

József Botos – Katalin Botos

Challenges and answers in energy policy

Introduction

No doubt, the economic history of recent times cannot be interpreted without exploring energy issues.

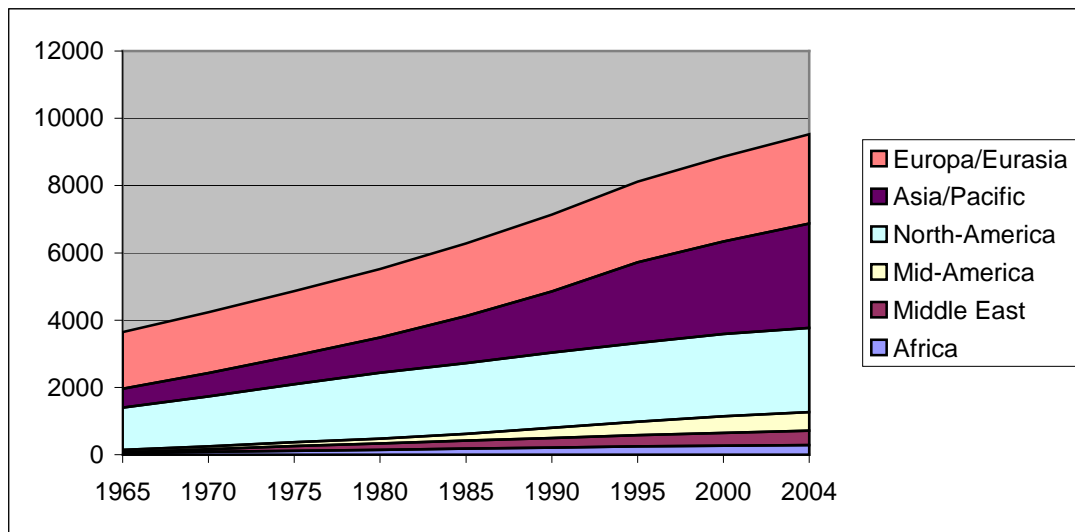
According to Angus Maddison¹, the acceleration of the development of western economies started in 1820, when the use of fossil fuels in the economy became extensive. Infrastructural development triggered by the spread of steam engines induced an upswing in the industry, resulting in an increase of the population and growth of economy. World economy which as a consequence of a low level of energy input had grown slowly until this time, started to boom and although showing huge fluctuations both in time and across regions, it demonstrated an enormous development. As people now live longer, they also consume more. GDP per capita grows, thus the theory of Malthus is not justified. The next technological boom in the 20th century was also connected to the use of fossil fuels by the spread of internal combustion engines. The main goal of world policy became the fight for new oil fields.

The present situation

Global use of energy has grown dynamically over the last 40 years but this trend has been moderated by the oil crises of the 1970s. Although the dark perspective of the Club of Rome about the fast exhaustion of energy sources did not come true, it is sure we will run out of fossil resources one day. New oil and gas fields will further enable us to base the growth of world economy on current technologies. As more and more countries need the blessings of motorization, more and more production areas are born that require high levels of energy input. The extensive development of Asian countries in the 1990s and especially after 2000 has increased global energy utilization again.

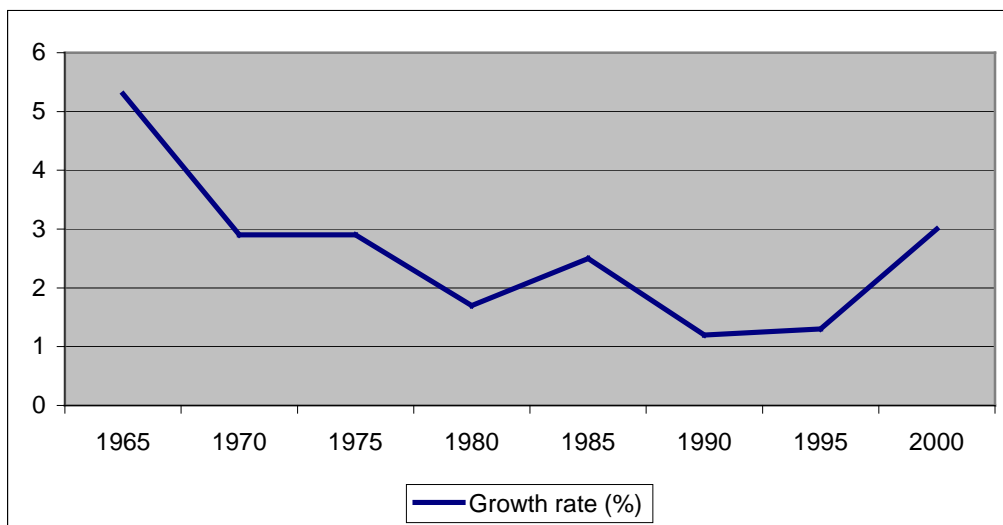
¹ The World Economy: A Millennial Perspective OECD Publications, 2004

Figure 1.a.: Development of global energy consumption across regions (1 million ton)



Source: <http://www.deutschebp.de/browsebytheme.do?categoryId=2010147&contentId=2000077> Own calculation

Figure 1.b.: Percentage development of global energy consumption (Total=100%).

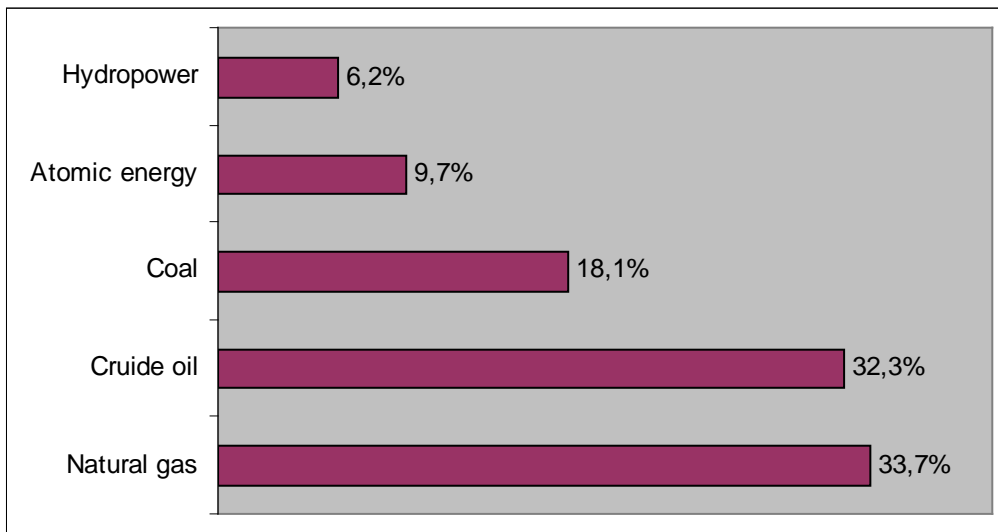


Source: <http://www.deutschebp.de/browsebytheme.do?categoryId=2010147&contentId=2000077> Own calculation

Own

Mankind utilizes many sources of energy, but the main resources are oil and gas.

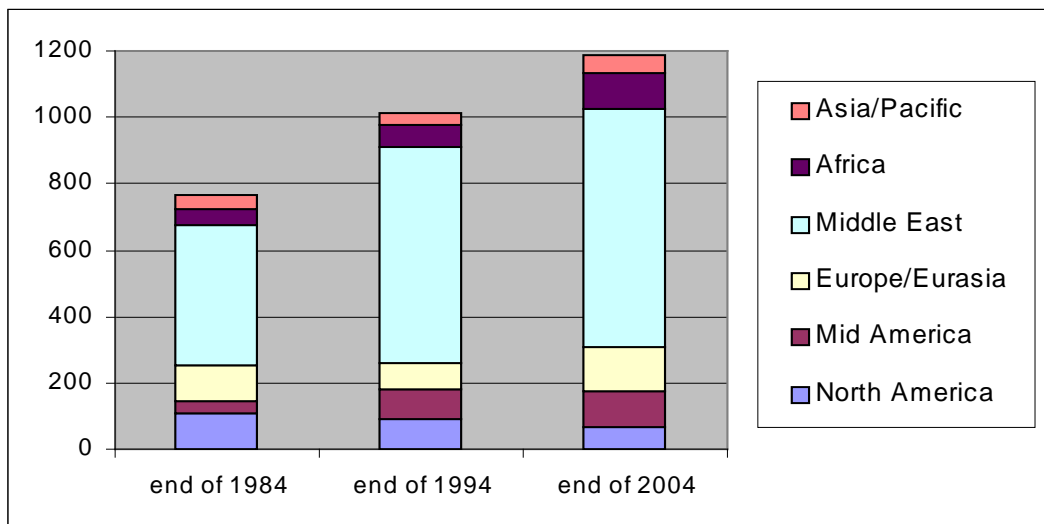
Figure 2.: Natural gas as the main energy source of Europe and Eurasia



Source: <http://www.deutschebp.de/browsebytheme.do?categoryId=2010147&contentId=2000077>
calculation

Own

Figure 3: Changes in real oil reserves (billion barrel)



Source: <http://www.deutschebp.de/browsebytheme.do?categoryId=2010147&contentId=2000077>
calculation

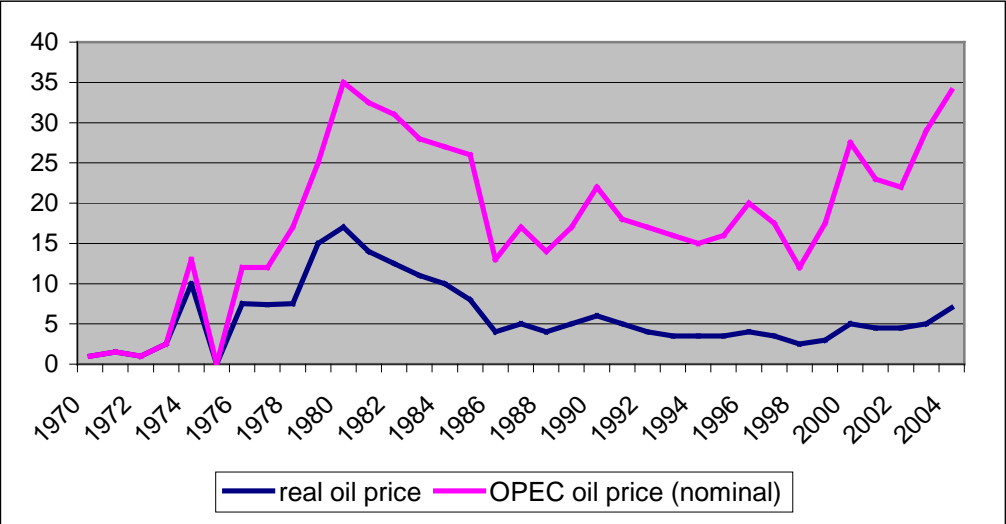
Own

Many experts have pointed out that the rise of oil prices had an enormous effect on world economy. Changes in the international financial system was also forced by the boosts of oil dollars. International inflation heated by euro-dollar markets disrupted the fixed exchange rate system of Bretton Woods. Although the international financial system remained operable, it

had to suffer severe crises from time to time. Devisa deposits of oil exporting countries also contribute to the current imbalances of international financial markets, although it has many other reasons as well.

It is worth studying the real prices of oil during the last 25 years as a huge inflationary wave penetrated the world economy in the 1970s and in the Eastern-European countries in the early 1990s as well. Thus, it is important to study the prices of oil cleared from inflation.

Figure 4: Inflation-free oil prices have not risen since the 1980s (US dollar/barrel)



Source: <http://www.deutschebp.de/browsebytheme.do?categoryId=2010147&contentId=2000077> Own calculation

It may seem astonishing but the real price of oil did not rise in the last 20-25 years, indeed. It remained under the level of the second oil crises of 1979 and started to rise only moderately in the recent years, probably due to the higher consumption by the Asian countries. Oil exporting countries could enjoy real price advantages for a short period of time only, because as soon as these countries wanted to spend their profits, developed countries sold them goods and services for higher prices.

Which factors influence nominal prices indeed? First of all, the boom of the world economy which was, however, held back temporarily by sudden increases in oil prices. Secondly, the amount of goods demanded and supplied in the market. OPEC countries strictly coordinate the amount of oil and gas produced and sold abroad, otherwise some countries would decrease prices to get extra devisa. However, real prices are influenced by international

inflation. It seems strange, but it is the huge devisa surplus that enabled the decrease of real values of reserves: oil-dollars deposited in banks worldwide sought investment possibilities, thus financed government deficits – avoiding severe economic recessions – and realized investments that sufficed less energy consumption. Per capita energy consumption decreased global energy demand, and finally, high oil prices were moderated by the demand for fossil fuels. This process was, however, also forced by the decrease of economic growth stipulated by many other reasons (consider the economic stagnation of the 1980s from which European countries and also Japan could hardly revive). Only the USA managed to produce a significant economic boom but he was not forced by the international markets. According to experts, this fact pushed the third oil crises far in time². The third crises was supposed by the fact that devisa deposits decreased in real terms after the first and second oil rise due to inflation. This, however, required a certain level of demand for oil and gas which was responsible for the first oil rise as well. We argue that synchronizing the American and the European business cycles produced a market environment where the oil prices could have been increased. The American diplomacy promoted the widespread use of dollar in the international commercial contracts. Thus, oil exporting countries demanded dollar which suffered from weaknesses that time.³

The evolution of the terms of trade

Prices in the world economy are best characterized by the ratio of prices of raw materials and energy sources to finished products. The most important factor of terms of trade is the price of energy. We have seen that developed countries managed to substitute losses of income due to higher oil prices. Studying the terms of trade between 1963 and 2000, we can establish which countries were capable for it⁴.

The basic year of our investigation is 1963 because in this year – falling between the Korean and the Vietnamese wars – world prices remained stable. As wars and military conflicts always have a price-increasing effect on energy markets, stagnating prices of the 1960s started to increase in 1973 when the US dollar was depreciated for the second time. Export competitiveness deteriorated in countries where currencies appreciated against the dollar. It had two reasons: energy prices increased and export income nominated in national currencies

²Jozsef Botos: Nemzetközi versenyképesség és árforradalom KJK, Budapest 1981.

³Jozsef Botos i.m. 1981

⁴Jozsef Botos: Versenyképesség - Nemzetközi versenyképesség PHD értekezés, SZTE, 2001

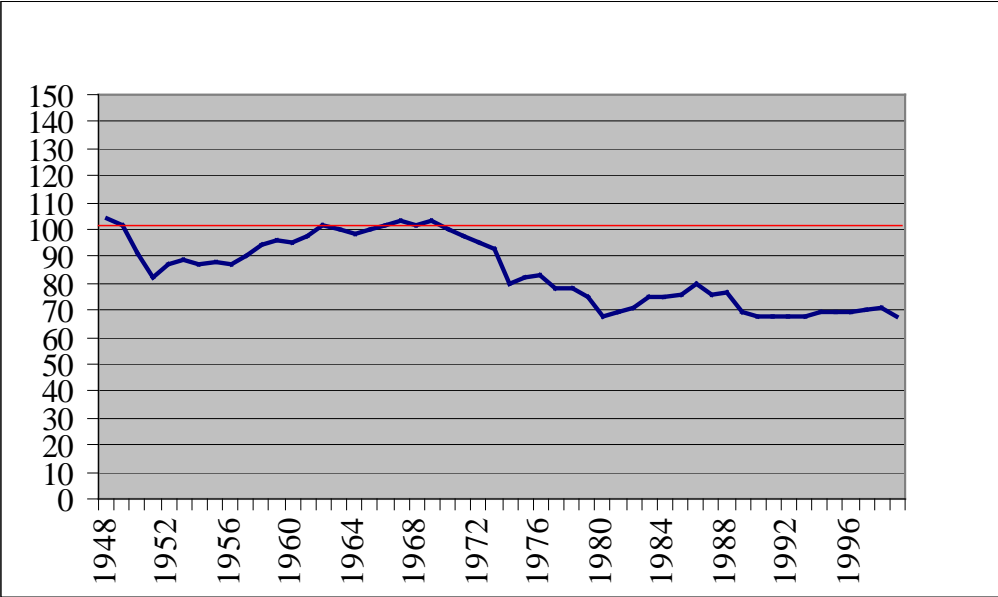
decreased. These two reasons led to a significant worsening of profitability that could be moderated by increasing export devisa prices.

Countries made price increasing decisions according to their treaty positions in their export markets. Corporates producing up-to-date finished products by using developed technologies were able to increase devisa prices because their customers could not supply these goods at lower prices. Corporates exporting agricultural products were not in such a lucky situation.

Terms of trade are a – not complex – signal of competitiveness. This has to be pinned down because many people doubt the ability of terms of trade to describe competitiveness. Some researchers reject measuring competitiveness of countries as well. Should an area underlie a currency area, competitiveness of market entities is rather influenced by prevailing economic policy. Once the commerical account of a country has been in a deficit for a long period of time, it is worth investigating why merchants selling goods to these countries are highly competitive. Chronic commercial deficit still bears losses in competitiveness even if it is hard to be financed or the technological advantage of the country is significant.

These facts are typical for the USA but it would be inappropriate to declare it „incompetitive”. According to data, however, terms of trade of the USA have worsened since the 1970s.

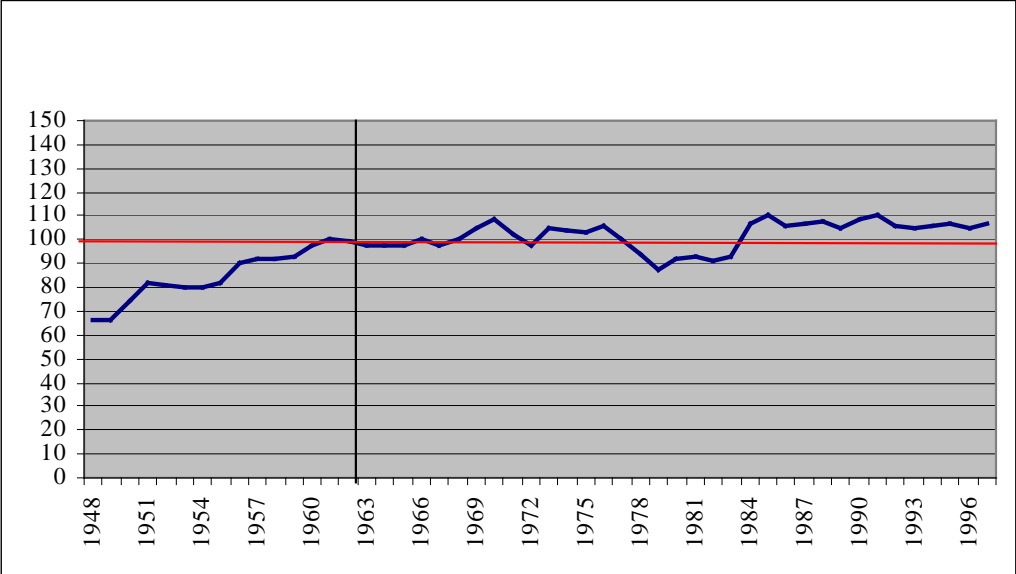
Figure 5: Terms of trade of the USA (1963=100)



Source: Monthly Bulletin of Statistics, 1977, 1981, 1998. Own calculation

The USA seems not to want to or not be able to increase its export prices as much as his import prices have increased. Thus, the share of USA in international trade is constantly stable at 12% (the share was above 20% after World War II). However, it is clear that the government of the USA gives a share from income to its exporting firms or these firms force subsidy from the government. The terms of trade never reached the level of 1963 again. We see a different situation with German prices. Looking at terms of trade, we see that oil prices had pushed the German terms of trade only temporarily under the level of 1963.

Figure 6.: Terms of trade of Germany (1963=100)



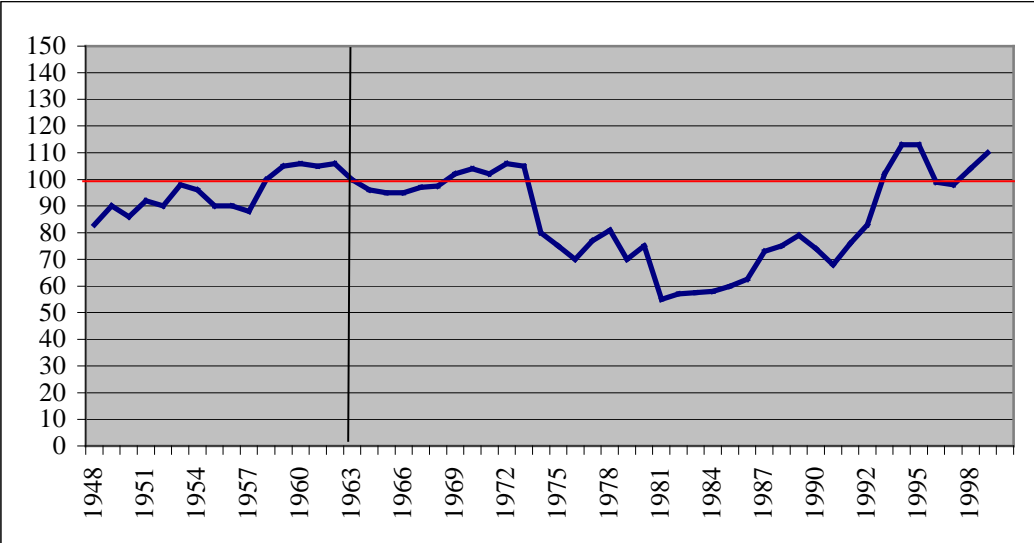
Source: Monthly Bulletin of Statistics, 1977, 1981, 1998. Own calculation

Terms of trade have been positive since the beginning of the 1980s so German market entities were able to revive from cost drawbacks caused by the increase of import prices. Studying price trends in the statistical report of the Federal Bureau of Statistics of Germany („Preise, Löhne, Wirtschaftsrechnungen”), we can establish a change in German price policy since the middle of the 1970s. During the 25-year-period after World War II, the level of export prices remained usually under that of import prices as the German mark was rather devaluated to purchasing power parity and firms burdened their operational costs mainly on the domestic market. During the next 20 years, companies successfully tried to compensate for the intensively increased import costs by raising devisa prices. We have to admit that continuous appreciation of the German mark forced them to raise the devisa prices. Appreciation compensated for the rise of devisa import prices but it also decreased the value of incomes realized in dollar but converted into German mark. In Germany, rising of devisa prices was a

general constraint. But how was this possible in a strong international competition? The only possible solution is that products on international markets were cheaper but at the same technological level that remained attractive also after price-rises as opposed to other possibilities.

Japan, requiring a significant energy input had suffered severely from oil price rises.

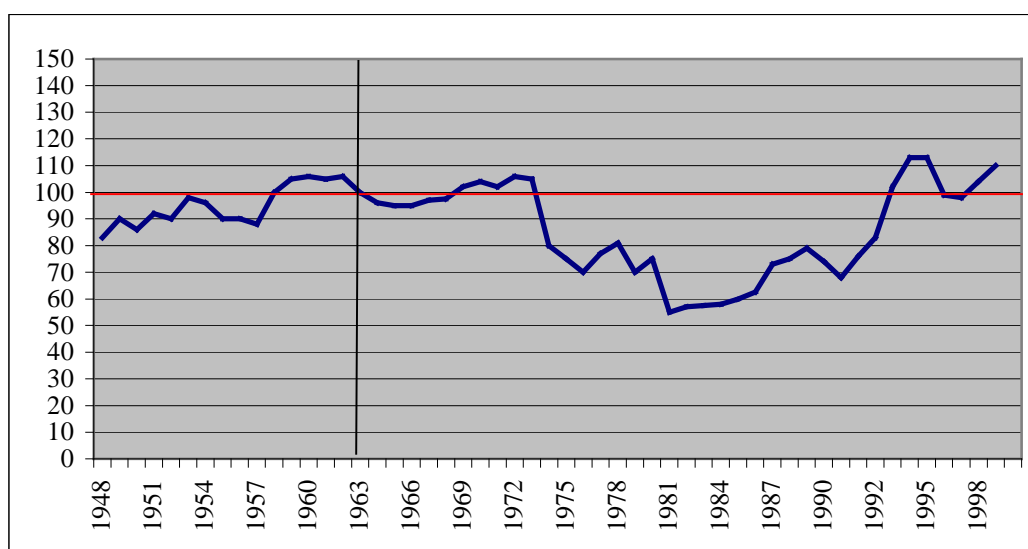
Figure 7.: Terms of trade of Japan (1963=100)



Source: Monthly Bulletin of Statistics, 1977, 1981, 1998. Own calculation

Japanese export prices were rather low. Japan did not risk this price level so prices remained under 100% from the 1970s to the middle of 1990s. His terms of trade improved only for a short period of time. As opposed to Japan, Switzerland had a positive terms of trade. Despite oil price increases, the country produced export surplus and also gained on export prices.

Figure 8.: Terms of trade of Switzerland



Source: Monthly Bulletin of Statistics, 1977, 1981, 1998. Own calculation

Comparing terms of trade to GDP, we can establish that a country gains and losses incomes during business cycles based on external devisa price changings. According to the calculation of Jozsef Botos, Switzerland may gain a whole annual income in every 11 year if his international commercial prices are favourable⁵. In the annex, we present the graphs about the external competitiveness of Norway, Italy and Spain. Terms of trade of Spain have not revived since the 1970s, Norway gained profit from national oil fields. Italy was affected by oil price rises but managed to alter his terms of trade in the 1990s.

The case of Hungary in historical aspect

Hungarian terms of trade show huge losses on terms of trade. Hungary's international commercial prices did not enable the country to revive from the shock. This is due to the fact that our export to the Soviet Union was dominated by agricultural goods. During the change of the political system, the share of agriculture from exports was about 20%. We could sell agricultural goods in barter just like the Soviet Union sold us energy. During the 1980s, meat and cereal exports were contrasted with oil imports in barter agreements. It is also known that prices nominated in rubel followed international price changes with a slight delay within the socialist commercial frame. These prices were defined well for stock market products but

⁵ Jozsef Botos: i.m. 2001

were rather low for agricultural products. The Hungarian agriculture could not compensate in its export the losses on import price increases: the prices of most homogenous products could not be raised. The fact, that the Hungarian economic policy wished to stop twisting of the inflation by appreciating the currency, encouraged the rise of devisa prices. Its success depended, however, on the product-structure. We can observe that capitalist's international trade developed slightly on price-work that was perceptible also in terms of trade. Altogether, Hungary's economy suffered losses on the changes of the terms of trade. According to the calculation of Jozsef Botos, Hungary lost its annual GDP on the prices every 7 years. This confronts to the data in Switzerland. This calculation was supposed to emphasize that the structure of exports and imports can significantly influence the GDP of a country. If national products are demanded in international markets, exporting firms are able to increase prices and compensate the losses on import prices. Eventually, the country will not suffer from income losses from international price changes but market entities will definitely face market changes.

This process did not come true in Hungary. But how do terms of trade of capital refer to oil price rises if most of our energy inputs originated from the Soviet Union? The deterioration of terms of trade of the Soviet Union can be understood but why does it reflect in the trade relation with Western economies?

Hungary experimented to moderate the dependence on Soviet-import by the Adria oil pipeline. This cost a lot of money and achieved no success. We wished to diversify our input but as the pipeline was completed in the 1970s, oil export from Arabian countries would have been more expensive than from the Soviet Union.

Soviet oil prices were set into trade agreements at a crawling price base, so prices remained under potential prices. The pipeline became one of the many investments of the socialist era that has never brought any profits. We have to admit that the aim of the economic policy was right since dependence on oil has led directly to political dependence⁶.

We cannot state that the only means to keep a country in dependence was the oil but it was definitely an important tool.

An important element of political dependence was the fear that possible domestic political disturbances will lead to external interventions. The prevailing political forces were highly

⁶ It is no coincidence that Romania who disposes of more oil reserves could shape his foreign relations freer in the 1970s than any member country of the Council for Mutual Economic Assistance. This fact has become a subject to jokes. The Mikroszkop Theatre led by Janos Komlos presented once a cabaret show in which artists dressed in folk representing the countries of the Council for Mutual Economic Assistance. The artist representing Romania had two musical instrument in his mouth: he blew a pipe and a saxophone.

interested in maintaining political stability. This political dominance acquired by alien weapons could only be maintained if direct external interventions are successfully averted. The country could, however, have carried out reforms to maintain relative well-being if there had been no disturbances from dissatisfaction. This was a double trap! Reforms enabling better achievements of the economy required peace in the society but these reforms could only be realized in peace. Without this, economic policy is shepherded back to administrative means used during the era of planned economy which would have caused poverty and dissatisfaction. Thus, people had to be persuaded to legitimate the system quietly.

Oil price rises affected Hungary severely from this aspect. As energy prices rise in the country people are interested in their standard of living and neglect the fact that energy prices in international markets could have risen even higher. Economic policy was thus responsible for hindering energy price rise penetration and social dissatisfaction in the 1970s. This role confronted with planned reforms since it distorted the inspiring role of prices. Neither corporates, nor people had been interested in energy savings that would have been the only sensible reaction, however. Economic policy introduced active exchange rate policy as a general tool, appreciating the forint and fixed prices needing government subsidies later⁷. Price and export subsidies created by the appreciated exchange rate meant a huge burden for the state budget. As Hungary did not dispose of enough domestic savings, forint surpluses could only be financed from foreign credits. External financing was easily justified by the fact that the dollar – becoming artificially cheaper after appreciation – boosted the import which required more devisa reserves. Then has the so-called „twin deficit” developed but it has also been typical ever since. The contemporary state accounting boards, however, tried to obscure this and present deficit financing credits as other revenues.

But why did not Hungary have domestic resources to finance the budget deficit? The reason is that wages had been relatively low and possible savings from the society were spent on housing credits. There have been no other resources but external financing which was far more comfortable for the country. So, temporary domestic problems had been solved by increasing the level of indebtedness. We do not know for sure why economic policy decision makers believed that indebtedness can be overcome later on. They certainly did not count with two things: firstly, that deficit will not be a single phenomenon since the economy cannot adjust to changed circumstances in the world economy due to the distorted

⁷ Botos - Szalkai - Patai: Pénzügyek és nemzetközi gazdasági kapcsolataink. KJK, 1981

mechanisms, and secondly, that international interest rate conditions will change dramatically. It was rather cheap to apply for foreign loans due to excessive liquidity but it became expensive after the deficit boom of the USA increased the interest rates worldwide.

This has increased interest service that could not be financed from the capital account suffering constantly from a deficit. So, debt had been accumulated by a snowball-effect.

As a consequence, international inflation could not be kept outside the country by appreciating the currency but it could be converted into a current account deficit.

It should be emphasized that the odd Hungarian economic reforms which were started but stopped later affected the external relations. Western import becoming cheaper after depreciation was incorporated in Eastern exports boosting indebtedness. Western countries produced a surplus as opposed to Eastern countries where the level of indebtedness increased. As Hungary could not take up any more loans from abroad the country came close to insolvency, like Poland. In order to manage debts, Hungary joined the IMF in 1982 and was forced to carry out tightening actions. However, setting the country on a dynamic growth pathway was not feasible in the 1980s (statistics show only 1% growth of GDP p.a.). This has increased dissatisfaction and led – together with foreign problems – to the collapse of the system in 1990.

Returning to our first question: why did Hungary suffer from terms of trade deterioration in international capital relations beside the oil import that burdened all socialist countries?

The reason is that our western partners increased their prices what could be seen on the graphs. This period, Hungary performed about half of its foreign trade with countries out of the CMEA territories, especially with EU countries. Our most important foreign trade partner was Germany but Italy played a significant role too. We have seen that these countries made enormous efforts to diminish their losses on prices. These countries raised their export prices and we could not do anything else but get used to it as developed Western technologies assisted to produce and sell competitive processed goods to Eastern countries. Most firms considered trading with socialist countries to be beneficial. The business was remunerative in national currency!

So Hungarian foreign trade had suffered from oil price rises by two factors: directly in Soviet relations and indirectly in foreign trade relations with Western countries. All responsibility, however, shall not be drifted to external circumstances – Hungarian economic policy had also a big role in the severeness of the consequences.

Challenges and answers in energy policy

It is worth evaluating the answers of the energy policy beside analysing economic policy. Studying analysis of former UN officials, we can establish that developed countries did not react to energy price rises by developing the domestic energy sectors⁸. The exploitation of fossil resources in Europe cost lots of money since reserves shall be exploited from deep and exploitation from the North Sea requires expensive technologies under the current physical conditions. These fields were not utilized until oil prices skyrocketed again after the second crisis. At this time, exploitation seemed to be economical, so it became a real alternative for Norway and Great-Britain. We remember, however, the strong commitment of the Thatcher-government to close down non-viable mines requiring state support in spite of long lasting strikes.

Energy policy followed a special path in France where nuclear program became the cornerstone of energy policy. A significant part of France's energy demand is provided by nuclear power stations.

Most countries in Europe, however, had bought energy from abroad. These countries did not even aspire to make foreign investments. On the one hand, this was due to the fact that oil exporting countries have realized the importance of their natural resources and on the other hand, foreign investments were risky due to the international political turbulences.

The only possibility was traditional trade in which developed countries tried to compensate losses of income by raising export prices.

As far as domestic investment policy is concerned, the spread of energy saving technologies had been typical. Per capita energy consumption decreased everywhere. It is an interesting fact that since domestic energy price rises in the USA had been smaller than in other countries in the 1970s, the country had a time-lag to European countries in using energy saving technologies⁹.

In Eastern-Europe, however, we experienced the strenghtening of self-sufficiency in the countries of the Council for Mutual Economic Assistance (CMEA). It was not only because better prices supported internal trade but also because price changes had been favourable to the Soviet Union. It is commonly said that providing CMEA countries with energy was a

⁸ Konjunktúra-és Piackutató Intézet: A fejlett tőkés országok beruházás-és fejlesztéspolitikájának hosszú távú alkalmazkodása a megváltozott világgazdasági helyzethez. Discussion Paper, Manuscript, 1980.

⁹ Katalin Botos: Energiapolitika külgazdasági szemszögből In: Pénzügykutató Intézet Tanulmányai, 1980.

burden for the Soviet Union, the situation eased as prices became more advantageous. Price differences enabled to import products to the Soviet Union suffering from constant current account deficit. Since energy transportation from long distances in the East requires capital investment, the Soviet economic policy had to overcome the problem.

Investment contributions and credits of the International Investment Bank¹⁰ had served this purpose. Former conditions are reflected well in the fact that the scientific thesis of the author was classified, although neither secret information had been included nor the critics of the CMEA system had reached further than the work of Alexander Ausch („Situation, mechanisms and prospects of the CMEA system”) published by the publishing house of the Hungarian Academy of Sciences in 1969. However, the era between 1969 and 1972 had brought a more tense viewpoint of the Soviet Union as opposed to the previous liberal, reform-oriented manner. The thoughts seemed too „revolutionary”¹¹. Ausch rejected previously the official viewpoint many times. He was not invited to conferences and became embittered. His teaching work at the University of Economics was taken by the author of this article later.

The International Investment Bank was established in 1971 similar to the European Investment Bank to finance common developments. During the first period, Hungary tried to get support also for developing the processing industry but these efforts had not been successful. The bank that will be dissolved soon used most of its tools to finance the building of the Soviet pipeline in the 1970s¹².

As we can conclude from a former study¹³, investments financed also by the International Investment Bank served mainly the interests of the Soviet Union and lacked of any kind of rationality. The building of the pipeline of Orenburg was divided among the interested countries. Every country had to perform their own works; payment was settled according to Soviet building norms. The pipes had been imported from Western countries, thus, countries applied for devisa loans. The pipeline, however, became the property of the Soviet Union. The devisa and transferable rubel loans to build the pipeline had been given to the Soviet Union in two-sided agreements. The loans were installed but loan conditions were rather

¹⁰ Katalin Botos: A szocialista integráció nemzetközi beruházáspolitikája Kandidátusi értekezés, 1972

¹¹ Alexander Ausch died unexpectedly in 1971, two years after publishing his book. The cause of his death has never been clarified.

¹² A study of the author dealing with investment contributions of the 1970s had not been approved for publishing. The prestigious director of the Finance Research Institute, Istvan Hagelmayer justified this decision by the fact that Andropov, former head of the KGB (later secretary general) visited Hungary that time and asked the leaders of the Party to stop the publishing of the article judging the rubel settlement system. Censorship had only been eased after the death of Andropov.

¹³ Katalin Botos i.m. 1972

unfavourable. The several billion dollar debt burdened the external debt of Hungary and so contributed to the snowball-effect. This served the purpose of transporting gas with fixed long-term conditions. But gas received as an exchange for loan installments had to be accepted. Thus, Hungary became a leading country in using gas-operated systems. The technology spreading also in rural areas diminished traditional methods of household utilization. Using gas was more comfortable for households and more advantageous to protect the environment as opposed to coal. The indirect effect from eliminating traditional agricultural wastes seemed evanescent but may seem regrettable today.

Nowadays, Hungary depends more on gas import than it would be acceptable. It is easy to get used to good things, so households use gas heating more widely than it would be acceptable. As gas prices rise the population is also about to save energy by heating only designated places of flats. However, consumption remains high in Hungary. This fact – as we have experienced during the winter of 2005/2006 – exposes the country to severe risks in economic policy.

Summary

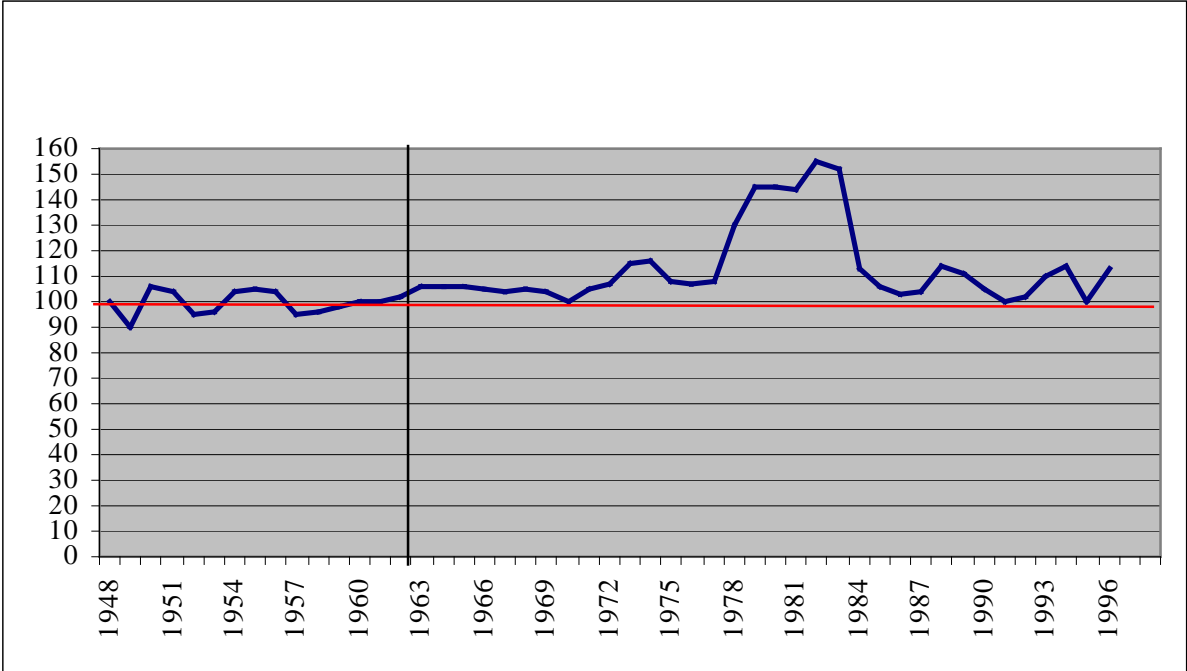
Hungary reacted to international oil price rises in a nonsensible way in the 1970s. As opposed to international practices, the country did not pay enough attention to develop processing industry by energy saving technologies and encourage the sensible consumption of households but invested in extensive solutions. The country was partly responsible for this step but the pressure from Moscow also forced us. Autarky at the level of CMEA in the form of investment contributions and unreasonable economic and organizational solutions became a costly way of energy supply. Financial policy serving the wishes of the power hurt the country severely in the long run. The most absurd thing in this situation was that these negative effects had been intensified as a result of Hungarian economic mechanisms. Everyone was interested in forint profits. This fact resulting in the increase of dollar import and appreciation of the exchange rate became a serious factor of indebtedness. As profits were measured in forint, we transformed convertible dollar receivables to inconvertible transferable rubel. So, debt taken up from capitalist countries had not been even partly moderated by claims from socialist countries. Actually, both meant a burden for the country. The terms of trade of the country deteriorated constantly and we could not reverse it by developments in the processing industry. But how would it have been possible if capital required for

modernization had been absorbed by autarchic energy policy and reforms aiming to serve a sensible economy had been realized only partly until the collapse of the system¹⁴.

¹⁴ Katalin Botos: Lesz-e konvertibilis a magyar forint? KJK, 1990

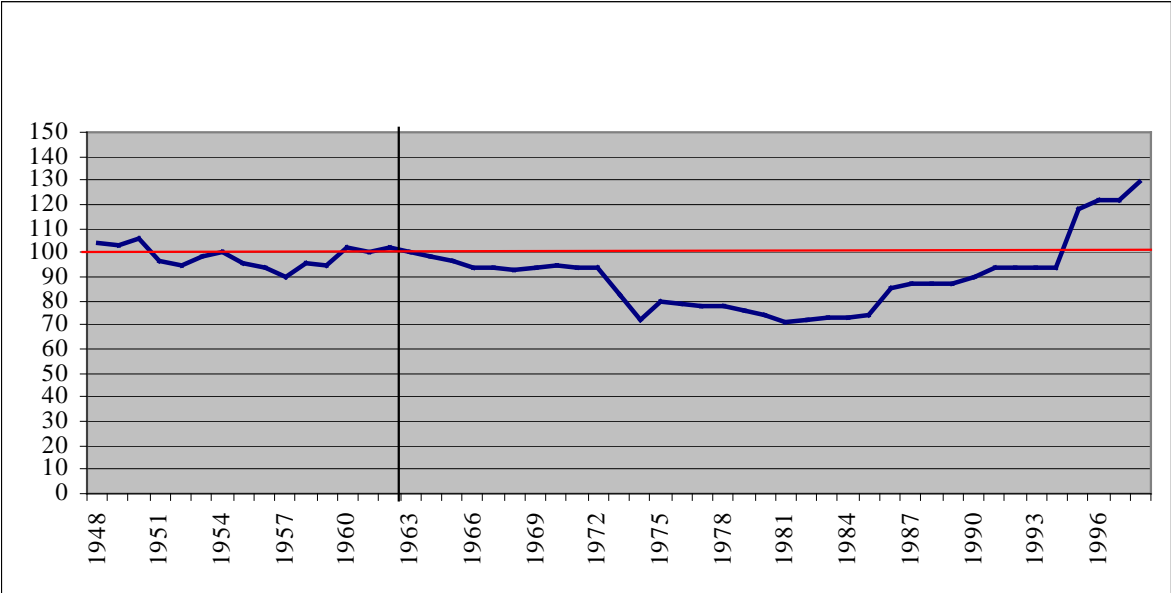
Annex

Figure 1: Terms of trade of Norway (1963=100)



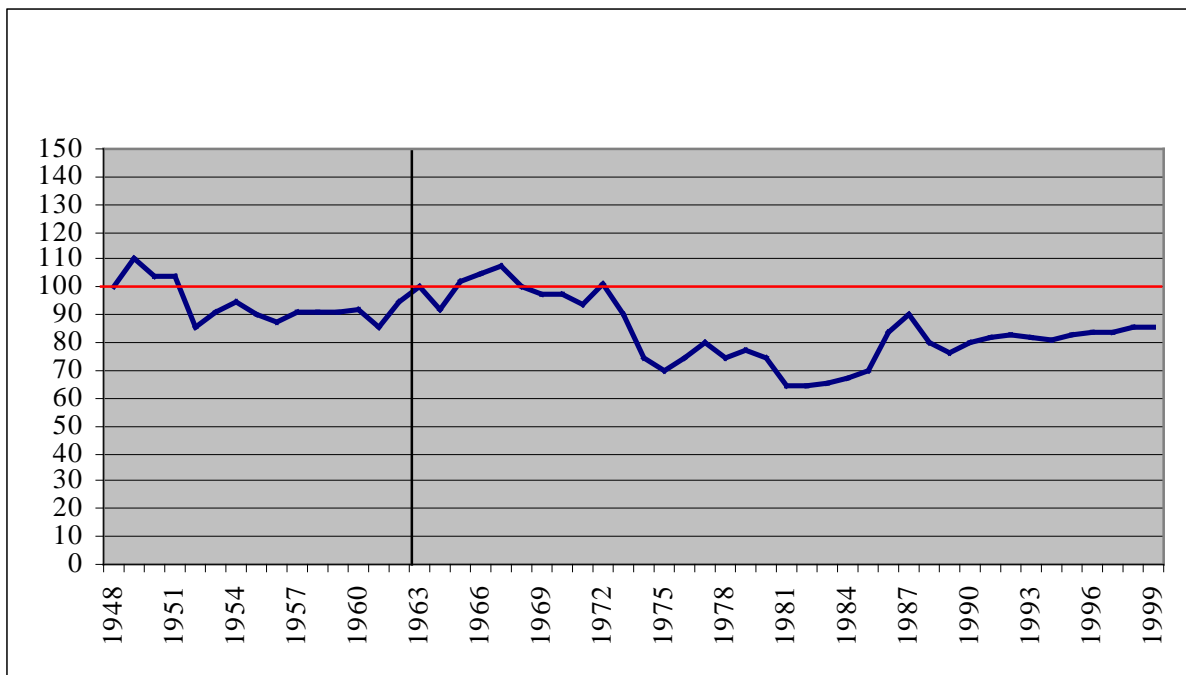
Source: Monthly Bulletin of Statistics, 1977, 1981, 1998

Figure 2: Terms of trade of Italy (1963=100)



Source: Monthly Bulletin of Statistics, 1977, 1981, 1998

Figure 3: Terms of trade of Spain (1963=100)



Source: Monthly Bulletin of Statistics, 1977, 1981, 1998