Issues of central bank independence with special focus on India

Draft paper not for quotation

OBIC research grant paper

Prepared by

Peter Bihari

Pune, India, August 2017

There are very few technical-scientific debates which end with the full and complete victory of one side. The debate on the independence of central banks is certainly not one of this kind. The debates in connection with the institutional setup began in the 1980s, at the time of the deviation from the fixed exchange rate system and the search for a new path related to monetary policy regime and came to rest by the early 2000s. Conflicting opinions remained but according to the most broadly accepted views the operation of the central bank free of political influence has been a necessary condition of meeting monetary policy objectives. After the global crisis, the old arguments for independence were put into a new light under changed macroeconomic circumstances, new criteria arose, urging the re-thinking of the content boundaries of independence. The earlier consensus was upset and the theoretical debate on principles started anew. This writing reviews the traditional set of arguments for independence in relation to this debate and makes an attempt at their reformulation, taking into account the changed circumstances. Putting the final conclusion of the article forward: de jure the central banks of the advanced countries reached a high level of independence by the turn of the millennium, yet actual central bank independence was of a lesser degree than that shown by various measurement indices. In the post-crisis era freedom from the influence of short-term political interest continues to be necessary in interest rate policy, while financial stability can be preserved only with the close cooperation of the central bank and the government, as will be shown subsequently. There is a high probability that this duality will lead to some de facto infringement of central bank independence in monetary policy and it will come to stay at a lower level than in the pre-crisis period.

The novelty about this article consists in the fact that it merges an economic approach with considerations of political economy. This provides new results primarily in distinguishing de facto and de jure central bank independence. This article does not discuss cases of specific countries but accepting the risks of generalization it attempts to capture those common features of central bank independence which can be applied to most central banks. Hungarian experience will not be underlined either. Nevertheless, the article contains a number of conclusions of special relevance for the Hungarian case. An informed reader will be able to identify these easily.

The first part of this article reviews the theoretical aspects laying the foundations for independence, the way as they arose in the period before the global crisis. The second part summarises the empirical experience related to central bank independence. The third part examines whether the original arguments for independence are still relevant under today's conditions and what extent of cooperation is required by the expanded scope of responsibility of central banks, primarily in relation to financial stability with those shaping government policy. The article ends with drawing the conclusions.

Economic and political economy arguments for central bank independence

One of the most fundamental macroeconomic problems of the last quarter of the 20th century was the rise in inflation coupled with a low growth rate in several countries. It was found that the Philips curve did not apply. Both practical economic policy and economic research sought for the possibilities of reaching low inflation over the long term and as part of this, the best institutional solution. By the early 2000s, a practical consensus evolved about the fact that monetary policy can best contribute to economic growth by maintaining price stability while the operation of the central bank free of political influence can best guarantee reaching price stability. It was primarily the works of Rogoff (1985), Debelle and Fischer (1994), Sargent and Wallace (1981), Kydland and Prescott (1977) that constituted the theoretical point of departure of this consensus. The clean final result was, however, the joint work of so many people that they simply cannot be listed[1]. Below I bring up the three most important arguments for central bank independence.

1. Through increasing the cost of holding money and economic activities, the distorting role of income redistribution and the deteriorating predictability of future processes, a level of inflation higher than that of price stability leads to growth lagging behind the potential and at the same time has an unfavourable impact on the rate of potential growth.[2] With a view to reinforcing public trust in them and to increase the chances of retaining power, politicians have a propensity to reduce taxes, introduce new welfare expenditures and new public investments, even if the welfare surplus generated through these measures is coupled with surplus inflation. They hope that the impact on growth will appear first and prices rise only with a delay preferably following the next elections and only for a transitory period.[3] Economic agents, however, tend to react to higher prices with demands for higher wages. Rising wages transform the initial demand price increase into lasting cost inflation, while the higher cost level channels the growth rate back to the level prior to the demand shock.

   As a result of the demand shock, economic growth increases only for a transitory period, while inflationary consequences may come to stay. Government politicians act against their self-interest – their re-election – if they introduce measures concomitant with real economic costs with a view to curbing inflation. As long-term interests linked to price stability are not aligned with the short-term interest of politicians, there are good reasons to make the cause of price stability into a responsibility of an institution outside the government structure. This institution is the central bank. But even a central bank is able to achieve price stability only when it is outside the government structure not only in a formal sense, but its actual activity is free of the influence of short-term political interests.[4] A number of empirical studies showed a correlation between the

[1] In view of the fact that the next three points summarise the arguments more or less generally accepted in international literature, references to authors will be omitted.

[2] Inflation below price stability triggers growth below the potential because of the negative impact on total demand and the rise in the real value of debt.

[3] The theory of political business cycles places the empirical correlation between political cycles and economic cycles into a wider macroeconomic framework (Nordhaus (1975)).

[4] Lastingly low inflation may occur even in the absence of independence. Prior to monetary integration, the Bundesbank did not enjoy a high degree of independence, yet there was price stability in Germany as a result of a social consensus against inflation. Government policy fuelling inflation would not have resulted in political

independence of the central bank and the low rate of inflation, and the lack of independence and the high rate of inflation. (Alesina (1988) Cukierman (1992), Grilli et al. (1991), Arnone-Romelli 2013). There were also studies, which demonstrated the causal relationship between the two. (Romelli (2017) Moreover, Cukierman et al. showed that a successful anti-inflationary monetary policy may contribute to the reinforcement of independence through strengthening public trust in the central bank. (Cukierman, Web, Neyapti (1992) [5]

The central bank's independence, however, does not guarantee the implementation of price stability. If there is no supportive social environment, if economic policy itself fuels inflation, if the budget is too lax, if there is an external demand price shock, the low inflationary environment adequate to price stability cannot evolve despite a central bank's independence. "No monetary policy regime including inflation targeting will succeed in reducing inflation permanently in the face of unsustainable fiscal policies." (Bernanke (2005) Yet, there is a better chance of achieving price stability if it is safeguarded by an institution in whose operation short-term political interests linked to re-election are not present and which cannot be forced to implement instructions driven by such interests.

2. Governments have a propensity to spend more than they take in. If it is easy to find cheap sources of funding for expenditure in excess of revenue, then the motivation to make for a greater deficit is higher. If a government can borrow from the central bank (or can sell government papers to it), then the deficit can certainly be financed up to the amount of such credits. If, however, it is not possible to have the central bank finance the budget deficit[6], then the possible extent of the deficit is limited by the possibilities of financing from the market. If these funds peter out, then this pressure creates budgetary equilibrium.
With an institutional structure keeping the central bank subordinated to the government, a high budget deficit evolves easily. The central bank can be easily instructed to issue credit for creating the sources of financing of a demand shock. Such lending (government paper purchases) is limited only by the self-restraint of the government. But why would a government refrain from borrowing, if it can hope for greater electoral support from additional expenditure?

If the central bank operates outside the government structure and it cannot be instructed to finance the government, there is a better chance for the evolution of a disciplined fiscal policy. A chance, however, is not a guarantee.[7] The claim is no more than stating that a high deficit may come into being with more difficulty when the central bank is independent and more easily when the central bank is not independent, even in the

gain but losses owing to the inflation sensitivity of the public. In most countries, however, there is no such anti-inflationary constraint of cultural origin.

[5] Many disputed the grounds of the calculations and the final conclusion. Several authors questioned the grounds of the data (fundamentally, the assessment of independence). Others criticised the merging of experiences of the advanced and the emerging countries. See, for instance, Cargill (1995),), Eijffinger and Keulen (1995), Hayo (1998), Posen (1993)

[6] Fiscal financing, fiscal dominance or the monetisation of debt are notions with content similar to the central bank financing of the deficit.

[7] Market investors may be willing to finance unsustainable budgets, even for longer periods of time, because of being short-sighted and driven by the possibility of momentary profits.

absence of sufficient market financing. As high deficit in the budget fuels inflation, the central bank responsible for price stability will refrain from central bank financing enabling the high deficit based on its own set of objectives. In most countries, central bank laws exclude the possibility of financing the budget, which also includes a paradox. Independence means a higher degree of freedom, while the prohibition takes precisely that freedom from the central bank to make the decision on whether or not to finance the state with its own instruments.

In other words, one can bring up arguments for central bank independence not only from the viewpoint of price stability and the efficiency of monetary policy, but also from that of budget sustainability. To use a profane metaphor: an alcoholic recognising his harmful passion will remove alcohol from his home, so as to render access to it more difficult in bad moments.

3. Public trust in a central bank (its credibility) means that economic agents regard the declared objectives of monetary policy as stable and accept them, and they believe that the central bank is committed to and able to meet its mandate. If the credibility of a central bank is low, i.e. the public has no trust in achieving the price stability objective, and shapes its expectations on the basis of this perception, inflation is very likely to be higher. The higher the credibility of a central bank, the lower the real economic cost of the fight against inflation. If the central bank is part of the government structure, people will have reason to believe that the central bank will not be able to consistently act to achieve its declared objectives. Low inflation is not a primary objective for economic policy as a whole (see point 1 above), hence it cannot be a primary objective for the central bank either. The public will have reason to fear that the objective will be changed or that the objective is no more than an empty declaration. The operation of the central bank free of political influence is a necessary precondition to central bank credibility. An automatically higher level of credibility does not, however, follow from an independent status. If a central bank makes professional errors, if it gives in to political pressure, if it fails to meet its objectives serially as a result of exogenous factors, its credibility will be damaged.

Authors in political economy fundamentally approach the issue of central bank independence from the side of political fragmentation and interest relations. According to Bernhard (1998), in the event of a coalition government, the different political preferences of the partners, any eventual tensions between the government and its own legislators can be more easily managed, if the central bank is independent, because at least the debates concerning exchange rate, inflation and anti-inflationary measures do not burden the relationship of the parties. They can blame the central bank for unpopular measures instead of one another. Central bank independence is one of the instruments of reinforcing government stability. When there is a high degree of identity of views between coalition partners, political monochromaticity and a non-democratic establishment, there is less chance of central bank independence. Crowe and Meade (2007) showed a positive correlation between central bank independence and the democratic political setup. According to Hallerberg (2002), in the event of a federal structure the holders of local power may support central bank independence in order to mitigate the weight of the central power. According to De Haan és Eijffinger (2016), the greater the political fragmentation in a country (e.g. coalition government, disputes between coalition partners, a strong system of checks and balances, a federal state organisation), the higher the chance of a central bank becoming independent.

Several authors explain the fact that central banks have become independent through the lobbying activities of economic interest groups. Had price stability been of the same significance for every social group, none of the social groups would have any special interest in central bank independence. Inflation and monetary policy decisions impact individual social groups differently. Responses appear depending on the size of the group concerned, the extent of being aware of belonging to the group, the interest enforcement capabilities, etc., in different forms (changed inflationary expectations, changing wage demands, newspaper articles, protest movements, etc.). According to Posen (1995), the greatest losers of high and sudden inflation are the companies of the financial sector, hence the establishment of institutional conditions best facilitating the implementation of price stability is largely in their interest.[8] In Posen's interpretation, the entire society wins with the implementation of price stability, since the companies of the financial sector facilitate the enforcement of the public good by supporting central bank independence while they are pursuing their own interests. Interpreting Posen, Hayo and Hefeker (2001) state: "... it is not really central bank independence that causes monetary policy to strive for low inflation rates. Rather, central bankers simply reflect the interests of a specific group, namely the private financial sector, which is ultimately the source of low inflation." (p. 17)

Stiglitz also believes that the central bank enforces the interest of the financial sector. In contrast to Posen, however, in his view private interests are enforced to the detriment of the public good in the meantime. Financial interest groups exercise pressure on the central bank through their personal relationships and the public with a view to having monetary policy decisions made, which suits them. "America's central bank was captured by Wall Street: [Fed] came to reflect the ideology and interests of the financial sector, which it was supposed to regulate." "... delegating the conduct of monetary policy and regulations to those who come from and reflect the interests of the financial market is going to result in policies that are not (and were not) necessarily in society's broader interests." (Stiglitz (2013) p. 31) Stiglitz's assessment – if understood to refer to modern central banks in general – is excessive, yet his proposed solution is remarkable. As early as 10 years before the outbreak of the global crisis, he advocated not the subordination of the central bank to the government, but a combination of central bank independence and a broader social representation, i.e. stronger social control over the central bank than at present. He regarded the central bank representation of consumers, traders and employees as desirable considering it not as a constraint on central bank independence, but as better compliance with a democratic setup. (Stiglitz (1998) In 1998, he still regarded this as an appropriate solution for enforcing social interests. Since then Stiglitz's assessment has changed radically (see later).

[8] Banks tend to finance their longer term credits from short-term funds. The interest rate on short-term funds follows changes in inflation. If banks were to raise the lending rates on longer maturities in line with the rise in inflation regarded to be transitory, then the rise in real rates following the curbing of inflation would give rise to a deteriorating return on credits. If expecting a reduction in inflation, banks raise their lending rates ab ovo at a rate lower than the rise in inflation (and of deposit rate), then with the shrinkage of the margin, their net interest revenues decline. The plausible banking response to a rise in inflation is largely a reduction in lending activity.

Difficulties of measurement and of interpreting measurement results (de jure vs de facto independence)

There are many known procedures for expressing a quantified extent of independence. The original sources of measuring independence are the Cukierman-Webb–Neyapti (CWN) and the Grilli-Masciandaro-Tabellini indices. Both procedures are based on the combined assessment of the sub-constituents of independence.[9] Individual central banks can be placed on a scale of independence based on the indices, and time comparisons can also be made. The subsequent refining of the measurement procedures taking into account new variables, omitting certain variables and the modification in the data sources used resulted in new and newer independence indices. (For instance, Crowe and Meade (2007), Dincer and Eichengreen (2014), Arnone, Laurens, Segalotto and Sommer (2007), Masciandaro D.- Romelli D. (2017). A detailed presentation of the measurement procedures is not the subject of this article. The CWN index is presented in the Appendix only to illustrate the technology of the procedure. The number of the criticisms of the calculating procedures is almost proportionate to the expansion of the independence indices. Most of the criticism relates to the variables used or not used, and the subjective elements of assessments and the weighing system.

The concurrent conclusion of the measurements applying different procedures is that central bank independence has reached a very high level by the early 2000s, starting from the low level of the early 1990s. Crowe and Meade calculated the value of the CWN index using 2003 data projected to a range of countries broader than originally. The results show a significant increase in central bank independence. In particular, the independence of the central banks of the emerging countries and within them the Central East European EU Member States rose spectacularly. (Crowe-Meade (2007))[10] The distinction of de jure and de facto independence, however, adds hue to the picture. Independence indices measure the kind of autonomy guaranteed by the formal rules applicable to a central bank and “de jure institutional rules are not good indicators of actual independence” (VULETIN G.- ZHU L. (2011) (p. 1209)[11] The figures for legal independence tends to overestimate the extent of the actual independence of central banks. De facto independence is hard to measure, yet public opinion tends to recognise sooner or later if a central bank is independent only on paper and this may be the source of serious problems of credibility/expectation. Below, certain manifestations of the difference between de jure and de facto independence are discussed.

The various indices regard a central bank all the more independent, the greater the influence of parliament or the head of state standing above political parties on the appointment of the central bank governor (central bank decision-makers)[12] In reality, however, the government (the prime

---

[9] For a more detailed comparison of the two procedures, see for instance Masciandaro D.- Romelli D. (2017) or Mangano (1998).

[H]Balls E.- Howat J. - Stansbury A. (2016), and Dincer and Eichengreen (2014) and Arnone (2007) arrive at a similar result.

[11] According to Cargill (2016) de jure independence is suitable for signalling major shifts in the relationship between the central bank and the government even under the best scenario. Owing to the lack of clarity of the notion and the difficulties of measurement, he recommends the rejection of the use of the notion of independence and instead proposes the application of accountability and transparency.

[12] The CWN index gives a score of 0 (does not regard it independent), if the governor of the central bank is appointed by the government and a higher score, if the role of the government in the appointment process is restricted.

minister) has a decisive role, even if its formal authorisation is restricted merely to initiation, the parliament (or parliamentary committee) has the right of approval and the head of state effects formal appointment. The rejection of the prime minister's proposal is not much more than a formal possibility for the head of state or the parliament. In particular, that is the case when the parliament and the head of state do not have a controlling function over power. Governments are able to achieve that a person who meets the political preferences of the government the most and who means a personal guarantee that the central bank will function in accordance with these preferences be appointed to head the central bank at the end of the appointment process.[13] The importance of selection is underlined by the fact that after the appointment, the possibilities to influence monetary policy are substantially constrained and there is no legal possibility to remove an inadequate person.[14] If the decision-makers of a central bank are not sovereign thinkers, the central bank will function in subordination to the government even if the rules of appointment, removal and conflicts of interest are the most independent even without instruction and the direct exertion of pressure. In contrast to Stiglitz. we may say that there is a greater risk of the central bank being captured by the (short-term political interests) of the government, then of the (economic private interests) of various economic interest groups.

Central bank governors (and central bank decision-makers) are always political appointees. "The replacement of the departing central bank governor with an allied central bank governor shows relatively low frequency overall the sample amounting to 5.4% of the total of governor changes. It is interesting, although not surprising, that there is a substantial difference between developing and advanced countries in this field. While central bank governors in advanced countries do not tend to give up the highest positions of ministries or government institutions for their new mandate, in developing economies 8.5% of the total central bank governor changes were central bank governor positions following government posts held till then. This practice occurred in the case of 11 of the 21 developing countries in the sample." [15] (VULETIN and ZHU (2011) p. 1192 " … it cannot be disputed that the appointment of a person who at the time of his appointment was the highest ranking leader of a ministry or some kind of a government institution represents the clearest case of the capture of the central bank by the government." (VULETIN G.- ZHU L. (2011) p. 1191) Governments, however, do not necessarily use the possibilities available to them in the selection process to make puppets head central banks. A politician's self-restraint and sensitivity to longer term criteria dictates that they do not expect the service of their short-term power and political interests even from a "friendly" central bank governor. Manifestation of this would be to seek multi-party support in initiating the appointment or the invitation of external experts for the parliamentary hearing of the selected persons. Largely, it was the government politicians of leading market economies that showed evidence of their foresight, their respect for longer term criteria, their insight and liberality. In addition to the quality of the persons, the condition of political culture and political power relations also play an important role in the selection process. On the other hand, it depends also on the selected governor to what extent the independence of the central bank is violated in the event of a "friendly" appointment. Compliance with the

[13] "To be sure, the acquisition of control over monetary policy is the primary driver of the appointment process." (Ennser-Jedenastik L. (2013) (p. 6)

[14] "Politicians have an interest in appointing persons with government-aligned preferences to monetary councils and to remove those who go against the government's political actions." (Ennser-Jedenastik L. (2013) (p. 5)

[15] VULETIN and ZHU analysed the data of the governor replacements of 42 countries (21 advanced and 21 developing countries) between 1972 and 2006. They studied altogether 257 cases. They regarded a central bank governor as an ally of the government, who held a high-level government position within a year preceding his appointment.

provisions of the Central Bank Act, the pursuit of the central banking ethos, the demand for professional credibility may clash with the political expectations of the appointer. It is the personal choice of the central bank governor (and the central bank decision-makers) that will decide what he (they) give(s) priority to in the case of such a conflict.

While independence indices frequently show a substantial independence of the central bank based on the rules pertaining to appointment, in reality the appointment process provides substantial opportunities for enforcing political influence. There are, however, other instruments as well for enforcing the government's intentions. The various dimensions of the personal independence of the central bank governor (and the decision-makers) constitute parts of every independence index. It is, however, surprising that the rules pertaining to the determination and the mode of changing personal income are not included among the variables of the indices. It follows that these indices are insensitive to income changes applied as political retaliation or political reward during the period of the mandate. Changing the income is an obvious attempt at changing monetary policy or reinforcing the existing direction. It is also a message to future central bank governors (decision-makers) that their personal incomes depend on how the government assesses monetary policy. If the fundamental mandate of a central bank and the personal income relations of the higher central bank decision-makers are not harmonised with one another, it constitutes a severe structural problem and may be a source of operational disturbances[16]. Because of this, an income rule fixed in advance for the period extending from the moment of appointment to the end of the mandate is an indispensable precondition to central bank independence and a successful implementation of the central bank mandate.

Beyond all this, professional debates between the central bank and the government led to forcing the central bank governor to leave before his time on several occasions. Enforcing the resignation is an obvious violation of central bank independence; the objective of such a step is to change monetary policy in a direction deemed to be right by the government. Such precedents may motivate the next central bank governors to undertake as little conflict with the government as possible having learned from the experiences of their predecessors. Most frequently, what stands in the background to such debates is the difference in views about the contribution of monetary policy to economic growth and the expansion of the elbowroom of the budget. As the rules of recall generally do not provide for an opportunity for political consideration and leave only a minimal possibility for the government to recall the central bank governor, the primary instrument of removal has been the exercise of political pressure. The methods of enforcing resignation extend from persuasion behind closed doors to open attacks questioning the professional qualifications, human dignity and loyalty as citizen of the central bank governor. In their study already referred to, Vuletin and Zhu established that 28 of the 93 bank governor changes in the advanced economies and 105 of the 164 cases in the developing economies took place prior to the expiry of the governor's mandate. They do not give quantitative estimates, but they explain some of the changes before their time with political attacks against the "disobedient" central bankers. Ennser-Jedenastik studied the interrelations between the party affiliations of central bank governors and the governments and heads of states in 30 European countries in the cases of 196 central bank governors between 1945 and 2012. He established that central bank governors having the same party affiliation as the parties in executive power

[16] Giving financial incentives to central bank managers to implement central bank objectives, such as the inflationary target, may have detrimental consequences. A central bank governor may press for the achievement of the inflationary target because of personal material advantage, even if it goes with excessive real economic sacrifice.

had a much longer period in office than nonpartisan central bank governors. The period in office of central bank governors having affiliations with opposition parties was shorter than that of nonpartisan central bank governors. (Ennser-Jedenastik L. (2013))

Legal independence includes the decision-making freedom of monetary policy. Independence indices reward the fact when the government cannot give and the central bank cannot accept instructions in the course of using monetary policy instruments with a high score. In reality, however, the exercise of political pressure is frequent.[17] The instruments of influencing range wide from personal meetings and phone calls through covert hints dropped in statements made to the press, through undisguised demands and threats.[18] Some decision-makers adjust to the political expectations even upon the slightest signals while others do not give in even to the most forceful pressure. The handling of the expectations of public opinion constitutes perhaps an even greater challenge for central banks. The intentional contrasting of public opinion with the central bank is one form of exerting political pressure. A weakening of the acceptance of the central bank by society may also weaken the success of monetary policy because in such a situation it is less to be expected that market expectations change in the manner hoped for by the central bank. The trade-off between independence and social insulation may motivate the central bank to make compromises.

It may happen that de facto independence exceeds the extent of de jure independence. A central bank that is de jure less independent may be able to efficiently enforce the criteria of monetary policy, if the head of the central bank has a substantial ability to enforce interests by virtue of his professional qualifications, personal strength of conviction or the relationship of trust with the prime minister. As this ability is linked to specific persons, the de facto independence arising from this exceeds independence determined by legal regulations so long as the key actors are in office.

Overall, it can be established that the independence of central banks definitely increased over the two to three decades prior to the global crisis, but actual independence has characteristically been lower than that shown by the formal rules and the quantified values of independence indices.

Experiences of the newly introduced inflation targeting in India

India has had long history with high inflation. In the five years ending March 2014, India's annual inflation rate was in double digits. The currency became overvalued, the trade deficit spiralled out of control and the rupee plunged. While RBI has fared better in maintaining financial stability during the crisis years, its anti-inflation record has been mixed over the past decade. It is perhaps to correct the perception of being an ineffective force against inflation that the flexible inflation targeting framework has been adopted. Ironically, India has moved to an inflation-targeting framework just when the intellectual consensus underpinning it has weakened. There is a growing agreement on asserting that inflation-targeting itself is not

[17] Representatives of the financial sector, employers, trade unions, academic circles and international organisations frequently give vent to their opinions in relation to the monetary policy to be pursued. These give useful feedback to monetary policy. The exertion of political pressure is to be distinguished from this, as it means a government intervention to make the central bank deviate from the fulfilment of its mandate.

[18] Havrilesky uses an indicator to measure political pressure. He gives a value of +1 to every occurrence of government demand for tightening in the press, while -1 for loosening it. He draws conclusions as to the strengths and direction of political influence based on the sign and magnitude of the end result. (Havrilesky(1993))

adequate if the central bank ignores risks to financial stability. The very timing of IT introduction suggests that for RBI the establishment of a credible nominal anchor and an anchor of inflation expectation remain the main priorities..

The Finance Act 2016 of May 2016 amended the Reserve Bank of India Act, 1934 to state price stability as the primary objective of the monetary policy, adoption of flexible inflation targeting with CPI as the nominal anchor for monetary policy along with the setting up of a Monetary Policy Committee (MPC) to set the policy rate to achieve the inflation objective The amended RBI Act came into effect in June 2016. In August 2016, the Government notified an inflation target of 4.0 per cent, with 6.0 per cent and 2.0 per cent as the upper and lower tolerance levels respectively, for the period up to March 31, 2021. A six member MPC was constituted in September 2016. The MPC meets on a bi-monthly schedule. Having made these changes I*ndia formally adopted flexible-inflation targeting in early Fall of 2016.*

The change has to be seen in the context of macroeconomic developments that preceded the introduction of IT. Since 2000, the Indian economy underwent three distinct phases with different inflation trajectory and policy response.

1. **Moderate Inflation and Strng Growth, 2000-2008**
   In the early 2000s monetary targeting was in force in India. The policy operated without an explicit nominal anchor but with low and stable inflation. The macro-economic scenario in early 2000s was that of an economy experiencing considerable slowdown in growth resulting from a combination of domestic and external factors. As a result of low food inflation and weak overall demand inflation remained well inside the comfort zone of RBI. With growth firming up, underlying inflation pressures started to emerge in early 2005, prompting a reversal of monetary policy stance to a tightening mode. By 2008 inflation as measured by WPI breached single digits to a level much above the comfort zone of the Reserve Bank. CPI inflation also registered a sharp increase. A sustained rise in global commodity prices in general and especially that of crude oil and its lagged pass-through to administered prices shot up fuel inflation and through the input cost channel and second round effects fed into the underlying inflation process. Further, the economy was showing signs of over-heating from growth rates in excess of 9 per cent for three consecutive years. The policy rate was raised by a cumulative 300 basis points to a peak of 9 per cent in 2008. The cash reserve ratio (CRR) was increased sharply concomitant with rate hikes

2. **Persistently High Inflation: 2008-2013**
   Following the Lehman Brothers collapse GDP growth in India saw a sharp fall. However, as calm returned to financial markets, by second half of 2009, growth saw a sharp rebound to 9 per cent in 2010-11 aided by both expansionary fiscal policy and monetary easing. Hence, the large negative output gap at the start of 2009 turned positive. A series of supply side commodity price shocks, pushed inflation to around 10 per cent in 2010. One of the proximate cause was the monsoon shock of 2009 and the resultant rise in food inflation. Rapidly increasing world oil prices, though partially offset by administered price mechanism led to higher domestic prices. Consequently, given the post-crisis slowdown in potential output, strong demand pressures along with rising input costs, through wages and raw-material prices, quickly transmitted to output prices of goods and services leading to sharp increases in underlying inflation.

Persistent food and fuel price shocks in a context of low monetary policy credibility led to drift in inflation expectations contributing further to overall inflation persistence. Entrenched inflationary pressures led monetary policy to shift to aggressive tightening. However, on concerns of a sharp slowdown in the economy policy rates and signs of moderation in inflation, key policy rates were eased during 2012 and the first half of 2013. The lack of a credible nominal anchor during this period, and the consequent de-anchoring of inflation expectations, has had negative impact on overall macro-environment. Persistent and elevated inflation in the post-crisis period led to an erosion of savings in view of negative real interest rates on bank deposits, loss of competitiveness and worsening of trade deficit. It was in this context that the need for a review of the monetary policy framework was felt.

3. **Disinflation and a New Framework: 2014 – till date**
   Though CPI inflation moderated from double digit levels to single digits, it continued to remain elevated and persistent at the start of 2014, as the pass-through of exchange rate depreciation following the US tapering played out through the economy. To break the inflation persistence, key policy rates were increased in January 2014. By the second half of 2014 underlying inflation started to ease on a more sustained basis. This was further aided by sharp fall in commodity prices especially crude oil and the return of a relatively stable exchange rate. Furthermore, food inflation moderated towards the end of 2014. As a result, headline inflation saw a rapid decline to 5.2 per cent in January 2015. Along with it household inflation expectations moderated somewhat and expectations on part of professional forecasters became better anchored to the inflation glide path. Since January 2015 inflation conditions evolved generally in accordance with the disinflation glide path reaching 5.7 per cent in January 2016 (below the disinflation target of 6 per cent set for January 2016). As the economy remained within the path of broad-based disinflation, with a view to support growth, in a scenario of renewed concerns on the strength of recovery of global economy, the policy repo rate was reduced by 150 bps during January 2015 to April 2016. The move towards a flexible inflation targeting framework was formalized through an agreement between the RBI and the government in February 2015 and was actually implemented in the third quarter of 2016. Following its decision to lower the policy repo rate by 25 basis points (bps) shortly after its creation, the MPC decided to hold the policy rate in the December 2016 and February 2017 meetings.

Not only that the RBI could successfully execute the declining path, the inflation target for 2016-17 was met. The average consumer price inflation declined to 4,9 per cent in 2015-16 and 4.5 per cent in 2016-2017. Recent inflation and output growth developments have undershot the forecasts set out in the October 2016. Headline inflation declined to significantly low levels during November 2016-February 2017, much lower than projected in the October 2016. RBI staff's baseline path for headline CPI inflation is expected to take it from its current level of 3.7 per cent (February 2017) to 4.2 per cent in Q1:2017-18, and 4.7 per cent in Q2. Professional forecasters surveyed by the Reserve Bank expected CPI inflation to pick up, however, their medium-term inflation expectations (five years ahead) remain at 4.5 per cent, close to the Reserve Bank's medium-term inflation target of four per cent. These predicted developments justify an unchanged monetary policy stance.

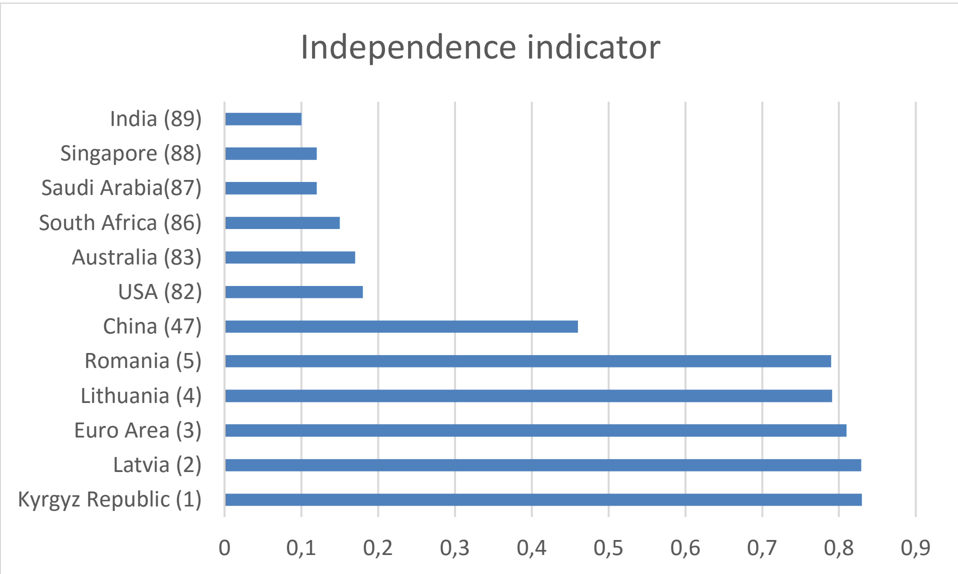
Institutional issues of inflation targeting in India

A new governor was appointed as head of RBI in August 2016. Dr Urjit Patel as new governor of the Reserve Bank of India (RBI) will replace Dr Raghuram Rajan who completed his three-year tenure on September 4, 2016 but decided not run for the two year extension of the term which is normally allowed and has been a common practice for long time. Actually, Raghuram Rajan is the second Reserve Bank Governor who will be leaving RBI without getting a five-year term in the last 25 years — since 1991 when India started liberalizing its economy. According to friends and colleagues. the decision to quit came because of lack of support from the Finance Minister and the Prime Minister. Influential politicians of the current ruling party accused Rajan of being "mentally not fully Indian". Rajan was selected by the previous government. According the newspaper sources, a selection panel was set up to consider a field of candidates rather than directly offer the governor in office an extension to his three-year term, effectively forcing him to reapply for his own job. He may have felt limited chances to be reappointed and decided not to run for the position.

The newly appointed governor Dr Patel was Deputy Governor of RBI looking after monetary policy, economic policy research, statistics and information management, deposit insurance, communication and right to information.

This change in the governor’s position makes the discussion of RBI independence of topical interest.

The Government has been repeatedly asserting that RBI should be content with ‘full’ autonomy. Or as the words of the Finance Minister say: „the government fully respects the independence and autonomy of the Reserve Bank of India”. By and large, the Indian government leaves the central bank alone.However, the de jure independence of RBI is rather limited. According to Dincer-Eichengreen(2014) India has the lowest independence score in a group of 89 countries investigated.



Source: Dincer-Eichengreen(2014) *Country's rank among 89 countries is indicated in parentheses

This low score of India is mainly attributable to two formal rules.

First, The RBI Act (Section 7 on Management) lays out things quite unambiguously. Part (1) of Section 7 states: "The Central Government may from time to time give such directions to the Bank as it may, after consultation with the Governor of the Bank, consider necessary in the public interest." This point gives a great deal of power to the government as it is the government itself who determines what the public interest is. Subjectivity and political considerations may play an outstanding role in this. One also has to admit that this instruction power has never been used in the history of the RBI, yet. Nevertheless, the very existence of it may force to RBI policy makers to an ex ante adjustment in order to avoid the worst. Most of the times, there are other ways to make government will prevail than the usage of the nuclear weapon of instructions. A large part of the banking system is state-owned in India and functions under the directions of the finance ministry. If RBI is in conflict with the ministry, and the finance minister is unable to remove the RBI governor, it is possible for him or her to frustrate the efforts of RBI through directives issued by the banking division of the finance ministry.

There is no widespread discussion to change status of RBI. However, there are isolated suggestions to give constitutional protection to RBI's autonomy. Chandavarkar, A. [2005] But at a time when support for central bank independence seems to be waning globally, it may not be easy for RBI to demand and gain greater autonomy. Nor will legislators be keen of RBI's greater autonomy.

The Dincer-Eichengreen(2014) ranking reflects 2010 data. To be sure, there would also have been some improvement in the RBI's independence ranking after adoption of the inflation targeting framework. However, one can also argue that in the pre-IT times too much power concentrated in one hand. In India, until the monetary policy framework and an inflation target were introduced, it was the RBI which decided what a reasonable rate of inflation should be. It was the RBI Governor — just one person — who had complete control over monetary policy goals and decisions. With a view to strengthening the consultative process in monetary policy, the Reserve Bank of India had constituted a Technical Advisory Committee on Monetary Policy. Nevertheless, the RBI governor had taken sole responsibility for deciding rates. That was vesting too much independence in an unelected official. The proper way to conduct monetary policy is via explicit goals laid out by the elected government which are then executed by a group of experts — a Monetary Policy Committee — rather than one individual, without any interference from the government.

Beside the formal rules, there have been numerous attempts to curtail RBI's autonomy, A committee to examine financial sector reforms laid out several suggestions to clip RBI's wings. The Finance Ministry has summoned the members of the monetary policy committee to New Delhi to discuss government views on interest rate policy. Two sessions have been proposed: one with RBI representatives in the MPC and then one with the outside members. The chief economic adviser openly said that such meetings would be an attempt to "give structure to the government inputs to the MPC". These meeting are clear attempts to make pressure on MPC members. The most widely discussed issue was the withdrawal of the 500INR and 1000INR bills in the Fall of 2016, replacing 86% of the currency in circulation. The move has had controversial macroeconomic impacts. A shortage of cash caused a temporary drop of overall demand, thus a drop of GDP growth rate, as well. At the same time, illegal cash based economic activities were significantly weakened. According to normal procedures, the decision of the government had to be made on the recommendation of the central board of directors of the RBI. Many raise the question whether this recommendation to the government happened after due deliberations within the central board of the RBI? Were the views of all the board members heard? Were they recorded? It was not clear if there was a special meeting of the central board called for discussing the withdrawal of legal tender issue. Many come to the conclsion that this was a decision of the prime minister only, implemented by the RBI. If the decision was really that of the prime minister and the central board rubber-stamped the decision, then it is clear that the autonomy of the RBI has been severly compromised. One cannot know with certainty if RBI is a believer in the demonetization exercise or a reluctant supporter of the move? If it is the latter, then it should have given a fight. Irrespective of a win or loss, that would have made people perceive that the central bank is independent, as public perception about autonomy is as important as autonomy itself.

The second rule which formally curtails the independence of RBI is the government right to remove the governor. The governor can be removed from office any time by the central government. HE/SHE holds office at the pleasure of the central government. Section 11 of Chapter II of RBI Act states: (1) The [Central Government] may remove from office the Governor, or a Deputy Governor or [any other Director or any member of a Local Board]. Freedom of action by central banks clearly requires fixed tenures for those who head these institutions. Their removability represents a clear counter-incentive to drive monetary policy by the sole goal of price stabilitzy.

History shows that new governments rarely call for new central bank governors quickly. There have been only two instances in the central bank's history of India in which the governor was changed right after a new government came to power. The 12th RBI governor, K.R. Puri, was moved out days after the Janata Party came to power in New Delhi in 1977. In 1990, then RBI governor R.N. Malhotra had to step down to make way for S. Venkitaramanan, after the Samajwadi Janata Party formed the federal government. In all, as many as five of the 28 governors have been made to go by the Government.

"So, you have to distinguish what is *de jure* (by law) and what is *de facto* (in reality) and I think *de facto*, the RBI is independent," Raghuram Rajan, the outgoing governor of RBI said back in 2015. That is to say, that India represents a unique case in regards of central bank independence. In most countries, de jure independence is higher than de facto. India is one of the very rare countries where the reverse is the case.

Conclusions

In the period prior to the global financial crisis, there was an almost general agreement in that the independence of a central bank is a necessary condition of achieving price stability. Independence meant the use of instruments free from the influence of short-term political interests rather than the fundamental goals of the central bank's mandate and monetary policy. Society's control over central banks was ensured by the fora of rendering central banks accountable, and the specification of central bank goals by the legislature. By the early 2000s, central banks enjoy a high level of de jure independence in most countries. The de facto independence of central banks was, however, substantially less than indicated by formal independence indices because of the political criteria enforced in the course of the appointment (and recall) of central bank decision-makers and the political pressure exerted on monetary policy decision-making. It may be a case of pseudo-independence, when a former politician earlier serving in the government or a servile official serving the political interests of the government is placed to head the central bank. After the global financial crisis, the validity of the theoretical considerations laying the foundations for central bank independence transitorily weakened. Neither increasing inflation in the interest of achieving price stability, nor the fiscal financing becoming necessary to enhance the elbowroom of the budget required central bank independence. With the future normalisation of the macro-economic situation, however, these considerations do not lose their validity. Monetary policy goals can be achieved with the highest degree of security with the independence of the central bank also in the post-crisis period. In the wake of the global crisis, the scope of authority of central banks was expanded with the protection of financial stability. Macro-prudential activity can, however, be carried out only in cooperation with the government. Central bank independence is not possible in this area. The two goals and the two forms of operation can be aligned only with grave difficulty. It is difficult to safeguard the independence of monetary policy, simultaneously with the macro-prudential activities carried out in cooperation with the government. The negative social consequences of central bank independence shrinking de facto will become visible when a tightening monetary policy will become necessary in the interest of achieving of price stability in the future, but the central bank may not have sufficient power to bring decisions that might be different from the short-term interests of politicians.

References

Alesina, A. [1988]: Macroeconomics and Politics. NBER Macroeconomics Annual 3 (1988). https://doi.org/10.2307/3584936.

Arnone M. – Laurens B. – Segalotto J.-F. – Sommer M. [2007]: Central Bank Autonomy: Lessons from Global Trends. *IMF Working Paper* WP/07/88

Arnone, M.–Romelli, D. [2013]: Independence Indices and Inflation Rate: A New Empirical Exploration Journal of Financial Stability, Volume 9, Issue 3, 2013, pp. 385–398. https://doi.org/10.1016/j.jfs.2013.03.002.

Balls, E.–Howat, J.–Stansbury, A. [2016]: Central Bank Independence Revisited: After the financial crisis, what should a model central bank look like? Mossavar-Rahmani Center for Business and Government Working Paper Series No. 67.

Bernanke, B. S. [2005]: Inflation in Latin America: A New Era? Presentation, https://www.federalreserve.gov/boarddocs/speeches/2005/20050211/default.htm.

Bernanke, B. S. [2010]: Central Bank Independence, Transparency, and Accountability. Presentation, https://www.federalreserve.gov/newsevents/speech/bernanke20100525a.htm.

Bernanke, B. S. [2016]: “Audit the Fed” is not about auditing the Fed. Blog entry, January 11, 2016., **https://www.brookings.edu/blog/ben-bernanke/2016/01/11/audit-the-fed-is-not-about-auditing-the-fed/**.

Bernhard, W. [1998]: A Political Explanation of Variations in Central Bank Independence. American Political Science Review, 92, 311–27.

Cargill T. [2016]: The Myth of Central Bank Independence MERCATUS WORKING PAPER October 2016

Cargill, T. [1995]: The Statistical Association between Central Bank Independence and Inflation, Banco Nazionale del Lavoro, Quarterly Review 193 , (June), p. 159-72

Chandavarkar, A. [2005]: Towards an Independent Federal Reserve Bank of India Economic and Political Weekly Vol.40, No35, Aug.27-Sep.2, 2005

Crowe C,- Meade E. [2007]: The Evolution of Central Bank Governance around the World Journal of Economic Perspectives—Volume 21, Number 4 —Fall 2007—Pages 69 –90

Cukierman, A. [1992]: Central Bank Strategy, Credibility, and Independence. Theory and Evidence. MIT Press, Cambridge (Mass.).

Cukierman, A.–Web, S.–Neyapti, B. [1992]: Measuring the Independence of Central Banks and Its Effect on Policy Outcomes. World Bank Economic Review, 6, pp. 353–98. https://doi.org/10.1093/wber/6.3.353.

De Haan, J.–Eijffinger, S. [2016]: The politics of central bank independence. De Nederlandsche Bank Working Paper No. 539. https://www.dnb.nl/en/binaries/Working%20paper%20539_tcm47-350814.pdf.

Debelle, G.–Fisher, S. [1994]: How Independent Should a Central Bank Be? in Goals, Guidelines, and Constraints Facing Monetary Policy Makers, Federal Reserve Bank of Boston Conference Series, No. 38. (Fuhrer, J. C. ed.).

Dincer, N.–Eichengreen, B. [2014]: Central Bank Transparency and Independence: Updates and New Measures International Journal of Central Banking 10(1): 189–259. March 2014

Eijffinger, S.- van Keulen, M. [1995]: Central Bank Independence in Another Eleven Countries," Banco Nazionale del Lavoro Quarterly Review 192, (March), p. 39-83

Ennser-Jedenastik, L. [2013]: Party Politics and the Survival of Central Bank Governors. Presentation at a workshop: „Political Parties and the Recruitment of Appointed Elites in Contemporary Democracies", Johannes Gutenberg University, Mainz, Germany, March 11-16, 2013.

Fischer, S. [2016]: Central Bank Independence. Presentation, Herbert Stein Memorial Lecture, November 4, 2015., https://www.federalreserve.gov/newsevents/speech/fischer20151104a.htm

Grilli, V.–Masciandaro, D.–Tabellini, G. [1991]: Political and monetary institutions and public financial policies in the industrial countries. Economic Policy, Vol. 13. No. 6. pp. 341-392. https://doi.org/10.2307/1344630.

Hallerberg, M. [2002)]: Veto Players and the Choice of Monetary Institutions. International Organization, Vol. 56. Issue 6. pp. 775-802. https://doi.org/10.1162/002081802760403775.

Havrilesky, T. [1993]: The Pressures on American Monetary Policy. Kluwer Academic Publishers, Boston. https://doi.org/10.1007/978-1-4757-2228-4

Hayo, B. [1998]: Inflation culture, central bank independence and price stability,"

European Journal of Political Economy, 14, pp. 241-263.

Hayo B.–Hefeker C. [2001]: Do We Really Need Central Bank Independence? A Critical Re-examination. University of Basel WWZ Working Paper No. 01/03, https://doi.org/10.2139/ssrn.264454

Kydland, F.–Prescott, E. [1977]: Rules Rather than Discretion: the Inconsistency of Optimal Plans. Journal of Political Economy, Vol. 85. Num. 3. pp. 473-491. https://doi.org/10.1086/260580

Mangano, G. [1998]: Measuring central bank independence: a tale of subjectivity and of its consequences. Oxford Economic Papers, 1998, Vol. 50. Issue 3. pp. 468-492. https://doi.org/10.1093/oxfordjournals.oep.a028657.

Masciandaro, D.–Romelli, D. [2017]: The evolution of central bank independence and inflation: causal evidence from dynamic indices. Conference Paper, Vancouver, Canada.

Nordhaus, W. [1975]: The Political Business Cycle. Review of Economic Studies, Vol. 42. Issue 2. pp. 169-190. https://doi.org/10.2307/2296528

Posen, A. (1993): Why Central Bank Independence Does Not Cause Low Inflation: There is No Institutional Fix for Politics. Finance and the International Economy, 7, - The Amex Bank Review Prize Essays, ed. R. O'Brien, Oxford Univ. Press

Posen, A. [1995]: Declarations Are Not Enough: Financial Sector Sources of Central Bank Independence. NBER Macroeconomics Annual 10 (1995). https://doi.org/10.1086/654279.

Rogoff, K. [1985]: The Optimal Degree of Commitment to an Intermediate. Quarterly Journal of Economics, Vol. 100. Issue 4. pp. 1169-1189. https://doi.org/10.2307/1885679.

Sargent, T. J.–Wallace, N. [1981]: Some Unpleasant Monetarist. Federal Reserve Bank of Minneapolis Quarterly Review, Vol. 5, No. 3. pp. 1-17.

Stiglitz, J. [1998]: Central Banking in a Democratic Society. De Economist, Volume 146. Issue 2. pp. 199–226. https://doi.org/10.1023/a:1003272907007.

Stiglitz, J. [2013]: A Revolution in Monetary Policy: Lessons in the Wake of the Global Financial Crisis. 15th C. D. Deshmukh Memorial Lecture, Mumbai, 2013.

Vuletin G.–Zhu L. [2011]: Replacing a "Disobedient" Central Bank Governor with a "Docile" One: A Novel Measure of Central Bank Independence and Its Effect on Inflation Journal of Money, Credit and Banking Vol. 43. Issue 6. pp. 1185-1215. https://doi.org/10.1111/j.1538-4616.2011.00422.x.

Appendix

The Cukierman-Webb–Neyapti index uses 16 variables assessed on a scale between 0 and 1, then generates 4 clusters from these, which take on the mean values (weighted or unweighted) of the components. Finally, the ultimate value evolves on the basis of the weighing regime defined from the clusters.

Variable number	Description of variable	Weight	Numerical coding
1	Chief executive officer (cEo)	0.20	
	a. Term of office		
	Over 8 years		1.00
	6 to 8 years		0.75
	5 years		0.50
	4 years		0.25
	Under 4 years or at the discretion of appointer		0.00
	b. Who appoints cEo?		
	Board of central bank		1.00
	A council of the central bank board, executive branch, and legislative branch		0.75
	Legislature		0.50
	Executive collectively (e.g. council of ministers)		0.25
	One or two members of the executive branch		0.00
	c. Dismissal		
	No provision for dismissal		1.00
	Only for reasons not related to policy		0.83
	At the discretion of central bank board		0.67
	At legislature's discretion		0.50
	Unconditional dismissal possible by legislature		0.33
	At executive's discretion		0.17
	Unconditional dismissal possible by executive		0.00
	d. May CEO hold other offices in government?		
	No		1.00

	Only with permission of the executive branch		0.50
	No rule against CEO holding another office		0.00
2	Policy formulation	0.15	
	a. Who formulates monetary policy?		
	Bank alone		1.00
	Bank participates, but has little influence		0.67
	Bank only advises government		0.33
	Bank has no say		0.00
	b. Who has final word in resolution of conflict?		
	The bank, on issues clearly defined in the law as its objectives		1.00
	Government, on policy issues not clearly defined as the bank's goals or in case of conflict within the bank		0.80
	A council of the central bank, executive branch, and legislative branch		0.60
	The legislature, on policy issues		0.40
	The executive branch on policy issues, subject to due process and possible protest by the bank		0.20
	The executive branch has unconditional priority		0.00
	c. Role in the government's budgetary process		
	Central bank active		1.00
	Central bank has no influence		0.00
3	Objectives	0.15	
	Price stability is the major or only objective in the charter, and the central bank has the final word in case of conflict with other government objectives		1.00

	Price stability is the only objective		0.80
	Price stability is one goal, with other compatible objectives, such as a stable banking system		0.60
	Price stability is one goal, with potentially conflicting objectives, such as full employment		0.40
	No objectives stated in the bank charter		0.20
	Stated objectives do not include price stability		0.00
4	Limitations on lending to the government		
	a. Advances (limitation on nonsecuritized lending)	0,15	
	No advances permitted		1.00
	Advances permitted, but with strict limits (e.g., up to 15 percent of government revenue)		0.67
	Advances permitted, and the limits are loose (e.g., over 15 percent of government revenue)		0.33
	No legal limits on lending		0.00
	b. Securitized lending	0.10	
	Not permitted		1.00
	Permitted, but with strict limits (e.g., up to 15 percent of government revenue)		0.67
	Permitted, and the limits are loose (e.g., over 15 percent of government revenue)		0.33
	No legal limits on lending		0.00
	c. Terms of lending (maturity, interest, amount)	0.10	
	Controlled by the bank		1.00
	Specified by the bank charter		0.67

	Agreed between the central bank and executive		0.33
	Decided by the executive branch alone		0.00
	d. Potential borrowers from the bank	0.05	
	Only the central government		1.00
	All levels of government (state as well as central)		0.67
	Those mentioned above and public enterprises		0.33
	Public and private sector		0.00
	e. Limits on central bank lending defined in	0.025	
	Currency amounts		1.00
	Shares of central bank demand liabilities or capital		0.67
	Shares of government revenue		0.33
	Shares of government expenditures		0.00
	f. Maturity of loans	0.025	
	Within 6 months		1.00
	Within 1 year		0.67
	More than 1 year		0.33
	No mention of maturity in the law		0.00
	g. Interest rates on loans must be	0.025	
	Above minimum rates		1.00
	At market rates		0.75
	Below maximum rates		0.50
	Interest rate is not mentioned		0.25
	No interest on government borrowing from the central bank		0.00
	h. Central bank prohibited from buying or selling government securities in the primary market?	0.025	
	Yes		1.00
	No		0.00

Source: Cukierman, A.–Webb, S.–Neyapti, B. [1992] pp. 358-359