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The cost of capital

A cross-country and cross-industry perspective

Workshop report

Workshop of the Club of Regulators

University Paris-Dauphine, 12 April 2016

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The cost of capital

A cross-country and cross-industry perspective

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Determining the cost of capital is a complex financial, technical and political question that involves conflicting interests and requires a shared vision of the future and a common understanding of complex rate setting. Regulators must manage these challenges, provide stakeholders with stability and enable the users to benefit from new technologies and choices.

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Introduction

Catherine L'Hostis
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Why is the cost of capital important?

The cost of capital is seen as the main driver of profitability for regulated industries. There is a strong relationship between actual profits, the allowed cost of capital or rate of return, and the actual cost of funding required for investments and operations by regulated industries. Regulators must balance the risk of over-investment if capex is remunerated above its opportunity cost, against the risk of under-investment if the cost of capital is set at a level that deters investors.

The rate of return is generally based on weighted estimates of different types of funding, particularly debt and equity funding. The capital asset pricing model (CAP-M), which is used in many sectors and jurisdictions, incorporates various parameters that are felt to reflect market conditions. These include the risk-free rate and market risk premium as well as asset and industry specific parameters such as the debt spread and beta level. This approach could be expected to deliver similar estimations of market and industry-specific parameters for regulated industries within countries or even across countries.

In practice, however, allowed rates of return are not highly similar across regulated industries in Europe. This can arise for a number of reasons, including the following:

- legacy issues or a desire for consistency leading countries or industries to favour a particular regulatory approach;
- the consideration of the weighted average cost of capital (WACC) as one of several elements available to influence the overall balance of risks and rewards underpinning regulatory decisions;
- the use of a degree of flexibility in allowed rates of return to support policy objectives; and technical assumptions and methodological decisions that weigh in the final estimate.

The regulatory approach

Regulatory regimes range from mechanistic frameworks, where a set methodology to derive WACC parameter values from the appropriate dataset, to discretionary approaches focus on consistency in principles rather than in methodology. The transparent and predictable mechanistic approach gives investors a degree of certainty around how the cost of capital will be determined. The discretionary approach offers greater flexibility to adapt to market events and can also provide stability as long as principles are applied predictably. Ultimately, the approach chosen is less important than the consistency with which it is applied.

Setting the WACC

The cost of capital must be considered relative to wider regulatory and policy objectives. Regulators walk a fine line between over- and under-investment. For each price that is controlled, the potential cost of setting the rate of return too low increases when policy objectives call for high investment. In other circumstances the risk of windfall profits will outweigh the risk of attracting too little investment.

Numerous inter-connected methodological choices underlie WACC decisions. In theory, the cost of capital is a forward-looking concept that applies to a future regulatory period. In practice, the difficulties of obtaining forward-looking data and making appropriate adjustments result in endless debates with operators. Furthermore, estimates are based on expected 'normal' market conditions, but expectations of normality can vary by regulator and by methodological approach.

Conclusion

This event is an opportunity to discuss how trade-offs are made, why there are wedges in observed allowed rates of return across industries and sectors, and how these factors can be incorporated into future decisions. It will also be interesting to discuss the costs and benefits of established frameworks, different approaches to defining comparator sets, and responsiveness and change in methodologies.

1st roundtable | International comparison: The experience of multi-sector regulators and of the UK regulator's network

The cost of capital: a contrast in approaches

Cristina Cifuentes
Commissioner, Australian Competition and Consumer Commission (ACCC)
Board Member of the Australian Energy Regulator (AER)

The cost of capital, particularly the way in which regulators apply discretion and provide consistency and certainty, is one of the enduring challenges facing regulators around the world.

In the Australian energy sector, the rate of return typically accounts for around 50% of revenues recovered by businesses and around 30% of the final price paid by consumers. This challenge has become exponentially more difficult to manage in recent decades.

The ACCC has regulatory functions across a range of sectors. The AER covers wholesale markets, network services and some consumer protection elements. They are subject to a range of legislative frameworks, which creates challenges for and sets limitations on consistency.

Regulatory objectives and regimes

Regulatory regimes and their competition assessment, enforcement and infrastructure regulation activities must all support the long-term interests of consumers. The ambiguity of these terms obliges regulators to adopt a discretionary approach from the outset. The regulatory frameworks also explicitly require that infrastructure should be used and invested in efficiently.

The ACCC and AER operate under a number of different regulatory regimes. For example, the electricity networks are the subject of full economic regulation but airports are simply monitored for quality of service and investment needs.

What do investors look for in regulatory regimes?

Although investors often complain about inadequate rates of return, there is no lack of appetite for investment in infrastructure. Infrastructure projects are central to defensive asset allocation portfolios so offshore pension funds are at the forefront of highly-contested bidding processes. The predictability of the process remains, however, important. The regulatory regime must be well established, well understood and transparent. Australia tends to adopt a mechanistic approach but has incorporated more discretion and flexibility since the global financial crisis.

Electricity distribution and transmission

Electricity is regulated using a forward-looking model with an incentive-based framework. The regulators establish the amount that the operators are allowed to recover from consumers, including a cost of capital allowance, and encourages operators to act efficiently through an incentive regime based on saved costs. The cost of capital is determined by applying a nominal vanilla WACC to the regulatory asset base. This appears to be simple but it is difficult in practice.

The global financial crisis obliged regulators to take account of a broader information base in relation to predictability of process and consistency of application. In Australia, the regulator held a year-long consultation with the industry to draw up a guideline for the rate of return. The guideline stated clearly that the rate of return should be "commensurate with the efficient financing costs of a benchmark efficient firm with a similar degree of risk as… the service provider" and that the regulator would define the benchmark and financial framework in order to share risk appropriately and avoid under- and over-investment. The guideline is not binding and, despite an understanding that it would be applied, it is not being used by the industry.

The return on equity framework adopts a very standard, prescriptive approach which requires the regulator to consider a wide range of evidence, including relevant estimation methods, financial models and market data. To limit the ability of operators to cherry pick among acceptable models and information, the guideline includes a range of criteria for assessing evidence. The standard CAP-M, which is relatively simple and widely accepted, is the foundation model for decision making. It is used to derive a range of acceptable point estimates that are fed into the WACC.

The cost of debt is the newest element in the model. It was decided that a staggered debt approach over a ten-year period should be used instead of the existing unrealistic, on-the-day approach based on the prevailing interest rate. Again, the industry participated in this decision but has chosen not to apply it.

The consultation process to determine the cost of capital was highly detailed and academic but was challenged in the courts. The Competition Tribunal supported the regulator on the cost of equity but not on the cost of debt on the basis that the benchmark 'efficient entity' is not a regulated firm. This decision is being appealed. Although this process was intended to provide certainty, it has created a huge amount of uncertainty for investors and the government.

National broadband programme

The scale and complexity of the national broadband programme is unprecedented and has given rise to a high degree of uncertainty, especially over the ability to recover costs in the early years. Various cost recovery mechanisms and price controls were built into the regulatory framework. There was no historical data or equity beta available to assess these mechanisms, identify appropriate gearing ratios, and establish credit ratings and appropriate financing. The nominal WACC has been used but a margin of 350 basis points has been added to the risk-free rate. The process took two years and will spend another two years going through tribunals. This cost of capital will apply for ten years and there is no mechanism for changing it.

A comparison of energy and telecoms regulation in Germany

Annegret Groebel
Head of Department International Relations, Postal Regulation, Bundesnetzagentur

BNetzA is the German multi-sector regulator responsible for telecommunications markets, postal markets, energy networks and railway networks. The cost of capital is particularly relevant to the capital-intensive telecoms and energy industries as well as railways.

The cost of capital framework

The cost of capital is a major and oft-disputed aspect of price regulation proceedings. Challenges typically focus on the rate, the right to determine the rate, and the amount of discretion which can be exercised. The courts have ruled that regulators are entitled to set the rate. Despite operating in a highly "mechanistic" environment, German regulators retain a degree of discretion. Consistent methodologies and parameters enable the regulator to respond to operators' complaints that other sectors are treated more favourably. The standard CAP-M has been used across the sectors since 2011 to ensure that operators and investors benefit from transparency and comparability of a well-known methodology. Differences in the final cost of capital reflect the risks of investing in particular sectors and some slight variations in the calculation of technical parameters.

The cost of capital is the result of the rate of return and the valuation of the asset base (the investment value). It is important that the framework takes account of the whole package and any changes in the underlying network structure.

Comparison of energy and telecoms regulation

Differences between sectors in objectives and regulatory approach affect the way that the rate of return and cost of capital are calculated. In the energy sector, the main objective of the cost of capital is to ensure ongoing investment and maintenance of the network so it is efficient and fit for purpose ("viability of the network"). In telecoms, only the dominant or significant market power (SMP) operator is regulated. The focus is on promoting competitive pressures at all levels of the value chain in order to incentivise efficient investment by the SMP operators and new entrants alike. Therefore, in general current costs are used in the telecoms sector.

Regulation in the energy sector

Incentive regulation is used in the energy sector and all costs are fully subject to incentive and efficiency requirements. A cost audit, which includes a strict calculation of the asset base, is conducted in the last year of each regulatory period. New investment and historical investment are managed differently in terms of valuation and rate of return. As in any revenue-cap regulation, an overall general productivity rate is taken into account. Moreover, an individual firm-specific productivity rate based on an efficiency benchmark is assumed.

The first regulatory period under incentive regulation began just prior to the financial crisis with the result that operators were advantaged. Nevertheless, there have been complaints.

For example, gas network operators argue that investment in gas networks is more risky than investment in electricity and object that the same rate of return is applied to both networks.

The rate of return was lowered very slightly in 2011 to take account of the investment demands of the energy transition; the risk-free rate also declined. The risk premium was left unchanged to encourage investments in grid expansion for the integration of renewables.

Extra investment measures in the first regulatory period do not fall under the revenue cap. They come under the cap and become subject to efficiency requirements during the second period.

Regulation in the telecoms sector

SMP operators are subject to additional obligations and price controls. The regulator determines the price and the cost of efficient service provision that would prevail on a fully competitive market. The CAP-M is used to determine the cost of equity.

Comparison of energy and telecoms regulation

The objective in energy regulation is to maintain a viable grid. As such, the regulatory asset base is calculated using a top-down approach and there are detailed, mechanistic provisions regarding the costs which are taken into account. There is more discretion in telecoms, where the focus is on ensuring a competitive level playing field. A bottom-up model is used to calculate investments at current costs according to the MEA concept. Risk is reflected in the rate of return and all aspects of the cost calculation are subject to efficiency requirements, with extra incentives where additional investments are necessary. A working group analyses new theoretical developments and ensures cross-sectoral consistency.

A UK cross-sectoral perspective

Ian Rowson
Associate Partner, RIIO Finance
Investor Relations, Ofgem

WACC in the UK

The WACC has been a central issue since the UK's first regulated privatisation took place in 1984. The UK's energy networks were privatised between 1986 and 1991. The WACC is central to regulation and is also crucial for the political sustainability of regulatory regimes: if companies are perceived to be making too much profit, the politics of regulation become much more difficult. The government has become more heavily involved in the regulatory environment due to this legitimate political interest, which is also a legitimate investor interest.

Regulators in different sectors sometimes reach different decisions on similar issues, even when variables appear to be similar. In response, the government established the cross-sectoral UK Regulators Network (UKRN) to help ensure greater consistency in WACC. The UKRN aims to deliver coherent and consistent economic regulation across sectors and provide a clear, shared view of cross-sectoral issues. Its cost of capital working group meets regularly.

Cost of capital working group initiatives

The working group has established a fairly generic statement of cost of capital principles. The group emphasises its commitment to learning from others, increasing transparency, explaining decisions, improving the quality of decision making and resource sharing through peer review. However, it decided not to develop a shared WACC approach or a joint cost of capital team or to publish a point estimate of the different aspects of the WACC calculation. This reflects the degree of uncertainty in the variables: setting the WACC is an art, not a science, and each calculation needs to reflect political aspects as well as investors' requirements. Instead, the working group has established a framework for collaboration and for peer reviews of regulatory decisions relating to the cost of capital.

Areas of uncertainty

The forward-looking risk-free rate is uncertain given the environment of sustained negative real yields on government bonds. Price control periods can extend for long periods, eight years in the case of energy networks in Great Britain. The cost of debt can be updated annually based on an index but the cost of equity is more challenging and inherently uncertain. Beta risk observations are difficult and the observed evidence is ambiguous at best. There is no clear mechanism for understanding the exposure of regulated entities to wider economic risk. Investors are concerned about regulatory and political risks even though these are not formal considerations under the Capital Asset Pricing Model (CAP-M).

A different understanding of risk is needed. The UKRN has been identifying drivers of beta risk and risk asymmetry within regulated industries and assessing whether regulatory frameworks can protect investors from those risks. For example, revenue control mechanisms protect operators from demand risk by assuming high levels of beta, but it is possible that these assumptions serve as a proxy for regulatory, political and other risks. This transforms the dynamics of the cost of capital, creating an environment where equity in these companies behaves more like bond yields.

Other issues

Questions remain over the remuneration of the uncertain cost of debt, the sensitivity of the cost of equity to the risk-free rate, regulatory approaches to risk management, and the potential for convergence with structured finance. Indexes and targeted approaches might resolve some of these issues but could create a new set of problems.

The cost of capital in the energy and water sectors in Italy

Alberto Biancardi
Commissioner, Italian Regulatory Authority for Electricity Gas and Water (AEEGSI)

General framework for tariff setting

Like other European regulatory bodies, the AEEGSI applies the tariff-setting principles issued by the OECD. The procedure involves identifying policy objectives, collecting data, and holding a public consultation. Standard revenue cap methodologies are used for opex, while a mixed approach centred on the classical rate of return is used for capex. The regulatory asset base (RAB) is updated in a standard process based on the Gross Investment Deflator index (GID) and the nominal value of the RAB is used. The WACC is based on the real rate.

Cost of capital in the energy sector

Cost of capital decisions were particularly important in 2015 given the situation on the financial markets and the length of regulatory periods, which required updated values and a more consistent approach to WACC. The CAP-M with real rates and pre-tax has been retained. Although the regulator does not oppose a post-tax approach, a pre-tax approach provides more flexibility given that the regulator covers a range of sectors. The WACC regulatory period is six years. All WACC parameters were harmonised in 2016 and will be reviewed in 2018. Other parameters, such as the beta, are updated when the tariffs for each activity are updated.

The cost of equity is calculated by adding a country risk premium to the traditional CAP-M formula used by AA-rated countries. A negative risk-free real rate has also been introduced in response to issues in the Italian financial markets. The equity risk premium cannot drop below a floor of 0.5%. Greater weight is being placed on the concept of total equity market return. This should ensure a more consistent set of assumptions for the risk-free rate and the equity risk premium than would be obtained through separate estimates.

The system is being anchored to long-term parameters due to the importance of giving signs of stability to the markets, even when that indication of stability has a price.

Following long discussions about whether the beta and the gearing should use standardised parameters, it was decided to use a parameters table for all sectors excluding water and revisit the question after four years.

The WACC is not dissimilar to that applied in other countries once differences due to pre- and post-tax and nominal and real rates are taken into account. The beta will be reviewed when the parameters are updated at the end of each regulatory period for each sector.

Regulatory approach to the water sector

The water sector is unusual as the regulator needs to work with over sixty local and regional agencies as well as the operators and there is a great need for massive investment. The cost structure of the sector is evolving to reduce opex and expand the proportion devoted to capex. Tariffs are rising slightly and will continue to increase in order to attract investment. The WACC formula, in particular the cost of equity, has been adapted to reflect the results of the referendum for public water held in 2011. The RAB must be considered as a form of debt. The regulator is confident that a judicial review will support its approach.

The regulator is aiming to implement a reassuringly stable long-term approach to these issues.

1st rountable | Debate

If it was possible to set a perfect forward-looking WACC, how would it be applied and with which parameters? The Scottish regulatory process focuses on cash flow rather than equity or the cost of debt. As such, the financial return can be controlled without estimating an ex ante WACC. What underlying capital structure is required to enable the delivery of an 'efficient' WACC?

Cristina Cifuentes

The notion of efficiency is based on the entire regulatory framework. In Australia, benchmarks are used to assess efficient costs for everything, including the cost of capital. This ensures that companies adopt efficient financing practices and the framework reflects reality. The benchmark approach does not examine the actual financing practices of regulated organisations but it obliges them to behave like efficient firms in competitive markets.

What is your approach to the debt to equity ratio?

Cristina Cifuentes

We do not take that ratio into consideration when calculating return of equity. The tribunal decision regarding the regulatory status of the benchmark efficient firm raises questions around the return of equity and beta. We are awaiting the outcome of our appeal.

Why does the water regulation framework prohibit payments for equity? Does this relate to the ownership of assets or concession structure? Is it determined by law?

Why does the water regulation framework prohibit payments for equity? Does this relate to the ownership of assets or concession structure? Is it determined by law?

Alberto Biancardi

Ideally, regulations would be the same for private and public firms. A referendum held shortly before our appointment as water regulator was perceived as a result in favour of public water and made it possible to fix the rate of return. The challenge is to calculate a cost of equity that enables the operator to raise finance and recognises that this is more difficult for water than for other sectors. A water risk premium is used to calculate the difference using classic cost of debt parameters. The debt burden in the water sector is much higher than in other activities.

Do binding consultations create more problems than they solve?

Cristina Cifuentes

The guideline was intended to provide certainty about the process but enable the regulator to respond to market conditions and allow operators to develop new models and new approaches. The regulator consulted with the industry over a long period and there was a general agreement to adhere to the guideline, although both parties were free to depart from it subject to detailed justification. While the regulator has adjusted its position, the operators have made a complete depart from the guidelines, for example by rejecting the use of CAP-M. The tribunal supported the regulator's approach but found that the operators did not behave reasonably.

Financial ratios are used as a sense-check. Although ratings agencies initially felt this approach was not appropriate for setting the cost of capital, they have been won over by the predictability and certainty of our approach.

Could you elaborate on your comments about new investments?

Annegret Groebel

Energy regulation started in 2005 following on from an ex-post regime which did not function. In 2006, it was decided that new investments would be calculated using historical costs and existing investments would be taken at a value stemming from historical costs plus a statistical index. However, a court decision turned over the index used, which forced BNetzA to recalculate the value of existing investment. The rate of return is calculated using the nominal rate for new investments and the real rate for historical investments.

2nd roundtable | The approach of French regulators

The regulatory capital rate of return

Stéphane Lhermitte
Director of Economics and Forward-Planning, ARCEP

ARCEP is entitled to establish the cost of capital and price controls for SMP operators and universal service providers. Under European law, SMP operators are entitled to a 'reasonable rate of return' that takes account of investments made and risks involved.

The French telecoms market opened to competition in 1997, starting with universal service and fixed telephony for the sole incumbent. Between 2001 and 2003, unbundling and the development of mobile telephony expanded the need for price setting. A unique rate of return was applied to all mobile operators. Since 2004, specific cost of capital approaches have been developed for fixed activities, mobile activities and transmission. The regulatory process is transparent and includes consultation with the public and with market players.

Setting the regulatory capital rate of return

Fixed, mobile and transmission operations all involve different activities and competitive environments. Capital is mainly employed on the local loop, an essential facility which was the subject of significant investment in the 1970s. This past investment must be justly remunerated.

Each mobile operator has a monopoly on incoming calls. Capital is usually employed on assets common to fixed and mobile services and for regulated and non-regulated activities. There is value competition on infrastructure.

The former incumbent operator maintains a strong position in radio-transmission activities. It is challenging to set the cost of capital because the capital employed for assets is partly replicable by competitors and is shared by regulated and non-regulated activities.

The use of CAP-M is well-accepted and understood. The WACC is pre-tax and nominal and is set for two or three years at a time.

The financial characteristics of the regulated operators and of efficient operators who could enter the market are used to estimate parameters for the telecoms sector. Values are based on a sample of comparable European operators and take account of the risk and market premiums of listed companies. The regulator is transparent about the parameters that are applied and the underlying methodologies used to calculate them. It should be noted that the WACC is one of a number of regulatory objectives that are taken into account when setting the rate of return.

Capital rate of return and wholesale pricing

The cost of capital is used primarily for determining tariffs for regulated wholesale services and financing long-term historical investments. Wholesale price controls also provide visibility to the market, grant fair remuneration for past investment, and promote new infrastructure investments.

The cost of capital has *per se* a limited impact on the markets. Wholesale products in France account for around a fifth of the turnover of the telecoms sector and are split equally between opex and capex. Financial issues relating to the setting of the cost of capital are not the main concern for regulated operators.

Regulatory decisions on wholesale tariffs have a significant impact via the regulatory asset base, the regulatory lifetime of assets, and the regulatory cost standard employed. WACC is one element in a wider framework of tariff-setting.

The cost of capital also relates to the financing of new investment projects, such as the roll-out of an entirely new optical fibre network. The cost of capital for fixed telephony is based on anchor pricing plus a risk premium which is outside the regulator's control. The regulator's cost of capital calculation is used as a reference value in disputes heard by the competition authority.

The cost of capital: A cross-country and cross-industry perspective

Fadhel Lakhoua
Director of Financial Affairs and Wholesale Markets Surveillance, Energy Regulation Commission (CRE)

Legal framework

The CRE is active in network regulation and the supervision of wholesale and retail markets. Its activities cover the whole value chain. It makes non-binding recommendations and proposals to government and is also able to take methodology and rate decisions around network tariffs. A number of its activities require expertise in WACC.

Regulatory framework

Like other regulators, the CRE engages in consultation and complex analytical processes during tariff setting. Decision-making processes are increasingly transparent. Typically, the WACC is viewed as a reasonable range rather than as a single, mathematical point estimate. The CRE typically works on ranges of WACC that are proposed by its consultants. It aims to propose a WACC that is consistent with market conditions while having a degree of discretion within the range.

Most network tariffs will be reviewed in the coming year. The new gas distribution tariff that is due to begin in July 2016 is the first to be set in the current financial environment.

Incentive regulation

The CRE adopts a fairly standard approach to incentive regulation and allowed revenues. When possible, capex is based on a RAB estimate. Although legal challenges have been mounted to some regulatory aspects and one distribution tariff, the parameters and methodology used to calculate the WACC have not been questioned.

WACC

Pre-tax WACC is calculated using the CAP-M and based on the cost of debt and cost of equity. Exogenous parameters are typically the risk-free rate, the market risk premium and the corporate tax rate, while endogenous parameters are the debt spread, beta and gearing. In terms of cross-sectoral comparison, there are theoretical reasons to expect a degree of convergence between exogenous parameters in the future with endogenous parameters remaining sector-specific.

CAP-M works according to a set of assumptions which are not necessarily satisfied in the real world. Although the assumptions of CAP-M may not hold, the model is robust and provides in particular a useful framework for understanding investments. It is useful to have a sensible, straightforward model which provides pragmatic insight for regulatory decision making.

Distribution tariffs

The CRE originally remunerated electricity distribution using a standard RAB-WACC approach. This was legally challenged as the operator employs a concession regime and is not the legal owner. Following the cancellation by the Council of State of the tariff in 2012, the CRE changed its method. It now provides an asset margin on total assets and only remunerates regulated equity capital through CAP-M.

The economic and financial context

Policy rates, sovereign rates, yield curves, and ten-year bonds and credit default swaps (CDS) all highlight the complexity of the current economic and financial context. The market is accepting negative interest rates for growth and inflation and the only risk that is obtaining a positive price is the risk of major credit events, such as a default on the part of the French or German debts. The bond markets seem to indicate that zero or negative interest rates will prevail barring such events.

These economic and financial considerations are probably the most important challenges facing regulators in the coming period. It will be extremely challenging to set the WACC in an environment where the models do not function and a significant crisis cannot be excluded.

The cost of capital: Arafer's approach

Isabelle Dechavanne
Director of Finance, Autorité de régulation des activités ferroviaires et routières (Arafer)

Arafer was set up in 2009 to regulate the rail sector. Its remit has since been expanded to include the regulation of some intercity coach services and access to coach stations, the monitoring of highways concession agreements, and the co-regulation of some international rail links like the Channel Tunnel.

The French public rail sector is made up of three public industrial and commercial undertakings with a special legal status, 'EPIC', and is characterized by high levels of debt and public fundings. Only freight and international passenger transport services are open to competition. SNCF Mobilités, the incumbent operating railway undertaking, also operates the 300 passenger stations of the network and has around 170 different tariffs.

Arafer ensures non-discriminatory access to the rail network and services facilities (e.g. passenger stations). It issues legally binding opinions on access charges.

Approach to WACC

The European directive 2012/34/EU states that charges imposed for track access within service facilities and the supply of services in such facilities must not exceed the cost of providing it, plus a reasonable profit. Arafer has to issue opinions for all service facilities covered by this principle, including passenger stations, freight terminals, maintenance facilities and refuelling facilities.

The French transport code states that charging principles are established by decree. The decrees say little about the WACC but are very specific about how charges should be calculated. Thus, the operating profit of non-regulated activities in passenger stations, such as commercial activities (shops, restaurants), when positive, is partially diverted to lower the charges of regulated activities, which corresponds to the so-called "adapted dual-till system". Tariffs are set every year as part of a 2-years process during which the operator performs calculations, engages in public consultation and seeks opinions from Arafer. There are also ex-post regularisations covering traffic and investment risks.

As platforms are owned by the infrastructure manager (SNCF Réseau), they are regulated separately from passenger stations, which are operated by the incumbent railway undertaking (SNCF Mobilités). Consequently, Arafer issues two legally binding opinions and must make WACC calculations for each item. It uses the same approach in both cases but considers also the differences that may exist (e.g. different corporate tax rates).

The calculations have given rise to disputes, due to different risk assessments for the two above-mentioned state-owned entities and the legal and economic framework they operate in.

2nd rountable | Debate

How are other regulators approaching the calculation of RAB in energy markets?

Fadhel Lakhoua

Electricity is nominal and based on historic costs but current economic costs are applied for gas. This applies to past and current investments. New investments are treated as pass-through with an ex ante assumption corrected on ex post data. Work in progress is remunerated based on the cost of debt. Debt costs are recognised when construction projects last more than a year.

What is the impact of transparency? Does it affect the quality of debates around tariffs?

Fadhel Lakhoua

Transparency can create challenges but it is a good regulatory practice and provides greater legal certainty. The pay-off is worthwhile as challenges are inevitable. A transparent approach is adopted throughout the process and we explain our final decision. The quality of the debate depends on the stakeholder but greater transparency does tend to raise the quality of interaction with all parties.

You mentioned there was a premium for investments in the new fibre optic network. Who was responsible for setting that premium? Did the regulator play a role?

Stéphane Lhermitte

The operators are responsible for setting the risk premium for new investments. The regulator has produced a symmetrical framework and model to support dispute resolution which includes recommendations around a reasonable risk premium. There have been no disputes so far.

CAP-M is based on an ideal world. Would it make sense to incorporate insights from behavioural economics into the model to reflect consumer and investor irrationality?

Ian Rowson

Stock market research indicates there is some market inefficiency and a delayed response from investors in regulated companies. We are hoping to unravel this through advanced statistics. The observed betas might be more complex and inflated by other factors.

Annegret Groebel

Adapting the CAP-M to include behavioural insights and reflect the irrational investor carries with it a danger of subjectivity which cannot be excluded. Very long time series are already used to try to smooth the effects of stock crises and events that promote volatility. There are existing ways of modelling these concerns but we do need to think about how we might adapt if interest rates and inflation remain low.

Fadhel Lakhoua

CAP-M does not include rational ways of modelling irrationality but the current economic climate is an incentive to consider this.

We can also rely on the notion of asymmetrical volatility, which is applied in financial markets. Even in severe debt crisis situations where governments default, utilities do not default because people still have to pay their bills. There is perhaps room to include that in risk estimates.

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