

Should we be afraid of low long-term bond rates ?

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Division synthèse conjoncturelle

Long-term interest rates on public bonds are now standing at historically low levels in the leading industrialised countries. While these levels seem to be in line with the outlook for growth and inflation in the euro zone and Japan, this is much less evident in the case of the United States. It seems that the low level of American long rates is linked to a decline in the bond premium, which is itself the result of various phenomena, the most important of which is certainly the strong growth in purchases of government securities by foreign traders, notably the central banks of certain Asian countries. In the United States the inertia of long rates in response to the rise in short rates has led to a partial inversion of the yield curve. While historically such an inversion has been an indicator of a coming economic slowdown, the present situation is somewhat different. The inversion now being seen in fact corresponds to a decline in the bond premium. Moreover, the risk of a sudden harsh upward adjustment in long rates seems to depend largely on the abandonment by certain Asian countries, notably China, of their policies of large-scale purchases of long-term US Treasury bonds.

The evolution in the prospects for growth and inflation is not sufficient to explain the decline in long rates, at least in the American case

In the leading industrialised countries, long-term bond rates have declined sharply in recent years and now stand at historically low levels (see Graph 1).

Bond rates are the result of the balancing of supply and demand on the securities markets. Put simply, if a bond giving rise to the payment at maturity of a sum M is bought on the market at price P , its yield over the period remaining to maturity will be

$$r = M/P - 1.$$

This means that an increase in the demand for bonds in relation to their supply will raise their prices but reduce their yields. Arbitraging by traders on the market for savings implies that the remuneration on a long-term loan is equal to that of a succession of short-term loans over an equivalent period. The 10-year

interest rate that results from the balancing of supply and demand for securities on the market can therefore be seen as an average of present and expected short-term rates, plus a bond risk premium. The risk premium associated with a bond, which is not directly measurable, is a reflection of the attraction felt by agents for this type of asset in relation to other types and depends on its characteristics (liquidity of the security, risk of payment default, uncertainty regarding expected yields, etc.).

If one assumes a constant bond risk premium, a decline in long rates in relation to current short rates corresponds to a decline in expected short rates, signifying that traders expect monetary policy to be eased in the future.

A decline in key rates can be related to an easing of inflation. Inflation has in fact tended to decline or to remain under control in the leading industrialised countries in recent years. However, yields on inflation-indexed long-term bonds are also standing at historically low le-

vels (see Graph 2). Declining inflationary expectations therefore explain only part of the weakness of long rates.

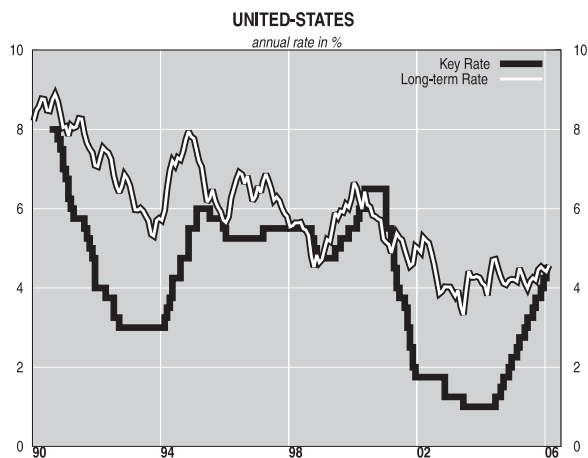
Another possible explanation is that agents are expecting a decline in key rates, in reaction not only to low inflation but also to a slowdown in economic activity. This explanation is plausible for the euro zone, Japan or the United Kingdom. In these three zones, the evolution of real interest rates in recent years seems consistent with that of economic activity (see Graph 3). In the United States, on the other hand, the supposition that the decline in long rates in the recent past is linked to a decline in growth seems unconvincing, as the past three years have been marked by an uncoupling between the evolution in real interest rates and in activity, with real long rates distinctly lower than year-on-year GDP growth.

All things considered, the weakness of long rates cannot be explained, at least in the American case, by a decline in expected

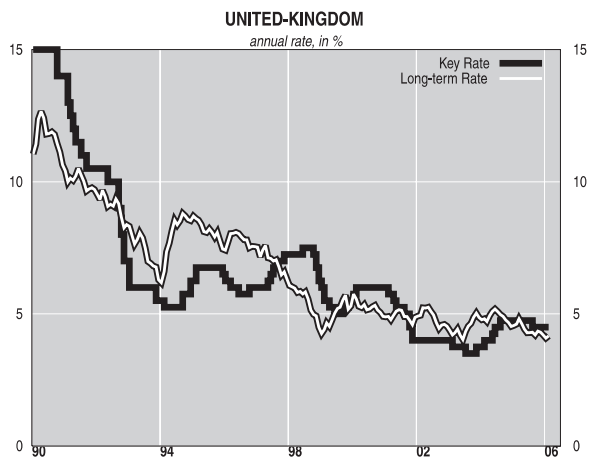
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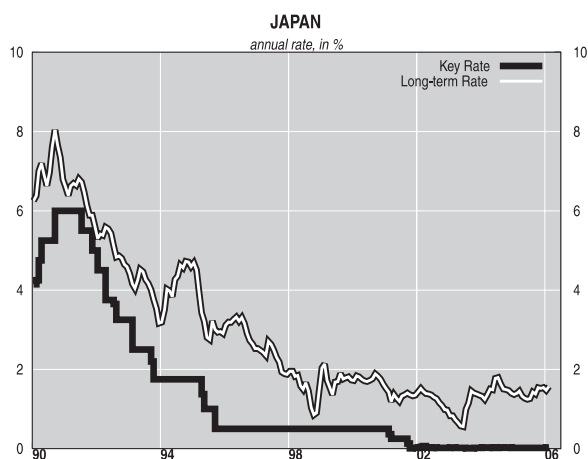
LONG-TERM RATES (10-YEAR FIXED INCOME BONDS) AND KEY RATES (IN %)



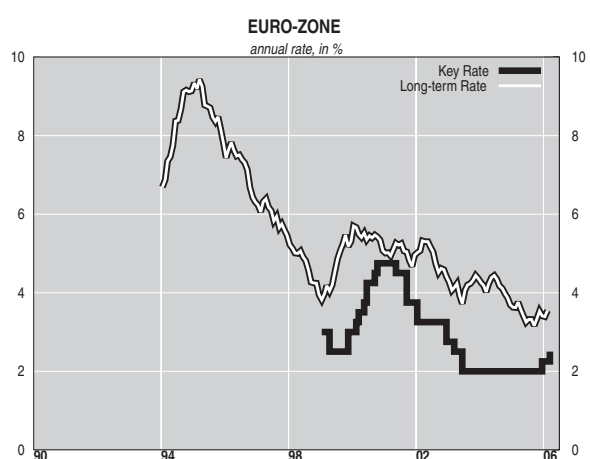
sources : DataInsight, federal Reserve



sources : DataInsight, Bank of England



sources : DataInsight, Bank of Japan



sources : DataInsight, ECB

short rates linked to a decline in expectations of growth or inflation (see Graph 4).

A variety of factors liable to explain the decline in the bond risk premium

The decline in United States long rates would seem therefore to be related, at least partly, to a decline in the risk premium on long-term bonds, which may itself be the result of several different factors.

In the first place, it could be related to a decline in uncertainty regarding the evolution in macroeconomic variables. The United States has been through an exceptionally long period of strong growth and

controlled inflation, interrupted only by a brief recession in 2001. At the same time, the low volatility of inflation seen in the leading industrialised countries in recent years has convinced market traders of the capability of central banks to damp down price variations. Moreover, in recent years the central banks have made substantial efforts to improve communication regarding their monetary policy decisions. Finally, the improved integration of financial markets at world level and the development of derivative products have enabled investors to diversify their risks.

Many analysts believe that the decline in the risk premium required on bonds could also be linked to a «global savings glut». This expres-

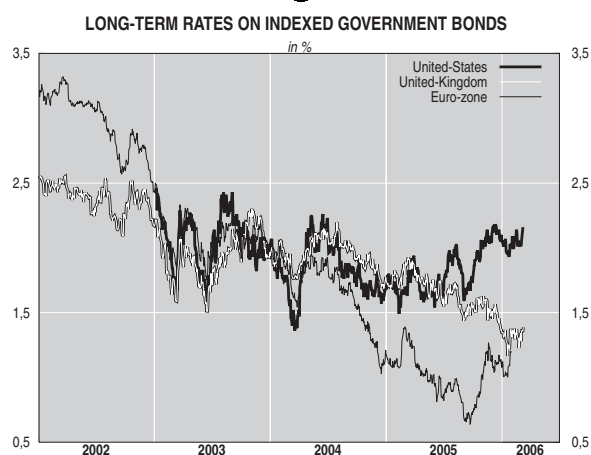
sion was coined by the Fed's new Chairman, Ben Bernanke, and has been widely taken up since.

First of all, the hypothesis of a global savings glut has to be seen in the context of the very accommodative monetary policies introduced in the leading industrialised countries following the 2001 recession. These policies have encouraged borrowing, the consequence being very rapid growth in liquidity in the leading industrialised countries, with the exception of Japan (see Graph 5).

The excess of global saving over investment seems also to be due to a decline in firms' propensity to invest, probably explained by a deterioration in the outlook for activity

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sources : DataInsight, Federal Reserve, Bank of England, Agence France Trésor

or by growing pressure from shareholders who have become increasingly cautious and demanding regarding the return on their investments.

The decline in investment in the industrialised countries was particularly marked following the bursting of the high-tech bubble in 2000. In the United States, the upturn in corporate investment starting in 2003 has remained decidedly modest in relation to the evolution in corporate saving. American firms have in fact recently become net lenders. (See Graph 6). In the euro zone and Japan investment has been held back by the prospect of only modest growth. Furthermore, follo-

wing the collapse of equity markets in 2000, investors have tended to give preference to purchases of less risky assets, such as bonds, in a «flight to quality».

At the same time, the scale of firms' financing capacity has prompted them to find less of their finance by means of bond issues. This reduction in the supply of corporate bonds implies a shift in the demand for bonds towards government securities and this may have contributed to the decline in yields on these securities.

In the most highly industrialised countries, the savings glut could also be linked to the expansion of

saving for retirement, notably through pension funds. This is because these funds, but also life insurance companies, whose debts are mainly long-term, could be prompted to increase the proportion of long-term bonds in their assets in order to reduce the duration mismatch between their assets and their liabilities. In particular, this tendency could be the consequence of the reforms aimed at reducing the risk of insolvency that have been introduced or are due to be introduced in both Europe and the United States (see, for example, International Monetary Fund 2005a). It should be noted, however, that American pension funds and insurance companies have played only a minor role on the market for American public debt, with net purchases of 43.5 billion dollars since the beginning of 2002, in contrast to the 962.8 billion dollars of purchases by foreigners (all categories taken together).

In the emerging countries, especially in Asia, the growth in saving in relation to investment seems to be linked to the expansion of foreign trade at the expense of domestic demand, which has enabled them to build up substantial trade surpluses. In addition, the economic crises of the 1990s have given these countries an in-

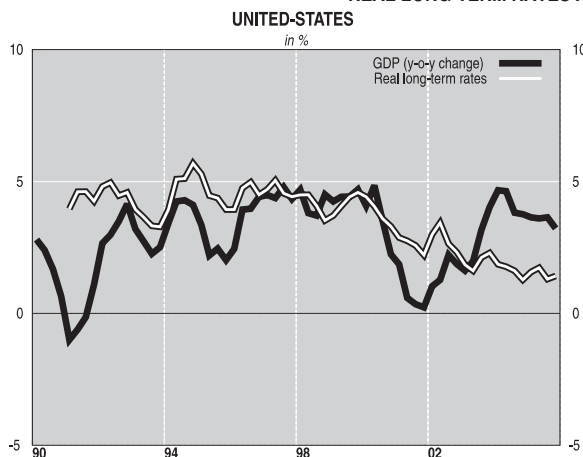
Table 1 : Foreign holdings of US debt securities

Outstanding US public debt securities		November 2000		November 2005		Evolution Nov. 2005 / Nov. 2000	
		Amount in billion \$	Share of total (in %)	Amount in billion \$	Share of total (in %)	Amount in billion \$	Share of total (in point)
Maturity of less than 1 year (T-Bills)	Foreign-owned	258	38	275	28	18	-10
	of which : official sector	155	23	215	22	60	-1
	Total outstanding	682	100	987	100	305	
Maturity of more than 1 year (T-Notes and T-Bonds)	Foreign-owned	763	32	1,899	59	1,136	27
	of which : official sector	455	19	1,043	33	588	13
	Total outstanding	2,355	100	3,198	100	844	
All maturities	Foreign-owned	1021	34	2,174	52	1,153	18
	of which : official sector	610	20	1,258	30	648	10
	Total outstanding	3,037	100	4,185	100	1,149	

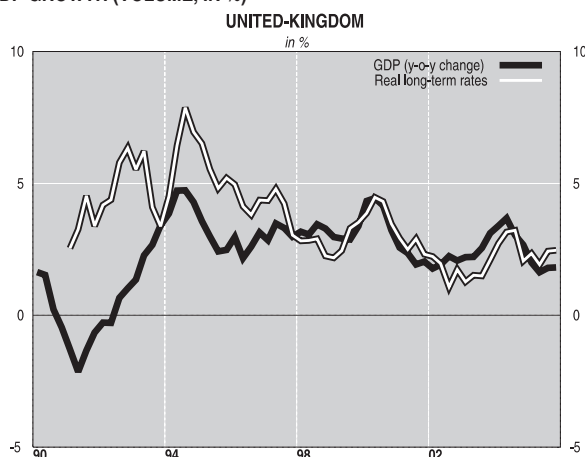
Source : US Department of Treasury, Insee calculations

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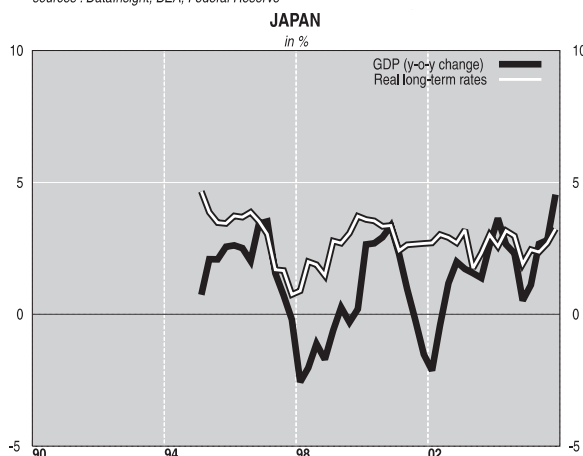
REAL LONG-TERM RATES AND GDP GROWTH (VOLUME, IN %)



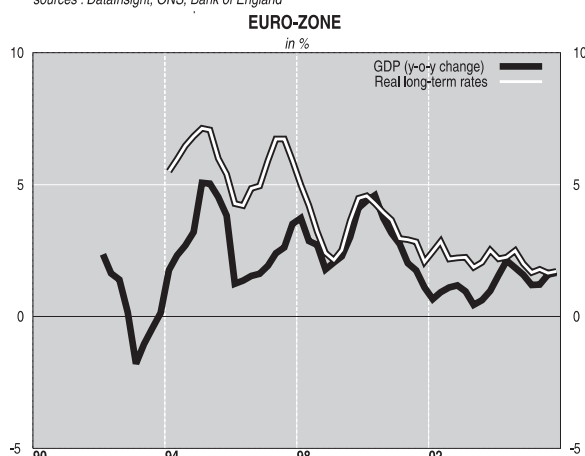
sources : DataInsight, BEA, Federal Reserve



sources : DataInsight, ONS, Bank of England



sources : DataInsight, Cabinet Office, Bank of Japan



sources : DataInsight, Eurostat, ECB

How to read the graph:

Real long-term rates displayed here correspond to the difference between the interest rate of long term public bonds and the year-on-year increase in GDP deflator. This is an approximation, since actual real long term rates correspond to the difference between nominal yield and inflation observed on average from the buying of the security till its term.

centive to build up their foreign exchange reserves in order to guard against fresh crises. In addition, the central banks of certain Asian countries have been stabilising their exchange rates through massive purchases of foreign currencies in order to encourage their exports, whereas these rates should normally have been rising as a result of the trade surpluses. In fact, the behaviour of foreign central banks, especially those of Japan⁽¹⁾ and China (see Graph 7) has often been cited as one of the most plausible explanations for the decline in

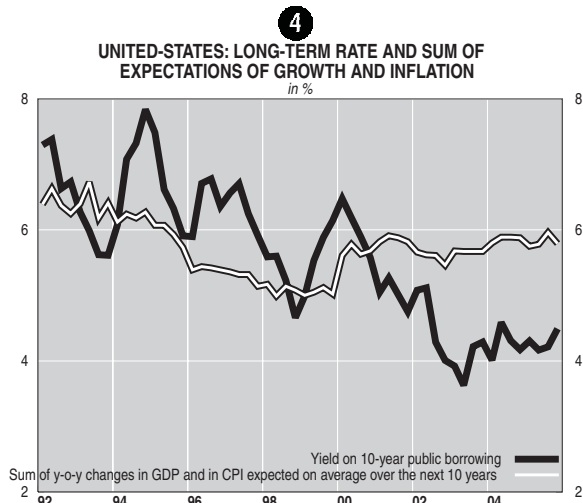
(1) Since March 2004, the Bank of Japan has ceased its massive interventions on the currency markets.

US long rates. Foreign central banks do indeed largely accumulate their foreign exchange reserves in the form of government securities, held mainly in dollars. In addition, foreign central banks have in recent years shown a preference for long-dated securities (see Table 1).

Independently of this mechanism, the evolutions in monetary policy in the United States and in the euro zone contributed to the decline in United States rates up to 2004, during the period of easing of American monetary policy, but also to the weakness of their subsequent rise during the phase of hikes in key rates.

This meant that, starting in 2001, market traders were able to take advantage of the cuts in key rates in both the United States and the euro zone to borrow short in order to buy long-dated securities with higher remuneration. This led to a rise in demand for long-dated securities and so tended to reduce yields in this segment. Starting in mid-2004, US key rates began to be raised, but euro-zone rates have remained stable at historically low levels. The gap created in this way between short rates in the United States and in the euro zone was partially passed on into the whole of the yield curve. With the tightening of United States monetary

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source : DataInsight, Federal Reserve of Philadelphia (Consensus)

policy US long rates admittedly failed to rise, but they stopped falling, in contrast to European long rates.

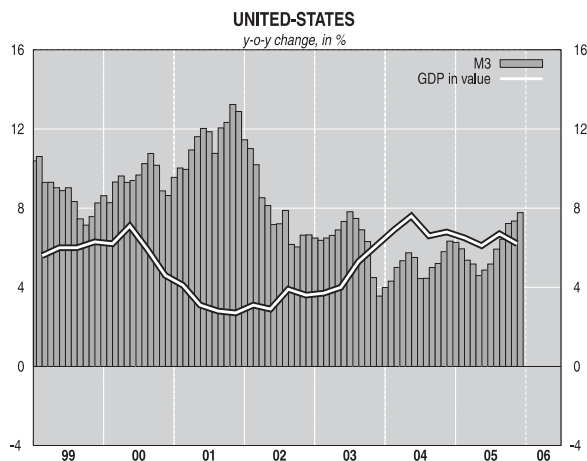
The prospect of obtaining higher remuneration on investments in the United States then prompted invest-

tors to move towards dollar-denominated securities such as US Treasury bonds. Graph 8 shows the steep growth in 2005 in purchases of US Treasury securities by non-official foreign traders. At the same time, purchases by the official sector were running out of steam, notably because Asian central banks no longer find themselves having to be solely responsible for the purchases of dollar securities needed for their exchange-rate policies.

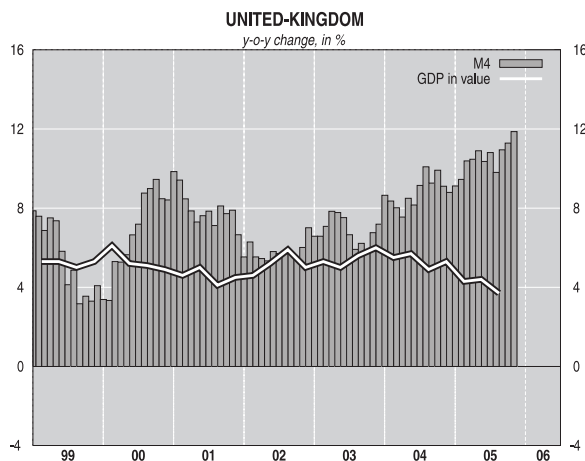
All things considered, a range of factors can explain the decline in the bond premium in the United States in recent years, but it is difficult to quantify the impact of any particular one. It would seem, however, that the predominant role was played by the increase in pur-

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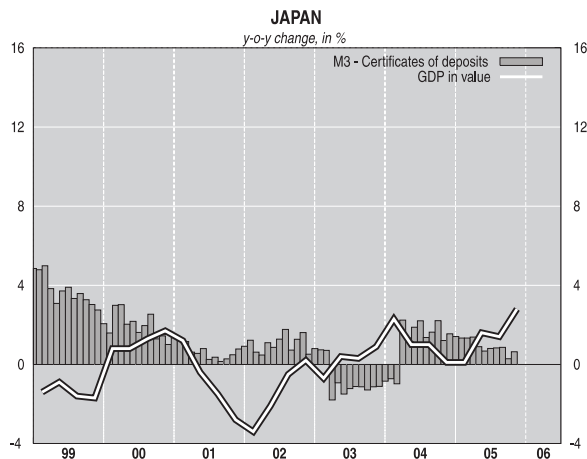
GROWTH OF LARGE MONETARY AGREGATES



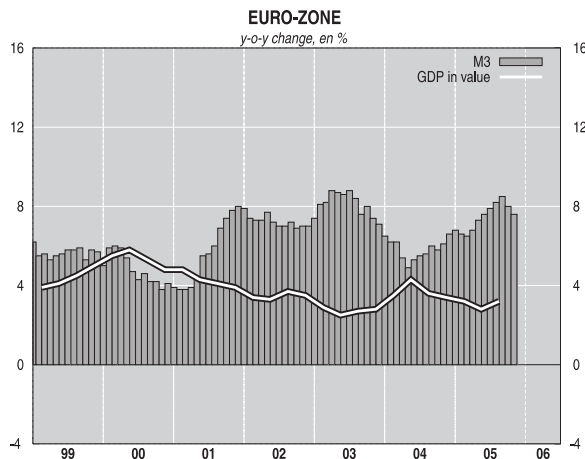
sources : DataInsight, Federal Reserve, BEA



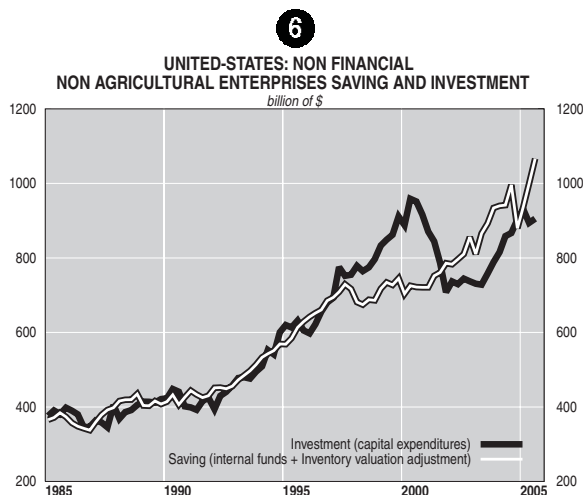
sources : DataInsight, Bank of England, ONS



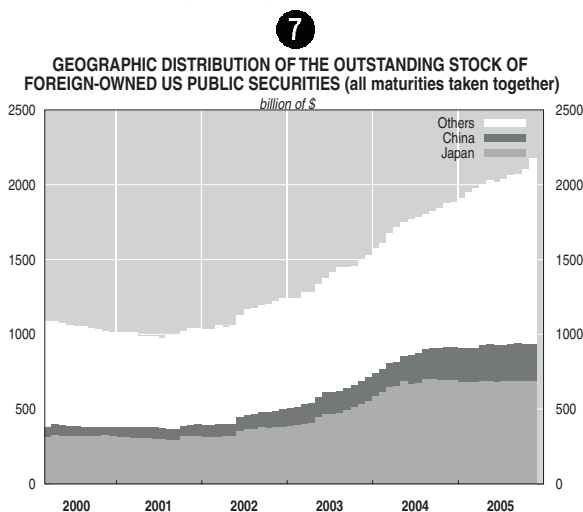
sources : DataInsight, Bank of Japan, Cabinet Office



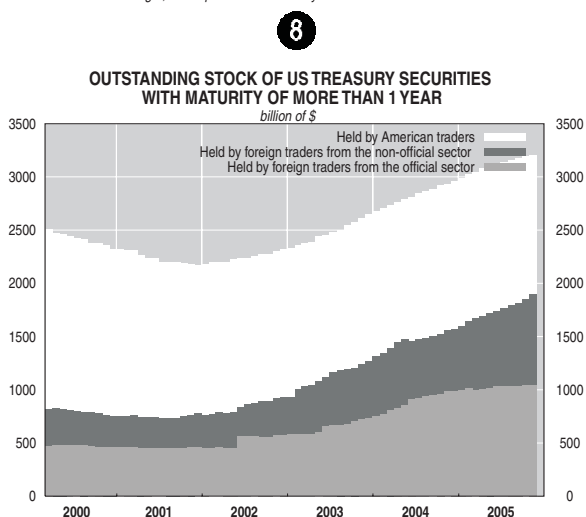
sources : DataInsight, ECB, Eurostat



source : Federal Reserve (Flow of Funds)



sources : DataInsight, US Department of Treasury



sources : DataInsight, Federal Reserve, US Department of Treasury

chases of American public securities by foreign traders, as shown in Graph 8 and as confirmed by the econometric estimates set out in the box. These purchases were mainly by:

- central banks between 2002 and 2004, notably the Bank of Japan (until March 2004) and the People's Bank of China;
- private traders in 2005, when yields on American public securities became attractive, especially in relation to yields on European public securities.

A flattening or an inversion of the yield curve does not imply a recession in the United States

Since the beginning of 2006, the yield curve for American public securities has undergone a partial inversion, with 10-year rates now standing below six-month rates (see Graph 9)⁽²⁾.

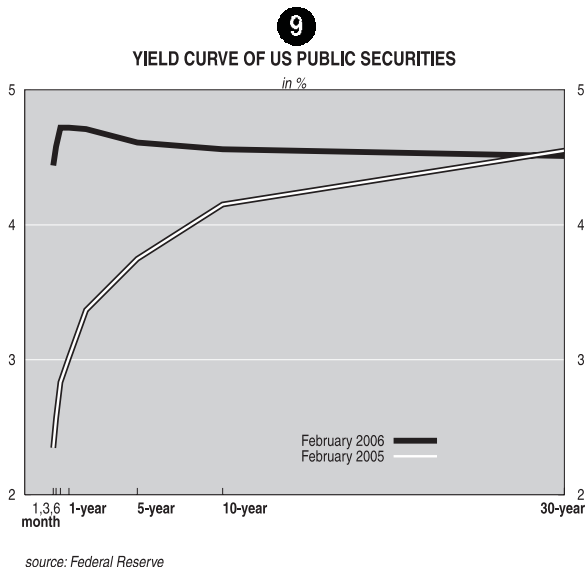
Historically, an inversion of the yield curve, with the key rate higher than the yield on 10-year government bonds, is a good indicator of an imminent economic slowdown in the United States (see Graph 10).

Two explanations have been put forward for this phenomenon. First, a flattening of the yield curve generally reflects market expectations of a future easing of monetary policy (assuming a constant bond risk premium) corresponding to the expectation of an economic slowdown. Second, the narrowing of the gap between short and long rates adversely affects the situation of the banks⁽³⁾ and may prompt them not to grant loans that could turn out to be unprofitable.

(2) The yield curve shows the return on the type of asset as a function of its various maturities.

(3) The interest rates on loans made by the banks are different from the yields on public bonds, but the respective evolutions are linked via arbitraging.

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In the present situation, however, it is by no means evident that an inversion of the yield curve implies a recession. On the contrary, it seems that in the United States today the flattening of the yield curve corresponds, not to agents' expectations of an economic slowdown, as it might have done in the past, but at least in part to a decline in the bond risk premium.

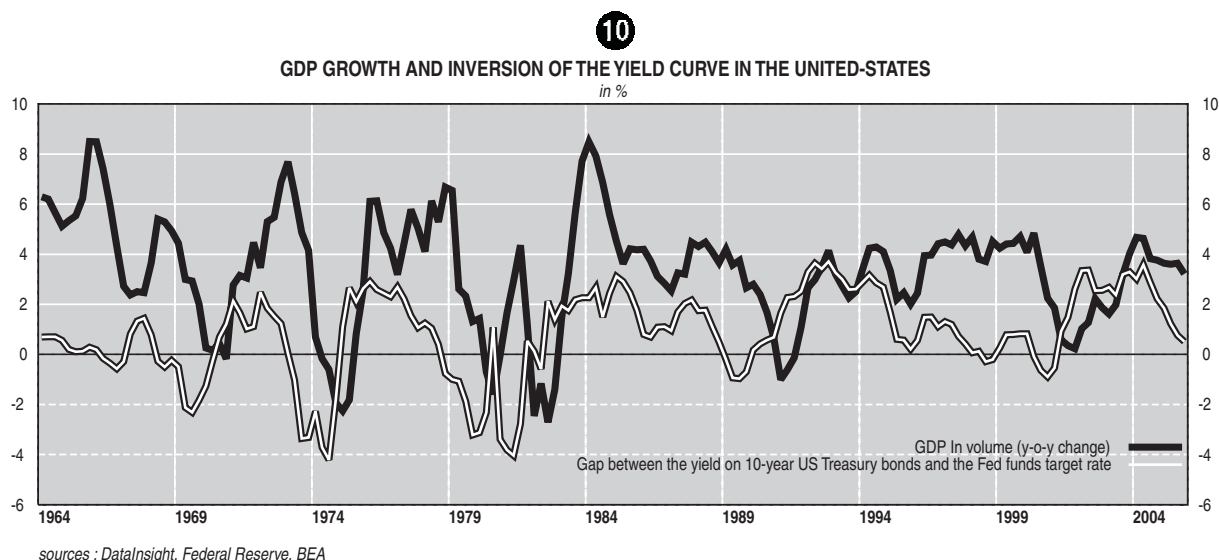
Another consideration is that the relationship between the slope of the yield curve and the willingness

of the banks to provide loans has weakened over time. Since the 1980s, the banks have been confronted with the liberalisation and globalisation of the financial markets and now have greater facility for hedging against the risks related to the loans they make. Moreover, they have broadened the scope of their activity and arbitraging the maturities of their claims and their debts is no longer the only way for the banks to maintain their margins.

The risk of a «hard landing» seems linked to the abandonment by the Asian countries of their policies of substantial purchases of long-term government bonds

It is not so much the low level of long-term interest rates that is cause for concern as the threat of a collapse of the bond market and a steep and sudden rise in long rates, as this would adversely affect the demand for loans and investment.

Purchases of public securities by the official sector have slowed down in recent months (see Graph 8), but yields on public securities have risen very little, because purchases by private traders simultaneously increased. If these private purchases were in their turn to show signs of weakness, the maintenance of US long rates at a relatively low level would be conditional on the policy applied by foreign central banks. There would then be a risk of a sharp upward adjustment in long rates unless central banks increased their purchases of long-term US Treasury bonds. ■



Should we be afraid of low long-term bond rates ?

BOX: ESTIMATED EQUATION FOR AMERICAN LONG RATES INCLUDING THE IMPACT OF THE INCREASE IN THE SHARE OF US PUBLIC SECURITIES HELD BY FOREIGNERS

The 10-year interest-rate can be regarded as an average of current and expected short-term rates plus a risk premium. We therefore use as explanatory variable the 3-month rate on US Treasury bills (T-bills), but also growth in GDP and in GDP prices, these two variables being seen as guiding monetary policy and hence expectations of short rates.

We add a further explanatory variable in the form of the share of US public securities held by foreigners. This makes it possible to take into account the demand shock for US public securities resulting from the growing globalisation of the market in these securities from the mid-1990s on. This phenomenon, linked partly to the constitution of substantial foreign-exchange reserves by the Asian central banks, is *a priori*, because of its size, one of the most convincing explanations of the low current level of interest rates in the United States.

Equation 1 (estimated from Q1 1985 to Q4 2005; Student *t* statistics are shown beneath the respective coefficients)

$$\Delta(txlong) = \begin{matrix} 1,29 & -0,29 & & & & & \\ 3,62 & -6,18 & \left[\begin{matrix} txlong(-1) & -0,40 & tx3m(-1) & -0,23 & gta_pib(-1) & -0,69 & gta_prixpib(-1) & +0,09 & peustr(-1) \end{matrix} \right] \\ & & & -5,38 & & -2,82 & & -4,52 & & 5,59 \end{matrix}$$

$$+ \begin{matrix} 0,28 & \Delta(txlong(-1)) & + & 0,56 & \Delta(tx3m) & - & 0,50 & \Delta(tx3m(-1)) & + & 0,07 & \Delta(gta_pib) & + & 0,15 & \Delta(gta_prixpib) \\ 3,22 & & & 5,32 & & & -4,20 & & & 4,20 & & & 3,91 \end{matrix}$$

$$\overline{R^2} = 0,58 \quad \hat{\sigma} = 0,27 \quad DW = 2,22 \quad LM(4) = 1,15 \text{ (34\%)} \quad ARCH(4) = 0,12 \text{ (98\%)} \quad JB = 3,38 \text{ (18\%)}$$

with:

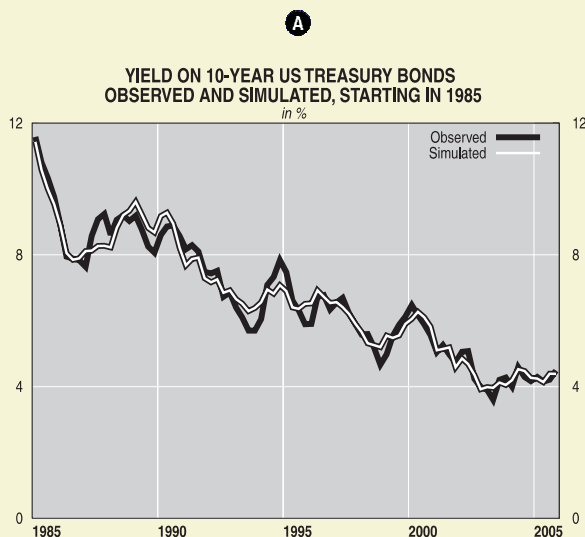
txlong Yield on 10-year US government bonds

tx3m month yield on US Treasury bills (T-bills)

gta_pib Annualised quarter-on-quarter GDP growth

gta_prixpib Annualised quarter-on-quarter change in the American GDP deflator

peustr Share of US Treasury securities held by foreigners



The results of the dynamic simulation of the equation appear to be satisfactory, in particular for the recent past (see Graph A).

If one excludes from the estimation the variable «share of US public securities held by foreigners», the estimate appears to be acceptable in certain respects. However, it is noticeable that there are strongly negative residuals for the recent period (the equation tending to overestimate long rates). Moreover, the hypothesis of normality of the residuals is rejected by the Jarque-Bera test. Finally, a dynamic simulation carried out with this equation gives a value for the 10-year interest rate in Q4 2005 that is 100 basis points above the level predicted with the previous equation, which is in fact very close to the observed value. As a result, the introduction of this variable makes it possible above all to provide a better explanation for the fact that 10-year rates have not risen in the recent phase of monetary tightening (see Graph B).

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Equation 2 (estimated from Q1 1985 to Q4 2005)

$$\Delta(txlong) = 0,04 - 0,15 \begin{bmatrix} txlong(-1) - 0,58 tx3m(-1) - 0,29 gta_pib(-1) - 0,99 gta_prixpib(-1) \\ 0,25 \quad -4,50 \quad -4,81 \quad -1,78 \quad -3,12 \end{bmatrix}$$

$$+ 0,28 \Delta(txlong(-1)) + 0,59 \Delta(tx3m) - 0,51 \Delta(tx3m(-1)) + 0,07 \Delta(gta_pib) + 0,14 \Delta(gta_prixpib)$$

2,94
5,16
-5,13
3,70
3,28

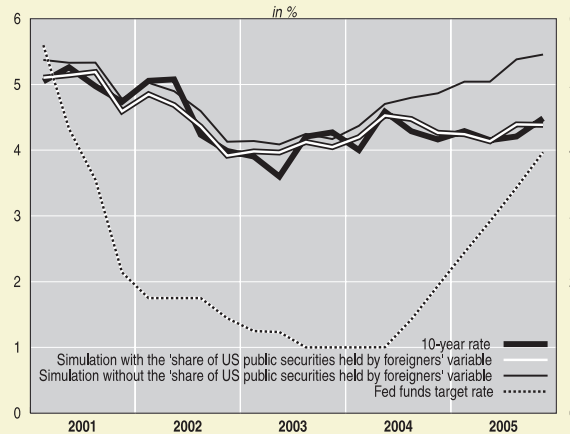
$$\overline{R^2} = 0,50 \quad \hat{\sigma} = 0,30 \quad DW = 2,10 \quad LM(4) = 0,34 (85\%) \quad ARCH(4) = 0,04 (100\%) \quad JB = 11,7 (0\%)$$

The dynamic contributions of equation 1 are shown in Graph C. Note the increasingly negative contribution of the «share of US public securities held by foreigners» variable. The variation in this contribution between the beginning of 2002 and the end of 2005 is slightly greater than 100 basis points and represents an estimate of the impact on American long rates of the growing globalisation of the market in public securities during this period.

Other authors have tried to estimate the impact on US long rates of purchases of public securities by foreigners. Warnock and Caddac Warnock (2005) estimated in September 2005 that in the absence of purchases by foreigners the yield on US long-term public securities would have been 150 basis points higher in the recent past. In July 2005, Artus estimated that the introduction into an interest-rate equation of the share of US public securities held by foreigners made it possible to correct a negative residual of 80 basis points in the early part of 2005.

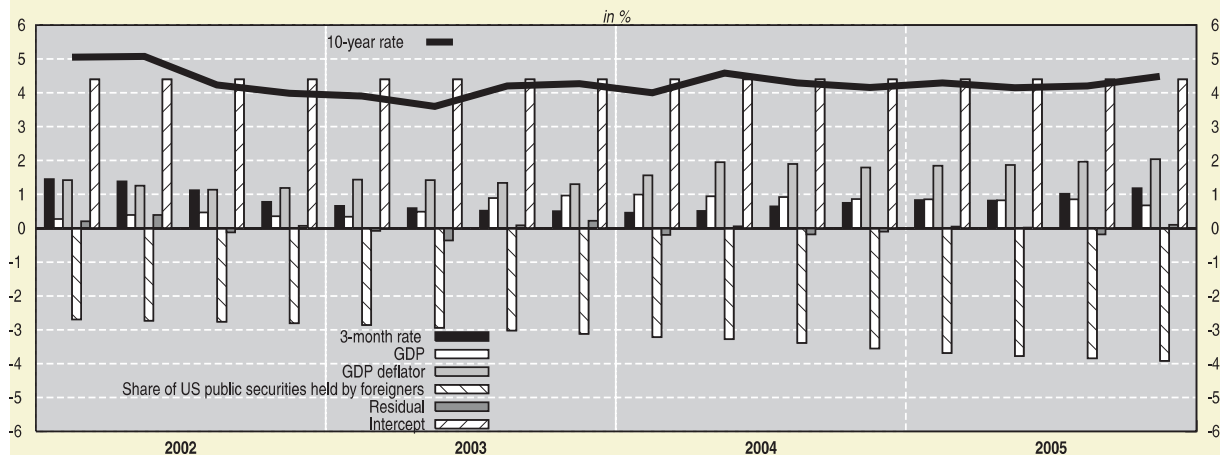
B

SIMULATION ON THE 10-YEAR INTEREST-RATE WITH AND WITHOUT THE 'SHARE OF US PUBLIC SECURITIES HELD BY FOREIGNERS' VARIABLE



C

CONTRIBUTIONS TO THE US LONG-TERM RATE



Should we be afraid of low long-term bond rates ?

Some authors have concentrated more specifically on purchases of US public securities by foreign central banks. In February 2005, Roubini and Setser estimated their impact on long rates to be around 200 basis points. Frey and Moëc (2005) put the impact at around 115 basis points in the second half of 2004. On the other hand, Dudley (2006) considers the impact of these purchases to be negligible. For their part, Loeys et al. (2005) estimated the impact to be only 35 basis points in June 2005 and attributed most of the fall in long rates (130 basis points) to excess corporate saving and accommodative monetary policy.

Bernanke et al. (2004) have estimated the impact on long rates of the accumulation of reserves by Asian central banks since 2002 to be of the order of 50 to 100 basis points.

Finally, Hissler (2005) notes a deviation of 170 basis points in long-term US interest rates from their estimated value in Q4 2004, without attributing this phenomenon to any particular variable. ■

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