

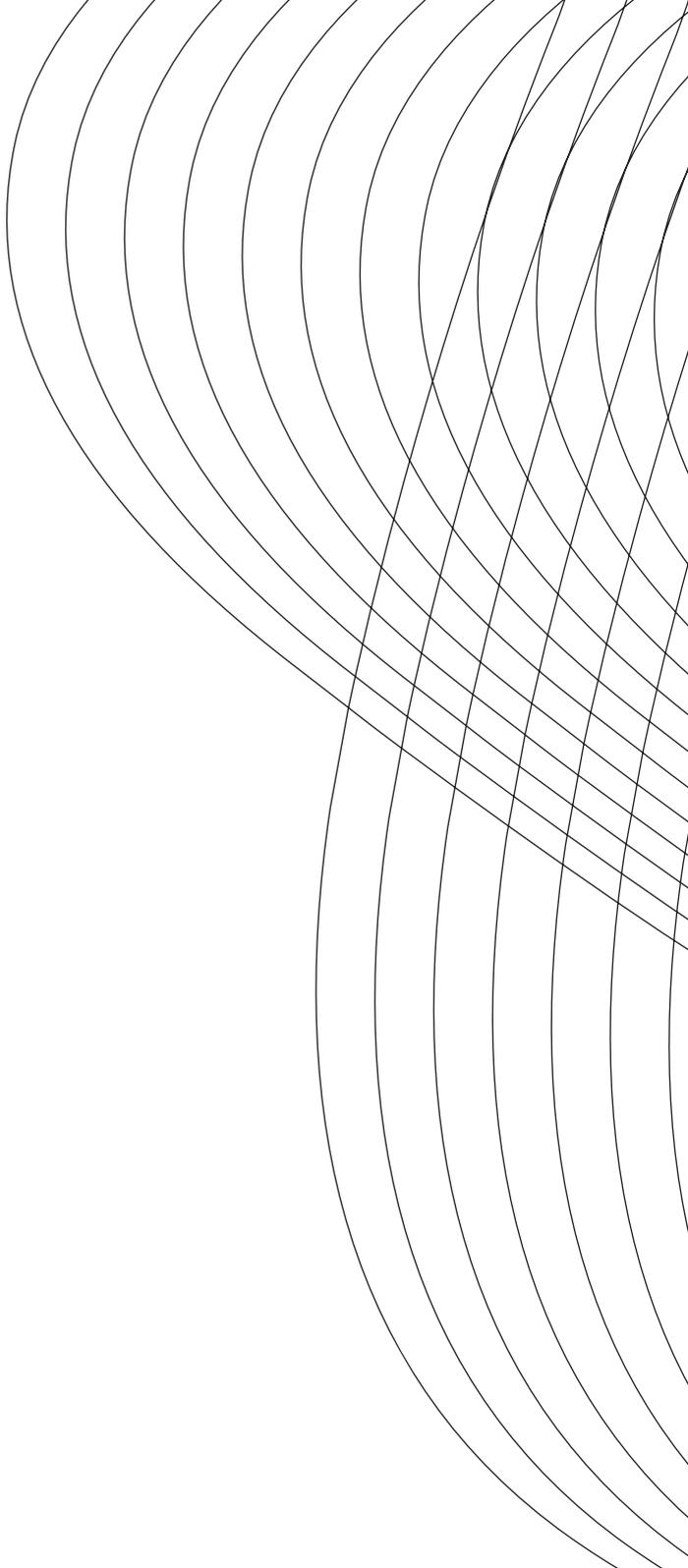


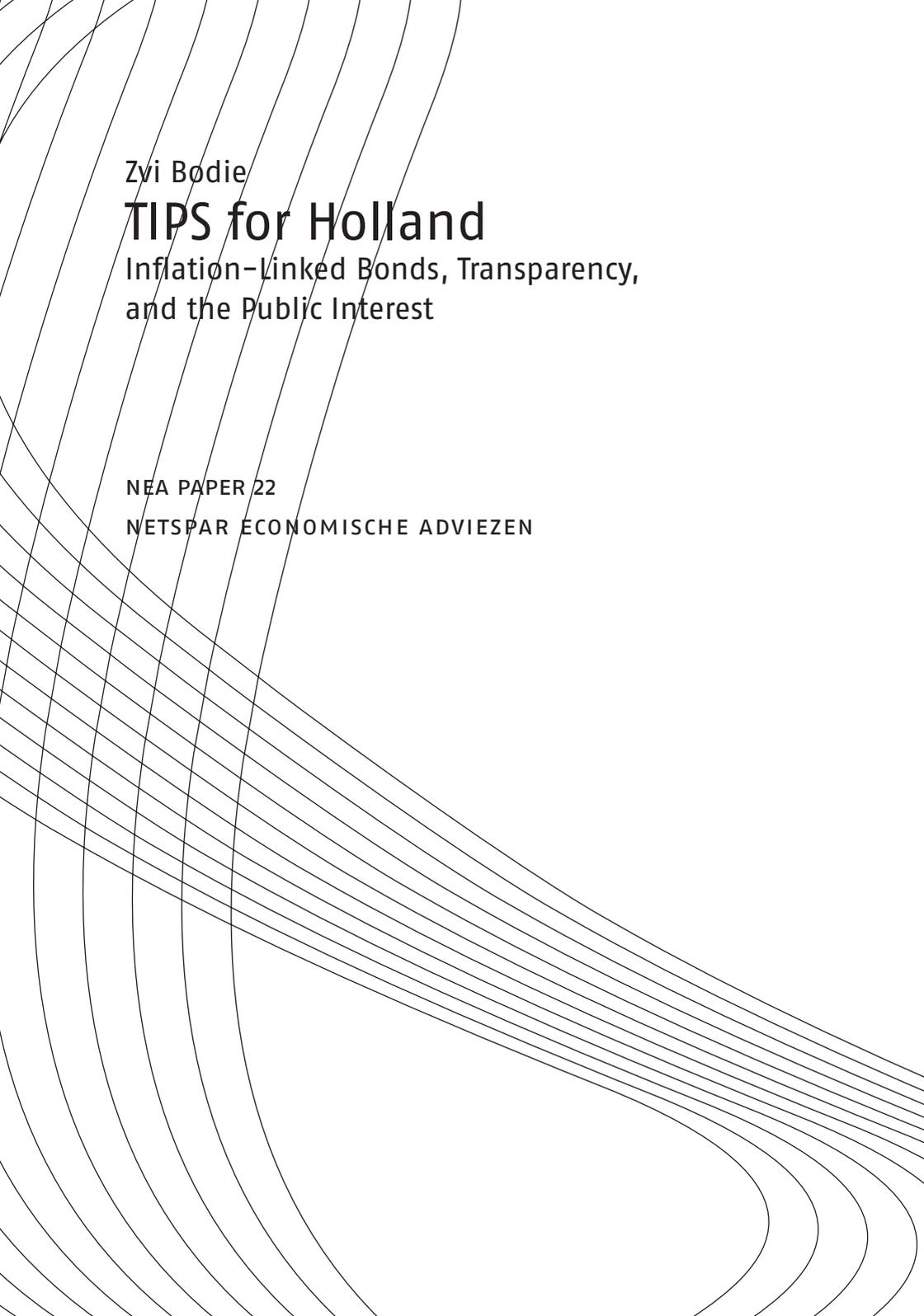
Zvi Bodie

TIPS for Holland

Inflation-Linked Bonds, Transparency,
and the Public Interest

Netspar NEA Papers



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and the Public Interest

NEA PAPER 22

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VOORWOORD

Netspar stimuleert debat over de gevolgen van vergrijzing voor het (spaar-)gedrag van mensen, de houdbaarheid van hun pensioenen en het overheidsbeleid. Doordat veel van de babyboomers met pensioen gaan, zal het aantal 65-plussers in de komende decennia snel toenemen. Meer in het algemeen leven mensen gezonder en langer en krijgen gezinnen steeds minder kinderen. Vergrijzing staat vaak in een negatief daglicht, want ten opzichte van de bevolking tussen 20 en 65 jaar zou het aantal 65-plussers wel eens kunnen verdubbelen. Kan de werkende beroepsbevolking dan nog wel het geld opbrengen voor een groeiend aantal gepensioneerden? Moeten mensen meer uren maken tijdens hun werkzame periode en later met pensioen gaan? Of moeten de pensioenen worden gekort of de premies worden verhoogd om het collectieve pensioen betaalbaar te houden? Moeten mensen worden aangemoedigd zelf veel meer verantwoordelijkheid te nemen voor het eigen pensioen? En wat is dan nog de rol van de sociale partners in het organiseren van een collectief pensioen? Kunnen en willen mensen eigenlijk wel zelf gaan beleggen voor hun pensioen of zijn ze graag bereid dat aan pensioenfondsen over te laten? Van wie zijn de pensioengelden eigenlijk? En hoe kan een helder en eerlijk speelveld voor pensioenfondsen en verzekeraars worden gedefinieerd? Hoe kunnen collectieve doelstellingen als solidariteit en meer individuele wensen worden verzoend? Maar vooral: hoe kunnen de voordelen van langer en gezonder leven worden benut voor een meer gelukkige en welvarende samenleving?

Om een aantal redenen is er behoefte aan debat over de gevolgen van vergrijzing. We weten niet altijd precies wat de gevolgen van vergrijzing zijn. En de gevolgen die wel wel goed kunnen inschatten, verdienen het om bekend te worden bij een groter publiek. Belangrijker is natuurlijk dat veel van de keuzen die moeten worden gemaakt een politieke dimensie hebben en daarover is debat hard nodig. Het gaat immers om maatschappelijk zeer relevante en actuele vraagstukken waar, in de meest letterlijke zin oud en jong mee worden geconfronteerd. Om die

redenen heeft Netspar de NEA Papers ingesteld. In een NEA Paper neemt de auteur gemotiveerd stelling over een beleidsrelevant onderwerp. De naam NEA Papers heeft twee betekenissen. Ten eerste, NEA staat voor Netspar Economische Adviezen. De auteurs adviseren op persoonlijke titel en op verzoek van Netspar over actuele economische kwesties op het gebied van vergrijzing en pensioenen. Ten tweede, NEA klinkt als Nee-Ja en geeft daarmee een wezenskenmerk van elk debat aan.

Henk Don

Voorzitter van de Netspar Redactieraad.

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Zvi Bodie is werkzaam als 'Norman and Adele Barron' Professor of Management op Boston University (USA).

TIPS FOR HOLLAND

Summary

The main benefits of government issuance of inflation-linked bonds are:

1. It provides a safe long-term investment vehicle for households saving for retirement and other life-cycle goals.
2. By issuing bonds that are denominated in units of constant purchasing power, the government makes perfectly clear and transparent the distinction between nominal and real rates of return. It thereby counteracts the normal tendency of people to fall victim to "money illusion" and encourages more rational saving and investment decisions.
3. Existence side by side of both conventional and inflation-linked bonds provides a valuable indicator to policymakers about investors' inflation expectations through the spread between the interest rates on the two. This spread is known as the "breakeven rate of inflation," and it is widely used today by central banks around the world.
4. Linkage to inflation reduces the temptation of government to create inflation as a way to reduce the real value of its debt and impose an implicit inflation "tax" on holders of nominal bonds.

In recognition of these benefits, today the governments of many countries issue inflation-linked bonds. Holland is a notable exception. In its official statements on inflation-linked bonds, the Dutch government shows a preoccupation with minimizing the interest cost of servicing its debt. While such an objective would be primary for a private company, it is secondary for a national government. The more important objective is to promote the public welfare by supporting an efficient allocation of risks and encouraging greater transparency in financial intermediation. As evidence of a reduction in transparency, the Dutch pension system, which in many respects is one of the most efficient in the world, has in recent years taken a step backward by making inflation protection of pension benefits conditional on the performance of the stock market. While seemingly not lowering expected benefits, this conditional index-

ation exposes retirees to the avoidable risks of inflation and a decline in the stock market. It indicates that policymakers in Holland may believe that in equities always perform best in the long run and will provide a good hedge against inflation. These propositions are false. There is no free lunch even in the long run.

1. Introduction

The distinction between real (adjusted to units of constant purchasing power) and nominal values of GDP, national income, interest, profit, and other economic variables is fundamental in economics. The greatest economic thinkers from Adam Smith to Milton Friedman have supported the idea that government debt should be denominated in units of constant purchasing power. There were few public policy issues on which the libertarian Milton Friedman and the liberal James Tobin could agree, but one of them was the desirability of government issuance of inflation-linked bonds.

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4. Linkage to inflation reduces the temptation of government to create inflation as a way to reduce the real value of its debt and impose an implicit inflation "tax" on holders of nominal bonds.

In recognition of these benefits, today the governments of many countries—including the U.S., France, Germany, Italy, Japan, and Sweden—issue inflation-linked bonds. So far the Dutch government has been a notable exception.

In its official statements on inflation-linked bonds, the Dutch government shows a preoccupation with minimizing the interest cost of servicing its debt. While such an objective would be primary for a private company, it is secondary for a national government. The more important objective is to promote the public welfare by supporting an efficient

allocation of risks and encouraging greater transparency in financial intermediation.

In welfare terms, the most important direct use of inflation-linked bonds is in pension plans. After people leave the labor force and are living on a fixed income, they are extremely vulnerable to inflation. The Dutch pension system, which in many respects is one of the most efficient in the world, has in recent years taken a step backward by fixing benefits in nominal rather than real terms. It is hard to see any rational justification for exposing retirees to this increase in avoidable risk.

One possible explanation is that policymakers in Holland, like their counterparts in the U.S., believe in the proposition that equities rather than inflation-linked bonds should be the core of pension fund asset portfolios. They believe that the risk of equities is greatly diminished in the long run, and that equities provide a good hedge against inflation. These propositions are false, as we will see further on.

2. Inflation-Linked Bonds Around the World

Table 1 (at end of paper) shows the list of countries whose governments currently issue inflation-linked bonds. The trend of the past few decades for governments to introduce inflation-linked bonds began with the United Kingdom in 1981 as part of a major reform of the national pension system. The Thatcher government sought to privatize much of the country's economy, and as part of that effort enabled private companies and individual employees to opt out of the government-run social security system. But in recognition of the importance of having a safe long-run instrument in which to invest retirement savings, the Treasury issued the first index-linked gilts (i.e., bonds) tied to the official retail price index or RPI.¹ Today roughly a quarter of the total of the UK Treasury's debt takes this form. In September 2005, the UK Government issued 50 year index-linked government bonds, the 1¼% Index-linked Treasury Gilt 2055, to provide a very long-term inflation hedge for pension funds.

The government of Chile also issued inflation-linked bonds as part of its pension reform starting in the early 1980s. Since that time the list of governments in both the developed and emerging market countries has

1 <http://www.dmo.gov.uk/index.aspx?page=Gilts/Indexlinked>

grown substantially. The U.S. Treasury started issuing their version, called Treasury Inflation-Protected Securities (TIPS), in 1997. At that time, the Clinton administration announced that the main purpose for issuing TIPS was to provide a safe long-run investment vehicle for retirement savings. Today, the U.S. government is the largest single issuer of inflation-linked bonds in the world.

In addition to issuing marketable inflation-linked bonds, the governments of the U.S. and the U.K. also issue non-marketable inflation-linked savings bonds to individuals. In the U.S. they are called Series I savings bonds, with a maturity of 30 years, and the interest income is tax-deferred.² In the UK, they are called index-linked saving certificates, and they are completely tax-exempt.³

3. The End of Indexation for Dutch Pensions

Occupational pensions in Holland were *de facto* indexed to inflation until 2000. The good performance of the assets of Dutch pension funds which were heavily invested in equities enabled this, and little thought was given to what might happen if the equity markets performed badly. But the poor performance of equities during the three year period from 2000 to 2003 brought a need for change.

Occupational pension funds recognized that part of the solution would have to be a reduction in pension benefits. But rather than keep benefits linked to inflation and lower the level of those benefits, policymakers chose another path – “conditional” indexation. The essence of this alternative is to guarantee benefits in nominal terms and make inflation indexation conditional on the funding status of the pension fund, i.e. on the performance of the assets held by pension funds.

From the perspective of rational economic policy, conditional indexation in this form makes no sense. It subjects retirees to avoidable risk and confusion by mixing inflation indexation with the performance of the global equity markets. Instead of matching their assets to inflation-protected benefit liabilities, the pension funds have matched the bene-

2 http://www.savingsbonds.gov/indiv/products/prod_ibonds_glance.htm

3 <http://www.nsandi.com/products/ilsc/index.jsp>

fits to the performance of their risky asset portfolios. *This is asset-liability matching in reverse.*

This makes retirement planning by retirees much more difficult and far less transparent. I suspect that this solution was motivated in part by a belief that in the long run equities can be counted on to deliver a return that more than compensates for inflation. But that belief is mistaken.

4. The Fallacy of Time Diversification – Equities are not safe in the long run

There is a widespread belief that a portfolio of equity securities diversified across countries and industries will always offer a higher rate of return than bonds over “sufficiently” long holding periods. This belief has become the conventional wisdom among investment managers and advisors.⁴ This belief, however, is false and dangerous. Experts in financial economics starting with Paul Samuelson have exposed the fallacy in thinking that the risk of equities goes away in the long run.⁵

The basis for the proposition that stocks are less risky in the long run appears to be the observation that the longer the time horizon, the smaller the *probability* of a shortfall. If the *ex ante* mean rate of return on stocks exceeds the risk-free rate of interest, it is indeed true that the probability of a shortfall declines with the length of the investment time horizon. But the probability of a shortfall is a flawed measure of risk because it ignores how large the potential shortfall might be.

It is easy to see this point if we assume that stock returns follow a simple “random walk.” In any 1-year period, assume the rate of return on stocks can take only one of two values -- either +20% or - 20%, independent of its past history. Consider the worst possible outcome for time horizons of increasing length. For a 1-year horizon one can lose 20% of

4 Perhaps the best-known advocate of this position among academic economists is Jeremy Siegel. His book *Stocks for the Long Run* has acquired the status of gospel among many practitioners in the investment business. But even Siegel has occasionally warned of the riskiness of stocks for retirees in some of his public pronouncements.

5 Samuelson made his arguments most recently at a conference held on October 23, 2008. To watch a webcast visit this URL:
<http://www.bu.edu/phpbuniverse/videos/view?id=260>.

the initial investment, for a 2-year period 36%, and for a 20-year period as much as 99%. Using the probability of a shortfall as the measure of risk, no distinction is made between a loss of 20% or a loss of 99%.

I have shown using option pricing theory and the actual observed prices of put options on equity indexes that the cost of insuring an equity portfolio against a shortfall relative to the safe asset actually *increases* with the length of the time horizon.⁶ The cost of insuring against a shortfall at a horizon of 25 years is roughly 5 times the cost of insuring against a shortfall at a 1-year horizon.

5. Conclusion

I conclude by reiterating my position that the inflation indexation of pension benefits conditional on the performance of the stock market exposes retirees to completely avoidable risk. By issuing inflation-linked bonds to facilitate the hedging and the pricing of benefits that are truly inflation protected the Dutch government can improve the transparency and the efficiency of its pension system. The gain in national welfare far outweighs any potential saving in the interest expense of servicing the national debt.

6 For a more complete development of the material in this section see Zvi Bodie, "On the Risk of Stocks in the Long Run," *Financial Analysts Journal*, May 1995, Vol. 51, No. 3: 18-22

Summary sovereign table

Figure 181: Developed markets overview

	US	UK	France	Italy	Sweden	Greece	Canada	Australia	Japan
Generic name	Treasury Inflation Indexed Securities, TIPS	United Kingdom Index-Linked Gilts	OATEI, BTANFI, OATI	BTPFI	Swedish Government Index-Linked	GGBFI	Canadian Real Return Bonds	Australian Real Capital Indexed Bonds	JGBI
No. Bonds Outstanding*	24	14	11	7	6	2	5	3	14
No. Bonds Outstanding bn*	\$ 497.773 bn	£ 157.445 bn	€ 140.720 bn	€ 80.245 bn	SEK 254.950 bn	€ 16.184 bn	CAD 37.362 bn	AUD 9.334 bn	¥ 7,946.351
Market Value Outstanding \$ bn*	\$ 497.773 bn	£ 308.654 bn	\$ 205.352 bn	\$ 116.937 bn	\$ 39.982 bn	\$ 23.615 bn	\$ 37.480 bn	\$ 8.468 bn	\$ 73.978 bn
First Issue Date	January 97	March 81	September 98	September 03	April 94	March 03	December 91	July 85	March 04
Linking Index	CPI All urban nsa	UK RPI	French CPI ex-tobacco Euro HICP ex-tobacco	Euro HICP ex-tobacco	Swedish CPI nsa	Euro HICP ex-tobacco	CPI all items nsa	All groups CPI	Japanese CPI ex-perishables
Linking Index Bloomberg Ticket	CPURNSA index	UKRPI index	FRCXTBM index CPTFEMU index	CPTFEMU index	SWCPI index	CPTFEMU index	CACPI index	AUCPI index	JCPNGENF index
Indexation Lag	2-3 months	8 months or 2-3 months	2-3 months	2-3 months	2-3 months	2-3 months	2-3 months	6 months	2-3 months
Floor?	Par Floor	No Floor	Par Floor	Par Floor	2 with par floor, 4 without	Par Floor	No Floor	Coupon and Principal Par Floor	No Floor
Coupon Frequency	Semi-annual	Semi-annual	Annual	Semi-annual	Annual or zero coupon	Annual	Semi-annual	Quarterly	Semi-annual

Note: * as of 31 January 2008

Source: Barclays Capital

Summary sovereign table

Figure 182: Emerging markets overview

	Brazil	Argentina	Mexico	Chille	Colombia	South Africa	Poland	Turkey	South Korea
Genetic name	NTN-Bs, NTN-Cs	Argentinean Government Inflation-Linked	Udibonos	BCU	TES	South African Index-Linked	POLGB	TURKGB	KTBI
No. Bonds Outstanding*	11	6	8	12	8	4	1	1	1
No. Bonds Outstanding bn*	BRL 253.176 bn	ARS 64.863 bn	MXN 217.25 bn	CLP 2.280 bn	QDP 12.624 bn	ZAR 80.091 bn	PLN 9.4442 bn	TRY 2.075.301	KRW 2.075.301
Market Value Outstanding \$ bn*	\$ 143.654 bn	\$ 20.468 bn	\$ 20.152 bn	\$ 4.857 bn	\$ 6.596 bn	\$ 10.291 bn	\$ 3.782 bn	\$ 2.195 bn	\$ 2.195 bn
First Issue Date	September 03	December 03	January 03	September 02	December 02	March 00	September 03	February 07	February 07
Linking Index	IPCA consumer price index	CER consumer price index	Unidas de Inversion (UDI)	UF consumer price index	UVR consumer price index	South Africa CPI NSA	Polish CPI	Turkish CPI	Korean CPI
Linking Index Bloomberg Ticker	BZPIIPCA index	ARCI index	MXCI index	CPINSAI index	COCPI index	SACPI index	POCPYOY index	TUCCI index	KOCCI index
Indexation Lag	2-3 months	2-3 months	2-3 months	2-3 months	1 month	3-4 months	2-3 months	2-3 months	2-3 months
Floor?	Par Floor	Par Floor	Par Floor	Par Floor	Par Floor	Par Floor	Par Floor	Par Floor	No Floor
Coupon Frequency	Semi-annual	Quarterly	Semi-annual	Semi-annual	Monthly	Semi-annual	Annual	Semi-annual	Semi-annual

Note: * as of 31 January 2008

Source: Barclays Capital

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Zvi Bodie

TIPS FOR HOLLAND

Indexleningen (inflation-linked bonds) kennen veel voordelen volgens Zvi Bodie (Boston University), de auteur van dit NEA paper. Vandaag de dag geven veel regeringen dan ook indexleningen uit. Zo niet de Nederlandse. Ons pensioen systeem is er de laatste jaren juist op gericht om de hoogte van pensioenen te relateren aan de aandelenmarkt. Volgens Bodie denken Nederlandse beleidsmakers, dat aandelen uiteindelijk altijd positief uitpakken en dus een goede bescherming tegen inflatie bieden. Maar, zo stelt hij, "there is no free lunch even in the long run."

Dit NEA paper is in het Engels.



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