

CENTRE *for* ECONOMIC
P E R F O R M A N C E

World Financial Reform

Olivier Davanne
Andrew Haldane
Peter Kenen
Ken Rogoff

Edited by Graham Ingham

**A conference held at the
Centre for Economic Performance on
1 July 1999**

THE ROLE OF TRANSPARENCY FOR A BETTER PRICING OF RISKS

Olivier Davanne

Events of the last few years, some would say of the last few centuries, have highlighted the serious deficiencies of financial markets as far as assessing and pricing risks are concerned. Let's briefly mention three recent examples. Firstly, the 1997 Asian crisis took financial markets which were quite confident about the prospects of the region completely by surprise: such confidence was illustrated by the very narrow spreads those countries had to pay in the credit market a few weeks prior to the crisis. Secondly, with the benefit of hindsight, it appears that the terms of the credits extended to the hedge fund LTCM until September 1998 did not reflect the actual riskiness of this highly leveraged institution. Last, but not least, the many investors who used to play the 'yen carry trade', ie investing in dollars on the basis of yen finance, were probably not fully aware of the possibility of a 13% change in the dollar/yen exchange rate in the absence of any major economic news. However, such an extraordinary move actually happened on the 7th and 8th of October 1998.⁴⁷

The dollar/yen sharp movement, coming after many similar accidents in asset markets, came as a reminder that investors can underestimate market risks (the risk of a large movement in asset prices) as well as credit risks (the risk of a default on a fixed income instrument).

This paper stresses the key importance of market transparency in order to improve the way financial markets assess and price various classes of risks. It should be no surprise if in the current process toward building a new "financial architecture", improving transparency is very high on the agenda⁴⁸. However, in the course of this paper, we will address three main criticisms about the way this issue of transparency is currently generally handled.

Firstly, little is being done to improve the way financial markets assess and price market risks. Transparency is generally seen in a narrow sense as a way to improve how the markets assess and price credit risks, ie the risks of default. But more transparency can also help market participants to better identify and manage the large asset price movements of the recent dollar/yen kind. As far as market risks are concerned, we will insist on the need for much more detailed information on investors' financial portfolios. Specific proposals will be made.

Secondly, even in the field of credit risk, some current proposals can be considered as a bit timid. In particular, we believe that in order to help assess their risk profile, both regulated and unregulated financial entities should make public their daily profits and losses almost in real time.

Thirdly, transparency is an essential necessary condition for a better pricing of risk, but not a sufficient one. Not enough attention is being paid to the lack of incentives private investors face in order to use the available information in an efficient way. This is an extremely complex issue with many aspects involved, but we believe that public authorities can play a useful role through a better organised process of market surveillance. For example, in the foreign exchange market, we believe that the G-7 multilateral surveillance process should be strengthened.

The first section starts with mainstream issues and discusses the role of transparency for an efficient pricing of credit risk. The second section deals with market risks and stresses the need for more information on investors' portfolios. It shows how this can be set up using, for example, the network of bank regulators coordinated by the BIS. The third section looks at valuation

⁴⁷ See BIS (1999) for a detailed analysis of this event.

⁴⁸ See the report of the managing director to the Interim Committee on progress in strengthening the architecture of the 'International Financial System', IMF (1999), for an extended presentation of all the initiatives taken over the last two years in order to reform the International Financial System.

methodologies used by investors and argue that more information on investors' portfolios, if used efficiently, may have a very significant impact on financial markets dynamics. As an illustration, the fourth section deals specifically with the foreign exchange market and argues that combining more transparency with an "enhanced surveillance process" could radically improve the way this key market is functioning. The fifth section concludes and discusses briefly the concept of market efficiency.

4.1 Transparency and credit risks

As far as transparency is concerned, the focus is generally put on the credit market. In order to help the market correctly evaluates the risks of lending to or trading with a counterpart, be it a financial institution, a non-financial corporation or a public entity, investors should have all the information about the situation of this counterpart.

One of the G-22 Working Groups which met in the aftermath of the Asian crisis was centered on this issue and published a report, 'G-22' (1998), which provides a good summary of the progress to be made, both in terms of disclosure by the private sector and as far as macroeconomic informations are concerned. In particular, the report rightly stresses the need for more information on public and private foreign debts, especially as far as their maturity and currency denomination are concerned.

As far as the banking sector is concerned, establishing codes of good conduct in matters of transparency is one of the main priorities of the Basle Committee on Banking Supervision (BCBS). BCBS (1998b) describes the sound practices for loan accounting and guidelines in terms of credit risk disclosure. Various reports, see BIS (1994), BCBS (1998a), BCBS and OICV (1999), have also specified the standards as far as market risks are concerned. They stress that disclosure should concern both actual risk taking, with the help of Value At Risk (VAR) estimates, and the design of the internal procedures used to manage market risks.

Assessing where we stand and what is still to be done taking into account all these reports is beyond the scope of this paper. However, we would like to stress two points : firstly, we see a few holes in this quest for credit risk transparency and, secondly, it is useful to briefly discuss how far transparency can really help as far as pricing credit risks is concerned.

(a) Transparency loopholes

In 1997, only 27% of the large international banks published the details of their daily profits and losses on market operations in their annual report (see BCBS and OICV, 1998), despite the fact that doing so is one of the main recommendations of the previous BCBS and OICV reports in order to help the market assess the risk taking behaviour of various institutions. And beyond the information published in annual reports, there is a striking lack of regular information on market results. Annual or quarterly disclosure has limited value in a world where market positions change very rapidly. The issue of real time disclosure of daily gains and losses has to be addressed. In times of turmoil, this would avoid the spreading of rumors and would help the market to assess the actual situations of all financial institutions.

Indeed, the report known as the 'Fisher report', (BIS, 1994), stressed that one of the main advantages of transparency is to make less likely the run on a bank triggered by an unfounded rumor. However, it stopped short from arguing for real time disclosure. Some banking supervisors probably fear the consequences of such transparency with regard to the situation of weak institutions. In the event of large market losses, their counterparts could cut the lines of credit and make their situation even worse. However, the lack of transparency does not help: rumours play a central role and, as could be seen during the 1998 fall, the weakest banks are the first under fire.

We believe that this issue of real time disclosure on market gains and losses deserves a thorough examination.

The second specific issue we choose to address in this paper is the question of transparency for financial institutions other than commercial and investment banks. Partly due to the fact that their risks are much more difficult to assess, the transparency of insurance companies is far behind the standards of the banking industry in many countries. This subject deserves more attention. But the hottest issue is elsewhere: the near-collapse of the hedge fund LTCM in September 1998 has revealed the risks from some unregulated and highly leveraged institutions (HLIs) which do not seem to provide enough information to allow a correct assesment of their riskiness.

Two BCBS's reports, (BCBS, 1999a and b), argue that in order to reduce the risks induced by HLIs, the priority is to obtain that better credit standards be applied by their banking counterparts. In particular, before dealing with HLIs, banks should get more information about their risk profile. Following the LTCM crisis, progress has been made and the Basle Committee insists that "improvements in credit standards and risk management processes are 'locked in' over time and that the lessons are applied to the management of counterparty credit relationships more generally". However, the information given by HLIs, like VAR estimates, is useful to assess risk only as long as the model on which it is based is robust enough. But one can argue that it is not realistic, nor really efficient, to expect all the counterparts to thoroughly examine the methodology used by HLIs to assess and manage risks. It is thus very tempting to argue that a process of external auditing on HLIs' internal risk management systems should be organised.

It is an open question to know whether this external auditing should be done by private consultancy firms or by banking regulators. As far as the largest hedge funds are concerned, a direct knowledge by the regulators of the internal risk management system could bring many benefits. A side product of such a direct relationship would be to allow regulators to collect data on specific market positions. We'll later examine how this information could be used.

(b) Transparency's contribution to the pricing of credit risk

It is important to keep in mind that as necessary as transparency is, it is not enough to guarantee an efficient pricing of credit risk. Two obvious caveats have to be made:⁴⁹

Firstly, transparency is useless when the lenders benefit from explicit or implicit public guarantees on their loans. When this is the case, they have no incentives to look thoroughly at the situation of their debtors. All the responsibility of monitoring the institution which benefits from the guarantee rests on the public entity which will pay in case of trouble. Although extremely important, issues connected with 'moral hazard', which is unfortunately a rather prevalent characteristic of the credit market, are not discussed in this paper.

Secondly, there is obviously much work to be done in order to translate the detailed information on the debtor situation into an assessment of its risk of default. The latter depends very much on the future strategy of the institution under scrutiny and, above all, on the shocks which may hurt it. The shocks may have many origins: macroeconomic, microeconomic or financial (for example, a sharp rise in short-term interest rates for a firm or government indebted on short-term maturities). The efficiency of the credit market depends as much on the transparency of the participants as on the efficient use of this information by lenders to assess the creditworthiness of debtors.

There are many reasons to believe that there is a lack of incentives for individual lenders to do this costly credit research. This is something we examine in more detail in Appendix 2 in the context of an overall valuation model. Everyone can be rather tempted to take the free rider position as far as research is concerned. By investing as everyone else, without paying the research cost, an investor guarantees for himself an above average return. On top of that, if he is only in the position

⁴⁹ Stiglitz and Bhattacharya (1999) provides an extensive discussion on the benefits and limits of transparency.

of the « agent » investing on behalf of a « principal », this herding behaviour is rather comfortable since he minimizes the risk of a bad relative performance which may trigger his firing.⁵⁰

It could be argued that the strong tendency of the credit market toward titrisation may reduce even more the incentives in favour of a thorough research effort. The trading of debt instruments in secondary markets may facilitate herding behaviour since volume and prices, ie credit spreads, become easy to observe while the terms of traditional long-term credit may be proprietary information. Moreover, the liquidity of bonds relative to traditional credits may contribute to greatly shorten the lenders' horizon. They may now try to maximize the return on their credit portfolio over a short period of time. This may have a very profound impact on the way the credit market operates.

A traditional lender is interested in the true probability of default over the life of the credit. A short-term buyer of bonds is interested in the value of its portfolio in a few months time. What is important is no longer the true probability of default, but the future price which is related to the view the market will take in the short-term future on this probability. Thus, we enter into the logic of the famous Keynesian beauty contest where what is important is no more the truth but the view others form about the reality. We argue tentatively in Appendix 2 that this shift could deteriorate the quality of the research, as investors are no longer incited to look at the long-term reality, but rather, to spot the short-term surprises which will move the market.

So the bad news is that the incentives for extensive credit research are probably weak and becoming weaker. However, one can question the rationality of having this research done at the individual investor's level in the first place. There is a considerable waste of human resources if a large number of lenders process the same information in rather the same way to arrive at similar conclusions. Indeed, one can argue theoretically than in an efficient market the research effort should be externalised and disseminated to all participants in exchange for a compulsory fee. This structure of research is cost-effective and also suppresses the free-riding of passive investors who replicate the average investor's portfolio.

In some way, this is exactly what is happening, since credit research is done in rating agencies, with the cost paid by the issuer, and in investment banks, which diffuse widely on the market the result of their research with a bias in favour of the best clients. It remains to be seen if this research infrastructure is optimal. The incentives faced by rating agencies and investment banks may be biased taking into account the way they finance themselves and the way the market operates. For example, one may argue that investment banks are very much involved in the Keynesian beauty contest and that their research is too much focused on short-term issues.

This is a very tentative proposition but one can imagine that certain incentives could favour the emergence of more independent research activities. In the case of country risks, academic research institutes could get more funds in the context of annual conferences focused on the long-term prospects of various countries or regions. Overall, the recent events and the record of rating agencies seem to signal a significant lack of resources mobilised in long-term oriented research activities. Indeed, one can argue that the large research departments in investment banks are by themselves the sign that something is wrong in the way the system processes the basic information. There is a clear waste of human resources as these teams do all the same things and are more often than not focused on short-term issues. If there were sufficient high quality research available publicly, there would be much less need for such large research departments.⁵¹

⁵⁰ See Devenow, A. and Welch, I. (1996) for a survey of the literature on rational herding.

⁵¹ Obviously, "available publicly" does not mean publicly and centrally produced. It is important to keep a certain degree of competition in research as in any other activities.

4.2 Transparency and Market Risks

In most current discussions, transparency is seen as a condition for an efficient credit market. However, it is important to recognize that not all crises have their fundamental origin in the credit market. Many crises could be classified, at least initially, as market crises rather than pure credit crises.

It is useful to describe a recurrent scenario leading to such market crises. In a first stage, whatever the reasons, numerous investors or traders take the same large buying or selling position. In a second stage, because the market runs against them or the expected profit is too late in coming, some decide to close these positions and to bring their portfolio composition back to normal. This initiates or accelerates the market correction and may force the other wrongfooted investors to follow suit and to close their excessive positions. All the orders in the market are then going in the same direction and this can lead to a violent market correction, with an overshooting of the market on the downside - when the market starts initially from an overbought position - or on the upside - when the market starts from an oversold position. Such market dynamics happen rather frequently. Let's remember, for example, the difficult situation of the dollar and of the US and European bond markets in the first half of 1994 following a period of excessive buying interest.

But the most spectacular example of such dynamics is provided by the dollar/yen exchange rate behaviour at the end of 1998. Over the last few years, the most popular position for many investors or traders has been the so-called "yen carry trade" position. In order to benefit from much higher interest rates in the US than in Japan and from the expected decline of the Japanese currency, many market players took large positions in the US fixed income market funded in yen. When, to everyone's surprise, the yen came out on the upside, some market players had to reduce their positions in order to limit their losses. Obviously, as a result they sold the dollar against the yen and contributed to the acceleration of the yen's sharp recovery. The 13% jump of the yen on the 7th and 8th of October 1998 is generally explained by such a perverse market mechanism, see BIS (1999).

Such very large movements in asset prices are quite costly. In some extreme cases, they can even threaten the solvability of the institutions which are playing in the market under consideration. As it is now well known, there is no strict separation between credit and market risks since a sharp movement in asset prices can have some strong implications for the solvability of the institutions involved in this market.

We believe that more public information on the positions taken by various market players can help spot early enough these risky situations and convince people to cut their excessive positions in a more orderly manner. However, some analysts fear that such information could aggravate the situation due to the herd behaviour of many players. Before discussing the practical modalities of collecting such information we have to address this important issue: is there a risk that the market would become even more unstable if market positions were disclosed?

To answer this question, one has to differentiate between individual and aggregated positions. As far as individual positions are concerned, the "boomerang effect" is quite possible since many players may be tempted to follow the market leaders who have the strongest reputation. However, there is not such a risk as far as aggregated positions are concerned. Most professional investors, having learnt their lessons and profiting from the past, know how dangerous it is to take some very large positions when everyone else has the same on his book. Indeed, while preparing a report on these issues requested by the French Finance Minister, we met with numerous risk managers in large French and US financial institutions and they all made perfectly clear that they were worried when their own traders' positions were too similar to the market global position (see Davanne, 1999).

Indeed, most of them seemed interested by the prospect of having more information on aggregated positions. Overall, we believe that the disclosure of such information would have a

direct stabilizing effect in the sense that many players are likely to reduce their positions if aggregated data show an excessive speculation build up.⁵²

However, for most categories of investors, there is little that can be done to collect information on positions taken in the market.⁵³ But there is a very important exception. International banks have developed their own internal systems for measuring market risks. They are capable of studying their exposure on various classes of asset markets. Data regarding exposure to the main assets could be grouped together by the bank supervisors on a monthly or quarterly basis, integrated by the BIS and then circulated very quickly. Such a procedure would involve several problems, notably that of strictly protecting the confidentiality on individual data, but it would provide the monetary authorities and private investors with a much closer monitoring of the various asset markets. Such a process already exists as far as international credit risks are concerned: the BIS and the community of bank supervisors collect data on credit to foreign counterparts and publish the aggregate results on a quarterly basis. An extension to key market risks would make a lot of sense. In principle, the collect of information should be extended to investment banks regulated by the SEC and eventually to the largest unregulated investment funds.

Some market professionals may be sceptical of such disclosure efforts as they stress the fact that positions are moving very fast. However, for each seller, there is a buyer and it seems unlikely that the aggregated position would change as fast as the individual positions. In any case, little is known about the dynamics of risk taking in the banking sector and one of the benefits of this collect of information would be to allow a better understanding of what banks are doing.

Finally, let's note that there is an alternative way of getting more information on what market players are doing: the use of surveys on positions or expectations. As far as the latter are concerned, it is reasonable to assume that investors who are very optimistic about an asset return are likely to invest in accordance and to buy it. Indeed, numerous surveys already exist, both on positions and expectations, which underline the market's need for more information. Many investment banks use their sale representatives to question clients and the results are shared with the best of them, especially the hedge funds.

However, there are many drawbacks in these surveys. For example, surveys on expectations are often sent to economists rather than actual investors and that limits the reliability of the answers in order to get an insight on positions. Coming from private initiatives, these surveys may have a few flaws: breaks in time series, no guarantee as far as the statistical quality is concerned etc.

More importantly, when people are asked about their expectations, they have to give only their view about the most likely outcome. The choice of investments, however, depends on the whole statistical distribution and a bullish forecast doesn't have the same signification depending on whether the risks are seen on the upside or downside.⁵⁴ The Appendix 1 describes a survey on the dollar/euro exchange rate which is calibrated to give information not only on the most likely outcome but also on the risks as they are assessed by the market players.⁵⁵

⁵² Note also that the question of disclosure on individual positions should not be a taboo and deserves more examination. It is important to recognize that the hostility of most investment funds to the disclosure of their individual positions is in no way related to this risk of herding. Indeed, herding is beneficial for them as it moves the market in the direction they are hoping for. Their actual fear is to be unable to close large loss-making positions if the market knows about them and as a result counterparts disappear. They don't fear herding, but rather the opposite behaviour in time of market stress.

⁵³ One should note in particular that what is important is not the portfolio's structure *per se*, but the difference between this structure and the investor's benchmark. An investor does not consider he is taking any speculative risk when there is no difference between his portfolio and the benchmark.

⁵⁴ Some information on the profile of market players' expectations can be extracted from the option market. In particular, the 'risk reversal' index can help to estimate whether risks are seen on the downside or the upside.

⁵⁵ Davanne (1999) advised that the Bank of France take the responsibility of such regular surveys as far as French capital markets are concerned.

4.3 Valuation methodologies and the use of information on investors' portfolios

Until now, we have discussed the issue of transparency and pricing of market risk without a formal valuation model. We simply stressed that more information on investors' portfolios can help investors to foresee the possibility of a sharp adjustment in prices and adjust, as a result, their financial position.

However, we cannot escape the following question: in a fundamental valuation model, how should the information available on portfolios and expectations be used in order to assess the 'right' asset price? If this class of information is important, and everything points in that direction, how does it relate to the fundamental value of the asset under consideration? 'Fundamentalists' are the stabilising forces in financial markets and it seems necessary to discuss how they could or should use this category of information.

It is important to recognize that information on investors' portfolios and expectations could be invaluable inputs in order to estimate the 'risk premium' on various assets. The risk premium is the expected excess return required by investors to hold a financial asset taking into account its risk characteristics. Theory as well as many empirical evidence⁵⁶ show that risk premia are time-varying.

For example, the size of the public debt or the degree of price instability can have major consequences on the excess return required by investors in order to hold the supply of bonds. However, despite this importance, it is very difficult for fundamental investors to assess the level of risk premia on various assets. Currently, there is very little direct information on expected excess returns and most 'fundamentalists' use rather crude methodologies to estimate the risk premium which enters as an input in their valuation models. More often than not, assumptions on risk premium are only based on a simple retroactive analysis: the long-term *ex post* difference between the returns on various assets is taken as a proxy of the current risk premium, ie the current expected excess return.

Indeed, there is a striking divergence between, on the one hand, the academic literature which stresses both the rather complex determinants of risk premia and their time varying nature, and, on the other hand, actual practices by market economists and real life investors. We believe that this divergence has not received enough attention.

Information on portfolios and well done surveys on investors' expectations could bring the first quantitative, regular and quality-controlled indicators on risk premia. Surveys on actual investors' expectations, such as the one described in Appendix 1, allow in principle a direct measurement of the risk premia required by investors, since such surveys precisely try to assess the excess return they are expecting. Coverage of the trading positions in the banking sector would bring a less direct and more qualitative indicator: large positions reveal that traders expect a high return on the assets they buy and thus, by definition, that the risk premium is large (at least as far as this class of investors is concerned).

It is thus important to recognize that in efficient financial markets based on 'fundamentals', indicators showing excessively large investment positions or abnormally favourable expectations regarding the return on some assets should directly feed into the valuation models used by investors as an increase in risk premium. Obviously, rational investors would know that this information only gives a snapshot on risk premia. In order to correctly value long-term assets as bonds, equities or foreign currencies, more than an instantaneous risk premium is required: one needs to estimate how the risk premium will change in the future, ie take a view on the likely future changes in the return required by the holders of the asset taking into account its changing risk characteristics. Therefore, the analysis has to be prospective and fully integrate, beyond the current information on portfolios, the complex determinants of risk premia.

⁵⁶ See Campbell *et al* (1997) for a reminder of the empirical evidence.

In any case, though the analysis they have to do is far from straightforward, there is little doubt about the reaction of rational fundamental investors to the news of excessive speculation in favour of an asset: the investors should increase the risk premium which enters as an input in their valuation models, sell the asset and play as a result a stabilizing role.

The following view is likely to prove more controversial : we strongly believe that more information on positions and risk premia, if they feed into valuation models just as it has been described, could strengthen very significantly the share of investors following strategies based on 'fundamentals '. The stabilizing consequences of such a shift in valuation methodologies could prove to be powerful.

A well documented fact is the diversity of the methodologies used by market participants to assess future asset prices and to make decisions about their investments. In general, the economic literature opposes the chartists and the fundamentalists, as in Frankel and Froot (1990), or the noise traders and the fundamentalists, as in Shleifer and Summers (1990). Noise traders comprise all the irrational investors, including, but not limited to, the chartists.

Noise traders are blamed for the financial markets' excess volatility. Chartists, for example, are seen as 'trend chasers' who can drive asset prices far from their fundamental value. It is thus very important to understand what determines the relative weight of chartists and fundamentalists in the financial markets. A first answer could be 'nature': some investors would be born with some psychological bias which make them behave in an irrational manner. This is not a very satisfactory answer, even though there is much literature which describes such psychological biases (see Shiller, 1998).

In their famous paper, Frankel and Froot (1990) have tried to endogenize the relative weight of chartists and fundamentalists. Indeed, they rightly observe that the 'market shares' of various valuation methodologies are not stable, but change over time. Thus, it is very important to understand what drives these changes since they can be responsible for the shift over time in financial market volatility. Frankel and Froot (1990) start from the premises that investors drop a valuation methodology when it has produced wrong signals for too long. They build a model in which a change in fundamentals triggers an unexpected sharp move in prices and, as a result, initiates a vicious process in which market participants lose confidence in fundamental models. The more they lose confidence, the more prices diverge from what fundamental models of valuation predict and the more valuation methodologies shift towards chartism and other 'irrational' models. The famous dollar bubble of 1984-1985 is presented as an example of this vicious circle. The unexpected change of the US policy-mix in the early 1980s would have triggered the process.

It seems very reasonable to assume that the loss of confidence in fundamental models is triggered by forecasting mistakes. However, the key issue is to assess the real causes of these mistakes. For Frankel and Froot (1990), "bad luck" is implicitly to be blamed, since the fundamental models are accurate but unexpected changes in fundamentals result in forecasting mistakes. But it remains to be explained why investors are unable to see the real causes of the mistakes, ie the changes in fundamentals, and unrightfully lose confidence in fundamental models when they should not. Indeed, we would support strongly the idea that forecasting mistakes *per se* are unlikely to result in shifts in valuation methodologies: the only mistakes which can produce such a result are mistakes that cannot be explained *ex post* by the model itself. Forecasting mistakes are not the key in this process: rational investors lose confidence in their fundamental models if, and only if, there is a long period without any connection between the actual prices and the prices described by the models on the basis of the perceived fundamentals. In other words, in order to start this process 'bad luck' and surprises, as far as fundamentals are concerned, are probably not enough: something must be wrong with the models themselves.

In the case of the dollar in the early 1980s at least, it is not that difficult to find that something was wrong. One aspect which deserves attention was the behaviour of the risk premium on dollar assets at that time. All available surveys on expectations showed that the risk premium was extraordinarily negative. For example, according to a survey published by 'The Economist

Financial Report' and quoted by Frankel and Froot (1987), during the 1981-1985 period, market participants were expecting the dollar to decline on average by 10.7% against the mark over the coming twelve month period: taking into account the spread of interest rates, 4.2% on average in favour of dollar assets, the excess expected return, or risk premium, on the US dollar was a negative minus 6.5%.⁵⁷ As we argued in the previous section, such surveys should not be taken too literally in order to estimate the actual risk premium, but there is nevertheless little doubt that there was at that time some kind of lack of dollars in the FX market, especially in the context of the strong demand coming from Japan and the UK after a progressive lifting of capital controls. This lack of dollars was responsible for a rather significant negative risk premium. In other words, the equilibrium of the market was only due to extremely high depreciation expectations which were needed to suppress the *ex ante* excessive demand for the dollar.

We will not elaborate on that, but it seems unlikely that this exceptional situation as far as risk premia are considered was fully understood at that time. In other words, fundamentalists were probably wrong. Indeed, many economists, taking into account the rising trend of the dollar, were unable to drop the rational expectation hypothesis and argued against all evidences that investors were expecting a very high excess return on dollar assets. As a result, they thought that the risk premium was indeed very large, but with the other sign, ie against the dollar! (See Cumby, 1988.)

In Appendix 2, we come back, with a more rigorous treatment, to the key question of the investors' choice of valuation methodology or 'investments styles' to use the market jargon. We show that a lasting mistake on risk premia, ie a risk premia used as input into valuation models which differs from the true excess expected return, produces systematic forecasting errors which may trigger the process of loss of confidence in fundamentals described by Frankel and Froot (1990).

We tend to believe that other markets at other times have faced a similar process. Let's take the dynamic of US equity market over the recent past. There is little doubt that the market has lost confidence on fundamental valuation models and rely more than ever on other investment techniques (see Appendix 2 for a tentative typology of these alternative valuation methodologies). This should be no surprise as most fundamentalists looking at equity prices on the basis of the fundamental adequacy between risk and return have been pessimistic since the mid-1990s and proved to be wrong. It is also likely that most investors believed for a while what they were told about the fundamental value of US equities and, as a result, for a long time took an underweight position in the US market. (This is well documented as far as the international investors are concerned.) In other words, the true risk premium on US equities was probably quite low in the second half of the 1990s as expected returns based on bearish consensus forecasts were very moderate.

There is absolutely no sign that fundamentalists spotted at that time the low level of the risk premium and drew the right conclusions as far as their valuation models were concerned. It is only *ex post*, when their valuation models had already failed for quite some time, that some fundamentalists started a few years ago to mention the possibility of a structural shift in the demand for equities, due to the rise of long-term saving by the baby-boom generation. This kind of *ex post* rationalization of an observed shift in risk premia comes too late to really strengthen investors' confidence in fundamental valuation models.

In the US equity market, as was the case for the US dollar in the early 1980s, one can argue that the loss of confidence in fundamental valuation models has less to do with investors' irrational behaviour than with the mistakes made by the fundamental investors in assessing the strength of demand relative to the available supply of stocks, ie the actual risk premium.⁵⁸

⁵⁷ Decline of 10.7% of the dollar, compensated partially by the higher interest rates on US assets.

⁵⁸ To be fair, fundamentalists were also wrong on more traditional fundamentals, ie the trend in profits, as they probably underestimated for a long period of time the supply-side improvements in the US economy. So, one could argue that there is no need for our interpretation on 'risk pricing mistake' in order to explain the loss of confidence in fundamentalists and the dangerous dynamics it creates. Indeed, in order to fully understand the current dynamic in the

To be frank, we don't think that fundamentalists' mistakes in assessing actual risk premia are related only to the lack of reliable information on investors' expectations and/or investors' portfolios. Some information exists as we already mentioned in the previous section and even though its quality should be radically improved, it already could serve as proxy for more systematic estimates of the demand/supply balance and risk premia. Indeed, as explained in Appendix 2, there is a class of investors, the 'contrarians', which have learnt how to exploit the spare information which is available and/or collect new information about investors' expectations and positions.⁵⁹ But, the contrarian methodology is used mainly as a short-term trading rule helping, in our view, the smartest part of the market to benefit from the pricing mistakes made by fundamentalists. The very deep rationality of the contrarian style of investment has not lead to an overhaul of fundamentalist methodology nor to more awareness of the importance of assessing the strength of demand in order to value financial assets correctly.

However, more systematic information on expectations and investors' portfolios could serve as a wake-up call for fundamental investors. Firstly, easy-to-read and regular information could draw their attention to the time-varying nature of risk premia. Secondly, they are likely to be puzzled by the strong attention given to such indicators by many market professionals. This interest should send a strong signal about the information content of these kind of indicators and may give the fundamentalists a strong incentive to better integrate questions of supply, demand and risk premia in their valuation models.

4.4 Combining Transparency and Enhanced Surveillance for a More Efficient Foreign Exchange Market

In the course of the previous sections and in Appendix 2, we have seen that a market can have problems in pricing assets correctly for several reasons. There may be a lack of transparency, ie basic information about the current situation and strategies of various economic agents; there may be a lack of processing of the basic information in order to extract implications in terms of risks and returns ; investors may not use the available information and studies on fundamental economic and financial variables and rely on destabilising models to price the assets.

We stressed that these shortcomings may be mutually reinforcing : the lack of transparency on investors' expectations and portfolios may lead the fundamentalists to misprice assets and lose the confidence of investors. A shift to valuation methodologies making little use of economic and financial fundamentals may sharply cut incentives to do research and process correctly the available basic information. "Under certain circumstances, agents find it worthwhile to acquire further information only if other agents do " as Devenow and Welch (1996) put it.

The question therefore is what could be done to improve the situation with respect to transparency, information processing and valuation methodologies. There is probably a specific answer for each market and indeed we would urge a sort of audit along these lines of the way various markets operate. In this section we want to discuss specifically the situation of the foreign exchange market which is both one of the key market of the economy and a market which suffers from recurrent bout of excessive volatility.⁶⁰

The birth of the euro can create sooner or later a major shift in the balance between supply and demand for various currencies, thus a change of risk premia which the market may find very difficult to accomodate smoothly.

US stock market and in the FX market in the early 1980s, one has probably to take into account a mix of real factors (profits, growth, real interest rates) and purely financial factors (trends in supply and demand, risk premia).

⁵⁹ The contrarians invest against the market consensus. They sell the assets for which other investors expect very high future returns as they believe they are overpriced.

⁶⁰ This section draws extensively on Bergsten, Davanne and Jacquet (1999).

One of the key features of the FX market is that 'pure fundamental analysis' does not receive the weight it deserves. Indeed, there is not even a consensus about the right valuation methodology to be used. As far as bonds and equities are concerned, market investors and economists who advise them have a sound notion of the valuation model that should be used (future profits, shifts in short-term interest rates, risk premia etc). This is not the case in the foreign exchange market.

This is a puzzling situation since the theory is rather straightforward about what should drive exchange rates in a world of rational investors who equalize the return on various assets (except for the risk premium). The basic mechanisms were well described by Dornbusch (1976) more than 20 years ago.

In the medium to long-term, the real economy has the final say and exchange rates cannot diverge forever from what is called their long-term equilibrium. An abundant literature exists on the subject. The dominant approach used in estimating a long-term exchange rate equilibrium⁶¹ consists in first defining a sustainable trade balance for the middle to long-term, and then in identifying the level of competitiveness that enables the trade balance to reach its sustainable level. We'll come back to that briefly later on.

Two factors may justify 'normal' fluctuations of current, actual exchange rates around the sustainable, long-term equilibrium: discrepancies in real interest rates and risk premia.

A positive real interest rate differential, for example, implies a real appreciation of the exchange rate relative to the long-term average. The reason is that it increases the attractiveness of investment in domestic financial assets. Such a differential can lead to a significant, albeit rational, real exchange rate appreciation. For example, if domestic real interest rates over a ten-year period are more than 1% higher than abroad, the domestic exchange rate could easily be overvalued by about 10% (in real terms): over a long period of time the investor would earn in interest ($10 \times 1\%$) what he would lose if the currency were to go back to the long-term exchange rate equilibrium (progressive elimination of the 10% overvaluation)

The natural link between exchange rates and spreads in different long-term interest rates assumes perfect asset substitutability, and will in general be affected by the existence of risk premia. These can stem either from specific barriers to capital mobility that prevent assets from being perfectly substitutable, or from different risk characteristics. For example, a nation with a large external debt will have to serve its foreign creditors a higher return than what they can get in their own country. At given interest rates, risk premia should therefore play a crucial role in exchange rate determination. If a given currency has to serve a positive risk premium, either the interest rates must increase by the size of the premium or the exchange rate must depreciate considerably in relation to the 'normal' rate and reach a level at which investors will anticipate a future appreciation that will compensate them for the risk.

For example, if they require an additional 1% return per year and the exchange reaches its long-term equilibrium on average over a ten-year period, the currency will have to be undervalued by around 10%. Exchange rate overshooting therefore responds to the non risk-adjusted interest rate differential, ie the differences between domestic and foreign interest rates, including any risk premium.

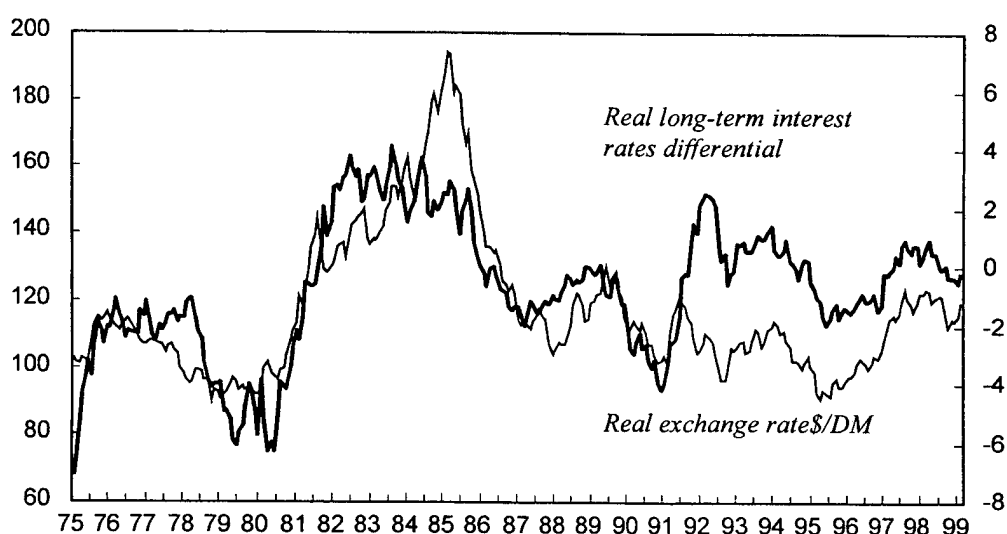
The explanatory record of this simple analytical framework over the last 20 years is surprisingly good for some currencies. Major shifts in exchange rates can thus be fully explained by the substantial real interest rate differentials in the late seventies and early eighties. For example, the long-term real interest rate differential between the United States and West Germany shifted from -6% to +4% between mid-1979 and early 1982, which on the basis of the previous analysis fully justifies the 100 percent real appreciation of the dollar over that period.

In fact, the most spectacular shifts in the dollar's value, at least relative to the mark, can clearly be traced back to the reversal in the US economic policy: an overly lax monetary policy in

⁶¹ See IMF (1998), Williamson (1994) and Wren Lewis and Driver (1998).

the late seventies, followed by the Volcker-Reagan 'policy mix' in the early eighties, consisting in a tight, anti-inflationary monetary policy and a dramatic fiscal expansion through tax cuts and an increase in defense spending. The result was a spectacular growth in real interest rates and a brutal real appreciation of the dollar. Most empirical work thus reveals a fairly close correlation between shifts in exchange rates and long-term real interest rate differentials for certain currencies⁶². It is therefore puzzling that most market professionals ignore this relationship when establishing their fundamental economic forecasts. The chart below illustrates the correlation for the dollar/mark real exchange rate which was until the birth of the euro the most important single cross rate in the world.⁶³

4.1 Real Exchange Rates (base 100 in 1980, left-hand scale) and real interest rate differential (in %, right hand scale)



From this chart, instability in exchange rates can often be traced back to vagaries in economic policies : an increase in inflation and an excessive drop in real interest rates (the United States in the late seventies or France in the mid-seventies), an unbalanced 'policy mix' and a real interest rate hike in response to an overly expansionist fiscal policy (the United States in the early eighties or Germany in the initial phase of unification at the end of the same decade).

However, one should not conclude from the previous analysis that, after all, the foreign exchange market is working well. Firstly, the link between real exchange rates and real interest rates is much weaker for many other cross-rates. Secondly, even for the \$/mark rate, a rational economic analysis based on interest rate differentials cannot account for all periods of instability. Thus, the sudden surge in the value of the US dollar in terms of European currencies in late 1984 and early 1985 remains rather mysterious, as do its drop in late 1987 or its relative weakness in 1993-1996 (see graph 4.1 above)⁶⁴. The dollar peak from late 1984 to February 1985 resembles a speculative bubble, though we gave our interpretation of this mysterious move earlier. Thirdly, this relative rationality has little to do with the spontaneous behaviour of private investors. Discussions among market participants seldom focus on notions like long-term equilibrium, risk premium or,

⁶² See notably Baxter (1994), Coe and Golub (1986), Davanne (1990), Sachs (1985). Meese et Rogoff (1988) found no strong link, but in this paper real rates were calculated on the basis of the inflation rate of the last three months (annualized), which introduced a lot of noise in the data.

⁶³ Very similar charts which were used to interpret 25 years of floating exchange rates can be found in Blanchard (1997), Davanne (1990) and Dominguez and Frankel (1993).

⁶⁴ See also the synthesis by the IMF (1998) on links between the economic cycle, interest rates and exchange rates. *World Economic Outlook*, May, 1998, chapter III : "The Business Cycle, International Linkages and Exchange Rates".

even, spreads of real long-term interest rates. As we already insisted, there is not even a consensus about the right valuation methodology to be used. It's difficult to know why the situation is so peculiar,⁶⁵ but the *ex post* rationality revealed by the graph has a lot to do with the vigilance of major industrialised nations (1985: the dollar drop was accelerated by the intervention of central banks in the wake of the Plaza Agreement; 1987: the dollar was stabilized thanks to interventions as part of the Louvre accord; 1994: it was once again stabilized thanks to interventions).

The role of central banks has been even more important in the case of the \$/yen rate, where major misalignments have been reduced only by massive FX interventions (notably over the 1995-1998 period).

Building on this experience, a sensible priority, for the G-7, would be to establish a mechanism of 'enhanced surveillance', based on a much improved monitoring process. The objective would be more ambitious than simply stemming panic situations as in the past. What is at stake is to considerably strengthen the private sector incentives to use better valuation methodologies and process the available information. We have urged in section 2 more transparency on positions and expectations, but we believe that the full benefits of such improvements are unlikely to be felt without more surveillance by national and international monetary authorities.

More specifically, by 'enhanced surveillance' of the FX market, Bergsten, Davanne and Jacquet (1999) define a two-step process consisting in the G-7:

– *Assessing on the basis of a report by the IMF how far away major currencies are from a reasonable estimate of their long-run equilibrium.* The IMF report will present its own view, but also discuss other estimates available in the market place. Indeed, it would be extremely useful that the staff establish on this issue a regular dialogue with both the academic world and private sector investors.

In the current state of knowledge, competitive estimates are more likely to convey the relevant information, and act as a strong signal possibly anchoring expectations, than single estimates. The IMF could maintain an up-to-date database on the world major financial institutions' estimates of long-term exchange rate equilibrium. Many international bank research departments do not produce such estimates. Our expectation is that an officially sanctioned focus on such estimates would at least provide some incentive for them to do more work on this key issue.

The equilibrium real exchange rate is derived using external trade equations that link foreign trade, domestic demand and external competitiveness. They are used to estimate the level of exchange rate which is in line with a sustainable current account balance. Interestingly, however, this process can lead to long-term equilibrium real exchange rate estimates that are rather far from traditional competitiveness indicators such as relative prices (purchasing power parities - PPPs - estimated by the OECD, for instance), relative labour costs or average long-term real exchange rates.⁶⁶

The main explanation for such discrepancy rests in the low price elasticity of trade volumes typically produced by traditional econometric trade equations. A large adjustment in relative prices is therefore necessary to engineer any required change in the volume of exports and imports. The low price elasticity found in authoritative empirical studies is somewhat puzzling, as thin export margins suggest a high degree of competition in most international markets. This suggests that applied economic research on what determines international trade volumes needs to be further encouraged and developed. However, as we already stressed, this kind of research with a very high

⁶⁵ To be sure, the academic literature does not send a strong message on what models should be used. Meese and Rogoff (1983 and 1988) maintained that exchange rates did not obey stable economic logic and followed what is referred to as a random walk. These papers are still quite influential, despite the fact that they did not test correctly the existence of a link between real long-term interest rates and exchange rates (see footnote above).

⁶⁶ For example, FEER estimates of the euro/dollar rate generally put the long-term equilibrium between 1.20 and 1.30 dollar per euro, while the OECD puts the PPP rate at 1.06 (1998 figures).

public good component is unlikely to be efficiently produced in the private sector. Research institutes and academics should have more incentives to conduct such applied economic research.

– *Discussing whether or not cyclical conditions and interest rates in various countries justify, from an investor perspective, the degree of undervaluation of some currencies.* Here again, the IMF should provide the technical support. In well-functioning financial markets, countries whose economic activity is particularly weak should have lower real long-term interest rates and a relatively weak exchange rate. The consistency between real long-term interest rates and real exchange rates should be closely monitored by the G-7. This implies an assessment of any risk premium imbedded in interest rates differentials: let us recall that a real long-term interest rate differential of 1% (for 10-year maturities) in favour of the foreign country and an adverse risk premium of 1% against the domestic currency imply a potential, rational real undervaluation of the domestic exchange rate of up to 20%.

As we have argued at length, more information on expectations and investors' portfolios would facilitate such an assessment. The birth of the euro makes it even more necessary in order to anticipate diversification strategies and get a better grasp of the factors likely to influence the demand for euros. This analysis of supply and demand trends in the foreign exchange market should be an integral part of the "enhanced surveillance" process we advocate.

We do not expect such a process of enhanced surveillance to produce "true" calculations. At least in a first stage, we don't expect various countries to agree publicly on specific figures. However, a regular and frank discussion on these issues would bring about three main benefits. Firstly, it would force the IMF to audit the economic research process in the field of long-run equilibrium exchange rates and risk premia. The resulting conclusion would likely be that more work should be done and we can imagine a regular cycle of conferences where both private sector practitioners and academics could meet. Secondly, G-7 countries would be much better prepared to intervene in case of market turmoil as they would have a good grasp on the FX market fundamentals. Thirdly, last but not least, this process could have a strong disciplinary effect on the private sector behaviour and trigger a very significant shift in valuation methodologies.

4.5 Conclusion

In this paper, we stressed how important transparency is. We argued in particular that more information on expectations and investors' portfolios may help the fundamentalists to correctly price market risk and, as a result, shifts in valuation methodologies toward chartism and other destabilising investment styles would appear less likely. This powerful indirect effect of transparency has so far received little attention.

We also argued, however, that transparency by itself does not guarantee an efficient processing of the basic information disclosed to the market. Market surveillance by monetary authorities may help to improve the way markets work and we made a few proposals as far as the exchange rate market is concerned.

Overall, the long-term ambitions of the current reforms of the 'international financial architecture' should be to build what is called 'efficient markets'. But what does this really mean, in view of the previous discussions?

In general, efficient markets are defined as markets in which all the available information is already used and no profit can be made by using information available to the general public (semi-strong form of efficiency) or even to a sub-group of market participants (strong form of efficiency). However, one could argue that this is a rather misleading definition of efficiency. Let's take a market made of passive investors or index trackers in which no one cares about information and in which prices follow a pure random walk. By definition, money cannot be made from any kind of information, but this does not mean that the market is efficient!

In our view, the concept of efficiency should be defined rather more directly by reference to the way market players produce and use information. « It is a stubborn fact that there is no exchange rate other than what these people set » as Lyons (1999) insists in his survey of the microstructure approach to exchange rates. An efficient market should have two characteristics. Firstly, there are agents producing the needed analysis on the assets' likely return, their risk characteristics and as a result the risk premia required by investors in the short, medium and long-term. Secondly, the asset price should fully reflect the consensus view about its return and the risk premium it has to offer. In other words, investors should use fundamental valuation models rather than other destabilising methodologies.

The nice thing with this definition is that one doesn't have to do a lot of econometric work to assess whether or not a market is efficient. The best thing to do is to precisely analyse the way information is collected, processed and used by investors. This should be done market by market. One of the most difficult issues is related to the optimal design of intermediate institutions which process the basic information (rating agencies, international institutions, research departments of financial institutions, academic research institutes etc). What are their incentives? How should they be financed? What is the social value of their production? Those are fascinating issues which undoubtedly deserve more research.

APPENDIX 1

Draft Survey on Exchange Rate Expectations

Euro/dollar exchange rate

euro/dollar rate when you answer the survey (1 euro =\$):	Most likely euro/dollar rate in 3 months :	Most likely euro/dollar rate in one year :

ASSESSMENT OF RISKS AT VARIOUS HORIZONS	
3 months	one year
Probability of one euro worth less than 0,95 dollar in 3 months :	Probability of one euro worth less than 0,95 dollar in one year :
Probability of one euro worth more than 1,15 dollars in 3 months :	Probability of one euro worth more than 1,15 dollars in one year :

NB : Probability should be expressed in percent ("one chance out of four " : 25%).

APPENDIX 2

Valuation Methodologies, Research Strategies and Mistakes in the Pricing of Market Risk

In this appendix, we want to examine more rigorously the issue of investors' choices of valuation methodology and the consequences of fundamentalists' mistakes as far as the pricing of risks is concerned.

Let's take an asset with an infinite life and let's suppose for a start that investors are "pure fundamentalists". Each agent 'i' has a view about the assets' average return in the future, R^i , and the needed risk premium, rp^i , over treasury bills, taking into account the asset risk characteristics. In order to simplify, the rate on treasury bills is assumed constant at r . The views on R^i and rp^i come from the studies which are publicly available and from the investor's own research effort. We'll come back to that later. As a result, each investor 'i' has a view about what should be the asset price: $P^* = R^i / (r + rp^i)$.

As they are fundamentalist investors, they believe that the asset price will converge progressively on P^* . So, they form their expectations for the future price P^a_{t+1} in the following way:

$$P^a_{t+1} = a P_t + (1-a) P^* \quad (1)$$

At the aggregated level, we have:

$$P^a_{t+1} = a P_t + (1-a) P^{\text{cons}} \quad (2)$$

With $P^{\text{cons}} = R^{\text{cons}} / (r + rp^{\text{cons}})$

P^{cons} is the fundamental price which reflects investors' consensus on R and rp (R^{cons} and rp^{cons})

We would like to show that a systematic mistake on rp^{cons} can start a process where investors lose confidence in the fundamentalist valuation methodology describes by (1). Let's assume that the true risk premium, ie the market required excess return, is rp^t rather than rp^{cons} . So our starting point is the assumption that the consensus is wrong on the actual risk premium. This mistake has obviously some strong implications on the actual 'fundamental price' of the asset under consideration. If the short-term treasury bill rate is 4%, rp^{cons} 1%, but the true risk premium is 2%, the 'fundamental value' of this asset is 17% lower than the market believes.¹

How will the market adjust to this mistake?

At the beginning, suppose nobody suspects that there is something wrong with the 'fundamentalist view'. Thus, equation (2) holds. The current price will be such that an investment in this asset gives an excess return rp^t , ie the true risk premium. In other words:

$$P_t = (R + P^a_{t+1}) / (1 + r + rp^t) \quad (3)$$

with R , the expected coupon paid on $t+1$ for the holding period t to $t+1$,

¹ The market thinks the right price is $R^{\text{cons}} / 0,05$ while it is $R^{\text{cons}} / 0,06$.

In order to get an easy result, let's assume that $R = R^{\text{cons}}$, i.e. future payoffs are assumed to be constant. After a few lines of calculation, we find that the current price will be:

$$P_t = R^{\text{cons}} / (r + rp^{\text{cons}}) * (1 + r + rp^{\text{cons}} - a) / (1 + r + rp^t - a)$$

$$\text{Or } P_t = P^{\text{cons}} * (1 + r + rp^{\text{cons}} - a) / (1 + r + rp^t - a) \quad (4).$$

This equation shows that the mistake on the level of the risk premium creates a difference between the price expected by the fundamentalist on the basis of their wrong assumption, P^{cons} , and the actual price.

Let's take a numerical example. The mistake on the risk premium is supposed to be 1%, as assumed above in our back-of-the-envelope calculus. The horizon is supposed to be three months. And at this three-month horizon, fundamentalists assume that one quarter of the difference between P^t and P^* will have disappeared ($a = 0,75$). As a result, $P_t = P^{\text{cons}} * 0,99$: the price of the asset is systematically 1% below the value simulated by the fundamentalists' model.

As soon as some investors are able to spot this systematic mistake in the fundamentalist model, the dynamic changes. For example, they may revise their assumptions as far as the speed of the convergence to the fundamental price is concerned, i.e. increase the value of the parameter 'a'. According to the equation (4) this results in an increase in the difference between P_t and P^{cons} . Some investors may also start to take fundamentalists views with a pinch of salt and integrate the observed bias in their forecasts for $P^{a_{t+1}}$. As a result of this shift in valuation methodology, the difference between the actual price and the price simulated by the flawed fundamental model increases.

As described by Frankel and Froot (1990), as more and more investors stop trusting the fundamental model, a trend in the asset price can appear and it attracts the chartists' speculation. One could argue that chartists are not irrational though they are not interested in researching R and rp . They try to find some empirical regularities in the past and it is quite possible that markets follow similar pattern when there is such a 'valuation crisis', i.e. a situation where the market is progressively losing faith in fundamentals.

A key point here is that when a market has lost faith in its own rationality and believes that the price process no more follows (1), all behaviors can change. Research strategies put less weight on the fundamentals (short term and above all long term) and more on technical analysis. Rational investors themselves can behave in a destabilizing manner and "it becomes hard to tell the noise traders from the arbitrageurs" as Shleifer and Summers (1990) put it.

Overall, one has to remember that in this example, the true fundamental value was 17% below the price simulated by the model based on the wrong risk premium. So, the movement we have just described is not by itself irrational. However, once the dominant valuation methodology has changed, there is no reason to expect a smooth convergence. The price decline may well overshoot its fundamental target as the dollar did in the early 1980s.

The market will find again its equilibrium only once the fundamentalists have corrected their mistake on the risk premium² and regain the confidence of investors. It may take quite a long time.

An interesting feature of this model of crisis based on a mispricing of risk is that it explains the success of a famous class of investors: the 'contrarians'. Contrarians invest against the crowd. They especially like to sell the assets that are supported by the consensus

² It does not necessarily mean that they have to change rp^{cons} : the true risk premium, rp^t , may change and come back to what the fundamentalists consider as the normal level. This is what happened with the dollar in the course of the 1980s.

view. This investment style has not attracted a lot of interest from economists despite the fact that it is quite influential among professional investors.

Contrarians spot the assets where the expected return is far away from what is generally considered as normal. By definition, the expected return is $r + rp^t$ (risk free rate plus the true risk premium) while the normal return is $r + rp^{cons}$ (risk free rate plus the risk premium used as an input in fundamental valuation models). When the difference, ie $rp^t - rp^{cons}$, is large, contrarians sell this asset. Indeed, this seems to be the right strategy since the fundamentalists are probably wrong in assessing the risk premium required on this asset and the market may be heading toward a period of instability.

Finally, we want to come back to equation (1) describing the research strategy and valuation methodology of 'pure fundamentalists'. They research R and rp and assume a progressive return of market prices to their fundamental level. This was a convenient way to describe the stylized facts of the process we wanted to analyse, but it is important to recognize that actual research strategies and valuation methodologies are much more complex than that, even in a world where people believe in fundamental valuation models. It seems useful to describe a few other 'investment styles'.

1) There are what we could call the 'long-term pure fundamentalists'. Contrary to the 'short-term pure fundamentalists' who use only equation (1) as a guide to allocate their investments, the 'long-term pure fundamentalists' are less concerned by the price at the date $t+1$ than by the long term return of the asset under consideration. They are less worried by the short-term volatility of prices since any overshooting or undershooting will have to be corrected in the future periods. Equation (1) is no more their only reference. They also look at the price in a longer term perspective and takes into account the price they would be ready to pay if they had to buy and hold this asset. This price is $P^{*lt} = R^i / (r + rp^{it})$. In this equation, rp^i is replaced by rp^{it} , ie the investor's true risk premium. P^* is an estimate of the asset's fundamental value from the market's perspective (ie using an estimate of the market's required risk premium). P^{*lt} is an estimate of the asset's fundamental value from the long term investor's own perspective (using his own true risk premium).³

2) What we call 'sceptical fundamentalists'⁴ will try to assess how the current market consensus will move between t and $t+1$. Thus, they don't try to assess the true value of R and rp , but they rather try to identify what the current consensus is and whether or not future news on 'fundamentals' will surprise and move the markets. They are the smart rational investors trying to anticipate the change of mood of the crowd rather than doing the pure fundamentalist's hard job, as described by Keynes (1936) and later Shleifer and Summers (1990). When they believe that the consensus is right and that there will be no surprise, they invest as the "passive investors".

3/ The "passive investors" are even more sceptical than the previous category as far as the research agenda is concerned and believe that it makes no sense to spend any money looking at the fundamentals. They rely on the work done by others and assume it is not possible to find a better estimate for R and rp than the current R^{cons} and rp^{cons} . They believe that all the available information has been efficiently processed and, as a result, that the best forecast for the asset's return between date t and $t+1$ is $r + rp^{cons}$. The only thing they have to do is to choose the best asset allocation on the basis of these constant expected returns. 'Index

³ Introducing the 'pure long term fundamentalists' in our previous model would have showed another way in which short term pure fundamentalists can lose investors' confidence when they are using a wrong risk premium as an input in their models. When rp^{cons} is different from rp^t , long term pure fundamentalists tend to drive prices away from the prices forecasted by their more short term oriented colleagues.

⁴ See Davanne (1998). We call them 'sceptical fundamentalists' because they don't believe it makes sense to search for the true fundamentals. They prefer to chase the changes in consensus.

trackers' represent an extreme variety of passive investors. They simplify even the asset allocation process as they invest in each asset strictly according to its share of the market's value. Implicitly, they assume that they have the same risk aversion that the average investor and as a result they simply replicate the average portfolio.

It is beyond the scope of this paper to look from a theoretical perspective at how investors choose their "investment style" and the results of the interaction between different kinds of investors. An interesting question is obviously the costs/benefits ratio of these various valuation methodologies and research strategies. We simply want to discuss briefly some consequences of the activities of 'sceptical fundamentalists' and 'passive investors'.

1) Keynes' contention that, from the investor's point of view, the limited resources available for research are better used in the 'sceptical fundamentalist' rather than the 'pure fundamentalist' way seems reasonable, but, to our knowledge, has not been the subject of extended formal investigations. It is important to recognize that the type of information produced is likely to be quite different in these two research strategies: 'pure fundamentalists' look at long-term trends as far as return and risks are concerned. 'Sceptical fundamentalists' will be quite short-term oriented and will spend a lot of time forecasting the forthcoming news on fundamentals to try to exploit any element likely to surprise the market⁵.

There is a strong presumption that the social value of the information produced in the former strategy is much higher than the information produced by the latter. Here the reference should be Hirshleifer's (1971) seminal work on the private and social value of information. He showed that in a pure exchange economy, there is no social value in information as will be revealed later. For example, there are many incentives to try to guess the US CPI a few hours before its release because any surprise relative to the consensus view will move the markets, but there is little, if not no, social value in this research activity. As stressed by Hirschleifer, the advance knowledge of such a piece of information will only have a redistributive effect in favour of those who know the figure and can trade on it at the expense of the uninformed.

Overall, one can argue that the presence of 'sceptical fundamentalists' is much less beneficial to the efficient functioning of financial markets than that of 'pure fundamentalists'.

2) As far as 'passive investors' and 'index trackers' are concerned, one could argue that their strategies are very rational and dominate the other two. Indeed, their performance should be above average since, contrary to the average investor, the passive investor spends no money collecting information. Indeed, in the long run, it is a well-documented fact that passive investors get better returns than the large majority of active investors. And as a result, they are clearly gaining more and more market shares.

Index trackers deserve special attention as they probably play a very negative role in financial markets. Quite often, the indexes they use are not perfectly representative of the market. They may give an excessive weight to some assets (for example large stocks relative to small stocks or Japanese equities relative to US equities as far as international equities indices are concerned). When this is the case, the index tracker's portfolio is not optimal. However, the index tracker is not the only one to suffer from such a situation. One can argue that there is a risk for the overall stability of the market as well. Indeed, any bias of this kind distorts the risk premia as there is a systematic difference between the structure of the index

⁵ An important part of the job of the 'sceptical fundamentalists' is to assess where the consensus stands. As Lyons (1999) put it, "Whatever the source, if one adds superior knowledge about other beliefs, then one can forecast interim price more accurately than the market at large. In FX, it is a fact that dealers share their beliefs with certain other dealers, but do so rather selectively". One could analyse many expenses in financial institutions as a consequence of searches for this sort of information (entertaining clients is just but one). This direct way of collecting other people private information seems to receive little attention from the literature which insists, on the one hand, on fundamental research and, on the other hand, on the possibility to extract information from the market prices themselves, as in Grossman and Stiglitz (1980).

trackers' demand and the actual supply in the market.⁶ The asset, which benefits abnormally from the index trackers' demand, will be able to offer investors a lower return than that of other assets. In other words, it will receive a lower risk premium. It may be very difficult for fundamental investors to correctly price such assets. Any mistake in this pricing may trigger some instability as we argue in this paper.

Let's note in conclusion that this appendix takes a very original view on the respective role of chartists or contrarians on the one hand and fundamentalists on the other hand. In general, the former is associated with irrationality and the latter with rationality. In fact, we believe that fundamentalists are quite vulnerable to mistakes as far as the pricing of market risk is concerned and that chartism or contrarian investments may thus be a rational reaction to these mistakes. That is not to say that chartists or contrarians play a stabilizing role: they do not, but only that the underlying true reason of instability could well be the irrational mistakes made by the fundamentalists.

⁶ A recent example of the difficulties for the market to adjust to such a situation was given by the recent floatation of France Telecom in France. Only 20% of the shares were quoted and the rest were still held by the government, but France Telecom entered in the main indexes for its full market value, which triggered a large demand by index trackers despite the low available supply.

APPENDIX 3

International Monetary Reform

Second meeting at the Centre for Economic Performance, LSE

Thursday 1 July 1999

Attendees

Charles Bean	CEP/LSE
Peter Boone	Brunswick Capital Management
Sir Alan Budd	Queen's College Oxford
Andrew Crockett	Bank for International Settlements
Olivier Davanne	French Economic Analysis Council
Huw Evans	Financial Services Authority
Jeffrey Frieden	Harvard University
Alberto Giovannini	Long-term Capital Management
Morris Goldstein	Institute for International Economics, Washington
Charles Goodhart	Financial Markets Group/LSE/Monetary Policy Committee
Andrew Haldane	Bank of England
John Hicklin	IMF
Graham Ingham	CEP
Lal Jayawardena	High Commissioner, Democratic Socialist Republic of Sri Lanka
Anatole Kaletsky	The Times
Peter Kenen	Princeton University
Nobuhiro Kiyotaki	CEP/LSE
David Lawton	HM Treasury
Richard Layard	CEP/LSE
Sir Nicholas Monck	CEP Policy Committee/Former Permanent Secretary at Dept. of Employment
John Peet	The Economist
David Peretz	The World Bank
Richard Portes	London Business School and CEPR
Hélène Rey	CEP/LSE
Ken Rogoff	LSE/Harvard University
Ciro Schioppa	ECB
George Soros	Soros Fund Management
Sushil Wadhvani	Monetary Policy Committee
Andrew Walter	International Relations, LSE

- Obstfeld, M. and Rogoff, K. (1995), 'The mirage of fixed exchange rates', Journal of Economic Perspectives, 9, 73-96.
- Obstfeld, M. and Rogoff, K. (1996), *Foundations of International Macroeconomics*, Cambridge: MIT Press.
- Ozler, S. (1993), 'Have Commercial Banks Ignored History?', American Economic Review, 83, 608-20.
- Raffer, K., (1990), 'Applying Chapter 9 insolvency to international debts: an economically efficient solution with a human face', World Development, 18, 301-11.
- Rodrick, D. (1997), *Has Globalization Gone too Far?*, Washington: The Institute for International Economics.
- Rogoff, K. (1985), 'Can international monetary cooperation be counterproductive?', Journal of International Economics, 18, 199-217.
- Sachs, J. (1995), 'Do We Need an International Lender of Last Resort?', Princeton University, Frank Graham Memorial Lecture.
- Sachs, J. (1998), 'Fixing the IMF remedy', The Banker, 148, 16-18.
- Soros, G., *The Crisis of Global Capitalism*, New York: Public Affairs Press.
- Svensson, L. E. O., (1998), 'Trade in risky assets', American Economic Review, 78, 375-94.
- Tobin, J. (1978), 'A proposal for international monetary reform', Eastern Economic Journal, 4, 153-59.
- Ventura, J. (1997), 'Growth and interdependence', Quarterly Journal of Economics, 115.
- Wallace, N. (1988), 'Another attempt to explain an illiquid banking system: the diamond and Dybvig model with sequential servicing taken seriously', Federal Reserve Bank of Minneapolis, Quarterly Review, 12, 3-16.

4. The Role of Transparency for a Better Pricing of Risks

- Basle Committee on Banking Supervision (1998a), 'Enhancing Bank Transparency'.
- Basle Committee on Banking Supervision (1998b), 'Sound Practices for Loan Accounting, Credit Risk Disclosure and Related Matters'.
- Basle Committee on Banking Supervision (1999a), 'Banks' Interactions with Highly Leveraged Institutions'.
- Basle Committee on Banking Supervision (1999b), 'Sound Practices for Banks' Interactions with Highly Leveraged Institutions'.

- Basle Committee on Banking Supervision & OICV (1998), 'Trading and Derivatives Disclosures of Bank and Securities Firms, Results of the Survey of 1997 Disclosures'.
- Basle Committee on Banking Supervision & OICV (1999), 'Recommendations for Public Disclosure of Trading and Derivatives Activities of Banks and Securities Firms'.
- Baxter, M. (1994), 'Real Exchange Rates and Real Interest Differentials, Have We Missed the Business-Cycle relationship?', Journal of Monetary Economics, Vol. 33.
- Bergsten, F., Davanne O. and Jacquet P. (1999), 'The Case for Joint Management of Exchange Rate Flexibility', Washington: Institute for International Economics, Working Paper 99-9.
- BIS (1994), 'Public Disclosure of Market and Credit Risks by Financial Intermediaries', Discussion paper prepared by a working group of the Euro-currency Standing Committee.
- BIS (1999), 'International Banking and Financial Market Developments', March 1999.
- Blanchard, O. (1997), *Macroeconomics*, Prentice Hall.
- Campbell J., Lo A. and MacKinlay, A. (1997), *The Econometrics of Financial Markets*, Princeton University Press.
- Coe, D. and Golub, S (1986), 'Exchange Rates and Real Long-term Differentials, Evidence for Eighteen OECD Countries', Paris, Organization for Economic Cooperation and Development, Working Paper.
- Cumby, R. (1988), 'Is it risk? explaining deviations from uncovered interest parity', Journal of Monetary Economics, 22.
- Davanne, O. (1990), 'La dynamique des taux de change', Economie et Statistique, 236.
- Davanne, O. (1998), 'L'instabilité du Système Financier International', Report to the French Prime Minister, Collection des Rapports du Conseil d'Analyse Economique, Paris, La Documentation Française.
- Davanne, O. (1999), 'Transparency of Financial Portfolios and Control of Market Risks', Report to the French Minister of the Economy, Finance and Industry, *mimeo*.
- Devenow, A. and Welch, I. (1996), 'Rational Herding in Financial Economics', European Economic Review, 40.
- Dornbusch, R. (1976), 'Expectations and Exchange Rate Dynamics', Journal of Political Economy, 84.
- Frankel, J. and Froot, K. (1987), 'Using survey data to test standard propositions regarding exchange rate expectations', American Economic Review, March.

- Frankel, J. and Froot, K. (1990), 'Chartists, fundamentalists and trading in the foreign exchange market', American Economic Review, 80.
- G22 (1998), 'Report of the Working Group on Transparency and Accountability', October.
- Grossman, S. and Stiglitz, J. (1980), 'On the impossibility of informationally efficient markets', American Economic Review, 70.
- Hirshleifer, J. (1971), 'The private and social value of information and the reward to inventive activity', American Economic Review, 61.
- IMF (1998), *World Economic Outlook*, May.
- IMF (1999), 'Report of the managing director to the Interim Committee on progress in strengthening the architecture of the International Financial System'.
- Keynes, J.M. (1936), *The General Theory of Employment, Interest and Money*, London: Macmillan.
- Lyons, R. (1999), *The Microstructure Approach to Exchange Rates*, MIT press.
- Meese, R. and Rogoff, K. (1988), 'Was it real? the exchange rate-interest differential relationship over the modern floating-rate period', The Journal of Finance, 43.
- Meese, R. and Rogoff, K. (1983), 'Empirical exchange rate models of the seventies, do they fit out of sample?', Journal of International Economics, 14.
- Sachs, J. (1985), 'The Dollar and the Policy Mix, 1985', *Brookings Papers on Economic Activity*, 1.
- Shiller, R. (1998), 'Human Behavior and the Efficiency of the Financial System', NBER Working Paper 6375.
- Shleifer A. and Summers, L. (1990), 'The noise trader approach to finance', Journal of Economic Perspective, 4, 2.
- Stiglitz, J. and Bhattachary, A. (1999), 'Underpinnings for a Stable and Equitable Global Financial System, From Old Debates to a New Paradigm', Paper prepared for the Eleventh Annual Bank Conference on Development Economics on April 28-30.
- Williamson, J. (1994), 'Estimating Equilibrium Exchange Rates', Washington DC, Institute for International Economics.
- Wren-Lewis, S. and Driver, R. (1998), 'Real Exchange Rates for the Year 2000', Washington DC, Institute for International Economics.