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DEVELOPING THE ECU MARKETS: PERSPECTIVES ON FINANCIAL INNOVATION

Richard M. Levich

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ABSTRACT

The European Currency Unit (ECU) was officially introduced in March 1979 and has joined the ranks of innovative financial products that are rapidly appearing. The purpose of the paper is to explore the properties of the ECU and analyze those characteristics of the ECU, and products denominated in ECU, that offer value-added. Changes in communications and information technology, changes in the regulatory climate, and changes in the macroeconomic environment have generally encouraged recent financial innovations. We argue that the ECU has gained an edge on its component currencies because of its portfolio properties, its role in reducing transaction costs, the role of the European Monetary System, and trading factors peculiar to the ECU. Private participants should continue to gravitate toward the ECU as a useful vehicle to fulfill the services of money.

Richard M. Levich
Graduate School of
Business Administration
New York University
100 Trinity Place
New York, NY 10006

212-285-8924

I. Introduction

Over the last decade, a process of financial innovation has enveloped the United States and other industrial countries. While the details differ country by country, there are several common features including (i) the development of new financial products and markets, (ii) a greater tendency toward market-determined interest rates, and (iii) increased competition among financial institutions.[1/] In any newly formed or newly competitive market, one expects to find a flurry of new products and new strategic alliances during the development phase followed by a shakeout period. This cycle is then repeated until the market reaches steady-state maturity and the surviving markets and products have been identified.

The European Currency Unit (ECU), a basket of ten European currencies, is part of this modern tradition of financial innovation. Since its official introduction in March 1979, the ECU has made its presence felt in numerous financial markets: the interbank market, the short-term deposit market, the Eurobond market, the Euronote and syndicated credit markets, the currency swap market, and the organized ECU futures and options markets. Such widespread use may itself be a signal of success. But in a highly dynamic and competitive setting, one cannot help but wonder whether the ECU, a "currency created by a committee," is merely an "institutional curiosity" that is likely to fade from view once its novelty has worn off. Or, is the ECU another example of a financial innovation with lasting promise?

The purpose of this paper is to explore the properties of the ECU and then to analyze those characteristics of the ECU and products denominated in ECU that offer value-added, and thus enhance the future of the ECU. We begin from a theoretical perspective by examining the general process of financial innovation. The objectives of financial innovation are reviewed along with those factors which enhance the likelihood of innovations. A taxonomy for classifying innovations is presented. The role of transaction costs receives special attention as an explanation for many of the new financial instruments and applications.

We then turn to consider the ECU itself as a new financial instrument. We analyze the channels through which the ECU will contribute value added if the ECU remains a "foreign currency." Here we focus on the ECU's portfolio properties, its role in the European Monetary System (EMS), and again the role of transaction costs, all of which make the ECU useful in numerous applications. Other attributes of the ECU that may detract from its usefulness (e.g. its open basket nature that engenders recomposition and realignment risks) are also examined.

Obviously, if the political decision is made to elevate the status of the ECU to a parallel currency and legal tender in all EEC countries, then the future of the ECU is assured and a full line of ECU-financial products will result. However, even if the ECU remains a parallel currency and a "foreign currency" (West Germany now being the major hold-out), the ECU offers many market participants substantial advantages relative to individual component currencies. These advantage arise because of the

potential depth of the ECU market relative to smaller component currency markets, the stability of the ECU relative to its component currencies, and the role of reduced transaction costs. These advantages should persist even as foreign exchange controls are relaxed in individual countries. Unless specific barriers are placed around the ECU, its use should expand, which in turn will promote further use and further tightening of the linkages across European financial markets.

II. Theoretical Aspects of Financial Innovation

A. Functions of International Financial Markets

According to Dufey and Giddy (1981), innovation takes place in international financial markets when it becomes profitable to better fulfill any of the major functions of the international financial sector. Dufey and Giddy cite four such functions:[2/]

(1) To provide appropriate instruments for effecting payments in individual currencies.

(2) To facilitate monetary exchanges between currencies.

(3) To develop institutions and markets that enable the flow of savings towards investments across national boundaries.

(4) To provide mechanisms for allocating, diversifying and compensating for risk.

B. Alternative Taxonomies

Financial market innovations take many forms and it will be useful to have a classification system. Dufey and Giddy propose a division between "aggressive" and "defensive" innovations. The former refers to new financial products or services offered in response to a perceived demand that is currently not satisfied. The latter refers to innovations that follow from changes in

customer demand patterns or changes in relative costs. Dufey and Giddy argue that in the financial services industry, aggressive innovations should be random and relatively infrequent. Most financial innovations are defensive -- aimed at either circumventing government regulations or taken in response to relative price changes or relative risk changes among previously available financial instruments. Government policies -- in particular, regulations that are not applied uniformly across all parties or countries, and tax rates that are not applied uniformly across different sources and uses of income -- provide a fertile ground for the innovative process.

Another well-known taxonomy is the distinction between "product" and "process" innovations. New financial products include such diverse entries as exchange-traded currency options, zero-coupon bonds, and stock index futures.[3/] Examples of process innovations could include the SWIFT (Society for Worldwide Interbank Financial Telecommunications) network for foreign exchange payments, the grey market (or pre-market) in Eurobond trading, and the establishment of formal linkages and dual listings between U.S. and foreign stock and commodity exchanges. Applying this taxonomy to the ECU, clearly the ECU is a product innovation. The ECU is the primary innovation and other ECU-denominated instruments are derivative of this basic innovation. But as the ECU plays a key role in the EMS, it is also part of a process innovation intended to stabilize European exchange rates. Related arrangements, such as the ECU clearing system, are derivative process innovations designed to facilitate the use of the ECU.

The theory of finance suggests a third approach for understanding the recent wave of financial innovations. Agents in financial markets are typically characterized as risk-averse utility maximizers. To optimize with respect to risk, agents will desire the flexibility to hedge against any contingent risk. If the available set of financial assets do not "span" all possible contingencies, then agent utility might be improved by the creation of securities whose payoffs depend on these contingencies. The introduction of interest rate futures, heating oil and crude oil futures, and mortgage-backed securities might be seen as products that help complete the menu of financial products thus allowing agents to reach their desired exposure to particular risks. Some of these innovations may be viewed as "unbundling" existing financial products (e.g. a forward contract might be split into the combination of a put and call option, and a U.S. Treasury security might be split into its CATS and STRIPs components).[4/] Other new products represent the creation of tradable claims based on previously existing financial positions (e.g. mortgage-backed securities [GNMAs], and automobile loan backed securities [CARS]).[5/]

To optimize with respect to expected returns, agents will take into account taxes and the transaction costs of managing their positions. Many financial products (e.g. money market mutual funds, stock index options and convertible bonds) represent a composition or "bundling" of more elementary financial instruments. Agents are attracted to these composite products largely because they lower the cost of establishing and

maintaining a desired position, or because they assist small investors to attain scale economies, which again lowers the cost of financial services, including professional management expertise.

C. Economic Environment

The pace of financial innovation is heavily influenced by factors within the economic environment. Obviously, technological change, in particular the development of computer hardware and software, has dramatically changed the types of financial products and services that are feasible. Advances in communications technology that make it possible to link market participants and the markets themselves have also changed the nature of products and services that can be offered.

The relationship between regulatory change and financial innovation is two-way and difficult to detail. The presence of regulations that call for information disclosure and insure the enforcement of contracts may promote entry into the financial services industry, promoting competition and innovation. "Excessive" regulation may be a two-edged sword -- on the one hand, it may delay certain types of innovations; on the other hand, it has often encouraged innovation in order to avoid regulatory constraints. The trend of the last decade toward deregulation has certainly lengthened the list of market participants and the menu of products that may legally be offered. Deregulation has clearly added to the pressures for market-determined interest rates and products tailored to customer demands. As nations have reduced regulations on the international movement of capital, international financial innovations and linkages across markets have been encouraged.

Macroeconomic changes may have contributed the sufficient condition for the rise of financial innovation. The increase in inflation rate, interest rate and exchange rate volatility since 1973 has been well-documented elsewhere.[6] This change in volatility changed the relative risk/return trade-offs for financial products available in the 1970s. Individuals, corporations and governments queued up to buy risk-reducing and return-increasing products. Seeing the huge incentives, the financial services industry naturally responded to meet (if not stimulate) the demand for new products.

D. The Role of Transaction Costs

Many models of macroeconomic behavior develop their results abstracting from the presence of transaction costs. Such omissions are often appropriate for the task, but students are sometimes left with the notion that transaction costs are of little or no importance within an economy. This inference could hardly be further from the truth -- in a world in which the cost of transacting were zero, many commonplace economic phenomena would not exist. The existence of money, the distortions associated with monopolies, and the like cannot be explained without appealing to some cost of negotiation, search, information, enforcement, or other forms of transaction costs. And many parity conditions, which often play an important role in macroeconomic models, need not hold exactly if arbitrage is costly.[7]

In the area of financial products and services, it is easily demonstrated that transaction costs play an important role for both large and small players in the markets. A variety of powerful

financial products exist because they can establish equivalent financial positions at lower cost than another set of transactions. Several examples may be useful to establish this point.

Open-end mutual funds are financial products that allow investors to attain higher returns, greater diversification, and easier access to professional management at lower cost. A money market mutual fund pools funds from many smaller investors, enabling them to capture the higher yields on large-denomination certificates of deposit, especially those issued in the Euro-dollar market.[8/] An equity market mutual fund also pools funds permitting small investors to acquire diversification gains for less than if they purchased individual securities directly. As long as there are scale economies in transacting, the cost-saving advantage of mutual funds should persist.

An American Depositary Receipt (ADR) is a claim issued by a U.S. bank representing an underlying share of foreign equity. Rather than incur the expense of long-distance communication, foreign language translation, currency conversions on purchase of shares and dividend payments, and the like, associated with a foreign stock purchase, a small American investor can simply purchase an ADR share in U.S. dollars. The depositary bank will handle all related dividend payments, rights offerings and so forth on behalf of the ADR shareholder.

For larger institutional investors, stock index futures are a new product that should offer appeal. Efficient portfolio selection rules could lead a large institutional investor to hold

some combination of a large, well-diversified asset portfolio (say, the Standard and Poors [S&P] 500) and another portfolio of risk-free government securities. To manage portfolio risk around target levels, or attempt to exploit stock or bond market rallies, the institution might find itself buying (or selling) large blocks of equity shares against government securities. Clearly this strategy could entail large trading costs, even assuming that large block-trades have no impact on the prices of the securities. The same risk-management and timing goals could be achieved through buying and selling futures contracts on the institution's portfolio of risky securities, in this case, the S&P 500 Index. In all likelihood, the brokerage cost of trading and the disruption in individual securities prices would be substantially less with this strategy.

Finally, forward exchange contracts, used by the very largest corporations, owe their existence to transaction costs. In the absence of transaction costs, there would be no need for forward contracts as forward positions could be created through a combination of borrowing and lending in two currencies -- a swap arrangement. With transaction costs and an active demand for forward cover, banks find it advantageous to quote forward rates (bid and offer) within the range predicted by the cost of borrowing and lending funds.[9/] Lower transaction costs are at the heart of the forward contract.

III. The ECU as a Financial Innovation

While there are a growing variety of ECU-denominated financial products (e.g. deposits, futures, options, bonds, etc.),

in this section we argue that the ECU itself is the only true financial innovation. The success of the numerous ECU-denominated instruments depends critically on the success of the ECU "as money." [10/] If the ECU fails to perform the services of money, then it seems unlikely that any ECU-denominated product, no matter how cleverly engineered, is likely to find a market niche. The "moneyness" of the ECU is the key factor.

A. Status of the ECU as Currency

The status of the ECU reflects a mixture of official and markets practices. This combination of de jure and de facto forces is not unusual. The U.S. dollar is "legal tender" in the United States, but the dollar is used extensively outside the United States by mutual consent. For transactions between the central banks of the countries participating in the EMS, the ECU enjoys official recognition. These official ECU are created and circulate under regulations formulated by the European Communities (EC) Commission. All other ECU are designated private circulation ECU. There are no supranational rules governing private ECU; each country is free to set its own regulations.[11/] For countries outside the EC, the ECU is clearly a foreign currency and subject to all applicable foreign exchange controls and restrictions. For member EC countries,the situation is more complicated. In these cases, the ECU contains a mixture of both foreign and domestic currencies -- a strict interpretation would conclude that national regulations on capital export, minimum reserve requirements, credit controls and so forth ought to be applied to (at least some portion of) the ECU. Such rulings would run counter to the

European Commission's interim goal of free mobility of the ECU as a parallel currency.[12]

To address this issue, the EC has proposed that during an initial phase, all EC countries should classify the ECU as a foreign currency, thereby making it exempt from regulations affecting national currencies. West Germany classifies the ECU as an index or unit-of-account, making it illegal to denominate bank liabilities or oother debts in terms of ECU.[13] For other EEC countries, ECU are the equivalent of "Euro-ECU" and subject to minimal regulation. As a consequence, in France and Italy, ECU are preferred to domestic currency from the standpoint of regulatory barriers. It could be argued that this asymmetric treatment offers the ECU an unfair advantage over local currency, that will vanish once these regulatory differences are removed.[14] We will return to this point at the conclusion.

Another sensitive issue is that no central bank supervises the circulation of private ECU and there is no lender-of-last-resort in the system. Neither of these points need prove fatal for establishing the critical level of moneyness for the ECU. The development of other segments of the Eurocurrency market has proceeded at a healthy pace guided by self-interest and self-regulation; most likely the Euro-ECU market will follow suit. The Basel Agreement would likewise suggest that all ECU banks banks may readily draw on their parent domestic central bank should lender-of-last-resort facilities be required.

In both its official and private capacity, the ECU carries out the traditional functions of money -- medium of exchange, unit of account and store of value.[15] At the official EC level, the

ECU is used (i) to settle inter-governmental swap and credit transactions, (ii) as a numeraire for budgets and exchange rate parities within the EMS, and (iii) as part of official reserves of EC central banks. In the private sector, the other papers in this session confirm the wide variety of money-like roles played by the ECU.

B. Value Added from the ECU

The ECU reflects a particular basket of ten European currencies. In principle (and ignoring transaction costs, foreign exchange controls, or other barriers), there is no financial transaction possible using the ECU that would not also be possible if we were restricted to using the ten component currencies. Accepting this premise, the following question must be asked: What features of the ECU, or of the economic environment, create value for the ECU in comparison with the component currencies? In short, "Why should the ECU exist?" The answer will also suggest how the ECU will fare should there be a change in any of its features or the economic environment. Our discussion may also shed light on the prospects for other basket currencies (e.g. the Special Drawing Right [SDR]). We offer four inter-related channels through which the ECU gains an edge vis-a-vis its component currencies.

1. Portfolio Properties. Any basket of assets that are not perfectly correlated will exhibit diversification properties, that is the variability of the basket is less than the weighted sum of variability in the components. It should be emphasized that the ECU basket, unlike the SDR, contains only European currencies and does not contain the U.S. dollar. As a result, the variability

(i.e. risk) of an individual European currency vis-a-vis the ECU is much smaller than it is vis-a-vis the U.S. dollar. Chart 1 reveals that this reduction in variability is as little as 35% for the Swiss franc or as great as 85% for the Irish pound. The variability of the ECU itself vis-a-vis the U.S. dollar will be greater than for some European currencies and less than for others. Chart 2 illustrates these results. For risk-averse agents, transactions denominated in ECU would be preferred to other units of account (of course, holding other factors constant).

2. Role of Transaction Costs. Any ECU position could be replicated exactly by transacting in the ten individual currencies. But the alternative would subject agents to ten times as many transactions, transactions in several thinly traded markets, and transactions in fractional or odd amounts. All of these factors would greatly increase the cost of establishing a basket position from the ground up rather than operating through the ECU itself.

3. Role of the EMS. It might be argued that any basket of currencies offers diversification gains and transaction costs savings. Why then do we not observe the "M.A.S.K." , a basket of the Mexican, Australian and South Korean currencies? One factor is that the level of economic activity among these countries is relatively low and there is no intention to harmonize macroeconomic policies or smooth exchange rate movements. Consequently, the MASK could be relatively volatile vis-a-vis its constituents. Furthermore, would there be a natural source of demand and supply for the MASK? There are no official linkages between these governments, and probably very few business entities

that have foreign exchange needs in MASK proportions.

The ECU, by comparison, has official recognition and the weighting factors bear some relationship to the extent of economic activity between the EC countries. Moreover, the EC has committed itself to stabilize the ECU through the EMS and the ground rules governing changes in the composition of the ECU. Finally, many businesses generate a natural economic exposure in European currencies. It can be demonstrated that the ECU basket is highly correlated (90% level and above) with a variety of European currency portfolios.[16/] Consequently, demand and supply for ECU might readily result from existing economic transactions.

4. Trading Factors. Financial markets in several of the EC countries are small, and consequently the range of financial products and the availability of hedging services are likely to lack substantial depth, breadth, and liquidity. By moving transactions into the ECU market, agents may be able to trade a wider range of products at more favorable terms than they might in their domestic markets. However, some of these gains may be the result of foreign exchange restrictions that have hampered the development of financial market products, in particular forward contracts for hedging purposes. The ECU offers a less restricted path to a more competitive financial market. If foreign exchange controls on domestic currency were relaxed, the advantage of the Euro-ECU would be reduced. But the other advantages of size and scale economies would continue.

C. Negative Features of the ECU

Earlier we noted that no single central bank manages the

circulation of the ECU and that there is no single lender-of-last-resort. These features do not appear to represent fatal shortcomings. However, other aspects of the ECU have aroused more attention.

First, the ECU is an "open basket" of currencies rather than a "closed basket." In an open basket, the currencies in the basket and their weighting factors may change. In the case of the ECU, new currencies may be added to the basket (e.g. the Greek drachma entered the ECU in September 1984 and the Spanish peseta and Portuguese escudo may enter within the next few years) and the amounts of each currency in the basket are subject to change. The procedures governing these changes are complex, but the overriding objective is to insure the stability and credibility of the EMS and the ECU. [17] Nevertheless, agents who intend to use the ECU for hedging specific underlying positions in the (ten) component currencies will view the open basket concept as an element of risk.

In addition, currency realignments within the EMS will effect the relative importance of currencies within the ECU. Again, this injects an element of risk for agents using the ECU to hedge a fixed position. As a practical matter, both recomposition and realignment risks appear to be small. [18]

D. Product Pricing and Market Linkages

The development of the ECU has spawned numerous related products also denominated in ECU. Because the ECU is a portfolio of existing currencies, there will be obvious pricing relationships between the ECU and products expressed in terms of

component currencies. To the extent that there is a "real" market in ECU products, their prices should fluctuate within the neutral band given by the cost of reconstructing the ECU product from its components. If this condition is met, no arbitrage profit opportunities will be available by trading between the ECU and its component currencies. Similarly, prices of related ECU products (e.g. spot rates, forward rates, interest rates, put and call option prices, and so forth) should satisfy the traditional parity relationships to eliminate risk-free arbitrage profits.

To consider the pricing of one particulaar product, ECU bonds would trade at a higher yield relative to a theoretical portfolio of component bonds if the ECU bond market were relatively illiquid. On the other hand, the yield on ECU bonds might be lower relative to a theoretical portfolio of component bonds if investors value the convenience of transaction cost savings of the ECU. The data suggest that the former relationship (higher ECU bond yields) was observed in the first few years of ECU bond trading, while the latter relationship is now the case.[19/] ECU bond yields may also diverge from the yield on a theoretical portfolio if the market expects a redefinition of the ECU, and this phenomenon has also been observed.[20/]

IV. Conclusions and Implications

In this paper, we have argued that the major source of value added for the ECU can best be viewed in its role as money. The traditional services of money (medium of exchange, unit of account, and store of value) are being utilized in both the official and private sectors. Other ECU-denominated products (e.g. futures, options and bonds) are derivative products that follow

"naturally" as the moneyness of the ECU is understood.

Whether the ECU ever becomes a common currency and the one money of Europe involves many dimensions of analysis. The gains from macroeconomic coordination and a unified currency area are still the subject of intense debate, and these issues will be treated in other papers in this volume by Thygesen and Edison. Ultimately, establishing the ECU as a common currency is a political decision, albeit one where there can be substantial economic input. If the ECU is adopted as a common currency, it will be because it is viewed as a beneficial financial innovation that increases the availability of useful monetary services in Europe. If this were to happen, clearly ECU products would flourish, offering a strong balancing position vis-a-vis the U.S. dollar.

However, even if the ECU does not reach this status and it remains a "foreign currency," and a "parallel currency," the ECU should continue as a growing feature of the market. As long as Europe continues as an economic community with substantial economic linkages, the component foreign exchange and financial market instruments will be linked. Private participants seeking to further reduce risks and transaction costs will gravitate toward a European basket. The ECU, not the first entrant but the first to receive substantial official and private sector support, should continue as the vehicle to satisfy private sector demands.

CHART 1

ECU and US$ EXCHANGE RATE VARIABILITY

PERIOD 1/1979 – 5/1985

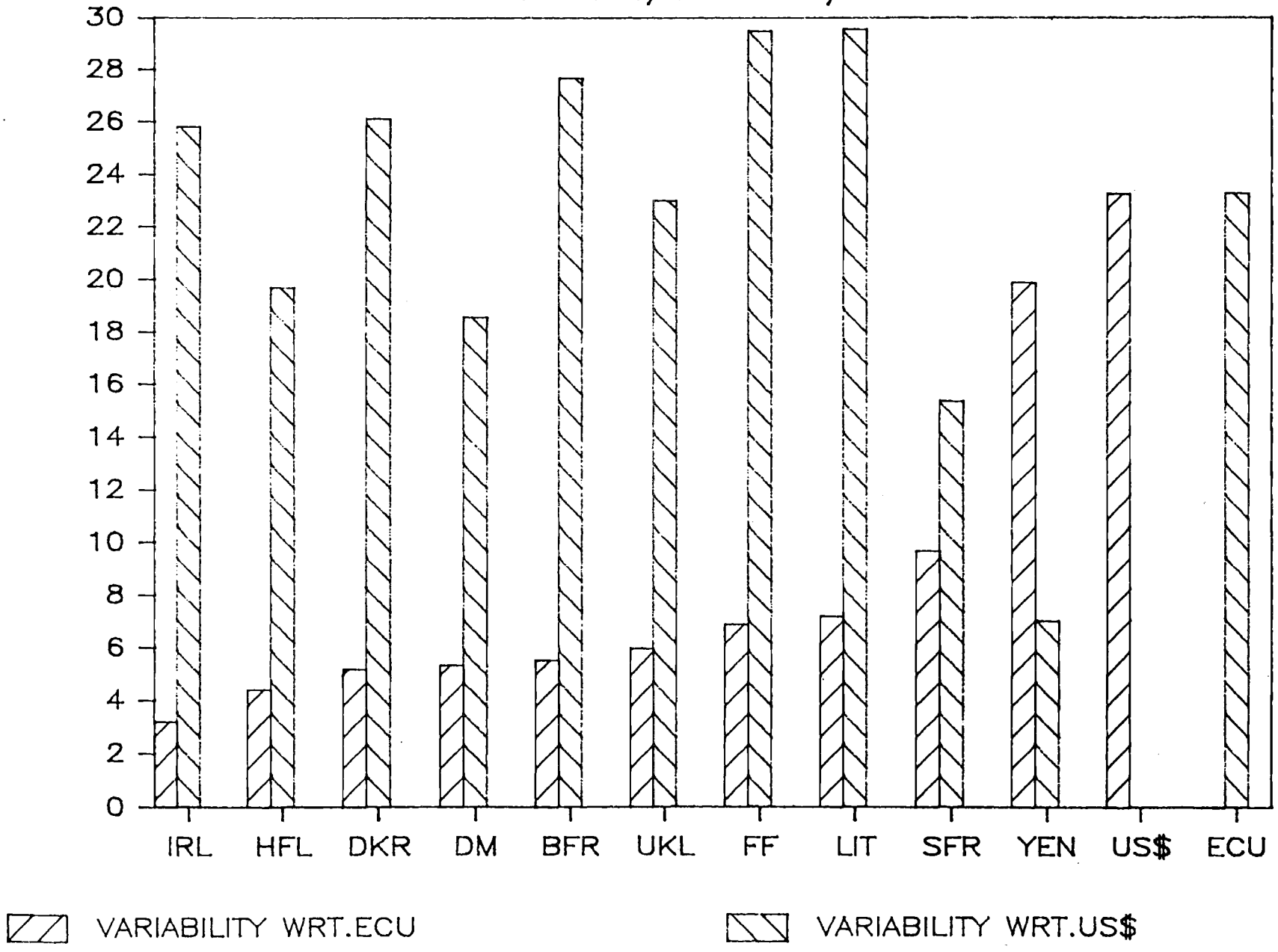
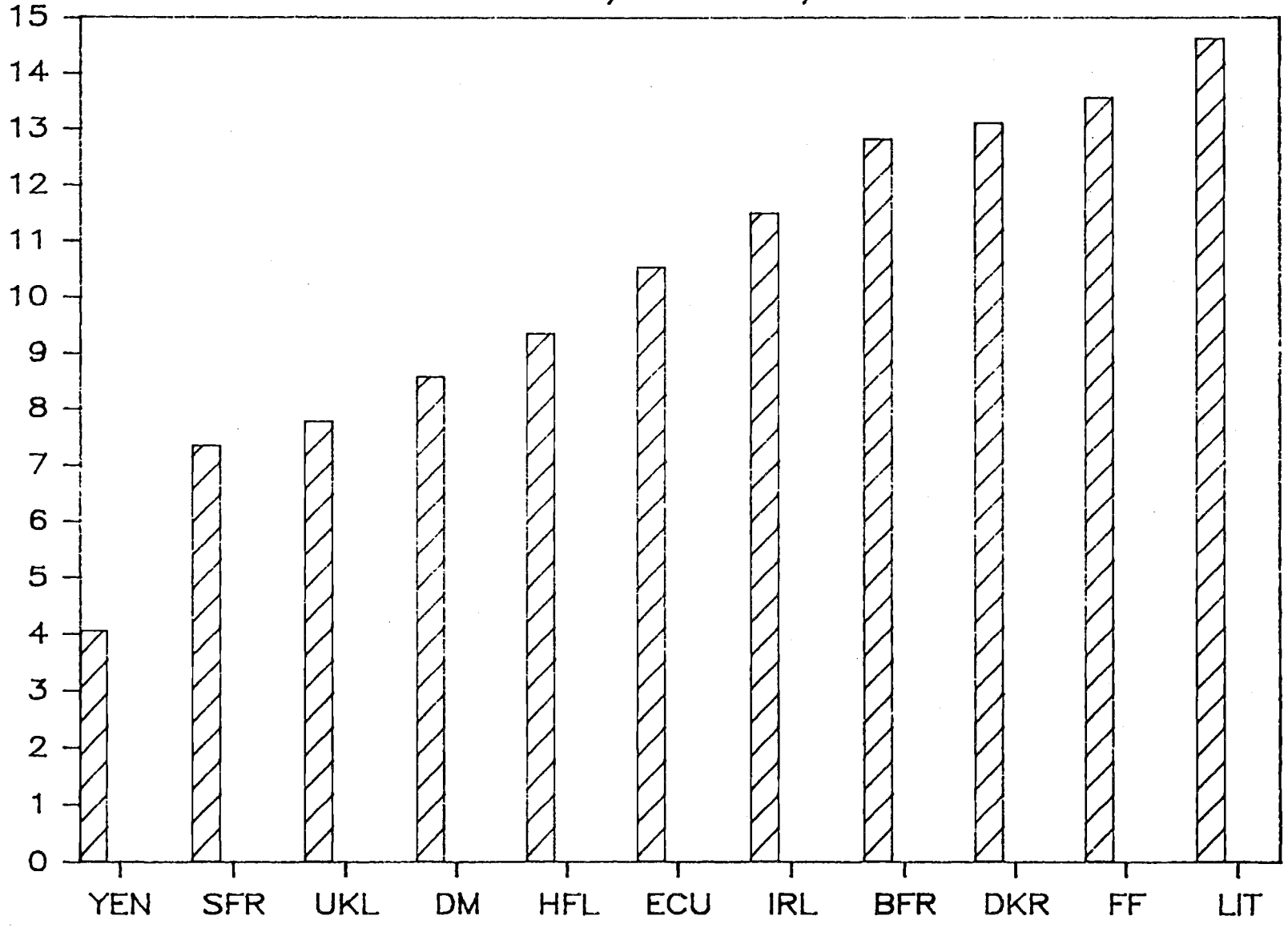


CHART 2

ECU and US $ EXCHANGE RATE VARIABILITY

PERIOD 1/1979 – 5/1985



FOOTNOTES

1. Germany and Morton (1985, p.743).

2. Dufey and Giddy (1981, p. 33).

3. Dufey and Giddy (1981) argue that financial services are experience goods (in the sense of Nelson [1970]) implying that individuals must purchase and consume the goods before it can be evaluated. Since the risk/reward implications of a new financial product may be difficult to ascertain, individuals may rely heavily on those institutions with a reputation for producing new and successful products.

4. CATS are Certificates of Accrual on Treasury Securities, similar to a zero-coupon bond, and STRIPs are Securities on Treasury Registered Interest Payments, really the coupon or interest component of a Treasury security.

5. GNMAs are securities issued through the Government National Mortgage Association, whiles CARS are Certificates on Automobile Receivables.

6. Germany and Morton (1985, p.744) also argue that the growth of government budget deficits has been an important factor encouraging financial innovation. The added volume of government securities has added depth to these markets and regulatory barriers have been reduced to facilitate their sale.

7. For further discussion on this point, see Frenkel and Levich (1979).

8. Some of the yield differential reflects the fact that Euro-deposits, and large denomination certificates of deposit are not FDIC insured. In addition, money market mutual funds are not obliged to hold balances in reserve at less than market interest rates.

9. See Hilley, Beidleman and Greenleaf (1981) for an empirical analysis on this point.

10. The ECU is not really a "new" product. Beginning in 1962, the European Economic Commission introduced a series of "Units of Account," which reflected numerous basket formulae. The European Unit of Account (EUA) was introduced in 1975, and replaced by the ECU in 1979. For a detailed review of the ECU's forebearers, see Swiss Banking Corporation (1985, pp.14-16).

11. Swiss Banking Corporation (1985, p. 43).

12. Fratianni and Peters (1978, p. xx).

13. Gerhard Stoltenberg, West German Finance Minister, recently announced (Financial Times, September 22, 1986) that the West German government was prepared to legalize investments in ECUs provided that other EEC countries (notably France and Italy) made suitable progress in liberalizing capital movements. The ultimate decision to revise German law pertaining to the ECU resides with the Bundesbank.

14. A similar argument was applied to the Eurobond market, which developed in the 1960s under the umbrella of various U.S. capital market regulations (e.g. the Interest Rate Equalization Tax and the Voluntary Foreign Credit Restraint program). Some observers predicted the demise of the Eurobond market once these controls were lifted in 1974. In 1984, new issue volume in the Eurobond market was $79.5 billion, roughly 38 times as great as in 1974. See Levich (1985) and Morgan Guaranty Trust (1985).

15. Beven (1985, p. 83).

16. Chicago Mercantile Exchange (1986, pp.19-21)

17. Swiss Banking Corporation (1985, pp.22-24)

18. Chicago Mercantile Exchange (1986, pp. 10-12)

19. Levich (1987, chapters 6 and 7).

20. Levich (1987, chapters 6 and 7).

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