

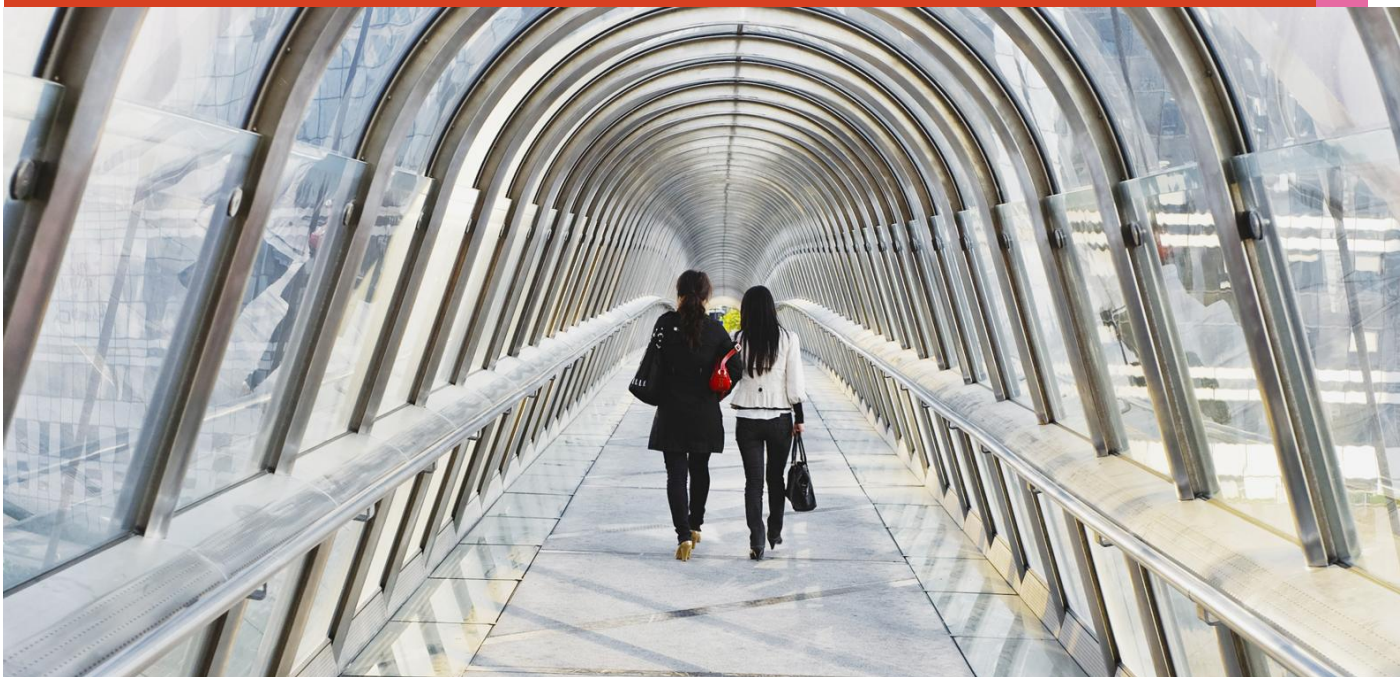
Strategy & Economics

Optimal debt portfolio and the regulatory cost of capital

*Strictly private
and confidential
Final*

18 januari 2013

STEDIN^{NET}



pwc



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Amsterdam, 18 January 2013

Geachte heer van der Bie,

Met veel genoegen presenteer ik onze studie naar de optimale looptijd van vreemd vermogen voor een netbeheerder. In dit rapport staan wij stil bij de gevolgen van de korte referentie periode die de NMa hanteert voor het vaststellen van de kostenvoet voor vreemd vermogen in de WACC.

Onze analyses richten zich op een vergelijking tussen de regulatorische methodiek en de financiële wereld van Stedin.

Ons rapport is opgesteld voor Stedin. Wij accepteren geen verantwoordelijkheid of aansprakelijkheid jegens derden die mogelijk gebruiken maken van onze analyses of van dit rapport.

Mocht u nog vragen hebben, dan vernemen wij dat uiteraard graag.

Hoogachtend
PricewaterhouseCoopers Advisory N.V.

A handwritten signature in black ink, appearing to read 'Paul Nillesen', is written over a light blue horizontal line.

Paul Nillesen
Partner

PricewaterhouseCoopers Advisory N.V.
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At a glance – our views

Onze visie

Als gevolg van de door de NMa voorgestelde methode om de vergoeding vreemd vermogen (VJV) te bepalen, speelt er bij Stedin een strategisch dilemma. Om de voorgestelde VJV te kunnen volgen, zou Stedin kortere leningen moeten afsluiten, terwijl langere looptijden beter passen bij een prudent financieringsbeleid. Stedin zou haar prudente financieringsbeleid ook kunnen voortzetten, maar de resulterende mismatch met de VJV zou negatief beoordeeld kunnen worden door rating agencies, aandeelhouders en afnemers. Wij adviseren daarom om de VJV te baseren op gemiddelde yields over 10 jaar. Dit brengt inkomsten in lijn met daadwerkelijke kosten, verbetert de tariefstabiliteit en corrigeert voor de huidige kunstmatig lage yields.

Introductie

- De NMa stelt de vergoeding vreemd vermogen vast als onderdeel van de regulering van netheerders. De NMa heeft voorgesteld om door te gaan met het gebruik van korte referentieperioden.
- Met de huidige lage rentestanden wordt de mismatch tussen de vergoeding vreemd vermogen en de werkelijke rentelasten (gebaseerd op een prudent financieringsbeleid) versterkt. Kortere looptijden van leningen zullen echter waarschijnlijk tot een lagere credit rating leiden.
- Stedin heeft PwC het volgende gevraagd:
 - bepaal de optimale looptijd voor vreemd vermogen op basis van de methode van de NMa,
 - vergelijk dit met de optimale looptijd voor Stedin vanuit een theoretisch, empirisch en praktisch perspectief, en
 - schat de impact op Stedin van zowel het volgen van de NMa methode (het gebruik van korte looptijden) en het voortzetten van het huidige financieringsbeleid.

De methode van de NMa vergroot tariefvolatiliteit...

- De NMa stelt voor om de vergoeding vreemd vermogen te baseren op een 3-jaars gemiddelde van 10-jaars obligaties.

Deze korte referentieperiode vergroot de volatiliteit van tarieven aangezien de WACC sterk doorwerkt in de x-factor. Een 1%-punt toename van de WACC leidt tot een verlaging van de x-factor van meer dan 1%-punt (en *vice versa*).

...en het matchen van de methode vereist het verkorten van de gemiddelde lening looptijd tot onder 3 jaar...

- Onze simulatie laat zien dat wanneer netbeheerders de mismatch tussen de vergoeding vreemd vermogen en de werkelijke rentelasten willen minimaliseren, zij de totale looptijd van vreemd vermogen zouden moeten verkorten tot 5 jaar (waarmee de gemiddelde looptijd wordt verkort tot onder 3 jaar).
- Een één-op-één match is echter niet mogelijk, aangezien er verschillen blijven.
- **..dit gaat in tegen theorie en praktijk...**
- De dominante academische theorie over optimale looptijden voor financiering is het “maturity matching” principe. Dit principe stelt dat langlopende activa het beste gefinancierd kunnen worden met langlopende schuld.
- Empirisch bewijs ondersteunt dit, bijvoorbeeld een enquête onder CFO's in Europa. Zelfs de bedrijven in de peergroep van de NMa voor de WACC, hanteren looptijden boven de 16 jaar voor hun financiering.

- Een groot deel van de bedrijven vermeldt in jaarverslagen dat het minimaliseren van liquiditeitsrisico's het hoofddoel is en niet het minimaliseren van rentelasten.

...en kan aanzienlijke risico's veroorzaken...

- Liquiditeit, schuldposities en regulering zijn belangrijke onderdelen bij het bepalen van de kredietwaardigheid van netbeheerders door rating agencies.
- S&P stelt: “To support credit quality, a utility must be assured of earning a fair—and consistent—rate of return” and “Even when analyzing highly creditworthy companies, it is necessary to be aware of the overall maturity structure and potential for refinancing risk”.

...waaruit de noodzaak blijkt voor de NMa om de gekozen aanpak te heroverwegen

- Wij zijn van mening dat de NMa de referentieperiode moet verlengen en de historische lage rentestanden daarvoor moet aangrijpen. Het verlengen van de periode past beter bij het risicoprofiel van netbeheerders en zal tariefvolatiliteit verlagen.
- Toezichthouders zoals Ofgem en BNetzA gebruiken reeds langere referentieperioden om beter aan te sluiten bij de optimale looptijd van leningen van netbeheerders.

Our views

As a result of NMa's proposed approach to the cost of debt, Stedin faces a strategic dilemma in financing. In order to mimic the cost of debt allowance following the regulatory reset, Stedin should shorten debt maturities whilst longer debt maturities should be considered from a prudent financing policy perspective. Stedin could also maintain prudent financing policies, but the resulting mismatch with the cost of debt allowance could be negatively valued by rating agencies, shareholders and users. We advise to base the cost of debt allowance on 10-year average yields. This would bring revenues in line with costs, improve tariff stability and correct for the current artificially low yields.

Introduction

- NMa sets a cost of capital allowance as part of its regular price control review. NMa is proposing to continue with a short reference period for the cost of debt.
- With the current low interest rates the mismatch between the calculated cost of debt and actual rates based on prudent financing policies is amplified. A shortening of debt maturity is likely to have a negative impact on the credit rating.
- Stedin has asked PwC to:
 - assess the debt maturity implied by NMa's methodology,
 - to compare this with the optimal debt maturity for Stedin from a theoretical, empirical, and practical perspective, and
 - to assess the impact on Stedin both of following NMa's methodology (by shortening debt maturities) and continuing current financing policies.

NMa's methodology increases tariff volatility...

- NMa proposes to base the cost of debt on a 3-year average of 10-year bonds.

- The short reference period increases the volatility of tariffs. A 1%-point increase in the WACC reduces the X-factor by more than 1%-point (and *vice versa*).

...and matching the methodology requires shortening the average debt maturity to under 3 years...

- Our simulation shows that if network operators want to minimise a regulatory mismatch between the actual cost of debt and the NMa cost of debt, they should significantly shorten the tenor of their debt to 5 years (decreasing average debt maturity to below 3 years).
- However, a one-to-one match is not possible as differences remain.

...this is against theory and practice...

- The dominant theory in the academic literature on optimal debt maturity is the "Maturity Matching Principle", stating that long-term assets should be financed with long-term debt.
- The empirical evidence clearly shows this, with survey evidence from CFO's across Europe. Even NMa's own peer group companies all have debt tenors in excess of 16 years.

- Many of the companies state in their annual reports that their primary goal is minimising liquidity risk, rather than minimising interest rate costs.

...and will introduce significant risks...

- Liquidity, debt profiles, and regulation are key elements when rating agencies assess the creditworthiness of network operators.
- S&P states: "To support credit quality, a utility must be assured of earning a fair—and consistent—rate of return" and "Even when analyzing highly creditworthy companies, it is necessary to be aware of the overall maturity structure and potential for refinancing risk".

...implying that the NMa should reconsider their approach

- In our view the NMa should reconsider the reference period also given current historically low yields. A longer period will better match the risk profile and asset maturity of network operators and lower tariff volatility.
- Regulators such as Ofgem and BNetzA also use longer reference periods to better match the optimal debt profiles.

Executive report

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The NMa sets a cost of capital allowance as part of its regular price control review. The NMa proposes to continue using a short reference period for setting the cost of debt. This methodology stimulates companies to shorten their average debt maturity.

Introduction

Gas and electricity networks in the Netherlands are regulated by the NMa. Every 3-5 years, the NMa sets an allowance for the cost of capital by calculating the Weighted Average Cost of Capital (WACC).

The NMa asked the Brattle Group to review the current methodology for calculating the cost of capital. The methodology applied by Brattle implies a number of changes from the methodology previously used by NMa.

One of the changes is that the cost of debt is based on the three-year average yield of ten-year government and corporate bonds. Previously the average yield over a 2-year and 5-year period was taken. The reference period therefore remains short. Both approaches give network companies an incentive to shorten the maturity of their debt, if they want to minimise the risk of a mismatch between the regulatory debt compensation and the actual cost of debt.

This strategy however creates a significant cost and increases risks for network operators, as they need to balance the benefits of more short-term financing (lower interest costs) with the risks that this could bring, such as access to finance and liquidity, interest rate changes, etc. The short reference period also increases tariff volatility for users.

Dutch energy network operators have the objective and role to provide reliable and stable access to vital energy infrastructure. The financing strategy of these companies focuses primarily on permanent access to capital and managing risks. The cost of capital only plays a secondary role in financing decisions. Shorter debt maturity does not fit with the prudent financing policy needed to meet their objectives.

Impact of the new cost of debt approach on Stedin

Network operator Stedin is part of the vertically integrated utility Eneco. Financing for Stedin is arranged by Eneco at the holding level.

Stedin is responsible for roughly 61% of Eneco's EBITDA, so any changes in the cost of capital set by the NMa materially impacts Eneco.

Eneco's average debt maturity (i.e. the average remaining lifetime of the loans before they are fully repaid) is approximately 11 years. This is significantly longer than the reference period of 3 years, which the NMa uses.

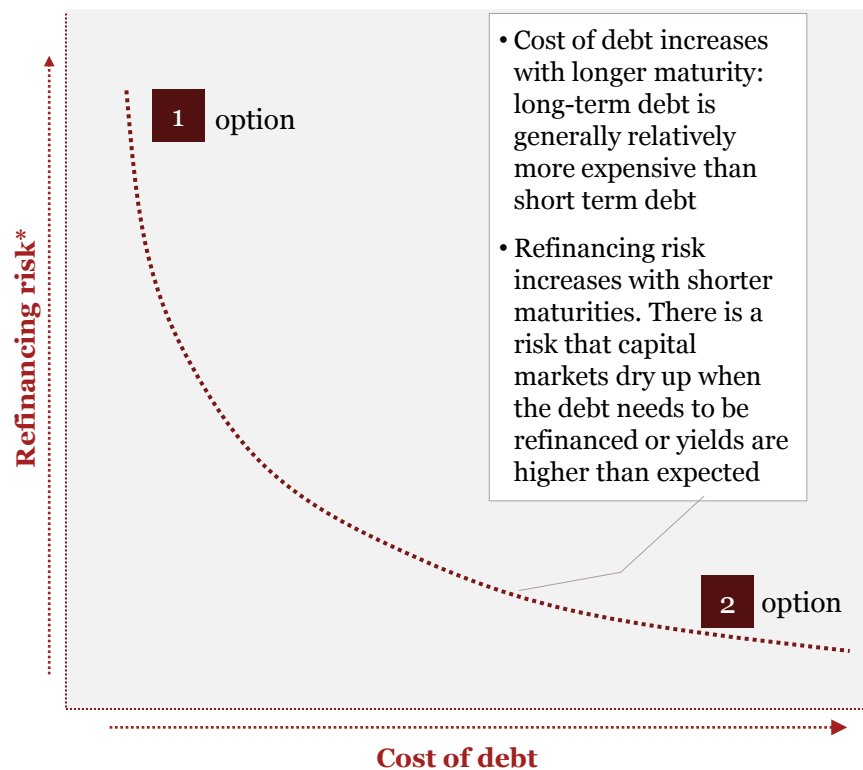
Eneco's treasury policy is prudent and driven by maintaining financial continuity and stability with permanent access to a variety of funding sources (requiring an A "investment grade" rating). Eneco seeks to manage its business and financial risk profile to meet the A-rating requirements by Standard and Poors.

Stedin has asked PricewaterhouseCoopers Advisory N.V. (PwC) to assess the debt maturity implied by NMa's methodology, to compare this with the optimal debt maturity for Stedin from a theoretical, empirical, and practical perspective, and to assess the impact on Stedin both of following NMa's methodology (by shortening debt maturities) and continuing current financing policies.

This report presents the findings of our analysis. On the next pages we first present the strategic dilemma Stedin faces when making decisions on financing, given NMa's proposed cost of capital methodology. After that, we present the structure of our report and provide a road-map for the reader.

As a result of NMA’s proposed approach to the cost of debt, Stedin faces a strategic dilemma in financing decisions. On the one hand, Stedin could shorten debt maturities to mimic the cost of debt allowance. An alternative is to maintain conservative financing policies. Both have undesirable effects.

Stylised trade-off between cost of debt and refinancing risks:



***Refinancing risk** is the possibility that a borrower cannot refinance by borrowing to repay existing debt

1 Shortening debt maturities

In order to follow NMA’s “prescribed” cost of debt, companies may choose to shorten their debt maturity profile by refinancing current long-term loans with short-term debt. One advantage is that in this way they avoid large differences between the cost of debt allowance and the actual cost of debt. As the graph on the left shows, this strategy results in relatively high refinancing risks, but there is potential for a relatively lower cost of debt.

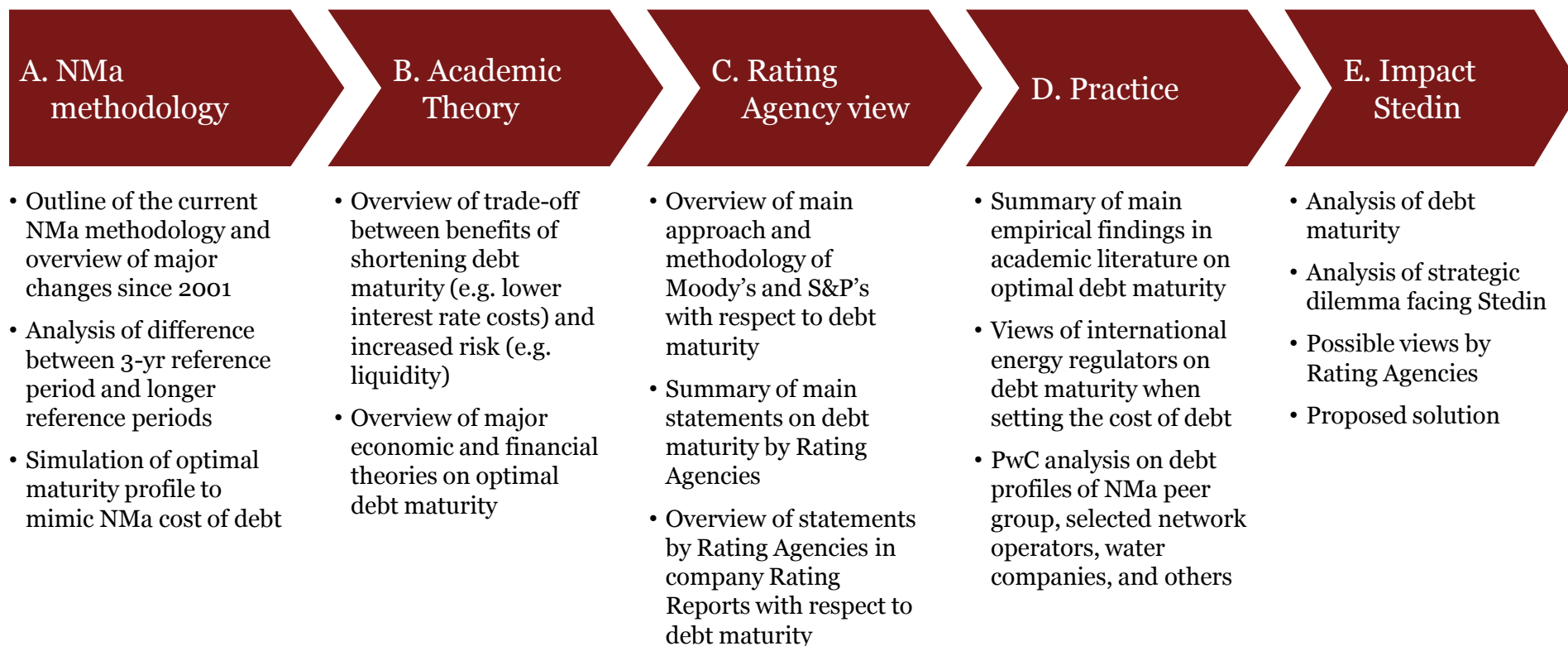
Consequences: credit rating agencies prefer long-term maturities for companies with long-term assets. Thus, shortening debt maturities would increase refinancing risks and can result in a rating downgrade and subsequently higher costs of capital, or even limited access to the capital market. In volatile financial markets (like 2008) serious liquidity issues, default and distressed asset sales can occur.

2 Maintaining the current (long-term) debt maturity profile

Network operators are generally financed by long-term debt, due to the nature of their assets. Maintaining the current debt maturity profile would sustain lower refinancing risk (less exposure to capital market shocks in the short-term), but could potentially lead to a relatively high cost of debt.

Consequences: there would be a structural difference between the financing costs of network operators and their cost of debt allowance. In periods with relatively low yields, as is currently the case, actual higher financing costs have a negative impact on equity income (and *vice versa*). Therefore, in this case shareholders bear an additional risk for changes in the cost of debt for which they are not compensated. Moreover, the short term approach to the cost of capital is viewed negatively by rating agencies. Tariffs also become more volatile, which is negatively valued by network users.

The structure of the report



A. Implications of the methodology to estimate cost of debt



Main findings

- *Since the start of regulation the methodology for calculating the cost of debt has changed a number of times, with each change the reference period has shortened. The subsequent changes in determining the cost of debt can only be implemented in actual financing decisions with a significant lag*
- *Over the period 1965-2012 the 10-year moving average gives a more stable development of the average interest rate than the 3-year moving average. Differences between the 10-year and 3-year averages are significant and persistent over time and introduce additional risks, which are borne by shareholders*
- *It is not possible to perfectly match the NMa cost of debt using a portfolio of different loans, leading to a structural difference between the actual cost of debt and the calculated cost of debt by the NMa*
- *A portfolio with 5-year loans gives the closest approximation to the NMa cost of debt allowance, resulting in an average debt maturity of only 2,5 years. Even with this average debt maturity significant differences between the actual and pre-calculated cost of debt remain*

The NMa proposes to continue using a short reference period for the cost of debt calculation (3 years). This short period is significantly more volatile than the 10-year moving average, and the differences persist over long time periods.

Current yields are artificially low as a result of a “flight to quality”. High quality (low risk) assets are relatively expensive due to the uncertainty on financial markets, resulting in historically low yields.

The proposed methodology by NMa uses a 3-year average to calculate the cost of debt...

Risk-free rate	2,65%
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Based on the **3-year average** yield on 10-year Dutch and German government bonds.

Credit Spread	1,17
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Based on the **3-year average** spread between the yield on the debt of an A rated utility firm and the risk-free rate.

Issuance Fee	0,15%
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To account for the costs of debt issuance and other non-interest costs of debt.

————— +

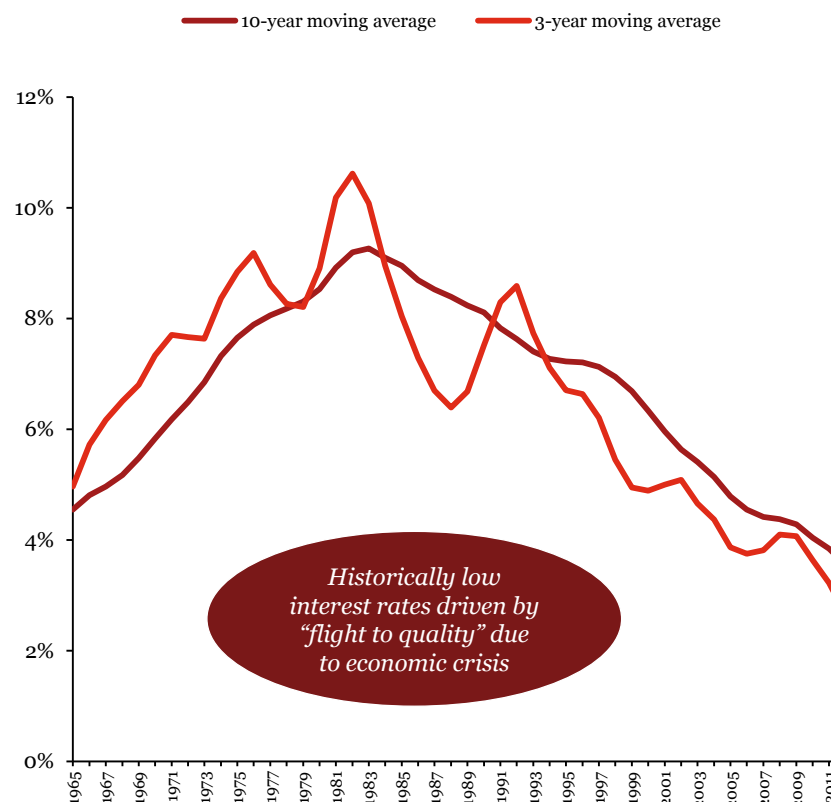
Cost of debt (pre-tax)	3,97%
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Cost of debt (post-tax)	2,98%
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Corporate Tax Rate of 25%.

...but a 3-year average is significantly more volatile than a 10-year average...

Moving average of Dutch 10-year government bonds



Source: CBS

Source: Eurostat; Brattle (2012), PwC Analysis

The differences between the 10-year and 3-year average are significant, which results in a mismatch between revenues and (regulated) costs. Given financing policies based on long term debt, this mismatch introduces an additional risk which is borne by shareholders

Historical impact of differences in reference periods

As will be demonstrated later on in this report, network companies are generally financed with long term debt. If the cost of capital allowance is based on a 3-year historical average whilst a company is financed based on a 10-year average, this results in a significant and persistent mismatch between the company’s costs and its (regulated) revenues. As the graph shows, the differences between the two averages are significant, with the 10-year average generally being below the 3-year average up to 1983 and above since then.

Mismatches are both positive and negative, but it is important to note that they tend to persist over many years. The differences are most pronounced when interest rates are at an inflection point (from increasing to decreasing, or *vice versa*).

Differences are even higher for corporate bond yields

The above example is illustrative for government bond yields. For corporate bond yields, the extent of the mismatch can be even higher. For example, the difference between a 10-year corporate bond yield and a 3 year corporate yield (both rated single A) was almost 80 basis points at the end of 2012.

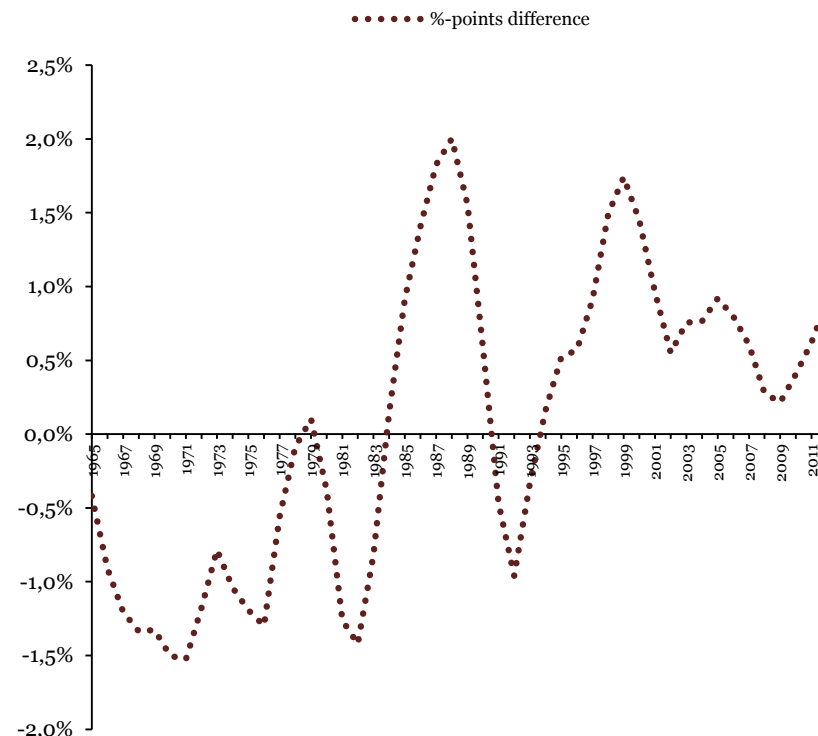
The mismatch introduces additional risks for shareholders

The existence of a mismatch between the cost of debt allowance and the actual financing costs of network operators introduces an additional financial risk for the company. This risk is in first instance borne by shareholders. Shareholders are not compensated for this additional risk as the cost of equity does not take this risk into account.

Source: Eurostat, CBS, PwC Analysis

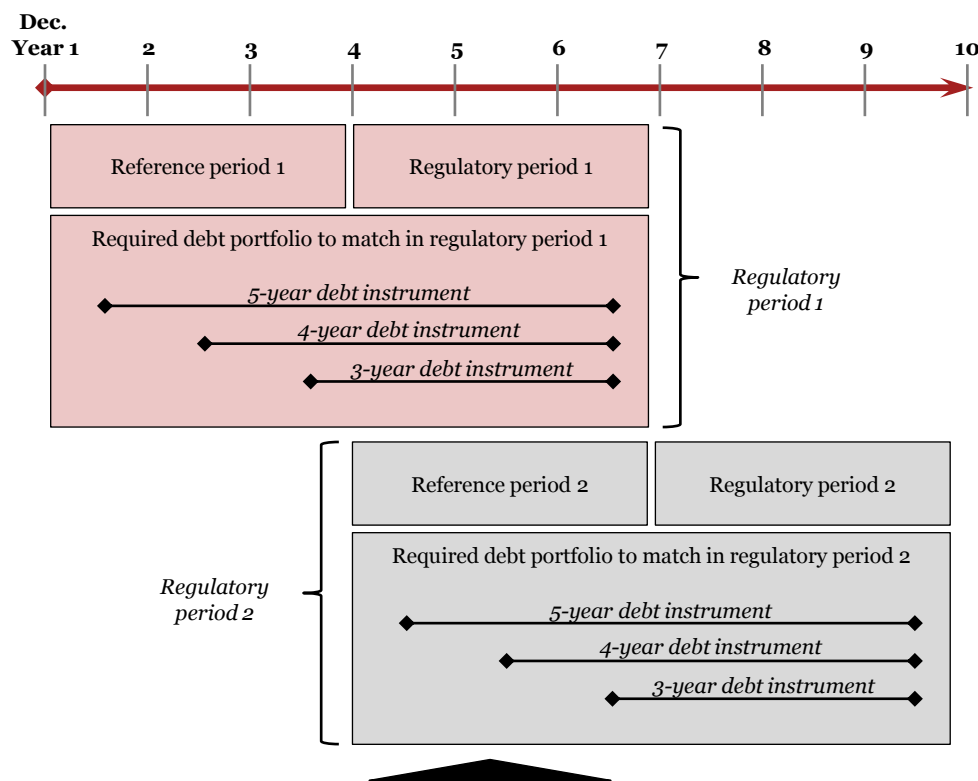
...with differences persistent over time and significant

Difference between 10-year and 3-year averages of Dutch 10-year government bonds



Companies are not able to perfectly match the cost of debt allowance of the regulator due to a number of factors. This creates risks for the companies. Moreover, it takes time to adjust actual financing to changes in the regulatory methodology

Illustrative required debt portfolios to match regulatory allowed return on debt



In order for a company to have a matching debt portfolio during the second regulatory period, debts will have to be taken on during the first regulatory period. This debt will, however, start requiring interest payments already during the first regulatory period, causing the mismatch with the regulatory allowance

If a company wants to minimise the difference between the actual cost of debt and the regulatory cost of debt, a tenor of 5 years is optimal. This means an average debt maturity of only 2,5 years. This only minimises the difference, as an average gap of 0,3%-points remains in our simulation

Perfectly matching the regulated cost of debt is not possible

Matching a company’s debt portfolio with the NMa approach is not impossible. Even assuming that an annual refinancing would reflect the daily yield quotes used in the benchmark, there are two fundamental elements that are impossible to replicate in a debt portfolio, unless using complex provisions (e.g. early redemption, interest-free periods, which would be very costly and would create risks of its own).

1. WACC allowance is fixed while the benchmark is calculated on continuous data (see illustration on the left)

Matching a company’s debt portfolio with the benchmark, for more than one regulatory period, would require taking on new debt during the first one. This debt would already generate interest expenses during that first regulatory period, causing a mismatch.

2. Debt maturity deviates from the reference period

The combination of a 3-year reference period and a 10-year yield also creates risks. When a company tries to minimise the deviation from the 3-year reference period, this would increase the deviation from the 10-year maturity and *vice versa*.

This gives a company exposure to either the yield curve (when deviating from the 10-year remaining maturity) or interest rate risk (when deviating from the 3-year reference period).

Our simulation shows an average tenor of 5 years as optimal

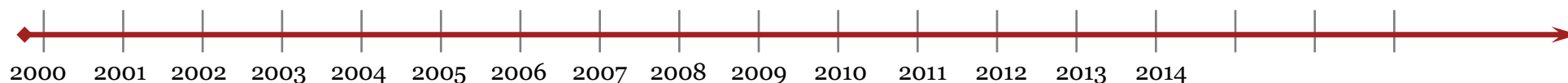
Our simulation (see appendix) demonstrates that a tenor of 5 years (a debt maturity of 2,5 years) best mimics the regulated cost of debt. Even then a structural difference of on average 0,3%-points remains.

Source: PwC Analysis

The previous analysis is based on a stable regulatory framework. However, in practice the NMa has repeatedly adjusted and finetuned the methodology to determine the cost of capital allowance. We focus here on the cost of debt, but significant changes have also been made in other areas

Given a portfolio of debt, it should be noted that any changes in determining the cost of debt can only be implemented in actual financing decisions with a significant lag (see Annex for explanation).

Regulatory timeline: key changes



First/second/2007 regulatory period:
cost of debt based on 5-year moving average

2006/2007 until 2014 cost of debt based
on average of 2-year and 5-year moving
average

Proposal: from 2014 onwards cost of
debt based on 3-year moving average

*“Een schatting van de risicovrije rente kan worden verkregen door het gemiddelde effectieve rendement te bepalen op staatsobligaties met een **resterende looptijd van 10 jaar**. Een significant deel van het netwerk heeft een **economisch levensduur van meer dan 10 jaar**.*

*Echter, staatsobligaties met een **resterende looptijd van meer dan 10 jaar** zijn **weinig liquide**.*

*Het gemiddelde effectieve rendement op staatsobligaties met een resterende looptijd van 10 jaar, gemeten over de afgelopen 5 jaar, ligt tussen **4,75% en 5,25%**”*

*“De Raad acht het van belang dat de te hanteren **referentieperiode representatief** is voor de (verwachte) **risicovrije rente** in de **komende reguleringsperiode**. (...)*

Een referentieperiode van twee jaar wordt daarom gezien als een redelijke periode om de risicovrije rente op te baseren. Tevens wordt een referentieperiode van vijf jaar gehanteerd.

Door de risicovrije rente ook op een periode van vijf jaar te baseren wordt rekening gehouden met de geleidelijke herfinanciering van de financieringsportefeuille van netbeheerders.”

Source: NMa (2000), Richtsnoeren inzake price-cap regulering, p. 29

Source: NMa (2008), Besluit 102610_1/27, Bijlage 3, p. 3

Source: Brattle (2012)

B. Academic theory of the structure of capital and debt maturity choices

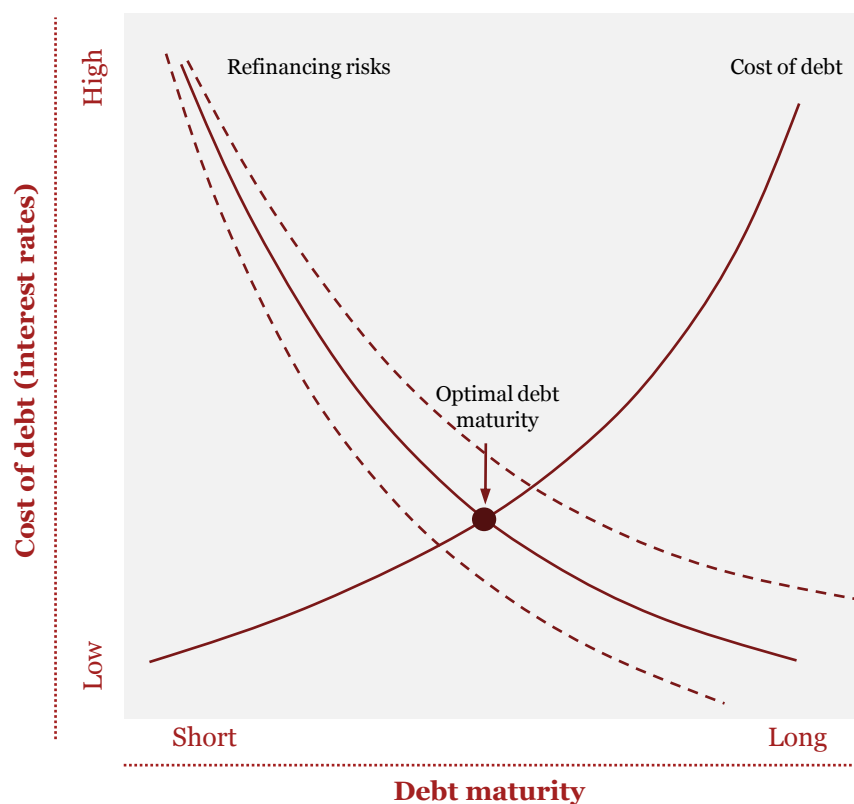


Main findings

- *Academic theory on optimal debt maturity suggests multiple factors drive debt maturity choice*
- *There is a trade-off between the benefits of more short term debt, such as lower interest rates and flexibility, and the risks, such as refinancing, liquidity, signalling, and agency issues*
- *The dominant theory in the academic literature is the “maturity-matching hypothesis”, which simply states that the maturity of debt should be in line with the economic life of the assets that are being financed*
- *This allows the cashflows that are generated with the asset to match the liabilities associated with the financing*
- *Using shorter term debt introduces refinancing risk, whereas debt that runs longer than the asset increases the risk that there will be insufficient funds to repay the loan and interest*

According to corporate finance models, the optimal amount of debt maturity has to balance refinancing risks and costs of debt. During times of economic uncertainty, liquidity and permanent access to a broad variety of capital sources are even more important from a going-concern perspective.

Equilibrium between refinancing risk and costs of debt (illustrative)



Source: Ross et al (2006), PwC Analysis

Balancing risk and costs

- Long-term financing is generally more expensive than short-term debt mainly due to opportunity costs for lenders (they could have invested elsewhere) and a higher risk of bankruptcy. Therefore, the cost of debt increases with the debt maturity (upward sloping yield curve).
- Refinancing risks, when the debt cannot be refinanced because the access to capital is limited or lenders are not willing to lend, decreases with the debt maturity. The longer the term for repaying the debt, and the more refinancing needs are spread over time, the smaller refinancing risk.
- From our experience and based on the literature review that we have performed, it seems that companies generally prefer risk mitigation over cost savings. Liquidity and permanent access to capital are even more important in times of economic uncertainty such as in the recent financial crisis. In the current situation on financial markets where traditional bankfunding sources retreat, it is even more important to have access to a variety of funding sources. These are offered in international capital markets but lenders require "A" investment grade rating of the borrowing companies.
- The graph demonstrates the trade-off between:
 - The marginal costs of increasing debt maturity by increasing "costs" in the form of actual interest rates and loss of flexibility, and
 - The marginal benefits of increasing debt maturity by lowering "costs" in the form of liquidity, refinancing options, signalling effect, etc
- Although the marginal costs of increasing maturities can be measured, the marginal risks of varying the maturity is a matter of risk aversiveness and company/shareholder preferences.

Corporate finance handbooks and academic researchers point out four main theories that determine debt maturities. The most discussed theory concerns the maturity matching principle – matching the debt maturity with the economic lifetime of company’s assets that are financed by it.

	1. Maturity matching theory	2. Risk profile theory (Diamond’s model)	3. Agency theory	4. Signalling theory
	Matching debt maturity with asset lifetime	Both low and high risk companies rely more on short-term debt, but low risk companies do so out of choice	Firms with less growth options tend to issue more long-term debt	The debt maturity profile is used to signal firm’s quality to investors
<i>Theory</i>	<ul style="list-style-type: none"> When the maturity of the debt is shorter than the life of the assets, there is a risk that the firm will not have sufficient cash at hand to pay its debt obligations when they are due. On the other hand, when debt has a longer maturity than the assets, then cash flows from assets will stop while the firm still has an obligation to repay. This has been heavily applied in the financial sector where prudence rules require active asset-liability management policies to ensure a matching of the maturity of assets and liabilities. 	<ul style="list-style-type: none"> According to this model, high-risk companies do not have access to long-term debt due to their riskiness. They are therefore reliant on short-term debt. Low-risk firms on the other hand have access to both short-term and long-term debt and can thus choose a portfolio that optimally fits their business – and benefit from overall lower financing costs if they (partially) use short-term debt. Medium risk companies will have more limited access to both markets and may not have complete freedom to create their desired portfolio. 	<ul style="list-style-type: none"> The debt maturity profile is not always optimal due to so called agency problems. If the future investment is partially financed by debt, some of its generated cash flows goes to debt holders. The return for equity holders is reduced and this can distort investment incentives (leading to under investment). The prediction is that firms with less growth options tend to use more long-term debt. 	<ul style="list-style-type: none"> This theory suggests that the debt maturity structure of a firm can signal insiders’ information on the firm’s quality. Low quality firms will tend to choose long-term debt to “hide” their quality and avoid refinancing risks. Insiders of high quality firms will perceive the market’s risk premium as excessive and may choose to signal their high quality by issuing short-term debt. Therefore, the debt maturity profile is used by rational investors to infer information about the firm’s quality.
<i>Applied to a network operator</i>	Long-term debt preference given asset lifetime in excess of 30 years, which means assets-liabilities are matched	Preference for blend of short and long-term , as network operator – given risk profile – can access both debt markets	Long-term preference as network operator is faced with stable predictable growth which are transparent	Long-term preference as transparent regulatory structure and rating means that signalling is less relevant

C. Rating agencies' view

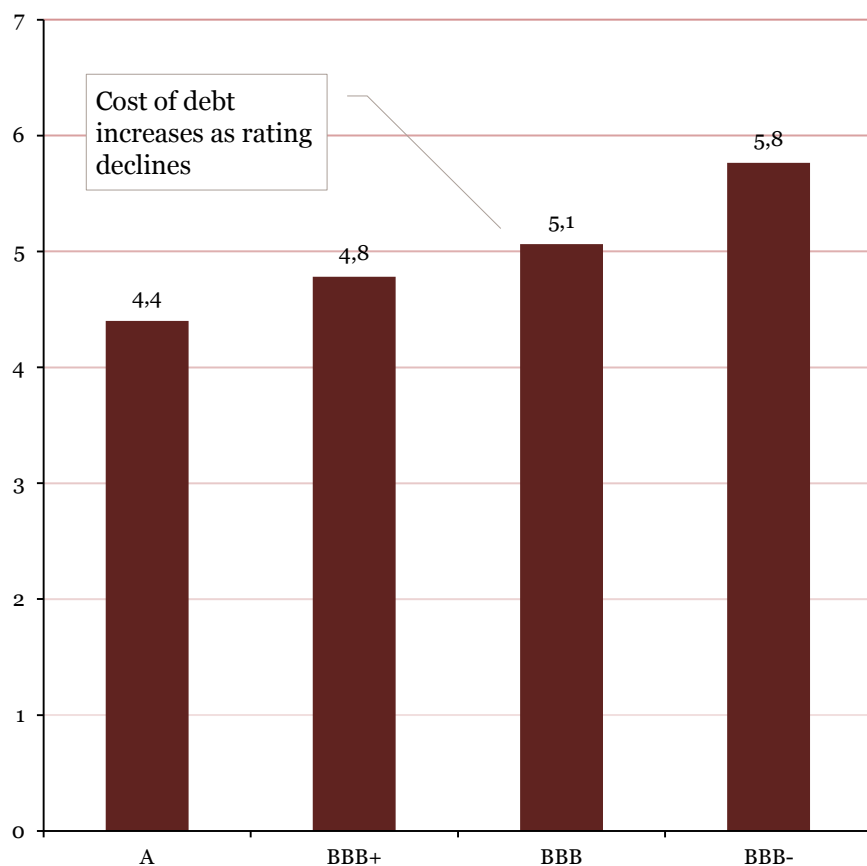


Main findings

- *Credit rating agencies are highly sensitive of re-financing risks and prefer longer maturities*
- *Debt maturity structures are seen as important for creditworthiness*
- *The risks posed by changing regulations and more stringent (regulatory) efficiency requirements are potentially detrimental to the credit rating*
- *Inconsistent regulatory methodology amendments and/or a regulatory reset deviating from expectations and/or peer regulatory policies will be a negative in the credit rating*

Debt maturity profiles are important for rating agencies. The impact is negative if profiles are unbalanced and/or dominated by short-term debt. Currently long-debt is offered by investors. This contributes to the credit rating, but limits the company's ability to refinance without considerable cost

Average 10-year European corporate (industry) bond yields in 2001-12 by credit rating



Source: Capital IQ

Debt maturity profiles are important for credit ratings...

Credit rating agencies view debt maturity as a very important part of a company's creditworthiness. Generally, long-term debt is preferred over short-term financing, since it reduces refinancing risks in the short-run (or the period of the outlook by rating agencies, with a 3 to 5 years horizon). In addition, debt financing should be well balanced and a company should not be needing to refinance more than 20% of its debt, unless it has a detailed plan and provisional commitment ultimately 6 months prior to the maturity date. Otherwise, rating agencies perceive it as a significant risk for its operations.

...but are also important for investors

The result of the debt crisis, bank solvency requirements (Basel III) and recent credit rating downgrades of banks, have forced banks to further deleverage and continue to squeeze credit lending.

Companies have shifted to the bond and/or private placement market to investors searching for "A" investment grade corporate yield. These investors (primarily insurance companies and pension funds) usually offer longer term tenors to serve their asset-liability matching policies.

...but limit the company's ability to overnight restructure to match a regulatory reset

Restructuring a company's debt maturity profile (to more short-term financing by repaying the loan upfront) usually involve significant costs (penalty fees and penalty interest, 'make whole' amounts), as investors will demand compensation for differences in interest and the refinancing risk caused by the prepayment of debt. Institutional investors, such as insurance companies and pension funds prefer not have loans repaid before their due date as they would face a reinvestment risk.

Rating agencies focus on quantitative and qualitative aspects when assessing the credit risk of a company. For utilities there is an explicit focus on liquidity, permanent access to a variety of sources of capital, maturity, adequacy of risk management, and the regulatory environment

How rating agencies assess debt refinancing risk

- Current ratings analyses put much greater emphasis on cash flow adequacy and liquidity than in the past
- Liquidity and maturity profile are considered to be critical factors, as are the sources of capital that can be accessed
- Regulatory framework, and potential regulatory resets, are also relevant

STANDARD
& POOR'S

In recent reports, S&P notes that current ratings analyses put much greater emphasis on cash flow adequacy and liquidity than in the past. This is due to the recent turbulence on financial markets. S&P explicitly indicates that an unusually short maturity schedule for long-term debt is a negative. More generally, when determining the rating one of the key factors is the maturity structure and exposure to interest rate fluctuations, i.e. the mix between fixed and floating interest rates.

*“Generally speaking, long-term assets such as factories are best financed using fixed-rate debt, while short-term working capital financing may be accomplished using floating-rate borrowings. Management should develop an appropriate maturity schedule and liquidity targets.”**

*“Even when analyzing highly creditworthy companies, it is necessary to be aware of the overall maturity structure and potential for refinancing risk.”**

*“Regulatory treatment should be transparent and timely and should allow for consistent performance— if it is to be viewed positively in the ratings context (..) Setting rates is obviously important. To support credit quality, a utility must be assured of earning a fair—and consistent—rate of return.”**

* S&P and Moody's, various reports on rating methodology

MOODY'S

Moody's focuses on four key factors: the regulatory framework, the ability to recover costs and earn returns, diversification and financial strength and liquidity.

Financial strength and liquidity are seen as key credit factors supporting long-term viability of capital intensive utilities. Utilities require consistent access to capital markets to assure adequate sources of funding to maintain financial flexibility.

For regulated networks Moody's also focuses on the regulatory environment and asset ownership model, efficiency and execution risk, stability of the business model and financial structure and key credit metrics.

Moody's considers the maturity structure and creditor protection as sources of ratings uplift:

*“Structural enhancements in this category address financial risks associated with liquidity, interest rate and refinancing risk. Typical arrangements include: (i.) Dedicated cash reserves to cover specific costs, for example liquidity facility covering scheduled interest payments, often for the next 12 months; (ii.) Timing reserves to cover future “lumpy” payments (e.g. operating and maintenance facility); (iii.) No material refinancing risk (e.g. benefits of amortising debt)”**

In its rating reports on several of Eneco's peers, S&P recognizes the importance of a well-spread maturity profile, as well as the regulatory risk present in the sector.

By favouring long-term debt maturities, S&P points to the importance of maintaining a long-term maturity profile, even if the regulatory framework was to change.

Selected quotes from Standard & Poor's rating reports on a number of Eneco's peers



“The rating is constrained by **regulatory reset risk in 2014**; exposure to incentive-based regulation that can impose **challenging efficiency requirements** [...] “[...] Alliander had **short-term debt maturities in the next 12 months** of €504 million. The latter includes a €500 million debt maturity in April 2012, which **we understand the company should refinance in a timely manner.**”



“...our view that Enexis' credit metrics have strengthened due to tariff increases for the 2011-2013 regulatory period, and **the company's well-spread maturity profile.**” “The main strengths of Enexis' ‘intermediate’ financial risk profile are: [...] **A well-spread maturity profile.**”



“The **"aggressive" financial risk profile** reflects TenneT's high leverage due to a large, debt-funded capex program....[...]. The **stable outlook** reflects our view that TenneT will remain **focused on its regulated activities** and will **maintain a financial profile** that we deem **commensurate with the rating**”



“We view KELAG's liquidity position as strong mainly due to the company's comfortable cash position, access to financing, and **a lack of significant debt maturities during the next two years.**”



“Our assessment of EDP's ‘aggressive’ financial risk profile reflects its **high debt burden and maturities in a challenging funding environment** [...]. Tapping capital markets could remain tough for Portuguese companies and **make it difficult when EDP needs to refinance** a sizable amount of debt in 2014 and 2015.”



“On Dec. 31, 2011, the **average time to maturity was 5.5 years** [...] against Vattenfall's target of a minimum of five years. On Dec. 31, 2011, the group's **debt maturities were reasonably well spread**, though with some concentration in 2013 and 2015 [...]”



“...**Further constraints** are **regulatory reset risk** affecting the electricity and gas distribution”

D. Empirical evidence on maturity, cost of debt and debt profile



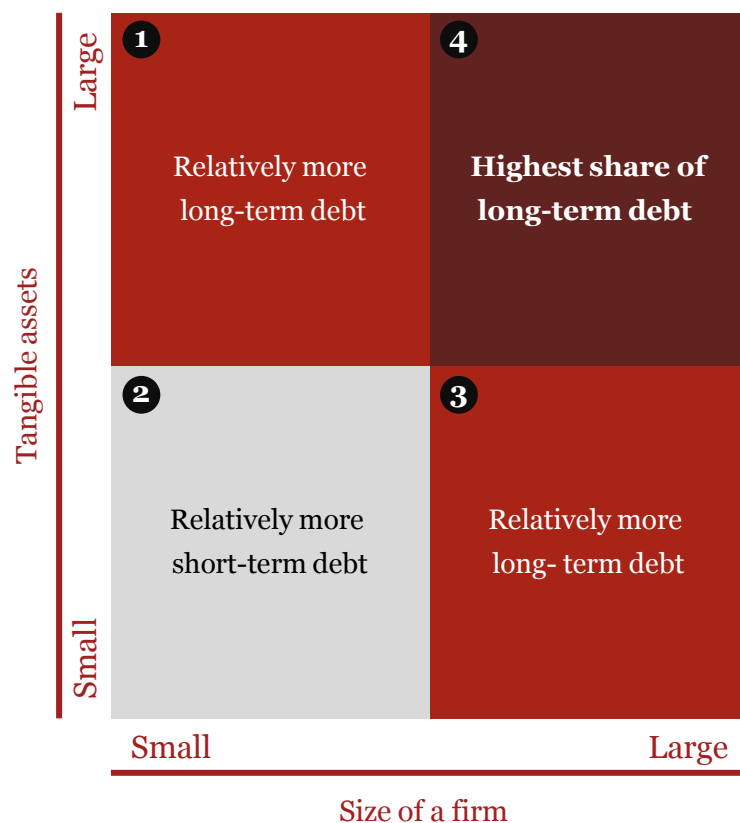
Main findings

- *Several empirical studies demonstrate that the Maturity-matching theory is dominant for corporate decision-makers*
- *In a recent survey, 57% of CFO's indicate maturity matching is the most important factor in debt maturity decisions, with 48% stating that long-term debt is used to minimise refinancing risks...
...which is in line with actual company practices in the NMa peer group and Eneco's own peer group*
- *Average debt maturity of NMa's peer group is about 10 years*
- *Companies focus on maintaining credit rating and securing long-term financing*
- *Other energy regulators are using longer periods to determine the cost of debt given current market conditions*

Research on the financing of Dutch firms shows that capital intensity and company size are key determinants of the share of long-term debt.

Large firms and firms which are more capital intensive tend to finance more with long-term debt. This fits the profile of Stedin as Eneco is both sufficiently large and highly capital intensive. Based on this research, Stedin should be among the companies with the highest share of long-term debt.

Debt maturity matrix for large and small firms with different amount of tangible assets:



In research for the European Banking Centre*, 130,217 Dutch firm-years observations were tested in the period 2002-05 to define the relationship between debt maturity and firms’ characteristics.

The empirical evidence shows that economically the most relevant firm characteristics for both total debt and long-term debt are firm size and tangible (fixed) assets.

Large firms have better access to long-term debt

The empirical analysis shows that larger firms have a higher share of long-term debt in their capital structure. These results are in line with previous work in this area that investigated larger companies’ capital structure.

One explanation is that large firms are perceived as safer due to their diversified activities and a known track record, which enables a lender/credit rating agency to make a better assessment of the risks involved. Moreover, large firms have better access to capital markets and more liquid bond issues.

Tangible assets mitigate risks of liquidity and may also grant a better access to long-term financing

There is a strong empirical evidence that Dutch firms with larger shares of tangible assets (as a percentage of total assets) also have more long-term debt than firms with less tangible assets. Generally, these firms can use their assets as collateral to attract long-term debt (mitigating risks to lenders). Although the energy infrastructure cannot be sold, the natural monopoly characteristics and regulatory framework provide a solid basis for stable cashflows.

Source: *Degryse et al. *The Impact of Firm and Industry Characteristics on Small Firms’ Capital Structure: Evidence from Dutch Panel Data* (2009)

In practice, debt and asset maturity matching is most relevant to European corporate decision-makers. However, it is not always possible to perfectly match the maturities (due to limited access to capital or too high costs). Companies then need to compromise on their debt maturity.

In practice the principle of maturity matching is relevant. According to the international survey of 313 CFOs*, a firm's choice highly depends on the maturity matching principle, as well as a need to mitigate refinancing risks:

Survey responses to the question "What factors affect your firm's choice between short- and long-term debt?"

Factor	% always or almost always		
	NL	DE	UK
Matching maturities principle	57%	60%	59%
Use long-term debt to minimise refinancing risks	48%	52%	29%
Use short-term debt when interest rates are low	25%	38%	16%
Use short-term debt when long-term debt interest rates are expected to decline	14%	38%	11%
Use short-term debt to maximise returns for shareholders	9%	4%	13%
Use short-term until the credit rating improves	5%	8%	5%
Use short-term reduces the chance that a firm takes up risky projects	2%	6%	2%

Source: *Brounen et al. Capital Structure Policies in Europe: Survey evidence (2005); Ross, Westerfield, Jaffe *Corporate Finance*, 5th edition, 1999

Perfect maturity matching is in practice not possible. Therefore, firms balance refinancing risks with interest costs

Yet, it is not always possible nor desirable to attract capital that perfectly matches the maturity of assets because lenders are not willing to lend for such periods of time or it can be too expensive for a firm, given its risk profile.

In addition, short-term interest rates are normally lower than long-term interest rates. This implies that on average it is more costly to rely on long-term borrowing than on short-term borrowing.

Therefore, given interest costs, the optimal debt maturity mix is generally shorter, yet cannot be financed too short-term because it would raise refinancing risks. The refinancing risk is difficult to quantify but can be seen as the product of probability and impact.

Analysis on NMa and Eneco’s peers also confirms the maturity matching principle: utilities and network operators finance themselves long-term to match their asset longevity and mitigate risks.

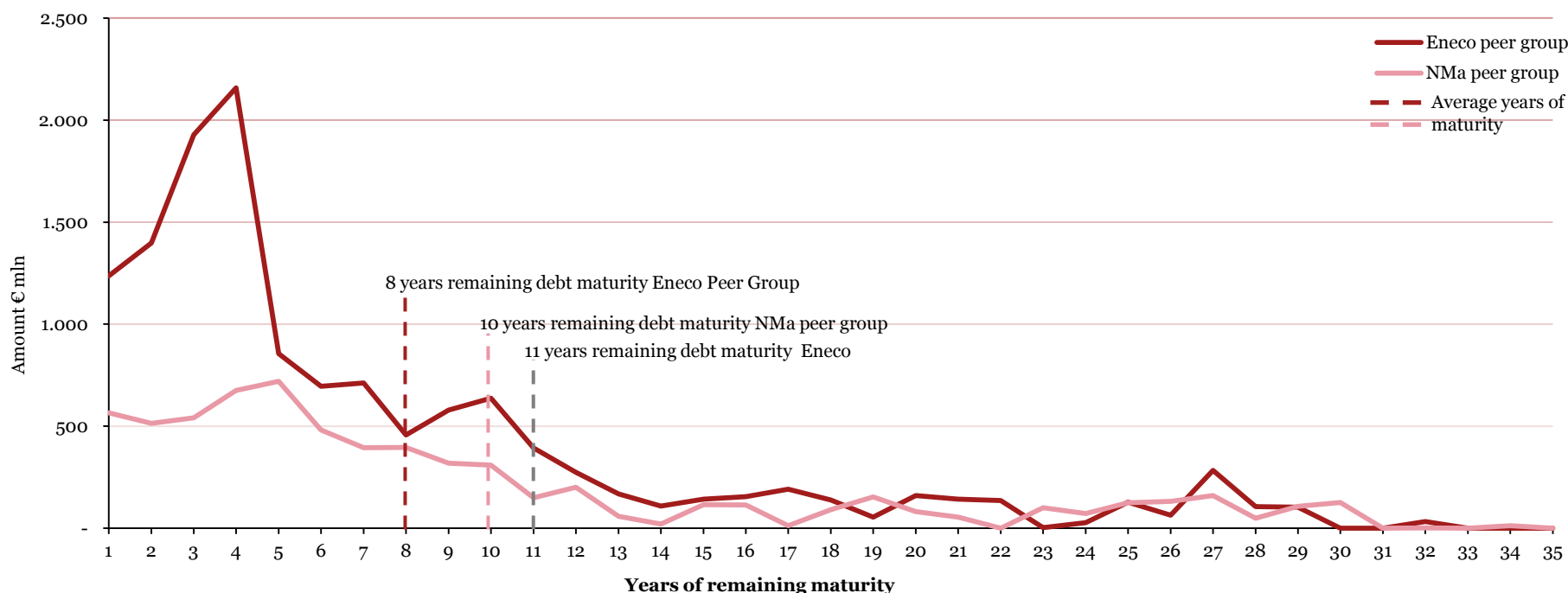
Eneco is roughly aligned with the market in its maturity. This implies that most companies in the industry will face similar financing challenges in the future

The average debt maturity for the peer group, as defined by NMa, is 10 years. We observed a similar debt maturity (8 years) for the peer group defined by Eneco, as well as in a PwC defined peer group of Dutch infrastructure-intense companies (8 years)*

The data demonstrate that the effective tenor of loans is in fact on average between 16-20 years.

There is a long-tail showing that many of the companies also have very long-life debts in their portfolio.

Average outstanding debt by maturity (in years from now)



* Including Alliander, Enexis, TenneT, Gasunie, Brabant Water, Attero, Schipol, NS; see appendix for overview of Eneco and NMa peer group

Source: PwC Analysis, Bloomberg, Annual Reports

The financing strategies of the peer companies are all emphasising the importance of a high credit rating to secure the continuity of debt financing. Long-term (over 5 years) is also preferred by most utilities and network operators.

Utilities and network companies are aiming to maintain a single-A rating to keep access to capital markets



“Utilities are by nature very capital intensive and have a great need for **long-term financing** via the bond markets, which in turn requires a **high credit rating**.”

“[...] liquidity risk is mitigated by maintaining an even maturity structure and a **long average remaining term** in the company’s debt portfolio.”



“Alliander’s financial policy aims to preserve financial strength and flexibility and good access to the capital market at all times by maintaining a **solid A rating profile** [...]”



“The capital management of the Enexis Group (“the Group”) aims to achieve a financially sound capital structure and to **maintain its strong credit ratings** [...] to **support the continuity of its operations** and to be able to make planned investments.”

Due to the capital intensive nature of the companies, long-term financing is an important pillar of the peer group’s financing strategy



“It is the Group's policy to maintain committed facilities and/or available surplus cash resources of at least £1,200 million, raise at least 75% of its net debt (excluding non-recourse debt) in the **long-term debt** market and to maintain an average term to maturity in the recourse long-term debt portfolio **greater than five years**.”



“Terna’s borrowing strategy focuses on **long-term loans** whose term reflects the useful life of company assets.”



“Ren has continued the consolidation of its debt structure so as to **prolong the average maturity**, diversify funding sources and increase the amount of credit lines.”

Source: Companies’ annual reports, PwC analysis

Regulators are reviewing their methodologies for setting the cost of capital.

The exceptionally low and volatile yields have made regulators resort to more long-term averages. Moreover, the inconsistencies between short-term averages of risk-free rates and longer-term averages for the market risk premium needed to be resolved.

Regulators in Europe



Ofgem has been using the **10-year moving average** of the iBoxx indices in calculating the cost of debt (CoD). Regarding the cost of equity (CoE), Ofgem has been using the CAPM but changed their focus to **long term estimates**, especially because they set controls for an eight-year period



The calculations of both CoD and CoE are based on **long-term UK index-linked gilts**.



BNetzA has been using the **10-year average** in estimating the risk-free rate and current DMS data for the risk premium calculation. However, acknowledging the **current economic situation they added 70 bp** to their final result to account for the market volatility

Regulators worldwide



The Australian Energy Regulator had been using a short-term period in estimating the risk-free rate along with a fixed ERP estimate. However, as Australian government bonds reached historically low levels, the **Competition Appeals Tribunal overturned** the decision and ruled towards a **longer period** for the calculation of the risk-free rate, that also resulted in higher market returns



IPART recognised the inconsistency between in the calculation of risk-free rates and ERP as the former was based on a short-term period and the later on a more long-term. Given the economic situation they modified the calculations to use **long-term periods** for both estimations.

Source: PwC Analysis, NERA

6. How cost of debt regulation affects Stedin



Main findings

- *Stedin faces a strategic dilemma in financing decisions: shorten debt maturities to mimic NMa's cost of debt allowance or maintain prudent financing policies and minimise refinancing risks*
- *Shortening debt maturities can lead to a chain-effect, whereby the risk profile is negatively affected*
- *S&P could conclude that NMa's WACC has a significant negative impact on tariffs and x-factors and increases risks for the company, with consequently a negative impact on the company's credit rating*
- *The mismatch in the cost of debt creates a risk for shareholders for which they are currently not compensated*
- *NMa's short term approach makes tariffs more volatile, which is negatively valued by network users*
- *We advise to base the cost of debt allowance on 10-year average yields, bringing revenues in line with costs, improving tariff stability, and correcting for the current artificially low yields*

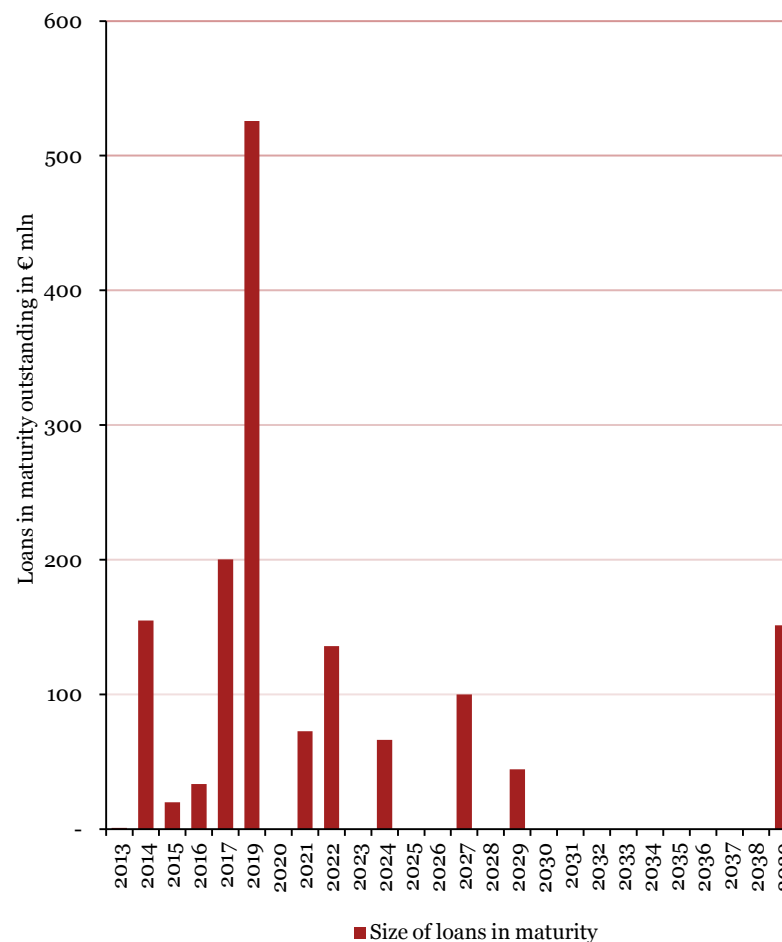
Stedin is part of Eneco Holding N.V. Eneco Holding is a Dutch integrated energy company encompassing energy company Eneco, network company Stedin and infrastructure company Joulz.

The debt profile of Eneco shows a balance in shorter-term and longer-term financing.

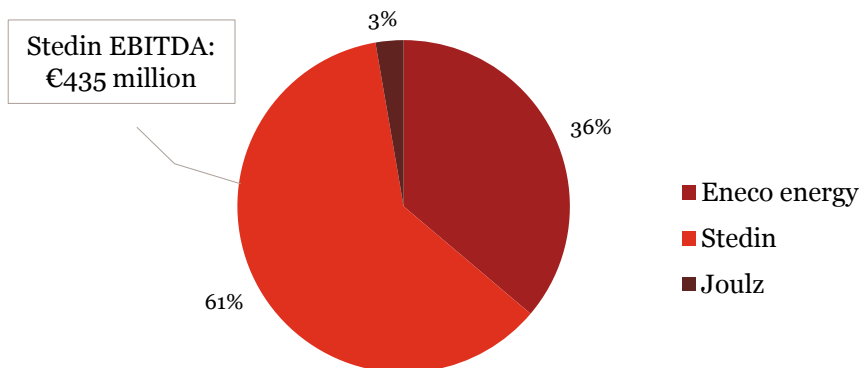
Stedin's position within Eneco Holding N.V.

- Stedin maintains, manages and develops gas and electricity networks in the Netherlands. In 2011, Stedin contributed €435 million (or 61%) to Eneco Holding's EBITDA, which amounted to €711 million in total.
- Treasury activities are performed at the holding level. Eneco Holding N.V. attracts capital for the entire group and distributes this via intercompany loans. However, NMa considers the network business as a stand-alone operation. We assume Stedin's debt profile is a pro-rata reflection of Eneco Holding's debt profile to assess the impact of the short reference period.
- Standard & Poor's currently rates the holding A- (long term) and A-2 (short term) with a stable outlook.

Eneco Holding N.V.'s debt profile



Breakdown of Eneco Holding N.V. EBITDA, 2011



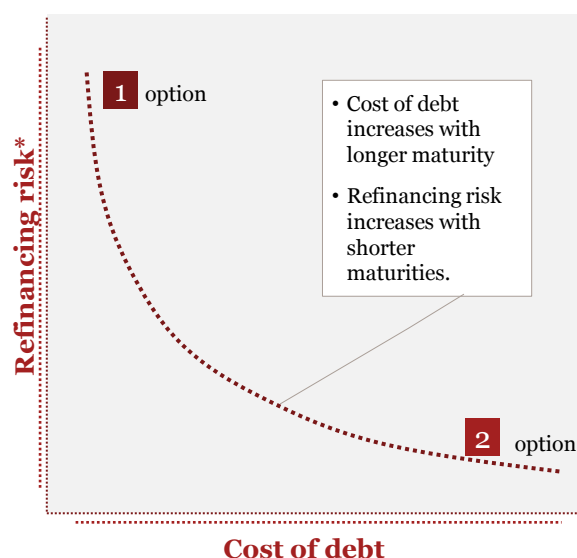
Source: Eneco data, PwC Analysis

As a result of NMa’s proposed approach to the cost of debt, Stedin faces a strategic dilemma in financing decisions. On the one hand, Stedin could shorten debt maturities to mimic NMa’s cost of debt allowance. An alternative is to maintain conservative financing policies.

Strategic options

- Given the short reference period for the cost of debt, Stedin has two basic strategic options: (i) to respond to the incentives provided by NMa’s regulatory regime by shortening debt maturities, or (ii) to remain oriented towards long term financing.

Stylised trade-off between cost of debt and refinancing risks:



*Refinancing risk is the possibility that a borrower cannot refinance by borrowing to repay existing debt

1 Shortening debt maturities

In order to follow the “prescribed” cost of debt, Stedin may choose to shorten its debt maturity profile by refinancing current long-term loans with short-term debt. One advantage is that in this way Stedin can avoid large differences between the cost of debt allowance and the actual cost of debt. However, this strategy results in relatively high refinancing risks.

2 Maintaining the current (long-term) debt maturity profile

Network operators like Stedin are generally financed by long-term debt (average is 10 years), due to the nature of their assets. Maintaining the current debt maturity profile would sustain lower refinancing risk (less exposure to capital market shocks in the short-term), but could potentially lead to a relatively high cost of debt.

We will discuss both strategic options in turn in the following pages. Note that it is not changes in the cost of debt in itself which will have an impact on Stedin and Eneco, but the *methodology* to determine the cost of debt, and more specifically the reference period. As a result of the short reference period, the mismatch between NMa’s assumptions with respect to the cost of debt and actual financing policies by Eneco increases.

In either scenario – mimicking the regulator, or maintaining the current debt portfolio – the result could be an increase in the risk profile of the company. Once this process is triggered, it could cause a chain effect and further increase the risk profile and costs of the company

The critical aspect here is not so much increased interest costs, but the risk of restricted access to a diversified capital base to attract financing for Stedin’s assets and investments

A credit rating downgrade raises the costs of financing and might limit access to capital (as some investors are only allowed to invest in A-rated companies). Moreover, suppliers may demand additional safeguards after a downgrade which will raise costs. This could subsequently further increase the risk profile, especially in capital intensive sectors.

Currently, the reference period for estimating the risk-free and corporate bond rate has a significant impact on the WACC (a 0,7%-point increase in the cost of debt raises the WACC with 0,9%-points). The current method uses 2-5 year averages. The proposal is to switch to a 3-year average. Both are relatively short compared to Stedin’s average maturities.

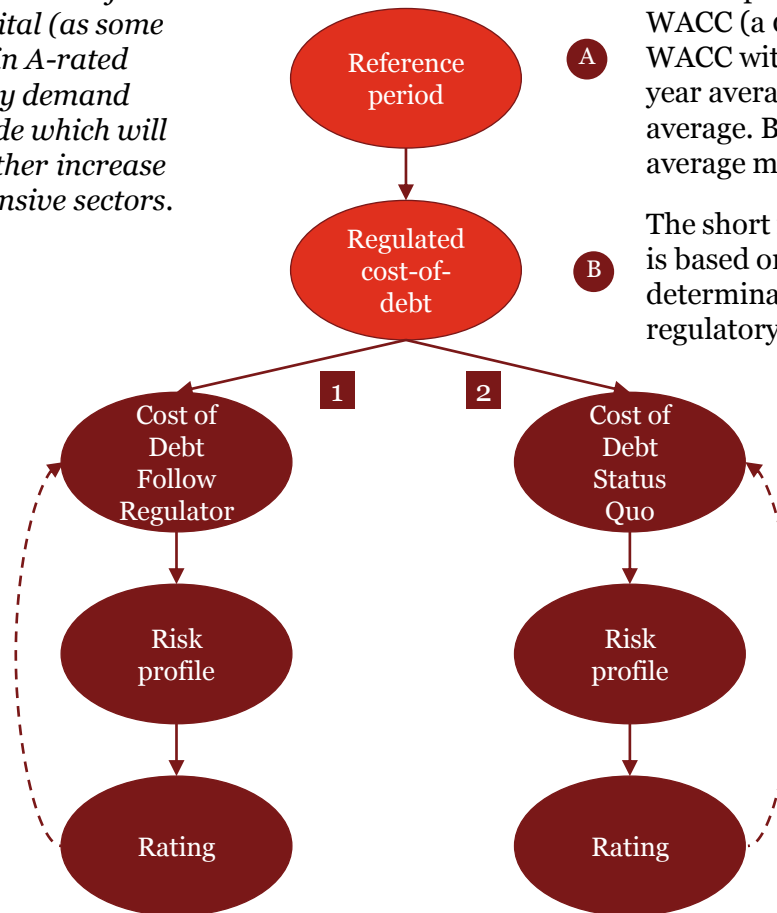
The short reference period results in a cost of debt which is based on the past three years as input for the determination of the cost of capital allowance for the regulatory period

Reduce average maturity by shortening tenors – thereby lower cost of debt... **C.1**

...which will adversely affect risk profile due to increase in liquidity and refinancing risk... **D.1**

...this could result in a rating downgrade.... **E.1**

...triggering increase in spreads or restrict access to capital markets



Keep average tenor and balanced debt maturity in line with current prudent policy... **C.2**

...risk profile could be adversely affected if regulatory decisions are not consistent in methodology over regulatory periods and/or reset tariffs beyond reasonable expectation **D.2**

...this could result in a rating downgrade.... **E.2**

...triggering increase in spreads or restrict access to capital markets

Regulatory consistency and predictability are critical from a rating perspective. A shorter reference period is undesirable from a risk perspective, and importantly also undesirable from a user perspective – as it increases tariff volatility

Reference period should match company practice...

- Given the analysis presented we believe that a relatively long debt maturity best fits the business profile, risks and objectives of a network operator.
- This approach is supported by theory, supported by evidence from other companies, supported by the methods and approaches employed by rating agencies, and importantly is better for the stability of tariffs.
- Network operators, and other energy companies, in their financing policies have the primary objective to ensure permanent access to a variety of sources of capital, and secondarily to minimise their interest rate costs.

Although the incentive to shorten debt maturity is strong if a network operator wants to minimise the deviation between the cost of debt that is allowed to be recouped in tariffs and the actual cost of debt, this nevertheless introduces substantial risks that could result in a downgrade.

...and should be stable and predictable...

- S&P takes the regulatory regime into account when setting a rating. Changes in the cost of debt methodology could potentially contribute to a downgrade.

*“We could **lower the ratings** if Eneco's credit metrics were to deteriorate below our guideline levels for an extended period of time-.[...] **We also consider the risk of a worse-than-anticipated tariff decision for the next regulatory period.**”*

Source of quotes: Credit rating report for Eneco, November 2012

We believe that a cost of debt allowance below actual costs is one of the factors which can be seen as “a more stringent efficiency measure” by rating agencies.

A longer reference period reduces risks, matches theory and practice, and is better for users.

*“In our opinion, a revision of the **regulatory framework** with a **harsher-than-anticipated outcome** for 2014 onward--**more-stringent efficiency measures than are currently anticipated**, for instance--would have a **detrimental effect on Eneco's revenues, EBITDA, and FFO (funds from operations)** from 2014.”*

A longer reference period is also desirable from a user perspective

- Using a longer reference period lowers the volatility of the WACC, and therefore the volatility of tariffs.
- Our analysis of previous X-factor decisions by the NMa show that an increase in the cost of capital of 1%-points would have resulted in a lower x-factor of 1,3%-point in 2011-2013 for electricity network operators and 1,9%-point for gas. The impact of a reduction in the cost of capital is similar.

Lengthening the reference period will increase the WACC for the next period, but could lead to lower WACC's later on

- With the sharp decline in interest rates as a result of the severe economic crisis and the “flight to quality”, using a longer term reference period will increase the WACC initially.
- However, as interest rates start to rise again – as they eventually will – using a longer reference period will lead to lower costs of debt than using a shorter period. Over multiple regulatory periods, the choice of the reference period should have a neutral impact on the WACC. This will benefit users, and lead to more stable tariffs over time.

Appendices

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1	Debt portfolio simulations	35
2	List of companies in peer groups	38

The model calculates the mean average deviation (MAD) based on a statistical model assuming a normally distributed interest rate development. The MAD compares the average interest rate of a debt portfolio with the regulatory allowance.

Simplified example of model

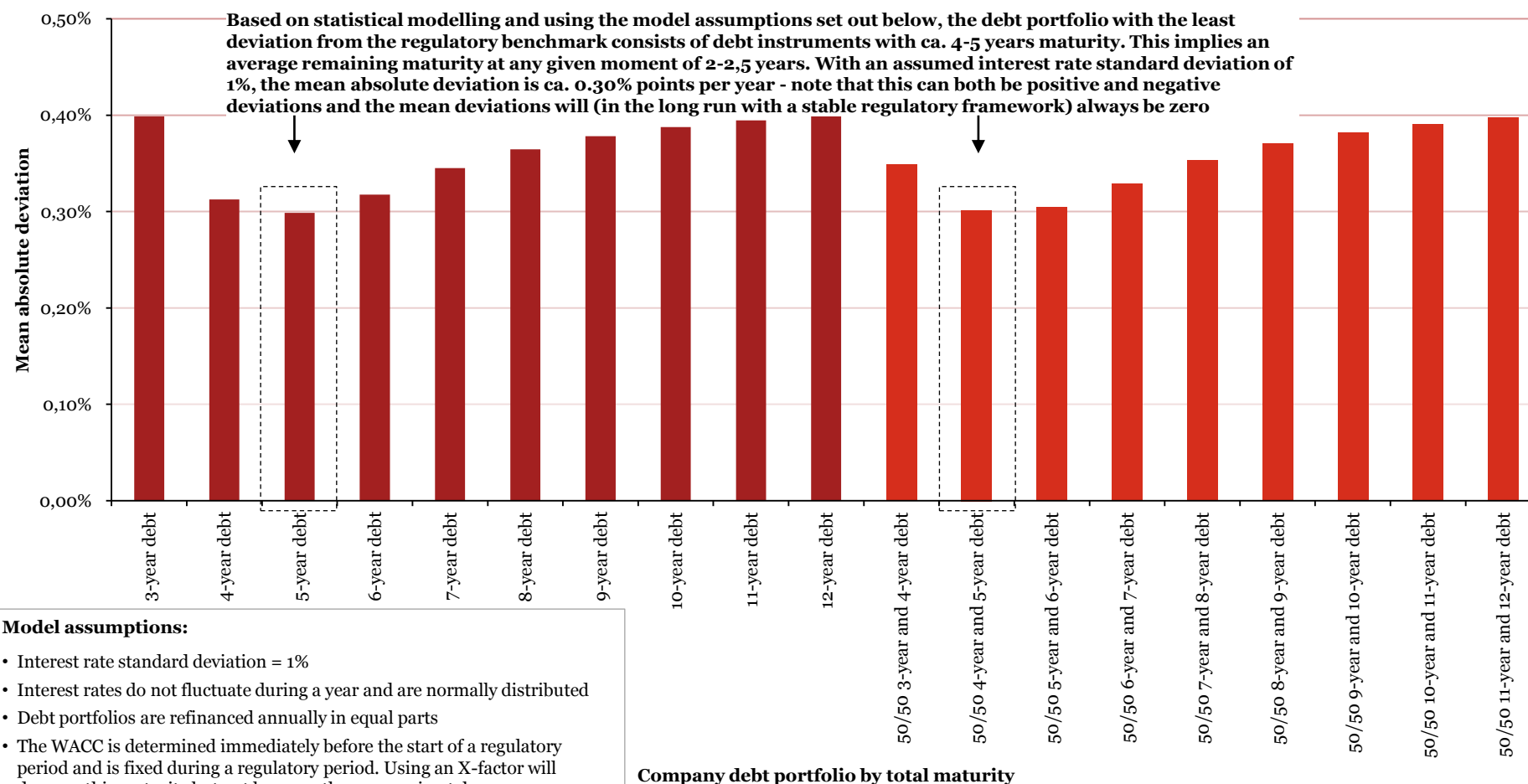
Average	3.00%	3.00%	3.00%	3.00%	0.29%	0.38%
Standard dev.	1.00%	0.58%	0.43%	0.31%	0.22%	0.29%

Year (1 t/m 10.000)	Interest rate	Regulatory allowance	5-year debt portfolio	10-year debt portfolio	MAD with 5-year debt portfolio	MAD with 10-year debt portfolio
	(1) Random generated based on a normal distribution with 3% average and 1% standard deviation	(2) Calculated as the average of the past three interest years. Subsequently stable for three years	(3A) Moving average of past five years	(3B) Moving average of past ten years	(4A) Absolute difference between 'Regulatory allowance' and '5-year debt portfolio'	(4B) Absolute difference between 'Regulatory allowance' and '10-year debt portfolio'
1	2.7%	2.2%	2.7%	2.6%	0.4%	0.3%
2	4.4%	2.2%	2.7%	2.7%	0.4%	0.5%
3	2.4%	2.2%	2.6%	2.8%	0.4%	0.6%
4	2.4%	3.2%	2.7%	2.8%	0.5%	0.4%
5	4.4%	3.2%	3.0%	2.9%	0.1%	0.3%
6	2.5%	3.2%	3.3%	3.0%	0.1%	0.2%
7	3.7%	3.1%	3.2%	2.9%	0.0%	0.2%
8	1.3%	3.1%	3.0%	2.8%	0.1%	0.3%
9	2.5%	3.1%	2.9%	2.8%	0.3%	0.4%
10	1.7%	2.5%	2.6%	2.8%	0.1%	0.3%
11	3.4%	2.5%	2.4%	2.8%	0.1%	0.4%
12	1.4%	2.5%	2.3%	2.7%	0.2%	0.2%
13	3.1%	2.2%	2.2%	2.6%	0.1%	0.4%
14	1.9%	2.2%	2.3%	2.6%	0.2%	0.4%
15	3.0%	2.2%	2.4%	2.5%	0.3%	0.4%

Source: PwC Analysis

We have simulated the optimal debt portfolio which best fits the cost of debt allowance by the NMa. The best fit is reached with debt of a maturity of 4-5 years, resulting in an average debt maturity of 2-2,5 years.

Difference between regulatory allowed return on debt and a company's debt portfolio, based on statistical model



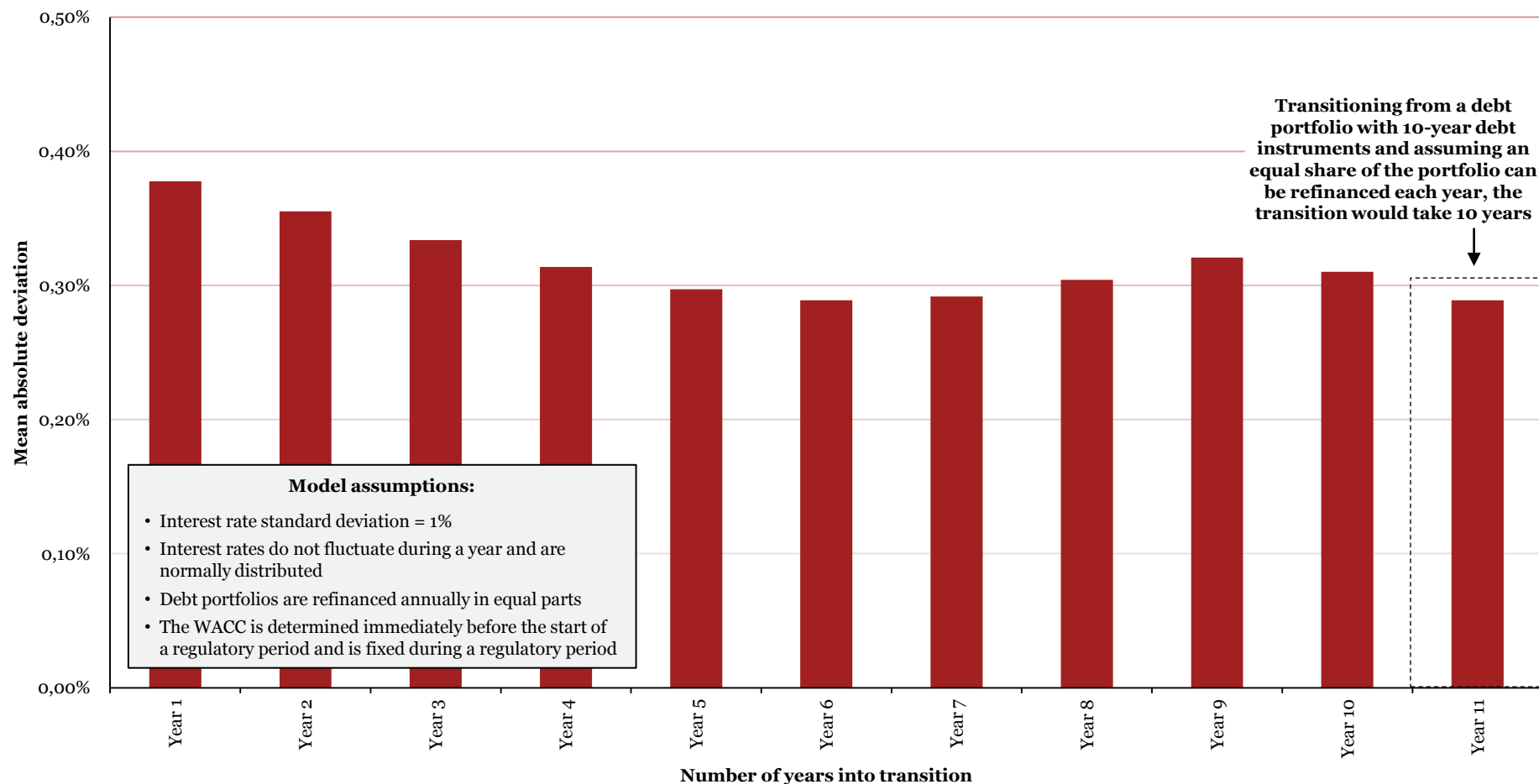
Model assumptions:

- Interest rate standard deviation = 1%
- Interest rates do not fluctuate during a year and are normally distributed
- Debt portfolios are refinanced annually in equal parts
- The WACC is determined immediately before the start of a regulatory period and is fixed during a regulatory period. Using an X-factor will dampen this maturity but not by more than approximately 1,5 years.

Source: PwC Analysis

Transitioning from a debt portfolio with 10-year debt instruments to one with ca. 4-5 years debt would take 10 years

Difference between regulatory allowed return on debt and a company's debt portfolio, statistical model



Source: PwC Analysis

Companies in peer groups (NMa, Eneco and PwC)

Company name	Peer group	Country of listing
Centrica plc	Eneco	United Kingdom
Drax Group plc.	PwC	United Kingdom
Electricite de France SA	Eneco	France
Edison International	PwC	United States
EDP-Energias de Portugal, S.A.	Eneco	Portugal
Elia System Operator SA	NMa	Belgium
Enagás, S.A.	NMa	Spain
EnBW Energie Baden-Wuerttemberg AG	Eneco	Germany
Enel SpA	Eneco	Italy
E.ON SE	Eneco	Germany
Fortum Oyj	Eneco	Finland
GDF Suez S.A.	Eneco	France
Iberdrola SA	Eneco	Spain
Kinder Morgan Energy Partners, L.P.	NMa	United States
National Grid plc	NMa	United Kingdom
Northwest Natural Gas Company	NMa	United States
Piedmont Natural Gas Co. Inc.	NMa	United States
Red Eléctrica Corporación S A.	NMa	Spain
RWE AG	Eneco	Germany
Snam S.p.A.	NMa	Italy
SSE plc	PwC	United Kingdom
TC PipeLines, LP	NMa	United States
TERNA - Rete Elettrica Nazionale Società per Azioni	NMa	Italy
VERBUND AG	Eneco	Austria
Endesa SA	PwC	Spain