

## Ten years with inflation-linked bonds - a new asset class has been established

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### Introduction

Sweden began issuing inflation-linked bonds in 1994, thus becoming one of the first OECD countries to develop such a bond market. Of major countries, only the United Kingdom had a well-developed inflation-linked bond market at that time.

Today - almost exactly ten years after the Swedish National Debt Office issued its first inflation-linked bond loan – there may be reason to take a look at how the market has evolved and what we can say about the future. What I can already say now is that we have established a new asset class, but that it was not self-evident that we were going to succeed.

## **Inflation-linked bond market growing in Sweden and internationally**

The sum of inflation-linked bonds outstanding among OECD countries has increased substantially over the past 10 years (**slide: outstanding stock of inflation-linked bonds in Sweden, the UK, the US, France and Italy from 1994 to now**). The leading inflation-linked bond market since the early 1980s had been the British market. This debt instrument also existed in Canada and Australia.

One important step in the development of an international inflation-linked bond market was the decision of the United States to issue Treasury Inflation Protection Securities (TIPS) in 1997. This laid the groundwork for a global inflation-linked bond market. France followed suit in 1998. As a result, inflation-linked bonds also existed in what soon afterwards became the euro zone. Initially, the French chose to link their bonds to national inflation, but nowadays they also have inflation-linked bonds that track the inflation rate of the euro. The latter have gained wide international circulation. Last year, Europe's largest debt issuer - Italy - followed suit, issuing an Italian inflation-linked sovereign bond also tied to the inflation rate of the euro. Japan has issued its first inflation-linked bond, and rumours of similar steps in other countries are constantly circulating. Perhaps of greatest interest is that some market observers believe that Germany will begin issuing inflation-linked bonds.

In the space of 10 years, the market – in Sweden and internationally – has evolved from a niche market for a few enthusiasts to a well-established new asset class. If the topic of discussion five years ago was the excess supply of inflation-linked bonds, today there are discussions about the lack of supply and about how structural demand is driving down the real yields. The change is dramatic, and in these contexts Sweden is regarded as a pacesetter country.

Our experience is that the issuer's long-term perspective and commitment to inflation-linked bonds are crucial. You cannot try inflation-linked bonds for a short time or hesitate along the way. The strategy must be carefully thought-out and long-term. The Swedish National Debt Office has issued inflation-linked bonds every year since 1994, although in some years the demand has been sluggish. In that case, we have reduced the volume. But by nevertheless continuing to issue these bonds, we have clearly demonstrated that we believe in the growth of this market.

For a time, there was concern in the United States that the new Bush administration would re-assess the decision to issue inflation-linked bonds.

At that time, many investors held off from buying such bonds. The future of the market was being questioned, among others by bond dealers. But when the US government decided to continue issuing TIPS at a normal pace, this was an important signal to all market players that inflation-linked bonds were here to stay.

Another observation is that those intermediaries that are successful with inflation-linked bonds are the ones that realise the special nature of this debt instrument. They employ specialists and devote major resources to analysis. It is not good enough to include inflation-linked bonds as a sub-category of other fixed-income trading. For this reason, the international market was dominated for many years by one bank, which had invested in cutting-edge expertise in this field. Today other banks have realised the potential of this market, and competition has intensified.

## **Why issue inflation-linked bonds?**

The most common arguments as to why sovereign borrowers should issue inflation-linked securities are the following:

*Strengthening the credibility of their low-inflation policy.* Since an inflation-linked debt cannot be inflated away, there is less temptation for politicians to generate inflation for the purpose of reducing their government's debt burden.

*Diversifying national debt.* Given a certain share of inflation-linked bonds in the debt portfolio as a complement to nominal Treasury bonds, the costs of government debt - interest payments - will vary less than if the debt consists only of one kind of debt.

*Lower costs.* It is somewhat cheaper to issue inflation-linked bonds than nominal bonds, since investors are presumably willing to pay to be spared the risk of inflation; the "inflation risk premium" received by the issuer of inflation-linked bonds reduces interest costs somewhat.

*Financial market development.* By introducing a new type of debt, the state contributes to the development of the financial markets.

Generally speaking, the credibility argument has declined in importance as the position of central banks has strengthened. Sweden, the US, the UK and France do not need inflation-linked bonds in order to preserve the credibility of their economic policy. But on the other hand, inflation-linked bonds do not hurt their credibility. With inflation-linked bonds as part of government debt, fiscal policy - of which government debt management

is one element - also demonstrates that it is striving for low inflation, in line with monetary policy.

The most important argument in Sweden and other countries is diversification. A debt consisting of several types of instruments with different characteristics helps reduce fluctuations in the yields on government debt. Among those of us who work with government debt policy, this concept is known as tax-smoothing, in other words, the debt profile contributes to more stable interest rates on government debt, thereby reducing the risk of having to change taxes and benefits in the short term in order to offset rising interest rate cost.

During the stagflation of the 1970s, inflation-linked bonds would have increased costs; at that time, nominal bonds were a good choice. But during the late 1990s, when inflation was low and nominal interest rates were high, borrowing in the form of inflation-linked bonds helped lower the Swedish state's interest costs. **(Slide: nominal yield and inflation, 1970-2003)** This trend is the main reason why Sweden has reported savings of around SEK 9 billion since it started issuing such bonds in 1994. **(Slide: Accumulated gain plus actual and break-even inflation)** The market's expectations of high inflation proved wrong, and disbursements of inflation compensation were lower than anticipated. Experience has been similar in the UK, which issued "inflation-linked gilts" when inflationary expectations were high in the late 1980s. The British government, too, eventually achieved large savings.

Unless we are sure in advance of what macroeconomic environment we will have, it is wise to have different types of debt instruments in our portfolio. Sometimes nominal bonds will be cheaper, sometimes inflation-linked. Should the economy perform in line with what is currently being priced in by financial markets, i.e. we will be spared major macroeconomic imbalances, the cost of inflation-linked and nominal borrowing will be about the same.

In the same way that nominal Treasury bonds serve as a base for pricing many instruments in the financial market, inflation-linked bonds contribute to the development of new markets. A property company whose revenues are pegged to price trends would have a lot to gain from having its liability side pegged to price trends. This creates a match between incoming and outgoing payments. Without an established inflation-linked bond market, perhaps the property company will not wish to risk being the only one that issues an inflation-linked bond loan. But given a well-established market, property companies and other borrowers will see new potential. In a corresponding way, the Swedish state's inflation-linked bonds provide an opportunity for long-term investors to

put their money in an instrument that safeguards future purchasing power. One positive *side effect* of an inflation-linked bond market is thus that it allows other players in the economy to make their financial management more efficient. In this sense, establishing an inflation-linked bond market has elements of what economists call “public good”.

There are this many sound reasons for sovereign debtors to issue inflation-linked bonds. One objection that we sometimes encounter is that if this is the case, it cannot be good for investors to buy inflation-linked bonds. However, the major advantage of inflation-linked bonds is that they contribute to the diversification of financial portfolios. This applies both to debt and asset portfolios. There is fundamentally no difference with for example equities: it may be beneficial *both* for a company to issue shares and for an investor to buy the same shares.

### **What share of inflation-linked debt should Sweden aim at?**

It is relatively easy to conclude that inflation-linked bonds contribute to the diversification of the central government debt portfolio. But after that, it is more difficult to establish how large a share of inflation-linked bonds is appropriate in the overall debt portfolio. A number of factors are of importance.

If a country has a foreign currency debt, as Sweden does, this reduces the need for inflation-linked debt. If inflation in Sweden turns out to be lower than in other countries, the krona will tend to strengthen and our foreign currency-denominated debt will then become cheaper. If, on the other hand, inflation in Sweden is faster than in other countries, the krona will tend to weaken and the foreign currency debt will become more expensive. The impact of inflation on debt costs is thus similar for foreign currency debt and for inflation-linked debt, although the connection between inflation and exchange rates may deviate over long periods from what we learned in textbooks. And this is also the reason why the Debt Office has advocated a smaller foreign currency debt and a larger inflation-linked debt. The latter debt has better diversification characteristics.

The liquidity of nominal and inflation-linked bonds, respectively, is another important factor in deciding what share of the portfolio we are aiming at. If we choose a large share of inflation-linked bonds, the stock of nominal bonds must be reduced. That may have adverse effects on liquidity, which drives up interest costs. But on the other hand, the inflation-linked bond market must also be large enough for its liquidity to be acceptable. It is a matter of balancing the cost of liquidity premiums in the various markets.

When specifying the share of inflation-linked debt in the portfolio, it is also reasonable to consider what macroeconomic disruptions are the most likely. Given Sweden's unhappy inflation history, it remains true that the risk of high inflation is deemed larger than the risk of deflation, even though developments in recent years make that conclusion far from self-evident.

In the proposed guidelines for central government debt management that the Debt Office will send to the Swedish Government this coming autumn, we will analyse the share of both inflation-linked debt and foreign currency debt in the overall government debt portfolio. Our ambition is to formulate a target for inflation-linked debt that is more exact than today's strategy, which merely states that we should aim at an increased share. Now that the share has reached 15 percent of the total debt portfolio, it is reasonable to specify what we are aiming at over the next few years.

**(Slide: Share of foreign currency and inflation-linked debt, 1994-2003)**

### **Three phases in the market's development**

If we study the trend of inflation-linked and nominal bond yields in Sweden since the introduction of inflation-linked bonds, it becomes clear that the differential between inflation-linked and nominal yields, or "break-even inflation", has varied sharply. **(Slide: inflation-linked yields, nominal yields, CPI and break-even inflation)** Inflation-linked yields were 5 per cent at their highest and are just above 2 per cent today, close to their lowest levels to date. Nominal yields have also fallen in the past 10 years, actually to an even greater extent. The differential between them has narrowed: Break-even inflation - viewed over one decade - has fallen from a high of 8 per cent to a low of just over 0.5 per cent. Today break-even inflation stands at just over 2 per cent.

The past decade can be divided into three phases. During the introductory phase, say 1994-96, inflation-linked and nominal yields were relatively high. There was still great uncertainty as to whether Sweden would succeed with its low-inflation policy, even though actual inflation was low. The large central government budget deficit contributed to credibility problems; during 1994 and 1995, the central government had budget deficits of 11 and 8 per cent of GDP, respectively. Inflation-linked bond issues were limited, but took off late in 1996 when auctions were abandoned in favour of on-tap sales **(Slide: Annual issue volume since 1994, columns and inflation-linked yield and break-even inflation)** There was great uncertainty about the market trend. Investors were cautious and the market was dominated by a few players, which hampered liquidity and price transparency.

The second phase, say between 1997 and 2001, was characterised by a stock market upturn, strong central government finances and less worry about inflation. For a few months, actual inflation was below zero and the Debt Office introduced a “deflation guarantee” after both the US and France had chosen that construction. Break-even inflation was below the Riksbank’s 2 per cent inflation target and occasionally even below 1 per cent. Investor interest in inflation-linked bonds was weak. Issue volumes were small, since the Debt Office deemed it expensive to issue such bonds at such low break-even levels.

In retrospect, it is possible to say that this was the period when investors should have shown the greatest interest. Instead the opposite was true. The stock market frenzy contributed to this, but it is still surprising that more people in the managements and boards of directors of pension funds and foundations did not realise what an opportunity this was. Even if they did not wish to divest equities, at a time when everyone more or less was being pulled into the market frenzy, it is surprising that investors did not exchange their nominal bonds for inflation-linked ones. With inflation-linked yields of 3.5-4 per cent and a nominal yield that was occasionally only 0.5-1.0 percentage points higher, it was a golden opportunity. Inflation-linked bonds would help diversify their portfolios and they would have been able to do this when implicit inflation was priced far below the Riksbank’s target. A common counter-argument was that liquidity was not sufficiently good. But it is difficult to believe that liquidity should be of such great importance to large, long-term portfolios. It is admittedly important to the individual portfolio manager working with a benchmark index, but if fund managers had focused to a greater extent on their overall objective of providing a good return, I believe they would have made a different assessment. Many asset management organisations let themselves be run by managers who prefer easily traded, highly liquid securities. We have understood this through the questionnaires and interviewed that we have commissioned. But this is gradually changing. Portfolio analysts and investment consultants are gaining more and more power over investment decisions, and this will benefit inflation-linked bonds. The growth of the inflation-linked bond market is yet another example of how it pays to dare think independently and sometimes go against the herd.

The third phase, say between 2001 and 2004, can be described as a maturity phase. In the aftermath of the burst equities bubble, many asset managers in Sweden and internationally began re-examining their allocation strategies. Equities can no longer be presented as the self-evident choice for a long-term investor. There are risks in the stock market that are not captured in conventional models. Furthermore, to a greater extent, investors view their mandate in ALM terms, that is, they try to

match their assets with their liabilities. This benefits inflation-linked bonds, since most investment intermediaries have as their ultimate objective to safeguard the purchasing power of their end-customers. All these factors together result in a structural demand for inflation-linked bonds; inflation-linked yields are falling more than nominal yields and break-even inflation are rising. The supply of inflation-linked bonds is also increasing, in Sweden and internationally.

Long-term inflation-linked yields are now just over 2.5 per cent. I believe that this is still an attractive level for investors. Sweden's annual GDP growth rate over the past 20 years has been around 2 per cent. As a rule of thumb, long-term inflation-linked yield should be consistent with the long-term real economic growth rate. This would indicate that inflation-linked yield will at least not rise. In addition, it should be taken into account that inflation-linked yield on government bonds carries zero risk, which ought to result in a somewhat lower inflation-linked yield than the real interest rate that applies to the entire output of the economy. Furthermore, Sweden's inflation-linked yield is relatively high, compared to those in France and the US, for example.

### **Break-even inflation and risk premiums**

Let me conclude this section of my remarks by discussing the relationship between break-even inflation and inflationary expectations, as expressed in questionnaire surveys. **(Slide: Break-even inflation, inflationary expectations and measured inflation, 1994-2004)** As the slide indicates, measured expectations are more stable, around 2 per cent, than break-even inflation. The explanation is that break-even inflation is not merely a measure of inflationary expectations, but also includes risk premiums.

The inflation risk premium, which cannot be measured exactly and which should be added to the underlying inflationary expectations, can be assumed to have been large during the mid-1990s, when Sweden's inflation history was fresh in people's memories. The premium then declined sharply and was perhaps even negative, i.e. investors were more worried about deflation than inflation, in the late 1990s when actual inflation dropped below zero. During the past year, it is reasonable to believe that the premium has normalised; the fact that break-even inflation is somewhat higher than measured inflationary expectations points in this direction.

Another risk premium that cannot be measured exactly either, and that has affected the trend of break-even inflation, is the liquidity premium, which raises the required return on inflation-linked bonds. The liquidity premium can be assumed to have been large during the market build-up phase, when



investors demanded compensation for limited liquidity. It has recently been reduced and today it is limited.

Break-even inflation is thus misleading as a measure of inflationary expectations; a number of factors influence its movements, although inflationary expectations are probably the most important. The liquidity premium will probably be lower in the future as well; the market is now well-established and it is possible to trade large amounts at an acceptable cost. But the inflation risk premium will certainly continue to vary in the future as uncertainty about inflation varies over time. And this is true even when uncertainty about inflation varies within a narrow range, say between 1-3 per cent.

## **Conclusions after 10 years with inflation-linked bonds**

It has now been almost exactly 10 years since the Swedish National Debt Office introduced inflation-linked bonds. Today nearly 15 per cent of Swedish central government debt consists of inflation-linked bonds, equivalent to about SEK 200 billion. As a percentage of government debt, the Swedish inflation-linked bond market is one of the largest in the world. We were also among the first to introduce inflation-linked bonds.

During the past five years, there has also been rapid growth in this market internationally. Of the G7 countries, today only Germany has not introduced inflation-linked bonds. In the euro zone, France and Italy have developed an inflation-linked bond market based on the euro zone's harmonised inflation rate. The outstanding supply of inflation-linked bonds in developed countries since 1994 has risen from about SEK 500 billion ten years ago to SEK 3,100 billion, and this growth will continue.

Issuers such as the Swedish National Debt Office and asset managers have a reason in common as to why they want to sell and buy inflation-linked bonds, respectively: this debt instrument contributes to the diversification of their portfolios. No other asset class can so directly safeguard the future purchasing power of savers. For the Debt Office, inflation-linked bonds have also meant about SEK 9 billion in lower interest costs over the past ten years, since the market priced in a high inflation rate during the mid-1990s, which did not materialise.

In this year's proposed guidelines for Swedish government debt management, the Debt Office will specify how large a share of inflation-linked bonds in total government debt we should be aiming for. To date, the Government's guideline decisions have only stated that this share ought to increase.

Sweden is internationally regarded as a pacesetter when it comes to inflation-linked bonds. We were early in issuing such bonds, and we have always been convinced that inflation-linked bonds have a natural place both in our portfolio and that of others. Ten years after we started issuing these bonds, we can note that both the Swedish and the international inflation-linked bond market is well-established.