

Charles University in Prague

Faculty of Social Sciences
Institute of Economic Studies



BACHELOR THESIS

**Currency separation of Czechoslovakia in
1993 - any lessons for the Euro area?**

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Declaration of Authorship

The author hereby declares that he compiled this thesis independently, using only the listed resources and literature.

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Prague, July 28, 2014

Signature

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Abstract

This thesis analyses important aspects of the Czechoslovak currency separation, its incentives, technical and organizational solutions and the total expense of the operation. The main contribution of this work is (i) comparing the situation in the Czech and Slovak Federative Republic before the currency separation in 1993 with the situation in Euro area countries after 2008 and describing its similarities, (ii) analytical view of a possible application of the solutions used within the separation of the Czechoslovak currency in the context of the Euro area states, and (iii) discussion about possible gains from leaving the European Monetary Union.

JEL Classification E20, E27, E30, F63, F68, K10

Keywords Currency separation, Czechoslovakia, Euro area, Monetary union

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Abstrakt

Tato práce zahrnuje důležité aspekty operace měnové odluky společné československé měny, její motivaci, technické a organizační řešení a vlastní náklady odluky. Hlavními přínosy práce jsou (i) porovnání situace v Československu před měnovou odlukou v roce 1993 se situací v eurozóně po roce 2008 a nalezení vzájemných podobností a rozdílů, (ii) nastínění možnosti aplikace podobných řešení, jaká byla aplikována při měnové odluce v Československu, při oddělení některé ze zemí eurozóny a s tímto spojených problémů, a (iii) diskuse nad předpokládanými přínosy vyčlenění se z eurozóny.

Klasifikace JEL E20, E27, E30, F63, F68, K10

Klíčová slova Měnová odluka, Československo, Eurozóna, Měnová unie

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Acronyms

ATS	Austrian Schilling
CHF	Swiss Franc
CNB	Czech National Bank
CMEA	Council for Mutual Economic Assistance
CSK	Czechoslovak Koruna
CSFR	Czech and Slovak Federative Republic
CSOB	Československá obchodní banka
CTC	Central Trans-departmental Committee
CZK	Czech Koruna
CZSO	Czech Statistical Office
DEM	Deutsche Mark
ECB	European Central Bank
ECU	European Currency Unit
EMU	European Monetary Union
EU	European Union
EUR	Euro
EURES	European Employment Services
EUROSTAT	Statistical office of European Union
FDI	Foreign Direct Investment
FRF	French Franc
FSO	Federal Statistical Office
GDP	Gross Domestic Product
HICP	Harmonised Index of Consumer Prices
IMF	International Monetary Fund

IRB	Investičná a rozvojová banka
KB	Komerční banka
LOGG	Local Operational Control Group
NBS	National Bank of Slovakia
NUTS	Nomenclature of Territorial Units for Statistics
OCA	Optimal Currency Area
OECD	Organisation for Economic Co-operation and Development
PIIGS	Portugal, Ireland, Italy, Greece and Spain
PPP	Purchasing Power Parity
PSSI	Productive Structure Similarity Index
RCA	Revealed Comparative Advantage
RSC	Regional Steering Committee
SBCS	State Bank of Czecho-Slovakia
SITC	Standard International Trade Classification
SKK	Slovak Koruna
SSO	Slovak Statistical Office
TARGET2	Trans-European Automated Real-time Gross settlement Express Transfer system
USA	United States of America
USD	United States Dollar
VUB	Všeobecná úverová banka
XCS	Clearing Koruna
XCU	Clearing European Currency Unit

Bachelor Thesis Proposal

Author	Daniel Husek
Supervisor	Doc. Mgr. Tomáš Holub, Ph.D.
Proposed topic	Currency separation of Czechoslovakia in 1993 - any lessons for the Euro area?

Topic characteristics The economic recession from 2008 intensified the process of divergence between Eurozone's core and peripheral Eurozone's states. The single currency limits the possibilities to solve this problem, thus the economic community began to talk about the currency separation. Within the light of current developments, the currency separation seems not to be an urgent topic anymore. However, in the future we should be theoretically prepared for such a situation. One of the starting points is the empirical knowledge of the currency separation of Czechoslovakia in 1993.

This thesis analyses important aspects of the Czechoslovak currency separation, its incentives, technical and organizational solutions and the total expense of the operation. The main contribution of this work is (i) comparing the situation in the Czechoslovak Republic before the currency separation in 1993 with the situation in Euro area after 2008 and describing its similarities, (ii) analytical view of a possible application of the solutions used within the separation of the Czechoslovak currency in the context of the Euro area states, and (iii) discussion about possible gains from leaving the European Monetary Union.

Hypotheses We suppose that the separation of Czechoslovak currency union had besides its political reasons also economic reasons. We also suppose that the Czechoslovak currency separation was technically and organizationally easier as the financial interconnectedness was not deep. Finally, we suppose that the separation of European Monetary Union would imply greater impact to the global economic development and its overall costs would outweigh its benefits.

Methodology We compare the development of economic indicators relevant for the theory of optimal currency area as incentive to separate currency union and discuss the Czechoslovak separation in the context of Eurozone situation.

Outline

1. Introduction
2. Theoretical and empirical description of separation of Czechoslovak currency
 - (a) Economic reasons of the currency split
 - (b) Technical and organizational preparation
 - (c) Realization of the currency separation
 - (d) Clearing system
3. Similarities and differences in conditions within the Euro area
 - (a) Incentives – economic divergence in post-crisis period
 - (b) Possibilities of usage of the same technical solution
4. Discussion about benefits and costs of the monetary union separation
5. Conclusion

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Author

Supervisor

Chapter 1

Introduction

In the early 1990s the Occidental Europe was proceeding the first stage of monetary integration towards a single currency, while in the same time, Czechoslovakia¹ was thinking otherwise.

Czechoslovakia was politically separated on 01/01/1993, when two autonomous subjects of international law, the Czech Republic and the Slovak Republic were founded. Monetary system of both countries continued to use the common currency Czechoslovak Koruna (CSK). Nevertheless, due to the different economic development it could be seen from the very beginning that the single currency was only a phase towards an inevitable creation of individual currencies. The dissolution of Czechoslovak currency occurred on 08/02/1993.

The currency union in colorful Europe always had its supporters and opponents, hence it is not surprising that its first major recession of its life in 2008-2009 raised concerns about its future. Moreover, since the peripheral European countries face imbalances in real effective exchange rates and as they have built up large net external debts in a currency which they cannot devalue, an exit from European Monetary Union (EMU) shows to be one of the possible ways of addressing the competitiveness, solvency and liquidity problems.

At this point we believe that analysis of recent experiences of currency separation are useful tools for policymakers². Thus, the objectives of this thesis are to analyze the currency split in Czechoslovakia with main focus on its

¹In this work we will not distinguish between different names of united political formation on the area of today Czech Republic and Slovak Republic and so we will use the term of Czechoslovakia or federation.

²Moreover, the usefulness of recent experiences does not limit to the Euro area case and it could be contributive in the separation of the United Kingdom of Great Britain and Northern Ireland (Scottish independence) as well.

economic reasons and process organization and to compare the situation with the conditions in the Eurozone.

We will not discuss the political reasons even though we are well concerned with their meaningful role in the final decision of the dissolution. The main contribution of this thesis is possibility to learn a relevant lesson from the Czechoslovak experience in nowadays economic context of European integration scheme.

The thesis is structured as follows: Chapter 2 covers the analysis of the reasons of the Czechoslovak currency split and a description of its technical and organizational procedure. Chapter 3 shows the possible analogy of the described situation with the one in the Eurozone during and after the economic recession in 2008–2009. Chapter 4 discusses the trade-off between currency union and separated currencies in our cases. In chapter 5 we summarize our findings.

Chapter 2

Theoretical and empirical description of separation of Czechoslovak currency

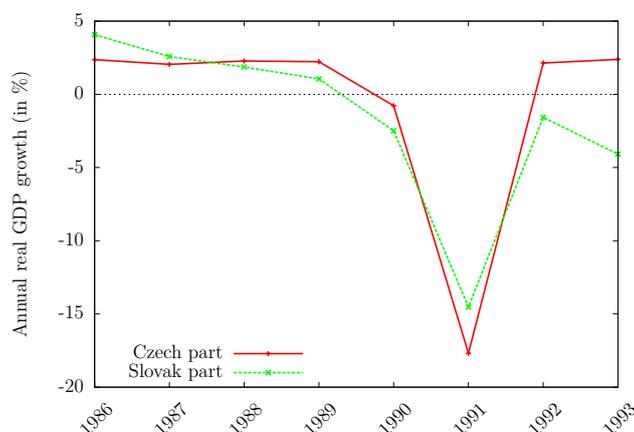
2.1 Economic reasons of the currency split

Since the decision makers at the end of 1992 expected the continuation of already initiated economic divergence in development of both countries, different macroeconomic policies were to be applied. Not to restrict the number of policy instruments, it inevitably led to the currency split in the close future. Let us now focus on the main economic trends in Czechoslovakia before the split with focus on differences between the Czech and Slovak part of federation.

2.1.1 Business cycle divergence

It can be seen in figure 2.1 that both economies were – after decades of living together and sharing economic policies – tightly linked to each other. The bivariate correlation of real GDP growth from period 1986 to 1992 is 0,958440; the bivariate correlation calculated from data of dramatic period 1990 to 1992 is even larger and equals 0,997326. Although the development of GDP indicator does not reveal if the tight linkage in economic performance was caused by monetary or only fiscal union, we conclude that the business cycle divergence did not represent an economic reason for the currency separation.

Figure 2.1: Real GDP growth (in %)



Note: Growth rates are calculated from GDP statistics expressed in prices from 1984.

Source: author's calculation; data for Czech part 1985-1989 are from Fischer *et al.* (2013, p. 13, tab. 8), data for Czech part 1990-1993 are from CZSO and data for Slovak part are from Statistical yearbook of the Slovak Republic 1994

2.1.2 Divergence in development of prices

Fleming (1971) considered similarities in price development (and in propensity to tolerate inflation) as one of conditions for Optimal Currency Area (OCA). Nevertheless, during the period of transition process – from centrally planned economy towards economy built on market principles – the most important determinant of inflation is the process of liberalization of prices which can to some extent debase the particular importance of this theory. Moreover, looking at the inflation annual data for the period just prior the split, we can notice lower differences between the Czech lands and Slovakia than between Czechoslovakia and other geographically close transitional countries.¹ Still, as can be seen in table 2.1, the differences were noticeable.

Table 2.1: Inflation rates in Czechoslovakia (in %)

GEO/TIME	1989	1990	1991	1992
Czech part	1,4	9,7	56,6	11,1
Slovak part	1,3	10,4	61,2	10,0

Source: CZSO; Statistical yearbook of the Slovak Republic 1994

In 1991, the recorded level of the inflation in the Czech part was 56,6% vs. 61,2% in Slovakia, which stands for the difference of -4,6 percentage points.

¹*Source:* CZSO; Statistical yearbook of the Slovak Republic 1994; and OECD

In 1992 the corresponding figures were 11,1% for Czech part and 10% for the Slovak part, which represents 1,1 percentage points differential. Hence, the differences does not seem to be persistent and we conclude that they were little enough not to bring out the currency split.

On the other hand, despite the little size of dissimilarities of inflation characteristics if they were results of more fundamental and long-term differences, they could contribute to the process of divergence in the future and might play the role in the decision to split the currency. One of those fundamentals was identified by Čapek *et al.* (1992) who noticed the divergent trend between states considering the increase (respectively decrease) of real wages pushed by the increase (respectively decrease) of labor productivity. Our data of 1990 truly shows that the Slovakian real wage growth exceeded the labor productivity growth in greater extent than in the Czech part. On the other hand, our data in table 2.2 and in figure 2.2 provides empirical evidence that this trend did not last in following years. Moreover, the development of differences of real wage growths and productivity growths formed inflation pressures in Czech part rather than Slovak part of federation.

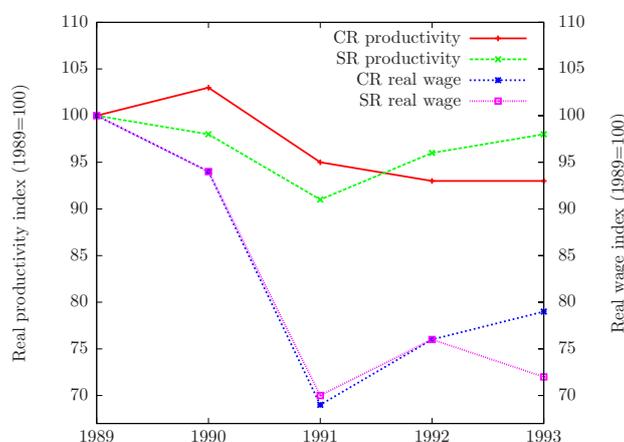
Table 2.2: Real wage and productivity growth differences (in percentage points)

GEO/TIME	1990	1991	1992	1993
Czech part	-9,2	-18,0	12,2	3,4
Slovak part	-3,9	-18,3	2,8	-7,4

Note: Productivity growth rate is based on real productivity measured by GDP (in constant PPP USD) per employed person

Source: author's elaboration; data from World Bank, CZSO and SSO

Figure 2.2: Czech and Slovak labor productivity and wage indexes (in real terms, 1989=100)



Note: The real productivity indexes are constructed from data of labor productivity measured by GDP (in constant PPP USD) per employed person

Source: author's elaboration; data from World Bank, CZSO and SSO

2.1.3 Exports and imports

Most noticeable disparity is depicted by the trade data. At the beginning of 90's the Slovak import and also export was more dependent on the economies of the former Eastern Bloc than the Czech one was. In 1991 the Slovakian share in the total exports of Czech and Slovak Federative Republic (CSFR) was estimated by Federal Statistical Office (FSO) to 26,6% – while the share in GDP was 29,7% – and the share of exports to the market economies was only 25%. To some extent it reveals the different attitude towards the fast transformation into market economy and also a difference of the competitiveness of exporters in two nations.

The greater import intensity combined with lower export performance of Slovakia implied deficit in balance of trade in 1990. The deficit of Slovakian part was CSK 9226 million compared to the Czech part with CSK 19779 million trade deficit. Slovakia recorded the CSK 14064 million deficit also in 1991 when the federation budget was in surplus as the Czech trade surplus consisted of CSK 24813 million. On the other hand, the numbers for 1992 are preferable for Slovakia, when its trade balance ended with deficit of CSK 5136 million, whereas the Czech trade deficit was almost 9 times higher as valued CSK 45308 million, please see table 2.3.

Table 2.3: Trade balance in parts of former Czechoslovakia (in CSK billion)

GEO/TIME	1989	1990	1991	1992	1993
Czech part	5,5	-19,8	24,8	-45,3	-4,5
Slovak part	3,1	-9,2	-14,1	-5,1	-33,8

Note: Trade balance in 1993 are denominated in CZK and SKK in the Czech Republic and the Slovak Republic respectively, given that estimating the average exchange rate of CZK and SKK for 1993 is not reasonable.

Source: CZSO; Statistical yearbook of the Slovak Republic 1994

The Slovak trade deficit was indirectly – but to large extent – financed by one side fiscal transfers.² As these transfers stopped hand in hand with the political dissolution of the federation, the difference in trade balance meant divergence in forces relevant in determining the exchange rate.

2.1.4 Labor mobility and unemployment

Until the end of the federation, the fiscal transfers occurring between states allowed to mitigate structural differences. Since the day of political disintegration the future of currency union depended on the capacity of states to absorb asymmetric shocks. Mundell (1961) introduces theory of conditions for non problematic functioning of a currency area. He finds it in the free and flexible migration of workers from regions affected negatively by the shocks recording higher unemployment rate to other – unaffected – regions.

There were negligible cultural and social barriers to labor mobility in former Czechoslovakia and furthermore no legal restrictions were posed to migration across inner borders. None of these attributes disappeared after the political separation when the idea of sustaining the currency union was agreed. Despite this convenient situation, the statistical data reveals the fact that the migration was not sufficient and important variance in unemployment rates is present among regions. We can simplify the situation stating that the unemployment was increasing while going from the west to the east of Czechoslovakia.

The average unemployment of 1992 reached 10,4% in Slovakia and 2,6% in the Czech part. In 1993, the average unemployment rate remained high reach-

²The value of transfers is difficult to quantify as the budget included them to the federal redistribution. Nevertheless, Ivan Kočárník - the Czech Minister of finance – estimated this value to about CSK 25 billion in 1991 and independent analysis by New York Times estimated its value at between USD 700 million and USD 1 billion (Pavlínek 1995, p. 365).

ing 14,4% in Slovakia and 3,5% in the Czech lands. The differences among the regional figures were even more significant. In the Czech part, the minimum and maximum regional unemployment rates in December 1992 were 0,3% and 6% respectively. Similarly, in December 1993 the Czech part recorded corresponding numbers of 0,3% and 8,7%. In Slovakia the rates were between 3,8% and 19,3% in December 1992 and 4,5% and 26,4% in December 1993. Although the situation in Slovakia required high rates of mobility, it seems that Czech population was comparatively more mobile.³ In 1990, the gross internal migration (ratio of the population moved) reached 1,57% and 0,94% of Czech and Slovak population, respectively. On the country level the migration was very low in both parts of former state in the same year, only 0,07% of Czechs and 0,19% of Slovaks migrated across the common border. (Fidrmuc *et al.* 1999, p. 13–14)

Furthermore, Fidrmuc *et al.* (1999) found only a little evidence of negative relationship of unemployment rate and migration on the regional basis considering the period 1992 and 1995, which would have been crucial for sustainability of the currency union. The rise of unemployment rate by one percentage point was estimated to lead to net outflow corresponding to 0,02 percentage point of the region population in the Czech Republic and 0,003 percentage point in Slovakia.⁴

The previous indicates higher sensitivity of mobility to unemployment in the Czech lands despite its greater necessity in Slovakia. In other words, the labor mobility would not have worked as an effective mean in mitigating the adverse effects of asymmetric shocks if the monetary union had been sustained.

Dědek (1996) demonstrated the different nature of the unemployment in the Czech and Slovak part of state in multiple aspects:

- Demographic reasons:

As Slovakia registered a more pronounced baby boom in 70's, in 90's the average age of a worker was lower in Slovakia than in the Czech part and so in the Czech part there was a greater proportion of retired people who

³Noting that the inter-town migration decreased almost by half in the period 1990 and 1992; *Source*: CZSO.

⁴These results come from the base model regression using year dummy variables; unemployment variable and variable wage ratio, which is constructed as regional year average wage divided by the national year average wage – to cope with common change of wage statistics across regions. The corresponding figures of the regression controlling for all relevant variables are 0,005 and 0,002 in the Czech and Slovak case, respectively.

left the job market and did not search for a job anymore. If the proportion of working pensioners was the same as in the Czech lands, another 45000 vacancies would have been available (Pavlínek 1995, p. 362). Moreover, in Slovakia the groups with fewer employment opportunities of gypsies and women on maternity leave were greater in comparison with the Czech part.

- Social reasons:

The unemployment was also raised by generous social support in Slovakia, which increased the reservation wage and decreased the probability of potential workers to look actively for a job.⁵

- Geographic reasons:

An apparent difference between the two countries is the boarder characteristics. The Czech Republic shares its boarder mostly with developed countries Austria and German which formed an auspicious position for FDI and new job creation financed by those states. Moreover, it also encouraged the mobile unemployed workers to find a job in economically health country. In contrast, Slovakia's border with Austria is rather short and all the other neighboring countries were economically affected by transition in a similar manner.

The last but not least identified reason of unemployment differentials is

- Structural composition of industries:

Slovakia suffered from the dependence on the heavy and more specifically armament industry. Unlike the Czech part which produced handguns and radars, Slovakia produced tanks and armed vehicles. As Pavlínek (1995, p. 364) states, the armament industry in Czechoslovakia – of which 60-65% was located in Slovak part – represented an important component of domestic product.⁶ As in the beginning of 1990 the federal government decided to cut back the production within industry regardless the economic consequences and since the dissolution of Council for Mutual Economic Assistance (CMEA) decreased the demand it logically resulted

⁵According to the Competence Acts of 1990 the social policy was transfered entirely to the governments of the Republics and so removed the uniform Federal social security network. The unemployment benefits were distributed by the Republic Ministries of Labor without any coordination. In 1991, these individual rules probably contributed to the different unemployment growth paths in the Czech and Slovak Republics.

⁶In 1988 armament industry represented more than 4% of net industrial output and about 2% of net national product of Czechoslovakia (Pavlínek 1995, p. 364).

in a huge lay off of employees.⁷ The development of the small and medium size enterprises was also slower and in 1991 the Czech part registered about 1,06 million private entrepreneurs, while in the Slovak part, there were only 280 thousands of private entrepreneurs, which formed about 10,2% and 5,3% of the population of individual countries, respectively. Hence, about 250 thousand vacancies were created in Czech part and only about 30 thousand in Slovak part in 1991 (Pavlínek 1995, p. 362).

2.1.5 Diversification of economy

Kenen *et al.* (1994) states that largely diversified entities experience considerably more peaceful impacts of asymmetric shocks than insufficiently diversified countries.

”*Ex ante*, diversification serves to average out external shocks and, incidentally, to stabilize domestic capital formation. *Ex post*, it serves to minimize the damage done when averaging is incomplete.”
(Kenen *et al.* 1994, p. 54)

On the aggregated level, the structural differences between the two economies showed similar pattern of diversification, see following figure 2.3.

Nevertheless, the difference could be seen on the disaggregated level. The socialist politics – intended to mitigate development gap and living standards between the two parts of the federation – introduced rapid industrialization of Slovakia (Pavlínek 1995, p. 358). Because of the geographic position of Slovakia the industrialization was driven by heavy steel, chemical and armament industries which were meant to be traded mainly with the Union of Soviet Socialist Republics.⁸ This implied that a large proportion of the Slovak industrial base was more energy-intensive and less diversified than the Czech economy (Pavlínek 1995, p. 359). The aforementioned combined with an orientation on different markets⁹ and with different preferences towards transition process¹⁰ increased the social tension between the two countries and weakened the sustainability of the currency union.

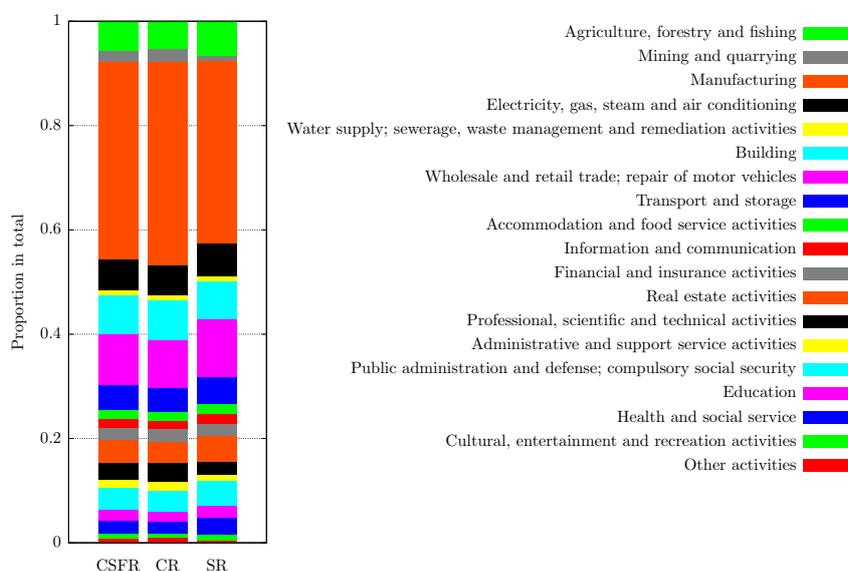
⁷In 1991 the armament production in Slovakia dropped from CSK 19 billion to CSK 3,5 billion and 20 thousands workers were dismissed (Pavlínek 1995, p. 364).

⁸Above that, the Slovak part was considered to be safer place to locate these strategic industries than the Czech part (Pavlínek 1995).

⁹The shares of exports to the CMEA and the EU in 1991 were 42% and 34%, respectively, compared to 35% and 43% for the Czech Republic (Fidrmuc *et al.* 1999, p. 23).

¹⁰“The Czechs were much more accommodative of the rapid transition towards the market economy, whereas the Slovaks retained a strong “anti-market bias”.” (Roháč 2012, p. 2)

Figure 2.3: Czechoslovak structure of economy in 1992



Source: author's elaboration; data from Czech statistical office

2.1.6 Level of foreign currency reserves

In our opinion, the sustainability of any currency union stands and falls with the 3rd parties trust in it. To the question if this was the case in Czechoslovak currency union we can mention the fact that the pegged exchange rate policy¹¹ experienced a trouble with the level of foreign currency reserves. Because of certain distrust regarding the sustainability of the currency union, State Bank of Czecho-Slovakia (SBCS) noticed a rapid decrease in its foreign currency reserves by the end of 1992.

”While at the end of August 1992, the foreign exchange reserve of the Czech and Slovak banks totaled USD 5,6 billion, by the end of December 1992 they fell to USD 4,4 billion, out of which USD 1,2 billion were the reserves of the central bank.” (Rehman & Askari 1998)

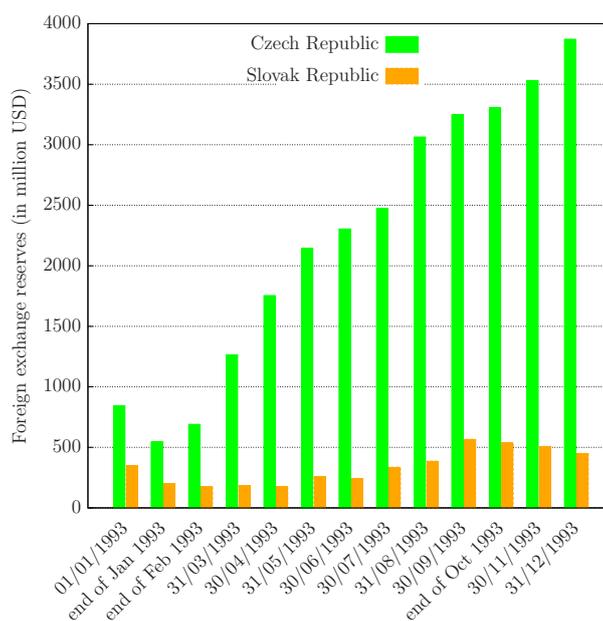
This decline did not stop suddenly and the foreign exchange reserves of Czech National Bank fell from USD 842 million on 01/01/1993 (respectively on 09/01/1993 when the interbank foreign exchange market was resumed after central bank separation) to USD 545 million on 31/01/1993, furthermore the

¹¹Since 01/09/1992 until 01/04/1993 CSK was pegged to the currency basket of USD (49,07%), DEM (36,15%), ATS (8,07%), CHF (3,79%) and FRF (2,92%) with fluctuation bands of 0,5% (Durčáková & Mandel 2003, p. 317).

reserves declined to USD 462 million by 09/02/1993. In the Slovak Republic the decline was even more dramatic, the reserves of National Bank of Slovakia dropped from USD 350 million to USD 197,2 million between 01/01/1993 and 29/01/1993 and the fall continued also in February, please see figure 2.4.

This almost 50% shrinkage of reserves in less than 2 months was initiated by the cautious attitude of foreign investors and was not stopped by the restriction of possible exchange for hard currencies by Czecho-Slovak citizens limited to CSK 7500 (Pehe 1993, p. 28) neither by restriction for Slovak commercial banks imposed by NBS¹². We conclude that the distrust from abroad significantly contributed to the decision to separate currency and that it is justifiably presented as the official reason for the separation (Pehe 1993, p. 29). Furthermore, the separation visibly helped to improve the level of foreign exchange reserves in the Czech Republic.

Figure 2.4: Development of foreign exchange reserves in CNB and NBS in 1993



Note: End of January 1993 stands for 31/01/1993 and 29/01/1993 in the Czech and Slovak case respectively, end of February refers for 28/02/1993 and 26/02/1993, end of October for 31/10/1993 and 29/10/1993 in the Czech and Slovak case respectively.

Source: author's elaboration; data from NBS, CNB and Rehman & Askari (1998, p. 236)

¹²NBS tried to solve the decline of foreign exchange reserves by imposing restrictions to commercial banks, the criteria for possible purchase of foreign currency from NBS was the ratio of foreign exchange position of banks and its registered capital, in January this ratio was set to 15% and in February increased to 35% which remained till April 1993 (National Bank of Slovakia 1993, p. 47).

2.2 Technical and organizational preparation

The very idea of the split did not come up with the economic development, on the contrary, the preparation started in the course of the second half of 1992 because of the results of July 1992 Parliamentary election, since it indicated the political separation of the federation. Moreover, the policy statement of Slovak government indicated the initiation of separated national central banks with the common emission center. The whole preparatory process, which was successfully kept in secret to the media and public, intended to provide all possible scenarios for separation consistent in its technical, organizational and legal part.

The preparation of the currency separation was build on multiple principles. In a nutshell the preparatory stage intended to introduce the comprehensive approach to all issues related to the separation, to build consistent guidelines to all groups of economic agents with the aim of fast realization, to prioritize the minimization of discomfort for the population and to minimize all possible harmful impacts on the economic development related to the currency separation (Prokop 1994, p. 10). Moreover, it did not intend to work as an additional implicit tax instrument (Prokop 1994, p. 11). This showed to be a key factor during the process of split as population trusted the government considering the claim of not losing one's money, which resulted in a non-problematic cooperation. Biggest problem was to balance the trade-off of the continuousness of process and the threat of a fraudulent behavior.

Although the SBCS knew almost precisely the division of different values of banknotes and coins in the circulation and in the reserves, the bank could not reliably estimate its spread between Czechoslovakia and foreign holders; between public and business sector and most importantly between the Czech and the Slovak part.

The estimates of value of the Czechoslovak currency held by foreign institutions and individuals assessed by Czech commercial banks and individuals varied from CSK 0,5 billion to CSK 15 billion. On the other hand, the response to the CNB request addressed to foreign central banks to estimate the value of interest showed rather low numbers. Accordingly, CNB leaned towards the lower value limit of in-country estimates. (Prokop 1994, p. 14)

On 31/12/1992 the balance sheet of SBCS was divided to form financial fundamentals of the new central banks. The loans to commercial banks and their deposits in SBCS were divided following the rule of geographical position of bank headquarters. The assets and liabilities in regards to International Monetary Fund (IMF) were divided in the ratio 2,29:1 for the Czech Republic (Czech National Bank 2013, accessed 14/04/2014). Finally, federal budget assets and foreign exchange reserves were divided in the ratio 2:1 for the Czech Republic reflecting the ratio of the population and generally higher economic activity in the Czech lands (Dědek 1996, p. 127). Since the volume of currency in circulation fluctuated around CSK 100 billion with its peak on the 18/12/1992¹³, the ratio implied the division of cca CSK 66,6 : 33,3 billion.

This division favored Slovak part since the more realistic ratio – understand “better reflecting the level of economic performance” – would imply the division of CSK 70-75 : 30-25 billion for the Czech part (Dědek 1996, p. 127). Moreover, the division was accompanied by a mismatch of transferred assets and liabilities which formed a claim of CNB to NBS of CZK 24,7 billion. Even though the claim was acknowledged by both involved sides, Slovak central bank has never met the obligation. Finally, in 2001 CNB wrote-off the item from its balance sheet (Papoušková 2006, p. 32).

2.2.1 Discussion about differentiation of Czech currency

Among the first and most important decisions of the currency separation which had to be made was the choice of the means to differentiate newly established Czech currency from the federal one. In the decision making process the role was played by the spread of volumes of individual banknotes and coins in circulation and by the fact, that new federal banknotes of nominal values CSK 200 and CSK 1000 with Czech motifs were already prepared to be printed.

First possibility which comes to mind is the usage of differentiation according to the graphical design of the banknotes, the ones with the Czech motifs and text – CSK 20, 100 and 1000 denomination banknotes – would be used in the Czech Republic and the other with Slovak motifs and text – CSK 10, 50, 200 denominations – in the Slovak Republic. As the reserves of banknotes with Czech motifs were sufficient to cover the needs, this differentiation would

¹³The volume was increasing during the whole year 1992 in the average rate of 0,57% per month, i.e. CSK 550 million per month (Prokop 1994, p. 13).

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have been operationally feasible to be proceeded. On the other hand, it did not reflect the major goal of the separation to divide the purchasing power of nations. Moreover, in the next stage it would become an onerous task to prevent Slovak citizens not to exchange federation banknotes with Czech motifs for newly issued Czech banknotes. For this reason the simple solution was abandoned.

The possibility to print provisional new Czech currency was identified as an effective and organizationally simple solution, since the banknotes could be printed abroad and the process could be held in secret. Finally, the currency could be exchanged in unlimited amount per person, i.e. without additional need to deposit money in hand. The reason of rejecting this option was most probably directed by the insufficient storage capacity of CNB and Komerční banka (KB)¹⁴. Furthermore, this option would not satisfy the principle of comfort for citizens because the time shortage would allow to print only banknotes with insufficient security and graphical quality and would have to be re-exchanged in the near future. This solution was partially adopted considering the CSK 50 and CSK 20 banknotes as they were temporarily replaced by their coin counterparts.

Another possibility was the usage of special machines for franking. This alone did not seem to be safe enough as the Czech private sector was well equipped to imitate a frank pattern. Moreover, this solution required an investment of CSK 30-35 million for 200 franking machines with possibly only onetime usage¹⁵. This option was considered to be used in combination with stamps for banknotes valued CSK 100, 500 and 1000. Franking itself meant to be used to CSK 10, 20, 50 notes (Prokop 1994, p. 19).

Different possibility in consideration was to print stamp markers directly on newly printed sheaves of federal banknotes. Since the printing process required at least 3 months, this solution was generally not feasible. However, already proceeding order of CSK 1000 banknotes allowed usage of the direct stamp prints. The most frequently used option was the gluing of the government stamps. Despite the related human resource difficulties and impossibility of holding the process in a secrecy, this option was identified as the most reliable.

¹⁴KB was a joint stock company with a state share which had a mandate to keep part of the state currency reserves.

¹⁵The cost of franking machines was similar to the cost of producing the stamps amounting to CZK 31,8 million.

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In the end, the banknotes of the highest denominations, CSK 100, 500 and 1000, were proceeded in the last described way, new CSK 1000 banknotes were given the print stamps and new banknotes with nominal value of CZK 200 were emitted. The banknotes of CSK 10, 20 and 50 denominations consisted about 3% of value of currency in the circulation and about 45% of the banknotes volume, hence they were not a subject of the differentiation in the Czech Republic (Surga 1994, p. 416).

2.2.2 Discussion about exchange related conditions for the population

One of the issues of preparation was the setting of the upper limit of a value of federal money authorized to be exchanged. Two possibilities were in suggestion CSK 1000 per person and CSK 4000 per person¹⁶. After recognition that the value of local reserves of stamped currency is sufficient and with the intention to satisfy daily needs of citizens, the later was chosen. Above that, for each person younger than 15 years old both her parents were authorized to exchange additional CSK 1000.

Another major issue was the length of the exchange period. As the economy was fundamentally dependent on cash payments, a long period could cause problems of cash circulation. The importance of this aspect was further emphasized by the decision of not authorizing two simultaneously used currencies – because of the likely speculation attacks and problematic accounting book-keeping (Dědek 1996, p. 132). Based on expert assessment, the maximum possible period was identified to be 4 days. On the other hand, the shortest administratively feasible period in consideration was 2 days. Finally it was decided to use the longer period.

2.2.3 Organizational structure

At the beginning of the organizational preparation stood only two men, František Vokatý and Leopold Surga, who operated under strict secrecy until November 1992 (Knapík 2005, p. 106). The most important organizational body of preparation was the Central Trans-departmental Committee (CTC) headed by Pavel Kysilka and consisted of the leaders of institutions involved in the process. About 50-member committee started its work during November 1992 but

¹⁶For comparison, the average monthly nominal gross wage in 1992 was CSK 4644; *Source*: Statistical yearbook of the Czech Republic 1994.

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formally was established on 02/02/1993 (Prokop 1994, p. 32). In the course of the process of separation the committee did not meet together as the chief representatives led the related work of their institutions. The special Organizational Team – formed by employees of CNB, Police of the Czech Republic and Czech Ministry of Interior – worked as an information linkage among the institutions and the core of organizational structure formed by the CNB management and controlled the transportation of money. Lower in the structure – subordinated to CTC – 8 Regional Steering Committees (RSCs) were established the composition of which reflected the one of the CTC. Above that, it included the representatives of local government. Further in the structure, on the level of district capitals, 75 Local Operational Control Groups (LOCGs) were established to create the exchange points and lead the local related services¹⁷. In the information sharing process two paths were used:

- CTC –to– RSCs –to– LOCGs
- CTC –to– leaders of institutions within the CTC –to– subsidiaries of institutions

Individual tasks of separation procedure were performed by different institutions. In gluing of stamps CNB and KB were involved. Czech Post and Czech Savings Bank¹⁸ were responsible for the exchange process. In charge of the security of exchange points was the Police of the Czech Republic and Czech Ministry of Interior. The Army of the Czech Republic then worked as an extra transportation capacity. In total the number of agents involved to the procedure was about 40 thousands (Hrdá *et al.* 1994, p. 16).

The efficiency of process was achieved mainly by the complete centralization of preparatory part and almost autonomous consequent work of agents during the process itself (Prokop 1994, p. 35).

¹⁷Those were for instance exchange services for disabled people or the collection of people from areas hard to reach.

¹⁸Czech Post was a government-owned corporation and in Czech Savings Bank the government owned approximately a 40% share.

2.3 Realization of the currency separation

2.3.1 Process of stamping

As the reserves of Czechoslovak currency were rather oversized¹⁹, Czech National Bank could start the process of stamping even before the resolute decision about currency split and its timing without taking the risk of insufficiency of unstamped currency in circulation.

The total amount of 160 million stamps were at the end of 1992 prepared to differentiate the banknotes of CSK 72 billion from which:

- 40 million pieces of CSK 1000 denomination banknotes
- 50 million pieces of CSK 500 denomination banknotes
- 70 million pieces of CSK 100 denomination banknotes

Source: Prokop (1994, p. 24)

Value of currency prepared ahead of the separation was estimated to CZK 97 billion of which CZK 5 billion was formed by newly emitted banknotes of CZK 200 denomination, CZK 42 billion was represented by treasury receipts²⁰ of CZK 2000 and CZK 5000 denomination and about 50 CZK billion consisted of successfully stamped banknotes (Prokop 1994, p. 24-25). Certain additional capacity remained in lowest banknotes denominations and coins which were not the subject of stamping. In total we can consider the value to be more than sufficient to become a prerequisite to the continuousness of the separation.

The majority of stamps – 144,4 million pieces – were delivered to individual subsidiaries of KB according to the population measures. The further issue was to reallocate the stamps due to the volume of the reserves stored. On the 04/01/1993 it was decided to stamp 20% of banknotes of CSK 100 nominal value, 50% of CSK 500 notes and 20% of those of CSK 1000 denomination as part of total volume in reserves by the end of 1992. The incentive not to stop stamping on predetermined limits was driven by the start of a preparation process in the Slovak counterpart. In subsidiaries of KB about 10 thousand

¹⁹The value of the currency in circulation declined to CSK 30 billion and the reserves counted about 15 million pieces of CSK 1000 denomination banknotes, 69 million pieces of CSK 500 and 54 million of CSK 100 banknotes which in sum valued more than CSK 54 billion.

²⁰They were issued by CNB to overcome possibly considerable needs of business sector.

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employees stamped more than 152 000 sheaves²¹ representing the total value of CSK 65 billion.

In Slovakia the process of stamping started on 13/01/1993 directed by NBS. As well as in the Czech part, commercial banks were involved in the process, namely VUB bank, Slovak Savings Bank, Slovak Agriculture Bank, People's Bank and IRB²² (National Bank of Slovakia 1993).

2.3.2 Public announcement

At the end of January 1993 the Czech and Slovak Prime Ministers agreed on the currency separation. On 02/02/1993 the separation legislation was passed by both national Parliaments and the very same day the separation was publicly announced (Dědek 1996, p. 125). Starting the very next day financial connection between the two republics stopped and border controls were tightened to prevent transfers of cash from one country to the other (Fidrmuc *et al.* 1999, p. 7).

2.3.3 Process of exchange

The exchange of federal money for general public took place between Thursday 04/02/1993 and Sunday 07/02/1993, when only Czech citizens and people having a permanent residence permit in the country were allowed to exchange their money in the Czech Republic. In the same time the process of exchange was initiated in the Slovak Republic. As already mentioned, the banknotes authorized for exchange in the Czech Republic were those of CSK 100, CSK 500 and CSK 1000 denominations. Instead of them people got stamped banknotes or new CZK 200 notes in more than 4 thousand exchange points²³ from which they could freely choose the most favorable for them. For successful procedure they needed their identity card or its official replacement or the residence permit which was affixed by a stamp afterwards to prevent multiple exchanges by

²¹1 sheaf = 1000 banknotes

²²Original names are Všeobecná úverová banka (VUB), Slovenská štátná sporiteľňa, Slovenská poľnohospodárska banka, Ľudová banka and Investičná a rozvojová banka (IRB). The VUB bank – which had a mandate to keep part of the state currency reserves - played the most important role in the process.

²³Those were subsidiaries of Czech Post, Czech Savings Bank and special detached workplaces.

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a single person. It is noteworthy that the format of an identity card was similar to nowadays passports which enabled stamping in it.

The banknotes above upper limit were accepted as no-interest bearing deposits and exchanged for a special confirmation or for the CNB treasury receipts²⁴. Beside this, the deposit instruments in Czech Post and Czech Savings Bank were offered to be used and cash machines of KB with new CZK 200 banknotes were in service during the days of exchange.

Nevertheless, population prepared to the currency separation by converting their high denomination banknotes to those with lowest denomination. As the result, they mostly did not use the whole capacity of possible exchange – CSK/CZK 4000 – neither the additional provided instruments. Public exchanged the currency worth roughly CSK/CZK 10 billion, which corresponded to about 1/3 of the expected value.

The banknotes which could not be exchanged during the exchange period from objective reasons defined by law – for instance a one's stay abroad or a sudden illness – could be exchanged in the following 6 months period, until 09/08/1993. During this period the total limit of CSK 4000 or CSK 1000 per person remained unchanged.

Between 08/02/1993 and 09/02/1993, in the boarder crossings and in a few of bank subsidiaries, all but Slovak foreigners could exchange Czechoslovak currency providing the passport and a proof of purchase of currency. The exchange for business entities localized in the Czech Republic occurred between 07/02/1993 and 09/02/1993. The banks – provided their supply of currency allowed it – exchanged the whole businesses balance of the accounting book effective on 07/02/1993 (Dědek 1996, p. 136). Through this approach the government could fully use the opportunity of the currency separation to determine "illegal money".

In Slovakia the period of exchange for natural persons was one day shorter and occurred between Thursday 04/02/1993 and Saturday 06/02/1993, the identification requirements were identical as in the Czech Republic – providing identity card or permanent residence permit. What differed is that Slovak citizens under 15 years old were not authorized to exchange their banknotes, neither their parents were for them (Národná rada Slovenskej republiky 1993,

²⁴Treasury receipts were subsequently exchanged for Czech currency in the process specified by CNB.

§ 4 art. 1). Legal persons exchanged their banknotes between 06/02/1993 and 07/02/1993 (National Bank of Slovakia 1993). In D-Day 08/02/1993 the value of stamped banknotes in circulation of denominations SKK 20, 50, 100, 500 and 1000 amounted to SKK 28 billion (Kyjac 1994, p. 27).

2.3.4 Denomination of financial assets and liabilities

According to Oldřich Dědek the denomination of banking assets and liabilities followed simple rule of geographic location of company's headquarter. Hence the deposits of both Czech and Slovak citizens in Czech banks were denominated in CZK and their deposits in Slovak banks were denominated in SKK. In case of cross-border financial items – for instance assets held by a Czech commercial bank with its liability counterpart held by a Slovak commercial bank – the value of this item denominated in CSK was divided into CZK and SKK in ratio 2:1. Nevertheless, this formal division did not affect the solvency of banks related to the nominal depreciation of Slovak currency since the settlements of financial claims created before the day of separation used exchange rate of CZK to SKK of 1:1, for details please read the next section.

2.4 Clearing system

2.4.1 Discussion about possible financial transaction system

There were two main scenarios for the mutual financial transaction system between the Czech Republic and the Slovak Republic. The dilemma stood between a usage of clearing system and the standard payments in convertible currencies.²⁵ In other words, the decision between more coordinated or more autonomous approach had to be made.

Principal arguments advocating the standard payment system in convertible currencies were certainly the necessity of different monetary policies, an unwillingness to cooperate and non-discriminatory market approach vis-a-vis other trade partners. On the other hand, clearing system reflected the interdependence between the eastern and western part of the initially united state. The unquestionable advantage of clearing system in comparison with standard system is the lowered need for external reserves as the payments on the daily basis are made in national currencies and the convertible currencies in central banks reserves are used only to cover the imbalances generated in agreed period. This argument showed to be relevant afterwards as the ratio of the monthly volume of clearing payments to the CNB external reserves was 38% in February 1993 and 15% in May 1993 and the respective numbers were 59% and 264% for the Slovak Republic (Dědek 1996, p. 144). Among the other amenities of clearing system was the existing infrastructure, as the clearing system used to be the international payment system between Czechoslovakia and other socialist countries (Fišer 2004, p. 55). Clearing system was also ideal solution to combine benefits of fixed exchange rate natural for the recent economic unity with the market adaptable exchange rate necessary for the different development of both economies.

2.4.2 Description of clearing system

The clearing system was formally arranged in Payment Agreement negotiated on 04/02/1993 by representatives of the Czech and Slovak Republics. As opposed to the previous clearing system used by federation, it also proceeded

²⁵At the first stage a mutual convertibility of CZK and SKK using fixed exchange rate policy was also considered and abandoned because of an inability to set a reliable exchange rate. The idea of “dirty floating” within fluctuation bands was then abandoned from the same reasons as the monetary situation was unstable and the threat of speculative attacks was present.

capital account transaction and not only those related to trade. The question of exchange rate settings was solved by the usage of two clearing system framework. The so-called old block was aimed to settle the contracts signed ahead of the currency split on 08/02/1993. Within this block the transactions were accounted in the Clearing Koruna – denoted as XCS – with the constant 1:1 exchange rates in regards to CZK and SKK respectively (Prokop 1994, p. 65). The compounded exchange rate implied 1:1 rate of CZK to SKK. This exchange rate removed the speculation about which entity should bear the exchange rate related losses and the question of how to divide the federal assets and obligations and furthermore it avoided otherwise possible irrecoverable debts. The imbalances in the old block bore 3% p.a. interest rate and were to be paid in convertible currencies or to be moved to the new block in 3 months intervals²⁶ (Prokop 1994, p. 64).

The new block, on the other hand, was accounted in the Clearing European currency unit – denoted as XCU. The exchange rate of XCU and national currencies was set by CNB and NBS on the basis of the exchange rate of European Currency Unit (ECU) published every day by both central banks. The agreement set the maximum digress of 5% of the national exchange rate to ECU and the exchange rate to XCU (Dědek 1996, p. 147). Thus, the exchange rate between CZK and SKK followed the formula:

$$\frac{CZK/XCU}{SKK/XCU} = (1 + \delta) \times \frac{CZK/ECU}{SKK/ECU},$$

where $\frac{CZK/XCU}{SKK/XCU}$ is the clearing exchange rate, $\frac{CZK/ECU}{SKK/ECU}$ is the central parity of the exchange rate and $\delta \in \left[-\frac{1}{10}; \frac{1}{10}\right]$ is the authorized digress from the central parity.

This restriction policy worked as a compromise between opportunistic realignments and their necessity in the case of permanent imbalances. The final exchange rate of Czech and Slovak currency was therefore derived as a ratio of CZK/XCU and SKK/XCU exchange rates. To overcome temporary imbalances, the agreement introduced the marginal loan of ECU 130 million. This loan bore 5% interest rate and if the limit was exceeded, the applied interest rate doubled to 10%. The value of imbalances recorded at the end of each month were to be defrayed until the 15th of the following month in convertible currencies. (Prokop 1994, p. 64)

²⁶The first payment was made on 15/05/1993 (Pehe 1993, p. 29).

Besides the clearing system the Payment Agreement also introduced the scheme for re-export transaction settlements and for tourism. Re-exports, defined as the exported goods without any qualitative change on place (provided that packing, marking and preservation were not considered to be a change), were defrayed directly in convertible currencies.

On the other hand, in tourism the currencies appeared to be mutually convertible, the value limit for import or export of currency in hand was set to 7500 in CZK and SKK respectively (Pehe 1993, p. 30). Next to cash tourists could use traveler's checks which were not limited in value but not frequently offered as a banking service (Czech National Bank 1993, part 5, p. 24). The exchange rate for those transactions was in the competence of commercial banks and was expected to follow market forces of supply and demand. Since the uncertainty was highly present, especially Czech banks were unwilling to hold Slovak currency in their portfolios. Even though central banks agreed to mutually exchange 200 million in CZK and SKK respectively to support system, commercial banks did not use it to expected extent (Prokop 1994, p. 69). As a result the Slovakian demand for Czech currency outweighed its supply and the situation in the Czech Republic happened to be similar as the demand for SKK was often higher than its supply (Dědek 1996, p. 155). Moreover, from the reason of uncertainty, commercial banks determined the tourist exchange rate close to the official clearing rate rather than to make effort to find exchange rate entirely reflecting the market forces (Šmídková 2003, p. 36).

In total, the system of payments legally allowed the coexistence of 4 exchange rate settings in the same time.

2.4.3 Performance of clearing system

Shortly after the split the value of payments in the new block grew fast, however, the value of payments from the Czech Republic rose faster than the payments in the opposite direction. The development in the old block showed an opposite nature. While the payments from the Czech Republic to the Slovak Republic declined continuously over time and in July 1993 it nearly stopped, it was not the case of Slovak payments. Dědek (1996) explains this noticeable difference by speculative delays of payments in reaction to the expected devaluation of the Slovak currency and by lower solvency of Slovak companies. Moreover, many Slovak businesses had their bank accounts in the Czech Republic, transactions for imports paid from these accounts naturally did not

pass through the clearing system. Both central banks reacted to described imbalance via allowed incremental devaluation in Slovak case and revaluation by CNB in relation to the central parity. Further development of the clearing rate proceeded in the same direction as NBS devalued the Slovak currency by 10% with regards to the convertible currencies in July 1993 and to the same degree it changed the central parity of the clearing rate (Dědek 1996, p. 152). Subsequently it devalued in relation to the central parity (in allowed interval) and with combination of imports restrictions it caused the change of trend in development of the total balance (sum of balance of the old and the new block).

Slovakia exceeded the marginal credit twice, in December 1993 and January 1994 it had to settle its deficit of ECU 39 million and ECU 46 million, respectively. As the trend reversed, in July 1994 the Czech Republic had deficit of ECU 64200 to settle, in August ECU 68,8 million, in September ECU 79 million, ECU 73 million in October, in November it had to liquidate claims of ECU 53 million and in December the total balance resulted in deficit of ECU 16,7 million (Šmídková 2003).

2.4.4 Preventions against speculative arbitrage

The expectations of devaluation of newly established Slovak currency represented an important incentive for Slovak citizens to use any possibility to exchange the federal currency for Czech Koruna and eliminate the risk of exchange rate loss. For decision makers the task was to diminish the amount of possibilities to minimum keeping in mind other principles of operation.

In the course of exchange the financial connection across the Czech-Slovak border was interrupted. In this period the banks blocked all automatic transfers to Slovak banks and all Czech individuals and legal persons were forbidden to use inter boarder bank account transfers nor they could pay or receive money in cash from Slovakia. Besides the inter country money order services²⁷ Czech Post interrupted also package services. To prevent foreign reserves attacks CNB prohibited the sale of foreign currencies by all institutions authorized to do so before. (Prokop 1994, p. 50-51)

In spite of these restrictions, there still remained the possibility for general public to use coins and banknotes of low denominations which sustained in common circulation until the middle of 1993. The notes of nominal value CSK 10 were not stamped at all and those of CSK 20 and CSK 50 denomination were

²⁷This service was fully reestablished on 03/01/1994 (Prokop 1994, p. 50).

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stamped only in the Slovak Republic.²⁸ The non-stamped currencies allowed exchanging SKK to CZK for one to one. Moreover, the falsified banknotes and stamps started to appear frequently. Between 08/02/1993 and 31/12/1993 CNB detained 12519 pieces of stamped banknotes or stamp counterfeits in nominal value CZK 5,17 million and NBS detained 4126 pieces of stamped banknote counterfeits in nominal value SKK 2,11 million representing almost threefold increase in incidence of domestic currency counterfeits from the previous year level.²⁹ Nevertheless, we consider this form of illegal process to be negligible and because of its temporary nature to have no great impact to the functionality of the monetary system.

More severe problem could arise due to the duality of blocks in the clearing system. As Dědek (1996, p. 148) describes the issue graphically, proceeding the payment from Slovakia via the old block and subsequently paying back using the new block – for reason such as an incorrect invoicing – means the profit for the Slovak company while the burden of loss is borne by the Slovak government budget, see table 2.4. The profit could be then divided to the participants of described illicit act. Despite the controls from both Republics, this started to be an important issue in July 1993, when NBS devalued the SKK and so increased the spread between the blocks, hence the arbitrage promised higher possible gains. Even though the discussion about modification of clearing system, especially about closing the old block, were on the table, both blocks were discontinued together on 30/09/1995 (Dědek 1996, p. 157).

²⁸Higher denominations were stamped in both countries.

²⁹*Source:* CNB and National Bank of Slovakia (1993)

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Table 2.4: Clearing system speculation

Czech exporter		Czech commercial bank	
Assets	Liabilities	Assets	Liabilities
(f) CZK +100 bank deposit		(d) CZK +100 deposit at CNB	(f) CZK +100 business account
(g) CZK -100 bank deposit		(h) CZK -100 deposit at CNB	(g) CZK -100 business account
Czech National Bank		Czech government budget	
Assets	Liabilities	Assets	Liabilities
(e) CZK +100 Credit to government	CZK +100 bank account	(d) (i) CZK +100 budget income	(e) CZK +100 budget expenditure
	CZK -100 bank account		
	CZK +100 government deposit		
Slovak importer		Slovak commercial bank	
Assets	Liabilities	Assets	Liabilities
(a) SKK -100 bank deposit		(b) SKK -100 deposit at NBS	(a) SKK -100 business account
(l) SKK +110 bank deposit		(j) SKK +110 deposit at NBS	(l) SKK +110 business account
National Bank of Slovakia		Slovak government budget	
Assets	Liabilities	Assets	Liabilities
(k) SKK +110 credit to government	(b) (c) SKK -100 deposit at NBS	(c) SKK +100 government budget	(k) SKK +110 budget expenditure
	SKK +100 government deposit		
	SKK +110 bank account		

Note: Here, Slovak importer makes a payment of SKK 100 through the old block, which is returned by the Czech exporter through the new block: (a) the debtor instructs his bank to make payment; (b) the payment is transferred to the NBS clearing center; (c) the transaction is credited to the Slovak government budget; (d) the CNB makes a payment to the creditor's bank; (e) the transaction is debited to the Czech government budget; (f) the Czech bank credits the client's bank account; (g) the Czech exporter instructs his bank to return payment; (h) – (l) are a reversed sequence of steps (b) – (f).

Source: Dědek (1996, p. 148)

Chapter 3

Similarities and differences in conditions within the Euro area

3.1 Incentives – economic divergence in post-crisis period

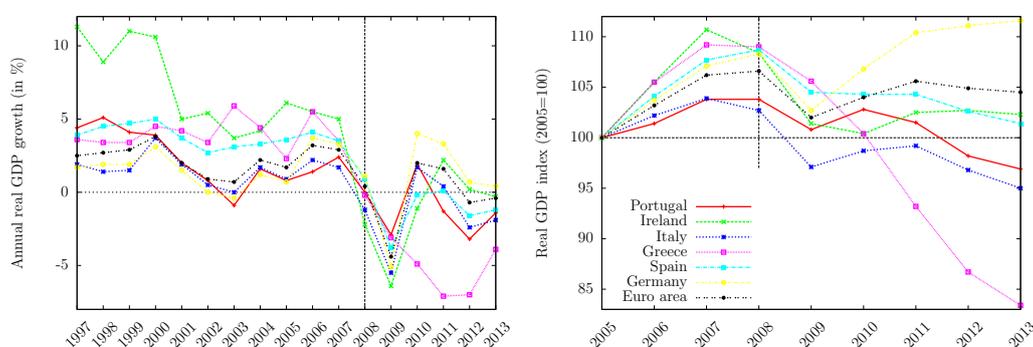
In this part of thesis we analyze the main macroeconomic variables of possibly problematic countries in the so-called peripheral Europe. Specifically it includes Portugal, Ireland, Italy, Greece and Spain known altogether as PIIGS countries. For relevant comparison we set Germany and the Euro area as the reference group. We choose Germany since the monetary policy of European Central Bank (ECB) finds its fundamentals in the former monetary policy of German Federal Bank (Deutsche Bundesbank) and then the Euro area because its development is the objective of ECB in the actual decision making process and because of its generality as it mitigates individual specificities. Much was already written about the overall functionality of the Euro area as the OCA, hence we will focus mainly on the different reactions to the external shocks from 2008 and other economic reasons for a currency separation. Further we comment the similarity of the situation with the development in Czechoslovakia before its currency separation.

3.1.1 Business cycle divergence

It can be seen in figure 3.1 that the Greek GDP growth was more volatile than the growth of other economies between 2000 and 2006. Greek GDP growth has also deviated the most from the general development after 2009. The evidence

of divergence of business cycle is supported by calculated bivariate correlations between examined countries (+ Germany) and Euro area countries (EA17), see table 3.1. The bivariate correlation of Greek GDP annual growth and Euro area countries between 1997 and 2013 is 0,547809; the statistics for the period 2007 to 2013 is even lower representing 0,256403. We conclude that development of GDP supports the evidence of an economic divergence of Greece in regards to the rest of Euro area countries. If the convergence is sufficient for the other examined countries is not obvious and we consider it to be a question for further analysis.

Figure 3.1: Real GDP growth (in %) and as index (2005=100)



Note: Euro area stands for EA11-2000, EA12-2006, EA13-2007, EA15-2008, EA16-2010, EA17-2013.

Source: author's elaboration; data from EUROSTAT

Table 3.1: Bivariate correlation of real GDP growth between individual countries and Euro area (EA17)

GEO/TIME	1997-2013	2007-2013
Portugal	0,811630	0,797099
Ireland	0,811074	0,850751
Italy	0,973397	0,983972
Greece	0,547809	0,256403
Spain	0,869211	0,891339
Germany	0,868655	0,972526

Source: EUROSTAT

3.1.2 Divergence in development of prices

As the sole mandate of ECB is the price stability, the convergence in inflation rate across Euro area countries is particularly important.

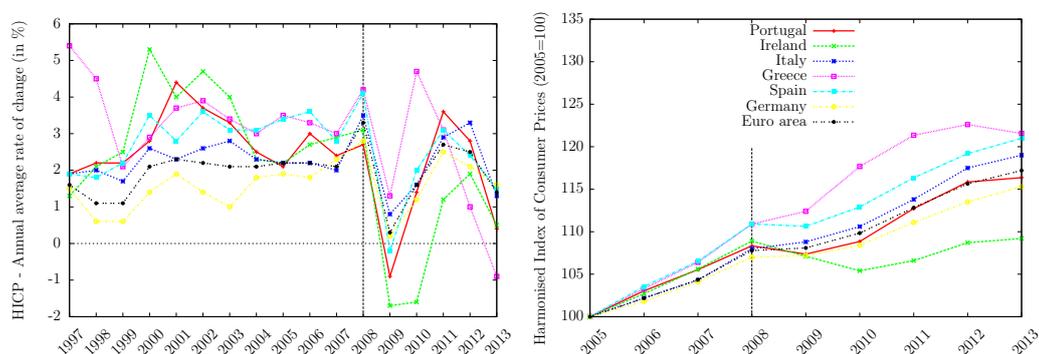
Our data clearly shows that the experience of a single currency did not materialize in the harmonization of the price development dynamics. The countries of which the HICP rose before the introduction of Euro currency faster than the reference continued to rise in the similar path afterwards. For further analysis of divergence or also convergence in so called stability clubs see for example Busetti *et al.* (2006).

Nevertheless, our eye focuses especially on the post-2008 period in which Portugal, Spain and Ireland experienced even lower price level than Germany. Ireland is the most visible from this group and its inflation rates did not exceed German figures since 2009. Specifically, the inflation rate differentials between Ireland and Germany were -1,9; -2,8; -1,3; -0,2 and -1,1 percentage points between 2009 and 2013, respectively. In the opposite end of the scale we find Greece with its inflation 1,1 and 3,5 percentage points higher than German inflation in 2009 and 2010, respectively. On the other hand, in 2011 the difference decreased to 0,6 percentage points, in 2012 the recorded Greek inflation rate was 1,1 percentage points below German one and in 2013 Greek economy even deflated by 0,9% representing difference of -2,5 percentage points to Germany, see also figure 3.2. Considered differences generally exceeded the figures in the Czechoslovak situation¹ and therefore we find it to be one of the indicators advocating the claim that a single monetary policy does not fit to all countries of interest. This also reveals that an independent monetary policy during the recession period could be assigned by specific gains. Apart from Greece and Ireland, all examined countries showed figures similar to both Germany and the Euro area.

Among the most relevant determinants of inflation identified by general economic theory is the real growth of average earnings. Next to its positive impact to the purchasing power of households it also increases the production costs and hence creates both demand-pull and cost-push inflation, provided *ceteris paribus* assumption. In fact though, during the recession the businesses decrease the wages and profit margins to support sales of their products and

¹In Czechoslovakia the highest difference in inflation rate from 1991 accounting for 4,6% is in relative terms low, as the inflation rates reached about 60%.

Figure 3.2: Inflation rate (in %) and development of HICP (2005=100)



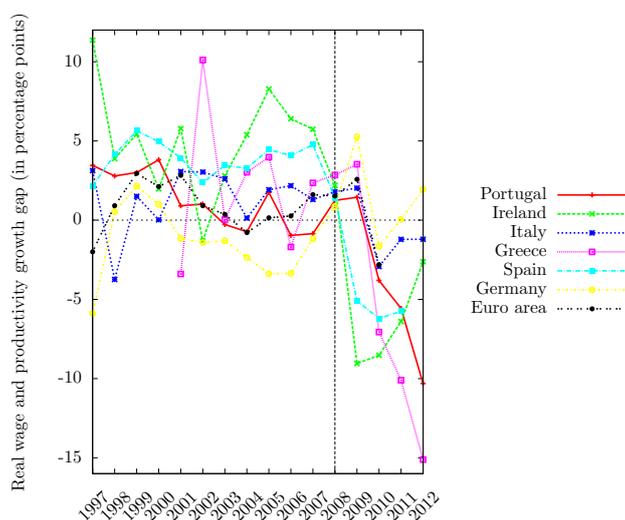
Note: Euro area stands for EA11-2000, EA12-2006, EA13-2007, EA15-2008, EA16-2010, EA17-2013.

Source: author's elaboration; data from EUROSTAT

thus countries usually suffer from deflationary pressures. Therefore, what appears to have a relevant and significant effect on inflation is the development of wage in the relation to the development of labor productivity, the so-called unit labor cost. Outside any fixed exchange rate area, the currency of countries experiencing higher productivity growths or lower wage growths would appreciate by market forces. Since this mechanism does not exist within the Euro area, the inflation differentials are the consequence. To be consistent with the data available in Czechoslovak case, we use in this context the differences in growth of real wages and the growth of productivity measured by GDP per person employed. The increase of described statistics impacts the unit costs of production and forms the so-called cost-push inflation.

In figure 3.3 we can easily notice that economic recession implied a breakthrough in the trend of the wage and productivity growths relationship. Furthermore, table 3.2 shows that the productivity growth rates noticeably dropped but the real wages to some extent showed to be downward flexible. From our point of view this forced internal devaluation improves the prospects to cope successfully with the structural asymmetric development before recession and asymmetric effects of recession itself and can support the low export performance of examined countries.

Figure 3.3: Real wage and productivity annual growth difference in Eurozone (in percentage points)



Note: Productivity is measured by GDP per person employed. Euro area stands for EA11-2000, EA12-2006, EA13-2007, EA15-2008, EA16-2010, EA17-2013.

Source: author's elaboration; data from EUROSTAT

Table 3.2: Real productivity and wage annual growth rates (in %)

Real productivity annual growth rate (in %)						Real wage annual growth rate (in %)				
GEO/TIME	2008	2009	2010	2011	2012	2008	2009	2010	2011	2012
Portugal	-0,5	-0,3	3,5	0,3	1,0	0,7	1,1	-0,3	-5,3	-9,3
Ireland	-1,5	1,6	3,1	4,0	0,8	0,7	-7,4	-5,4	-2,4	-1,8
Italy	-1,4	-3,9	2,5	0,1	-2,1	0,4	-1,9	-0,4	-1,1	-3,3
Greece	-1,4	-2,5	-2,4	-1,6	1,5	1,5	1,0	-9,5	-11,7	-13,6
Spain	1,0	2,9	2,0	2,0	2,7	2,4	-2,2	-4,2	-3,8	-
Germany	-0,1	-5,2	3,5	1,9	-0,4	0,8	0,1	1,8	2,0	1,5
Euro area	-0,4	-2,7	2,4	1,3	0,0	1,1	-0,1	-0,4	-	-

Note: Real productivity is measured by GDP per person employed. Euro area stands for EA11-2000, EA12-2006, EA13-2007, EA15-2008, EA16-2010, EA17-2013.

Source: EUROSTAT

3.1.3 Exports and imports

During the whole last decade the Eurozone current account displays a stable balance, whereas the individual countries within the Euro area experience fundamental imbalances. The examined countries recorded current account deficits while German and other core-Eurozone countries' current accounts constantly ended with a surplus.

In contrast to the Czechoslovak case, financial flows from Germany to less developed countries were not linked to government budget distribution and were encouraged by higher potential gains from innovations. On the other hand, an attribute similar to the Czechoslovak situation is the final allocation of considered financial flows. Finances were unfortunately not used for innovation purposes consistent with neoclassical convergence and they rather represented a capacity to finance imports of goods and services originated in countries providing these financial flows (Noble 2012, p. 20). This was the case especially in Greece and Portugal which experienced declines in corporate saving at the same time as declines in domestic investment (Chen *et al.* 2012, p. 7-8).

The economic recession resulted in the current account balance deterioration, however, the balances mostly promptly began a new trend of improvements. Italy represents the only exception among countries in focus as its current account balance deteriorated also in 2010. Very similar pattern can be seen in the balance of trade, see table 3.3, and we conclude that recession brought the breakthrough where the performance of feeble exporters improved the most and the others did not aggravate their overall position.

3.1.4 Openness to trade

Since high levels of international trade promote the benefit of currency union in terms of transaction costs savings, it is a fundamental part of the OCA theory (Artis & Zhang 2001, p. 42). In table 3.4 we can notice that the economy of Ireland is significantly more open to trade than the others. Moreover, all other countries are less open than is the average of OECD countries. Furthermore, the openness measure decreased as the consequence of the recession. Both these aspects decrease the benefits of sustained currency union.

Table 3.3: Current account net balance and balance of trade at current prices (in % of GDP)

Current account net balance										
GEO/TIME	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Portugal	-6,4	-8,3	-10,3	-10,7	-10,1	-12,6	-10,9	-10,6	-7,0	-1,5
Ireland	0,0	-0,6	-3,5	-3,5	-5,4	-5,7	-2,3	1,1	1,1	4,9
Italy	-0,8	-0,3	-0,9	-1,5	-1,3	-2,9	-2,0	-3,5	-3,1	-0,7
Greece	-6,5	-5,8	-7,6	-11,4	-14,6	-14,9	-11,2	-10,1	-9,9	-3,1
Spain	-3,5	-5,2	-7,4	-9,0	-10,0	-9,6	-4,8	-4,5	-3,7	-1,1
Germany	1,9	4,7	5,1	6,3	7,4	6,2	6,0	6,2	6,2	7,0
Euro area (EA17)	0,3	0,8	0,1	-0,1	0,1	-1,5	-0,2	0,0	0,2	1,2
Balance of trade										
GEO/TIME	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Portugal	-6,9	-8,2	-9,3	-8,3	-7,4	-9,6	-7,0	-7,2	-3,8	0,1
Ireland	15,3	14,1	11,6	10,3	9,9	9,0	15,8	18,6	21,6	24,0
Italy	0,5	0,7	0,0	-0,8	-0,3	-0,6	-0,5	-1,9	-1,5	1,1
Greece	-6,4	-5,4	-6,3	-9,5	-11,2	-11,6	-7,8	-6,7	-6,1	-2,5
Spain	-2,1	-3,8	-5,1	-6,1	-6,5	-5,5	-1,6	-1,9	-0,7	1,0
Germany	3,9	5,0	5,2	5,6	7,0	6,3	4,8	5,7	5,2	5,9
Euro area (EA17)	1,6	1,6	1,0	0,6	1,0	0,3	0,8	0,8	0,9	2,1

Note: Balance of trade is calculated as a sum of balances of traded goods and services

Source: EUROSTAT

Table 3.4: Openness to trade – average of total exports and imports (goods and services) as percentage of GDP, 2000, 2008 and 2009 (in %)

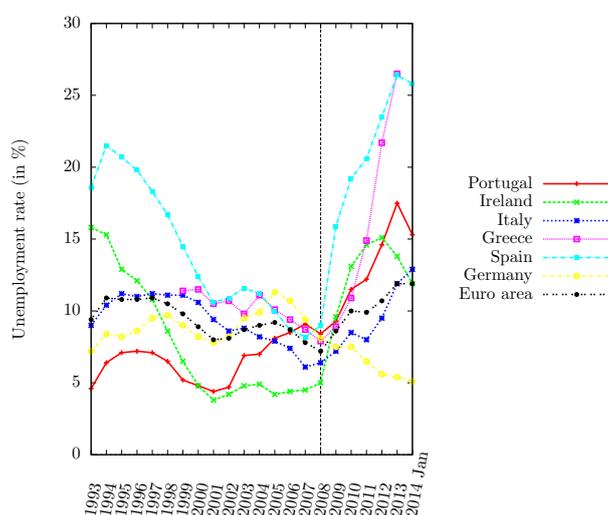
GEO/TIME	2000	2008	2009
Portugal	34,5	37,5	31,7
Ireland	91,4	78,9	83,0
Italy	26,6	29,1	24,1
Greece	31,6	29,9	24,2
Spain	30,6	29,3	24,5
Germany	33,2	44,3	38,4
OECD average	42,4	46,7	41,3

Source: OECD

3.1.5 Labor mobility and unemployment

The data from EUROSTAT reveals that the economic shock from 2008 strongly affected the development of unemployment statistics. It can be seen in figure 3.4 that countries in focus had problem with high unemployment rates also before introduction of Euro currency. Nevertheless, the steep increase of unemployment in Greece and Spain – experienced in last 5 years – is rather unprecedented. It is sure that if the countries used individual currencies, the support of exporters through monetary policy could improve the statistics, but we believe, that the problem itself is way deeper, requires structural changes and does not extensively rely on the used exchange rate system.

Figure 3.4: Average year unemployment rate (in %)



Note: Euro area stands for EA11-2000, EA12-2006, EA13-2007, EA15-2008, EA16-2010, EA17-2013.

Source: author's elaboration; data from EUROSTAT

Above all, the inter-country and inter-regional unemployment rates differences are crucial. In the comparison with USA as the OCA benchmark, the dispersion² of unemployment rates among states in the Euro area is twice the level of the USA (Broyer *et al.* 2011, accessed 01/05/2014, p. 4).³

²Dispersion was measured by the standard deviation of unemployment rates of the 16 Euro area states and 51 states of USA respectively.

³It is noteworthy that in the USA the shock in terms of surge of average unemployment rates after 2008 was even greater than within the EMU and the recover faster. Source: U.S. Bureau of Labor Statistics, EUROSTAT.

As well as in Czechoslovakia, the differences among regions spread widely across countries. Furthermore, it is not a surprise that the spreads increased after recession and still remain very high, see table 3.5.

Table 3.5: Highest and lowest regional unemployment rates (in %) and absolute change of their differentials between 2007 and 2013 (in percentage points)

GEO/TIME	Lowest 2007	Highest	Lowest 2013	Highest	Change of spread (in percentage points)
Portugal	4,3	9,4	16,2	18,5	-2,8
Ireland	4,5	4,8	12,6	14,1	1,2
Italy	2,6	13,0	4,4	22,2	7,4
Greece	5,3	12,1	18,3	31,8	6,7
Spain	4,8	20,3	15,8	35,6	4,3
Germany	4,3	17,4	2,6	10,6	-5,1
Euro area average	7,5		12,0		

Note: Statistics are based on data of regions classified as NUTS 2

Source: EUROSTAT

At the first glance it could be said that the parallel with the Czechoslovakian labor market is apparent, however, despite the similar results the reasons and nature of unemployment differ significantly.

”In Mediterranean countries, like Spain, Italy, Greece or Portugal, the problem which is often emphasized is the rigidity of labor laws, which tend to protect the “insiders” – people who have entered the labor market in the period of growth between the 1960s and 1990s, making it harder for new entrants to get in. The result is that young people are much more affected by unemployment, in spite of the fact that they are typically much more qualified than their parents.” (Afonso 2013, accessed 11/04/2014)

Looking at the unemployment insurance schemes in Europe we can notice that both the level and length of unemployment compensations are more favorable in “low-unemployment-rate” Germany than in Ireland or Greece (Broyer *et al.* 2011, accessed 01/05/2014, p. 10). Above that, in figure 3.5, which shows total severance payments, we can see that the dismissal conditions are also more favorable for workers in Germany than in Greece or Ireland⁴. On

⁴The comparison with Italy is more complicated as there is used a tenure-dependent separation indemnity, which is paid by the employer upon separation whatever the reason. “These provisions are not included in OECD indicators insofar as they correspond more clearly to a deferred wage which will be paid with certainty at the end of the employment relationship.” (OECD 2013, p. 79)

the other hand, in Portugal and Spain the total cost of lay-off is larger than German cost, driven mainly by the huge severance payments of workers with long tenure. Since the severance payments form a cost for the employer, it represents obstacles for dismissals and should help not to increase the unemployment. However, if the unemployment is already present it also limits hiring new workers, because employers regard the severance payments as the potential costs in the case of sudden problems.

Figure 3.6 then describes protection of workers against dismissals and it clearly shows lower total protection in examined countries than in Germany. The protection of individual workers exceeds German one only in Portugal, nevertheless, this is sufficiently compensated by the lowest protection against collective dismissals among countries of interest. Bearing in mind that higher employment protection lowers the probability of a dismissal, this impacts the unemployment rates differentials among countries.

Furthermore, among other differences, the collapse of the sharply edged demand for heavy industrial products in the Czechoslovakian example contrasts with the collapse of financial market, real estate market in Spain⁵ and then rather a widespread decrease of demand across the whole market. On the other hand, as well as in Czechoslovakia, border characteristics plays a significant role⁶ and unemployed workers do not show necessary propensity to move where they would be welcome.

Although the recognition of diplomas, setting up the European Employment Services (EURES) or coordination of social security systems meant a significant progress in supporting flexible labor market, the obstacles to labor mobility in the Euro area – especially language barriers – remain substantial. However, as Bräuninger & Majowski (2011, accessed 07/05/2014, p. 4) write, the population seem to be sensitive to changes in economic environment:

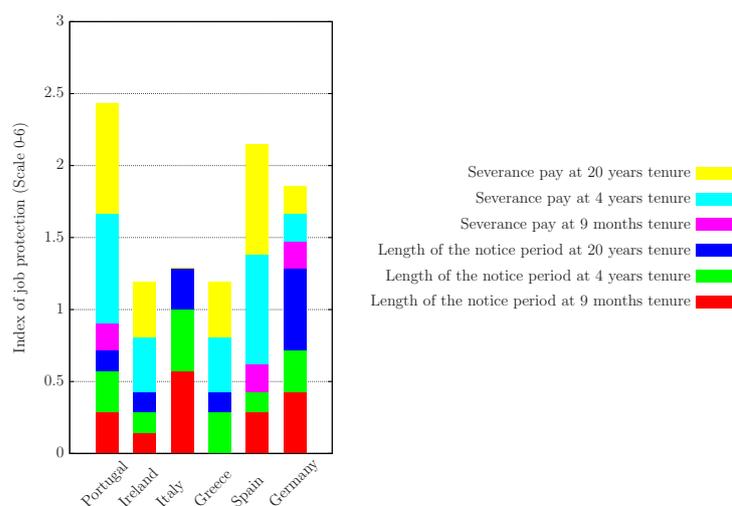
”The massive contraction in employment – after 2008 – has had a huge impact on migration flows. Countries with high net pre-crisis immigration, such as Ireland and Spain, are seeing people depart in droves. Inward migration figures have also tumbled sharply, with Spain registering the strongest absolute decline in net immigration.”

⁵Spanish drop in demand for real estates was caused by sudden interruption of immigration flows.

⁶As the South European countries are coastal states, the migration across border is limited and the regions with fundamentally lower unemployment rates are those in the North.

Summing up, without any reaction of labor market, the problems would be certainly even more profound. Nevertheless, the persistence of huge differences among regions demonstrates that the contemporary level of labor mobility – including intra-state mobility – is not sufficient to act as the single adjustment mechanism and needs further support and improvements.

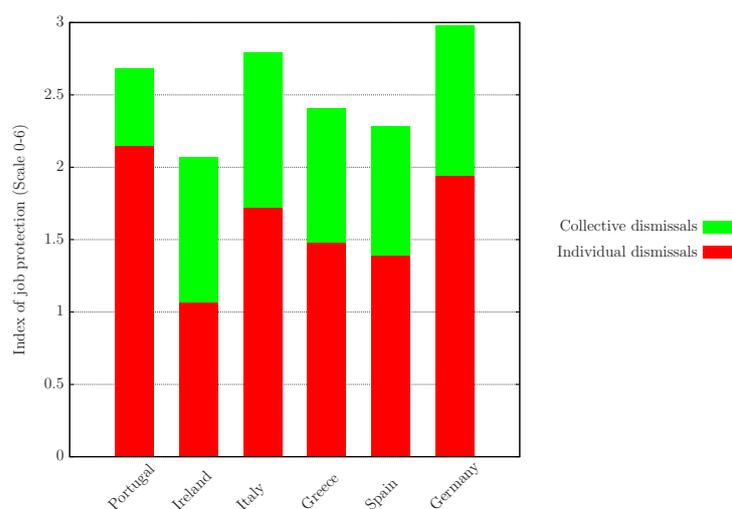
Figure 3.5: OECD Employment protection legislation index 2013 (scale 0-6)



Note: The OECD member states average index value is 1,6.

Source: author's elaboration; data from OECD

Figure 3.6: OECD index of protection of permanent workers against individual and collective dismissals in 2013 (scale 0-6)



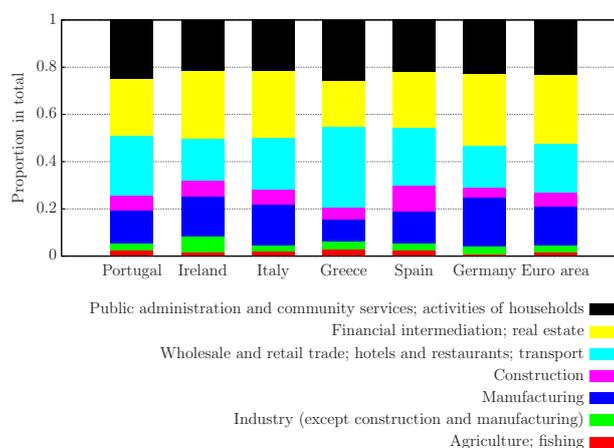
Note: The OECD member states average index value is 2,29.

Source: author's elaboration; data from OECD

3.1.6 Diversification of economy

Despite the basic sector division suffers from a high level of aggregation – which naturally tends to hide structural differences – we can distinguish clear asymmetries in the case of Greece. Economy of the Hellenic Republic is more dependent on retail trade and tourism than the Euro area average, this mainly to the detriment of manufacturing industry and financial sector, see figure 3.7.

Figure 3.7: Structure of economy in 2008 (share of total)



Note: Calculated from Gross value added (at basic prices); Euro area stands for EA15.

Source: author's calculation; data from EUROSTAT

For a better picture of the diversification of production we calculated Balassa index for specialization in exported production. Balassa index is defined as follows:

$$\frac{\frac{X_{i,j}}{X_{i,TOT}}}{\frac{X_{REF,j}}{X_{REF,TOT}}},$$

where X refers to value of exports, i represents specific country, j represents specific industry, TOT stands for aggregation of all export industries and REF stands for group of reference countries. In other words, $X_{i,j}$ is value of exports from country i within industry j to the reference group, $X_{i,TOT}$ refers to value of total exports of country i to the reference group, $X_{REF,j}$ is the sectoral exports of the group of reference and $X_{REF,TOT}$ is total exports of and within the group of reference.

As the reference group we used both the world economy and the EMU, see table 3.6. In the former case the data shows the evidence of significant differences in the export structure. The most deviating country from sample is Portugal of which the revealed comparative advantage is built on “low and medium skill and technology intensive” manufacturing industries, the extreme value of Balassa index is represented by household equipment production.⁷ Nevertheless, the data of Portugal are estimated and thus the precision of calculated Balassa index statistics should be considered with caution. Low diversification can be noticed also in the case of Ireland.⁸ Here, the spectrum of specialization lies mainly in the field of “medium and high skill and technology intensive” production of electronics. On the other hand, Balassa index referring only to the Euro area market is much more balanced and we conclude that the diversification is generally high.

Table 3.6: Specialization of exports measured by Balassa index of RCA

Referred to Euro area	Portugal	Ireland	Italy	Greece	Spain	Germany	
Median	0,893	0,276	0,815	0,680	0,943	0,901	
Arithmetic mean	1,262	0,693	1,020	1,380	1,010	0,891	
Min	0,033	0,000	0,058	0,012	0,035	0,045	
Max	6,044	7,471	5,025	11,895	3,601	1,856	
Standard deviation	1,179	1,141	0,737	1,732	0,605	0,346	
Number of sectors with RCA	41	19	38	39	42	37	
Referred to World economy	Portugal	Ireland	Italy	Greece	Spain	Germany	Euro area
Median	0,002	0,357	0,120	0,037	0,323	0,012	2,220
Arithmetic mean	31,772	9,789	0,546	2,736	2,864	1,292	2,387
Min	-5,043	0,000	0,000	0,000	0,000	0,000	0,000
Max	1961,576	576,912	6,918	94,053	27,370	23,026	5,242
Standard deviation	202,801	59,531	1,148	10,895	5,879	3,914	1,634
Number of sectors with RCA	28	36	14	20	38	18	68

Note: Number of sectors with RCA stands for number of sectors of industrial production displaying the Balassa index greater than 1, given that the total number of sectors in data set is 97.

Source: author’s calculations; data from UNCTAD

Although Balassa index provides us information about a level of diversification, it does not reveal if the market is diversified similarly across countries. In this context Botta (2014) proposes a synthetic Productive Structure Similarity Index (PSSI) through which he compares productive structure of peripheral countries with that prevailing in Germany. He finds that the difference of struc-

⁷The Balassa index of item SITC 775 (Household Type Electrical And Nonelectrical Equipment) in Portugal is 1961,6 in the world economy case.

⁸The summary statistics of Balassa index is influenced by Balassa index of SITC 30921 (Hides, skins and fur skins, raw) amounting to an extreme value of 576,9.

ture is small comparing Germany to Italy and Spain. Great difference is found comparing it to Greece and Ireland, moreover, with an increasing trend after 2008.

3.1.7 Government debt

Let us look for a while to the biggest issue in the Euro area economy and an important incentive to separate the common currency. It is the level of indebtedness of peripheral countries which disables an utilization of a fiscal stimulus as an adjustment mechanism for asymmetries. We talked about necessary improvements in competitiveness of peripheral countries by internal devaluation – through wage cuts – which apart from improving current account imbalances also contribute to the convergence of inflation rates. On the other hand, low inflation (or deflation) is not favorable looking to the debt obligations of governments. In our opinion, paying debt by seignorage of own national currency while rising the price level would be accepted by financial markets more positively than any kind of default.⁹ However, the question is if these preferences would be shared with the rest of society.

It is noteworthy that in this aspect the situation in the Euro area differs greatly from the Czechoslovakian one where the problem of indebtedness did not exist.

⁹Our opinion is based on fact, that we did not find any evidence of a country excluded from the financial market because of its high inflation rates – understand higher than the target of ECB, under control and without risk of hyperinflation – but we did in the case of partial defaults.

3.2 Possibilities of usage of the same technical solution

3.2.1 Dissimilarities in nature of currency unions

Size of the Euro area

There are several fundamental differences between the Czech and Slovak currency union and the EMU which arouse concerns about the possibility of usage of a similar technical solution in potential currency separation. The most striking one is the economic size of the Euro area. In terms of GDP the EMU accounts for almost 16,8% of world GDP, PIIGS countries represent share of about 5,5%, whereas the Czechoslovak share in moment of split was only 0,2% of world GDP¹⁰, for comparison of world GDP share of individual countries see table 3.7. Furthermore, Nordvig & Firoozye (2012, p. 12) states that Euro area banks account for 35% of global bank assets. In contrast, the Czechoslovakian share of global bank assets was less than 0,15%¹¹.

Table 3.7: Share in world GDP in 1994 (for Czech and Slovak Republics) and in 2012 (for other countries), (in %)

Czech Republic	0,17
Slovak Republic	0,07
Portugal	0,29
Ireland	0,29
Italy	2,77
Greece	0,34
Spain	1,82

Source: World Bank

Importance as an international currency

Another dissimilarity is the international importance of Euro currency. It accounts for 24,4% of allocated foreign currency reserves (IMF 2014, accessed 26/06/2014). Furthermore, it works as important currency in the international debt market and in 2012 its share in the stock of international debt securities amounted to 25,5% (European Central Bank 2013, p. 22). The share in daily foreign exchange trading is then 19,6% (European Central Bank 2013,

¹⁰ *Source:* World Bank 1994, 2012

¹¹ According the available banking data of OECD countries in 1993; *Source:* OECD.

p. 9). Furthermore, there are countries such as Andorra, Kosovo, Montenegro, Monaco, San Marino and the Vatican City which are not EU members but do officially use Euro as their national currency. As the Czechoslovakian currency did not serve intensively for internationally purposes, its cash circulation abroad was very low and hence the problem of the exchange for foreigners easy to solve by providing border exchange points. In the European situation this appears to be a greater issue. Moreover, the importance of Euro as an international currency indicates that global impacts of any turmoil in it cannot be directly compared to influence of the Czechoslovakian separation.

From another point of view the importance of Euro currency in the international market is related to its stability. Moreover, since Euro is likely to continue to exist after the exit of a limited number of countries, its significant depreciation assigned to the expectation of separation is not probable. In Czechoslovakia using pegged exchange rate, on the contrary, the market pushed the parallel exchange rate of CSK/USD to 51,56 in the contrast of the official exchange rate amounting to 28,93 and the parallel exchange rate of CSK/DEM to 31,96 while the official rate was 17,89 in January 1993 (Prokop 1994, p. 46).

Financial interconnectedness

Above all, the economic importance of the group of countries and the international importance of Euro currency is emphasized by the financial interconnectedness. In fact, financial integration among European countries was one of the aims when introducing Euro currency. Furthermore, if we compare the earliest available data of the net international investment position of the two Czechoslovakian successors with the data of PIIGS countries from 2013, we realize that the Czechoslovakian level of financial interconnectedness very likely reached only a small fraction of the one of today's PIIGS, see table 3.8.

In relation to the capital flight Nordvig & Firoozye (2012, p. 12) believe that after the currency separation

"more mobile capital would create transition costs exponentially higher than those in historical examples."

Table 3.8: Net international investment position (in % of GDP)

GEO/TIME	1993	1994	2013
Czech Republic	10,0	5,1	-45,6
Slovak Republic	—	11,9	-65,1
Portugal	—	—	-118,7
Ireland	—	—	-104,9
Italy	—	—	-30,0
Greece	—	—	-119,0
Spain	-24,7	-22,7	-98,2
Germany	11,5	9,6	48,3

Source: EUROSTAT

Political support

The currency union in Czechoslovakia was from the beginning meant only as a temporary solution with insufficient political support. Currency separation and establishing national currency were meant to accomplish the process of national independence. The European Monetary Union is completely different in this aspect and it can help to overcome uncertain times in terms of economic conditions. Currently we can notice bailout packages, in the future possibly fiscal union which could promote convergence and mitigation of economic shocks as successfully as the fiscal distribution within Czechoslovakia before its political dissolution.

Question of legislation

Another difference between the conditions in Czechoslovakia and the EMU is the legislative procedure needed to separate common currency. The two successor republics of Czechoslovakia agreed on 4 conditions under which either republic could withdraw from the currency union. Fidrmuc *et al.* (1999) present them as follows:

- Fiscal deficit of either republic exceeded 10 percent of the budget revenues
- Foreign exchange reserves of either republic fell below one month's worth of its imports
- Inter-republic capital transfers exceeded 5 percent of total bank deposits
- The Monetary Committee, which was charged with determining mone-

tary policy within the duration of monetary union, could not reach an agreement on fundamental monetary-policy issues

The final decision of Prime Ministers of the two countries then had to be passed by national Parliaments. Considering the EMU the possibility of a withdrawal from its membership is not legally clear and if the possibility does exist, the procedure is more complicated since it involves more actors. As Athanassiou (2009) states, the Article 50 of the Lisbon Treaty explicitly makes provision for the voluntary secession of a member state from the EU, whereas the possibility of leaving the EMU is not directly mentioned.

The exit clause describes the necessary procedure of a member state as follows. It has to inform the European Council about its intention and then the Council produces guidelines for further negotiation with the member state. Subsequently, the request has to pass by qualified majority voting of the Council and has to obtain consent of the European Parliament.

”The withdrawing Member State would cease to be bound by the treaties either from the date provided for in the withdrawal agreement or, failing that, two years after notification of its intention to withdraw. A former Member State seeking to rejoin the EU would have to follow the same admission procedure as any new candidate country.” (Athanassiou 2009, p. 23)

After all, we think that the right to withdraw from the EMU is implicitly covered by the right to repudiate the treaties in their entirety and is not explicitly mentioned because of the possible detriment of the credibility and stability of the European Monetary Union. Therefore, we consider the legislative procedure of exiting the EMU the same as while exiting the EU, moreover, with no mutual dependence of ceased membership of any of aforementioned unions.

3.2.2 Lessons learned

Capital flows

Apparent lesson from the Czechoslovakian currency dissolution is the large capital flow from a weaker country to stronger one – in terms of economic performance and so an expected relative currency value – ahead of the separation. The capital flow is tremendous to control and strict limits for exports and imports of currency and blocking cashless transfers between/among states are

still not flawless. The issue is that these restrictions can be imposed only for a short period not to destabilize the market and, moreover, in the moment when the decision to separate currency is already made, but the capital flow reacts to the public sentiments dependent not only on politicians' statements but also on the actual economic situation. The capital flows would be emphasized in the European case because of much greater expected devaluation of weaker countries.¹² As a result of the capital flow the deposits of Slovak banks at the SBCS were CSK 8 billion less than a 2:1 share would imply, whereas their use of central bank credits was CSK 4,5 billion higher (OECD 1994, p. 57). Bootle (2012, p. 74) observes the analogy in today's concerns of German Bundesbank about growing imbalances within the Euro area TARGET2 mechanism.

Claims within TARGET2 payment system of selected countries

TARGET2 imbalances represent an important part of central banks balance sheets where the loss would occur in case of revaluation. Nevertheless, the Czechoslovak currency separation sent a message telling us that we should expect even larger losses. The problem is hidden in the enforceability of the claims. Oldřich Dědek believes that the results would be similar to those in Czechoslovak situation where both sides were well aware of their claims initiated by the separation but Slovakia refused to meet its obligation. Moreover, the obligation amounted to CSK 24,7 billion (about ECU 724 million)¹³, whereas the imbalances in TARGET2 payment system, and so the reluctance to meet the related obligations, are significantly greater within the EMU, please see table 3.9. After 8 years CNB wrote the claims off, central banks in the EMU having claims against a leaving country would probably have no other choice than to follow this example. Next to German central bank it is for instance also Finnish and Luxembourg central banks which have positive balances in TARGET2 system, see figure 3.8.

¹²The fact that investors in Greek government bonds were willing to write-off half of the present value of the investment compensated by governing the bonds by English law (promising them their stable value in case of introducing national currency) suggests the size of devaluation of Greek national currency by market forces. The present value haircut of the Greek debt exchange was in range of 59 – 65 % depending on the discount rate (Zettelmeyer *et al.* 2013, p. 19).

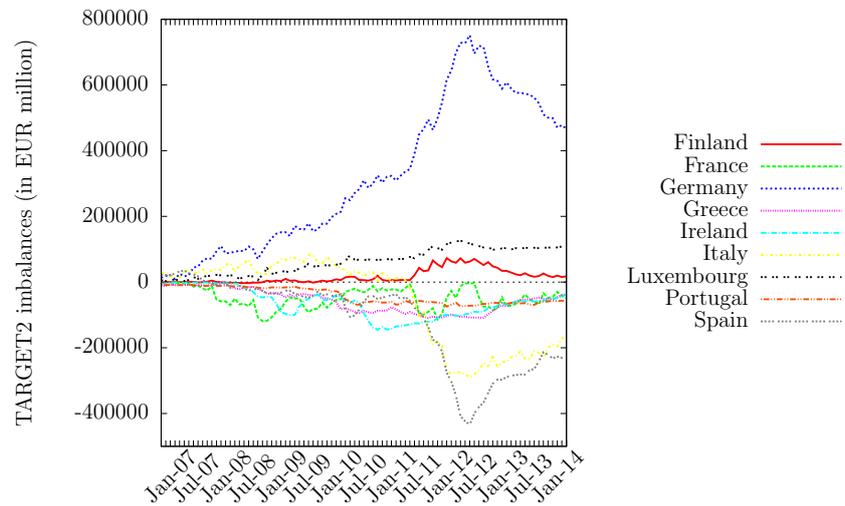
¹³For calculation we took the average exchange rate of CZK to ECU in 1993 which was 34,11425 CZK/ECU; *Source*: CNB.

Table 3.9: TARGET2 imbalances in 2009 and 2014 (in EUR million)

GEO/TIME	January 2009	May 2014
Portugal	-15974	-57374
Ireland	-46622	-36177
Italy	50650	-168338
Greece	-35311	-35996
Spain	-32550	-224837

Source: Institute of Empirical Economic Research at Osnabrück University

Figure 3.8: Development of TARGET2 imbalances (in EUR million)



Source: author's elaboration; data from Institute of Empirical Economic Research at Osnabrück University

Organizational preparation

We learned from the Czechoslovak case that a large operation of currency separation can be held in secret when the number of involved actors is limited. This in combination with the proper timing of public announcements, where the explanation targets to the economic incentives of currency separation and persuades citizens that they will not lose their money, can afterwards significantly help to smoothen the process of separation itself. Furthermore, the decentralization of process of the currency separation proved to be efficient and reliable.

Differentiation of banknotes by stamps

During the Czechoslovak currency separation the old banknotes were stamped in both countries because the old currency was going to be discontinued. On the contrary, Euro currency is likely to continue after separation of a limited number of countries and stamping banknotes in all separated parts seems to be redundant as the emission of same banknotes would be needed in the future. Moreover, one could argue that the problem of stocking high volumes of banknotes waiting to be differentiated, and those already differentiated, would be eliminated. For better understanding of stocking requirements please see table 3.10 which shows the estimated volume and weights of banknotes in Czechoslovakia. On the other hand, stamping banknotes only in the separated weaker countries would not meet the goal to divide the purchasing power of nations as their citizens would keep Euro banknotes and use them in “new Euro area” countries.

Furthermore, the Czechoslovak decision of non-differentiating lowest denomination banknotes represents a valuable experience. The question if the benefits of such a decision are expected to outweigh the risk of its abuse also in the European situation clearly depends on the chosen solution to differentiate currency.

The Czechoslovak option of gluing physical stamps was very difficult process in terms of labor force. Even though the experience shows that it is manageable, it still requires a relatively long period of time and involves many workers. This does not mean only the high costs but represents a real risk of leakage of information and in the conditions of free capital mobility it would imply a sudden capital flight. Hence, according to the Czechoslovak experience situated in present time of high labor cost, significantly lower banknote production

time¹⁴ and high capital mobility policymakers would choose a different option of how to differentiate Euro currency.

Table 3.10: Estimated volume and breakdown of denominations necessary to separate Czechoslovak currency

Denomination (CZK)	Volume (million of banknotes/coins)	Gross weight (tons)
5000 b	20	30
1000 b	40	50
500 b	50	55
200 b	40	43
100 b	60	60
50 b	40	38
20 b	60	55
10 b	75	65
50 c	35	331
20 c	55	491
10 c	70	588
5 c	70	406
2 c	80	420
1 c	100	420
0,50 c	70	66
0,20 c	80	67
0,10 c	100	69
Total	1045	3254
Banknotes	385	396
Coins	660	2858

Note: b = banknotes; c = coins

Source: Prokop (1994, p. 16)

Technical solution of currency exchange

Considering the Czechoslovak technical solution of the currency exchange it surely could not be used in its pure form in the European conditions. Although the solution of the people's free choice of an exchange point rather than the system of a specific place for a specific person – commonly used in any election procedure – was successful, it was not only because of the decentralized organization of cash transports between places with a shortage and an excess of differentiated currency. The allocation issues were significantly eased by the fact that only 1/3 of expected money were exchanged. Moreover, the non-problematic procedure was supported by a simple designation of people who already exchanged their money as all documents were of paper and a single stamp was a powerful instrument. One could argue that nowadays the

¹⁴Pending on the Euro note denominations and the printing works, the lead time from the unprinted paper sheet until the guillotine sorting and packing of the 1st Euro notes available can vary from 41 to 47 days; Source: ECB.

passport is a good replacement of a paper identity card but it is not an obligatory document for any European citizen to have, hence possibly an electronic system with a list of citizens would be necessary. In this context we think that the currency exchanges guarded electronically could be feasible on the national level and people could exchange their money anywhere in their own country, but they would be too complicated on the European level. As mentioned earlier, special treatment of foreigners with no precedent in Czechoslovak case would be needed.

Clearing system

Although the double clearing system used after the Czechoslovak currency separation would be wanted according to the interconnectedness and possible impact of the balance sheet revaluation on international trade and solvency of financial institutions, the advanced development of financial market is in our opinion a good reason to believe that its proper function without frauds would not be controllable. Other apparent issue would be choosing the currency or the weighted set of currencies which could replace the function of ECU in the Czechoslovak clearing system.

Denomination of financial items

The separation of financial items was much easier in the Czechoslovak situation because the “old block” of the clearing system protected financial institutions against the losses related to currency revaluation and because the mutual interconnectedness was extremely low. The separation of the EMU could not rely on pure administrative decisions such as a bank geographical position or certain ratios based on population and would need to use more market-based solutions. Nevertheless, Oldřich Dědek reminds that the separation of currency union is a political decision, cannot be considered as a business risk and governments have to face costs to sustain a viability of national banking sector.

Chapter 4

Benefits and costs of the monetary union separation

It is clear that currency separation implies both benefits and costs. Before entering any currency union, each country should evaluate its specific benefits and costs and behave accordingly, similarly while considering the leave.

The theory of OCA developed significantly from its beginning till the probably last contribution of De Grauwe who incorporated the issues of political union. Nevertheless, as Mongelli (2008) quotes “One Market, One Money” report by Emerson et al. (1992)

“There is no ready-to-use theory for assessing the costs and benefits of economic and monetary union.”

We will now summarize the most important variables playing role in estimating the overall benefits of leaving the currency union while not discussing the problematics of leaving the European Union itself.

4.1 Benefits of the currency union separation

4.1.1 Benefits

Independent monetary policy

The only but widespread benefit from leaving a currency union that we see is regaining the instrument of an independent monetary policy. There are several economic debates about efficiency of monetary policy and fiscal policy – as possible alternatives if one of them is not feasible. During and after

the economic shock from 2008 the problem has become even more profound as monetary policy has operated at zero lower bound and any fiscal stimulus in individual Euro area countries has been limited by an already excessive indebtedness.

Monetary policy benefits include seignorage revenues (Gockov & Jovanovski 2013, p. 184) and benefits related to adjustment via nominal exchange rate. The former is particularly interesting as the source to pay debt.

Furthermore, history provides us few useful examples of successful nominal devaluation of national currency related to problems of high debt levels and current account imbalances. The theoretical assumption is that a more competitive exchange rate supports exports and facilitates import substitution. Afterwards, overall improved trade performance – possibly experiencing so-called J-curve – entails economic growth.

One of those examples is the depreciation of the Finnish Markka. Between 1991 and 1993 Finnish currency depreciated by about 50% in relation to the Deutsche Mark. As the consequence Finland restored its competitiveness and promoted exports (Bibow 2012, p. 9-10). Finish example is particularly interesting due to succesful dealing with high sovereign debt (Jonung *et al.* 2008). On the other hand, Finnish loans denominated in foreign currencies formed just about 15% of the total (Honkapohja & Koskela 1999). Thus, the nominal depreciation did not affect the solvency negatively. Unfortunately, this example cannot be applied directly to the Greek case because of its government's outstanding bonds restructuring in March 2012 (Gruić & Wooldridge 2012). Since that moment 97,8% of Greek outstanding international bonds – representing value of EUR 126,8 billion – have been governed by foreign law.¹ In other words, after exiting the Euro area the Greek debt would be convertible to the national currency only with a great difficulty and possible devaluation of home currency would cause the debt to rise in real terms.

Argy *et al.* (1990, p. 151) then describes Belgian successful depreciation in 1982. Nevertheless, the nominal depreciation of 8,5% was accompanied by strong internal devaluation which substantially contributed to the nearly 30% real exchange rate depreciation between 1979 and 1983.

In other words, the size of benefit of an independent monetary policy relies on many factors including the social propensity to tolerate inflation, monetary

¹Before the restructuring the value of domestic and foreign bonds governed by the foreign law was only EUR 8,9 billion (Nordvig & Firoozye 2012, p. 75).

policies of trade partners², the balance sheet effect and the flexibility of each specific country functioning in the monetary union. As we argued in the previous chapters, the flexibility of wages and mobility of labor among examined economies is noticeable but rather insufficient. Considering the balance sheet effect, Céspedes *et al.* (2002) states that

”...it takes unrealistically high steady-state debt ratios and risk premiums to generate the contractionary case.”

On the other hand, using the estimates of elasticities of output to real devaluation calculated by Céspedes (2005) and estimates of devaluation of established domestic currencies calculated by Nordvig & Firoozye (2012) we noticed probable contractionary depreciation in the case of Greece (if the further restructuring or defaults do not occur), please see table 4.1. Even though Nordvig & Firoozye (2012) estimates of depreciation are calculated for a 5-year period and Céspedes (2005) states that the impact of balance sheet effect is historically only short-term and affects GDP development in one or two year period, we argue that the market would overshoot the devaluation of currency and the estimates are relevant.

Table 4.1: Estimated GDP change due to real depreciation (in %)

	External Debt/GDP × Original Sin	Elasticity of output to real devaluation	Estimated real depreciation (in %)	Estimated output change (in %)
Portugal	0,21	0,033	-47,2	1,5576
Ireland	-0,25	0,086	-28,6	2,4596
Italy	-0,09	0,086	-27,3	2,3478
Greece	0,55	-0,038	-57,6	-2,1888
Spain	0,21	0,033	-35,5	1,1715

Note: “External Debt” is defined as debt securities liabilities and other investment liabilities minus debt securities assets and other investment assets. “Original Sin” is calculated as one minus the ratio between the stock of international securities issued by a country in its own currency and the total stock of international securities issued by the country. Data about external debt in foreign currency or denominated in EUR but governed by foreign law is calculated by Nordvig & Firoozye (2012).

Source: author’s calculations, Céspedes (2005), Nordvig & Firoozye (2012)

²The nominal depreciation of national currency has potential to promote net exports only if trade partners do not offset this attempt by similar behavior.

4.2 Costs of the currency union separation

4.2.1 Direct costs

The separation of currency involves direct and non-direct costs. The direct costs are those related to preparation and process of the currency separation. In the separation of the Czechoslovakian currency these costs were almost fully covered³ by gains of central banks which stems in the shortage of liabilities represented by unexchanged coins and banknotes. Hence, the taxpayer contributions remained untouched (Dědek 1996, p. 140). There is no reason to think that the Euro area case would be different in this aspect. The total direct costs of the currency separation reached about CZK 2 billion⁴ from which the stamping and exchanging banknotes during February 1993 amounted to CZK 344,4 million (Dědek 1996, p. 141).

The function of the direct costs is certainly increasing in population, share of cash payments in total payments and the labor cost. Despite of the permanent progress in the cashless payments and newly introduced upper limits for cash payments in Spain and Italy (Matonis 2013, accessed 20/05/2014), we expect the potential direct costs to be significantly larger for those two big economies⁵.

4.2.2 Indirect costs

Transaction costs associated with returning to a national currency

Widely accepted benefit of currency union is the reduction of cross-border transaction costs. It occurs via elimination of the exporters' fees for exchanging their profits denominated in foreign currencies for their domestic currency and via elimination of the exchange rate risk. This benefit was estimated by

³The only exception was the delivery of stamps, which was reimbursed from other sources (Dědek 1996, p. 140).

⁴It is noteworthy, that CNB exchanged greater value of unstamped currency than value determined by preliminary currency division of 2:1 ratio while NBS recorded contrasting figures. All together CNB accumulated a loss of CSK 1,6 billion and NBS a profit of CSK 5,8 billion, this balance was divided between CNB and NBS in mentioned ratio 2:1.

⁵The potential direct cost increases constantly with rapidly increasing volume of banknotes and coins in circulation. In whole Euro area the volume of banknotes doubled and volume of coins almost tripled between 2002 and 2014, noting that the increase of population from EA12 in 2002 to EA18 in 2013 accounted for 8,4% and so did not play an important role; *Source*: ECB, EUROSTAT. According to the survey published in European Central Bank (2011) the value of cash transactions in 2008 in the Euro area was between 1,5 and 2 times the value of electronic payments at points of sale. Moreover, the survey identifies the Italian and Spanish households to be the most "cash-addict" from the group including also Austria, Belgium, Germany, France, Netherlands and Luxembourg.

European Commission in 1990 to about 1% of GDP and by other studies to still significant level of 0,5% GDP (Bootle 2012, p. 62). Nevertheless, the transaction costs are continuously falling due to the technology improvements and increasing usage of cashless transfers. Thus, in our opinion the leaving country should calculate with certain increase of transaction costs but probably lower than aforementioned estimates.

Costs related to trade

Another important cost of leaving single currency area is the loss of boosted international trade. In theory, the price transparency in the currency union should promote the efficient decision of market agents who now see better across the borders. In combination with the aforementioned transaction costs reduction the trade volume is supposed to increase. Although between December 1998 and December 2011 the increase in intra Euro area exports reached 80%, it represented substantially weaker growth path compared to the extra Euro area countries, where the value of exports raised by 130% (Bootle 2012, p. 63). There exists a consensus that this development was largely influenced by generally lower economic growth in Euro area countries and that the single currency supported international trade by 5% to 10% (Mongelli 2008). We also argue that the smaller and more open the countries are, the more significant this cost would be. Therefore, particularly Ireland should take this cost into account.

Furthermore, Booth (2013, p. 165) suggests that the exit of one of examined peripheral countries would imply the cost for the countries with constant balance of trade surpluses such as Germany, Netherlands or Finland. This cost would be represented by loss of competitiveness which could depress aggregate demand and reduce trade.

Loss of resilience to external shocks

Mongelli (2008, p. 50) argues that

”Euro area has greater resilience to external developments (and shocks) than its individual Member States ever had before the launch of the Euro.”

This entails the question what prevails, if the resilience to external shocks representing a cost of leaving the currency union or independent monetary

policy as regained instrument to cope with the shock when it comes. The point in which we agree with Mongelli (2008) is the cost of possible speculative attacks on national currencies, which has been removed in the EMU and which would become actual again after the introduction of a national currency.

Chapter 5

Conclusion

In the thesis we identified different economic reasons for the separation of currency in Czechoslovakia. First of them was the development of balance of trade driven by the stop of large fiscal distribution which formed a structural problem with solution in independent monetary policy. Furthermore, the economic structure between the two parts of federation showed significant differences, in combination with a rather insufficient diversification it would have implied a problematic asymmetry of external shocks. Another major problem of the Czechoslovak monetary union was the extremely low labor mobility and increasing regional differences in unemployment rates which called for different economic policies. The unsustainability of the monetary union was then caused by the market expectation of its end and so a rapid decrease of central bank foreign exchange reserves.

Comparing the economic conditions in the Czechoslovak monetary union and Euro area countries we notice that the issues are mostly different and more profound. We noticed divergence in business cycle and just recent deflationary pressures in “historically high inflation” Greece. In all PIIGS countries we noticed very high unemployment rates and regional differences not successfully mitigated by lowered level of obstacles for labor migration within the EU and generally low unemployment compensation in comparison with Germany. Considering the economic structure of export production we found out that within the EU market the level of diversification is very high and the production structure differs from German one only in Greece and Ireland.

We noticed that separation of EMU could learn from the organizational preparation of the Czechoslovak currency separation as the plans of separation were hidden from the public eye and as its decentralized approach and

public communication proved to work reliably. The problem of application of Czechoslovak solution in a hypothetical Euro area separation could appear afterwards while dealing with legal procedures because the final decision making process involves more actors than within the Czechoslovak situation and represents a threat of an information leakage.

Another of our findings is that the differentiation of banknotes by physical stamps would not be the most efficient solution in nowadays conditions of high labor cost and relatively short time of banknote production. The solution of printed stamps or completely new banknotes would be more preferable also from the point of ensured secrecy.

Considering the process of currency exchange the European situation involves some extra issues such as the proper form of designation of people who already exchanged their money, because the paper identity card are defunct and stamping in them is not possible anymore, or how to treat citizens of countries outside the EU but using Euro as national currency, since Czechoslovak experience does not reach so far. Those factors hinder the people's freedom of choice of exchange point and favor the system commonly used during elections where everyone has her assigned place where to go.

We also found out that despite capital controls and low capital mobility the separation has to count with certain level of financial and accounting frauds. Double clearing system framework used in Czechoslovak separation is not feasible in conditions of high financial market development and capital mobility as it experienced problems also in conditions of capital flow restraints. Furthermore, we realized that losses from devaluation are not the only losses that should be expected in a financial sector as the claims between central banks are difficult to enforce.

Finally, we found out that the overall costs of leaving EMU are much larger than the related direct costs and particularly if Greece would exit European Monetary Union the regained independent monetary policy would not contribute to better economic performance of the country in the medium term as the intense real devaluation would be most probably contractionary.

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