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New system of social services financing: myths and mistakes
Nový systém financování sociálních služeb: mýty a omyly



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Otevíráme prostor k odborné diskusi

BOJKA HAMERNÍKOVÁ

Do rukou čtenáře se v tomto roce dostává druhé číslo vědeckého odborného časopisu ACTA VŠFS. Nabízené vědecké statě reprezentují hlavní oblasti dlouhodobého výzkumu Centra pro ekonomické studie a analýzy (CESTA) a dalších pracovišť školy.

Vědeckovýzkumná činnost Vysoké školy finanční a správní je určena zejména zaměřením školy na oblast financí, měnové a rozpočtové politiky, veřejné správy a ekonomiky podniku. Svůj vliv má samozřejmě i aktuálnost určitých problémů národní ekonomiky, hospodářské politiky a Evropské unie.

Prezentované vědecké statě souvisí s vědeckými projekty výzkumníků VŠFS v rámci GA ČR a též s rozpracovávanými interními projekty (financovanými VŠFS).

Dlouhodobý záměr VŠFS rozvíjet se jako vysokoškolská instituce s plně kompletními funkcemi včetně funkce výzkumné se realizuje v rámci zvýšené aktivity vedení a akademiků školy i na poli vědeckovýzkumné činnosti.

Náš vědecký časopis by neměl zůstat uzavřen pouze v rámci vědeckovýzkumných aktivit VŠFS. Chtěli bychom dát prostor odborné diskusi širšího okruhu domácích a zahraničních autorů k již nastoleným tématům a k tématům novým. Chtěli bychom tímto oslovit odbornou veřejnost a pobídnout autory k aktivní participaci na kompletaci dalších čísel našeho časopisu.

Doufáme, že toto nové číslo ACTA VŠFS přinese zajímavé, inspirativní a přínosné poznatky a témata k odborné diskusi.

You are holding the second issue of the scientific magazine ACTA VSFS during this year. The scientific articles which you will find inside represent the main area of the long – term research of the Center of economic studies and analysis (CESTA) and other school work-rooms.

The direction of a research and development activity of the Institute of Finance and Administration (IFA) is defined by its focusing on the area of finances, monetary and budgeting policy, public administration and a company economy. It is also influenced by the actual specific problems of a national economy, economic policy and European Union. Published articles are connected with the scientific projects of IFA experts in the frame of GA CR (Grant Agency of CR) and IGA (Internal Grant Agency).

The long – term intension of IFA - to develop itself as the university with the complete functions including a research function - is realized by the increased level of the activity of a management and academic employees in the area of a research and development.

Our scientific magazine shouldn't involve only research and development activities of IFA. We would like to open it to the wide discussion of domestic as well as foreign authors who could participate in the contemporary as well as in the new topics. By this magazine we would like to accost the scientific community and to initiate authors to the active participation of completion of next issues of our magazine.

Let's hope that the new issue of ACTA IFA will bring interesting, inspirative and effective experience and topics for an expert discussion.



doc. Ing. Bojka Hamerníková, CSc.

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Accession of the Czech Republic into euro area and Maastricht convergence criteria from the perspective of theory of „impossible trinity“

Vstup ČR do eurozóny a maastrichtská konvergenční kritéria z hlediska teorie „nedosažitelné trojice“¹

MOJMÍR HELÍSEK

1 Introduction

The decision of the Czech Government, i.e. not to strive - for now, at least - for accession into the European Exchange Rate Mechanism II (ERM II), issued in October 2006, has postponed the accession of the Czech Republic into the euro area indefinitely. In spite of this, the Czech Republic has been referred to as a good example of timely preparation for accession into the euro area by the European Commission, even if the accession date has not been fixed yet. The Fifth EC Report on the practical preparation for future enlargement of the euro area (July 2007) appreciates, particularly, adoption of the National Plan for euro introduction in the Czech Republic (issued in April 2007).²

The accession of the Czech Republic into the euro area is conditioned by various circumstance, particularly, compliance with the Maastricht convergence criteria. Two of the three criteria (inflation and exchange rates), along with the obligation of each EU member to guarantee free capital flow, are contained in the theory of “impossible trinity”, i.e. impossibility of meeting all three criteria at the same time. This survey should check the applicability of this theory in the conditions of Czech economic system.

In the first section of this survey, the main features of the “impossible trinity” theory will be explained, at first in general terms, and then in the context of economic policies of the countries accessing into the euro area. In the second section, the evaluation of achieving these goals in selected countries that already have accessed into the area will be dealt with. The third section covers the issues associated with meeting these criteria in the Czech Republic. The final, fourth, section summarizes the experience in meeting the criteria of “impossible trinity” and the perspectives in the period of time where the Czech crown will be included in ERM II.

1 This paper has been made with the assistance of the Internal Grant Agency of the Institute of Finance and Administration, o. p. s. (project no. 7701).

2 EC, 2007, s. 10. The accession before 2012 is unacceptable, not only because of necessary consolidation of the public finances and flexibilization of the labour market, but also with regard to insufficient synchronization of economic cycles in the Czech Republic and the euro area (see Kaňková, 2007 for details).

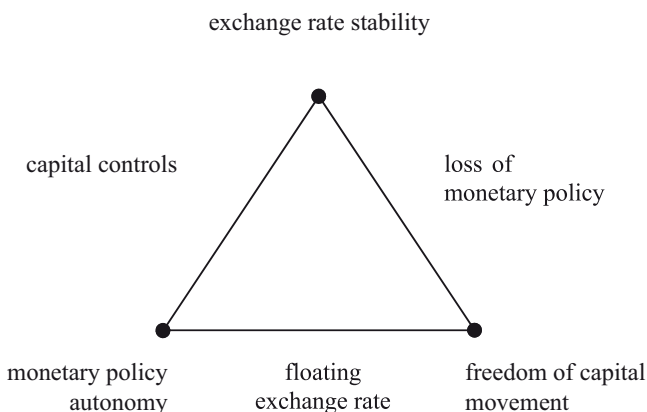
2 „Impossible trinity“ and the accession into the euro area

The hypothesis of the „impossible trinity“ is based on trinity of options in the macroeconomic policy in an open economy, of which only two can be achieved at the same time.³ These economic and political objectives are:

- independent (anti-inflation) currency policy,
- stable exchange rate,
- free international capital flow.

As shown in Fig. 1, the achievement of two of these objectives (vertices of the triangle) is conditioned by abandonment of the third objective indicated on the side between two achieved objectives.

Fig. 1: „Impossible trinity“ of economic policy in an open economy



Remark: In the original, loss of the currency policy is indicated as "currency board".

Source: Krugman, Obstfeld (2006), p. 630. The authors have implemented this analysis in the context of searching for reform of the worldwide "financial architecture", in response to Asian currency crisis. According to the authors, a stable exchange rate is more important for developing countries rather than for developed ones, since it allows to control the inflation more easily.

Impossibility of achievement of all three objectives at the same time is documented by the following combinations:

- 1) Having low inflation and, at the same time, stable exchange rate, capital control will have to be implemented, since low inflation with a restrictive currency policy and high interest rates attracts foreign capital. On the one hand, this will promote exchange rate appreciation, on the other hand, increase home stock of money and put under risk the inflation goal. The solution would be capital control, as already said.

³ The hypothesis is based on the model of monetary and fiscal policy under conditions of fixed exchange rates, as defined by Robert Mundell in 1962.

- 2) Combination of low inflation (with high interest rates) and free capital flow will put under pressure the exchange rate (its appreciation with unfavourable impacts on competitive advantage compared with foreign countries). This pressure could be encountered by introduction of floating exchange rate. Abandonment of the stable exchange rate could result in currency crisis, i.e. dramatic exchange rate devaluation - if the investors would lose their confidence – with following strong drain of capital from the country.
- 3) Maintaining stable exchange rate, along with free capital flow, will lead to fluctuation of central bank's foreign exchange reserves (resulting from exchange rate interventions), with impact on home stock of money. This process will bring about instability of inflation rate. Hence, the currency policy is not efficient in an economy with stable exchange rate.

For any country wishing to access into a monetary union, **low inflation rate** is the first of the four Maastricht convergence criteria stipulated in the Treaty on European Union. The Treaty has set forth the obligation of achieving sustainable price stability in long-term perspective and in the course of one year prior to assessment of compliance with these criteria, in particular, the reference inflation rate (i.e. average of three EU countries with the best results in terms of price stability, which is considered achievement of the lowest inflation rate) should not be exceeded by more than 1.5 percentage points.

Stable exchange rate is another criterion (on original sequence, the third one)⁴. The exchange rate of the assessed country must be within - so called - normal fluctuation band applicable in the European Monetary System (Exchange Rate Mechanism II – ERM II since 1999) for the time of minimum two years before the assessment of compliance. More exactly, the exchange rate must be within the “standard fluctuation band” and must not be subject to “severe tension”, without central parity devaluation.

The prevailing representation of the standard fluctuation band is asymmetric: 15 % above and 2.25 % below the central parity set to euro. The asymmetry of the fluctuation band results from ambiguousness of set criteria. The original ERM developed in 1979⁵ utilized a band of 2.25 % below and above, however, it was extended in August 1993, as a result of currency crisis. The interpretation of the exchange rate convergence criterion stems from the position of the European Commission, according to which the original (2.25 %) band above and below should be maintained, whereas exceeding of the appreciation limit of 2.25% should not be considered failure to meet this criterion (however, the extended limit of 15 % must not be exceeded).

Free capital flow has not been mandated in the Maastricht convergence criteria, however, the EU countries are obliged to enable free capital flow as specified in the Maastricht Treaty, not only within EU, but also internationally (with non-member states). This require-

4 It should be noted that the second criterion is fiscal one (consisting of two parts) and the fourth criterion are long-time low interest rates. The criteria have been defined in article 121 of the Treaty and set forth in more detail in the following Protocol no. 21.

5 The ERM II was implemented in early 1999, by way of transition from central parity between individual currencies to only one central parity, i.e. euro.

ment has been stipulated in art. 56 of the Treaty: „Within the framework of the provision set one in this chapter [i. e. Capital and Payments], all restrictions on the movement of capital between Member States and between Member States and third countries shall be prohibited.“

Formerly, capital controls had been possible (and frequently implemented – see below) before it was officially abandoned in July 1990. However, the Treaty (art. 120) allows for exceptions: „Where a sudden crisis in the balance of payments occurs and a decision within the meaning of article 119 (2)⁶ is not immediately taken, the Member State concerned may as a precaution, take to necessary protective measures“ As indicated further in this article, the Commission shall issue its standpoint on these measures, based on which the Council of European Union, consisting of the ministers of economy and finances (ECOFIN Council), after consultation with the Economic and Financial Committee, can decide on amendment, suspension or cancellation of the imposed „protective measures.“ The nature of these protective measures has not been specified in the Treaty, however, they have been normally understood as „capital control“.⁷

The possibility of implementation of „protective measures“ has also been mentioned in art. 59. In this particular case, however, the measures must be triggered by “serious difficulties for the operation of economic and monetary union,” i.e. they shall not be initiated by internal problems of any country.

The protective measures should be of temporary and exceptional nature, as can be concluded from the above legislation (incl. possible lifting of these measures by the Council), but also from the economic point of view. In case of frequent implementation of these measures, they could be anticipated by the market – and reflected by higher risk premium in interest rates.⁸ However, the most essential argument for exceptionality- or rather disapproval of capital control as a tool to maintain fixed exchange rate in ERM II – is the compliance with the exchange rate convergence criterion, without “severe tension“. This term (i.e. “severe tension“, with slight differences in understanding of this term by the Commission and ECB) can be characterized, among other things, by the response of the economic policy.⁹ Even if only foreign currency interventions and increasing short-terms interest rates have been specifically referred to, it can hardly be anticipated that capital control would be consistent with the condition “without severe tension“. Consequently, any infringement of free capital flow appears to be unacceptable as well (equally crucial as the compliance with the inflation and exchange rate criteria).

6 Art. 119 deals with the situation where “difficulties of the balance of payments“ resulting from imbalance or “type of the currency at its disposal“ are imminent or already encountered by any member state. The Commission will recommend measures the relevant member state should take. Should these measures prove insufficient, the Commission will recommend the Council to give assistance (a procedure agreed upon with other international organisations, prevention of commerce diversion in case of necessary quantitative restriction in relation to third countries or a loan granted by other member states).

7 For example, Begg et al., 2002, p. 66, or Schadler et. al., 2005, s. 85.

8 For example, Begg at al., 2002, s. 66, or Buiter, 2002, p. 10.

9 Helisek, 2006.

As already pointed out, the countries striving for accession into the euro area must comply with all three objectives stipulated in the Treaty on European Union at the same time. No wonder this provision raises criticism, for example by W. Buiter, former Chief Economist of European Bank for Reconstruction and Development. His objections are based on impossibility to pursue all three nominal objectives, i.e. inflation, interest rates and currency exchange rate, since this effort could result in "financial accident". According to Buiter, the fiscal criteria are sufficient. Stable exchange rate should not be required and the countries wishing to access into the euro area should be allowed to maintain floating exchange rates.¹⁰

Also Begg et al. point out the risk of a crisis resulting from participation in ERM II combined with high mobility of capital. The following claim has been brought up in association with ERM II: "However, crises, particularly of the contagion type, cannot be ruled out in any scenario that combines full capital mobility with the ERM II".¹¹ The alternative is capital control. Free capital flow could be allowed only in case of unilateral euroisation (introduction of euro without consent of European Union authorities). Begg et al. have recommended this option for countries that have reached fiscal and price stability and have "sound" banking systems, however, being aware of European Central Bank's definite disapproval of this option.¹²

Similar objections – arising from concerns about maintaining low inflation rate – can be found in the Czech literature as well: „Can these countries be expected to maintain a low inflation rate after their ERM II accession [...] and can setting exchange rate targets be regarded as a tool (or an intermediary milestone) which - at the same time – would allow maintaining stable and low inflation rate?“¹³

Also, the Czech National Bank points out the risk associated with the „impossible trinity“ in connection with impossibility to have fixed exchange rate and free capital flow. Maintaining fixed exchange rate too long will be „punished with foreign exchange crisis.“ The example can be the „currency turbulence“ in 1997 in the Czech Republic. The euro area has dealt with the issue of the „impossible trinity“ by wide flexibility of euro exchange rate.¹⁴

2 Experience in achieving of the “impossible trinity”

In the first wave, 11 countries have accessed into the euro area on 1 Jan. 1999; Greece followed on 1 Jan. 2001. The fixed exchange rate system had the shape of the initial ERM as a part of the European Monetary System (EMS). In March 1979, where the EMS was established, it included 8 countries, another countries have accessed with time. When

¹⁰ „The history of the pursuit of two or more nominal targets [...] is a most unhappy one. The pursuit of an inflation target (itself inappropriately specified) and a-fortiori of an inflation target and a nominal interest rate target subject to a nominal exchange rate constraint is an accident waiting to happen“ (Buiter, 2004, p. 43).

¹¹ Begg et al., 2002, p. IX, 70.

¹² ECB, 2003.

¹³ Viktorová, 2005, p. 63.

¹⁴ Tůma, 2006, p. 4 – 5.

evaluating the experience of these countries, striving to have the „impossible trinity“, several periods must be distinguished.

1) From establishment of the European Monetary System to mid-1980s:

- Getting fixed currency exchange rates in a narrow fluctuation band (see above) has brought about fixed exchange rates but, on the other hand, many changes in central parities, particularly devaluations (see Table 1).
- Considering significant differences in inflation rates, the countries continued to follow independent monetary policy. Hence, no agreement on a single policy was reached: in some countries, currency restriction would result in recession, in other countries, they would lead to decrease of inflation rate etc.
- Many obstacles in free capital flow (i.e. capital controls).

Table 1: Changing central parities within ERM

Country	3/13/79 – 1/12/87			1/13/87–8/2/93			8/3/93–12/31/98		
	R	D	Σ	R	D	Σ	R	D	Σ
Germany	7		7	1		1			
France	3	3	6	1		1			
Netherlands	6		6	1		1			
Belgium	4	1	5	1		1			
Luxembourg	3	1	4	1		1			
Ireland	2	2	4	1	1	2	1		1
Italy		5	5		2	2			
Spain	x	x		1	3	4		1	1
Portugal	x	x		1	2	3		1	1
Total			37			16 *			3

Source: own compilation according to Čech, Komárek, 2002, p. 524.

Rem: EMS established 3/13/1979; 1/12/1987 four parities were adjusted; 8/2/1993 the fluctuation band was extended. No changes to central parity in Austria and Finland. R = revaluation, D = devaluation, Σ = total. x = the country was not member of the system. * Of these 16 changes to central parity, 7 were devaluations triggered by the currency crisis in 1992 – 1993.

2) From 1987 to 1992 (before EMS crisis):

- Fixed exchange rates had experienced much less central parity adjustments (particularly, after being purged from the influence of the currency crisis 1992 – 1993).
- The countries abandoned independent monetary policy by linking up their exchange rates to DEM. Thus, Deutsche Bundesbank (DBB), in fact, performed the tasks of the European Central Bank. These measures were aimed at approximation of high inflation rates in some countries to the low inflation rate in Germany.
- The capital controls had been gradually reduced and officially abandoned in July 1990.

3) Currency crisis in September 1992 – August 1993:¹⁵

The anti-inflation policy in some countries (specifically Italy, Portugal, Spain) was not consequent and the confidence in stability of these currencies gradually fell. Moreover, the restriction of DBB was increased by the need of holding back fiscal expansion resulting from German reunification. This process was accompanied by political problems (failure to adopt the Treaty of Maastricht in Denmark, with expecting the same result in France and other) and led to UK's and Italy's withdrawal from EMR and currency devaluation in Italy, Spain (3x), Portugal (2x) and Ireland.

4) From 1993 to 1998 (discontinuation of ERM and transition to ERM II):

- Dramatic extension of the fluctuation band. "The post-crisis ERM agreed upon in 1993 differed little from a floating exchange rate regime."¹⁶ Generally, exchange rate fluctuations were not dramatic since the extended fluctuation band discouraged speculative attacks (elimination of the risk associated with the "one way speculation"). Within the two-years' period evaluated before accession into euro area, only three currencies failed to remain in the allowed depreciation band (Ireland – for 32 days, Italy – for 96 days and Finland – for 39 days) – see Table 2.
- The monetary policy was associated, predominantly, with the policy pursued by the German Central Bank. From this perspective, the policy was not "independent", however, it allowed to keep the inflation rate low, ranging from 0.6 % to 2.2 % (see Table 3).
- Capital controls were not allowed.

Table 2: Exchange rate fluctuations in ERM (countries that failed to remain in the depreciation band)

	Ireland	Italy	Finland
Maximum exchange rate deviation:			
- depreciation band	4.2 (4.8)	7.8 (10.0)	4.2 (9.1)
- appreciation band	10.9 (12.5)	1.8 (2.5)	3.7 (3.6)

Rem: Exchange rate deviations from central parity (in %). The first figure indicates exchange rate of the median currency– daily exchange rates (method implemented by the European Commission), the figure in parenthesis indicates exchange rate of the national currency with the highest deviation – 10-daily-average (a method implemented by the European Monetary Institute).

Sources: EMI: Convergence Report 1998, EC: Convergence Report 1998.

¹⁵ See Helisek, 2004, p. 43 – 47.

¹⁶ Baldwin, Wyplosz, 2006, p. 339.

Table 3: Rates of inflations of the first countries of the euro area (HICP, annual average, in %)

	1995	1996	1997	1998
Germany		1.2	1.5	0.6
France	1.8	2.1	1.3	0.7
Netherlands	1.4	1.4	1.9	1.8
Belgium	1.3	1.8	1.5	0.9
Luxembourg		1.2	1.4	1.0
Ireland		2.2	1.3	2.1
Italy	5.4	3.0	1.9	2.0
Spain	4.6	3.6	1.9	1.8
Portugal	3.4	2.9	1.9	2.2
Austria	1.6	1.8	1.2	0.8
Finland	0.4	1.1	1.2	1.4

Source: ECB: <https://sdw.ecb.europa.eu> [1. 4. 2008]

Achieving the “impossible trinity” within the European Monetary System and the initial ERM is summarized in Table 4.

Table 4: Achieving „impossible trinity” in EMS and ERM

Exchange rate	Monetary policy	Capital flow
1979 – 1987		
✓ x Frequent parity changes	✓ Independent MP	x Capital flow control
1988 – 1993		
✓ Fixed exchange rates	x MP dependent on DBB	✓ Abandonment of capital control
Currency crisis 1992 – 1993 (withdrawal from EMS, devaluation and fluctuation band extension)		
1993 – 1998		
✓ x Broad fluctuation band	x MP dependent on DBB	✓ Free capital flow

Source: own compilation according to Baldwin, Wyplosz, 2006, p. 335 – 339.

Summarizing, the assessment of meeting the “impossible trinity” is rather difficult, for the following reasons:

- ambiguous evaluation of the “fixed exchange rate” with broad fluctuation band; however, the broad fluctuation band was not utilized by most of the countries (generally, this objective seems to have been met),
- lacking independence of monetary policy, however, allowing keeping the inflation rate low (this objective, too, has been met).

Finally, it should be pointed out that all countries under consideration complied with the inflation and exchange rate criteria and introduced euro on 1 Jan. 1999 (at first, only in cashless payments, and at the beginning of 2002 for cash payments as well), naturally, without any international capital flow controls.

Greece (at the beginning of 2001) and Slovenia (at the beginning of 2007) became **new member of euro zone**. Lithuania was subject to assessment along with Slovenia, however, failure to comply with the inflation criterion (or rather sustainability of this criterion) caused the exemption from temporary non-participation in the monetary union has not been withdrawn ¹⁷.

Exchange rates of all countries were stable throughout the (approximately) two-years’ period (see Table 5), for example in Slovenia or Lithuania (Lithuania maintained currency board environment). The central parity of Greek currency was deliberately under-valuated at the moment of Greece’s accession into ERM which resulted in gradual exchange rate devaluation in relation to parity, however, within the appreciation zone of the fluctuation band.

Rates of inflation were low as well; Lithuania failed to meet the inflation criterion by as little as 0.1 percentage point (see Table 6).

Table 5: Exchange rate fluctuations within ERM II

	Greece	Slovenia	Lithuania
Maximum exchange rate deviation:			
- depreciation band	0.0	0.2	0.0
- appreciation band	8.2 (8.1) / 9.0	0.1	0.0

Rem: Exchange rate deviations from the central parity to euro (in %). Greece: The first two data refer to membership in ERM: exchange rate to the median currency (in parenthesis: exchange rate to national currency).

Sources: ECB Convergence Report (2000, 2006), EC Convergence Report (2000, 2006).

¹⁷ Accession of Cyprus and Malta into the euro area in early 2008 not considered in this survey.

Table 6: Inflation rate of new euro zone members (HICP, annual average, v %)

	1997	1998	1999	2000
Greece	5.4	4.5	2.1	2.9
	2003	2004	2005	2006
Slovenia	5.7	3.7	2.5	2.5
Lithuania	-1.1	1.2	2.7	3.8

Source: ECB: <https://sdw.ecb.europa.eu> [1. 4. 2008]

New members of the euro area succeed in achieving all three objectives, i.e. stable exchange rate, low inflation (however, the monetary policy in these countries has been modified to fit with the European Central Bank) and free international capital flow.

When assessing compliance with the inflation and exchange rate criteria, the development of the **Hungarian economy** is worth taking note of. In May 2001, quasi-ERM II (observance of the fluctuation band of 15% in both directions from the central parity; this process was not officially declared as accession into ERM II, however, approved by relevant EU authorities) was implemented in Hungary. After the implementation, exchange rate of Hungarian forint (HUF) gradually appreciated due to restrictive monetary policy and high interest rates that compensated expansive fiscal policy (aimed at low inflation). At late 2002, HUF exchange rate was close to the appreciation band limit. The Hungarian authorities had two options:

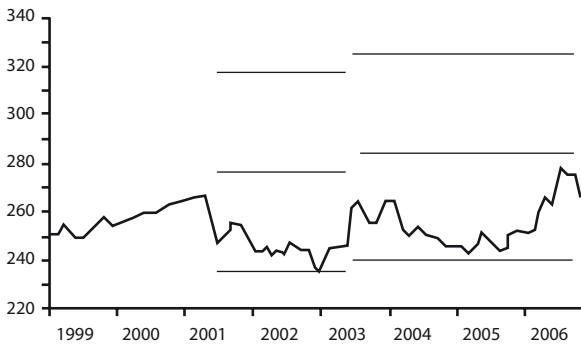
- to reduce the interest rates to mitigate the pressure towards appreciation or,
- to keep high anti-inflation interest rates and to reevaluate the central parity.

The first option prevailed and the interest rates decreased in November-December 2002, along with strong interventions in foreign currency sector (increasing Central Bank's foreign exchange reserves). Despite these measures, the tendency to appreciation continued and resulted in speculative attack¹⁸ in mid-January 2003, with speculators' expectations of exceeding the fluctuation band.

However, mitigation of monetary restrictions has been perceived as abandonment of the anti-inflation policy (giving up the inflation objective) by the investors. Paradoxically, the attempts to stop appreciation of HUF exchange rate resulted in depreciation, caused by „run“ from forint. In this situation, the Hungarian government decided – surprisingly – to devalue central parity by 2.3% in June 2003. This led to further depreciation which was responded by another increase of interest rate by the Central Bank. Thus, the depreciation rate reached approx. 12% from January to June 2003 (however, staying far from the central parity). The development of HUF rate of exchange can be seen on Fig. 2.

¹⁸ On 15 and 16 Jan. 2003, Hungarian Central Bank increased its foreign exchange reserves by 5.3 billion EUR (Viktorová, 2005, p. 74).

Fig. 2: Hungarian forint - rate of exchange (HUF/EUR, annual average)



Rem.: Horizontal lines represent simulated membership in ERM II. Central parity was 276.1 HUF/EUR from May 2001; after devaluation by 2.3% in June 2003, it was 282.4 HUF/EUR (middle line). The other lines show limits of the fluctuation band (15%) below and above the central parity. In January 2003 – June 2003, the depreciation amounted 12 %, in August 2005 – June 2006, it reached as much as 15 %.

Source: EC: Convergence Report 2006, p. 103.

Can a development like this be referred to as an example of non-consistent currency (anti-inflation) and exchange rate stabilisation policy? The answer is not easy:

- according to Viktorová, “the oscillation band seems to be much stronger limitation factor of the monetary policy than anticipated before this [appreciation] attack.” “This situation indicates any participation of Central and East European countries striving to comply with the inflation target in ERM II causes risk of lacking macroeconomic stability and inconsistent monetary policy.”¹⁹
- according to Dědek, “not any evidence of inconsistency of the Maastricht criteria, in practical terms, has been provided. For rigorous compliance with these criteria, it would be sufficient to activate the asymmetry of exchange rate within ERM II and reevaluate central parity.”²⁰

Nevertheless, another, and perhaps definitive, argument against the “turbulences” of this kind being referred to as inconsistency of the inflation and exchange rate objective is, according to Dědek, Hungarian inconsistency of monetary, fiscal and exchange rate policy. This was the essential cause of speculations by the investors and, consequently, exchange rate fluctuations.

3 “Impossible trinity” in the Czech Republic

The inflation and exchange rate indicators will be evaluated similarly as in the countries that have already introduced euro. The values of the **inflation criterion** and its observance in the Czech Republic are given in Table 7. The inflation is indicated using Harmonized Index of Consumer Prices (HICP, annual average, changes in %). In seven years under

¹⁹ Viktorová, 2005, p. 75, 78 – 79.

²⁰ Dědek, 2006, p. 5.

consideration, the inflation rate exceeded the reference value only two times, on the other hand, average inflation was approximately 24 % below the reference value.

Table 7: Inflation criterion and its evaluation in the Czech Republic

	2001	2002	2003	2004	2005	2006	2007
Three-countries average	1.6	1.4	1.2	0.7	1.0	1.4	1.3
Criterion	3.1	2.9	2.7	2.2	2.5	2.9	2.8
Inflation in CR	4.5	1.4	-0.1	2.6	1.6	2.1	2.4

Source: *Assessment, 2004, p. 4, 2005, p. 7, 2006, p. 8, 2007, p. 8.*

In most countries that have accessed into the European Union in recent time, the common issue of inflation has been accompanied by another specific phenomenon, known as Balassa-Samuels effect (B – S effect). This is an added ‘source’ of inflation due to different development of labour productivity and earnings in tradable and non-tradable sectors.²¹ In the former sector, the growth in labour productivity is higher (influence of international competition) and, consequently and the earnings grow as well. Rising earnings in tradable sector cause the earnings in non-tradable sector to rise (contagion), however, without adequate increase in labour productivity. As a result, the prices in non-tradable sector are rising and cause influence to grow.

Since the inflation should be kept low, this effect has to be responded to by exchange rate appreciation. Hence, the need of low inflation comes in contradiction with stable exchange rate and leads to appreciation (not speaking about other potential sources of inflation, which may stimulate exchange rate appreciation).

According to various assessments, the contribution of the B – S effect to overall national inflation rate ranges 1 – 4 percentage points.²² The assessments by IMF – used in some Czech analyses²³ – are shown in Table 8 (annual average in 1996 – 2003).

Table 8: Balassa – Samuelson effect

Country	%
Czech Republic	1.6
Hungary	1.9
Poland	1.2 – 1.5
Slovak Republic	1.0 – 2.0
Slovenia	0.7 – 1.4

Source: *Schadler (ed.), 2005, p. 150 (with reference to other sources).*

21 See e. g. Mandel, Tomšík, 2003, p. 166 – 167, 262 – 264.

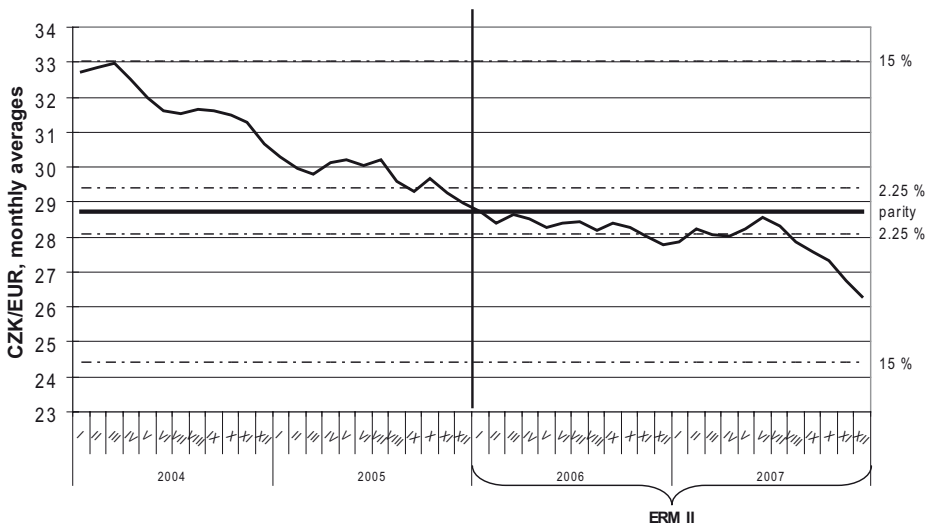
22 Viktorová, 2005, with reference to relevant literature. Similarly Šaroch, Tomšík, Srholec, 2005, p. 16.

23 Dědek, 2006, p. 8 – 9.

The data above document comparatively small impact of the Balassa – Samuelson effect. Dědek even indicates “overestimation of the B – S effect.”²⁴ From this perspective, the compliance with the inflation rate criterion is not under risk.

As far as the **exchange rate convergence criterion** is concerned, the Czech crown (CZK), so far, has not been fully integrated in the ERM II, hence, the compliance with this criterion can only be simulated – see Fig. 3. The hypothetical central parity has been based on ECB method, according to which the parity is indicated by average exchange rate in the first month of the period under evaluation (28.72 CZK/EUR in January 2006).

Fig. 3: Simulated membership CZK in ERM II



Source: www.cnb.cz (foreign exchange rates)

Overt the time of hypothetical participation in ERM II (2006 – 2007), the Czech crown has been appreciated - with some fluctuations - by 8.5 %. The narrow fluctuation band was exceeded already after 11 months, with following appreciation, however, the broad band (i.e. 15 %), by far, was not exceeded. Naturally, devaluation of central parity and “severe tension” (i.e. dramatic reduction of foreign exchange reserves of the CNB) did not occur. This can be attributed to foreign exchange interventions aimed at exchange rate stabilisation or dramatic increase in Czech interest rates (anti-depreciation measures). This can be documented by the data shown in Table 9.

²⁴ *Ib.*, p. 10. Similar conclusions drawn by Pazour (2006, p. 806) – The author claim the influence of this effect being in order of tenths of percentage point.

Table 9: “Severe tension” indicators in development of the CZK exchange rate

Period	Interest rate differential (percentage points)	Changes in foreign exchange reserve (%)
2006 I	- 0.5	15.4
II	- 0.7	- 4.0
III	- 0.8	- 2.0
IV	- 1.1	- 4.8
2007 I	- 1.2	- 3.3
II	- 1.3	- 2.9
III	- 1.2	- 4.5
IV	- 0.9	- 0.8

Rem.: The interest rate differential is the gap between 3 M PRIBOR and 3 M EURIBOR (in all cases, quarter average is shown); changes in foreign exchange reserves indicate year-on-year difference (December, in %,). The reserves are given in EUR.

Sources: www.cnb.cz (financial markets; statistics related to the balance of payments); www.sdw.ecb.europa.eu (statistical data) [1. 4. 2008]

The third objective of the “impossible trinity” is **free capital flow** (the other option: capital control). In the Czech legislation, the imposition of capital controls has been provided for in the Foreign Exchange Act (no. 219/1995 Coll.) as one of emergency measures in the foreign exchange sector. Capital control can be imposed by the Government in the event of unfavourable development of the balance of payments, both in terms of efflux and inflow of capital.

In the recent history of the Czech economy, the measures imposed by the Czech National Bank in the course of the currency mini-crisis in the spring 1997 can be regarded as a form of capital control. The access to loans (granted in CZK) and used for purchase of foreign exchange by non-residents was disabled from 22 May to 17 June 1997.²⁵ It was an exceptional preventive measure and has not been implemented since that time. Free capital flow has been observed by the Czech authorities.

To summarize, all three objectives of the “impossible trinity” (the first two being accepted as Maastricht convergence criteria) have been complied with concurrently.

4 Which are the risks associated with the “impossible trinity”?

When assessing compliance with three objectives of the economic policy before accession into euro zone, particularly in the period of membership in ERM II, specific features of the Maastricht convergence criteria should be considered, particularly:

- low inflation criterion allows exceeding the reference inflation rate by 1.5 percentage point and, as such, it is broad enough,

²⁵ Fixed CZK exchange rate, protected by CNB’s interventions (amounting approx. 2.3 billion USD) for 10 days, was abandoned on 27 May 1997.

- fluctuation band within ERM II is rather broad, allowing appreciation up to 15 % over the central parity,
- revaluation of central parity is not detrimental for compliance with the exchange rate criterion.

In specific conditions of the Czech economy, featuring long-time capital inflow (particularly, direct foreign investments) – along with surplus of the trade balance (see enclosed tables P1, P2 and P3), continuing trend towards CZK appreciation can be expected. This trend is consistent with the exchange rate criterion and, additionally, it contributes to low inflation.

Consequently, there is no risk of failure to comply with the exchange rate criterion, except for two eventualities:

- 1) Revaluation resulting from strong appreciation could bring about another appreciation expectations and, consequently, speculator attacks. Of course, the attacks can be fought off, however - given strong appreciation, not corresponding with the development of fundamental economic indicators - it may raise expectations of exchange rate correction (i.e. depreciation) which, finally, may put under risk compliance with the exchange rate criterion (depreciation currency crisis).
- 2) Depreciation currency crisis may also be “transmitted” as a result of contagion of the economic situation in one of the countries of a specific region (Central and East Europe). In this case, the investors may extend negative assessment of that country to all countries of the region, considering similar economic situation in that region. Begg et al. (2002) refer to this phenomenon as “flight to quality” where “investors seem to withdraw funds from entire regions rather than just the country where financial instabilities originate. Imperfect information on the part of international investors drives this kind of contagion. [...] Contagion is important in the context of accession [into the euro area – rem. by M. H.], because it is plausible to assume that market views about the ACs are indeed highly correlated, [...] news that the process of accession derailed in one country is, therefore, likely to affect market views about other countries in the group.”²⁶

Owing to expected determination of the relevant authorities (European Central Bank, national central bank) to protect the exchange rate, however, these risks seem improbable.²⁷

As suggested by O. Dědek in his quoted survey, inconsistency of the Maastricht criteria (i.e. inflation and exchange rate) is only a fiction. Meeting these criteria – so far, documented empirically - is not pure coincidence. This can be explained, on the one hand, by their inter-connection with the main instrument of monetary policy, i.e. interest rates, on the other hand, by the fact both criteria are closed in one direction only (“semi-opened” intervals). Increasing interest rates will lead to (unlimited) drop of inflation and - at the same time - to (unlimited) exchange rate appreciation. In consequence, the low inflation will allow reduction of long-term interest rates, as required in the Maastricht criteria. Introduction of relatively fixed exchange rate (after accession into ERM II), while maintaining free international capital flow, will be understood as abandonment of the independent

²⁶ Begg et al., 2002, p. 67.

²⁷ For details see Helisek, 2008.

monetary policy and full subordination to the policies of the European Central Bank, as in case of EMS and EMR in late 1990s. However, any limitation of an independent currency policy should not result in dramatic increase in national interest rates (with following unfavourable impact on production and employment), considering current (and, obviously, sustainable) low inflation in CR.²⁸

5 Conclusion

Let us conclude this survey with an interesting proposal to mitigate the contradiction between the inflation and exchange rate criterions. This proposal has already been put forward by W. Buiter²⁹ (quoted before), requiring re-definition of the inflation criterion in such a manner to include only prices of tradable sector in the price index (this proposal is the response to already mentioned Balassa- Samuelson effect), and to allow asymmetry of the exchange rate criterion (unlimited exchange rate appreciation). These changes would require amendment of the Treaty on European Union, a fact which is highly improbable. However, this will not be necessary, considering the facts above.

Abstract

Accession into euro area is conditioned (among others) by stable low inflation rate and stable currency exchange rate (participation in ERM II). Treaty on EU defines obligation to maintain free international capital flow. It concerns three objectives and theory of "impossible trinity" considers simultaneous fulfillment of all these three objectives infeasible. Experience resulting from the first wave of euro area members shows temporary limitation of capital flow, or loss of autonomous currency policy. Stable exchange rate is maintained, but extension of fluctuation zone denies its character of "stable exchange rate". In conditions of ERM II (Greece, Slovenia, Lithuania) stable exchange rate, low inflation rate (with connection of currency policy with European Central Bank) and free capital flow were reached. Present development of the Czech economy shows the same development. Maintaining low inflation by restrictive currency policy together with simultaneous appreciation of exchange rate (or revaluation of central parity) is not in contradiction with Maastricht convergence criteria.

Keywords

Euro, euro area, convergence criteria, impossible trinity, ERM II

Souhrn

Přistoupení k eurozóně je podmíněno (mimo jiné) stabilní nízkou inflací a stabilním měnovým kurzem (účast v ERM II). Ze Smlouvy o EU vyplývá povinnost udržovat volný mezinárodní pohyb kapitálu. Jde o tři cíle, jejichž současné plnění může být považováno

28 "There are some good reasons not to join too early. [...] According to the impossible trinity, adopting a fixed exchange rate implies the loss of the monetary policy instrument, in effect importing the ECB's policy. In particular if their [i. e. countries accessing into the euro area – rem. by M. H.] inflation rates are significantly higher than the eurozone rate, this would imply a very vigorous disinflation policy. It makes sense, therefore, to wait until their inflation rates have converted to the eurozone level" (Baldwin, Wyplosz, 2006, p. 341–342).

29 Buiter, 2000, p. 13 – 14.

za nemožné (teorie „impossible trinity“). Zkušenosti první vlny členů eurozóny vykazují dočasné omezení pohybu kapitálu nebo ztrátu autonomní měnové politiky. Pevný kurz je sice udržen, rozšíření fluktuativního pásma však zpochybňuje jeho charakter „pevného kurzu.“ V podmínkách ERM II (Řecko, Slovinsko, Litva) bylo dosaženo pevného kurzu, nízké inflace (při navázání měnové politiky na Evropskou centrální banku) i volného pohybu kapitálu. Dosavadní vývoj české ekonomiky svědčí o stejném vývoji. Udržování nízké inflace restriktivní měnovou politikou při současné apreciaci kurzu (nebo dokonce s revalvací centrální parity) není v rozporu s maastrichtskými konvergenčními kritérii.

Klíčová slova

euro, eurozóna, konvergenční kritéria, nedosažitelná trojice, ERM II

JEL classification / JEL klasifikace

E52, F31, F36

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Table P1: Balance of payments of the Czech Republic (billion USD)

	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
current account	0.5	-0.8	-1.4	-4.1	-3.6	-1.3	-1.5	-2.7	-3.3	-4.3	-5.8	-5.8	-1.9	-4.6	-4.4
capital account	-0.6	0.0	0.0	0.0	0.0	0.0	-0.0	-0.0	-0.0	-0.0	-0.0	-0.6	0.2	0.4	1.0
financial account	3.0	3.4	8.2	4.2	1.1	2.9	3.1	3.8	4.5	10.6	5.6	7.0	6.4	5.1	5.2
errors&omissions 1)	0.1	-0.2	0.6	-0.9	0.7	0.3	0.0	-0.3	0.5	0.3	0.6	0.4	-0.8	-0.8	-1.0
change in foreign exchange reserves	-3.0	-2.4	-7.5	0.8	1.8	-1.9	-1.7	-0.8	-1.8	-6.6	-0.4	-0.3	-3.9	-0.1	-0.8

Rem: 1) including exchange rate differences. Change DR: - = increase.

Table P2: Current account - Balance of payments of the Czech Republic (billion USD)

	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
trade balance	-0.5	-1.4	-3.7	-5.7	-4.9	-2.6	-1.9	-3.1	-3.1	-2.2	-2.5	-0.5	2.5	3.0	5.8
services	1.1	0.5	1.8	1.9	1.7	1.9	1.2	1.4	1.5	0.6	0.5	0.6	1.5	1.5	2.7
revenues	-1.1	-0.0	-0.1	-0.7	-0.8	-1.1	-1.3	-1.3	-2.2	-3.6	-4.3	-6.1	-6.5	-8.2	-12.5
current transfers	0.1	0.1	0.6	0.4	0.4	0.5	0.6	0.4	0.5	0.9	0.5	0.2	0.5	-0.9	-0.4
current account	0.5	-0.8	-1.4	-4.1	-3.6	-1.3	-1.5	-2.7	-3.3	-4.3	-5.8	-5.8	-1.9	-4.6	-4.4

Table P3: Financial account – Balance of Payments of the Czech Republic (billion USD)

	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Direct foreign investments	0.6	0.7	2.5	1.3	1.3	3.6	6.2	4.9	5.5	8.3	1.9	3.9	11.6	4.7	7.8
portfolio inv. 1)	1.6	0.9	1.4	0.7	1.1	1.1	-1.4	-1.8	0.8	-1.6	-1.2	2.0	-3.4	-1.4	-2.5
other invest.	0.9	1.8	4.3	2.2	-1.3	-1.7	-1.8	0.7	-1.8	3.9	4.8	1.0	1.7	1.8	-0.1
short-term	0.1	0.6	1.0	-0.9	-1.6	0.2	-1.0	0.8	-1.7	2.9	3.8	-1.2	-2.7	-0.2	0.4
long-term	0.8	1.1	3.3	3.1	0.4	-2.0	-0.7	-0.1	-0.1	1.0	1.0	2.2	1.4	2.0	-0.4
financial account	3.0	3.4	8.2	4.2	1.1	2.9	3.1	3.8	4.5	10.6	5.6	7.0	6.4	5.1	5.2

Remark: 1) from 1 Jan. 2000, incl. financial derivatives

Source: Balance of payment (CNB). www.cnb.cz (1 May 2008)

Redistribution systems theory as a key to reality decoding

Teorie redistribučních systémů jako klíč k dekodování reality

PETR BUDINSKÝ, RADIM VALENČÍK

In any theory development, we may generally distinguish three stages. Its origin is based on an idea enabling to make first small steps. For some time, they remain unconvincing, insufficient, and seem to be just little utilisable. The emerging theory suffers not only from lack of supporters, but also opponents. There are namely not many of those who would notice that something new and prospective is emerging. By entering the second stage, smaller and larger discoveries made within the theory increase faster and faster. They accumulate with a snow-ball effect. The theory proves prospective, consistent, and it opens the space for research that attracts expert supporters. It offers certain style and method adopted by higher number of experts. In the third stage, the space for further discoveries gets gradually exhausted. Some partial elements of the theory are rather fine-tuned. Theory results are however used plentifully in practice, and procedures of their utilisation are continuously improved. The theory has matured, it remains tied up by its own developed paradigm, and it waits until it is preceded by new one.¹

The fact that a new theory is emerging becomes apparent in the transition period from the first to the second stage. Indications of the fact that it is a prospective theory include:

- Increasing new knowledge and discoveries, relative quick transition from one knowledge level to the next.
- Each new step in the theory development raises great amount of questions. Figuratively speaking – upon opening one door, there are many others awaiting their opening.
- Frequency of questions and possible continuations in theory development lead up to certain scepticism, when we ask whether we are able to defend theoretical issues of the theory in question.
- Various directions of theory distribution start interfering, and the new knowledge gained this way becomes more conclusive, obvious and distinct, concerning both the meaning and the method of use.

The above applies in both the natural sciences area (e.g. theoretic mechanics, molecular kinetic theory of gases, elementary particles theory, etc. were born like this) and in case of social sciences (theory of use, Keynesian theory of macroeconomics, etc.).

¹ Compare e.g. Kuhn (1982).

Six months after we published the English version of the article called Nash Equilibrium in Redistribution Systems (calculation, meaning, and utilisation) in ACTA VŠFS² magazine in February 2008, we acquired much more knowledge in this area in a relatively short time, and walked through another part of the path leading to recognition of what goes on in social systems. It seems to us that we are at the beginning of a prospective theoretic concept.

Let's remember that under the term "redistribution system" we understood such system, in which certain movement of compensations as against performance of individual players takes place, resulting in its reduced efficiency. The cause of compensation movement as against performance of individual players is considered development of alliances inside the system, when players in the alliance controlling the system are favoured at the expense of players who are not part of this alliance. In other words, we can see the social system as a system, which various lobbies win their recognition in, when those controlling the system increase their compensations at the expense of those who are not part of these lobbies, which at the same time results in reduced efficiency of the entire system. The area of application of the redistribution systems theory is very broad. More specifically – we would barely find a social system that is not more or less influenced or at least threatened by what the redistribution systems theory tries to express using its mathematical apparatus. In the article published in February 2008, we presented a model of the elementary redistribution system, showed some of its features, and determined and calculated discriminating equilibrium and Nash equilibrium³. We at the same time indicated possibilities of further model extension and practical importance of modelling social systems using the apparatus of the redistribution systems theory.

1 How we recognise the reality through abstract models

We can recognise the reality in various ways. In some cases, we identify, designate, and classify what we encounter. We find the general and search for the causative or other connections. This way, we may proceed also in case of the analysis of various social systems. We may for example find that various alliances are formed not only inside these systems but also between them. These alliances are often hidden and decide on how the situation inside individual social systems would develop. When analysing procedures based on monitoring and experience only, we can find out soon that there are too many various connections or links as well as their intermediations. The possibility to foresee the development in individual systems is thus limited.

Another possibility is to use an abstract model. The process of reality recognition then looks like a process of "deciphering" or "decoding" of that area, when the key or the code is the model itself. The experience from reality recognition says that the condition of success consists in revealing what is very simple, i.e. really elementary. By expanding, enlarging, supplementing, generalising (extending) the preconditions, incl. hidden ones, the model then gets an image when it enables to capture the richness of the reality, and it is capable to describe it more comprehensively. It concurrently shows that it is necessary to define

² *Budinský – Valenčík (2008)*

³ *Nash equilibrium was interpreted mainly according to Carmichael (2005).*

(capture) root definitions again and again, and more precisely. Their precise approach is just the key to revealing hidden preconditions and thus also to model development. In doing so, it is important to find the simplest way. The simplest within the sense of intuition, since there is no formal regulation that would express what the simplest is and how to find it. If we then assume the simplest (the key), the reality starts opening in front of us, and we can start reading it.

With respect to importance of the principle to use the simplest model to read the reality, we will dedicate couple of comments to it. The most illustrative example of finding such key to read the reality was probably discovery of the law of inertia based on abstraction of the uniform linear motion. It is sometimes ascribed to Galileo, but it was rather discovered by his followers. It seems that there is nothing simpler then to express motion of an object, which is not influenced by anything, by equation $s = v \cdot t$ (the stroke s is directly proportional to the velocity v and the time t). This is thus a base of the well known formulation that the object remains standstill or in uniform linear motion, if no power applies to it.

For more then two thousand years, there was however a concept of objects motion based on the authority of Aristotle, saying that objects need constantly a power for their motion. A new concept based on abstraction of the uniform linear motion was emerging (gaining grounds as against established ideas and stereotypes) with great difficulties.

This concept then became a key (code) to read (decode) the reality. It for example raises a question – What if the object is affected by power? The second Newton's law then results from the answer - generalisation of the motion to uniformly accelerated one. Another example of extension is the power generated by mutual interaction of two objects (the law of action and reaction, or the third Newton's law). This was just a small step away from the molecular kinetic theory of gasses and liquids, etc.

It is important that each step leading to extension of the original model as well as the next step extending models generated by its extension was always managed in the direction of the simplest expression of the overlap.

Also the transition from the classical mechanics to the new ones, based on the relativity principle, was distinguished by the fact that the overlap featured (from the intuitive point of view) the simplest or the most economy solution.

We may imagine each step of word decoding as a limit-simple extension of the original (also originally limit-simplest) model. It is among others testified by some contributions published in the book *My Einstein* (the original was published in 2006). These are mostly contributions of top physicists who, with a dispassionate point of view and deep understanding, comment on what Einstein actually came up with. We can mention one of them. It is adumbrated by its title "Albert Einstein: Scientific "reactionary": *"Einstein resolved this discrepancy as a twenty six year old young man in 1905. He later reported that as soon as he realised suspicious nature of Newton's axiom of absolute time, he was able to find a method of modifying Newton's mechanics within six weeks, to be in accordance with Maxwell's equations. Since Einstein's mechanics and its best-known definition $E = mc^2$ have brought revolutionary consequences, we rarely realise that Einstein's innovation was basically very conserva-*

tive. His modification of basic physical equations valid at that time was just minimal... When Einstein introduced the basic velocity limit, i.e. light velocity, to the mechanics of objects, it was apparent that the Newton's gravitation theory must also be modified, since it calculated upon unlimited velocity to overcome gravity effects. Newton's law of gravity does not contain any limitation of velocity; gravity effects of rock motion on the Earth should in principle become evident anywhere in the universe. By 1917, Einstein created successfully a new gravity theory... His gravity theory, called regularly the general relativity, is often considered a revolutionary change in looking at the gravity, since Newton's gravity is a power, while in Einstein's concept it is a space and time curvature. In spite of that, general relativity was also actually just a conservative modification of the existing Newton's gravity theory... Einstein's gravity theory enabled curvature of both, time and space, and showed that those curvatures are mutually related. What could be more natural?... Also Einstein's discovery of quantum mechanics was again a conservative modification – conservative in terms of preserving classical structure of Newton's physics...” (Tipler 2007, p. 82-84.)

The fact that Einstein's modifications of the original (Newton's) model were “reactionary” or “conservative” means nothing else but they were the simplest (limit-wise) extension. Tipler's erudite interpretation enables to understand well what this simplicity consisted in. And in terms of methodology, it is instructive for any work with a model that strives for (if possible) general validity in that area of reality. Both, the first model and each (emphasis is on the word “each”) extension that is to be beneficial in discovering of what is going on must meet the criterion of intuitive (hard to define, but apparent by internal feeling) limit simplicity. This guide was and still is important also in our case. It was at the same time confirmed that the above process can be used not only in the area of natural but also social sciences. And as we show you thereafter, we can get very far using this method.

2 Practical and theoretical importance of identification and calculation of discriminating and Nash equilibrium in the elementary redistribution system

The model of the elementary redistribution system is conceived to include the most important and also the simplest we can encounter in this area. Its logic consists of three players (A, B, C), each of them with the same influence on the system, any two players may form an alliance, players' performance is acknowledged by small natural numbers (e.g. 6:4:2). We can then display players' compensation in a 3D space, when each coordinate axis corresponds with the compensation to any player. The impact of reduced system efficiency due to compensation departure from players' performance can be expressed by redistribution equation, e.g.:

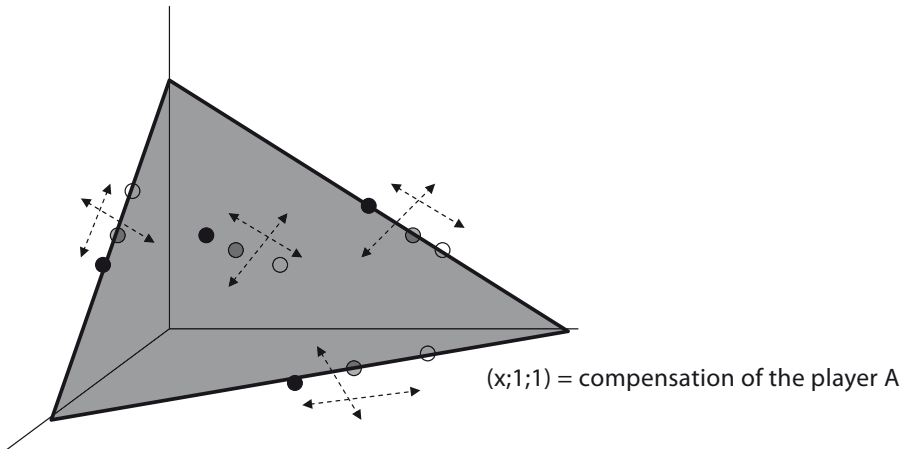
$$x + y + z = 12 - \eta \cdot R(x - 6, y - 4, z - 2)$$

where $x + y + z$ is a summary of compensations to individual players; 12 is the maximum compensation that could be distributed, if the performance of the redistribution system is maximal, which means that no redistribution would occur, and compensations would be distributed according to the performance; η is a coefficient of performance drop; $R(x - 6, y - 4, z - 2)$ is a function of distance of distributing actual compensations from compensations according to players' performance.

With respect to the fact that the redistribution equation links three variables (compensations of individual players) by single dependency, all possible redistributions may be displayed in the redistribution area in a 3D space. If we assume that the lowest compensation for each player is equal to 1, we can then form an idea on the arrangement of individual types of equilibrium in the redistribution area as follows:

Diagram 1: Various types of equilibrium in the elementary redistribution system:

$(1;y;1)$ = compensation of the player B



$(1;1;z)$ = compensation of the player C

Where:

- The triangle determines a simplified image of the redistribution area, i.e. a set of all possible redistributions.
- Thin lines of the coordinate represent compensations of individual players.
- Is the point corresponding with the distribution of compensations according to players' performance, in case of both, discrimination equilibrium (if on the border line) and the distribution according to the performance of all players (if inside the redistribution area).
- Is the point corresponding with discrimination equilibrium (if on the border line), or Nash equilibrium (if inside the redistribution area).
- Is the point corresponding with equalitarian distribution of compensations in case of both, discrimination equilibrium (if on the border line) and the distribution according to the performance of all players (if inside the redistribution area).
- Arrows indicate possible movements of discrimination equilibrium and Nash equilibrium in case of external influences on the redistribution system.

Graphic display of individual equilibrium types and their movements enables to form an idea of what is going on due to various influences acting on any system (that is also always a redistribution system). Everyone of us estimates what would happen. The ability

of our estimate is considerably individual. We have available various information, our own experience, we include the fact that “wish is the father to the thought” in our estimates in various ways, etc. General scheme may however significantly consolidate such our individual ability.

In doing so, it is very important to mention the following: As soon as we encounter that something develops differently than it should, it is a signal that there is a new influence or factor, which we did not envisage, e.g. a network link of any game participant, or the fact that he/she is a member of certain hidden cross alliance.

It applies in general that the role of social networks influencing the results of negotiations inside individual and relatively independent systems (of redistribution system type) is very strong and growing. It is appropriate to take it into account. Model confrontation as a visual image of the method of developing various types of equilibrium in redistribution systems with real development in particular organisations or institutions enables to anticipate respective links, and identify and correct strategic behaviour with respect to their existence and parameters.

3 Examples of extension of the elementary redistribution system model

We now arrive at the most important. If our model of the elementary redistribution system is really suitable and useful abstraction, we may then extend it in various directions, so that it increasingly becomes the true picture of the reality. Each step of such extension then enables to imagine better what is going on in the real social systems. And in accordance with the aforementioned, each (methodologically efficient) extension of the elementary model will be the simplest (most economical). We select four examples from what we have been successful with so far. They differ by their level of achievement, or the degree of development, and all of them are instructive in a different way:

- The first example represents model extension using effects of the competition and inter-organisational migration. It is in a way the most developed and most elegant example. It is based on a very simple model extension that has however very strong interpretation. In addition, nice (also within the aesthetic meaning) mutual supplementation of the arithmetic and geometric expression of this extension takes place here.
- The second example represents model extension using the element of mutual corruption of players in forming alliances and distributing compensations. It is interesting, since the primary analysis of feedback option consideration (i.e. means gained by players in a single round to influence results in the next round) leads us to the opinion that the whole model becomes very complicated and that we will be forced to define and test a great number of cases to reveal the key issue (which enables reality “decoding”). Further examination however shows that minor extension of the model is sufficient again to capture very economically the most important matters in this extension that form players’ behaviour.

- The third example pays attention to the possibility of players from one system type to influence forming alliances and compensation distribution in other systems. This example is in a stage when we are able to present basic tools of model extension and first results of their application. The model extension stated is not in a stage when the simplification effect takes place, i.e. when from the great volume of model specifications we select the option, which would be the key searched for, enabling to identify respective reality as economically as possible.
- The fourth example points out the problem area of cross alliance effects (i.e. alliances of players from various redistribution systems) on the process of negotiation inside individual redistribution systems. This area of model extension is currently the less developed as compared to the other three. With respect to further development of the redistribution systems theory and its application, it is however the area of significant importance.

3.1 Example one: Competition and inter-organisational migration effects

In the article Budinský-Valenčík (2008), we have shown that in the systems not exposed to the pressure of competitive environment alliances of average and less performing players will be prevailing, while the most performing players will be discriminated. What would happen, if the system were exposed to the competition?

It becomes apparent that we must examine competition effects always in certain connections – e.g. with systems development and the possibility of inter-organisational migration (i.e. in connection with the fact that anyone may leave or join the social system). Inter-organisational migration has a decisive influence on acquisition and maintenance of the human capital of companies and other types of organisations.

To create a respective model, it is important to find appropriate simplification that would serve as a key to precise description of the phenomenon. It became apparent that the most appropriate simplification is to put the possibility of inter-organisational migration in direct link with the lowest compensation, which must be paid to the most performing player. Players then negotiate how they can distribute the compensation available by forming various alliances. Such point of view is also nearest to the real situation. It can be expressed mathematically as follows:

If the most performing player had to receive compensation higher than 1, e.g. a , while the parameter $0 < a < x_{\max}$ (the highest value that the player A may receive), we then get the following equations:

$$a + y + z = 12 - \eta \cdot R(a; y - 4; z - 2)$$

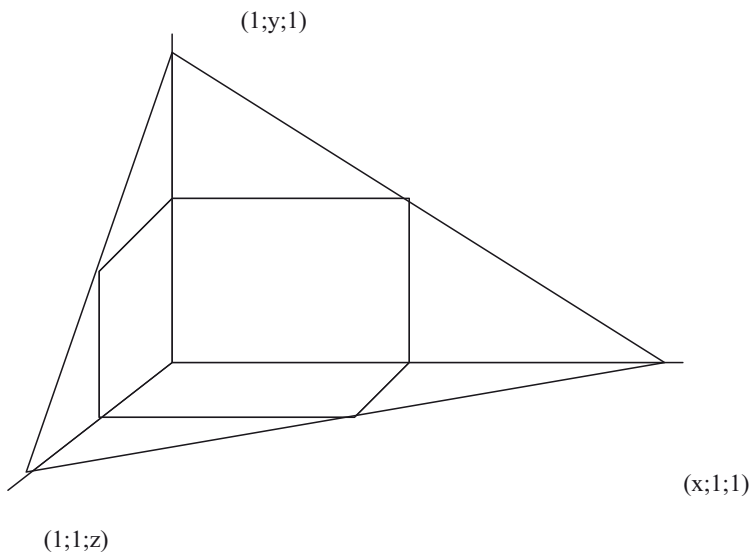
$$x + 1 + z = 12 - \eta \cdot R(x - 6; 3; z - 2)$$

$$x + y + 1 = 12 - \eta \cdot R(x - 6; y - 4; 1)$$

Very interesting and at the same time fully in accordance with what we have said on the importance of Diagram 1 is also the graphic expression of inter-organisational migration possibility. Let's show how we can get to it. The simplified model of equilibration in

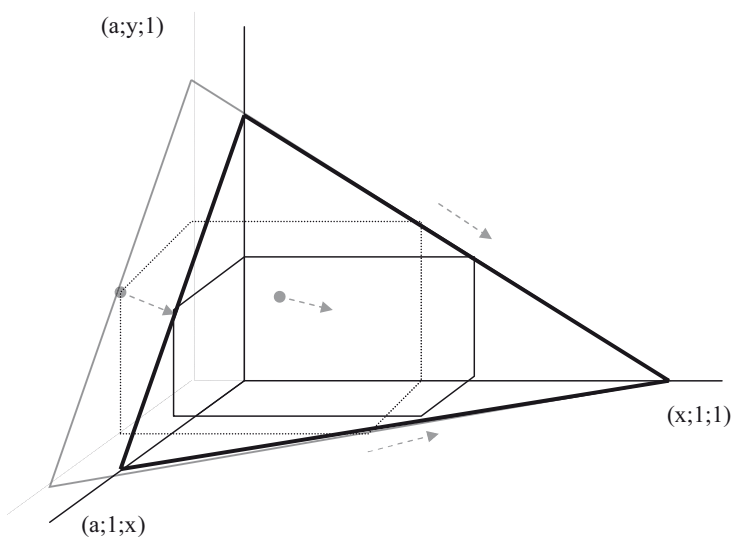
negotiation in pandering form can be displayed similarly as in Diagram 2 in the article Budinský- Valenčík (2008):

Diagram 2: Equilibration in negotiation in pandering form in the simplified model:



Instead of calculation, we may then use a visual image of where individual types of equilibration will move.

Diagram 3: Movement of discrimination equilibrations and Nash equilibration in the simplified model:



Thin dashed line indicates the original situation, the thick line indicates borders of the redistribution area moved at the parameter and with axes of coordinates $(x;1;1)$, $(a;y;1)$, and $(a;1;z)$. It displays graphically the condition of discrimination equilibrations in negotiation with pandering, and arrows show movements of discrimination equilibrations and Nash equilibration.

The experience gained by extending the module in given direction can be summarised as follows:

- Extension base is a very minor modification of equations leading to discriminating equilibration discovery (single parameter value will change only).
- This equations change corresponds with a geometrical model that is very descriptive and intuitively understandable.
- We were able to obtain the result by searching for the answer how to express effects of the competition and inter-organisational migration as economically and simply as possible, or using the opposite method, i.e. to made certain formal modification of equations and try to interpret it.
- In our case, we were searching for model expression of what we have identified in the reality. The opposite procedure seems to be very tempting. The path from formal extension of the apparatus, which describes the reality mathematically, to interpretation of what this extension means is however not as simple as it might seem, if we know the result.
- In this case it consists in the fact that the model describes not only the competition or not only inter-organisational migration, but concurrence of both effects. This among others shows that good model must proceed from careful perception of the reality. For example, trying to determine competition or inter-organisational migration effects, etc. in "clear" form at any price would not lead to any success in this case. It is always interaction between the model extending by "clear" mathematic generalisation and the effort to use the model to capture the essentials that we identify in the reality itself.

3.2 Example two: Possibility of mutual corruption of players (investing into a position)

The real voting power or players' influence on game results may usually vary. Even in the case where all players have formally the same (equal) position. Various methods are for example used for promoting effects of assets, income level or disposable funds on the possibility to influence forming alliances and distribution of compensations. In the event that the income may influence game results (which happens in practice almost any time), the feedback actually functions between the result of the previous game and the parameters of the next game. We know that feedback existence has always a significant impact on the behaviour of any system. We may anticipate that this will also apply to redistribution systems. The point is to find an appropriate model that would describe this phenomenon; i.e. that would capture consequences of investing into the player's position in that system.

The solution is always simple, and it also applies to this case. We may understand income effects on game results (distribution of compensation) in the next round (in forming alliances and achieving certain compensation within the alliance) so that the player will use part of his/her funds, which he/she disposes of and which he/she gained in the previous round, to pay to another player for the fact that this other player applies the strategy required by the first player. A very simple principle. It is however not simple to put it in operation, also with respect to necessary assumption of simplicity.

One of the problems we have to cope with is for example the question – how to use the model to capture the problem of agreement compliance or violation, i.e. that the player will apply the strategy required in return for compensation.

The following rules have been proposed:

1. An initial state was determined (e.g. distribution of compensation in the ratio 3:2:1).
2. Anybody may try to bribe anyone else from the funds available to him/her:
 - 2.1. Directly from the amount he/she actually disposes of.
 - 2.2. And also from the amount gained from negotiation.
 - 2.3. By promising compensation after round completion.
3. Any agreement related to compensation distribution may be proposed and any agreement of this type may be violated at any time.
4. The player not violating the agreement is expected not to violate it, until he/she violates some agreement; the player violating the agreement is expected to violate agreements.
5. After completion of each round, every player will receive his/her compensation
6. Each player spends certain amount in each round (e.g. 1).
7. All players are informed of all steps (negotiation results, agreements conclusion, their violation...) of other players.
8. Each player strives:
 - 8.1. Not to get into the state of exigency.
 - 8.2. To maximise his/her compensation in a long-term horizon.
 - 8.3. To maximise the total of compensations in individual rounds.

Let's now show an example of a game that was played in public at the regular Theoretical seminar of PCE in VŠFS on 28.01.2008:4

4 Theoretical seminar of PCE (Productive Consumption Economy) is held every week from October 2003 during teaching. Information on this event (topics, details) can be found at www.vsfs.cz → Science and Research → Theoretical seminar of PCE.

A	B	C	
3	2	1	(initial state)
3(-2)	2	1(+2)	A offered 2 to C, B did not respond, C accepted
1(+3)	2(+1)	3(+2)	compensations in this round
4(-1)	3(-1)	5(-1)	consumption
3	2	4	initial stat in the next round
C offers 1 to B			
A offers 1 to C			
B did not accept, requires 2 from C			
C did not accept, offers 1 to A			
A is willing to accept			
B did not respond			
3(+1)	2	4(-1)	
4(+2)	2(+1)	3(+3)	compensations in this round
6(-1)	3(-1)	6(-1)	consumption
5	2	5	initial stat in the next round
A offers 2 from the result to C			
B offers 1 to C			
C accepts the offer of 2 from the result from A			
5(+3)	2(+1)	5(+2)	compensations in this round
8(-1)	3(-1)	7(-1)	consumption
7	2	6	initial stat in the next round
7(-2)	2	6(+2)	A complied with the agreement
5	2	8	

In this game, the necessity to particularize determination of the negotiation process has proven among others.

If we consider the influence of redistribution to reduced performance of the organisation and the possibility to negotiate with pandering, we will find that the system would behave differently. We have to however assume that all players are perfectly reasonable, perfectly informed of the results of mutual negotiations, and the negotiation process is not limited whatsoever. Using the following rationale, we can show you how the system will behave under different circumstances. We will search for respective equilibriums, their definitions, interpretation and calculation. We logically also assume that some discrimination equilibrium was formed within the system, e.g. based on the alliance B and C against the player A. (Should another alliance be formed, the deliberation method and the results achieved will not change.)

Case one: Players B and C will tend to pander by bribing the player A, and they try to gain higher compensation then between each other within the existing alliance. Forming such alliance would also mean an improvement for the player A. He/she has no reason to decline the offer, which will bring him/her the compensation higher then 1 from any of the players B or C in the next round. But how much can he/she ask for? Exactly as much as defined by calculation of the discrimination equilibrium in case that he/she is in the winning alliance. The system thus turns into the state of any discrimination equilibrium.

Case two: Players B and C may offer a certain amount to the player A from their own funds before getting compensation in the next round, to assure getting into the alliance with him/her and that the player A will improve his/her position in this alliance. The player B has seemingly an advantage, since he/she disposes of greater funds and can assure the result by "overpaying" the player A. But also in this case there is nothing new. The thing is that all players think reasonably and are perfectly informed of mutual negotiations. The player B must aim to improve his/her compensation as compared with the previous round. He/she may overpay the player A, giving him/her more than the player C who would have to pander. In such case, his/her compensation would however be lower than if he continues with the alliance with the player C, and thus such situation will not arise. In the event that we do not consider the difference of values in time (i.e. the amount obtained in advance from the compensation in the first round or from the compensation in the second round with the same nominal value has also the same real value), the total of compensation in advance and after must be exactly at the discrimination equilibrium level.

Example three: The player A who is discriminated will try to improve his/her position and declares willingness "to get bribed" with certain amount, e.g. 2. In such case, he/she would be in the winning alliance with higher compensation, together with the player who would first accept his/her offer. If however some negotiation with pandering takes place and other two players could give him/her more, discrimination equilibrium would be formed again with the same parameters as when we do not consider bribery.

Example four: The case when a player outside the alliance (in our case the player A) makes an offer to get bribed with certain amount and must follow this offer is even more interesting. I.e. even in the event that another player (B or C) offers more, he/she cannot withdraw from the agreement declared. Then the player who first makes an offer to this player will form an alliance with him/her. However, we have to think even further here as well:

- It subsequently raises a question – how much he/she may ask for. It is interesting that this amount reaches up to the discrimination equilibrium level. I.e. as soon as he/she offers any amount that is a bit lower, one of the players will form equilibrium with him/her.
- Also other players may be aware of the above and make respective offer preventively. In such case, the system will "fall" again within some discrimination equilibrium.

Example five: Agreements however do not have to be complied with. In the first approach, we may model this situation by the fact that the amount, which one of the players is bribed with, must be higher exactly by much the risk of non-compliance with the agreement is higher. But if the game is played repeatedly, its development will be interesting again. The player who would not comply with the agreement might have never got into the winning alliance. So we can see that there is a very strong spontaneous pressure to comply with agreements in the system. To be more specific – agreements will be complied with in a purely model situation (which itself is an important and not trivial result).

Model investing into the position or the feedback bring interesting results also with respect to behaviour of real systems, and they may be summarised as follows:

1. Discrimination equilibriums influence very strongly the nature of agreements and subsequent distribution of compensations even with many modifications in the course of negotiation.
2. Discrimination equilibriums may be modified by some exogenous effects such as credibility of players, difference of the real and nominal value in various rounds, etc. These effects can be included in the system very easily, and they shift discrimination equilibrium values.
3. The system is very sensitive to exogenous effects that favour one of the alliances, e.g. to network links (an alliance with players from various redistribution systems).

The experience acquired by model extension in given direction can be summarised as follows:

- Even a very simplified model of bribery, or investing into the player's position, has many modifications, and the task is to compare it with the reality to find those that are relevant.
- Although it seems in the first approach that model extension using the element of possibility of mutual bribery of players would result in large number of variants of their behaviour, we can find in the detail analysis that even in such extended model, the same discrimination equilibriums and the same Nash equilibrium remain as in the elementary model. Some parameters may be only be slightly modified.
- It shows at the same time that what was considered sufficiently accurately expressed and obvious (in this case intuitive vision of the negotiation process) it requires determination in much more details.⁵

3.3 Example three: Influence of players from one redistribution system on forming alliances in another system

We have so far considered cases when in certain system the players of that system have sovereign influence only. We however know that the reality is different. There is usually certain influence of players from other systems on the behaviour of players in the system in question. It is particularly due to "networking" of players from various systems, i.e. by forming alliances "across" various systems, the members of which are players from various systems. These alliances may be visible or hidden. They may however significantly influence development in any particular system. We can model this situation using for example the following method:

We have N players in a redistribution system (A_1, A_2, \dots, A_N) , while the influence power of each of them is:

$$1 + a_i q_i,$$

where:

a_i is a coefficient of the level of influence of i -th player of the cross-alliance (in the simplest model) on forming alliances and the amount of compensation in his/her redistribution system;

⁵ For negotiation problems see for example Horniaček (2006), Osborne (2002), Selten (1999a), Selten (1999b).

q_i is the number of players from other redistribution systems, which this player forms the cross-alliance with.

(The above shows nothing but the fact that the more players from various redistribution systems form the network, the higher the power of their influence inside each redistribution system.)

The condition for forming a minimum winning alliance can then be formulated as follows:

$$\sum_j (1 + a_{ij}q_{ij}) > 1/2 \sum_i (1 + a_iq_i)$$

while the following applies for all k :

$$\sum_j [(1 + a_{ij}q_{ij}) - (1 + a_{ik}q_{ik})] \leq 1/2 (\sum_i 1 + a_iq_i)$$

where:

the index i assumes the value $1, 2, \dots, N$;

the index j gradually assumes the value $1, 2, \dots, N_j$ ($N_j < N$) and indicates only those players from that redistribution system who are members of the minimum winning alliance;

the index k assumes some values $1, 2, \dots, N_j$ ($N_j < N$) and indicates only some (any) player from that redistribution system, who is a member of the minimum winning alliance.

Both conditions are quite apparent. The first one (that the alliance is winning, i.e. disposes of sufficient influence) says that total influence of all players forming the minimum winning alliance must be higher than a half of all players in that alliance. The second one (that the alliance is minimal) says that if any member leaves this alliance, it will not have sufficient influence anymore.

If $a_i = 0$ or $q_i = 0$, we have the original model. Either there is no influence of the cross-alliance on development inside the system, or no cross-alliances have been formed. In compliance with the above conditions, we can modify a system of equations leading to calculation of discrimination equilibriums.

The above system extension distinguishes itself also by significant "economy". We assume that forming a cross-alliance of certain player from the distribution system in question with each player from other redistribution system increases its influence the same way, or by the same value (a_i). If $a_1 = a_2 = \dots = a_n = a$, it means that this influence increase would be identical for each player from that redistribution system. In that case, it would be possible to write down the conditions of the minimum winning alliance using even a simpler method.

Based on the above presented formalism, we can formulate many interesting tasks. It is apparent that reasonably behaving player will try to maximise the number of players he/she forms the cross-alliance with. He/she may also form an alliance with more players

from the other redistribution system (exclusivity does not have to be preserved). The same applies reciprocally. What would be the consequences, if there were players from different alliances in such developed cross-alliances (expulsion from the winning alliance as well as members of the winning alliance)? How will this influence stability of winning alliances? What role would this play in negotiation? What consequences will player's awareness or lack of information on the existence and structure of cross-alliances have (i.e. differences due to existence of hidden and visible alliances)? To answer these and similar questions, it is necessary to formulate other supplementary specifications describing players' behaviour. These specifications (formalised rules) must be intuitively understandable, simple, and correspond with the reality.

The experience acquired by model extension in given direction can be summarised as follows:

- As soon as we open the door to model extension by suitable formalisation, there is usually a great number of options of how to continue. It was also similar in the previous second example.
- Various options of paths and model specifications must be examined step by step.
- In doing so, there are questions that would not arise without model extension. These questions are usually both, interesting and significant, with respect to practical interpretations.
- Sooner or later we can assume that a method will appear how to describe this problem area and express it by relatively simple way, when many considered modification options of extended model description will prove to be misleading.

3.4 Example four: Influence of links between redistribution systems on the negotiation process inside each of them

One of the basic assumptions for calculation of discrimination equilibriums in the elementary redistribution system is that the negotiation process will pass perfectly, without any limitations. The reality is usually different. Not all players are informed of the negotiation process, the negotiation requires certain transaction cost, players do not have unlimited time, they might be more or less sympathetic to each other for various reasons, to trust each other differently, etc.

With respect to the fact that all three equilibriums are equally probable under the conditions of perfect negotiation, imperfections in the negotiating process as well as various external effects are decisive in what equilibrium would be formed. Even very minor effects. It is highly probable that network links (cross-alliance) of players from different redistribution systems may influence forming alliances also by the fact that they affect players' preferences in negotiation. If we could find suitable model expression, it would be possible to answer the following questions:

- How do redistribution systems link together within the meaning that forming certain type of alliance in one type of systems transfers to formation of the similar type of alliance in surrounding redistribution systems?

- What external influences on the redistribution system do move discrimination equilibriums and Nash equilibrium only (they can be compensated by the fact that any player would ask for lower compensation to enable influence of the winning alliance with his/her participation), and what external influences do eliminate formation of some types of winning alliances (and thus cannot be compensated)?

Both questions are from the theoretical and mainly practical point of view very important. In this sense, the above can be formulated also in reverse order: One of the important aims of development of the redistribution systems theory is to express the negotiation process as respective model extension, so that it opens the path to answer the above questions. If we attempt to answer the second question (what external effects can be compensated and what cannot), we may consider for example the following: Effects that cannot be compensated by concessions in negotiation of any player may relate to the fact that by creating network links between redistribution systems the respective player is excluded from the negotiation process. Another option is that he/she has no information on how the negotiation process goes and whether there is any at all. There are probably also other reasons for what predetermines certain alliance types.

The experience gained by extending the module in given direction can be summarised as follows:

- The option to ask the questions above is subject to achieving certain level of model development of the redistribution systems theory. As it is usual with any theory development, asking questions is important, it is certain theoretical result, and it contributes to better understanding of what is going on in the reality itself.
- Verbal (not formalised yet) description contributes to better classification of the problem area, but its informative ability is limited.
- For better capturing of the problem area, formalisation and subsequent mathematic expression prove not only desirable but also necessary.

4 What we have achieved

There are various concepts of how the theory develops. Each expresses the reality with certain simplification and complies more or less with that particular case. Although none of them is perfect, conclusions and suggestions result from each good concept, concerning the process in any theory development, or an answer to the question whether the theory in that particular case is prospective or not.

In our contribution, we have presented certain view of development of such theory types that use an abstract, formalised, and subsequently also mathematically expressible model for reality decoding. Consecutively, we showed how the elementary model is extended in case of the redistribution systems theory, how it gradually opens the path for answering the questions formulated, but also for asking other questions, and what role the visualisation and the possibility to confront the model with the reality play in this process.

For this, we have used four concrete examples documenting and illustrating the process of model extension. Each of them corresponds with different state of knowledge of such

part of the reality that we describe by extending the model, using formalisation and mathematical expression.

We assume that this is a suitable form of getting the expert public acquainted with continuously achieved results, since in the stage of dynamic development of the theory, each progress within the meaning of the answer to certain question raises even more questions. Therefore we cannot wait until we know answers to all of them. With respect to the fact that it is in our opinion a very prospective area of recognition, methodological reflection and process documentation play also a very significant role. Last but not least, using this form we aim to interest, motivate, and inspire those who are interested in cooperation in the area of redistribution systems theory. There is namely the possibility to achieve demonstrable and original theoretical results.⁶

Abstract

The contribution resumes the article called Nash Equilibrium in Redistribution Systems (Calculation, significance, use), published in the magazine ACTA 1/2008. It is based on some general methodological questions of theory development that use mathematical apparatus, where finding an appropriate reality simplification plays an important role. The article then applies these bases to the problem area of redistribution systems theory, which is one of the game variants. It specifies more the expression of discrimination equilibriums and Nash equilibrium, presents the original scheme that enables visualisation of these equilibrium types, extends the model of the elementary redistribution system by considering some influences on the redistribution system. Specifically, these are competition and inter-organisational migration effects; possibility of mutual bribery of players (investing into the position); influence of players from one redistribution system on forming alliances in another system; influence of links between redistribution systems on the negotiation process inside each of them.

Keywords

Theory of games, redistribution systems theory, Pareto optimum, Nash equilibrium, competition, inter-organisational migration, coalition, negotiation

JEL Classification / JEL klasifikace

D01, D33, D74.

Souhrn

Příspěvek navazuje na článek Nashova rovnováha v redistribučních systémech (Výpočet, význam, využití) uveřejněný v časopisu ACTA 1/2008. Vychází z některých obecných metodologických otázek vývoje teorií, které využívají matematický aparát a v nichž důležitou roli hraje nalezení vhodného zjednodušení reality. Tato východiska pak konkretizuje na problematiku rozpracování teorie redistribučních systémů, která je jednou z variant teorie her. Konkretizuje vyjádření diskriminační a Nashovy rovnováhy, prezentuje původní schéma, které umožňuje názornou představu o těchto typech rovnováhy, rozšiřuje model elementárního redistribučního systému o uvážení některých vlivů působících na redistribuční systém. Konkrétně pak jde o vliv

⁶ The work flow can be monitored at www.vsfs.cz → Science and Research → Theoretical seminar of PCE → An archive, where up-to-date research results are published in annexes to individual lectures.

konkurence a meziorganizační migrace; možnost vzájemného uplácení hráčů (investování do pozice); vliv hráčů z jednoho redistribučního systému na vytváření koalic ve druhém systému; vliv vztahu mezi redistribučními systémy na proces vyjednávání uvnitř každého z nich.

Klíčová slova

Teorie her, teorie redistribučních systémů, paretovské optimum, Nashova rovnováha, konkurence, meziorganizační migrace, koalice, vyjednávání

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Public economics in current health policy

Veřejná ekonomie v současné zdravotní politice

JAN MERTL¹

1 Introduction

Currently, the Czech Republic is standing at the crossroads and has to decide which way to go in its health service system. The current trend seems to lead to a sharp weakening of the government and public sector role. This is, of course, “a big topic” and it is not easy to cover it, not to say responsibly analyse it, on a few pages.

Though, it is useful to search and sum up what makes advanced world economies act in a different way in their health services, attribute a system role to the public sector in health service and develop this role in an active and responsible way. This will be dealt with on a theoretical level – we will tackle the role played by the economics of public sector or, in short, public economics in current health policy, and particular spots suitable for its application.

The starting point of this paper is the hypothesis that current health service policy in the Czech Republic leads to the model of passive care for health problems of the population and applying the principles of (quasi)market allocation in health service. Two essential questions follow from this summary hypothesis. First, if this approach is in compliance with the principles of public economics, especially from the viewpoint of a rational allocation in the public sector aimed at the results in health condition of the population. Second, to which extent the discussion on solidarity principles and equivalence is mixed with economic effectiveness. And/or, to which extent the back off from the solidarity in the sense of securing the necessary health care as a public service is accompanied by the signs of market failure and thus also suboptimal solution in allocating private resources. We can see that there are important hidden risks in both questions as regards the rationality and effectiveness of the system and also in its results measured by health condition of the population and other sub-criteria describing its characteristics.

2 The importance of public economics in health policy

A market solution in the field of health service consists in the approximation of health risks through private insurance. Historically, it was applied e.g. in the USA, but even there it resulted in regulating its rules by the government, managing the costs of health care and efforts to utilize economies of scale.

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Private insurance of health risks has, however, a number of properties making it unsuitable as a universal means for practising health policy. They are namely:

- The selection of risks leading to non-insurability, non-insurance and underinsurance of citizens
- Unless a non-profit principle in the sense of allocating the profit “inside” the insurance company is applied, the effort to make profit with the aim of its allocation outside the insurance company can weaken the sense of insurance
- For the insurance company, primarily, the quality of the insurance stock is substantial, not the health condition of the insured from the medical viewpoint
- Administration costs and dependence on economic activity of citizens
- The tendency of more well-off insured not to share the same “group” with the less well-off can theoretically result in the liquidation of the whole insurance market
- A private insurance company is an institution based on actuarial mathematics and aims at maximising the profit, not an institution pursuing the welfare and health condition of its clients – patients

These disadvantages can be found even with other kinds of private insurance. In case of health insurance, however, the problem is that generally, the citizens cannot avoid the costs of health care and thus it is absolutely imperative for them to participate in the insurance. Different situation exist in private life insurance relating to higher income categories and private non-life insurance. Here insurance is based on a voluntary principle and individual relation to risks. We can imagine that if, e.g., insurance policies of engines of higher volumes were expensive the share of such engines would relatively fall. Here the principle of “deadweight costs” known from tax theory can be applied. Just as well, insurance companies may indirectly force the clients not to build their houses in flood areas. In this respect private insurance can have an “educational” effect – it can suppress activities or situations which are obviously risky and thus hardly insurable.

In case of health insurance it is not so because this approach quickly collides with physical and psychical identity of an individual, and also with his or her social position in the economy.² These are objective facts difficult to handle in a short period and, moreover, there exists the principle of freedom, which is fundamental, connected with the very existence of human beings. But there is also the right to life – and as the condition of health is often linked with life and its quality, there is a tight relation between the right to life and the right to health in the sense of health care consumption necessitated by a change of health condition.

So we can see that a market solution through private insurance in health service meets a number of problems. Together with the application of solidarity principle this leads to its limited applicability in practising health policy. However, if it is not possible to apply the principle of private insurance generally, then a second rational approach is using economics of the public sector or, simply said, public economics.

2 *This does not mean, however, that insurance companies could not support the kind of behaviour which is evidently desirable for health condition – prevention or penalties for contrary behaviour. But the practice of health policy and experience of advanced countries show, that such tools have limits in health insurance.*

It is necessary to say that public economics is not self-salvable in the area of health service (or anywhere else). Disadvantages and risks described in the theory of public finance concerning the effectiveness of the public sector also apply to health service.

The principle of public health insurance does not consist in the calculation or individualisation of risks, but in sharing the aggregate health risk of the population. The premium for public health insurance is not a tax (as it is often mistakenly believed to be) indeed, but it is a specific parafiscal revenue – a fund – covering the aggregate risk of the population in a given year economically expressed as costs of health care.

No matter which way we prove the importance and ensure the effectiveness of the public sector even by using purely economic tools (Bénard, 1990), the sense of its existence in the economy is much broader. First of all, it facilitates the consumption of goods and services on the principle of civil rights where the society arrives democratically at a consensus. In case of health service where the right to health is defined by law (Listina základních práv a svobod) it is a very appropriate tool.

Let us point out, however, that the concept “the right to health” itself is only of a declaratory character, undoubtedly, the point is not in the possibility of making claims on health, on reaching good health condition of a concrete individual. Meeting such claims can never be guaranteed, which is given by the character of medicine and human existence, and also by economic constraints. So if we discuss the right to health, it is, in fact, a discussion on real possibilities of consuming health care used by an individual according to his or her health problems. The right to health can thus be interpreted as “equal chances of recovery”. And, of course, so it is with other rights, for instance the right of equality before the law – in practice an ideal application can hardly be achieved.

Another purpose of employing public economics in health service is the wielding of the state power in cases defined by law – in health service the so-called goods under protection (e.g. compulsory vaccination, treatment of contagious diseases), and also in the sense of ensuring the availability of health care for citizens across social groups and regions.

And the last purpose of employing public economics is the fulfilment of those health service dimensions and criteria which – as shown by empirical experience of market oriented health service systems – are not fulfilled by the market spontaneously. It is not only the social dimension of effectiveness (as described below), but also ethical criteria forming an organic part of market relations from where, however, they may be pushed out on the basis of momentary effectiveness preference (Smith, 1958)

3 The classification of goods in health service

Health care is indisputably a scarce good with non-zero production costs. Generally, economic theory classifies scarce goods from economic viewpoint as public and private.³

3 SAMUELSON, P. A. *Pure Theory of Public Expenditure and Taxation*. In: MARGOLIS, J. D. GUITTON, H. (eds.): *Public Economics: An Analysis of Public Production and Consumption and their Relations to the Private Sector*. London, Macmillan, 1969.

The criteria are non-exclusion from consumption, indivisibility of the good and non-rivalry in consumption (the costs of extending the service for another consumer are close to zero). Some economists, e.g. Coase, regard as more important than these criteria the criterion of transaction costs whose increase leads spontaneously to setting up bureaucratic institutions that do not make decisions about the goods on the principle of supply and demand of individuals.⁴

Methodologically it is useful to classify the goods from the institutional viewpoint as done by Bénard who classifies them from the viewpoint of financing to non-market, impurely market and market.⁵

Table 1: General classification of goods according to institutional criterion

Institutional criteria		
Category of goods	Existence of market negotiation and market price	Government discriminatory intervention
Pure market goods	yes	no
Impurely market goods	yes	yes
Non-market goods	no	yes

Source: Bénard, J. *Veřejná ekonomika I. Praha: EÚ ČSAV 1990*

This classification makes it possible to differentiate the character of a good from the viewpoint of financing (allocation) – if there exists a market price resulting from the interaction of supply and demand in a competitive market and financing from private sources, Bénard considers the good to be pure market, in contrary case non-market.

There is a connection between the characteristics of goods in health service and the concept of externalities, both positive and negative. Externalities are a sort of market failure and are the cause of the fact that the participant of an accomplished transaction does not bear the consequences of his activities.⁶

In health service by a positive externality we mean e.g. treatment of contagious diseases, more precisely speaking, its effect on not spreading it on further individuals. A negative externality is e.g. a high consumption of antibiotics based on non lege artis treatment because it may cause a loss of effect of a certain antibiotic on further people.⁷ Nevertheless, it is the character

4 COASE, R. *The Problem of Social Cost. Journal of Law and Economics*, October 1960. Coase suggests solving even the problem of externalities in this way – dealt with below.

5 BÉNARD, J. *Veřejná ekonomika I. Praha: EÚ ČSAV, 1990.*

6 In other words the impacts can be seen even out of the group of participants of a market transaction, so they are not “evaluated” within. By Bénard an externality is defined as a “direct linkage between utility functions or production functions of various economic subjects which does not develop through market”.

7 Viz Czechs score again in taking antibiotics.

<http://aktualne.centrum.cz/zdravi/zpravy/clanek.phtml?id=378360&tro1164_0_5>, [cit. 14. 3. 2008].

of externalities that the quantification of their effect is usually difficult, moreover, there may be different opinions on what may be considered an externality.

Generally, externalities can be solved by

- a) regulation and setting rules for transactions or by providing a good (in case of positive externality) in a non-market way,
- b) internalisation (negotiations between private subjects on condition of perfect information, defined ownership rights and zero transaction costs).⁸

In health service production only few goods being up to the criterion of a public good appear. Their consumption is either automatic (e.g. hygienic service, fighting epidemics, basic research of diseases, creating quality standards) or facultative (e.g. prevention programs). A much higher share of goods (e.g. the most of ambulance and sick-bed care in European systems) is financed publicly or regulated (so they are non-market or impurely market according to Bénard's classification), but not quite up to the criteria of a public good from the viewpoint of consumption. These health service goods (sometimes called mixed goods – see below) are, with some abstraction, divisible as to quantity, but typically, not quality, and technically, we can – ignoring medical or ethical criteria – exclude individuals from their consumption. Moreover, there may appear an effect of overburden, especially above a certain level of consumption of these goods (the case of using up the capacity).⁹

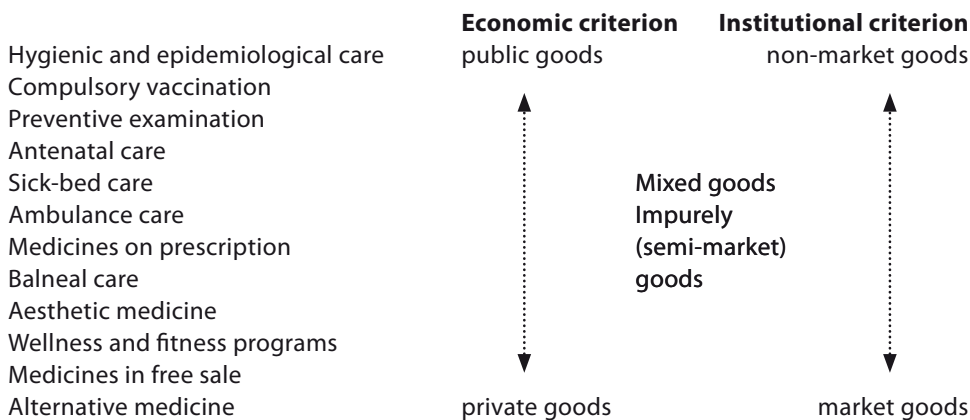
The problem is different if the exclusion is allowed by legislation, then other factors working within society are involved. Methodologically, it is useful to distinguish if it is really difficult to exclude an individual, either technically or by the nature of the good (e.g. from polio vaccination or national prevention program on cancer the exclusion is possible, though, but then the whole good will lose the sense of disease eradication) or if it is only a result of social consensus that there will be no exclusion (e.g. consuming physiotherapy care). Of course, it is not always possible to clearly determine the goods, as marked by connected arrows in the picture. It is also true that in the literature (with Bénard, too) the most of goods in health service are often classified as mixed goods with a combined collective and private element. I believe, however, that such classification is done according to benefits, i.e. who benefits from the consumption of the respective good (then it is obvious that it is both an individual and society, which leads to state intervention). I consider the differentiation used in this chapter more complicated, but more precise. Though it is true as well that if there is a long-term claim guaranteed by legislation on which there is general agreement and a certain capacity is defined by the nature of the good (e.g. salvage and rescue service covering a region) then I would rather classify such a good as public even considering a theoretical possibility of exclusion from consumption. It is a paradox of health service practice that currently, the governments can buy such a good from the private sector (through a public tender for e.g. rapid salvage service), but it is a matter of

8 *This approach is recommended especially by Coase who proves that under the fulfillment of these premises the market will solve the externality problem without a regulation – by including all participating subjects into negotiations and also the balance of the transaction (Coase's theorem).*

9 *As Bénard says to this effect "with a growth of consumed quantity (e.g. traffic congestion, overcrowded exhibition) the quality goes down (the speed and safety of traffic, impression of works of art)" BÉNARD, J. Veřejná ekonomika I. Praha: EU ČSAV, 1990.*

co-called make or buy decision (details by Hamerníková, 2007). It is necessary to say that the conceptions of various economists on the classification of concrete types of goods differ (they also depend on normative approach and public option, particularly as it regards the institutional criterion but also the way of understanding the characteristics of goods). The following scheme shows a model classification of health service in the direction from public goods to private and non-market to market.

Picture 1: Classification of goods in health service



Source: worked up by author

The scheme shows one more important fact, namely that in health service goods of various economic characteristics can be found, which makes the analyses more complicated. The biggest and most expensive group is sick-bed care and ambulance care which is situated in about the centre of the classification. Let me point out that the option of financing individual types of goods from public or private resources may also depend on criteria other than it corresponds to their economic classification and characteristics in achieving Pareto or Walras optimum. This is analysed by e.g. Buchanan coming to the conclusion that the real way of financing goods as a manifestation of their character also depends on the result of the democratic process (Public Choice) within which financing goods can be changed in any way.¹⁰ As said by Hampl in the discussion on approaching public goods in connection with Buchanan's approach „in a democratic society relevant majority is authorised to make any good public without any regard to its character or economic nature.”¹¹ In Buchanan's conception this is, of course, true also in the other way – in relation to private goods. These shifts, however, describe exclusively the institutional criterion, because the economic nature of goods cannot be changed even by democratic vote.

This analysis of goods shows that from the viewpoint of public economics Bénard's institutional approach is essential beside "intrinsic" characteristics of the good. The reason

10 BUCHANAN, J.M. *Public Finance in Democratic Process, Fiscal Institutions and Individual Choice*, Chapel Hill: The University of North Carolina Press, 1987.

11 HAMPL, M. *Troji přístup k veřejným statkům*. In: *Finance a úvěr*, č. 51, 2/2001, str. 111-125.

is that in different systems the government enters the allocation in different ways and so economic characteristics of goods are only a kind of „a starting point“ for discussions on intervention possibilities. The attitude of the government is an authentic fact according to which the goods are classified in Bénard’s table and thus the rationality of their allocation viewed by public economics is implied.

4 Dimensions of effectiveness in health service

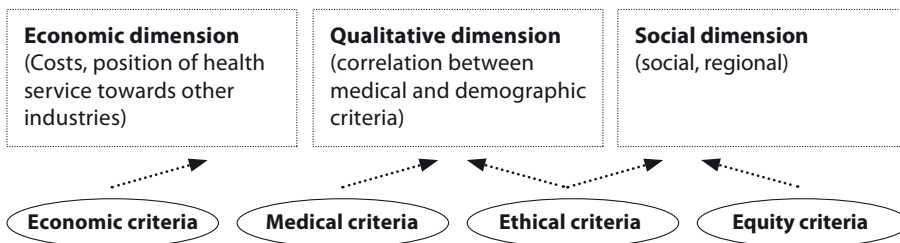
Let us emphasise the essential aspects which are, even on the basis of approaches mentioned in this text, the key to determine effectiveness in health service. The first, inherently present, is a continuous conflict between economic effectiveness and other criteria to be fulfilled by the system of health service. It hides not only the pressure on health service effectiveness per se, but also the pressure of competitive public systems such as education or transport – they want health service to consume more resources than objectively necessary – which means effective.¹² The second aspect is the grouping of sub-criteria into blocks (dimensions) which allow the classification of individual criteria from an analytic viewpoint.

The mentioned approaches lead to dividing criterional effectiveness of health service system into three basic dimensions – economic, qualitative and social dimensions.¹³ The fulfilment of these dimensions of effectiveness can be transposed as being up to

- economic criteria (e.g. expenses, financial stability, economic rationality) contained in the economic dimension
- medical criteria (e.g. the number and rate of success of transplantations, infant mortality) contained in the qualitative dimension
- equity criteria (e.g. availability of health service in social groups and regions) contained in the social dimension
- ethical criteria contained in both qualitative and social dimension

The presented idea is shown in the following scheme in a graphic form:

Picture 2: Scheme of effectiveness dimensions



Source: worked up by author

¹² More to the problem see e.g. MOONEY, G. *Economics, Medicine and Health Care*, second edition, Essex: Prentice Hall 1992 and his simplified analysis of cost of health service versus education.

¹³ Social dimension contains the aspect of non-discrimination according to income, i.e. social aspect, or residence, i.e. regional aspect.

The basic shortcoming is that in these dimensions effectiveness can hardly be achieved at a time. Typically, relative success may be reached easily in two of them, the more two dimensions are fulfilled, the more difficult the fulfilment of the third of them.

If we try to illustrate the above mentioned statement by an example, then, if the health service system fulfils the criteria of the social and qualitative dimension well, there will probably be problems with economic criteria. If economic and qualitative criteria are fulfilled well, there will be a problem with the social dimension. And finally, even if economic and social criteria are fulfilled well, there may be a problem with the quality of universally accessible, though cheap, care.

This implies that in creating health service conceptions the supporters of all mentioned approaches will be in conflict. According to which aspect will be more emphasised, health service may be "bent" to two of the three mentioned dimensions. Achieving overall consensus is a task that might be compared to other similar task in economic policy – and that is pursuing macro-economic objectives in the form of the tops of a magic quadrangle.

The key aspect to determine the effectiveness of health service systems is the identification of criteria influencing the effectiveness of the system in its individual dimensions, which means splitting effectiveness dimensions into a tree of criteria contained in them. It is necessary, no matter how the system may be set in practice, to identify key processes of negotiations on rationality and effectiveness held between the participating subjects – as we could see them in the chapter on individual health service systems.

Mutual contradiction of individual effectiveness dimensions is the factor making health service such a complicated economic sector. In other economic sectors pure market system is a tool which is able to balance the interests of individual subjects to achieve, as a result, a Pareto effective situation. The findings from health service economics show, however, that the system of supply, demand and price needs a number of means of aid and support, from the viewpoint of both economic rationality of chosen solutions, and (here more importantly) of results in improving the patient's health condition.

This requires balanced optimising in the field of health service and non-functioning of the concentration to one or two effectiveness dimensions. It is possible to make simple projections showing what consequences ignoring individual effectiveness dimension in health service leads to.

It is probably most difficult to ignore the problems of qualitative (medical) effectiveness, because it is medical profession itself that guarantees it. It is possible to imagine situations in which other people without medical education on the level required at present will, through various mechanisms, get to positions enabling them to treat. Another factor of decreasing medical effectiveness may appear when individual methods of treatment are no longer evaluated centrally – e.g. for the purpose of proclaimed decreasing costs of such evaluation and making various methods of treatment accessible. This will result in leaving evidence-based medicine and lege artis treatments – treatments will be based on the patient's confidence in his or her rational option only. In other words, this weakening, in spite of positive effects in strengthening competition and developing various treatments

including psychological or placebo effects, may, no doubt, lead to constraining effectiveness in the qualitative (medical) dimension of the system.

The problems of social dimension effectiveness, on the other hand, prompt ignoring. It is easy to transfer the system to the state when fewer performances will be accomplished at the same or larger amount of money – because on leaving social criteria it is not guaranteed that the system must meet all the need for health care. The care which will be materialised in effective demand will, simply, not be realised.¹⁴ Imperfect understanding the social dimension may lead to the fact that those relatively poor will look for health care in the quality corresponding to their economic possibilities, which may further complicate the quantitative dimension of the system towards health care consumed. It may also lead to under-consumption of health care, which can be reflected in health condition, but also in the life quality of patients and their possibilities to tap the services of modern medicine. The way of consuming care “if worst comes to worst” is risky as well – such care is often very expensive, can be urgent and need not guarantee a full recovery if it is practised only in the form of an acute intervention not being followed by a systematic treatment.

As to the economic dimension, that can be ignored as well if care is provided disregarding the availability of resources to cover it. In this respect, public insurance system tends most to ignore the economic dimension. In this system the provided care is specified by law without a guarantee of available resources to cover it. In health service systems financed from the national budget the risk consists in a low budgetary discipline and/or selective allocation of funds to the system disregarding possible factors justifying such exclusive interventions (e.g. epidemics, a sudden increase in sickness-rate). In a market system respecting social criteria the risk is represented by a growth of treatment costs for so-called socially recognised groups of population. The total of private and public expenditure can thus reach a high share of GDP.

Should we answer the question whether it is possible to ignore individual effectiveness dimensions, then the answer is „yes“ – it is a proven fact based on the experience of health service systems. It is not necessary to ignore them completely. It may be enough to leave certain aspects out of account. Hence, ignoring effectiveness dimensions means worsening the criteria in the respective dimension.¹⁵ It is difficult to set such practice right, because if individual subjects get used to it, then it is difficult for them to get rid of the rooted stereotypes.

5 The risk of mixing the social dimension of effectiveness and irrationality of allocation

The fact that in health service the social dimension is a very important phenomenon has been known since long ago. But in modern times there are significant shifts and much confusion in this area. On the one hand, there is a real, objective social problem measured by, let us say, the subsistence minimum, on the other hand, there is the rationality of allocation and fixing rational prices – and these two facts are mixed. Such mixing results

¹⁴ Also see the situation of the system in the USA

¹⁵ For instance, when ignoring the economic dimension the system becomes economically ineffective, because cost and financial stability indices are not objectified

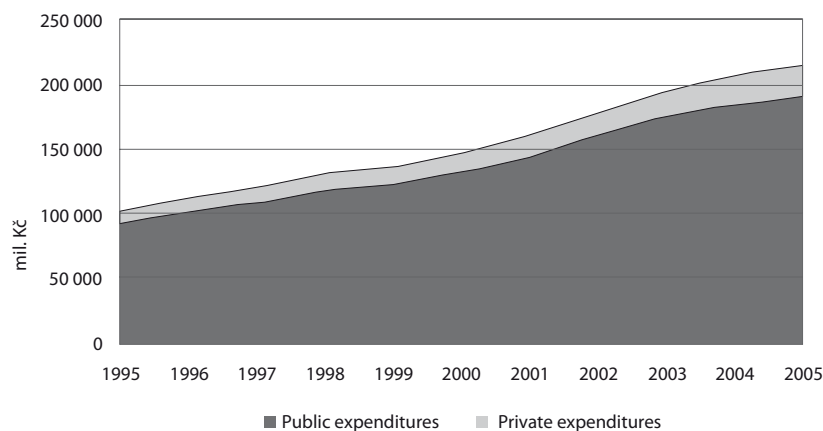
in a simple, but effective trick – the price rationality is assessed according to whether an individual or a household are able to afford a certain kind of health service. If they are, then it is regarded as given, health is not for free, so “if I have money, what to do, I will pay”. Seen economically, this situation implicitly supposes a vertical curve of demand for health care and zero elasticity of demand – the given volume of health care will be consumed by the patient in any case and “at any rate”.

This situation, however, leads to a dangerous phenomenon. The price of health care is considered a given fact, nobody is much interested in the possibility of cutting it while maintaining the effectiveness and quality. Only ways how to ensure financing the ever growing costs are being looked for. This approach in the form of a spiral has no way out, it lacks a limiting factor which in other types of markets returns the prices to a real level corresponding to real preferences of both sides and reflecting the objective situation in competitive markets.

And so, especially in case of private costs of health service, the patient is exposed to statements saying that health care “simply costs something” and thus practically an endless channel is opened through which financial means can be drawn. However, the patients are interested in quite different issues, their demand does not consist in some definite claim for health service, but in maintaining or restoring their health. And here is the core of the conflict which is determined only by the patients’ social situation and their budgetary constraints.

This implies one more task for public economics in health service. Fixing the price in the public sector is, as shown above, of key significance for, at least, partial objectification of costs of health service. It is evident from an international comparison that the higher the share of private resources in financing health care, the higher the prices (e.g. comparing Great Britain–Germany –USA). As shown by the following graph, in the CR this share has been relatively low so far, and that is probably the cause of a relatively low level of costs of health service in proportion to GDP.

Picture 3: The trend of total health service expenditures in CR 1995-2005



Source of data: *Zdravotnictví České republiky ve statistických údajích 2006*. Praha: ÚZIS, 2007

The above mentioned implies a very important conclusion for health policy – it is very misleading if just social acceptability is taken into account in the discussion on health care or health insurance prices. The issue of whether private expenditures on health service are a social problem is just one and, paradoxically, less important aspect viewed from the whole system. Much more important is in which way the prices are calculated, and what they result from, or whether private expenditures make the system more effective in the sense of cheaper achieving a better health condition of the population.

6 Conclusions

The application of public economics in health policy comes out of the nature of private insurance as a tool of solving health risks, objectively given market failure, enforceable laws, the necessity of rational allocation in the public sector and the existence of more effectiveness dimensions in health service. In practice there is a number of models of different intensity of employing the mechanisms of public economics.

The role of the government in the allocation of goods was empirically taken into consideration by Bénard in his formulation of goods classification according to institutional criterion. The possibility of an arbitrary choice of the character of a good on the basis of public choice is the key to allocation rationality. If the government intervenes in the interaction of supply and demand, it must choose tools to ensure the rationality of such intervention. And on the contrary, if the government decides not to intervene in this interaction, it must create conditions for competition and free option by legislation.

The theory and practice of health service systems implies the limits of effectiveness which are, having been worked up into definite indicators, an important guideline for practical implementation of health service. There are differentiated concepts of effectiveness and its criteria. Projecting theoretical principles into the practice of health policy and a follow-up synthesis of findings leads to specifying three basic dimensions of effectiveness in health service, namely economic, qualitative and social. These dimensions form a basis of effectiveness concepts. Their simultaneous fulfilment is a difficult optimisation task, because they eliminate one another in a way. The individual dimensions containing criteria to measure and assess the system of health service are subject to optimising health condition of the population as a fundamental, general target of health service.

The social dimension of effectiveness and social criteria are, indisputably, a significant reason of employing public economics in health service. However, they are not the only reason, and in any case, not the most important one. The discussions on the „social acceptability“ of reforming measures are an inseparable part of any thought of change. It is also substantial to consider if private resources of the citizens (if already taken into account), are being made rational use of to the benefit of improving their health condition. It is also necessary to examine continuously how the price of health care is calculated. A certain risk may be involved in gaining additional resources from patients who worry about correct and quality treatment in case of their illness. Public economics offers a number of tools to objectify the price of health service and optimise the expenditure on the basis of economies of scale. The question to what extent this is compatible with satisfying indi-

vidual needs and priorities of patients depends on the social consensus and civilisation standards.

Abstract

This article focuses on the role of the economics of public sector, shortly said public economics in current health policy and searches for the most important and strongest area for its adoption and application. It is based on the hypothesis, that currently, health policy in the Czech Republic heads to the model of passive solving of emerging health care problems of the population and applying (quasi)market allocation principles. Out of this hypothesis two research questions outcome. First, whether this approach is consistent with the principles of the public sector, rationality of resources allocation and population health condition achievements. Second, how much we mix the problem of social solidarity and economic effectiveness. Moreover, whether the current withdrawal from solidarity is accompanied by risks of market failure and thus suboptimal allocation of newly introduced private resources. In this context the dimensions of effectiveness and risks of mixing social acceptability and rational resource allocation are analyzed.

Keywords

Health, health care, health insurance, effectiveness, ethics, public economics, public sector

Souhrn

Článek se zabývá tím, jakou roli hraje ekonomie veřejného sektoru či zkráceně řečeno veřejná ekonomie v současné zdravotní politice a kde lze vidět nejsilnější místa pro její uplatnění. Východiskem je hypotéza, že současná zdravotní politika v České republice směřuje k modelu pasivní sanace zdravotních problémů obyvatelstva a uplatnění principů (quasi) tržní alokace ve zdravotnictví. Z této souhrnné hypotézy vyplývají dvě zásadní otázky. Za prvé, zda tento přístup je v souladu s principy veřejné ekonomie zejména z pohledu racionální alokace ve veřejném sektoru s cílem výsledků ve zdravotním stavu obyvatelstva. A za druhé, do jaké míry se tak v praxi směřuje diskuse o principu solidarity a ekvivalence s ekonomickou efektivností. Respektive, do jaké míry je ústup ze solidarity ve smyslu zabezpečení potřebné zdravotní péče jako veřejné služby doprovázen projevy selhání trhu, a tudíž také suboptimálním řešením při alokaci soukromých zdrojů. V této souvislosti analyzuje dimenze efektivnosti ve zdravotnictví a rizika směřování sociální únosnosti nastaveného systému financování a racionality alokace zdrojů.

Klíčová slova

zdraví, zdravotnictví, zdravotní pojištění, efektivnost, etika, veřejná ekonomie, veřejný sektor

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Tax mix impact on the growing differences between the tax quota of the Czech Republic and Slovakia

Vliv daňového mixu na rostoucí rozdíly mezi daňovou kvótou Česka a Slovenska

KVĚTA KUBÁTOVÁ¹

1 Introduction

Two new states came into existence in 1993 - the Czech Republic and Slovakia. Simultaneously, a new tax system came into force and effect in the two states. The tax systems of the two states of the former Czechoslovakia were almost identical in the initial period, since the same laws, approved in 1992, were in force and effect in the two countries. However, amendments of all tax laws were being implemented as soon as in 1993. This development has resulted in the growing differences of the formerly identical tax systems. The situation then culminated in the public finances reforms in both countries at the beginning of the new century.

Even though both reforms proclaimed rather ambitious goals, namely in keeping public expenditures under control, in the simplification of taxes and their supply oriented characteristics, this radical reform was only successful in Slovakia. The Czech Republic is currently at a midpoint, in spite of the fact that the so-called equal tax has been introduced this year. The most pressing issue is the pension system reform. The sustainability of the public finances seems unthinkable without the reform, however, only its direction is still being searched.

In the article, we will first focus on the development of overall tax quotas, and then we will analyze the differences in the growth indices of tax quotas of the two countries in the period of 2000 – 2005, i.e. the period, during which the last tax reforms took places.

2 Tax quota development of the Czech Republic and the Slovak Republic

Let us first state a brief characteristic of the tax revenues and their structure in the two compared countries from the perspective of the 27 member states of the EU. The tax quota of the Czech Republic amounted to 36.3 % in 2005, i.e. 1 % below the EU27 average. The

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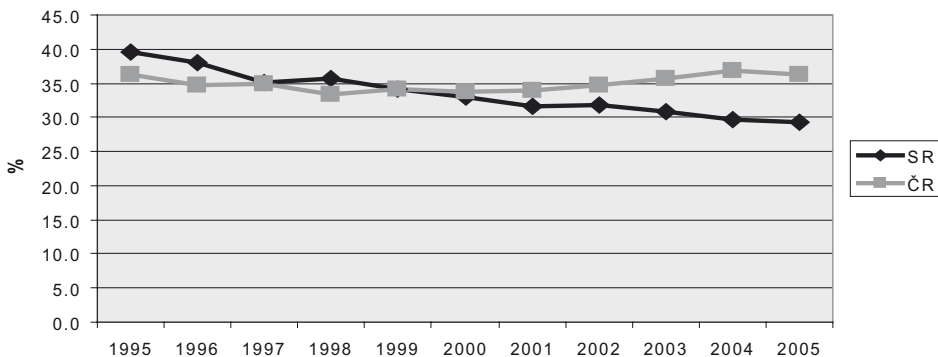
tax quota of Slovakia amounted to 29.3 % - the third lowest among all EU members after Romania and Lithuania.

The lowest tax burden of the GDP in the region of Central Europe is in Slovakia, followed by Poland and the Czech Republic; the tax quota is the highest in Austria and Germany. In comparison with the EU27 average, direct taxes do not play such an important role as indirect taxes / social security contributions in either of the two countries.

The tax structure shows the second highest share of social security contributions in the Czech Republic (after Germany), while indirect taxes form the highest revenue item in Slovakia, which are the fifth highest in the EU27 from the perspective of their share. The share of social security contributions has decreased substantially in Slovakia.

Together with Bulgaria, Romania, and Cyprus, the Czech Republic and Slovakia are countries, where the share of corporation income taxes is comparable with the personal income taxes; the corporation taxes in the whole EU27 are substantially lower than the personal income taxes, their share amounts to an average of 8.5 %. On the other hand, personal income taxes amount to 20 % of all taxes. This distorted structure in the Czech Republic and Slovakia is a reminiscence of the socialistic structure of contributions, in which the corporation income taxes were absolutely dominant. The economic and tax reform at the beginning of the 1990's did not fully exceed these boundaries, as the government had to consider the standard of living of the taxpayers and the goal was for employees not to pay substantially higher taxes than in the "old" system. Another factor causing the high corporation income taxes and low personal income taxes is still the unusually high leveling of wages in the Czech Republic and Slovakia.

Chart 1: Tax quota development of the Czech Republic and Slovakia in the period of 1995 – 2005



Source: *Taxation trends (2007)*

Chart 1 provides an overall view of the tax quotas (share of taxes in HDP) of the Czech Republic and Slovakia since 1995 (Graf 1). This chart confirms the above mentioned facts, i.e. that the quotas did not differ too much originally - the difference amounted to 3.4 %

in 1995 and the Slovak quota is in fact higher. However, the difference in 2005 already amounted to 7 %, however, the Czech quota is higher this time.

The share of taxes in GDP has been decreasing nearly all the time in Slovakia, while the Czech Republic has been affected by an absence of an effective tax reform – taxes correspond more or less to the development of an economic cycle (that is why an increase has been apparent after 2000), and there is no upward / downward tendency here.

3 Effect of the tax mix on the development of the tax quota differences

We will now analyze the period after the year of 2000, and the effect of individual taxes of the tax mix on the growing differences of the tax quotas². The items shown in Table 1 correspond to the classification of Eurostat (Taxation trends, 2007).

Table 1 also shows the calculation of the figures (1) through (3). The tax quota (TQ) refers to the share of the total tax revenues (TTR) in the Gross Domestic Product (GDP)²:

$$TQ = \frac{TTR}{GDP} \quad (1)$$

The difference between the TQ of the Czech Republic and the TQ of the Slovak Republic (QD) is:

$$QD = TQ_{\check{C}R} - TQ_{SR} \quad (2)$$

The difference between the QD in 2005 (QD_{2005}) and 2000 (QD_{2000}) can be broken down to addends, each of which showing the contribution of one tax type to the total difference (the term in the parentheses for different i):

$$QD_{2005} - QD_{2000} = \sum_{i=1}^9 (QD_i^{2005} - QD_i^{2000}) \quad (3)$$

QD_{i2005} or QD_{i2000} refers to the difference between the tax quota of the Czech Republic and Slovakia in 2005, or 2000, for the tax "i".

Contributions to the difference growth between the quotas of the Czech Republic and Slovakia will then be shown in a column chart (see Chart 2). In 2000, the tax quota of the Czech Republic amounted to 33.8 %, while the tax quota of Slovakia amounted to 32.9 %. Until 2005, the tax quota of the Czech Republic increased to 36.3 %, while the tax quota of Slovakia decreased to 29.3 % during the same period. The total difference between the two quotas thus increased from 0.9 % to 7 %.

² This section explaining the tax quota analysis has been taken over from Kubátová (2007)

Individual taxes contribute either positively or negatively to the total amount of a column, whereas the effect can always be broken down into two items - the tax revenues growth index itself and the weight, which corresponds to the share of the given tax type in an overall quota. High taxes thus have a higher potential to affect the total differences.

Out of the nine tax types being analyzed, seven contribute to the growing differences between the tax quota of the Czech Republic and Slovakia in the period of 2000 – 2005 in favor of a higher burden in the Czech Republic and decreasing burden in Slovakia, only two tax types result in a reduction of the difference.

The difference is affected the most by the social security contributions from employment; the corporation income taxes and personal income taxes have a high impact as well. Other taxes on products, other direct taxes (property), VAT, and the social security contributions of self-employed persons contribute less.

Table 1: Calculation concerning the structure of the growth of difference between the tax quotas of the Czech Republic and Slovakia in 2005 in comparison with 2000*

	TQ _{CR05}	TQ _{CR00}	TQ _{SR05}	TQ _{SR00}	QD ₂₀₀₅	QD ₂₀₀₀	QD ₂₀₀₅ – QD ₂₀₀₀
Tax quota	36.3	33.8	29.3	32.9	7.0	0.9	6.0
Indirect taxes	11.9	11.3	13.0	12.8	-1.1	-1.5	0.4
Value added tax	7.2	6.5	8.0	7.6	-0.8	-1.1	0.4
Excise duties	3.7	3.3	3.7	2.8	0.0	0.5	-0.5
Other taxes on Products (incl. import duties)	0.5	1.0	0.4	1.7	0.1	-0.7	0.8
Other indirect taxes	0.5	0.6	0.9	0.8	-0.5	-0.1	-0.3
Direct taxes	9.3	8.3	6.1	7.7	3.2	0.6	2.5
Personal income tax	4.6	4.6	2.8	3.6	1.9	1.0	0.9
Corporation income tax	4.5	3.5	2.8	2.8	1.7	0.7	1.0
Other direct taxes	0.2	0.3	0.5	1.3	-0.3	-1.0	0.7
Social security contributions: Employers and employees	15.1	14.2	10.8	13.6	4.0	0.6	3.4
Social security contributions: Self-employed	14.1	13.5	10.1	12.9	0.4	0.0	0.3

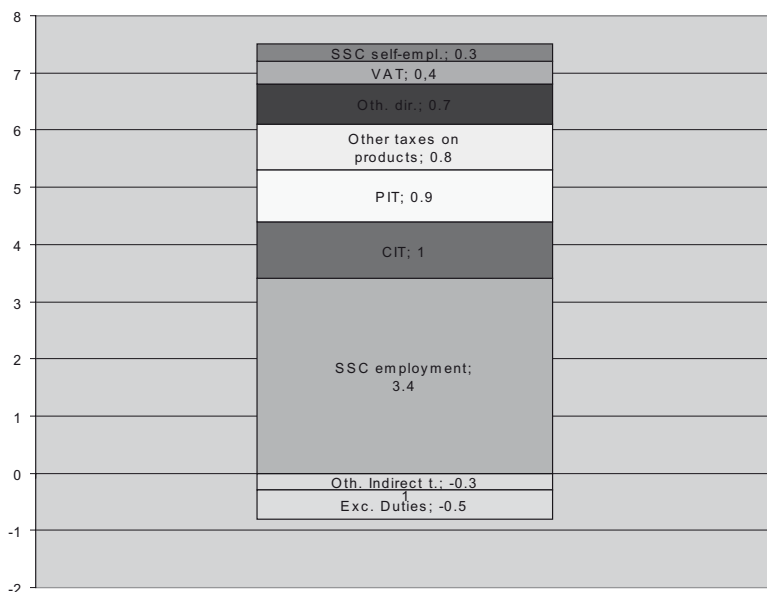
Explanatory notes: TQ – percentage share of the total tax revenue in GDP, QD – difference between the TQ of the Czech Republic and Slovakia

*The overall change in the difference of tax quotas of the Czech Republic and Slovakia (QD₂₀₀₅ – QD₁₉₉₅) is 0.6 % lower than the sum of the contributions of individual taxes to

it (columns of the chart). This discrepancy has been caused by a statistical methodology of including the so-called imputed social contributions, which governments should pay on behalf of their employees. When allowing for this amount to be included, the quota of the EU27 increases by 1 % on average, for Slovakia this difference amounts to 1.1% in 1995 and 0.5 % in 2005, however, no imputed social contributions have been registered (see Taxation trends, 2007, p. 404).

Source: Taxation trends (2007); own calculations

Chart 2: Share of individual taxes in the growth of difference between the tax quotas of the Czech Republic and Slovakia in the period of 2000–2005*



*The overall change in the difference of tax quotas of the Czech Republic and Slovakia (QD2005 – QD1995) is 0.6 % lower than the sum of the contributions of individual taxes to it (columns of the chart). This discrepancy has been caused by a statistical methodology of including the so-called imputed social contributions, which governments should pay on behalf of their employees. When allowing for this amount to be included, the quota of the EU27 increases by 1 % on average, for Slovakia this difference amounts to 1.1% in 1995 and 0.5 % in 2005, however, no imputed social contributions have been registered (see Taxation trends, 2007, p. 404).

Source: Taxation trends (2007), own calculations

Only two tax types reduce the gap due to the fact that their GDP share grows slower than in Slovakia. This concerns excise duties as well as other indirect taxes. These are also the taxes, the quota of which grew during the period of 2000 - 2005 in Slovakia. The VAT quota grew in this period as well, however, since its growth was higher in the Czech Republic, it also widens the gap between the quota of Slovakia and the Czech Republic, and its contribution can be found in the positive sector of the chart (Chart 2).

On the other hand, most taxes show a growing share in GDP in the Czech Republic in 2000 - 2005, with the exception of minor, de facto marginal, taxes – other taxes on products and other indirect and direct taxes.

We can see in the Chart 2 that a gradual decrease of the tax burden in Slovakia and its growing difference in comparison with the Czech Republic has not resulted from a drastic reduction of one or two taxes, but the tax reform targeted the system in its complexity and certain success has been achieved for almost all tax types. Not only does this approach correspond to the term "tax reform", the attribute of which is, among others, a substantial change of several tax laws (tax reform definition - e.g. Kubátová, 2006), but it also considers the findings of the tax optimization according to the tax theory. An accomplished tax optimization theory, the so-called "second best" theory, proclaims that several taxes are likely to bring more deformations, however, these deformations are likely to be lower in their sum than in case of one major tax. "Examples, where several smaller deformations could be more beneficial than one major deformation, illustrated a general rule that the elimination of one deformation (in case of an existence of several small ones) does not necessarily have to increase an overall effectiveness." (Stiglitz, 1997, p. 554). The reality of an effort in terms of the "second best" implies an achievement of a better situation than in case of the unrealistic "first best".

4 Conclusion

The paper deals with the effect of the tax reforms of the Czech Republic and Slovakia on the tax quota and its structure from the perspective of the comparison of the two countries.

In 1995, i.e. two years after the first tax reforms (or one reform - since it was common for both countries), the quotas vary, however, the difference amounts to just 3.4 % and the Slovak quota is in fact higher. However, the difference in 2005 already amounted to 7 %, and the Czech quota is higher this time.

In 2000 – 2005, the total difference between the quotas increased from 0.9 % to 7 %, and the Czech quota is higher during the whole period.

This growing difference between the tax burden of the Czech and the Slovak taxpayers has been caused by the difference in the tax rate of the seven out nine tax types, whereas only two types - i.e. excise duties and other indirect taxes - lower the difference in the quota of the two countries. The difference in the total taxation of the two countries is most contributed by the social security contributions from employment, followed by corporation income taxes and personal income taxes.

All these taxes are profitable, which is one of the reasons of their high impact on the total differences in the quotas and their development, however, another profitable tax - the value added tax - shows lower effects on the total trend of the growing differences between the Czech Republic and Slovakia, mainly due to the fact that it has been harmonized in the European Union and it cannot evolve too differently in these countries.

Abstract

Two new states, the Czech Republic and Slovakia, came into existence upon the division of one country in 1993, and these states implemented a new tax system in the same year. The tax system was legalized in 1992 and that is why the taxes of the two states were originally almost identical. However, many amendments of tax laws took place as soon as in 1993 and gradually, in spite of the tax harmonization process of the EU, the gap between the tax systems of the Czech Republic and Slovakia has widened. The paper aims at analyzing the growing differences in tax revenues (or in the tax burden of the two economies) and at finding out which taxes contribute the most to the growing differences. The method of breaking down the difference between the quotas to items - individual taxes - according to the classification used by Eurostat has been selected.

Keywords

tax quota, tax mix, taxes in Slovakia, taxes in the Czech Republic

JEL Classification / JEL klasifikace

H20

Souhrn

Po rozpadu společného státu v roce 1993 vznikly dva nové státy, Česko a Slovensko a tyto státy v témže roce zavedly novou daňovou soustavu. Soustava daní se uzákonila ještě během roku 1992, a proto původně měly oba státy téměř stejné daně. Ale již v roce 1993 docházelo k mnoha novelizacím všech daňových zákonů a postupně, přes sblížovací proces harmonizace daní v Evropské unii, se daně Česka a Slovenska stále více od sebe vzdalovaly. Článek si klade za cíl analyzovat rostoucí rozdíly ve výnosech daní (respektive v daňovém zatížení ekonomiky) a zjistit, které daně se na růstu rozdílů nejvíce podílejí. Je zvolena metoda rozkladu rozdílů mezi kvótami na členy – jednotlivé daně – podle klasifikace používané Eurostatem.

Klíčová slova

daňová kvóta, daňový mix, daně na Slovensku, daně v České republice

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New system of social services financing: myths and mistakes

Nový systém financování sociálních služeb: mýty a omyly

LADISLAV PRŮŠA

Among other things, the law on social services significantly changed the system of the financing of social services. The objective of my contribution is to point out some myths and mistakes that accompanied the creation of this system and to present possible solutions of the existing problems.

First mistake:

Within the grant proceedings, the basic principles of grant proceedings were not respected; there are differences in the amounts of the provided subsidies both among individual regions, as well as among organizations, depending on the selected organizational structure.

According to § 101 of law no. 108/2006 Coll., on social services, as amended, a grant from the state budget is provided for the securing of the provision of social service to those providers that are entered in the register. But an analysis of the results of grant proceedings shows that there are considerable regional differences in the provision of subsidies for individual types of social services, which suggests that, within the scope of grant proceedings, the breaching of the fundamental principles of grant proceedings, as they were defined in the year 2000¹, occurred. These are especially

- the principle of equal conditions for all providers of public services,
- the principle of equal conditions for all recipients of public services,
- the principle of the effective utilization of public funds,
- the principle of a transparent system of financing,
- the principle of a stable system of financing.

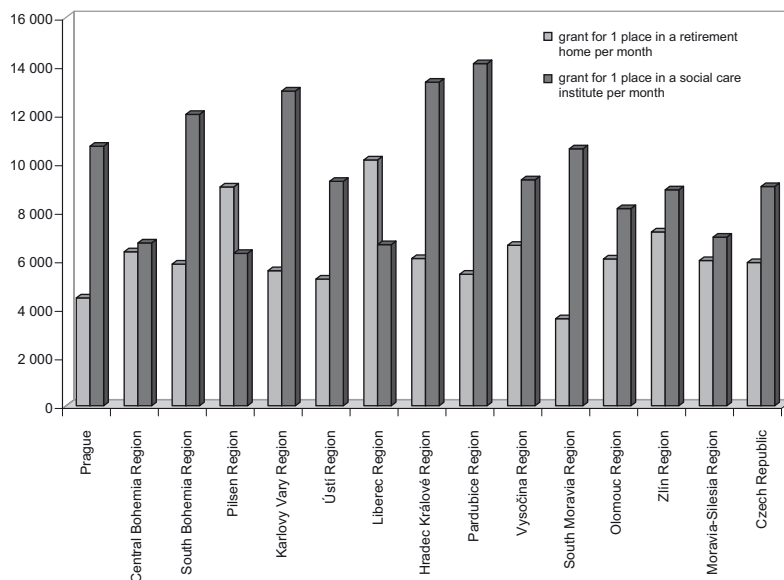
A detailed analysis of the amount of subsidies provided to residential services in individual regions shows that there are diametrical differences among individual regions:

- whereas in the South Moravia region in first place was a provided grant in the amount 3,588 CZK per month for a senior citizens' home, in the Liberec region its amount was more than 2.8 times higher and was 10,131 CZK,

¹ see: L. Průša, O. Mátl – Nad pojetím dotační politiky MPSV, Sociální politika no. 9/1999, pg. VI, ISSN 0049-0962

- whereas in the Pilsen region, a grant in the amount of 6,280 CZK per month was provided for one place in a social services facility for handicapped citizens, in the Pardubice region its amount was more than 2.2 times higher and was 14,097 CZK ² (see graph no. 1).

Graph 1: Amount of grants per 1 bed in homes for seniors and in homes for handicapped persons (including special treatment homes)



Source: own analysis on the basis of Ministry of Labor and Social Affairs (MLSA) internal data

These differences show that within the grant proceedings, the principle of equal conditions for all recipients of social services was also breached, since the existing differences in the amount of the provided grants among individual regions will clearly be reflected – also thanks to the change to the contractual principle for the provision of social services – in the differing amount of payments of the user of the service when using a comparable type of service.

These differences are also confirmed by findings that were shown by the survey on grant proceedings³, i.e., that the grant proceedings were not sufficiently transparent. Also the data about the total volume of funds spent on grants for all types of social services per one citizen of an individual region were roughly compared. Despite the fact that also here there are considerable regional differences in facilities, which cannot even be quantified in the area of the services of social prevention, since the existing statistics do

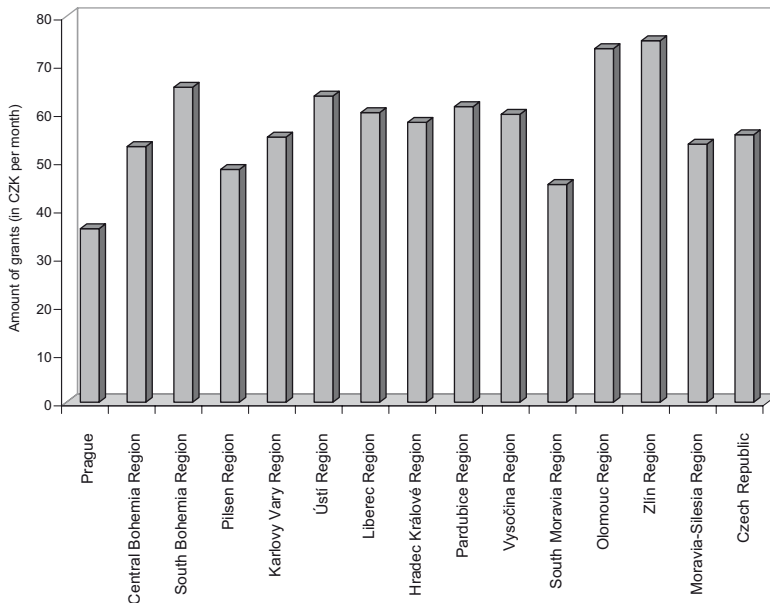
² in the interest of the objectivity of this comparison, it is necessary to state that the amount of grants in Social Care Institutes can be partially influenced by the differing structure of these facilities in individual regions

³ see: V. Hanzl – Anketa o dotačním řízení, *Rezidenční péče* no. 1/2007, pg. 6, ISSN 1801-8718

not monitor the majority of these services at all, even here the differences among individual regions are very significant (see graph no. 2):

- whereas the lowest volume of grants, when recalculated to 1 inhabitant in a region, was provided in the capital city of Prague (almost 36 CZK per inhabitant per year), in the Zlín region it was more than 2 times more (almost 75 CZK per inhabitant per month).

Graph 2: Amount of grants for social services recalculated for 1 inhabitant (CZK per month)



Source: own analysis on the basis of MLSA internal data

The principle of equal conditions for all providers of social services was also breached from the perspective that the level of the coverage of the requirements of individual providers is significantly differentiated based on their legal form. It is apparent that the most satisfied are subsidized organizations that are established by the region and that provide social care services, as their requirements were met at a level of 82.8% (the total amount of the grants is 4,204 million CZK). In virtually all of the cases, these are institutions of social care for the elderly and handicapped citizens, whose grant requests were met in this extent. The lowest level of the meeting of the requirements is being reported by business companies, whose requests for grants for social care services were met at a level of 2.7 % (the total amount of the grants is 1.1 million CZK). Even though it is not clear from the overview in table 1 what the portfolio of social services provided by individual founders is, the differences, from the perspective of the level of satisfaction of the requirements of individual types of providers, are striking.

Table 1: Comparison of the amount of the provided and requested grants, depending on the type of provider of the social service

	grant	
	mil. CZK	% of request
Alliance of municipalities	0.3	20.6
Subsidized organization established by the region	4 294.8	82.7
Subsidized organization established by the municipality	951.6	49.8
Church legal entity	561.2	59.0
Physical person	6.4	18.4
City, municipality, organizational unit	23.4	12.5
Public service organization	137.3	49.5
Business company	1.1	2.7
Civic association	729.6	49.6
Health care provider	1.1	20.2
Total	6 706.7	66.6

Source: own calculations based on the Interim report on grant proceedings by the Ministry of Labor and Social Affairs (MLSA) in the area of the support of the provision of social services, Prague: MLSA, 2007

Second mistake:

The payout of the contribution for care in cash does not create a dynamic environment for the development of social services; the criteria for its awarding are not balanced

The existing method of the evaluation of the level of dependence makes it possible to objectively evaluate the social situation of mainly physically handicapped and elderly persons. On the other hand, it does not make it possible to objectively evaluate the needs of mentally handicapped and blind persons. A number of the recipients of the contributions for care are stopping the usage of social services, since they understand the provision of the contribution as a means for the increasing of their own standard of living, or for the increasing of the standard of living of their families or the families of their children. Approximately 70% of the funds paid for the contribution for care do not return to the area of social services. This fact leads to the existential problems of a number of providers of social services, especially those having an in-the-field character, both from the ranks of non-state and non-profit organizations, as well as from the ranks of subsidized organizations, especially municipalities and cities.

Negatively is also evaluated the fact that members of the resistance -- for whom social services are provided for free pursuant to the corresponding laws -- can be the recipients

of a contribution for care, by which basically the double fulfillment of their rights occurs, respectively the abuse of the contribution.

These problems can be solved by taking these measures:

- a) clearly define that the contribution for care in a 1st and 2nd degree of dependence will only be paid out via vouchers and that only registered entities will be able to provide services for these persons,
- b) if a person is placed into a residential facility, then the contribution for care is by law the direct income of this residential facility,
- c) if a person is the recipient of a contribution for care in a 3rd and 4th degree of dependence, and care is provided for this person by a family member, consider the possibility of increasing the level of contribution for care⁴, and for this family member:
 - include the care period as a substitute period for the purposes of pension insurance,
 - in labor relations provide similar protection to the care provider as parents have on parental leave,
 - enable the taking of special courses, which would represent a certain form of support for the care provider,
- d) do not set the maximum amount of reimbursement for room and board in residential facilities, as well as the amount of reimbursement for individual actions of the care service, by law and a procedural regulation linked to it, but leave room for the establishing of these amounts directly between the provider and user of the service,
- e) clearly stipulate that the person, who by law has the right for the provision of social services for free, does not have the right for the payment of a contribution for care. The entity that provided these services for this person receives compensation based on information stated in his registration,
- f) re-evaluate the criteria for the assessing of the degree of dependence so that the needs of all groups of handicapped and elderly citizens are objectively evaluated,
- g) re-evaluate the degree of dependence of those recipients of a contribution for care, who acquired the right to it by roll-over from the increasing of the pension for the incapacitated and the contribution during care for a close person.

When setting the amount of payment for a client for room and board in residential facilities, and for individual acts of social services, the existing legislation is based on the fact that the establishing of a maximum payment amount is one of the forms of the protection of the client, which -- at the moment when social services are provided by organizations established by self-administration authorities of municipalities, cities and regions, and non-state non-profit organizations on contractual principles -- is an unsystematic element that does not create sufficient space especially for the desirable development of in-the-field social services. For the protection of the users of social services, the law has a number of effective tools (registration of the providers of social services, standards for the quality of social services, inspection of social services, whole-life education of social workers) available, and therefore the amount of the payment for provided social services should be set directly by the provider of the social service and should be stated both in the contract with the user of the social service as well as in the

⁴ *within the scope of the Proposal of the material intention of the Law on social assistance, which was prepared at the turn of 1997 - 1998, it was proposed to increase the contribution for care by 25 % in these cases*

provider's registration. At the same time, the existing amount of payments for the provision of care services, which is regulated by regulation no. 505/2006 Coll., is set at a very low level, which does not make the desirable development of this type of service possible.

First myth:

Changes in the system of the financing of social services will make it possible to decrease the capacities of residential social services facilities in the next period

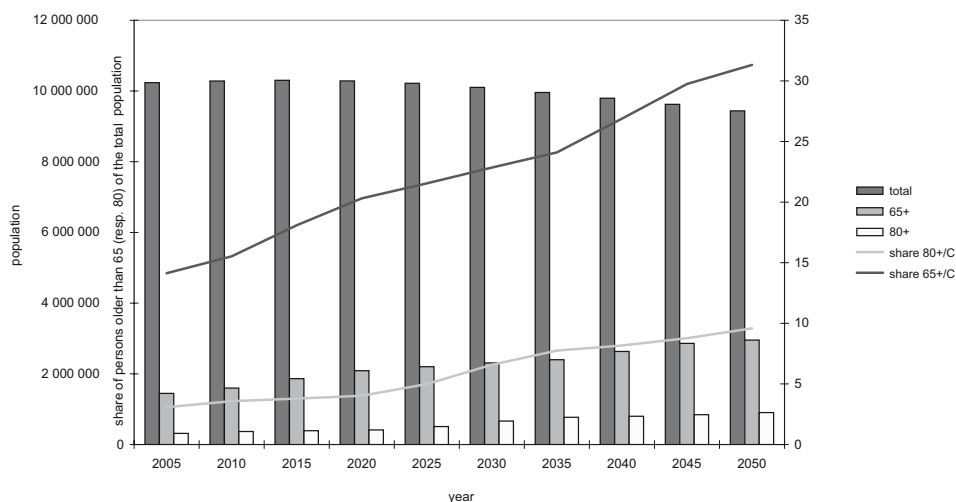
The forecast of the development of the population, which was prepared by the Czech Statistical Office at the beginning of this millennium, shows that significant changes in the structure of our population will occur in the following years. According to the so called medium alternative, it is assumed that by the year 2025 the total population will slightly decline, but the number of persons that are the most frequent recipients of social services -- i.e., persons older than 65 -- will increase by more than 50 %, and the number of persons older than 80, who are the most frequent clients of social care residential services, will actually increase by more than 60 %. These trends will also continue in the subsequent period, as during 2025 - 2050 it is anticipated that the total population will decline by approximately 8 %, but the number of inhabitants older than 65 will grow by another more than 30 %, and the number of persons older than 80 will grow by another more than 75 %. These trends are apparent in detail from table no. 2 and graph no. 3.

Table 2: Selected characteristics from the forecast of the CR population until 2050

year	Number of inhabitants	Of this, older than		Share of persons older than	
		65	80	65	80
	total	65	80	Of the total number of inhabitants	
2005	10 235 973	1 446 681	315 988	14.13	3.09
2010	10 283 042	1 596 812	368 068	15.53	3.58
2015	10 301 994	1 864 146	390 459	18.10	3.79
2020	10 283 929	2 088 333	413 674	20.31	4.02
2025	10 217 200	2 201 310	509 607	21.55	4.99
2030	10 102 433	2 308 073	664 338	22.85	6.58
2035	9 957 079	2 399 918	771 810	24.10	7.75
2040	9 795 118	2 633 554	800 123	26.89	8.17
2045	9 622 248	2 862 020	844 525	29.74	8.78
2050	9 438 334	2 956 079	904 745	31.32	9.59

Source: Population forecast of the CR until 2050 [online], cit. [2007-10-01], accessible on: [http://www.czso.cz/csu/2003edicniplan.nsf/t/FF004F4709/\\$File/4020rr05.xls](http://www.czso.cz/csu/2003edicniplan.nsf/t/FF004F4709/$File/4020rr05.xls)
[http://www.czso.cz/csu/2003edicniplan.nsf/t/FF004F5158/\\$File/4020rr06.xls](http://www.czso.cz/csu/2003edicniplan.nsf/t/FF004F5158/$File/4020rr06.xls)
 own calculations

Graph 3: Development of the population in 2005–2050 and development of the share of persons dependant on the provision of social care services



Source: own analyses

Table 3: An estimate of the need for social services for senior citizens in the following period, with the maintenance of the facilities at the 2006 level

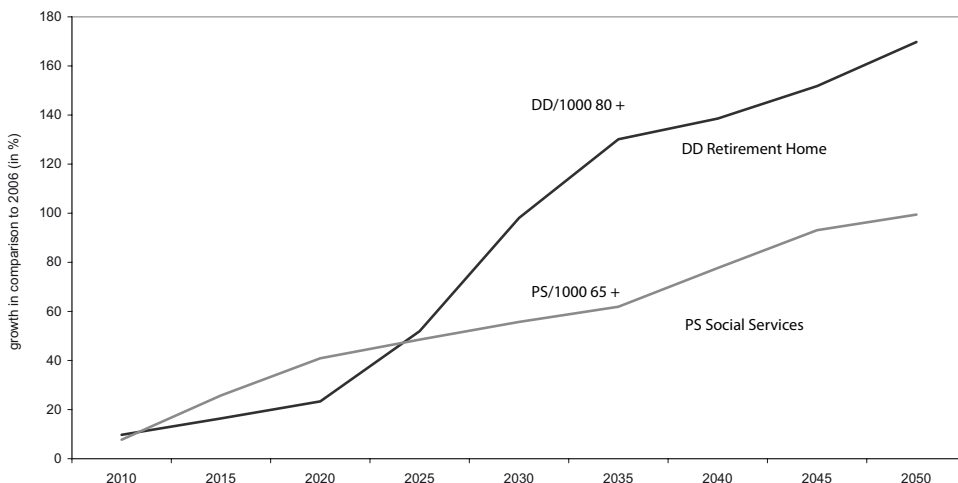
	Retirement Homes/80+			Social Services/65+		
	Total number of places	Growth compared to 2006 in absolute terms	Growth compared to 2006 in %	Total number of person	Growth compared to 2006 in absolute terms	Growth compared to 2006 in %
2010	42 438	3 766	9.74	113 214	8 126	7.73
2015	45 020	6 348	16.41	132 168	27 080	25.77
2020	47 697	9 025	23.34	148 063	42 975	40.89
2025	58 758	20 086	51.94	156 073	50 985	48.52
2030	76 598	37 926	98.07	163 642	58 554	55.72
2035	88 990	50 318	130.11	170 154	65 066	61.92
2040	92 254	53 582	138.56	186 719	81 631	77.68
2045	97 374	58 702	151.79	202 917	97 829	93.09
2050	104 317	65 645	169.75	209 586	104 498	99.44

Source: own calculations

With the maintaining of the existing proportions of the availability of social services in 2006 (the capacity of homes for seniors makes it possible to place 11.53 % of persons older

than 65, care services are provided to 7.09 % of persons older than 65), it is possible to quantify the growth of the need of social services for seniors during the following period (see table no. 3 and graph no. 4)

Graph 4: Estimated growth of the number of places in homes for seniors in proportion to 1000 persons older than 80 and the number of persons for whom social services will be provided, in proportion to 1000 persons older than 65, with the maintenance of facilities at the level of 2006



Source: own analyses

It is clear that it will be necessary to further specify this data in the following period, especially on the basis of an analysis for the need for care depending on the age of a person and type of care provided according to data from the information system on contributions for care. This data will also make it possible to update the data defining the need of social services in relation to the level of dependence and age of persons of a higher age⁵.

Abstract

The implementation of a new system of financing of social services establishes the conditions for the finding of the optimal form of the securing of human needs in an unfavorable social situation, which should contribute to the increasing of the effectiveness of the spent funds. The goal of this paper is to analyze some myths and mistakes that directly influence the effectiveness of this system of the social protection of the population. In this sense, attention is paid especially to:

- an analysis of the results of grant proceedings, which are regulated by § 101 of law no. 108/2006 Coll., on social services, as amended,

⁵ see: L. Průša a kol. – *Obce, města, regiony a sociální služby*, Praha: SOCIOKLUB 1997, pg. 31, ISBN 80-902260-1-9

- an analysis of some of the findings on the manner of using the contribution for care for the securing of the need of care for oneself,
- the implications of an aging population on the need of services for elderly citizens, in connection with the change of the system of social services financing.

Keywords

social services, grant policy, demographic development

Souhrn

Zavedení nového systému financování sociálních služeb vytváří předpoklady pro nalezení optimální formy zabezpečení potřeb člověka v nepříznivé sociální situaci, což by mělo přispět ke zvýšení efektivnosti vynakládaných finančních prostředků. Cílem tohoto příspěvku je analyzovat některé mýty a omyly, které se bezprostředně dotýkají efektivnosti tohoto systému sociální ochrany obyvatelstva. V tomto smyslu je pozornost věnována především:

- analýze výsledků dotačního řízení, které upravuje § 101 zákona č. 108/2006 Sb., o sociálních službách, v platném znění,
- analýze některých poznatků o způsobu využívání příspěvku na péči k zabezpečení potřeby péče o vlastní osobu,
- důsledkům stárnutí populace na potřebu služeb pro staré občany v souvislosti se změnou systému financování sociálních služeb.

Klíčová slova

sociální služby, dotační politika, demografický vývoj

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