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Foreword

Established in 1880 and representing the sixteenth Central Bank in the world, the National Bank of Romania has celebrated 140 years of existence in 2020. On this occasion, the Board has approved the publishing, within the "National Bank of Romania Library" Collection, of ten volumes containing a selection of papers and studies written by the bank's specialists during the last decades.

The present volume, titled "Economy. Selected studies", brings together eleven papers written in English by the NBR's economists. While the transition period of the '90s is covered by one study and the pre-crisis period of the '00s by another one, the vast majority of papers pertain to the post-crisis period (2015–2020).

The volume opens with the study "Resource Misallocation and Strain: Explaining Shocks in Post-Command Economies", written in 1997 by Daniel Dăianu (at that time, NBR's Chief Economist). Starting from the fact that command economies allocate resources inefficiently – and that resource reallocation is unavoidable when prices are freed – the author explains that such a reallocation is not only done in accordance with economic calculus, but also having in view the degree of strain it causes, socially and politically. For example, if resource reallocation results in large unemployment, the resulting strain might be accommodated by higher inflation. When wages need to be re-calibrated using economic criteria, this will be resisted not only by losers, but also by would-be winners (who will develop a wage illusion). Strain can also be accommodated by an increase in inter-enterprise arrears, especially when fiscal and payment discipline are weak. All in all, textbook remedies might not work in economies with high levels of strain, which are constantly finding ways to dissipate it.

The paper "Potential GDP Estimation for Romania" was written in 2007 by three young economists from the Macroeconomic Modelling

and Forecasting Department: Anca Gălăţescu, Bogdan Rădulescu, Mihai Copaciu. Defined as "the level of real GDP which the economy can produce without generating inflationary pressures", potential GDP has the drawback of being an unobservable variable. It can be estimated by econometric univariate methods – such as the Hodrick–Prescott filter, the band-pass filter, or the Kalman filter, all used in the paper – or by multivariate methods – such as the production function approach, filters with unobserved components, or structural vector autoregression, also used in this paper. The results are consistent, finding an acceleration in the annual growth rate of potential GDP from 3–4 percent between 2000 and 2002 to around 6 percent in 2003–2006. Several caveats are necessary: the very short sample of data; the numerous revisions of official statistical data; the frequent structural changes that might alter the final results. The authors do not venture into further explanations, but one can speculate that Romania's accession into the European Union, accepted in 2000 and fulfilled in 2007, constituted such a structural change, explaining to a large extent the dramatic increase in potential GDP during that period.

The paper "Estimation and forecast of GDP and GDP components with the Dynamic Factor Model. Application for Romania" was written in 2011–2015 by Andrei Tănase, a young economist from the Macroeconomic Modelling and Forecasting Department. The Dynamic Factor Model answers the need to model GDP and its components (consumption, investment, exports, imports) when we have a large number of regressors. The variation of the entire set of variables (60) can be sufficiently well explained by a reduced number of common factors. Once estimated, these factors can be used as regressors for any variable of interest. The methodology for estimating the factors is the one proposed by Forni, Hallin, Lippi, Reichlin. In the case of Romania, for the period 2005 Q2–2012 Q3, the first three factors explain around 65 percent in the variability of the data. Factor F1 explains variables such as output, monetary aggregates and the financial variables; F2 characterizes the labour market, real economy, external demand and their interaction; F3 comprises the labour market and capital flows. An important observation is that the degree of representativeness of the variables underlying the common factors increased in more recent periods.

Veaceslav Grigoraș and Irina Stanciu, also from the Macroeconomic Modelling and Forecasting Department, wrote in 2015 the study "Business Cycle Dating and Properties". Using the Bry and Boschan algorithm for quarterly series (BBQ), the authors perform in the first stage a univariate analysis, taking into account only the evolution of GDP. They find that in Romania GDP had an expansion phase of 8 years (32 quarters) between 2000 Q3 and 2008 Q3, with an amplitude (increase) of 51.9 percent, followed by a recession of 2 years (8 quarters) between 2008 Q3

and 2010 Q3, with an amplitude (decline) of -9.7 percent. Then, they perform a multivariate analysis, taking into account 34 different variables and using two different methodologies, yielding similar results. The heat map (first methodology) shows an expansion phase between 2002 and 2008, followed by a recession in 2008–2010. Differing from the univariate analysis is the decline of a number of indicators in 2000–2002, which however did not result into a contraction of GDP. The second methodology, based on the common factor extraction (see the previous paper), shows recession episodes in 2001, 2008–2009 and again in 2011–2012. But the latter should not be taken into account, since it was due to very specific factors. Finally, the authors turn to the problem of predicting recessions (two consecutive quarters of negative growth) and arrive at the conclusion that both linear and non-linear models are unable to forecast a quarter of negative GDP growth (let alone two quarters), because GDP growth is positively autocorrelated and because shocks are, by definition, unpredictable.

Several studies from 2016 were selected for the present volume. Lucian Croitoru, the Governor's advisor on monetary policy issues, wrote the paper "Are we Systematically Wrong When Estimating Potential Output and the Natural Rate of Interest?" He starts from the observation that, under the inflation targeting regime, monetary policy decisions are based on two unobservable variables (potential output and natural rate of interest), which might be constantly overestimated in both stages of the economic cycle. Overestimation of potential output (*i.e.* a monetary policy more accommodative than it needs to be) may be cancelled by the overestimation of the natural rate of interest (*i.e.* a monetary policy more restrictive than it needs to be), so that the overall effect is ambiguous.

The author explains these overestimation biases by the tendency of people – including econometricians – to use heuristics, logical shortcuts based on previous experience. Thus, during recessions, the anchoring heuristic (attaching a higher-than-needed value) might play a role in overestimation. Conversely, during boom periods, the representativeness heuristic might play a role, based on widespread over-optimism. In Romania's case, both hypotheses are validated by the observations between 2007 and 2015. The fact that inflation failed to increase after 2013 (when the effective – not the estimated – potential output and natural rate of interest were reached) may be explained by one-off events, such as a fall in energy prices, a bumper agricultural year, reductions in VAT, etc. But, most importantly, excess demand in 2013–2015 was met mostly through imports, which are non-inflationary, but create, in time, a current account problem.

Wilhelm Salater, the Deputy Director of the Economics Department, wrote in 2016 the study "Same rules, different times: beyond the letter of

the Maastricht criteria". He shows how specialists' and public's attitude towards fulfilling the Maastricht criteria have changed over time. Initially, in the late '90s and early '00s, they were seen as mere benchmarks to be observed as soon as possible in order to join the "Promised Land" of the Eurozone, where convergence was assumed to happen endogenously. So much so, that some countries were given waivers despite not fulfilling all the relevant criteria (Austria, Belgium, Italy among others), other countries falsified some statistical data (Greece), while still others adopted the euro unilaterally (Montenegro).

In the late '00s and especially after the financial crisis, it became obvious that the Eurozone does not constitute a nominal and real convergence area and that rules written in 1992 assumed a club of mostly rich countries at a similar level of development. These findings gave rise to critical attitudes towards the Maastricht criteria, especially from the new applicants' side. The criteria were seen as being too restrictive ("The Bed of Procrustes") and were criticized on valid economic grounds – for instance, for not allowing the Balassa–Samuelson effect manifest itself, neither through higher inflation, nor through currency appreciation.

Finally, in the last years it became obvious that the Maastricht criteria remain necessary, but must be complemented by real convergence criteria (such as those in the Scoreboard) to be achieved before joining the Eurozone. This new view might be summarized as "Maastricht criteria are not enough". It also became obvious for new applicants that steadiness counts much more than speed, so that "the fast track is not necessarily the right track", as the author puts it.

The seventh study in the volume is titled "Developing a Dynamic Stochastic General Equilibrium Model for Analysing Domestic Policies in a General-Equilibrium, Multi-Country Setup" and was written in 2017 by Tudor Grosu, the Director of the Macroeconomic Modelling and Forecasting Department. In the context of the New Open Economy Macroeconomics (NOEM), which is more realistic that the closed economy setup, the proposed model adapts the structure of the European Central Bank's EAGLE model to the Romanian economy. Three other trading regions are considered: the US, the euro area, the rest-of-the-world. The model includes a number of idiosyncratic features present in a small open economy: a distinction between tradables and non-tradables sectors; price stickiness, wage rigidities and costly disinflation; the external habit in consumption and the time-to-build in capital accumulation etc. With the help of the model, different elasticities and ratios are computed for Romania and compared with those of the other three trading regions.

Elena Banu and Irina Mihai from the Financial Stability Department wrote in 2018 the paper "Identifying the real estate cycle: are housing

prices enough?". Some countries have problems with the data concerning housing prices (short or unreliable time series). The authors propose an alternative method for assessing the real estate cycle, by constructing a real estate (RE) index. This index is composed of 14 (mostly macroeconomic) indicators, such as Gross Value Added in construction, Labour Cost Index in construction, number of employees in construction, consumer survey for intention to purchase a home etc. This index is applied to 18 European economies (12 developed and 6 emerging, including Romania), over the period 1995–2016. When comparing the two methods (housing price index versus RE index) in assessing the position of an economy in the real estate cycle, it is found that: a) the length of the expansion phase is almost similar, with 29 quarters (on average) for the housing price index versus 27 quarters (on average) for the RE index; b) the length of the contraction phase is somewhat larger (17 quarters on average) for the housing index than for the RE index (11 quarters on average); c) the amplitude of the expansion/contraction is lower for the RE index, because it incorporates many macroeconomic variables, with a smoothening effect; d) the predictive power of the two methods is comparable.

Lucian Croitoru's second contribution to this volume is titled "How Countries' Different Attitudes towards Inflation can thwart the European Dream" and appeared in 2018. He shows that a common currency (the euro) cannot be sustained if participating countries have different attitudes toward inflation and competitiveness. These different attitudes can be attributed to different national preferences for growth, sustainability and solidarity. The only way to overcome this is what the author calls "a democratic federalism" of the euro area, with a banking union and a fiscal union.

According to the macroeconomic policy trilemma (developed by Fleming and Mundell, 1962–1963), one cannot have at the same time a fixed exchange rate, capital mobility and (national) monetary policy. During the Gold Standard, independent monetary policy was sacrificed; in the Bretton Woods era capital mobility was discarded; within the euro area again national monetary policy is abandoned. But the demise of these arrangements came from outside, the so-called "external objectives". For instance, the Gold Standard came into conflict with the advent of mass politics, which put more emphasis on lowering unemployment than on lowering inflation (or increasing competitiveness). The Bretton Woods system collapsed when a deficit country (the US), instead of tightening its monetary policy – as prescribed by the rules of the system – loosened it in order to finance the Vietnam war.

According to the world political trilemma (Rodrick, 2000), world economic integration can coexist either with nation-states or with "mass

politics". This hypothesis assumed – somewhat heroically – that nation-states would not yield to mass politics grievances, since all states would compete for low inflation, higher inflows of capital, a smaller state, etc. (clearly a view not validated by reality). Habermas (2011) tried a way out of this trilemma by preserving monetary integration and nation-states, while (national) democracy is sacrificed, something he calls "executive federalism". Lucian Croitoru thinks this solution is problematic and proposes instead, on the footsteps of Röpke (1959), a democratic federalism, resulting into the creation of a United States of Europe, while acknowledging that currently the European public is not educated towards such a choice.

Daniel Dăianu's second paper in this volume is titled "Revisiting Euro Area Accession Terms: Fiscal Rectitude is not Sufficient!" and was written in 2018. The author argues that, for a successful working of the euro area, several non-trivial conditionalities must be met.

First, the new applicants must achieve a critical mass of real convergence before joining. In particular, given markets' myopia, excessive capital inflows into the non-tradable sector should be discouraged, as should be discouraged excessive private indebtedness (not only state indebtedness), through targeted macroprudential policies. Second, the governance of the euro area should improve significantly; this entails the completion of the Banking Union. But even a complete Banking Union would not suffice, without fiscal transfers and without a European safe asset (bond), allowing the euro area to borrow when the need arises to help its poorer members. Third, the insertion of New Member States into Western value chains does not imply automatic convergence, unless this insertion is done in high value-added activities, enhancing productivity gains. Continuous increases in productivity in New Member States is a *sine qua non* condition for them to give up the adjustment mechanism represented by currency devaluation.

A package of euro area redesign measures should include, *inter alia:* liquidity assistance in time of market stress; a fiscal capacity to cushion asymmetric shocks; a symmetrical operation of the Macroeconomic Imbalance Procedure, penalizing not only excess deficits, but also excess surpluses; investment programmes to foster economic convergence in high value-added niches; no de-regulation of finance etc.

Next comes the paper "Romania in the loop: An analysis of 155 years of business cycles in historical perspective", written in 2019–2020 by Veaceslav Grigoraș and David Orțan from the Macroeconomic Modelling and Forecasting Department.

Using the Maddison Project Database, the authors identify the business cycles of Romania and other countries (defined as the evolution of real GDP per capita in 2011 US dollars) for the period 1862–2016. Then,

they extract the concordance index and the business cycle correlation coefficient between Romania and other countries, for the whole period and for four sub-periods: pre-WWI (1862–1914), interwar (1919–1939), communist regime (1950–1989), post-communist period (1990–2016).

For the whole period (1862–2016) it is found that the average duration of expansions for Romania, of only 2.7 years, is the lowest in the entire sample (higher volatility explained, *inter alia*, by the large share of agriculture), while the average duration of recessions (1.5 years) is close to the average of the sample. The amplitude of expansions for Romania, of 22.76 percent, is also average, but the amplitude of recessions is very large, 13.87 percent, surpassed only by Greece. Overall, the business cycle seems to be correlated with the USA – which might be considered as a reference global cycle – but also with neighbouring countries (Bulgaria, USSR, Hungary). Then, the authors proceed with an in-depth analysis of the four sub-periods, yielding some rather surprising results.

The patient reader of this volume might conclude that the scientific research within the National Bank of Romania in the last two decades – as illustrated by the eleven papers – is on a comparable level with its European peers. From econometric modelling to historical overviews – going through contemporaneous hot topics such as the European project or post-crisis challenges – all the major themes are being tackled. Moreover, free speech and independent thinking – albeit not always reflecting the NBR's official position – are encouraged and promoted, with the belief that truth can only be discovered through debate and dialogue.

Valentin Lazea

RESOURCE MISALLOCATION AND STRAIN: EXPLAINING SHOCKS IN POST-COMMAND ECONOMIES[1]

Daniel Dăianu

1997

1. Revised version of a paper presented at the Annual meeting of the German Association of Political Economy, Frankfurt am Oder, October 1995 and at an economics workshop of the Central European University of Prague, in June, 1995. Many thanks to Fabrizio Coricelli, Laszlo Csaba, D. Mario Nuti for their useful comments. This paper appeared as "Strain and Resource Misallocation in Post-command Economies", *Working Paper* No. 96, The Davidson Institute, University of Michigan, Ann Arbor, 1997, and was published in G. Backhaus, "Issues in Transformation Theory", Marburg, Metropol, 1996, and D. Dăianu, "Transfomation as a Real Process", Aldershot, Aashgate, 1998.

ABSTRACT

A fundamental tenet in economic theory – which was confirmed by reality – is that a command system allocates resources poorly because of the impossibility of economic calculation[2]. Therefore, once prices are freed and start to operate at quasi-equilibrium (market-clearing) levels, the hidden inefficiencies come into the open and a massive resource reallocation would have to take place – from low to high productivity areas. More precisely, the issue refers to the possible and probable intensity of resource reallocation in view of constraints such as: the balance between exit and entry in the labor market, the size of the budget deficit and the means for its non-inflationary financing, social and political stability, etc. This paper argues that the magnitude of the required resource reallocation – the imbalance between exit and entry – brings about tremendous strain in the system. It also submits that when the expansion of the private sector is slow, the foreign support is insufficient, the external (negative) shocks are powerful, and the underground economy is not effective enough in absorbing the labor shed by the official economy, the *strain* in the system can lead to its growing destabilization. By looking at post-command economies, mainly, this study makes an attempt to show why *strain* emerges within an economic system and what are the implications for stabilization policy. A formalized expression of strain is suggested and illustrated for both closed and open economy cases. The distributional struggle, as a consequence of resource reallocation, is highlighted. Taken as an example, it is argued that inter-enterprise arrears are a symptom of strain. The line of reasoning espoused herein can help in explaining shocks in post-command economies.

NON-TECHNICAL SUMMARY

The working hypothesis of this study relies on the exceptional magnitude of the required resource reallocation in the former command economies;

2. Apart from the suppression, or diversion, of the entrepreneurial spirit, which – as best indicated by the Austrian School (Schumpeter, von Mises, Kirszner, Rothbard) – is vital for the dynamics of an economy.

it aims at emphasizing the extraordinary *strain* these systems are undergoing. Ignoring this *strain* would be equivalent to accepting a nonsensical proposition – that the command system was capable of allocating resources satisfactorily eventually. One needs to also highlight another factor that enhances *strain*: the change of the regime of functioning of the economy and the scarcity of organizational and institutional capital which explain high systemic fragility and vulnerability. It can be argued that the degree of *strain* in post-command economies is the main impediment for the achievement of quick and durable macroeconomic stabilization. The assessment of realistic policy choices needs to consider various constraints: the size of the budget deficit and the available non-inflationary means for its financing, the concern not to fuel inflationary expectations, the impact of restructuring on the dynamics of the private sector, the level of external aid (financing), the social consensus regarding the speed of restructuring, the privatization policy, etc. Economic policy decisions are hard to make not only because of our limited knowledge, but since they entail painful trade-offs, irrespective of choices. Viewed from this perspective, the attitude of those who relate failures to the lack of political will only is fairly remote of what can be called the "real political economy" of transformation. Aside from the attempt to decipher *strain*, this study has three main messages. Firstly, it does underline that what can be done quickly should be done accordingly; delays can bring about very damaging detours and can create a hard to escape "path-dependency". Secondly, it cautions against unavoidable trade-offs among policy goals and commends the need to understand what is possible and probable to achieve bearing in mind the complexity of transformation and the *strain* in the system. From this perspective it is argued that durable macroeconomic stabilization and bringing inflation to a one level digit takes time and depends on the evolving institutional body of the post-command economies and on the pace of restructuring (resource reallocation). Finally, it is contended that the reasoning proposed herein can be applied to any socio-economic aggregate (economy) undergoing heavy shocks (external and internal) and in which, consequently, an intense *strain* emerges.

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A fundamental tenet in economic theory – which was confirmed by reality – is that a command system allocates resources poorly because of the impossibility of economic calculation[1]. Therefore, once prices are freed and start to operate at quasi-equilibrium (market clearing) levels, the hidden inefficiencies come into the open and a massive resource reallocation would have to take place – from low to high productivity areas. More precisely, the issue refers to the possible and probable intensity of

resource reallocation in view of constraints such as: the balance between exit and entry in the labor market, the size of the budget deficit and the means for its non-inflationary financing, social and political stability, etc.

A hypothesis I used in other studies[3] is that the magnitude of the process of resource reallocation – the imbalance between exit and entry – brings about tremendous *strain* in the system. Flemming (1992), Aghion and Blanchard (1993), Sachs and Woo (1993), Gavin (1993) are among those who captured analytically implications of the magnitude of required resource reallocation in a post-command economy. Flemming, for example, focuses on the very shock caused by the brutal changes in relative prices which – as it is argued – would ask for temporary subsidies for the declining sectors. These analyses should be contrasted with Mussa (1982), who considered adjustment in a frictionless environment. It can be submitted that when the expansion of the private sector is slow, the foreign support is insufficient, the external (negative) shocks are powerful, and the underground economy is not effective enough in absorbing the labor shed by the official economy, the *Strain* in the system can lead to its growing destabilization – in spite of possibly vigorous efforts at macroeconomic stabilization, *strain* should not leave decision-makers insensitive to how they evaluate macroeconomic linkages and work out the policy-mix.

By looking at post-command economies, mainly, this study makes an attempt to show why *strain* emerges within an economic system and what are implications for stabilization policy. Beginning with the closed economy, after which the open economy case is looked at, a possible formalized expression of *strain* is suggested. The distributional struggle, as a consequence of resource reallocation, is highlighted. Next, and taken as an example, it is argued that inter-enterprise arrears are also a symptom of strain. The study concludes with final remarks. The annex mentions some empirical work done by Joaquim Oliveira Martins on the explanatory power of strain. The lines of reasoning espoused herein can help in developing an economic explanation of shocks in post-command economies.

1. THE CLOSED ECONOMY CASE

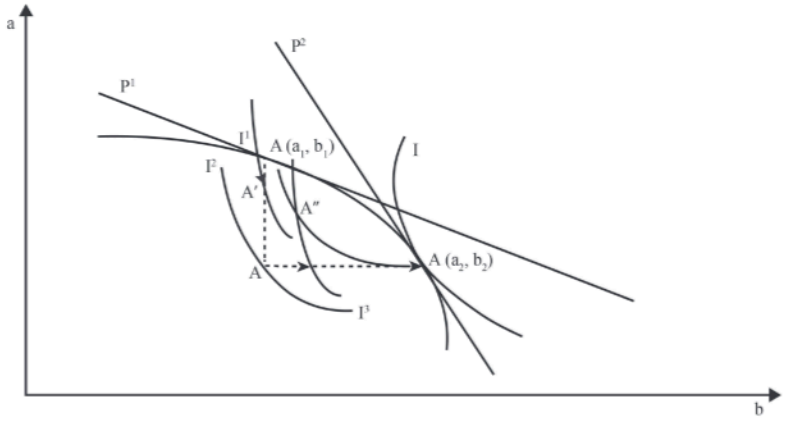
The relevance of the closed economy framework could be questioned. I would argue that, apart from a purely theoretical interest and the help it provides in scrutinizing the open economy model, its features fit the case of a very large economy – like the Russian economy, though even this economy suffered the impact of the collapse of Eastern markets.

3. See Dăianu (1994a, 1994b).

Let us take the simplified case of a two-commodity economy (Figure 1). The initial production combination, (a_1, b_1), still reflects the central planners' preferences; the latter are indicated by the price line P^1. Were consumers sovereign, the production combination would be (a_2, b_2) and the price line denoting equilibrium (market-clearing) prices would be P^2. Given resource reallocation without friction – with no imbalance between exit and entry – there would be no strain in the system; the shift from(a_1, b_1) to (a_2, b_2) would take place along the production possibilities curve.

In a real economy friction is unavoidable. Furthermore, the imbalance between *exit* and *entry* can be considerable, and it can cause the production combination A to be substantially inside the production possibilities curve – the fall of the output of a is not accompanied by a corresponding growth of the output of b. This means a significant reduction of aggregate utility – from I_1 to I_2 – if the expansion of the unofficial economy does not offset it. Over time the production combination would have to come ever closer to (a_2, b_2). This process is shown by the thick arrow in Figure 1.

Figure 1: Reallocation in a closed economy



The magnitude of the required resource reallocation can be illustrated by the ratio:

$$J = \frac{p_a^*|q_a^* - q_a| + p_b^*|q_b^* - q_b|}{p_a^* q_a^* + p_b^* q_b^*} \tag{1}$$

where p^* and q^* refer to equilibrium values, whereas p and q correspond to the current (distorted) resource allocation. J can be viewed as a

measure of aggregate disequilibrium (in the system) as against the vector of equilibrium prices and quantities[4]. The general form of (1) is:

$$J = \frac{\sum p_i^* |q_i^* - q_i|}{\sum p_i^* q_i^*} \tag{2}$$

The size of the above ratio measures the *strain* within the system and reflects the magnitude of aggregate disequilibrium.

It can be assumed that the possible level of unemployment is related to the degree of *strain* in the system: the higher is the *strain* (resource misallocation), the higher is the unemployment that would be brought about by the required resource reallocation. This is a major reason which lies behind the temptation to tolerate high inflation rates as a way to diffuse the tension within a system. Thus, in the social cost function

$$Z(U, \pi) = (U - U^n) + \beta\pi^2$$

the lower is the weighting parameter β, the more pressuring is the unemployment level, or when inflation emerges as the only way for diffusing tension in the system. Thus, let us consider the Phillips curve relationship. $U = U^n - \alpha(\pi - \pi^e)$, where π^e is the expected inflation rate. The social cost function can be written as $Z(U, \pi) = (U^n - \alpha(\pi - \pi^e) - U^n) + \beta\pi^2$, or $Z(U, \pi) = -\alpha(\pi - \pi^e) + \beta\pi^2$. It can be seen that Z is inversely linked with unexpected inflation, and directly linked with effective inflation. Minimization of the social loss function implies: $Z'(\pi) = -\alpha + 2\beta\pi = 0$. Therefore, the optimum level of inflation is $\pi = \alpha/2\beta$. The smaller is β – *i.e.*, the more disturbing is the unemployment level –, the higher would be the optimal inflation rate. U^n denotes the natural unemployment rate when resource misallocation would have been, basically, dealt with. Therefore, U^n is to be distinguished from the NAIRU (the non-accelerating inflation rate of unemployment) under circumstances when there is an intense pressure to reallocate resources; π is the inflation rate.

It can be argued that the above-mentioned trade-off is less valid, the more destabilizing is the very level of inflation – like in the case of a hyperinflation that can lead to an implosion of production. In the latter case, the fight against the highly destabilizing inflation should be the top policy priority. Therefore, analysis needs to consider the dynamics of inflationary expectations and, further, of money velocity.

Let us consider the following aspect. It is beyond contention that U', the unemployment that would be involved by an immediate and total resource redeployment, would not be tolerated by the system. Therefore, an optimal level of unemployment, U^*, can be imagined – a level that reflects the various constraints connected with the budget, the concern

4. See also Portes (1986).