999, the major currencies of those countries that join will have "irrevocably" locked exchange rates. National currencies will continue to exist until 2002, and commercial bank deposits can still be denominated in francs or euros. By 2002, the individual currencies--French francs, Deutsche marks, etc.--will disappear and be replaced by a circulating paper euro. In addition, two key institutions will become operational at the start of Stage III--the European System of Central Banks (ESCB) led by the European Central Bank (ECB) and TARGET, the large-value cross-border euro electronic payments system.

The Structure of the ESCB

The ESCB will be a combination of the national central banks, such as the Banque de France and the Bundesbank, under the coordination of the ECB, but key central banking functions and operations will be performed by the still-existing national central banks. Monetary policy will be controlled by the ECB--that is the setting of reserve requirements, discount rates, and foreign exchange policy, open market intervention, etc. The ECB will have its own balance sheet and capital.

Nevertheless, the national central banks will retain their identities. In particular, *each national central bank will operate its own national large-value payments system* and have its own balance sheet and capital. The profits (and losses) on monetary operations of the ECSB will be distributed to the national central banks in proportion to their shareholding in the ECB. In turn,

national central banks can pass these profits through to the respective national governments as in current practice.

Some Operational Details of TARGET

When it goes on-line at the start of Stage III, the TARGET payment system will provide the interface between national payment systems and will not replace them. Euro payments originating in one country will be delivered one-for-one nearly instantly as euros in another country. An understanding of some operational details of TARGET is important, because it is this system that will provide the credit that fuels crisis dynamics.

TARGET will effect large value payments in the euro, the new common currency, both between countries. TARGET is designed, according to the current risk control standard of most industrial country central banks, as a real time gross settlement system (RTGS). In such a system, final settlement of a payment is made simultaneously with the transmission of a payment message during the day. Therefore, the sender of the payment must have central bank money available at the time that the payment order is sent--otherwise, the payment is blocked.

Standard European RTGS systems allow a bank to overdraw its central bank account to make payments during the day, *provided that the overdrafts are collateralized by acceptable paper* such as the securities of the national government.

The TARGET system will work as follows. As a first example, suppose that a payment is made in euros or french francs from one bank to another bank in France. Both banks will have accounts at the Banque de France and will transmit payments across the national system. Payments will be settled by instantaneously transferring funds across bank deposit accounts at the Banque de France.

Second, suppose that a euro payment is made from a bank in France to a bank in Germany. The French bank will send a payment message over the French national system. The payment order will be channeled automatically through Banque de France software that will subtract the amount from the Banque de France account of the French bank, and process the payment order onward through the TARGET system to the Bundesbank. In turn, on receiving confirmation that euro funds are available in the Banque de France account of the sending bank, the Bundesbank will increment the account of the German bank one-to-one with euros.

Thus, a euro payment will be settled almost instantaneously across borders. Such payments from the internal currency of one country to that of another now generally require the standard two day wait through the exchange market through the use of two unconnected, parallel national payment systems.

Accounts can balance after this cross-border transaction because credit has been given by the Bundesbank to the Banque de France in settling the payment. The funds made available to the receiving bank in Germany are instantaneous and irrevocable; the funds that are deducted from the French bank are funds in an account at the Banque de France; so the Banque de France has incurred a "due to" to the Bundesbank. This will be accounted by incrementing the Bundesbank's *bilateral* correspondent (or interlinking) account at the Banque de France and reducing the Banque de France's *bilateral* correspondent account at the Bundesbank by the same amount.

In the example in Table 2, Paribas makes a payment of 100 euros to Deutschebank. This alters the Banque de France and Bundesbank balance sheets as shown between panel 1 and panel 2. Commercial bank deposits in the Banque de France fall by 100 euros and rise by 100 euros at the Bundesbank. The overall monetary base in euros is unchanged, but part of it has migrated to

Germany. This is accomplished instantly through an automatic credit from the Bundesbank to the Banque de France of 100 euros.

In this regard, TARGET operation is not remarkable and differs little from, for example, the US Federal Reserve's Fedwire system.[3] In the Federal Reserve system, daily imbalances between district Feds--that is, imbalances that arise when inter-bank payments cross district lines--are cleared by incrementing the claims of district Feds with net payment inflows against the Interdistrict Settlement Account. Claims against this account by district Feds with net payment outflows are reduced. This process is repeated on each succeeding business day. The cumulated claims against or obligations to the Interdistrict Settlement Account are settled once per year in April with the redistribution of gold certificates from district Feds with a negative cumulated net payment position to those with a positive position. Settlement in the Federal Reserve system does not require the use of accounts in a third party bank. Specifically, the Board of Governors in Washington is not a bank in itself but a regulatory body of each of the district Federal Reserve banks. Nevertheless, the Interdistrict Settlement Account is a *multilateral--not a bilateral--account*; claims against it are claims against the system.

If the individual national central banks freely provide credit to other national central banks, TARGET will function as planned and serve as the heartbeat of the unified currency. In this scenario, speculators will have no chance to profit by attacking the locked exchange rates of the system in the face of unlimited inter central bank credit. This differs from the current Exchange Rate Mechanism in which unlimited inter central bank credit is not available *de facto*.

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[3]Based on "Notes on Federal Reserve Accounting Structure, June 10, 1994, prepared by Bruce Summers

An Attack Scenario

A precondition of attack must therefore be skepticism that a strong currency national central bank will provide through TARGET unlimited credit in euros to the weak national central banks remaining in the system if it is preparing to leave the union. Alternatively, when a weak currency central bank is preparing to leave the union, it will not borrow unlimited amounts from the strong currency central banks remaining in the union. In a Stage III attack, TARGET operating procedures and the financial operating policy of the ESCB will determine the amount of inter-NCB credit in play and the order of magnitude of the funds moved by speculators.

Cross-Border Flows in a Currency Break-Up

The essence of a Stage III attack scenario is a well-worn story.[4] A currency area breaks up with a flood of existing currency and bank deposits from the region where it will have less post-dissolution value. The cross-border surge is a means of satisfying the suddenly increased currency demand in the strong currency region and the reduced demand in the weak currency region at the moment of monetary disintegration. This equilibrating inflow occurs even if there is no capital gain anticipated from a favorable conversion rate. If, in addition, favorable conversion rates create a potential capital gain at the moment of dissolution, the inflow temporarily can be much larger than the real money demand shifts across static equilibria.

To prevent excessive inflow, the receiving region closes the border until equilibrium can be restored and a new currency launched. Otherwise, it will lose seignorage and import weak zone inflation in the form of a one-time price level jump. Moreover, it may buy in excessively large

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[4]See for example Garber and Spencer's (1994) study of the monetary dissolution of the Austro-Hungarian Empire.

amounts of the currency at excessively appreciated conversion rates and suffer a post-conversion capital loss.

In the Stage III environment, *turning off TARGET will have the same motivation as an old-fashioned border closure: preventing the inflow of the weak central bank's money.*

A Static Graphical Analysis of Cross-Border Flows

Figure 1 depicts the shifts that will occur with a break-up of a monetary union into an inflationary France and a non-inflationary Germany. Just before the break-up the total nominal money supply in Germany and France is OO'. I assume for this static example that there is no jump in total money supply at the time of dissolution of the union. This is reasonable if the cross-border flows are not impeded and the moment of the break-up occurs with no expected discontinuity in prices. Later, I will relax these requirements to what happens if the dissolution is accompanied by a sudden surge in money creation through the operation of TARGET.

The demand for real money in France is $M_F/ P_F = f(i_F)$, and the demand for real money in Germany is $M_G/ P_G = f(i_G)$, where i_F and i_G are French and German interest rates, respectively. M_F and M_G are the French and German nominal money supplies, and P_F and P_G are the respective price levels. Together the two demands sum to $M_G/P + M_F/P = f(i_G) + f(i_F)$. Prior to an expectation of a dissolution of the monetary system, the price level is the same in both countries at a value of P. Similarly, the interest rates are the same: $i_G = i_F$.

In Figure 1, the curves are the rectangular hyperbolas M x 1/P whose positions depend on the interest rate at a given moment in time in each country. Initially, the union's total money supply is distributed as ON in France and O'N in Germany, and the price level P equilibrates the demand

and supply of money given the interest rate.

When the public recognizes that there will be a dissolution into separate currency standards, the interest rate jumps down in Germany to i'_G because Germany is expected to be a low inflation country. In France, the interest rate jumps up to i'_F. The demand for real money jumps up in Germany to $f(i'_G)$ and jumps down in France to $f(i'_F)$, as depicted in the Figure 1. If money is allowed to flow freely across borders up to the time of the dissolution, equilibrium in the money markets at the instant of separation will be established with a movement of N'N in net payments from France to Germany and a rise in the price level to P'. With this movement of funds, P' will initially be the same in both countries.[5] In addition, the exchange rate between German euros and French euros (between the renascent DM and euro still controlled by the ECSB) will not shift discontinuously at the time of dissolution: the successor currency zones will initiate the new regime with the original locked exchange rates. The euro would then steadily depreciate against the new DM.

The cross-border shift of money, if allowed to develop fully, is the mechanism that generates the new initial equilibrium without initial price level or exchange rate shifts. Once separated into different monetary standards, of course, the price levels will move apart and the exchange rate will move from its old "locked" parity.

By acquiescing in the full movement of money across its border at the time of dissolution,

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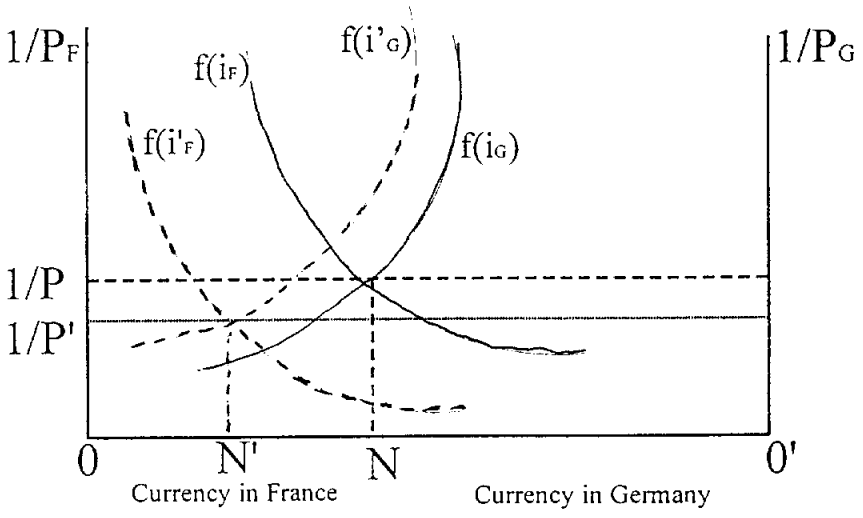
[5]Indeed, if the dissolution is anticipated, P' will not be generated by a discontinuity in the price level as seems to be indicated in this static analysis. Rather, the price level will rise continuously from P to P'. Of course, the price level may even fall in the dissolution if the upward jump in money demand in Germany is greater than the downward jump in France. The opposite case is depicted in Figure 1.

Germany is giving up to France the potential to gain seigniorage on a one-time basis equal to the real value of N'N. In addition it must absorb a jump up in the price level--all because it did not turn of its TARGET interface computer in time.

Figure 1. Currency and Price Level Shifts in Monetary Separation



A Dissolution with Discontinuity of Conversion Rates

This static seignorage cost of dissolution may be relatively benign. A potentially much more costly cross-border flow may occur as a result of uncertainty about the conversion rate between the renascent DM and the euro at the time of dissolution. If there is a potential for capital gain, large segments of the national balance sheets of countries adhering to the euro may be pumped into the

Bundesbank through TARGET. If such a capital gain to speculators does materialize through discontinuities in the conversion rate or the price level at the time of dissolution, it will materialize as a loss on the books of the Bundesbank.

A Strong Currency Exodus

Suppose that ECB policy generates a sufficiently weak euro that some countries of the monetary union consider an exodus. For concreteness, Germany will stand for the strong euro proponents and France will stand for the weak euro proponents, who are in ascendancy at the ECB. Positioning itself for a breakup, the financial system will move euro-denominated funds from France to Germany, at first slowly and then in a deluge, as in a currency crisis.

How will the euro payment mechanism facilitate the movement? When the crisis breaks out, the global financial community will sell French euros--euro bank deposits payable in France--and order payments through TARGET to German institutions, which provide German euros--commercial bank deposits payable in Germany.[6]

Because final settlement is made simultaneously with the transmission of a payment message, the bank sending the payment must have central bank money available on initiating the payment order. To avoid payment gridlock, TARGET provides for daytime overdrafts, so the French banking system can make outgoing payments larger than its euro deposits in the Banque de France, provided that it has the proper paper for collateral.

For example, panel 3 of Table 2 depicts the accounting changes in the Banque de France and

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[6]These can be denominated either as DM or euros in Stage III.

the Bundesbank associated with a sudden payment flow from French banks to German banks equal to 400 euros. Starting from panel 2, deposits of French commercial banks in the Banque de France fall from 300 euros to -100 euros, indicating a collateralized overdraft. Banque de France liabilities to the Bundesbank rise to 500 euros, and German commercial bank deposits in the Bundesbank jump to 900 euros.

In this way, holders of French securities use them to pry credit from the Banque de France, which in turn funds itself by borrowing from the Bundesbank. At the end of the business day, French banks will be unable to settle their overdraft position with the Banque de France, and the collateral will then have to be rolled overnight at the prevailing discount (Lombard) rate--set not by the Banque de France but by the ECB, uniformly across national central banks.

An Aside on the Interest Rate Defense

This uniform setting of the discount rate ostensibly eliminates the principal tool for defending against speculative attacks against currencies--raising the interest rate in the weak currency country.[7] Nevertheless, the ECB can still squeeze overnight borrowers by uniformly raising the Lombard rate. This will affect the money markets only of those countries that speculators believe will keep the euro; the money markets of the countries receiving the capital flows will have large amounts of liquidity, thereby leading to a fall in interest rates. Thus, a stout interest rate defense of the euro

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[7]The ECB will have the power to impose a differential haircut on discount operations involving securities of individual countries or even to terminate accepting them as collateral for overdrafts or for discounting. Such differential action against an individual state's securities is inherently a political decision that cannot suddenly be imposed, and the anticipation of its possible imposition can of itself trigger an attack. Also, terminating the use of a given country's securities as collateral for overdrafts would cut off its national payment system from the other members of the Union, thereby causing a float of the country's euro.

against dissolution--while imposing a squeeze on speculators-- will generate even looser monetary conditions in Germany than those that generated the potential dissolution.

How Big Can the Flow Be?

Outgoing payments to Germany can potentially be as large as all liquid French euro securities that can be settled quickly and that are deemed acceptable by the ECB as collateral at the Banque de France plus initial bank deposits at the Banque de France. Sellers may borrow French euros, using French euro securities as collateral, or sell outright; in turn, the securities are passed to the Banque de France to serve as collateral for overdrafts. Conversely, German banks will expand their German euro (DM) liabilities, which are balanced by their euro (DM) claims against the Bundesbank.

If the Bundesbank is unwilling to become a creditor against the Banque de France in what may effectively amount to the redenomination of all French euro securities and deposits into German euros, with all discountable French euro securities placed into the Banque de France, this system will collapse.

The Uncertainty of Loss-Sharing

Any losses that might accrue to the Bundesbank in the event that the system collapses will be presented to the German treasury in one way or another. How losses will be shared among the euro countries in a collapse is not clear, however. According to the Protocol on the Statute for the ESCB, monetary income of the national central banks is defined as annual income derived from its assets held against notes in circulation and deposit liabilities to credit institutions, with the assets earmarked according to ECB guidelines. The sum of the NCB's monetary income is to be split among the NCBs in proportion to their shares in the capital of the ECB, as is the profit of the ECB

itself. The fraction of shares of the ECB to be held by each NCB is to be determined as the sum of a country's population as a fraction of EU population and the fraction of EU GDP produced in that country, divided by two.

Evidently, this allocation of income is also a loss sharing formula, but it is applicable to an ongoing participation in the ECSB. In a dissolution crisis, it is not clear that capital losses incurrec by the Bundesbank in its secession would fall under this formula. Because of the bootstrapped confidence in the seamless success of the ECSB venture, there has been no provision for the liquidation of assets of the system or the sharing of liabilities and losses if the system or part of it is wound up.[8]

Atop its original dismay about the weak euro monetary policy, in a crisis Germany must also absorb the growing Bundesbank euro claims against the Banque de France. If there is a breakup, these claims will have to be settled, but in the weak euro as defined by the ECB. Presumably, the corresponding Bundesbank euro (DM) liabilities will be redeemed in the stronger successor currency--the German euro or the renascent DM -- a source of potentially catastrophic loss for the Bundesbank.[9]

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[8]See Garber and Spencer (1994) for the sharing of assets and costs in the liquidation of the Austro-Hungarian Bank.

[9]The rules for profit distribution and loss sharing within the context of an ongoing ESCB are not as relevant for determining German action, though, as the legal status of loss sharing in a breakup. An ERM-like crisis can get off the ground in Stage III only if the speculators are convinced that Germany will repudiate the EMU. What the chances of such repudiation are hinge first on the political situation in Germany, which may overturn any legal or treaty commitment by force majeure. Barring such arbitrary behavior, Germany presumably is limited in its actions by its legal commitments under the treaty and under it internal laws. The crux of

The evidence indicates that the Bundesbank was unwilling in 1992-3 to take unlimited market risk with other central banks through VSTFF lending when there were different currencies. That market risk will under the ESCB be converted into a credit risk, but after a collapse of the system, it will be converted back to market risk as the French euro floats against the German euro.

If the Bundesbank limits its lending to the Banque de France in order to avoid losses and because of its dismay over monetary policy in general, then it must eventually cut off further credit by disconnecting the national payment system from the TARGET system. Also, if the limitation of potential losses is an important motivation, it is better to end the system as early as possible in a crisis. This severance of the German euro from the French euro eliminates the par exchange between them. We then have a return to different currencies, where French euros have become distinct from German euros. *Ending the par exchange rate ratifies the expectations of speculators and allows them to profit from their short French euro positions.*

A Weak Currency Exodus

Suppose now that the ECB's policy produces so excessively strong a currency that a bloc of weak currency countries (represented here by France) wants to leave the union. The scenario plays out almost as before. Sensing that the Banque de France will produce a depreciating currency against the euro because the strong currency board will still control the ECB, speculators will move funds from French banks through TARGET to the banks of countries remaining in the monetary union. Inter-central bank liabilities denominated in strong euros will explode on the Banque de France's

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the matter then is to determine exactly what escape clauses there are in these legalisms: what contingencies Germany would have to invoke to pull out and what powers will still reside in Germany either in the Bundesbank, the government, or the constitutional court to pull out of the system and to convert the euro liabilities and assets in Germany into a successor currency.

balance sheets, while its assets will be in the weak local successor currency. Now, potentially large exchange losses will threaten the Banque de France, unless it can disconnect its payment system before its overdraft position in strong euros with the Bundesbank mounts excessively. The Banque de France is then in the same position as the Bank of England in the 1992 crisis--reluctant to take on more ECU liabilities in the face the losses of an eventual credit cutoff, it ended its intervention early and left the ERM.

Disconnect of Payments Systems=Exchange Rate Collapse

This disconnect of the German euro from the French euro eliminates the 1-1 exchange between them, and it locks up cross border payments. The only way to effect a conversion between the French euro and the German euro is then to retreat from the TARGET-euro system to the still-existing national payment systems, in combination with a rebirth of formal foreign exchange markets.

Conclusion

Speculators are now investigating possible methods to attack Stage II and Stage III of the European Monetary Union (EMU) to replay the ERM crisis of 1992-93. The source of profit in 1992 was the foreign exchange market intervention by the weak currency central banks combined with the credit offered by them directly and the Bundesbank indirectly that financed the huge short positions built up by speculators against the weak currencies.

What makes a Stage III attack attractive is the large short position against the weak euro region made possible through payment system credit and the inevitable overnight rollovers through ESCB standing facilities. The stakes on the table can become much higher than in previous currency

crises, and the potential profits from a successful attack even greater. The policy makers will not have the luxury of a leisurely separation decision at an undetermined time. Their hands will be forced and the timing of separation will be determined by speculative attack.

As long as some doubt remains about the permanence of Stage III exchange rates, the existence of the currently proposed structure of the ECB and TARGET does not create additional security against the possibility of an attack. Quite the contrary, it creates a perfect mechanism to make an explosive attack on the system. The Stage III institutions are then similar in essence to the ERM mechanisms and institutions that existed in 1992-3. To imagine that speculators will have leaner pickings in 1999 compared to 1992 because of these institutional changes may be a costly illusion.

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Table 1. Balance Sheet Effects of VSTFF Operations

Assume DM10 bn. = ECU5 bn.

Bundesbank

Assets		Liabilities	
Claim on VSTFF	+ ECU5 bn. (=DM10 bn.)	+DM10 bn.	Deposit of Banca d'Italia

VSTFF

Assets		Liabilities	
Claim on Banca d'Italia	+ ECU5 bn.	+ECU5 bn.	Due to of Buba

Banca d'Italia

Assets		Liabilities	
Deposit in Buba	+ DM10 bn.	+ECU5 bn.	Due to VSTFF

Target 2. Cross-Border Payment on TARGET

1. Initial Central Bank Balance Sheets (in Euros)

Banque de France

Assets		Liabilities	
French Govt. Securities	400	0	Due to Buba
		400	French Bank Deposits

Bundesbank

Assets		Liabilities	
Loans to German Banks	400	0	Due to Bank of France
		400	German Bank Deposits

2. National Central Bank Balance Sheets after Paribas pays 100 Euros Deutschebank

Banque de France

Assets		Liabilities	
French Govt. Securities	400	100	Due to Buba
		300	French Bank Deposits

Bundesbank

Assets		Liabilities	
Loans to German Banks	400	-100	Due to Bank of France
		500	German Bank Deposits

3. NCB balance sheets after French banks send 400 Euros to German banks, deposit 100 in securities as collateral for overdrafts

Banque de France

Assets		Liabilities	
French Govt. Securities	400	500	Due to Buba
		-100	French Bank Deposits

Note: French Govt. Securities for Collateral 100

Bundesbank

Assets		Liabilities	
Loans to German Banks	400	-500	Due to Bank of France
		900	German Bank Deposits