

WATER REGULATION IN CZECH REPUBLIC

DEAL FAIRNESS OPINION

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1. INTRODUCTORY REMARKS

1.1. Abbreviations Used

CR	Czech Republic
FD	Financial Directorate, subordinate body of the MoF
MoA	Ministry of Agriculture
MoE	Ministry of Environment
MoF	Ministry of Finance
SmVaK	Severomoravské Vodovody a Kanalizace Ostrava, a.s.
SOVAK	Association for Water and Wastewater Management
SVH	Water Management Association
WWM	Water and Wastewater Management

2. EXECUTIVE SUMMARY

This report focuses on the regulation of the water and wastewater management industry, as amended by recent legislation. It is intended to provide the reader with an overview in the following areas:

First, the report outlines the regulatory environment of the water industry. In particular, it focuses on the market participants responsible for water regulation and their formal as well as implicit powers; especially with regards to recent legislative amendments.

Second, the report analyzes mechanisms of tariff setting and audit. The section attempts to identify how the regulatory authorities assess tariff levels as well as levels of the specific components used in tariff calculation. In addition, the section looks at tariff development over time and tries to identify any reasonably confident forecasting methods as well as potential trends for future development of tariffs. This section also provides the reader with a comparative perspective on water tariffs. Czech regulation of water tariffs is contrasted with the Slovak regulatory framework while trends in price development are benchmarked against other utilities in the Czech Republic, Slovakia and Hungary.

Third, the report explores the relative cost of water to Czech households in terms of their disposable income. This section offers a comparative perspective as well as examining the costs of other utilities across the aforementioned three Central European Countries. The section indicates whether further tariff increases are feasible and socially justifiable.

Fourth, the report analyzes public debate and discusses whether and how influential it might be with regards to water prices. It also addresses the issue of changes in the regulatory environment due to potential change of government at both national and regional level.

There are four **key market participants** with respect to WWM regulation in CR

1. MoA: responsible for functioning of the WWM system and newly (as a result of recently enacted legislation) also for benchmarking of WWM companies. WWM companies are obliged to submit their annual tariff calculations to the MoA; if not, penalties are applicable.
2. MoF: responsible for price regulation. MoF acts as an appellate institution with respect to audits carried out by regional FDs. Submission of tariff calculation is not obligatory, however, most large companies do it as they want to stay out of the auditing spotlight.
3. FDs: audit WWM companies based on internal audit plans. Each FD is responsible for drafting and executing its own audit plan. FDs have the right to impose fines for violation of relevant water legislation.
4. SOVAK is an association of WWM companies that wields considerable lobbying power and exerts significant influence on MoA in both technical and economic issues.

Market Characteristics: the market is very fragmented. Consolidation is expected to a certain extent, mainly as far as the WWM operating industry is concerned. Consolidation is not expected to reach the

UK level. Rather, it is expected to approximate German or Austrian markets that exhibit substantial fragmentation as well. UK is perceived as an outlier within WWM rather than an example to follow.

Regulatory Changes: the recent amendment is based on experience the MoA has gained over 10 years of regulating the WWM market. As such, it is considered a state-of-the-art piece of legislation. Thus, any major overhaul is not expected in near future.

Tariff Regulation: tariff regulation does not discriminate between different company operating models (mixed or operational). WWM operator sets the tariff (usually with an approval of the WWM infrastructure owner), but burden of proof lies on the auditor; the auditor must prove whether costs are not justified and profit not reasonable. There are no rules that would allow a company to assess reasonability of its profit in advance.

Tariff Forecasts: references to tariff forecasts have been identified in several official documents of the MoF and the MoA as well as in statements made by WWM professionals, all predicting water prices to grow faster than CPI. However, all these forecasts are no more than a “best guess”. There is no methodology behind these forecasts and, therefore, they cannot be relied on with reasonable confidence. Our research attempts to analyze trends of price of water and other utilities in the Czech Republic, Slovakia and Hungary. This research confirmed that, historically, prices of water have been growing above the CPI rate. Nonetheless, due to small number of observations and large variance between regions, this research is rather descriptive and no extrapolations of these trends can be made.

Household Expenditure: water is the cheapest commodity relative to household disposable income in CR, Slovakia and Hungary. Household expenditure on water grows at roughly a similar rate as household disposable income.

Public Debate and Government Change: public debate regarding water prices is of low salience compared to intensity of debate on other utilities. Variance in the intensity of public debate is best explained by media discussion of change in standards of living of an average Czech household at the end of each year. Neither relevant ministries nor MPs have been known to act on a basis of public debate. On the contrary, both the regulatory authorities and MPs find it fairly irrelevant. Change of government is very unlikely to have a serious impact on WWM regulation, unless the Communist party enters a governmental coalition with responsibilities for either MoA or MoF or both. Given current opinion polls, this scenario appears to be highly unlikely.

3. KEY MARKET PARTICIPANTS

3.1. Government

WWM in the Czech Republic is governed by two major public authorities: MoA and MoF. Other ministries have some degree of regulatory power as well, which do not relate to tariff setting, and as a result is not examined in this report.

3.1.1. Ministry of Agriculture

From the technical point of view, MoA is the supreme regulator of WWM. Its responsibilities include regulation of technical standards, consumer protection, competition, supervising relevant legislation, drafting WWM legislation, issuing secondary legislation, keeping ownership records, etc. The role of MoA has been substantially augmented by newly introduced amendment (for in-depth analysis of legislation see section 7.2).

3.1.2. Ministry of Finance

The MoF is responsible for price-related regulation of WWM. In accordance with the Act on Prices (Act no. 526/1990 Coll.) that regulates tariffs and prices of some commodities, potable water and wastewater are soft-regulated commodities. The MoF sets the guidelines for tariff calculation and drafts secondary legislation that specifies the calculation formula:

tariff = “justified costs” + “reasonable profit” + taxes (VAT) / projected volume.

The MoF is naturally also responsible for supervision of the relevant legislation. Whereas the legislative responsibilities are retained by the MoF itself, tariff audits are performed by Financial Directorates, subordinate regional bodies of the MoF. When tariffs are found to be too high or not compliant with the existing rules on tariff calculation, the FD has the right to impose a fine. The audited company can appeal to the MoF. For more detailed examination of tariff audits please see chapter 5.2.

3.2. Non-governmental Organizations

3.2.1. Association for Water and Wastewater Management (SOVAK)

SOVAK was established in 1992 as a non-profit association of WWM companies with the aim of defending the interests of its members. For a long time, only WWM operators were accepted as full members. Owners of WWM infrastructure were allowed to join only in 2002, not long after they started considering foundation of an association of their own. Building on information from experts¹, we believe

¹ Interview with Prof. Wanner (February 27)

that SOVAK wields considerable lobbying power. The MoA openly admits to consultation of new legislation and other strategic documents² with SOVAK. The SOVAK monthly journal frequently features articles from MoA representatives and often signals upcoming changes in regulation of the WWM field. As of now, SOVAK has 90 full members that together supply potable water to over 8,5m customers. It is noted that Mr Kyncl, CEO of SmVaK, is a vice-chairman of the SOVAK board and, moreover, takes part in various important ad-hoc committees of SOVAK, such as the ones focused on legislative changes.

3.2.2. Water Management Association (SVH)

SVH is an older association of water-related companies, however, it has a much smaller member base. On the other hand, its scope of activity is much wider. It covers not only WWM, but also issues of groundwater, water pollution, flood prevention, river channels, etc. In the field of WWM, SVH fully recognizes the leading role of SOVAK. SVH does not compromise SOVAK's lobbying efforts nor in any other way acts against SOVAK's interests. SVH concentrates more on water-related public relations, education and research, and generally promotes the interests of the water management industry as a whole.

² For example the Prospects of water-related polices following the EU entry 2004-2010, drafted by the MoA in June 2004

4. MARKET BACKGROUND

4.1. Market Characteristics

The water and wastewater management market in the CR is largely fragmented. This fragmentation has a regional pattern and corresponds to the simple assumption that water industry supports natural monopolies. There are approximately 1200 WWM operators and 3500 owners of WWM infrastructure. According to the MoA, the market characteristics in neighbouring countries resemble that in the CR³. In recent years, there has been some trend toward market consolidation and it is generally expected to continue further, predominantly in the field of WWM operators. The market of WWM infrastructure owners is likely to remain fragmented. These trends are generally recognized by the regulatory authorities as well as by the SOVAK members. Nonetheless, both parties admit that the consolidation will certainly not reach the UK level.⁴

There are two main operating models for WWM in the CR: first, an “operational” model under which operators (e.g. Veolia, Ondeo) run the infrastructure that is owned by another entity, usually municipalities; second, a “mixed” model under which one entity (e.g. SmVaK) owns as well as operates the infrastructure. Companies that run under the operational model maintain a dominant position on the market.

There are two major international companies that shape the WWM market. Veolia Water Czech Republic, subsidiary of the large French utility company, operates the infrastructure of more than 1200 municipalities, supplies water to over 4.3m customers and thus maintains a market share of over 40%. Ondeo Czech Republic, subsidiary of the French-Belgian utility company Suez Environment, supplies water to over 1.2m customers and thus maintains a market share of app. 15%. There are a few other foreign utility companies on the market, but none of major importance.

The fact that both Veolia and Ondeo operate under the operational model inevitably has an influence on the policies of SOVAK, as all the regional subsidiaries of Veolia and Ondeo are its full members. We have reasons to believe that representatives of these two companies exercise considerable influence within SOVAK. We hold it as no coincidence that strategic documents of SOVAK openly declare preference of the operational model over the mixed model⁵.

There are mixed signals about SmVaK and its membership in SOVAK. SOVAK representatives have repeatedly stated that the operational model is more efficient, since all the costly regeneration of the infrastructure remains a responsibility of municipalities that have better access to state budget funds. All

³ Representatives of the MoA say that WWM markets in Germany, Austria and the CR show many similarities. The CEO of Ondeo argued in a magazine interview (Czech Business Weekly, August 8, 2005) that the local situation is different in the sense that the number of private investors is very low.

⁴ The MoA argues that such policies of Ms Thatcher that paved the way for market consolidation in the UK would not be desirable. According to the MoA consolidated WWM markets (such as UK) in general do not outperform fragmented markets (such as Germany, or Czech Republic).

⁵ 2004: “operational model is becoming dominant”, “if properly managed, operational model has unquestionable advantages”, etc.

this is often disguised under the defence of public interest, because, as SOVAK correctly argues that the infrastructure owners usually retain the right of final say in determination of the water tariffs. At the same time, Mr Kyncl, CEO of SmVaK, is a vice-chairman of the SOVAK board and, moreover, takes part in various important ad-hoc committees of SOVAK, such as the ones focused on legislative changes. However, we have not registered any of his comments on the issue, although the policies of SOVAK frequently appear to support the operating model.

The position of the MoA is ambiguous as well. On the one hand, there are leading officials (Mr Kendik, head of the Department of Water and Wastewater, and his superior Mr Puncochar, Director of the Water Management Section) of the MoA who maintain above standard relations⁶ with the SOVAK board. On the other hand, Mr Chaloupka (Head of the Methodology Unit, subordinate of Mr Kendik) defends the mixed model against SOVAK's attacks. In a certain sense, this could really be perceived as a clash of private and public interests, because the vast majority of the mixed model companies are partially or wholly owned by municipalities.

We conclude that whilst SOVAK's members represent the dominant position of operating companies versus mixed model companies, this does not translate in practice into any disadvantage to the mixed models by the regulator.

4.2. Legislation

The legal framework for WWM in the Czech Republic is defined by:

- The Act no. 254/2001 Coll. on Water (Water Act)
- The Act no. 274/2001 Coll. on Public Water Supply and Sewerage Systems (Act on Water and Wastewater Management)

Whereas the former deals with general issues of water (such as water protection, flood and drought prevention, etc.), the latter deals specifically with WWM, and therefore will be pivotal for the purposes of this report. The Act on Water and Wastewater Management has been amended several times. The last time it experienced a substantial overhaul was in February 2006⁷ that incorporates all the relevant experience from the WWM industry.

There are several driving factors behind this recent amendment. It was proposed partly due to the ongoing changes in the WWM field. As there is an increasing number of cases when the WWM operator and the owner of WWM infrastructure are no longer the same subjects, the amendment provides a more detailed description of the roles of the owners and operators as well as their mutual relationships.

The proposal of the amendment originally included plans of the MoA to introduce a new independent regulatory authority for WWM with responsibility to develop methodology for tariff setting and

⁶ They frequently attend SOVAK board meetings

⁷ This amendment was approved by the Chamber of Deputies on February 3, signed by the President on February 27, and is expected to come into force within couple weeks' time

monitoring of its implementation⁸. In fact, this should have been one of the key changes to the existing Act on Water and Wastewater Management. The reasoning behind the establishment of such authority was clearly stated within annex of the amendment's proposal. Yet, the idea of establishing a new regulatory authority has been abandoned in very early stages of the preparations. Thus, no details on methodology have ever been conceived.

The reasons for rejection were twofold. Had this authority been created as independent, it would have needed its own cost centre in the state budget, which was unacceptable for MoF. Also, SOVAK together with several regions also expressed strong disagreement with creation of such authority.

As a result, MoA changed the proposal in such way that it deleted any mention of the Authority and assigned all new competences to itself, instead. MoA will cover the additional costs of CZK 7m related to the new agenda from its own sources, so that the impact on the state budget will be neutral. This illustrates that the primary concern of MoA was to implement the new competences rather than to create a new authority. After changing the proposal, it was accepted in the interdepartmental consultations unequivocally by all ministries.

All new proposed competences of the Authority have been granted to MoA, including gathering of data from WWM companies, benchmarking and publishing, producing rules for infrastructure regeneration, entering WWM premises, seeing financial statements, etc.

To summarize, the amendment significantly augmented the regulatory powers of the MoA and strengthened its position vis-à-vis all other players⁹.

The role of MoF has not been changed by the amendment, as its regulatory power stems from a different piece of legislation¹⁰. MoF officials express their satisfaction with the current legal framework of soft water tariff regulation. The MoF believes it has enough tools to keep the tariffs at a socially affordable level.

In one respect, the amendment made the entire WWM regulation softer. The tariff calculation formula consists of justified costs, reasonable profit and projected volume. The two former are regulated by MoF, whereas the latter is not. It happens quite often that the WWM operator incorrectly estimates the volume and thus calculates the wrong tariff and charges the consumers less or more. If this was the case, the operator would have to compensate/charge the consumers of the difference. However, the amendment left out this obligation, because sometimes the transaction costs for such compensation were higher than the compensation itself. This, of course, does not prevent the consumer from seeking compensation at a court trial.

The amendment does not differentiate between mixed and operational model companies. It stipulates different obligations for WWM operators and WWM infrastructure owners. Due to their nature, mixed model companies have to comply with both owners' and operators' obligations.

⁸ Such central authority exists in Slovakia; CR has similar authorities for telecommunications or energy. The proposed WWM regulatory authority was supposed to be established along the same line and serving exactly the same purpose as the energy regulator.

⁹ The main argument of MoA goes that local authorities lack expertise and resources to monitor and regulate the WWM industry to a sufficient degree. Therefore, some of the agenda previously performed by municipalities or regions will be transferred back to MoA.

¹⁰ Act no. 526/1990 on Prices, and relevant secondary legislation

We believe the implications of legislative changes, details of which are discussed in detail below, are mostly positive for SmVaK. The more accurate definition of owner and operator allows for better understanding of different roles they have. This includes owner's duty to regenerate the infrastructure (The Infrastructure Regeneration Plan), which requires generating profit. Introduction of operating cost benchmarking will also benefit SmVaK, as it belongs among the industry's lower cost operators.

Having interviewed several representatives of MoA, MoF and WWM companies, we are unable to confirm that the amendment will gradually lead to establishing an independent regulatory body and/or methodology based on return on asset concept.

Detailed description of important changes in the recent amendment follows in the sections below.

4.2.1. Benchmarking

The MoA has newly been granted a degree of indirect regulatory power regarding tariffs. Earlier, the MoA could only participate in tariff audits on request of the FD. As a result of the amended legislation, the MoA will be able to enter the premises of WWM companies and will be entitled to see financial statements of WWM owners and operators. According to Mr Chaloupka of the MoA, the direct regulation and auditing of tariff calculation, carried out by MoF and regional FDs, is not sufficient¹¹ and therefore, the MoA wanted to influence tariffs indirectly through the process of benchmarking. It is important to note that the MoA benchmarking will be carried out independently and without any prejudice to audits conducted by the regional FDs.

Benchmarking is an indirect and 'ex-post' regulation¹². The amendment gives the MoA the right to request from all WWM owners/operators detailed technical information on the state of the infrastructure they own/operate. Moreover, the operators are obliged to provide information on their operating costs and tariff calculation. Up until this amendment, the MoA could perform benchmarking as well, but only of those companies that voluntarily submitted their data to the MoA (most of the largest ones did). Yet the year 2006 will be the first one for which the MoA will receive the data from all WWM companies. In case a company refuses to submit the required information, fines are applicable.

The exact extent of the benchmarking and the data to be submitted will be determined by secondary legislation which is not expected to be announced until June 2006. The MoA declares that it is the primary purpose of benchmarking to protect consumers and to ensure regeneration of the WWM infrastructure. If so, this will inevitably shape the type and amount of required data. It is a newly gained competence and therefore it is logical to assume that it will be applied more actively than before.

Whilst MoF is responsible for penalizing WWM companies for non-compliance with Act on Prices regulation, MoA uses benchmarking as an indirect regulatory tool. When the MoA finds the tariffs unfair

¹¹ Only some 50 out of the 1200 WWM operators are audited each year

¹² The only tool of direct regulation of the MoA is the authority to cancel the WWM license. However, this is to be used only in exceptional cases of gross violation of the law (i.e. non-compliance with health standards, etc.).

or wrongly calculated, it will launch investigations into the cost part of the calculation formula¹³. Subsequently, the MoA will publish its findings and will leave it up to consumers or politicians to remedy the situation¹⁴. The amendment specifies only one method of publication - municipalities will be obliged to display the benchmarking results on official information boards¹⁵. Other methods (not specified by the Act) may include, distribution of the benchmarking results among media, displaying them at the MoA website, etc.

The MoA puts emphasis on fair treatment of the customers by the WWM operators. Their experience is that operators tend to force customers to sign unbalanced contracts (e. g. contracts including sanctions only for consumers, none for operators). However, because of the “soft” approach to regulation, MoA cannot force operators to change the contracts. The whole concept of publishing results of benchmarking should lead to greater involvement of consumers and stronger public pressure.

We believe that SmVaK will benefit from such benchmarking as its tariffs are among the lowest in the region. SmVaK recently offered its WWM services to an adjacent region (Bruntalско) where tariffs are much higher. By means of benchmarking, the MoA will in fact help SmVaK to spread the information about its low tariffs, thus potentially winning new customers.

4.2.2. Financial Plan

All owners of WWM infrastructure will have a new obligation to draft and to follow a plan for investment into modernization of the infrastructure – ‘The Infrastructure Regeneration Financial Plan.’ Owners will be obliged to keep records of the technical state of the infrastructure and to accumulate funds for its modernization on a yearly basis.

Along with the process of benchmarking, the financial plan should serve as another tool of consumer protection. The measure specifically targets small municipal-owned companies which tend to maintain low tariffs for their citizens (to win political support) while neglecting the regeneration of infrastructure. The MoA wants to prevent situations of collapsing WWM infrastructure resulting from limited regeneration expenditures taking place, which would result either in skyrocketing tariffs or in municipalities asking for subsidies from the state budget (i.e. MoA). This measure will not affect large owners (including SmVaK) as they already maintain such financial plans.

4.2.3. Penalties

The amendment contains a whole new section that specifies penalties for not abiding by the law. This is a reaction to a frequent deficiency¹⁶ of Czech legislation – the lack of specific penalties in case of

¹³ MoA is particularly interested in the operating expenditure of the company (for instance, remuneration packages statutory bodies do not qualify as a justified opex item)

¹⁴ MoA relies on the power of public opinion; it is not entirely futile since for example Veolia Water CR had to improve its PR activities as a result of long-term negative publicity. For instance after taking control of WWM operation in Hradec Kralove public discontent occurred and Veolia was pushed into promising that tariffs will be raised only at inflation level.

¹⁵ In the CR, each municipality must maintain a public information board where various public announcements must be displayed for a given period of time

¹⁶ The Ministry of the Interior originally proposed a complete overhaul of all existing legislation to remedy this deficiency, but such far-reaching reform would be too complicated and impractical. Instead, a common agreement has been adopted that all legislation henceforth

violation. The amendment lists almost five pages of various penalties of which we mention several examples. WWM infrastructure owners/operators will be penalized if they:

- do not secure steady and safe functioning of the WWM system;
- do not allow other owner to connect to their system;
- do not draft the Infrastructure Regeneration Financial Plan;
- do not produce the calculation of tariffs on request of the consumer;
- do not provide information on the technical state of the infrastructure;
- do not have a written contract with the consumer;
- do not enable the fire brigades to access water

The important notion is that the MoA does not have the power to penalize the violator directly. It must refer such violation to the relevant regional or local authority and request that fine be imposed. Nonetheless, the MoA remains the appellate body.

4.2.4. Upcoming Legislative Changes

Relevant officials at the MoA believe that the amendment of the Act 274/2001 addresses all critical issues of the WWM industry that had not been addressed by the previous versions. Therefore, no further amendments are foreseen in near future. Relevant secondary legislation is currently being prepared by the MoA. It will elaborate on some issues of the new amendment and specify their implementation. It is estimated to come into force in summer or autumn 2006.

It will predominantly aim at providing the small WWM infrastructure owners with more detailed instructions on how to create the aforementioned “Infrastructure Regeneration Financial Plan.” It will also lay down guidelines for reporting costs to the MoA to ensure comparability of the data from all WWM operators in order to conduct the benchmarking.

must include specific penalties. The newest amendment to the Act on Water and Wastewater Management was drafted in accordance with this agreement.

5. TARIFFS

5.1. Tariff Regulation

5.1.1. Water and Wastewater Tariff

Since 1994, water and wastewater tariffs are subject to “soft” regulation – there are no centrally determined caps. Instead, tariffs are calculated by the WWM companies themselves using the following formula:



Tariff regulation, performed by the MoF, is related to the commodity, not to the company that provides it. Regulation applies to components of the tariff, i.e. justified costs and reasonable profit.

5.1.2. Justified Costs

The notion of justified costs stems from the price-related legislation. These are costs that are related to running of the core business in the respective industry. As far as the WWM industry is concerned, justified costs include the cost of water, technological costs, employee remuneration costs, overhead expenses or depreciation of property. All those costs that cannot be considered as justified are listed in Price Bulletin of the MoF, issued annually. In the process of determining which costs are still justified and which are already not, it is not important whether the WWM company runs under the mixed or operational model; it will always include the costs that are relevant to the main business activity. For instance, a mixed model company will include into its justified costs necessary investment into the infrastructure, while the operational model company will include rent paid to the owner of the infrastructure.

Interest on debt is considered justified only if the debt is used for something directly related to provision of WWM services (e.g. loan for infrastructure development). Conversely, as the MoF officials specifically mentioned, interest is not justified from such debt that has been used for acquisition of the company or its shares.

If a company is predominantly financed by debt, only a proportional share of interest expenditure from debt used for WWM directly related items is allowed to enter the calculation of justified cost and hence to influence reasonable profit. Burden of proof lies on the auditor. It is benchmarked against Prague Interbank offer rate (PRIBOR) and standard rates on loans of commercial banks.

5.1.3. Reasonable Profit

Officially, the MoF has no concept whatsoever for calculation of the reasonable profit as a percentage of any base (basic capital, costs, etc.); it is neither stipulated in any legislation nor defined by any internal document of the MoF. As relevant legislation vaguely defines reasonable profit as “usual long-term profit achieved in comparable field of economic activity”¹⁷, MoF compares it with the profits of other WWM companies in order to determine reasonability. This does not correspond to the statements of MoA officials, who argue that they generally consider reasonable profit as an absolute number. In either case, MoF and MoA agree that profit reasonability does not only depend on the size, but also on the purpose to which the profit is used. As a result, a company with higher capital expenditures can justify higher net profits.

There are no explicit rules or methods to evaluate in advance whether the given profit is reasonable; it is only determined ex post during the process of tariff audit. The burden of proof lies on the auditor, who must prove that the profit is not reasonable using largely subjective criteria. The company in question has the right to appeal the auditor’s findings with the MoF.

Yet, MoF officials admit that they use “Net Profit / Basic Capital”, “Net Profit / Total Assets” and “Net Profit / Fixed Assets” ratios as rough guides when benchmarking companies. At the same time, however, they do not consider any of these ratios to be a conclusive indicator of profitability when carrying out audits. WWM companies tend to use EBIT (y+1)¹⁸ / Justified costs or EBIT / Justified Costs when calculating next year’s tariffs.

According to the MoA, the average rate of profit within the WWM industry is 12% EBIT (y+1) / Justified costs ratio. Even though this ratio varies widely across the CR, there is an oral agreement¹⁹ between the MoA and the MoF that the EBIT (y+1) / Justified costs ratio should not exceed 30% by a large margin. In case the profit exceeded 30% MoA would probably take a closer look at company’s operations and conduct a peer analysis. MoA could also ask MoF to initiate a formal audit into the company potentially resulting in a penalty fee. This is a standard procedure according to which deviant cases will be treated and no consequences in terms of regulatory framework changes can be expected.

It is, however, impossible to make any generalization as the profit reasonability itself is influenced by so many factors that it can be assessed in individual cases only²⁰. MoF officials²¹ agree with this; in case a company records higher profits due to reduction of costs through increased efficiency, authorities tend to accept such higher profits, provided that the reduction of costs did not impair the capability of supply high-quality water.

¹⁷ Ordinance no. 580/1990 Coll., implementing the Act on Prices

¹⁸ This is an expected profit in a following year, which is used for tariff calculation. It must be 'reasonable.' (statement of Ms Janeckova, March 6)

¹⁹ Interview with Mr Chaloupka (February 27)

²⁰ For instance the CEO of Ondeo CR claimed in a magazine interview that he believes the reasonable profit ranges between 5-8% (Czech Business Weekly, August 8, 2005)

²¹ Interview with Mr Trojek (March 1)

Using publicly available company annual reports, we have compiled the following overview²²:

Table A: Examples of EBIT / Justified Costs Ratio (2004)

Company	EBIT / Justified costs	Model
Severomoravské vodárny a kanalizace	16,75	mixed
Vodovody a kanalizace Náchod	6,67	mixed
Ostravské vodárny a kanalizace (Ondeo)	6,2	operational
Vodárny a kanalizace Karlovy Vary (Ondeo)	5,44	operational
Vodovody a kanalizace Kroměříž	5,18	mixed
VaK Vsetín	3,43	mixed
Královehradecká Provozní (Veolia)	2,27	operational
Vodárenská akciová společnost (Ondeo)	2,2	operational
Přerov	2,13	mixed

Source: Annual reports of WWM companies

5.1.4. Dividends

As far as privately owned WWM companies are concerned, both relevant ministries agree that such company should be able to distribute dividends among its shareholders. A view that has been expressed by the MoF indicated that if the entire net profit is distributed to shareholders for several consecutive years, it may have implications for assessment of its reasonability in following years²³. In other words, the rate of dividends should also be reasonable (i.e. on average comparable to similar companies in the industry).²⁴

There has not yet been an example in which private company or foreign investor was not allowed to distribute free cash to shareholders.

5.2. Tariff Audits

Tariffs and tariff calculation processes are audited by the Financial Directorates upon request of one of the ministries or following their own decision. The FDs mainly control whether the tariffs were calculated in compliance with the Act on Prices as well as the relevant secondary legislation (i.e. whether all costs were justified and the profit reasonable). Since the tariffs are to a certain extent influenced by regional or local conditions, the FDs have no uniform rules or methods to determine compliance with the relevant legislation.

²² Please note that this sample is not representative and as such is only intended for illustrative purposes; it is not to be used for inference of general conclusions

²³ Remarks by Mr Trojek and Ms Janeckova of the MoF (March 1)

²⁴ For example (numbers are illustrative only), if reasonable dividends are 10%, reasonable profit, if wholly distributed in dividends, will be also 10%. If another 5% of the profit will be used for regeneration of water purification station built with a state subsidy (cannot be included in justified costs), then the reasonable profit may be 10% (dividends) + 5% (regeneration) = 15%. There are, however, no guidelines as to how this will be considered in a tariff audit. It depends on the FD auditor.

Based on the Act on Prices, “unjust enrichment” caused by wrong calculation (profit was unreasonable, some of the included costs were not justified) is punishable by a fine that contributes to the state budget. Moreover, the affected consumers may demand compensation. Violation also occurs if the fixed part of the two-component tariff exceeds the given cap (currently max. 20%).²⁵

As noted above, the new amendment to Act on Water and Wastewater Management made submission of tariff calculation to the MoA and local authorities compulsory. Yet, the MoA still has no direct power of tariff auditing. Based on the submitted data, it will only publish the benchmarks and thus motivate consumers to increase their demands on WWM companies. In contrast, submission of the same data to the MoF is not obligatory. According to Ms Janeckova of the MoF, however, approx. 100 largest companies submit it nonetheless.

MoF officials claim that the auditing itself is not a random process; the FDs apparently have internal plans and schedules. However, since the FDs may and do respond to external impetus (including suggestions from individual citizens) and there are more than 3500 owners it is clear that audits must focus predominantly on the largest companies. This may also be the reason why largest WWM companies “voluntarily” submit their calculations to the MoF – to create a better position for audit and to avoid potential disputes. Large divergence among results of tariff audits in 2003 and 2004 (total penalties plunged from 25m down by 85%, while ratio of reduced penalties rose from less than 1% to almost 50%!) indicates that internal rules for tariff auditing are rather vague.

Our research shows that there is a statistically significant difference between tariffs of operational and mixed model companies. Operational companies tend to be on average more expensive than mixed ones²⁶. There are many other factors involved (such as location, operational costs, elevation of water sources, condition of infrastructure, etc.), but the MoF still does not think it is a coincidence and the department of price regulation as well as regional FDs take it into account when auditing companies. According to Mr Trojek and Ms Janeckova of the MoF, they tend to assess level of reasonable profit in a more flexible way for mixed companies, such as SmVaK. Yet this is not an official stance an operator can rely on, as this policy may change with personnel.

Table B: Results of tariff audits by FDs in 2003 and 2004

	total audited companies	total number of penalties imposed	total amount of penalties (CZK)	appeals to MoF against penalties	penalties reduced by (CZK)	audits initiated on public request	public requests found unjustified
2003	50	38	24.9m	3	40k	25	19
2004	39	29	3.7m	9	1.8m	20	17
2005	Data from FDs are currently being collected by the MoF.						

²⁵ Only a scant minority of WWM companies operate under a two-component tariff scheme, SmVaK not being one of them.
²⁶ Paired t-test rejects H₀ of no difference between means at 95% confidence level (N = 40, α = 0.05, p value is close to zero). Paired test was used, because methods of setting tariffs for operational companies and mixed companies are not independent of each other.

5.3. Tariffs in Slovakia

Slovakia's WWM industry as well as other utilities are governed by a special central regulatory authority: Office for Regulation of Public Utilities. This Office issued Ordinance no. 3/2005, which stipulates a clearly defined procedure according to which the regulated prices of production, distribution and supply of potable water and draining and treatment of wastewater are determined. It defines the range of "justified costs", both positively and negatively²⁷; outlines a list of documents and that need to be submitted along with the price proposal; gives a precise mathematical formula for the calculation of "average price" of supply of potable water (and draining of wastewater) per unit of volume per year; and gives a precise mathematical formula for the calculation of "reasonable profit". Final tariff can be charged either as a uniform tariff for all consumers (must not exceed the average price) or as a variable tariff for different groups of consumers (weighted average of these tariffs must not exceed the average price).

According to this Ordinance, Justified costs include anything that is clearly and evidently connected with the running of regulated business activity:

- costs of water, technological costs, employee remuneration costs, depreciation of tangible and intangible property, overhead expenses, costs of renting the property that is used entirely in the regulated business activity;
- for the purpose of calculation of the employee remuneration costs, average wage per employee can be increased year-on-year only up to the maximum of nation-wide nominal wage index (issued by the Slovak Statistical Office);

Justified costs do not include:

- penalties and fines, costs of unused capacities, rewards of members of the statutory bodies, write-offs, exchange rate losses, adjusting entries;
- all the other costs that are not marked as justified;

Documents that need to be submitted along with the price proposal include: commercial registry statement; profit and loss statement for the year before previous year (t-2); planned calculations of formulas for average price, justified costs, reasonable profit (together with the data needed for these calculations) for this year (t); actual calculations of formulas for average price, justified costs, reasonable profit for the two previous years (t-1, t-2); and filled-out tables that are annexed to this ordinance (for standardized calculations).

Further documents must be submitted if the regulated water company supplies or drains more than 1 000 000 m³ per year: final accounts for the years t-2; annual report and auditor's review of the final accounts for the year t-2; index of tangible and intangible property that is used in the regulated business activity (planned for the year t, actual for the year t-2); overview of investment expenses for the years t-

²⁷ i.e. what can be included in the justified costs and what cannot

1, t-2; plan of investment expenses for the years t, t+1 and t+2; and calculation of the overhead expenses.

The formulas for reasonable profit:

Table C: Formulas for calculation of reasonable profit in Slovakia

supply of potable water



RP_t is the maximum ratio of reasonable profit that can be included in the calculations of price of supplied potable water for this year

D_t is the planned amount of annual depreciation of tangible property that is used in the regulated business activity

WL_{t-2} is the coefficient of water losses for the year t-2 (ratio of water lost to water delivered)

AWL_{t-2} is the average coefficient of water losses for the years t-2, t-3, t-4

AC_{t-2} are the actual costs without depreciation per unit of volume of potable water (ratio of actual justified costs to volume of water)

AAC_{t-2} is the arithmetic average of AC_{t-2} , AC_{t-3} and AC_{t-4}

p is the coefficient of profit constraint ($p=0,6$)

draining of wastewater

$$RP_t = D_t \times \frac{AAC_{t-2}}{AC_{t-2}} \times p$$

RP_t is the maximum ratio of reasonable profit that can be included in the calculations of price of drained wastewater for this year

D_t is the planned amount of annual depreciation of tangible property that is used in the regulated business activity

AC_{t-2} are the actual costs without depreciation per unit of volume of drained wastewater (ratio of actual justified costs to volume of water)

AAC_{t-2} is the arithmetic average of AC_{t-2} , AC_{t-3} and AC_{t-4}

p is the coefficient of profit constraint ($p=0,6$)

Source: Slovak Office for Regulation of Public Utilities

There are further formulas, coefficients and exemptions in the calculation of water tariffs; however, they are of little relevance to the overall picture.

5.4. History and Trends in Tariffs

5.4.1. Development of Tariffs in CR

This chapter will analyze the trends of prices and expenditure since 1994. Trend analysis of an earlier period would be flawed for two major reasons. First, prices of utilities were then so low that their initial increase to the level which at least covered the costs of production reached a few hundred percent. Such a steep increase in the initial period could severely bias the trend. And second, prices were not liberalized until 1994. They were kept at a centrally capped level and increased only based on administrative decision. This development is evidenced by Table 1.

From 1994 onwards, the time series can be considered fairly

Table 1: Early development of tariffs in CR

Year	Avg. Tariff of Water in CZK
1989	0,80
1990	0,80
1991	3,00
1992	9,00
1993	9,00
1994	15,95

Source: MoF

homogeneous as the number of observed companies remained stable over time and the administrative changes have not had any severe impact on the data.

The development of indirectly regulated tariffs between 1994 and 2002 was characterized by a relatively sharp increase. The average price of potable water increased from 7,65 Kč/m³ to 20,47 Kč/m³ while price of wastewater increased from 5,83 Kč/m³ to 17,22 Kč/m³, which on the whole represents a rise of 279,6 %. The higher increase in the prices of wastewater (295,5 %) than potable water (267,4 %) is explained mainly by the rising costs of operation of new wastewater treatment plants.

The steepest hike took place in the beginning of the observed period (1993/94 year-on-year increase of 23,6% for potable water and 24.5% for wastewater) as a result of one-time change of the pricing system, i.e. switching from low centrally determined uniform prices to indirectly regulated regionally varying prices. The following year, the price increase already slowed down to 12,7 % for potable water and 17,9 % for wastewater.

The next 4 years experienced a relatively modest increase of water prices, ranging between 11 and 13 % for potable water and 13 to 15 % for wastewater. Between 2000 and 2002, the rates of increase slowed further for both potable water (6,6-7,1 %) and wastewater (6,1-7,9%), with the lowest increase recorded in 2001.

Price increases in the water industry have kept well above the average rates of inflation, particularly with regards to specific costs:

- significant part of the inputs has to do with building and engineering works, whose prices in general have risen more than the prices of industrial or consumer goods
- new capacities are constantly being put into operation
- costly new investment
- sharp increase in the prices of repairs and maintenance

Another characteristic feature of the price development during the nineties is a steeper increase of water tariff for households, which finally resulted in full unification of tariffs for all consumers in 2001.

When examining the prices of utilities (setting 1994 as the base year), we observe that prices have been increasing steadily since 1994. In all cases utility tariffs have increased at a faster rate than the rate of inflation (See Plot 1). When analyzing the trends, we speculated whether or not to use a linear model. Eventually, when we compared measures of accuracy of the linear model with those of the exponential and quadratic models, we found that the linear model outperforms exponential by a significant margin. Only quadratic model exhibited similar accuracy as the linear model, but this is mostly due to a small number of observations (annual observations, short time period) and inherent characteristics of a quadratic function (very small sections of parabolic curve can be approximated by linear functions). Indeed, the linear model outperformed exponential and was able to fit data with reasonable accuracy in all cases.

Table 2: Mean Absolute Percent Error

No. of observations	12
CPI	3.84
Water	1.53
Utilities	5.96

Table 2 shows that linear function fits data quite satisfactorily. Linear function does not fit correctly on average 3.84% of time series values for CPI, 2.53% for Water and 5.96% for utilities²⁸. Price of water displays the strongest linearity.

Thus, assuming linearity, the model fits the following regression equations:

CPI: $Y_t = 102.158 + 6.235 \times t$

Water: $Y_t = 79.726 + 16.818 \times t$

Utilities: $Y_t = 82.025 + 19.052 \times t$

These trend equations confirm that prices all utilities have been rising at a faster pace than the CPI. Price of water itself, however, has been rising at a slower pace than weighted average of the other utilities. Exact weights are not published by the statistical office, and therefore we are unable to determine the most dynamic commodity in the basket of utilities. Nonetheless, based on the data of household expenditure (per person) presented below, we have reasons to assume that it is the price of electricity.

5.4.2. Tariff Development in Slovakia and Hungary

Similar trends have been found in Slovakia (see Plot 2). Price of water was indexed to allow for comparison with the CPI (1995 was set as the base year). The Slovak Statistical Office provides monthly data for the years 1997 to 2001. Again, assuming linearity, we estimated following equations (N = 60):

CPI: $Y_t = 100.721 + 0.977 \times t$

Table 3: Mean Absolute Percent Error		
	1997-2001	2002-2006
No. of observations	60	49
CPI	1.75	1.36
Water	1.57	-
Utilities	-	2.53

Water: $Y_t = 124.797 + 1.486 \times t$

Table 3 shows that, when applied to Slovakia, the linear model demonstrates similar accuracy as in the Czech Republic. The linear model predicts that prices of water will increase at a faster pace than CPI. Had the time series continued until 2002, we would have been able to register a considerable price increase due to the fact that VAT on water was increased from 5% to 19%. Unfortunately, the Slovak Statistical Office does not publish data on the prices of water during the years 2002 to 2005. Instead, we had to use weighted index of all utilities for the analysis.

²⁸ Heading “utilities” includes “rent, water and energy” according to methodology of the Czech, Slovak and Hungarian Statistical Offices; this variable serves as a rough proxy for all separate utilities as the relevant comparable data is unobtainable

Looking at the development of prices of utilities and CPI from the beginning of 2002 to beginning of 2006 (Table 3, Plot 3), we observe a pattern which is very similar to the one in the period 1997-2001 presented above. Respective estimated equations are the following (N = 49):

CPI: $Y_t = 106.684 + 0.587806 \times t$

Table 4: Development of Prices of Utilities in Hungary					
Year	CPI	Utilities	Electricity	Water	Gas
2000	100.00	100.00	100.00	100.00	100.00
2001	110.30	109.19	106.36	110.14	112.00
2002	116.30	114.98	104.70	105.92	107.14
2003	124.84	120.34	110.20	106.83	105.13
2004	142.44	128.53	117.78	110.47	111.46
2005	151.26	133.10			

Source: Own calculation, Hungarian Statistical Office

Utilities: $Y_t = 109.704 + 1.35357 \times t$

The fact that prices of utilities tend to rise at a faster rate than the rate of inflation is also supported by the case of Hungary (illustrated by Table 4). Results for Hungary also confirm that water tends to be the least dynamic element within the basket of utilities²⁹.

5.5. Tariff Forecasts

Recently, two tariff forecasts for the CR were published by the MoF and the MoE. Both suggest that tariffs will rise above inflation.

MoF estimates an increase of up to 7% p. a. until 2007. According to relevant MoF official³⁰, this estimate is published for “informative purposes” only (i.e. it is not based on any sophisticated forecasting methodology). In other words, it is the best guess of the ministry (based on its “expert knowledge of the environment”) and as such should only be used to give a rough guidance on the likely developments. It is derived from MoF’s expectations of future CPI and increase in prices of specific inputs (chemicals, energy, investment needed to comply with EU regulation, etc.). It does not have any policy impact³¹. Officials from the Department of Macroeconomic and Mathematical Modelling (under the MoF) confirmed that they do not possess any methodology for forecasting prices of water, nor they assist other departments in developing one.

²⁹ It is crucial to note that the results for Hungary should be treated as tentative, since the Hungarian Statistical Office publishes relevant data only since 2001

³⁰ Interview with Mr Trojek (March 1)

³¹ It is certainly not the maximum increase of tariffs that the MoF will allow or perceive as reasonable

MoE estimates annual increase of water prices of CPI + 3%. This figure is based on the report “Methodological Guidance for the Elaboration of Financial and Economic Analysis of Water Management Projects within the Framework of the Cohesion Fund” from March 7, 2005, prepared by the team of consultants from Mott McDonald Prague and JacobsGIBB Ltd. The MoF believes this forecast to be compatible with its own one, given that predicted inflation for 2007 is 2.7%.

MoA is sceptical about both of the aforementioned forecasts³², as the MoA is apparently the only institution that possesses the necessary data and it does not attempt to offer a prediction itself. According to the MoA, the differences across regions and other relevant factors make such forecasting virtually impossible³³. At the same time, however, MoA officials³⁴ expect further tariff increases, mainly because the WWM infrastructure has been neglected for along time and it needs heavy investment in order to comply with EU-induced legislation. The MoA estimates that 70-100 billion CZK is needed to modernize the old infrastructure, to increase health standards and to connect more households to WWM public infrastructure. Moreover, implementation of EU legislation that requires inclusion of all costs including environmental ones will also contribute to tariff increases³⁵.

³² As are some WWM companies – for instance the ScVS (North Bohemian Water Association, the largest owner of WWM infrastructure in the CR, wholly owned by regional municipalities); the ScVS does not take the ministries’ forecasts into account and calculates its own. Given the specific conditions in the region, ScVS decided that its water tariffs will rise by maximum 10.2% p.a. up to 2010 (Interview with CEO of ScVS in SOVAK Journal). In 2005 this cap has not been reached, as tariffs rose by only 8.5%.

³³ In some small villages for instance the municipality owns as well as operates the infrastructure. It charges unrealistically low prices or there are even cases that water is still for free at the expense of infrastructure regeneration. These will be forced by the new legislation to increase their tariffs by developing a regeneration plan (see below). In those areas the tariff increases may reach hundreds of percent. On the other hand big cities such as Prague could easily cover the necessary large investments (e. g. water purification station) by only slightly increasing the tariffs.

³⁴ Interview with Mr Chaloupka (March 3)

³⁵ This view is shared by chairman of the SOVAK board Mr Melcher (SOVAK journal, May 2004)

6. HOUSEHOLD EXPENDITURE

6.1. Expenditure in CR

In 2004, an average Czech household member spent 1.42% of his disposable income on water. It was the lowest expenditure when compared with other utilities (see Table 5), and even less than in 1994, when it had been 1.49%. This may have been due to three main reasons and/or combination of them.

First, expenditure on water would be declining if water tariffs were declining. However, this is not the case as we have established above that it is reasonable to assume that water tariffs increase linearly in time.

Second, it could have been caused by a sharp increase in disposable income in relation to expenditure. Nor this appears to be the case. Making an index of household disposable income and household expenditure on utilities (water, gas, heat, electricity) with the base year of 1994, we observe that household disposable income per person actually increased at a slower pace than expenditure on gas and electricity in particular (see Plot 4).

Furthermore, graphic depiction is confirmed by the trend analysis. In relative terms, only expenditure on water and heat grew at a slower pace than net disposable income (as evidenced by respective steepness of slopes). Linear model was used to estimate the regression equation of expenditure indexes (N = 14):

Net Disposable Income: $Y_t = 102.717 + 10.5256 \times t$

Water: $Y_t = 92.7056 + 10.458 \times t$

Electricity: $Y_t = 78.6866 + 24.3743 \times t$

Gas: $Y_t = 45.6158 + 40.2202 \times t$

Heat: $Y_t = 104.955 + 5.80409 \times t$

Table 5: Share of Household Disposable Income per Person

Year	Water	Electr.	Gas	Heat
1994	1.49%	2.42%	1.15%	4.47%
1995	1.45%	2.45%	1.13%	4.86%
1996	1.37%	2.41%	1.26%	4.24%
1997	1.35%	2.54%	1.42%	3.83%
1998	1.32%	3.07%	1.80%	3.53%
1999	1.35%	3.34%	2.01%	3.59%
2000	1.40%	3.62%	2.07%	3.67%
2001	1.34%	3.72%	2.31%	3.40%
2002	1.37%	3.98%	2.59%	3.44%
2003	1.39%	3.79%	2.46%	3.55%
2004	1.42%	3.74%	2.35%	3.50%
2005		3.80%	2.67%	
2006		3.94%	2.86%	

Table 6: Mean Absolute Percent Error

No. of observations	Czech Statistical Office	14
Net Disposable Income		3.094
Water		1.196
Electricity		5.767
Gas		6.036
Heat		3.639

The slow rise of expenditure on water is also confirmed in real terms. Linear model fitted the following parameters (N=14):

Water: $Y_t = 644.255 + 72.7 \times t$

Electricity: $Y_t = 890.747 + 275.910 \times t$

Gas: $Y_t = 245.835 + 216.793 \times t$

Heat: $Y_t = 2192.53 + 121.245 \times t$

Third, the relative cheapness of water might have been caused by a steep increase in the use and/or price of other utilities and electricity and gas in particular.

Finally, water expenditure exhibited yet another interesting feature. Unlike expenditure on other utilities, expenditure on water as a share of household disposable has been rather constant, as Plot 5 illustrates.

6.2. Expenditure in Hungary and Slovakia

Czech trends in household expenditure do not seem to be unique in the context of other Central European Countries. Very similar trend in respect to relative cost of water to an average household member is observed in Hungary (Table 8). In 2004, an average Hungarian household member spent 1.19% of his disposable income on water, which is even less than in the Czech Republic. Similarly, the most expensive utility (in terms of disposable income) for Hungarian households was electricity, representing 3.15% of their income, followed by gas with a 2.75% share. Gas is the only commodity which was more expensive to Hungarian households than to the Czech ones. Comparing data from 2000 onwards we find that gas has always been more expensive commodity for Hungarian households, rather than for the Czech ones. Conversely, both electricity and water have been relatively cheaper in Hungary, water reaching historical minimum at 0.92% of disposable income in 2002 and 2003.

Table 8: Share of Household Disposable Income per Person in Hungary

Year	Water	Electricity	Gas
2000	1.05%	3.32%	3.07%
2001	0.96%	3.13%	2.91%
2002	0.92%	2.87%	2.84%
2003	0.92%	2.64%	2.78%
2004	1.19%	3.15%	2.75%

Source: Own calculation, Hungarian Statistical Office

Slovakia is a rather interesting case for comparison. It is an illustrative example of how a fundamental tax reform can influence the level of household expenditure. Slovakia introduced a flat tax rate of 19%, applicable in all instances (personal income, corporate as well as value added tax). As a result, all utilities were moved from the reduced 5% to the standard 19% VAT rate as of 01/01/2004. Disposable income, however, has not risen so steeply. As Gustavo Ventura³⁶ points out in his report on flat tax reform, the benefits of such a reform require some time to materialize. In addition, most benefits are reaped by the top 20% of households (in terms of net income) whose income will increase by 5.2-5.4 per cent.

³⁶ Flat Tax Reform: A Quantitative Exploration, Journal of Economic Dynamics and Control 23 (1999): 1425-1458

As a result, relative cost of utilities to an average Slovak household member as a share of disposable income has risen by more than 60% from 14.2% to 21.2% (See Table 9). Unfortunately, the Slovak Statistical Office monitors only the basket of utilities and not individual commodities, so we are unable to identify how much the expenditure on water contributed to such a large increase. When comparing the relative costs of utilities in Slovakia and the Czech Republic, we observe that the tax reform made utilities more expensive in Slovakia than in the Czech Republic in terms of household disposable income per person.

Table 9: Share of Household Disposable Income Spent on Utilities per Person in Slovakia

Year	Slovakia	CR
2000	12.13%	19.82%
2001	11.82%	19.05%
2002	12.12%	20.31%
2003	14.20%	20.53%
2004	21.20%	
2005	21.42%	

Source: Own calculation, Slovak Statistical Office

The trend is very clear when we analyze disposable income and expenditure on utilities on a monthly basis, together with total expenditure in terms of nominal prices. To depict the dynamics of the increase and to control for high seasonal variation between certain months, quarterly averages of the data were calculated and then indexed, setting January 2002 as the base observation. This procedure enables us to observe changes relative to the base year. The impact of the tax reform can be easily identified in Plot 6. It is worth noting that the rise in expenditure on utilities is also evidenced by linear trend analysis. The following parameters were estimated (N=23):

Disposable income: $Y_t = 93.6338 + 3.24421 \times t$

Total Expenditure: $Y_t = 90.4832 + 3.40861 \times t$

Table 10: Mean Absolute Percent Error

No. of observations	23
Income	6.24
Expenditure	5.67
Utilities	20.74

Utilities: $Y_t = 51.3389 + 10.7767 \times t$

Linear analysis confirms an unusually high growth trend of household expenditure on utilities. Yet, such a large increase, being the result of a one-time event, prevents us from making any extrapolations of the trend and thus thwarts any attempts to predict further growth dynamics. Uniqueness of that event is also demonstrated by the fact that whereas linear function is quite accurate in fitting trends of disposable income and expenditure, it is fairly inaccurate when fitting the costs of utilities (it is unable to fit over one fifth of the data - see Table 10).

7. PUBLIC DEBATE & FUTURE DEVELOPMENTS

7.1. Public Debate

Public debate around water issues is dwarfed compared to the saliency of electricity and gas issues. In total, media have produced 1215 articles concerning water tariffs/prices since 1995, which is a rather small number compared to the 3742 about electricity, 2545 regarding gas and 1657 concerning heat. Most often reporting media on price changes are MF Daily (presenting itself as an unbiased daily of political centre, 511 articles) and left-wing Pravo (348 articles), weekly business magazines (Ekonom and Euro, with 29 and 14 articles respectively). Analyzed media include all daily newspapers (excluding regional ones as they tend to replicate headlines of major newspapers; this would unnecessarily inflate the number of references and could severely bias the results), major weekly magazines and public radio and TV.

Table 11: Descriptive Statistics: Water, Electricity, Gas, Heat

Variable	Months	N*	Mean	SE Mean	StDev	Minimum	Median	Maximum
Water	134	0	9.06	0.74	8.58	0.00	6.00	36.00
Electricity	134	0	27.93	1.71	19.79	0.00	25.00	129.00
Gas	134	0	18.99	1.47	17.06	0.00	15.00	95.00
Heat	134	0	12.37	0.81	9.34	0.00	10.00	66.00

Source: CEC calculation, Newton I.T.

Although the regression analysis (see Table 12) finds a slope of intensity of water debate to be different from zero at 5% significance level (Water Debate = $3.705 + 0.07943 \text{ Time}$, $p = 0.021$), level of media attention can be assumed constant over time for the purpose of this report for two reasons. First, the regression coefficient has very little explanatory power (adjusted R square = 12,3%), and second, variance of the mean is quite considerable. When we decompose the time series using multiplicative analysis³⁷, we find that public debate is most lively in November, December and January (see Table 13 and Plot 7).

Table 12: Regression Analysis (Water versus Time)

The regression equation is:
 Water = $3.705 + 0.07943 \text{ Time}$
 S = 8.03462 R-Sq = 12.9% R-Sq (adj.) = 12.3%

Analysis of Variance					
Source	DF	SS	MS	F	P
Regression	1	1265.12	1265.12	19.60	0.000
Error	132	8521.28	64.56		
Total	133	9786.40			

This is not a coincidence because media like to discuss which prices will increase and decrease in the upcoming year. Media forecasts of the standard of living in the upcoming year(s) have become a tradition ever since price had been liberalized. These three months retain the most explanatory power

³⁷ Additive analysis could have been used since the variance around mean is not increasing with the time period. Nevertheless, multiplicative analysis was preferred because it yields results as ratios, not in the original level of measurement. Therefore, multiplicative analysis facilitates comparisons of seasonal indices across models

even if we control for election years. In addition, the analysis could not reject the null hypothesis that the regulator (ministries or government) does not act on a basis of public debate even if the analysis was run with 3 and 6-month lag to facilitate identification of regulators’ output (laws, amendments, ordinances, decrees). Indeed, this finding has been confirmed by interviews with Ms Nedvedova³⁸ (MP-ODS) and Mr Hasek³⁹ (MP-CSSD) who have been appointed rapporteurs for water legislation in the past.

Table 13: Seasonal Indices

1	2	3	4	5	6	7	8	9	10	11	12
1.739	1.116	1.045	0.878	0.837	0.581	0.402	0.289	0.510	0.553	1.553	2.497

Source: Own calculation

Because the time series can be assumed to be stationary (it has a mean, variance and autocorrelation function essentially constant over time), it allows us to use autoregression-autocorrelation (ARIMA) model to test whether parameters differ significantly from zero and thus to extrapolate the trend in order to make forecasts of future debate. The best performing model is the one with moving averages and autocorrelation function of order one, adjusted for seasonal indices (12 periods). The fitted model safely rejects the null hypothesis that parameters are in fact zero at 5% significance level (large t-statistic values and p-values close to zero for moving average and seasonal orders). In addition, the MA(1) model appears to fit well, not only because the parameters of the model are significantly different from zero, but also because the residuals are uncorrelated, as evidenced by Box-Pierce (Ljung-Box) Chi-Square statistic that give large p-values of 0.420, 0.396, 0.567, 0.607. Because the p-values are quite large (greater than chosen alpha-level of 0.05), the test is not significant, thus the residuals appear to be uncorrelated. As a result, this model can be used for making forecasts.

To summarize, water debate is not particularly salient. Nevertheless, if we control for seasonal effects, we were able to identify a slightly increasing trend. This trend, however, is rather weak and almost inconsequential compared to electricity or gas.

$$\text{Electricity} = 17.19 + 0.1591 \times \text{Time}$$

$$\text{Gas} = 0.996 + 0.2666 \times \text{Time}$$

7.2. Potential Change of Government

A coalition of senior social democrats (CSSD) and junior Christian Democrats (KDU-CSL) and Freedom Union (US-DEU) form the current government drafted the recent Amendment to the Act on Water and Wastewater Management. The most important ministries for the area of WWM (agriculture and finance) are both controlled by the social democrats.

³⁸ March 6
³⁹ March 6

Table 14: Overview of relevant Czech political parties

Party and number of seats ⁴⁰	Location on the left-right spectrum	Implications on WWM regulation
KSCM Communists (41/42)	Extreme left. Supports nationalization of strategic industries, substantial wealth redistribution, increase rights of employees vis-à-vis employers	State ownership and development of WWM infrastructure, especially in the countryside. Under current circumstances (isolated party) backs proposals of CSSD against proposals of the right
CSSD Social democrats (70/53)	Moderate left. Advocates welfare-based market economy, defends private ownership and competition, albeit regulated to prevent social injustice.	Proposed current legislation. Does not principally oppose involvement of private companies in WWM, regulation aims at securing socially affordable tariffs.
Zeleni Greens (0/17)	Centre (no clear profile yet). Supports some liberalizing measures (reduction of taxes, no state aid for businesses), and more regulation in fields such as environment, gender issues, etc.	Newly emerging party; has not specified its stance towards WWM regulation yet.
KDU-CSL Christian democrats (21/20)	Conservative centre. Supports mixed economy. Emphasises Christian family values, supports countryside	Supports state subsidies in WWM infrastructure, esp. in the countryside.
US-DEU Freedom Union (10/0)	Conservative-liberal right. Claims to be the alternative to ODS.	Party is not relevant anymore, as participation on government with social democrats discredited it. Recent polls show US-DEU will not overcome the 5% threshold needed to enter the Chamber of Deputies in June 2006 elections.
ODS Civic democrats (57/68)	Conservative-libertarian right. Supports free market economy, competition and reduction of state regulation in general.	Opposes centralization of power at MoA, supports devolution, a greater role for regional and local government. Opposes creation of any new independent regulatory body. Wants to use EU funds for WWM infrastructure regeneration.

Sources: *Programs of political parties, Forecast of Factum Invenio based on opinion poll published in Pravo (7.2.2006)*

Possible coalitions (sorted by estimated likelihood) are:

Civic democrats + Christian democrats + Greens: Tariff regulation in CR is already very soft and it could hardly be more liberalized. This coalition might, however, want to transfer some of the central powers from the MoA back to the regional administrations. At this point, water policy is understandably of very little concern in the political debate, as there are numerous issues of much greater importance (taxes, health care, social and pension system, education, etc.). Within such coalition, Christian democrats are

⁴⁰ Current seats / Projected seats after the June 2006 elections. The lower house has 200 seats in total. The lowest ruling majority is thus 101 MPs.

likely to take control of the MoA while Civic democrats would retain the MoF. This might create some disputes whether to subsidise the WWM infrastructure in the countryside and from what sources. Greens might demand some environmental measures to be imposed on WWM.

Civic democrats + Christian democrats: Same situation as above, excluding influence of Greens.

Social democrats + Communists: Although current legislation has been prepared by socialists, the communist might press for greater state support and subsidies for the infrastructure, and potentially also for tighter tariff control. However, both relevant ministries would probably be primarily controlled by the social democrats, which would diminish the communists' demands. This coalition would probably take a form of a minority government of Social democrats with silent support of Communists, as Communists, despite their substantial electoral power, are still perceived as "non-democratic" party.

"Great coalition" (Social Democrats + Civic Democrats): In case that none of the two biggest parties was able to create a majority coalition with smaller parties, they might conclude an "opposition agreement" as it had already been the case in 1998. The stronger of these two parties would then create the government with support of the weaker one under agreed conditions. This coalition would probably have a common goal (e. g. change of election system). Since a similar attempt in 1998 failed, it is not likely that Great coalition would be the preferred after-election outcome.

"Anticomunist coalition" (all parties except communists): This alternative is sometimes mentioned by the media, but there is no political rationale behind it, unless communist party scores extremely successfully. Nonetheless, the Communist party has relatively steady electorate and there are no grounds for sudden doubling of its popularity.

Social Democrats + Communists + Greens/Christian democrats: This is only a theoretical option, as both Greens and Christian democrats have absolutely ruled out the possibility of participating in a government reliant on communists.

To summarize, whilst minor debates concerning the level of desired centralization or the level of state subsidies cannot be entirely ruled out, any major political controversy regarding an overhaul of WWM is highly improbable.

7.3. Potential Change of Regional/Local Government

A change in the regional or local government may influence water tariffs in situations where the regional governments or municipalities are the owners of the WWM infrastructure. The asset owner selects the WWM operator and sets the lease payment charge to the operator for the usage of the infrastructure. The lease payment is effectively a flow-through cost item in setting the tariffs and the WWM owners have the most influence setting the tariffs.

For instance in Prague, the WWM is operated by PVK (part of the Veolia Water CR group) and WWM infrastructure owner is the City of Prague through its subsidiary PVS. Tariffs set by PVK must be approved

by both PVS and Prague City Council. Thus, a major political upheaval at the City Hall (as unlikely as it is) could influence the tariffs.

With respect to SmVaK, being the owner and operator of WWM infrastructure, the impact of local political change is negligible. The consultations that SmVaK holds with an association of municipalities are purely voluntary and a sign a goodwill. Furthermore, the probability of a large shift in the political composition of the area served by SmVaK is small due to the in the numerous municipalities in SmVaK's service area.

8. CONCLUSION

This report explores in greater detail relevant elements of the water and wastewater management industry in the Czech Republic. The market of WWM is very fragmented and is likely to persist despite partial consolidation. There are two different operating models for WWM companies – operational and mixed. There are also two major foreign utility companies present on the market, both running under the operational model. Most of the WWM companies are associated in SOVAK, a non-profit interest organization that exerts considerable influence on the industry.

The report outlines the general regulatory environment, legal implications, responsibilities of key players and their mutual relationships. It takes into account the recent amendment to the Act on Water and Wastewater Management, which has substantially altered the existing legislation. Following this amendment, no other legislative changes are expected in the near future, as the regulation introduced by this amendment is deemed to be state-of-the-art legislation.

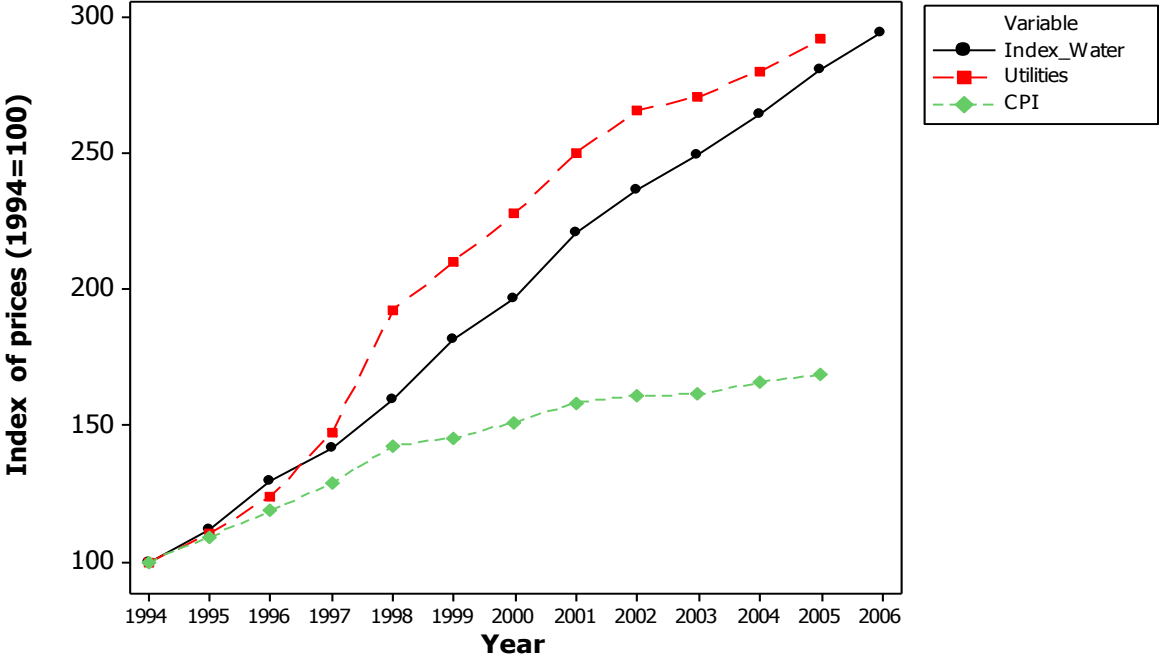
The report analyzed the issues of water tariff regulation, tariff calculation as well as tariff auditing. There are no hard-and-fast rules for the determination a reasonable profit with respect to calculating water tariffs. Unlike Slovakia, the Czech regulatory authorities offer no clear guidance in assessing reasonable profits. Various profitability ratios are applied and implicit agreements between the relevant authorities are made, but at the end of the day, the assessment of reasonable profit depends largely on subjective evaluation of the regional Financial Directorate representatives. However, the approval of the Amendment to the Act of Water and Wastewater Management introduces several positive features, namely differentiating the roles of an owner and operator, benchmarking and ensuring all companies have a long term financial plan.

A trend analysis is undertaken which offers quantitative analysis of CPI, water and other utility tariffs. The analysis reveals that water tariffs have grown in excess of inflation, but moderately relative to other utilities tariffs, particularly energy. In addition, analysis of household expenditure reveals that water services expenditures has always been the most affordable utility commodity in terms of household disposable income per person. Trend analysis suggests that this situation is not likely to change in any of the three analyzed Central European countries.

Finally, the report explores the public debate around water and other utilities. Public interest in water is limited to discussion of year-on-year price increases. Professional debate is restricted to technical aspects of water management. The only expert debate of water tariff regulation is confined to the SOVAK journal. Neither regulatory authorities nor relevant policy-makers have been known to act on the basis of public debate. This is indeed supported by the time series analysis, which was not able to link the peaks in public debate to any regulatory actions concerning water and wastewater management.

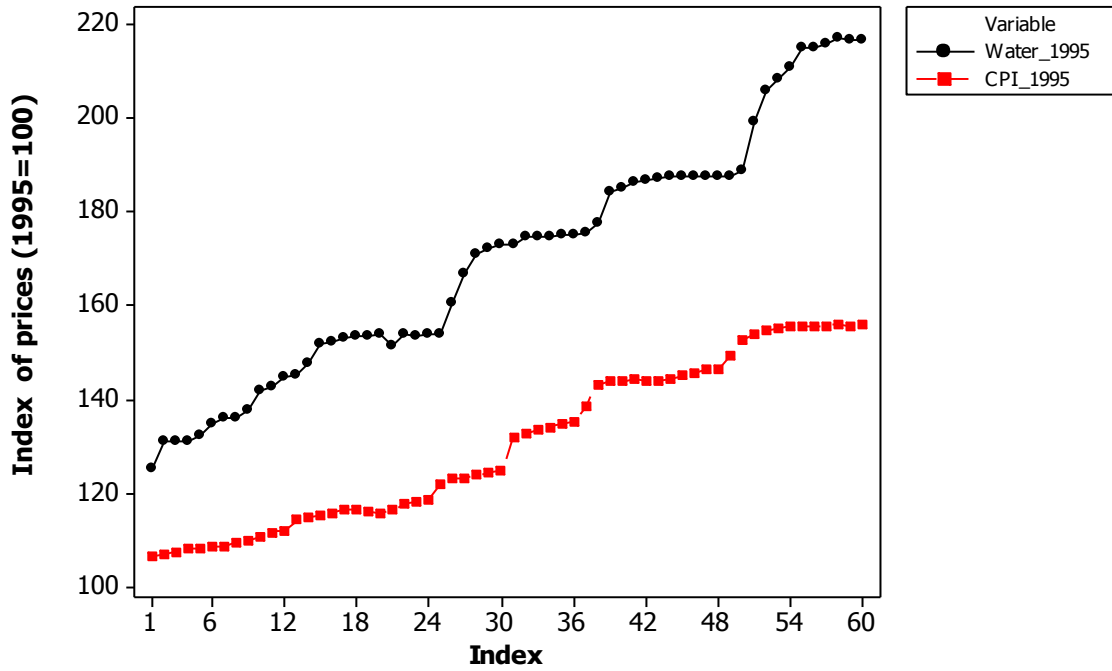
9. APPENDICES

Plot 1



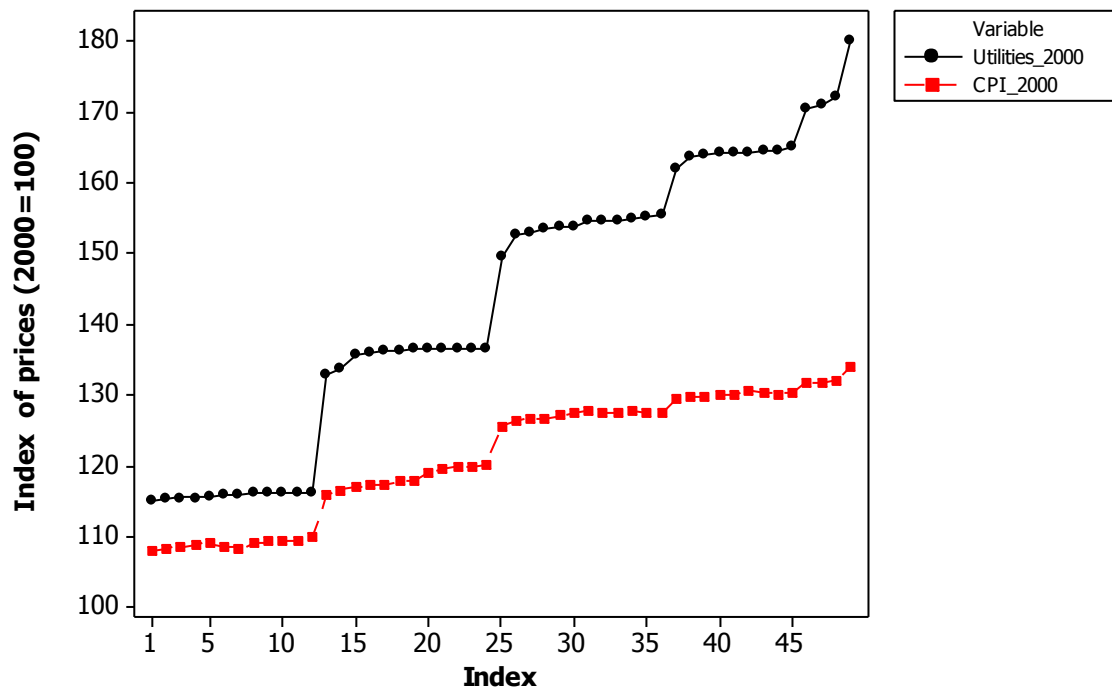
(Source: Ministry of Finance, Czech Statistical Office).

Plot 2



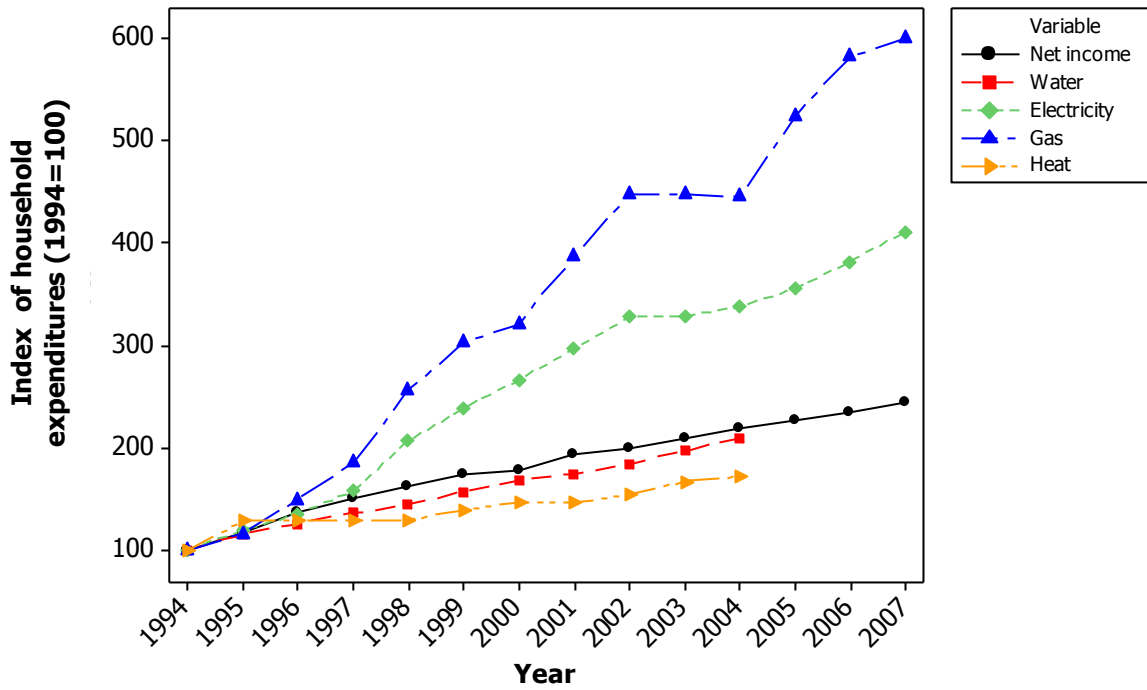
(Source: Slovak Statistical Office)

Plot 3



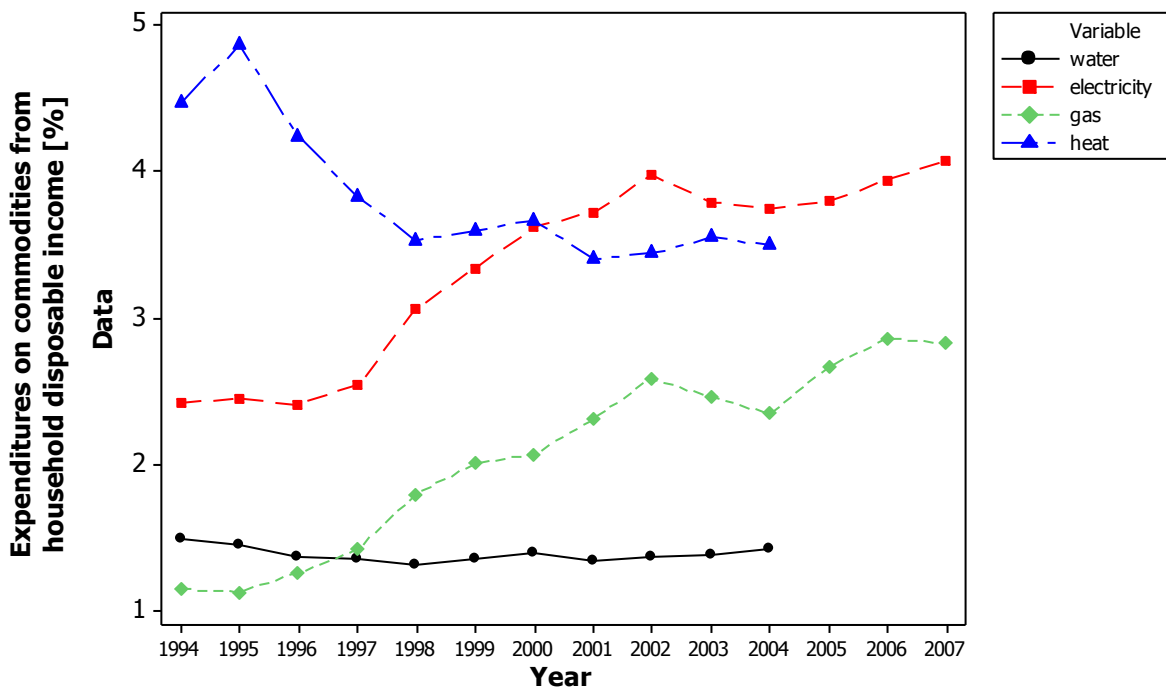
(Source: Slovak Statistical Office)

Plot 4



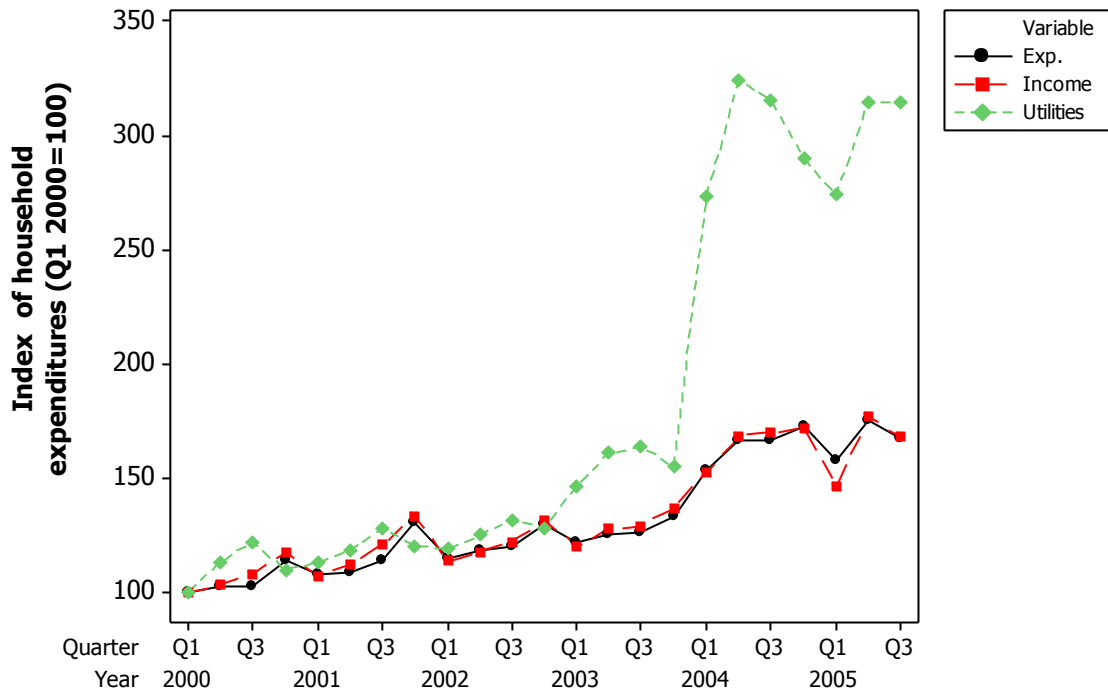
(Source: Czech Statistical Office, own calculations)

Plot 5



(source: Czech Statistical Office, own calculations)

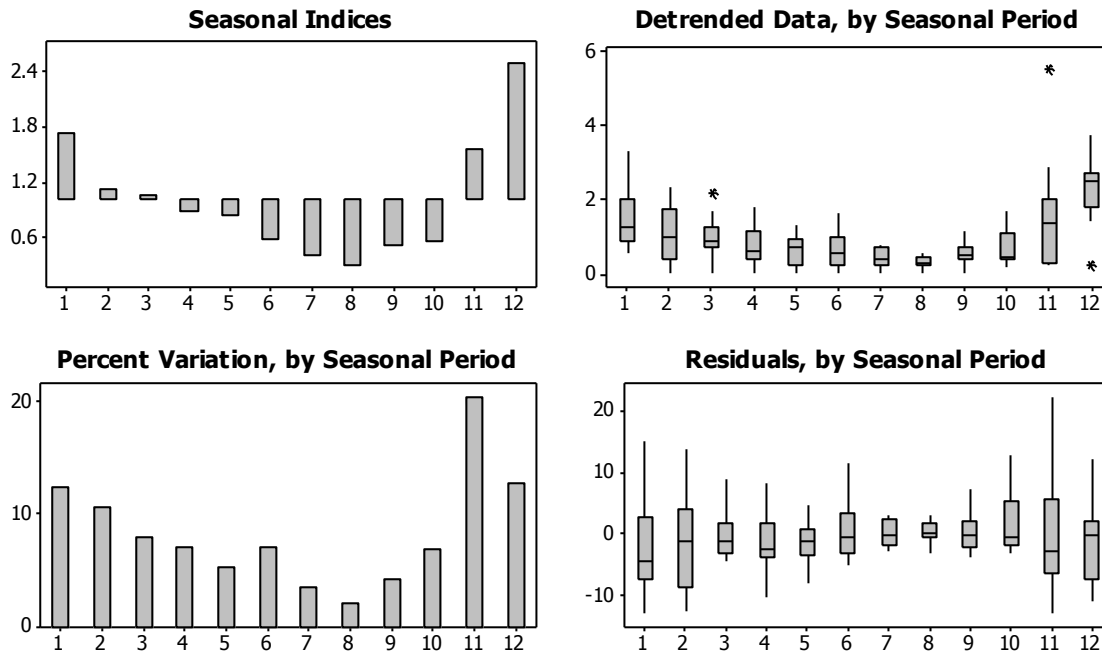
Plot 6



(source: Slovak Statistical Office, own calculations)

Plot 7

Seasonal Analysis for Water Multiplicative Model



Source: Czech Statistical Office, own calculations