

# The TARGET mechanism: will it propagate or stifle a Stage III crisis?\*

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## Abstract

Skeptics have long believed that the EMU faces a dangerous period in Stage III when the “legacy” currencies will still be in circulation. The issue of whether the EMU could collapse arises from whether a country can extricate itself from the treaty. I will look briefly at some of the legal questions concerning a breakup of the union, specifically focusing on some costs that would materialize. This paper mainly will consider the technical mechanism whereby a crisis will be propagated through the financial system of the union, if a crisis does arise. The crisis may emerge as a straight banking crisis and not as an attack on the permanence of the EMU at all. It may reflect a disbelief in the permanence of the union; even if this belief is erroneous, it is worth examining how the funds will flow across borders and how the system will be defended. Finally, there may be a crisis that is preliminary to the collapse of the union itself. I include some earlier work on the propagation of a crisis in Stage III and examine issues of timing and dynamics of an attack.

## 1 Introduction

Economists, particularly in the United States, have often voiced skepticism about the likelihood that European monetary union would occur. Perhaps this skepticism stems from the observable one-to-one relation between the number of sovereign states and the number of separate currencies, after accounting for vestigial colonial relationships.

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Now that EMU is about to occur, there is also skepticism about whether it will endure.<sup>1</sup> Specifically, will the 11 countries in the EMU follow the rules of behavior that seem to be required for the success of the union? Even if they fail to do so, will the monetary union survive out of a continued good faith effort?

It has long been believed by skeptics that the EMU faces a dangerous period in Stage III when the “legacy” currencies will still be in circulation. The disappearance of the national paper currencies in 2002 will make a dissolution technically more difficult; but a breakup could still emerge, so in principle there is little difference in the dynamics of a breakup in Stage III and afterward, given that it is possible at all.<sup>2</sup>

European economists are more sanguine about the prospects, although they do express some worries about whether the Stability Pact or the independence of the ECB can be maintained. Especially after the October 22, 1998 summit meeting of the EU in Vienna, which called for fiscal stimulus and a round of interest-rate reductions, the political leadership has signaled a tension between the ECB and the now more Keynesian socialist governments in the major “in” countries. European officials are adamant in their view that the EMU cannot fall apart. They cite the “irrevocable” fixing of exchange rates in Stage III, the “irreversibility” of the EMU, and the disappearance of the separate currencies after 2002.<sup>3</sup> The issue of whether the EMU could collapse arises from whether a country can extricate itself from the treaty—either in a manner envisioned by the treaty or through a pretext that simply nullifies the treaty. One must also consider the conditions under which a sovereign would want to withdraw from the treaty, even if frustrated

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<sup>1</sup>For example, Feldstein (1997) has even gone as far as arguing that a collapse of the union might even lead to war. In his recent review of the condition of the countries joining the union, Obstfeld (1998) has pointed to the danger that it might collapse, although he treats it only as a possible outcome.

<sup>2</sup>Monetary unions with the same circulating currency across regions have broken up in the past when they split into separate sovereign states, e.g., the Austro-Hungarian Empire in 1919 and the split between East and West Germany in 1948, although, Feldstein aside, the in-countries of EMU lack the hostility that was displayed then. The additional technical problem when a single paper currency circulates lies in creating a separate currency supply quickly and keeping out currency from other regions pending a conversion. This is done with a border closing (Berlin Blockade) and a rapid stamping locally circulating currency. Evidently, this set of steps adds to the cost of dissolution when there is a single paper currency.

<sup>3</sup>Indeed, it is a standard argument that the collapse of the EMU is a ridiculous concept because the currencies are now legally merely “different denominations of the same monetary standard.” It makes as much sense to consider a breakup of such a system as it does to consider a breakup of the dollar into \$10-bill zones, \$5-bill zones, etc. This rhetoric, to the extent that it makes sense at all, really indicates a question-begging legalistic interpretation of the agreement, not one that concedes that the agreement may break apart for dominating political or economic reasons.

by the monetary policy outcomes.

On a level more amenable to analysis, even if a country sought to leave the union, its departure might be quite costly and create uncertainty so that it might be deterred from leaving. Of course, this is not an argument that a country will never withdraw. In fact, it is an invitation to study the cost-benefit tradeoffs in the manner of the second-generation speculative attack models.

This paper will not take a stand on whether the union will or will not collapse in Stage III or later. It will simply consider the technical mechanism whereby a crisis will be propagated through the financial system of the union, if a crisis does arise. The crisis may emerge as a straight banking crisis and not as an attack on the permanence of the EMU at all. It may reflect a disbelief in the permanence of the union; even if this belief is erroneous, it is worth examining how the funds will flow across borders and how the system will be defended. Finally, there may be a crisis that is preliminary to the collapse of the union itself.

Initially, I will review a controversy that arose in autumn 1997 between Eltis and others arguing that the union might collapse. This is not because I believe that the controversy was particularly well-focused. Indeed, I think both sides were off base in their arguments. However, it opens the door to a more careful study of the technical mechanisms of how the union will operate and how it can be attacked.

Next, I will look briefly at some of the legal questions concerning a breakup of the union, specifically focusing on some costs that would materialize.

Finally, I will include some work that I have done earlier on the propagation of a crisis in Stage III and afterwards examine issues of timing and dynamics of an attack. If it does occur, a crisis will propagate itself through the TARGET payments system of the European System of Central Banks (ESCB). TARGET and its surrounding accounting procedures are the means by which the National Central Banks (NCBs) will provide credit to each other when there are cross-border payments imbalances in the euro. It may be that the sovereign governments are always willing to permit their NCBs to provide unlimited credit to each other, consistent with the obligations of the Maastricht Treaty. Then, there is no possibility that a collapse of the system will occur. Alternatively, they may be unwilling to provide continued credit—especially if they are already contemplating withdrawal—and this will set the parameters for the dynamics of collapse.

There is now a standard list of reasons for why there might be dissension and disgruntlement over the ESCB. First, there might be a conflict over the monetary policy set by the ECB itself—whether it is too tight or too easy. An excessively inflationary policy might drive out a group of countries that

wants less inflation, provided that it views the costs of the high inflation as exceeding the cost of departing from the monetary union. This tension may arise because of an asynchronous business cycle across different regions in Europe—the usual reason for why currency areas might fall apart. Alternatively, it may arise strictly from different levels of aversion to inflation.

Second, one or more countries may operate an excessively loose fiscal policy, thereby channeling resources from one region to another in the union. This would be a problem because of moral hazard issues: other members of the union might be forced to supply aid or to press the ECB to relax monetary policy to avoid default of one of the member State's debt.<sup>4</sup> Indeed, this is the reason that the Kohl government pressed the Stability Pact on its partners to lock in its entrance into the union.<sup>5</sup>

Third, because banking supervision remains in the hands of the national authorities, it can be used to circumvent the effects of a stringent ECB monetary policy simply through the imposition of a lax bank supervisory policy

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<sup>4</sup>Alternatively, the market price of such a member's debt may not reflect the credit risk because the debt might be dumped onto the ESCB as collateral for daylight or overnight loans at too low a haircut.

<sup>5</sup>The Stability Pact made more concrete the Maastricht Treaty's (Article 104c) requirement that member States avoid excessive debts. Widespread skepticism about the enforceability of the Stability Pact existed even before the recent change in German governments. See e.g., Salomon Brothers (1997).

Under the Stability Pact, each EMU member must submit annually a description of its budgetary plan and medium term projections. If the fiscal deficit exceeds 3 percent of GDP, sanctions may be applied. This requires a payment of a zero interest deposit up to  $\frac{1}{2}$  percent of GDP, which may eventually be converted into a fine if the excessive deficit is not corrected within two years. There are escape clauses, however. If the country is in the midst of a severe economic downturn, it may be exempted. A 2-percent downturn in GDP would automatically be treated as severe; otherwise, the members of the pact have the discretion to determine what is "severe." Also, an excessive deficit may be excused if ECOFIN decides that it is "exceptional and temporary." "Exceptional" means an occurrence of unusual events outside the control of the member state, e.g., a worldwide crisis. However, sanctions can be imposed only after the European Council has decided that an excessive deficit exists and that its recommendations have not been followed. Judgment of failure to comply will be determined only ex post, so a state may propose a corrected budget, but only after its results become clear will action be taken. Thus, there may be several years of failure before sanctions are imposed. Also, the major countries will in any case have a large block of their own votes on ECOFIN, which will decide if an excessive deficit exists. A large state with a deficit would only have to get one or two small states in alliance to block an unfavorable vote.

Toothless as it is, there is even less likelihood that the Stability Pact will be enforced in the current environment. If there is a concerted relaxation of fiscal policy, the Stability Pact will not be enforced by a majority of the Council. The only force pushing for an enforceable Stability Pact, the conservative German government, has now been replaced by a red-green government that has leap-frogged the other governments into pushing a Keynesian fiscal policy. The Vienna Summit's call for fiscal stimulus, including the new German government, makes clear that the Stability Pact is a dead letter.

in a given country. This would channel the monetary base into the hands of the country that is trying to evade the tight monetary policy. For example, in the single currency area of the United States, loose regulation of state banking systems has in recent times been used to channel credit from one region of the country to another. Of course, this was accomplished in the context of a national deposit insurance scheme, while in the EMU deposit insurance schemes would still be funded by the national authorities. Therefore, the national taxpayers would have to pay the ultimate costs. Nevertheless, the national authorities will have a good tool to implement counter-cyclical policy without running explicit deficits.

Fourth, there might be a simple banking crisis in a country that runs a lax supervisory policy, with the overall ESCB providing liquidity to the run banks. If the national authorities drag their feet on providing capital to those banks, it can stick the losses onto the ESCB as a whole for an indefinite time. This last scenario may not be imminent. Currently, the European banking systems are regarded as fairly sound. However, monetary unification will change the competitive basis of the local oligopolistic banking systems in the member countries.<sup>6</sup> Therefore, there is bound to be a fairly rapid shake-out; some banks, expanding for survival, will start doubling up their bets in the usual way. In the absence of strict supervision, that will lead to banking problems in some of the countries.

These difficulties together may be insufficient to drive any individual country from the monetary union, or any one of them may be enough. If the public believes that there is some possibility that a national government may want to leave the union, we will observe crises breaking out in the system. The question is how the system will handle it. If the belief has an objective basis, we will eventually observe the system collapse in the same way that we have seen numerous times in attacks on fixed exchange rates. If there is no objective basis to the belief, we will observe a crisis in some national financial sectors in a single currency zone, where there is no real question about continued adherence of the regions to the currency.

This paper will consider only a narrow dimension of the breakup—the impetus that may be added through the operations of the payment system.

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<sup>6</sup>Banks tend to fund their imbalances in a given currency in the local interbank market. The single currency will wipe out the advantage that some banks have in providing local currency inter-bank liquidity that arises because they have an advantage in the local deposit market. Foreign-exchange deals will be reduced, and the business in foreign notes will end. Indeed, the purported financial advantages and cost savings of the EMU result mainly from a reduction in demand for banking services. See Prati and Schinasi (1998).

## 2 The Eltis controversy

A controversy over the survivability of the EMU in Stage III broke out in September, 1997 with the dissemination of a paper by Eltis (1997). Eltis argued that the monetary union could come under intensive pressure and possibly collapse in Stage III because of the particular institutional arrangements in that stage.

The paper itself was a polemic, attacking the viability of the euro and reiterated analysis that had been done in more detail elsewhere.<sup>7</sup> The basic argument is that there will be inevitable tensions of the sort that would occur in any currency area where one region is in a different stage of the business cycle from the others. In addition, some regions might be more vulnerable to sharp interest-rate movements undertaken to maintain price-level stability than other regions. This, of course, was all quite well-known.

In addition, Eltis pointed out that the organization of the monetary union was such that cross-border payment imbalances would be financed by national central banks. The union might then break up when one central bank found that its accumulation of an excessive creditor position was intolerable. The creditor central bank might not follow the requirement imposed by the European Central Bank to continue providing credit and currency to satisfy cross-border demand.<sup>8</sup> Under the rules of the Stage III game, Eltis argued that in an extreme case the entire balance sheet of the financial system of a weak country might be redenominated into the currency of another, given that the legacy currencies will continue to exist as paper money and as a potential unit of account until the end of Stage III. The ECB could instruct, e.g., the Bundesbank to print an unlimited amount of DM to meet the demand. The Bundesbank might stall given some backing from German courts.

Thus, one or more countries might depart from the monetary union, and this possibility could generate a wave of speculation against the currency.

This possibility was also quite well-known—indeed, the ESCB and its associated TARGET payment system were specifically designed to provide unlimited credit across NCBs. The idea was picked up in a column by Samuel Britan, and it led to a flurry of criticism in the letter columns of the *Financial Times*. Notably, Richard Portes countered with the argument that a successful run in the currency of an in-country was out of the question in Stage III: after the start of Stage III, there is no longer a regime of fixed exchange rates, but a single currency with national currencies continuing to

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<sup>7</sup>See, e.g., Garber (1997a,b).

<sup>8</sup>Eltis put the problem in terms of efforts to convert currency and the inability to force a strong central bank to print more currency, thereby ignoring the more pressing problem of wholesale payment transfers.

exist only for technical reasons. The consideration of a breakup in a crisis is irrelevant. He argued correctly that if the Bundesbank is willing to issue DM, the system cannot break up. Portes also argues that Eltis' basic analysis is incorrect: if there were a run on a weak currency, the claims of the creditor NCB would be denominated in euros, and there would be an explicit exchange rate guarantee from the governments as signatories to the Maastricht Treaty. Not to honor the guarantee would abrogate the treaty with huge political and legal costs; and in any case this is not an option for a central bank alone.

This final point is true: a central bank is a financial institution that operates in the legal environment and restrictions set by the sovereign from which it has its charter. Clearly, a central bank by itself cannot break away from the rules set by the sovereign and act illegally in its own jurisdiction. Therefore, Portes argues that any comparison to the collapse of the ERM in 1992 is misplaced.

Portes' critique was made along this line because Eltis made the expositional error of stating that the creditor NCB would take action to break out of the Treaty rather than the sovereign state, and he simply jumped on that error. Basically, Portes' argument begs the question to dismiss the issue: given that it is inconceivable that the EMU can break up, then we must conclude that analyzing these technical trifles that surround an imagined breakup of a monetary union is nonsense. Of course, the national central banks (NCBs) will offer to exchange with the public domestic currency for other member banknotes at the official conversion rates. If one walks the narrowly legalistic line of assuming that this state of affairs will continue, one can conclude that the analysis of the dynamics of a breakup is misplaced. Indeed, this is the explanation of the virulent attacks on Eltis' discussion of a breakup.

I do not present this controversy because it sheds great illumination on the problems on which it touches. Indeed, it really contains little that is new. Rather, I include it because it touches on several of the issues that I will consider in subsequent analysis of the technical mechanism of crisis in Stage III. How will a crisis in one country propagate through the system? What role do weak private financial institutions have to play in a crisis? Does a run against a weak currency take the form of a "printing" of the strong currency by its NCB or simply a cross-border euro credit? Is the possibility of a crisis limited to Stage III, or can one occur after the national currencies disappear and the euro becomes the exclusive unit of account? Is a crisis in Stage III of EMU like a currency crisis in the ERM? Is there more than empty rhetoric behind a statement that after January 1, 1999 there will be one currency with merely different national denominations? The answers may swing in two directions. If it is impossible for the monetary union to break up-if the institutions work as programmed-then a crisis in Stage III is

not like the ERM crisis of 1992-93 where the institutional arrangements failed to work as promised. But, if it is possible for a country to withdraw from the EMU, then it is exactly like a currency crisis in the ERM and exactly like any crisis in which there is a speculative attack on a fixed exchange rate. The currencies can then diverge, and it is left only to determine who owes what to whom in the outstanding financial obligations.

### 3 The legality of withdrawal

To discuss the legality of withdrawal from a treaty among sovereign states may be splitting hairs a bit finely—a sovereign state can always find a reason for repudiating a treaty even if withdrawal is explicitly precluded or not provided for. The obvious reason for maintaining adherence to a treaty or breaking it turns on the relation of benefits and costs—circumventing treaty commitments is merely one of the costs to be considered and not an ultimate preventive to breaking up. One reason that some analysts feel so strongly that withdrawal is out of the question is that they regard the benefits of staying in EMU as far larger than the cost, and even if it is not, the fixed cost of withdrawal is large. Indeed, there has been no withdrawal from the existing economic union, where the relationship has grown progressively tighter. Any frictions have always been smoothed over because of the apparent desire of the member states to avoid a reversal of the process. Also, there has already been a large investment to attain, however crudely, the entry criteria of the monetary union in terms of budgetary stringency and high unemployment. It is not likely that the potentially weak currency countries would lightly throw that away by withdrawing.<sup>9</sup>

The Maastricht Treaty does say that the fixing of exchange rates at the start of Stage III is “irrevocable” (Protocol No. 3), and that the character of the Community’s movement to Stage III is “irreversible” (Protocol No. 10).<sup>10</sup> These words are used in special contexts that may or may not be construed to preclude withdrawal. What these words would mean is a breakup in which new currencies, e.g., a new DM, might appear is not clear. Also, in its 1993 Maastricht judgment the German constitutional court found that Germany could withdraw if the monetary union did not satisfy basic stability motivation of the treaty.

Indeed, the treaty itself does not address the matters of withdrawal or expulsion; in particular, no penalties are prescribed for withdrawal. Herdegen (1998) argues that legal action may be taken that can add to the uncertainty surrounding withdrawal and to potential costs. Specifically, he points

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<sup>9</sup>However, now they appear to want the fruits of that investment—which was, in any case, undertaken by more conservative governments than now rule.

<sup>10</sup>It does not state that EMU itself is irreversible.

out several issues that mainly revolve around the ability of a withdrawing country to redenominate claims in euros. As usual, there is a distinction between those claims issued in an offshore jurisdiction and those issued on-shore, i.e., depending on whose courts will determine the enforceability of claims. Herdegen presumes that offshore issues would be treated similarly to the way offshore issues in foreign currencies are now treated; these cannot be arbitrarily redenominated, so the claims will still be in euros as defined by the postwithdrawal ECB. Withdrawal would be a reassertion of sovereign power over the definition of the monetary standard, so domestic courts presumably will go along with redenomination. However, redenomination may cause hostility from authorities and courts of the countries remaining in the euro, depending on how punitive the conversion rate is.

#### **4 Unlimited vs. limited inter-NCB credit in the ERM and the ESCB.<sup>11</sup>**

The ESCB led by the 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.

For the reasons given in Section 1, centrifugal forces may pull against the permanence of monetary union. These forces could be strong enough that a country would choose to bear the costs of unilateral withdrawal from the group or at least cause the public to believe that such action is possible.

In this case, financial markets would start moving funds from more to less inflation-tolerant regions, betting on a dissolution of the system. How will the infrastructural arrangements designed to underpin the union then determine capital flow dynamics in a crisis and 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.

##### **4.1 *How the VSTFF operated***

The VSTFF is a facility to be used if 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

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<sup>11</sup>The discussion in this section is taken from Garber (1997a, 1997b).

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 as in 1992. 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.<sup>12</sup> 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.

#### **4.2** *How will an anticipated crisis play out under the ESCB?*

EMU 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 currencies of those countries that join continue to exist, and indeed will constitute the only circulating paper currency. Commercial bank deposits can

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<sup>12</sup>The supply of credit by the strong currency central bank was always subject to the provision that the provision of credit in a crisis should not undermine the monetary policy of the strong currency central bank.

Table 1:  
 Balance Sheet Effects of VSTFF Operations  
 Assume DM10 bn. = ECU5 bn.

<u>Bundesbank</u>		
	<u>Assets</u>	<u>Liabilities</u>
Claim on VSTFF	+ECU5 bn. (=DM10 bn.)	+DM10 bn. Deposit of Banca d'Italia

<u>VSTFF</u>		
	<u>Assets</u>	<u>Liabilities</u>
Claim on Banca d'Italia	+ECU5 bn.	+ECU5bn. Due to Buba

<u>Banca d'Italia</u>		
	<u>Assets</u>	<u>Liabilities</u>
Deposit in Buba	+DM10 bn. (=DM10 bn.)	+ECU5 bn. Due to Banca VSTFF

still be denominated in the legacy national currencies or in euros. By 2002, the individual currencies—French francs, Deutsche marks, etc.—will disappear and be replaced by a circulating paper euro.<sup>13</sup> TARGET, the large-value cross-border euro electronic payments system, will begin operations on January 1, 1999, and other competing payment systems will switch to euros. Government paper will be redenominated into euros at the start of Stage III, but private issuers have the option of not redenominating until 2002. From 1999 until end-2001, accounts may be kept in euros or national currencies. Afterwards, they must be kept in euros.

### 4.3 *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. Their accounts will be kept in euros and all NCB-operated payment systems will also deliver euros. The profits (and losses) on monetary operations of the ESCB 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. Ownership and control of the NCBs will continue as in their current national charters.

### 4.4 *Operational details of TARGET*

Under the TARGET payment system, euro payments originating in one country will be delivered one-for-one nearly instantly as euros in another country.<sup>14</sup> An understanding of some operational details of TARGET is important, because it is this system that will provide the credit to the private sector and across borders that can fuel crisis dynamics should the system break apart. Alternatively, when the system holds together, the payment system is the means of providing unlimited inter-central bank credit that

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<sup>13</sup>Printing of the euro will begin in the first quarter of 1999. By 2002, 13 billion euro notes will have been produced.

<sup>14</sup>This is supposed to occur within 30 seconds of origination but in practice may be longer.

breathes life into the notion that the national currencies are merely denominational manifestations of a single, unified currency.

TARGET will effect settlement of large value, cross-border payments in the euro between private banks. TARGET is designed as a real time gross settlement 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.

Cross-border euro payments are not limited to TARGET. There will be a competition between TARGET, the already existing national payments systems, and private payment systems, depending on cost. For example, the ECU Bankers Association with 56 clearing members has long operated a cross-border net clearing system for ECU payments, which will be converted to euro denomination and designated the Euro Clearing System (ECS) at the start of Stage III. As a netting system, there is a daytime credit element that allows banks to avoid holding eligible paper for overdrafts, but the credit risk is controlled by adherence to the Lamfalussy standards. Final settlement of net positions, of course, must occur through the national RTGS systems and TARGET or over the books of one of the NCBs. The national settlement systems that plug into TARGET will remain intact and under the control of the NCBs-TBF in France, ELS in Germany, BIREL in Italy. If one of these charges low enough prices, payments may be channeled mainly through it. For example, if the Bundesbank wants to capture the payments business, it can charge low fees on ELS. Branches of banks in Germany can then be used to channel euro area payments through ELS, with collateral for overdrafts being maintained in Germany or directed across borders. The UK is an “out” country, but it will have a presence on the euro payments network through the use of CHAPS Euro.<sup>15</sup>

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 paper acceptable for daylight overdrafts is the same as that for overnight borrowing from the ESCB from the marginal lending (Lombard) facility.<sup>16</sup> This paper is divided into two types. Tier 1 paper is marketable debt with a union-wide eligibility such as most government paper.<sup>17</sup> Tier 2

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<sup>15</sup>It will be permitted to fund daylight overdrafts in euro payments from UK addresses if the Bank of England keeps a like amount on deposit at the ECB (up to 3 billion euros) at the deposit rate. Since this costs the Bank of England the spread between alternative instruments for holding euro reserves and the ECB deposit rate, this is likely to be an expensive means of accessing euro overdrafts for UK addresses.

<sup>16</sup>See European Central Bank (1998) and European Monetary Institute (1997) for details.

<sup>17</sup>These must be liquid euro-denominated debt instruments with a high credit standard,

is an additional class of assets that have traditionally been eligible at some NCBs and are important sources of liquidity in some countries. For these, eligibility is established by the individual NCBs with ECB approval.<sup>18</sup> There is no distinction between the two tiers relative to the quality of the assets or their eligibility for monetary policy operations-e.g., they can be used for both intra-day and overnight credit. Also, they both can be used to access NCB funds on a cross-border basis. A financial institution can deliver Tier 1 and Tier 2 assets located in a different member country to access central bank credit from its own national central bank.<sup>19</sup>

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 (TBF). Payments will be settled by instantaneously transferring funds across bank deposit accounts at the Banque de France. These accounts at the Banque de France are denominated in euros, but the payee may have his bank put the funds in a franc-denominated account.

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.<sup>20</sup>

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 conventional two-day wait in the foreign-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

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located in the euro area, and listed on a regulated market.

<sup>18</sup>These can be nonmarketable debt instruments or equities traded on a regulated market of financially sound entities located in the euro area.

<sup>19</sup>Initial margins of 1% to 2% will be imposed on such lending. In addition, a haircut of from 0% to 5% will be imposed on eligible paper, depending on maturity.

<sup>20</sup>For details, see Working Group on EU Payment Systems (1996a, 1996b, 1997).

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 corresponding account at the Bundesbank by the same amount, i.e., by booking a “due from” the Banque de France in this case.

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.<sup>21</sup> If the Banque de France runs persistent payment outflows to Germany, the claims of the Bundesbank cumulate; there is no provision for settling the claim.

In this regard, TARGET operation is not remarkable and differs only a little from, for example, the US Federal Reserve’s Fedwire system.<sup>22</sup> 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 and has no separate balance sheet; rather, it is a regulatory body for 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. Also, Fedwire is an integrated system, completely run on behalf of the Board of Governors. There is no separately articulated intra-district, large-value, electronic payment system, which makes it impossible for a region to break away from the system and still maintain intra-district wholesale payments.

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<sup>21</sup>It is important to note that the inter-NCB payment is not done on the books of the ECB. The ECB is not at the pinnacle of the payment pyramid. Its role as a bank with a balance sheet, as opposed to its role in fixing monetary policy, is not different in kind from that of the ECBs except for its holding of the foreign-exchange reserves.

<sup>22</sup>Based on “Notes on Federal Reserve Accounting Structure, June 10, 1994,” prepared by Bruce Summers.

Table 2:  
Cross-Border Payment on TARGET

1. Initial Central Bank Balance Sheets (in Euros)

<u>Banque de France</u>				<u>Bundesbank</u>			
<u>Assets</u>		<u>Liabilities</u>		<u>Assets</u>		<u>Liabilities</u>	
French Govt. Securities	400	0	Due to Buba	Loans to German Banks	400	0	Due to Bank of France
		400	French Bank Deposits			400	German Bank Deposits

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

<u>Banque de France</u>				<u>Bundesbank</u>			
<u>Assets</u>		<u>Liabilities</u>		<u>Assets</u>		<u>Liabilities</u>	
French Govt. Securities	400	100	Due to Buba	Loans to German Banks	400	0	Due to Bank of France
		300	French Bank Deposits			500	German Bank Deposits
				Due from Banque de France	100		

3. NCB Balance Sheets after French Banks Send 400 Euros to German Banks, Deposit 100 in Securities as Collateral for Overdrafts

<u>Banque de France</u>				<u>Bundesbank</u>			
<u>Assets</u>		<u>Liabilities</u>		<u>Assets</u>		<u>Liabilities</u>	
French Govt. Securities	400	500	Due to Buba	Loans to German Banks	400	0	Due to Bank of France
		0	French Bank Deposits			900	German Bank Deposits
Due from French Banks	100			Due from Banque de France	500		
Note:							
French Govt. Securities for Collateral	100						

## 4.5 *An uncrackable 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.

A large cross-border capital movement may occur because of misplaced doubt about the continuation of a country in the monetary union, fear of a default on its bonds, or problems in its financial system that cause a bank run. Suppose that the problem occurs because of a bank run that leads depositors or other creditors to pull their funds from the weak banking system and move them to a strong one. Assuming that the NCB takes on the role of the lender of last resort and receives eligible paper as collateral, the NCB's intervention will be financed at zero interest by the recipient countries' NCBs.<sup>23</sup> Interest rates on wholesale funds will rise to the marginal lending rate in the weak banking system and fall in the other countries possibly as far as the deposit rate, which will penalize somewhat those who had pulled out their funds. If the weak banking system is truly insolvent and if the collateral delivered for the NCB loans is inadequate, then the national government eventually may have to cover the loss to the ESCB. In a severe enough banking collapse, this may take time and exacerbate tensions in the system because of the implied subsidy to the weak country financial sector and collateral issuers. Assuming that the all NCBs play by the treaty rules, however, there is no direct threat to the single currency.

If there is not a run on the banking system per se but simply an erroneous belief that a country may withdraw and inflate, again there will be a movement of deposits from the weak country to the other countries. In this case, however, there may be a high enough interbank rate that the recipient banks will be willing to lend to the weak country banks. If the ESCB's marginal lending rate is high above market rates, this inter-bank rate may be high enough to eliminate the net cross-border flow, as the cross-border interest rate differential increases. This is essentially an interest-rate defense.

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<sup>23</sup>There is some question about whether the ESCB is prepared to play the role of the lender of last resort. See Folkerts-Landau and Garber (1992, 1994) and Prati and Schinasi(1997). If the ESCB and other NCBs are not well-prepared to evaluate the paper presented for collateral and not quick to apply severe haircuts, then a large transfer may be made through the monetary system to sellers of the weak country's assets. Specifically, imagine that a single bad bank emerges to buy in paper that can be used as collateral at excessive prices, given the default risk of the paper, and presents it for overdraft or discount at the ESCB at those market prices, thereby allowing the original sellers of the paper to profit. The bad bank then defaults, forcing a large bailout bill on the national government.

#### 4.6 *An attack scenario*

A precondition of attack must be skepticism that a strong currency NCB will provide through TARGET unlimited credit in euros to the weak NCBs remaining in the system if there is some belief that it is preparing to leave the union. Alternatively, when a weak currency NCB is preparing to leave the union, it will not borrow unlimited amounts from the strong currency NCBs 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.

#### 4.7 *Cross-border flows in a currency breakup*

The essence of a Stage III attack scenario is a well-worn story.<sup>24</sup> A currency area breaks up with a flood of existing currency and bank deposits from the region where it will have less 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 discontinuous capital gain anticipated from a favorable conversion rate. If, in addition, favorable conversion rates create a potential discontinuous capital gain at the moment of dissolution, the inflow temporarily can be much larger than the real money demand shifts across static equilibria, but there will be a backflow after the crisis.

To prevent excessive inflow, the receiving region closes the border until equilibrium can be restored with its own paper money creation after a new currency is launched. Otherwise, it will lose seigniorage and import weak zone inflation in the form of a one-time price level jump. Moreover, it may buy in excessively large amounts of the currency at excessively appreciated conversion rates and suffer a postconversion 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.

#### 4.8 *A graphical analysis of cross-border flows*

Figure 1 depicts the shifts that will occur with a breakup of a monetary union, e.g., into an inflationary France and a noninflationary Germany.<sup>25</sup>

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<sup>24</sup>See for example Garber and Spencer's (1994) study of the monetary dissolution of the Austro-Hungarian Empire.

<sup>25</sup>Until the recent change in the German government, this was the usual scenario. The names of the countries might be reversed now.

Just before the breakup 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 breakup occurs with no discontinuity in prices.

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  $M \times 1/P$  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 Figure 1. If money is allowed to flow freely across borders at 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. In addition, the exchange rate between German and French currencies will not shift discontinuously at the time of dissolution: the successor currency zones will initiate the new regime with the original locked exchange rates, i.e., the conversion rate between the euro and the new German currency can be 1 – 1. The French currency (the euro) would then steadily depreciate vis à vis the German currency.

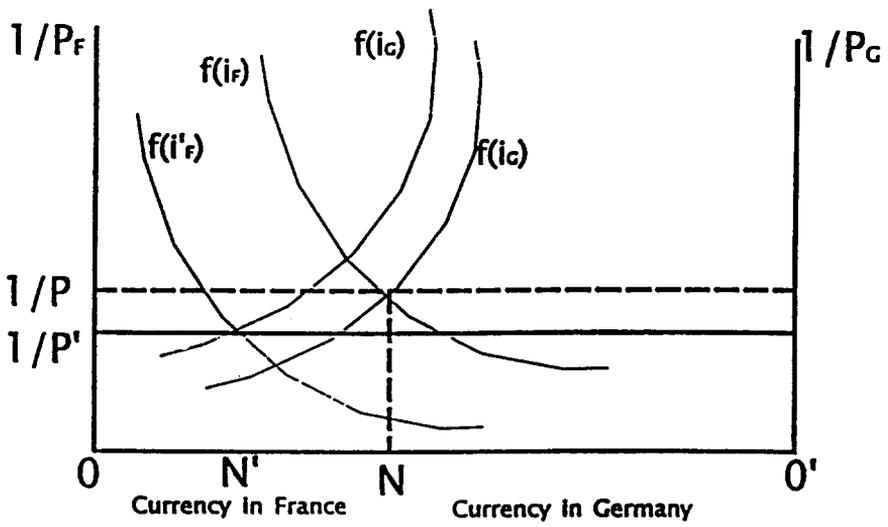
Alternatively, if the dissolution is anticipated,  $P'$  will not be generated by a discontinuity in the price level as seems to be indicated in this static analysis. Rather, the price level will rise continuously from  $P$  to  $P'$ .<sup>26</sup> Short-term interest rates in both countries will then rise prior to the collapse, shifting money demand downward in both countries. The collapse will come when the price level reaches  $P'$ , triggering the discontinuous flow of currency and opposite shifts in interest rates while keeping  $P'$  constant.

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<sup>26</sup>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.

Figure 1.

Currency and Price Level Shifts in Monetary Separation



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.

These continuity arguments are the basis for determining timing in the standard speculative attack model. If the public knows exactly how much credit the lending government will extend before it withdraws and the amounts by which other costs of staying in the system are growing, it can forecast the time of withdrawal. In this context, the maximum amount of cross-border credit is analogous to the minimum amount of net reserves that a central bank will tolerate in the standard speculative attack literature.

By acquiescing in the full movement of money across its border at the time of dissolution, 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 off its TARGET interface computer in time.

#### 4.9 *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 Governing Council of 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 euro bank deposits payable in France and order that payments be sent to German institutions, which provide commercial bank deposits payable in Germany. In Stage III, these might still be denominated in DM, but even without this feature the story would be similar because all deposits in Germany might be converted to the new currency.<sup>27</sup>

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. Because TARGET provides for daylight overdrafts, the French banking system can make outgoing payments larger than its euro deposits in the Banque de France, provided that

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<sup>27</sup>Since the DM will appreciate in this example, depositors would not likely protest a redenomination from euros to the new German currency except if they need the euros in a sudden liquidity stringency.

it has the eligible paper for collateral. Alternatively, it can order payment directly through the German EAF and deliver collateral to the Bundesbank, thereby by-passing the Banque de France.

For example, panel 3 of Table 2 depicts the accounting changes in the Banque de France and 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 0 euros and the Banque de France books a “due from” of 100 from the commercial banks, 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 marginal lending (Lombard) rate—set not by the Banque de France but by the ECB, uniformly across national central banks. This uniform setting of the marginal lending rate seems to eliminate one of the usual tools for defending against speculative attacks against currencies—raising the interest rate in the weak currency country.<sup>28</sup> However, a higher marginal lending rate in fact would bite only in France because German banks would be awash in liquidity and would not need to go to this window.

Outgoing payments to Germany can potentially be as large as all liquid French euro securities that can be settled quickly in delivery to the French banking system and that are deemed eligible 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 will be passed to the Banque de France to serve as collateral for overdrafts. Conversely, German banks will expand their German euro liabilities, which are balanced by their euro claims against the Bundesbank.

If the German government is unwilling to allow the Bundesbank to become a creditor against the Banque de France in what is effectively the redenomination of French euro securities and deposits into German euros,

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<sup>28</sup>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.

with eligible French euro securities placed into the Banque de France, this system will collapse.

#### 4.10 *Disconnecting the payment system separates the currencies*

Atop its original dismay about the costs of the weak euro monetary policy, which has set off the speculation in the first place, 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 liabilities will be redeemed in the stronger successor currency—the German euro or the reascent DM—a source of potentially large loss for the Bundesbank if the conversion rate of the successor currency—including the Bundesbank’s liabilities—appreciated discontinuously. Moreover, the Bundesbank’s claim may not even be against the Banque de France but against French banks directly if they have taken overdrafts directly through EAF payments and delivered eligible French paper.

Any losses that might accrue to the Bundesbank in the event that the system collapses will be presented to the German treasury.

If the German government limits the Bundesbank’s lending to the Banque de France to avoid losses, it must eventually cut off further credit by disconnecting the national payment system from the TARGET system. This severance of the German euro from the euro eliminates the par exchange between them. We then have a return to different currencies, where euros have become distinct from German euros.

#### 4.11 *A weak currency exodus*

Suppose now that the ECB’s policy produces so excessively strong a currency that the governments of 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 Governing Council will still control the ECB, speculators will move funds from French banks through TARGET to the banks of countries remaining in the monetary union. Liabilities to the Bundesbank denominated in strong euros will explode on the Banque de France’s balance sheets, while its assets will be in weak local successor currencies. 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. This puts the French government in the same position as the British in the 1992 crisis—reluctant to take on more ECU liabilities in the face of the

losses of an eventual credit cutoff, it ended its intervention, left the ERM, and discontinuously devalued.

#### **4.12** *Unexpected time of disconnect of payments systems causes an exchange-rate collapse*

This abrupt disconnect of the successor euros with a switching off of TARGET before money supply movements equilibrates the system eliminates the 1-1 exchange between them. The only way to effect an exchange between the successor euros 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. What makes the 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 policymakers 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.

## **5 Conclusion**

The TARGET payment system is the instrument for effecting either the irrevocable exchange rates promised in Stage III or the collapse of the system. The two-edged nature of this conclusion turns on the unlimited inter-NCB credit that TARGET can potentially deliver. If national governments do not regard such credit (or debt) as a problem, then a speculative attack capable of breaking the system is not possible. Its credit mechanism, if successful, can overwhelm cross-border runs. As long as some objectively valid doubt remains about the permanence of membership in the monetary union, the existence of this credit creates an additional cost of membership that can be avoided by accelerating withdrawal. It provides a perfect mechanism for funding an explosive attack on the system.

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