

Financial stability between liberalization and regulation

Cristian IONESCU

The Bucharest University of Economic Studies
cristian.ionescu@economie.ase.ro

Abstract. *The economic crisis that began in 2008 raised the problem of bringing into discussion some very important economic issues, including financial instability, which is perhaps the most serious and important one. Thus, given that economic policies seek not only to solve and to present alternatives, but also to be a part of a broader vision that includes longer temporal considerations, the financial instability approach also involves ideological reviews, policy reviews and so on. Thus, the central idea of this paper is that there is liberalization versus regulation dilemma, especially in the banking sector. The paper aims to analyze the effects of the benefits and costs of both options on financial stability, taking into account the link between the financial economy and the real economy. The paper also offers some solutions and future prospects.*

Keywords: financial stability, financial liberalization, financial regulation, banking sector, economic policies.

JEL Classification: E22, E32, E44, E51, E61.

REL Classification: 8J, 8M.

1. Financial liberalization and instability

Financial liberalization aims to eliminate inefficiencies through: 1) the banking activities liberalization, by eliminating the interest rate threshold and ceiling on bank deposits and loans, removing the interest contingents, removing the preferential interest rates, reducing the obligatory reserve requirements; 2) relaxation of restrictions on non-banking financial intermediation activities, in order to increase competition; 3) the creation of new markets; 4) the progressive privatization of the state banks and using a policy that favours foreign bank penetration.

There are several liberalisation proxies that have been used in the economic literature. But there are two main problems regarding them: a) their behaviour indicates that liberalisation reversed significantly; b) these are endogenous measures of liberalisation, which are affected by factors other than liberalisation. Some of the liberalization proxies are: the ratio of stock of personal sector consumer credit to gross domestic product; interest differential between deposit and borrowing rates; loan-to-value and loan-to-income ratios and mortgage equity withdrawal (Corugedo and Price, 2002)

2. Financial liberalization, instability and banking regulations

Financial liberalization influence the banking stability and therefore the financial stability through several channels of transmission.

First, interest rate deregulation is correlated with an increase in the level of interest rates. But due to maturity mismatch, which is linked to the maturity transformation of banking

intermediaries, the performance of banking intermediaries may decrease when deregulation increases the cost of banking resources, while interest rates on assets do not react very rapidly due to their longer term.

Second, financial liberalization involves the opening of the financial system. Financial liberalization may lead to the creation of regional financial centres. For the banking sectors, the opening of the financial system offers the possibility of raising funds in foreign stock markets; this is the currency mismatch situation, where the granted credits are secured with short term currency commitments; in the case of capital outflows, this is a weakening factor. These imbalances might explain some of the previous banking crises.

Third, the bank loans deregulation increases the number of granted commercial bank loans to the private sector. There are two indicators that illustrate the credit availability easing.

The first indicator is the comparison of real domestic credit growth rates in the private sector and gross domestic product, which emphasize that the countries where the credit increases faster than gross domestic product on long-run are followed by a monetary crisis.

The second indicator is the evolution of the ratio of domestic credit to gross domestic product, which evaluates the lending boom. Every lending boom was prior the financial liberalization. The expansion of domestic credit is correlated with monetary crises, implying a higher risk of swings in investors' confidence. The lending boom involves a growth in credit risk beard by commercial banks, which increases the probability of banking balance sheets erosion.

The lending boom implies an "over borrowing syndrome" (the transition's result from a repressed economy to a liberalized economy). This syndrome raises questions regarding the solidity and efficiency of the banking system. So, the government's guarantee on banking deposits has a counter-productive effect on financial stability; thus, "institutional failures" are a part of the mechanism of moral hazard.

The expansion of liberalization is affecting the real sector through two main channels: 1) easy monetary policy, which stimulates activity through an increase in permanent income; 2) access to credit allows firms to exploit technologies, leading to productivity gains (which has a direct effect on real activity).

Regarding the role of institutional factors in the banking crisis (which may lead to financial instability episodes), it can be noticed that: i) the deposit insurance increases the probability of a banking crisis (moral hazard is higher than the stabilizing effect of insurance); ii) the weakness of the legal system is an important factor in banking crises; iii) contractual arrangements of the creditors' rights over borrowers have a less significant impact.

The institutional logic rests on three pillars: 1) the first-best situation (prudent financial supervision is completely efficient); 2) the second-best situation (the necessity to supervise the composition of expansion in banking lending and its aggregate level, in order to monitory the inadequacies from the supervisory system; it is a question of a policy of negative directed credit programs that aims to ensure and maintain financial stability); 3) the third-best situation (the measures

are followed by controls that aim to restrict the entry of capital, in the case of a moral hazard problem in the financial system).

There are five requirements in order to achieve a successful liberalization: (i) adequate supervision and prudential regulation for commercial banks; (ii) a reasonable degree of price stability; (iii) budgetary discipline, which limits the negative effects of inflation tax; (iv) commercial bank behaviour aimed at maximizing profits; (v) a fiscal system, which is neutral in regards to intermediation activity (Allegret and Dulbecco, 2003).

The emerging economies have weaker regulation systems than the developed countries. So, they are very vulnerable to shocks after a financial opening, which requires the public intervention in the financial sector. Therefore, the increase of banking crises in the emerging markets may be a result of excessive financial liberalization, followed by an inadequate institutional infrastructure.

3. Financial instability and financial liberalization

Regarding the financial liberalization' effects on the macroeconomic stability, for the economies with an intermediate level of financial development, the full financial liberalization, by opening the domestic markets to foreign capital flows, is destabilizing, leading to periods of growth and capital inflows which are followed by collapse and capital run. But foreign direct investment does not have destabilizing effects, because foreign direct investors use their own credit. The economies at intermediate stages of financial development must analyze the manner they will choose to liberalize the capital account. One viable approach is to allow foreign direct investment and to impose initial restrictions regarding the portfolio investment.

Higher investment generate higher output and higher profits, which improve creditworthiness and increase borrowing which also leads to higher investment. So, the capital inflows finance the boom, which increases the demand for country-specific factors and the price relative to the output good. This increase of the input prices reduces the profits, the creditworthiness, the borrowing, the investment and the aggregate output. After the investment fall, all these processes are reversed and they create the conditions for another boom. This endogenous instability is causing shocks that have persistent effects.

At very high levels of financial development, investment do not face cash flows constrains; thus, cash flows shocks are quite irrelevant. At very low levels of financial development, firms have to manage borrow constraints, being unable to

response to cash-flow shocks. Thus, the disappearance of shocks will not cause any significant turmoil. But the intermediate levels of financial development involve cash flow shocks that lead to significant effects, which may represent sources of instability.

Therefore, opening an economy to foreign capital may be destabilizing: the response of an economy that has a closed capital market, in the case of a cash flow shock, will be limited depending on the available capital to entrepreneurs. Additional funding sources in the case of an open economy will increase the response to a shock or to a high probability / dimension of volatility.

4. Liberalizing foreign lending

It is considered an economy that has low domestic savings; first, the economy is not open to foreign borrowing and lending. At each date, the current wealth of domestic lenders W^L is important (domestic investment being constrained by domestic savings $W^B + W^L$). If it is supposed that the initial levels of entrepreneurs' wealth and the initial levels of domestic lenders' wealth (W^B, W^L) are very small, so initially $p_0 = 0$, domestic entrepreneurs are unable to drain the supply of country-specific inputs. At date 0, domestic savings ($W^B + W^L$) are smaller than the investment capacity $((1 + \mu)W_0^B$, where μ ($\mu > 0$) is the credit multiplier, reflecting the level of a domestic economy' financial development. When $\mu = 0$, the credit market collapse and the investors can use only their own credit. When $\mu W^B < W^L$, opening an economy to foreign lending has no relevant significance, due to the fact that the investment capacity of the domestic entrepreneurs is unable to absorb the domestic savings, so there is no need for borrowing. When $\mu > 1$, there is an excessive investment capacity (as long as $p_t = 0$, where p_t is the price of the country specific factor). Therefore, the domestic interest rate r_t , in a closed economy, is influenced by W^L and μW_t^B , where t is the period and μW^B is the maximum quantity of available lending to entrepreneurs; thus, entrepreneurs makes no distinction between borrowing and lending ($r_t = 1/a$). If $p_0 = 0$ and $W_t^L < \mu W_t^B$, then:

$$W_{t+1}^B = (1 - \alpha)[e + \frac{1}{a} W_t^B]$$

$$W_{t+1}^L = (1 - \alpha)[e + \frac{1}{a} W_t^L]$$

where $1 - \alpha$ is the fixed percentage of the agents' savings in the aggregate wealth; α is the consumed percentage; e is the exogenous income in terms of output, $\frac{1}{a}$ is the productivity proxy.

There are many conditions under which $p_t = 0$ and $r_t = 1/a$ for any t , where the wealth of the entrepreneurs will increase as the rate $(1 - \alpha)/\alpha$ decreases, due to the fact that it is constrained by the reduced level of domestic savings; also, $W_{t+1}^B(W_t^B)$ will intersect the 45 degree line at the point where $p_t = 0$, meaning that there are no persistent fluctuations.

In the case of a fully opened economy to foreign borrowing and lending, the interest rate will be established at the international level r . This might stabilize a closed economy, that otherwise would temporarily fluctuate in order to react to the interest rate movements. But the opening of a closed economy to foreign lending also involves net capital inflows, so the investors acquire the excess of funds demand from the international capital markets. The rise in borrowing increases the bid price of the country-specific factor, which leads to permanent fluctuations of p , W^B and aggregate output.

Figure 1 illustrates the liberalization case. The wealth schedule increases after the liberalization. W_B is the stable steady-state level of wealth of the borrowers before the opening of the economy to foreign borrowing and lending. After the liberalization, W_B is increasing progressively as capital inflows induce the investors' increase of borrowing, investments and profits. During the first two periods of liberalization, the demand for the country-specific factor is low so that $p = 0$. In period 3 (W_3^B) p starts to increase, but there is still economic growth. In period 4 (W_4^B) the price effect of the liberalization will strongly reduce the investors' net worth, leading to a recession. Aggregate lending drops, capital flows run out the country and the real exchange depreciates (p is significantly reducing). But the gain in competitiveness may rebuild the firms' net worth, so growth can eventually continue.

But the illustration from the figure 1 is available only for intermediate levels of financial development. If μ is large enough, there is no volatility in the open economy (as presented by the third segment of the curve that intersects the 45 degree line). When $\mu = 0$, financial opening will not support investment and there will be no capital inflow, so there is no upward pressure regarding the price of the

country-specific input. Therefore, a country that wishes to increase μ , will have to develop the domestic financial sector before fully opening to foreign lending.

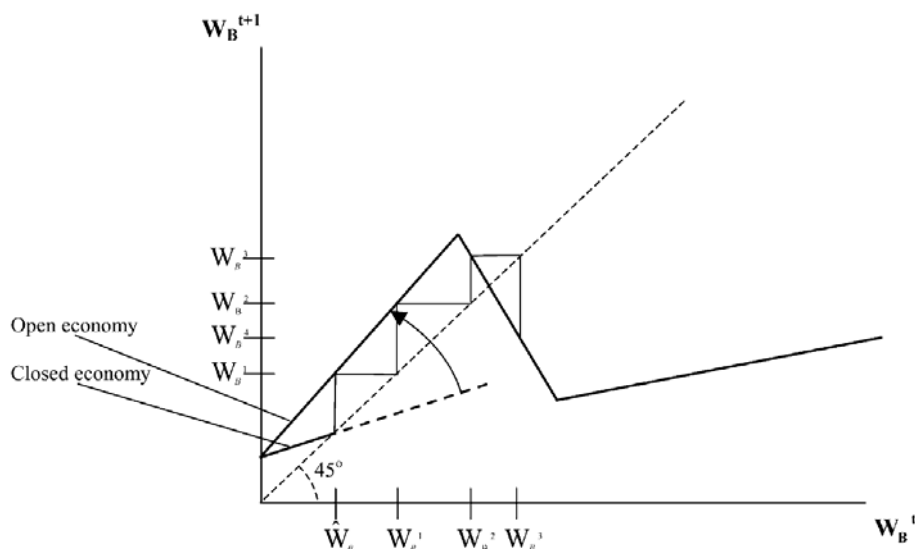


Figure 1. Liberalizing foreign lending

4.1. Foreign direct investment

While a full liberalization may have destabilizing effects, in the case of intermediate levels of financial development, the economies will not face volatility only due to the opening to foreign direct investment. Foreign direct investment is different from other financial flows: these are part of the equity of the firms, and investors have full information regarding the situation of the firms.

If the domestic cash flows are small, so that domestic investment are unable to fully absorb the supply of country-specific factors, foreign direct investors are stimulated to enter the economy in order to take advantage from the low price of the country-specific factors. This will increase and even fluctuate as a result of foreign direct investment. The price fluctuations will affect the distribution of profits between domestic and foreign investors, but they will not affect the aggregate output. The aggregate output will be stabilized at the level of the supply of factor resources Z , where there is a probability that the economy will be destabilized in the situation of a fully opening to foreign portfolio investment.

If the closed economy opens only to foreign direct investment, and if W^L is large enough, and firms can borrow the desired amount from the domestic market, the

foreign direct investment will flow into the economy as long as the investment's rate of return is higher than $r + \delta$. So, if F is the net inflow of direct investment, the equilibrium condition of free-entry is as following:

$$F > 0 \Rightarrow R = r + \delta,$$

where $R = (y - r_{int}L)/(W^B + F)$ is the net rate of return on foreign direct investment and r_{int} is the domestic interest rate. If domestic savings are smaller than the domestic entrepreneurs' investment capacity ($W^L < \mu W^B$), then: $r_{int} = 1/a$. But when domestic savings are exceeding the domestic entrepreneurs' investment capacity, then: $r_{int} = \sigma$, where σ is the return of an alternative and inefficient technology. In the case of a closed economy, lenders will invest in this technology. Even in the case where foreign direct investment leads to a increase in price, it does not generate a price and/or output volatility.

If the economy is opened to foreign borrowing and lending at rate r (only to foreign portfolio flows), it becomes volatile (Figure 4). But the opening to foreign direct investment will stabilize the price of the country-specific factor to p^* . Therefore:

$$(r + \delta)(W^B + F) = Z - r\mu(W^B + F)$$

The resulting effects will be the elimination of investment and output volatility. If the foreign direct investment inflows and outflows are not limited, the price of the country-specific factor and the aggregate domestic gross domestic product will be constant at equilibrium.

Foreign direct investment act as a stabilizing force because unlike foreign lending it is not depending on the creditworthiness of the domestic firms, and because during recessions or unfavourable economic periods foreign direct investors will enter the economy in order to take advantage from the low price of the country-specific factor.

When foreign direct investment and domestic direct investment are complementary, there are several possible situations: a) there may exist legal restrictions, so the total amount of foreign direct investment cannot be higher than a fixed percentage x of domestic investors' wealth W^B ; b) there may be a need for local investors to impose dividend payments or to exert control. Therefore, complementary foreign direct investments ($F \leq xW^B$) may de-stabilize an emerging market economy. But different from the situation of unrestricted foreign direct investment, such direct investments will finally decrease during periods of economic and financial difficulties, when investors' wealth W_{t+1}^B is facing problems. Recessions will be deeper than the recessions where foreign direct

investment is absent, due to the fact that the increase in p_t during the boom period increases the production costs and accentuates the firms' credit-crunch. Therefore, while the unrestricted foreign direct investment has stabilizing effects on an open emerging market economy, opening the economy to restricted foreign direct investment will have de-stabilizing effects.

4.2. Effect of shocks

Although the permanent volatility and permanent cycles are important, it is also essential to analyze the effects of shocks on a fully opened to foreign borrowing and lending economy where firms faces credit constrains.

Figure 2 illustrates the wealth schedule shift after a downward productivity shock. It is taken under consideration the case where the wealth schedule intersects the 45 degrees line on the downward sloping part (which corresponds to intermediate values of μ), with a slope smaller than one, so that the steady-state equilibrium X is an attractor in the absence of a shock on σ . The steady-state equilibrium X' a permanent shock $\sigma \rightarrow \sigma'$ is still an attractor; finally, the economy will be stabilizing in the long-run. But starting from the steady-state point X , the initial effect of a negative shock on σ will determine a severe fall in wealth W_B^t below the new steady-state level X' . Recovery will occur and the economy will converge to the new steady-state X' . Therefore, the shock $\sigma \rightarrow \sigma'$ is initially amplified by an economy with an intermediate level of financial development and which has been fully open to foreign borrowing and lending (Aghion et.al., 1999).

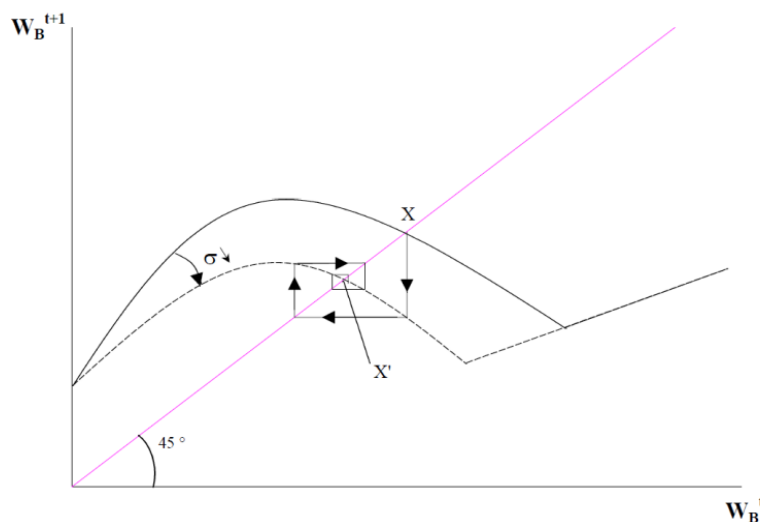


Figure 2. *Permanent productivity shock*

A *temporary* productivity shock $\sigma \rightarrow \sigma'$ (one downward shift in the wealth schedule), will induce a severe fall in output than is warranted by the shock itself (an amplified effect), due to the fact that immediately after the shock the price of the non-traded good is too high relative to the price on the steady-state level. Figure 3 illustrates the dynamic response of output.

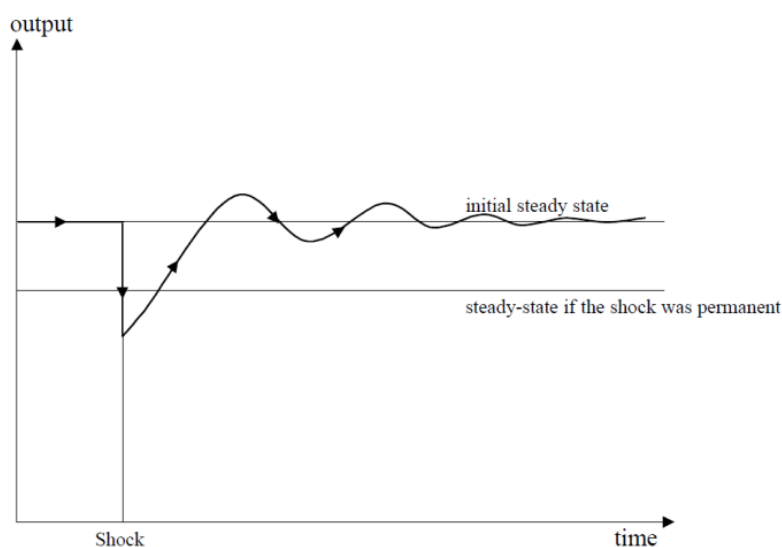


Figure 3. *Temporary productivity shock*

There are two aspects that must be underlined. First, one situation was the one where the steady-state is an attractor. A similar, but more complicated analysis, could be undertaken for the case where the economy converges to a cycle; therefore, a negative shock on σ creates an initially lower level of output than the level on steady-state. Second, the amplified and non-monotonic response pattern is contrasting with the slow (and monotonic) response of wealth and output to a negative productivity shock in an economy that has a very low / very high degree of financial development.

Volatility in emergent open economies is reflected in capital flows volatility and current account volatility. Therefore, financial instability is affecting the real economy, as well as it is affecting the financial economy.

5. Financial development and instability: the role of the labour share

Labour share has an important role in creating instability in emergent open economies.

Financial markets are imperfect, entrepreneurs are credit constrained, the credit constraints are tighter for low levels of financial development. Once the degree of financial development starts to increase, output also increases, but instability appears for intermediate levels of financial development. Changes in the labour share play an important role in eroding profitability. So, financial crises are associated with critical movements in the sharing of value added between capital and labour.

5.1. Dynamic behaviour

There are two main possible regimes: a constrained and an unconstrained regime.

5.1.1. Constrained regime:

If $\mu < \mu_u$, then $\varphi(k^*) < k_u$. Therefore, dynamics of the capital stock are as following:

$$k_{t+1} = \begin{cases} \varphi(k_t) & \text{dacă } k_t < k_u \\ k_u & \text{dacă } k_t \geq k_u \end{cases}$$

If the economy has an entrepreneurial wealth above k_u , then the entrepreneurs are able to finance the optimal stock k_u , and the economy will always stay at k_u . In this case, there are multiple possible dynamics paths: a) if $k^\wedge < k^*$, the capital stock converges monotonically to the steady state; b) if $k^\wedge > k^*$, then various scenarios are possible : monotonic convergence, cyclical convergence, permanent cycles or divergence (Orgiazzi, 2007).

Three of these possible cases are illustrated in figures 4, 5 and 6. Figure 4 illustrates the case where the steady state capital stock is situated to the left of the maximum of the $\varphi(k_t)$ schedule ($k^\wedge < k^*$); therefore, the capital stock increases until it reaches the steady state k^\wedge . Figure 5 illustrates the case of an economy that converges cyclically. Figure 6 illustrates the case of an economy of a two-period cycle. But it is impossible to obtain analytical conditions that indicate the situations where each of these scenarios would prevail.

5.1.2. Unconstrained regime

When the level of financial liberalization greater than μ_u , $\varphi(k^*) \geq k_u$ leads us to a point where entrepreneurs are not constrained; therefore, they invest as much as

they want. In this case, k_u is the maximum quantity that entrepreneurs want to invest in their own technology. At k_u , the economy remains at this level; the dynamics of capital stock are:

$$k_{t+1} = \begin{cases} \varphi(k_t) & \text{dacă } \varphi(k_t) < k_u \text{ și } k_t < k_u \\ k_u & \text{otherwise} \end{cases}$$

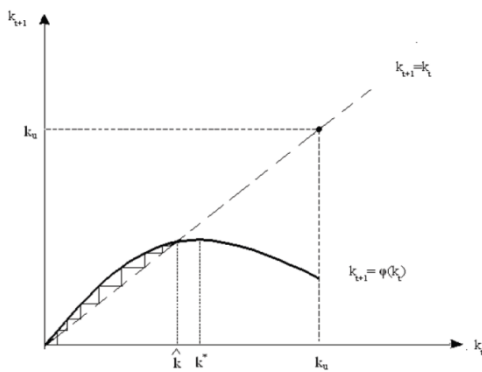


Figure 4. Monotonic convergence to the stable steady state

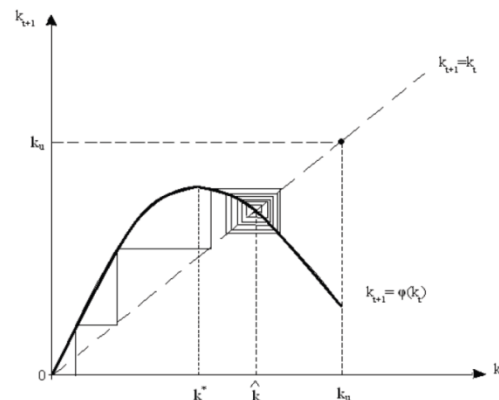


Figure 5. Cyclical convergence to the stable steady state

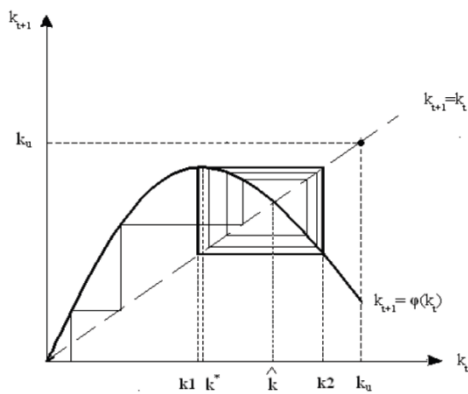


Figure 6. A stable period-2 cycle

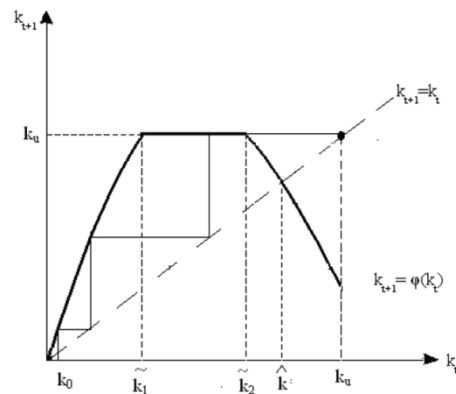


Figure 7. Unconstrained regime

There can be considered the following variables: k_1^{\sim} and k_2^{\sim} , so that $\varphi(k_1^{\sim}) = \varphi(k_2^{\sim}) = k_u$ ($k_1^{\sim} < k_2^{\sim}$). Due to the fact that $\varphi(k_t)$ is concave and $\frac{d\varphi(k_t)}{dk_t} > 0$, for any $k_t < k_u$, then k_1^{\sim} decreases with μ , while k_2^{\sim} increases. A higher μ means a greater range of k values that implies that entrepreneurs are not constrained

(Figure 7). The economy will converge to k_u , cyclically or monotonically, depending on the value of $\mu > \mu_u$ and depending on the initial level of capital.

Notations are as follows: k_t is the capital stock; k_u is the desired capital stock, $\varphi(k_t)$ is the equation of capital stock per worker; k^* is the steady state capital; k^* is the stock of capital at which function $\varphi(k_t)$ reaches its peak; μ_u is the lowest level of financial development in order to ensure that at some point entrepreneurs will no longer be constrained.

6. The government, elections, exchange crisis, banking crises and banking reforms

In an emerging market economy that has achieved a positive steady state economic growth rate g^s , financial intermediation takes place through a large banking sector. But banking supervision is still developing bad loans (BL), which increase over time at a rate α :

$$BL(t) = \alpha(t + 1 - t_\alpha) \text{ if } t \geq t_\alpha, BL(t) = 0 \text{ if } t < t_\alpha$$

The accumulation of bad loans is not observed by market participants, but may be observed by the government, which has the responsibility for banking supervision (through the central bank). α follows the function $\alpha = 0$ until t_α , when it jumps to α^s . Market participants know this function and the probability P^α that α may jump in each period of a given length, but do not observe t_α , the moment when the bad loan problem emerges.

The government is not a benevolent optimizer, but will implement the reform of the banking sector if it serves its political purposes (the re-election at the election date t_{elec}). The electorate is concerned only about economic growth, and will re-elect the government if growth is higher than g^s .

The government knows that cleaning up the banking system will reduce growth by reducing available credit. If it is considered that growth is reduced by the amount of bad loans at the moment of clean up (BL_{reform}), it will gradually return to normal, since the restructuring banks must reduce lending immediately and it takes time for the resources reallocation (figure 8):

$$g = g^s - \gamma BL_{reform} + \min(\theta(t - t_{reform}), \gamma BL_{reform}) \text{ for } t_{reform} \leq t$$

Therefore, the occurrence of the reform ($t = t_{reform}$) raise the gaps by γBL_{reform} and recovers over time to steady state growth g^s .

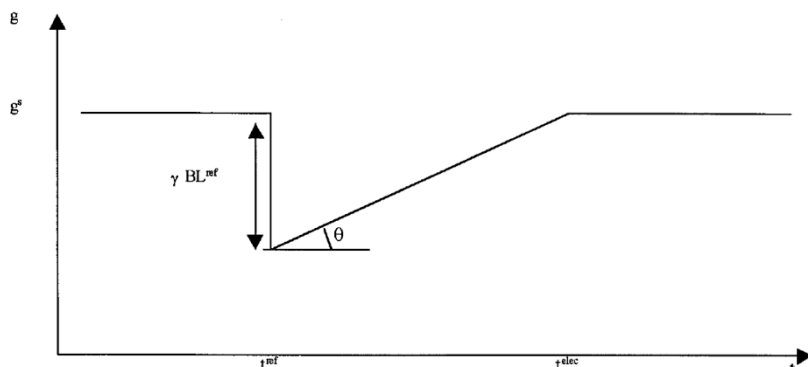


Figure 8. Growth fluctuations after a banking sector revisal

This leads to the first result of non transparency or indecision: if elections are relatively far away, the government will implement a banking sector reform after observing the banking sector problems. But a positive α^s implies that there is a specific period of time, before the elections ($t_{nontransparent}$), after which the government will no longer implement any banking reform, in order not to reveal the problems induced by the severe reduction in economic growth, which would not recover in time for the elections. Therefore, the government stops reform when:

$$t_{nontransparent} = t_{elec} - \gamma\alpha^s/\theta$$

The length of the period in which the government undertakes easy banking supervision or is not revealing the problems is $\gamma\alpha^s/\theta$, and varies linearly with the size of the jump in bad loans, α^s , having an impact of the jump on growth, γ , and an inversely impact with the speed at which growth returns to normal, θ .

There are specific conditions under which non-transparency may lead to an external crisis.

It is assumed that the central bank has reserves in order to honor its commitments (related to the exchange rate and to the objective to maintain an adequate banking system). Therefore, the central bank requires a minimum level of reserves (equal to M1 and to the expected size of bad loans in order to avoid an attack on the currency or a run on the banks):

$$RES_{min} = e(M1 + BL_{exp}),$$

where e is the exchange rate, and RES are the foreign currency reserves. A severe fall of reserves below this minimum level will mean that the central bank is

unable to honor its commitments, so the confidence in a stable exchange rate is lost and the capital will fly over the country, leading to a devaluation of the currency to a new level:

$$e_{dev} = RES / (M1 + BL_{reveal})$$

If the credibility problems of the Central Bank are not taken into consideration, it may be assumed that the central bank prevents the capital flight by devaluing, in order to keep away a potential future greater devaluation. Moreover, it may be assumed that the exchange rate appreciates in order to accommodate a better than expected bad loan result and in order to reward investors for maintaining their currency holdings.

There are three main aspects that must be underlined. The first aspect is related to the “warchest” result: if the country has ample reserves, it do not have to manage a severe speculative attack (neither in the elections period or after the elections period, when the bad loans are revealed). If the size of reserves is higher than the maximum size of bad loans, the central bank is prepared for the worst case scenario and will be able to honor its commitments:

$$RES \geq RES_{warchest} = M1 + BL_{max}, BL_{max} = (1 + \frac{\gamma\alpha^s}{\theta})\alpha^s$$

The “warchest” reserve level is quadratic in the jump in bad loans, α^s , since it affects both the length of period during which the bad loan problem is hidden and the rate at which the problem is accumulated.

The second result is the post-election disappointment or revelation result. There may be a possibility for an exchange crisis occurrence (when the elections are over, the new government is settled, the real state of the economy is revealed, the situation of the bad loan problem is worse than expected). Therefore, the exchange rate may be devalued in order to restore the relation between the exchange rate and the level of reserves. For the case where $RES = RES_{min}$ before the elections, the change in the exchange rate is:

$$1 - \frac{M1 + BL_{exp}}{M1 + BL_{reveal}} \geq 0 \text{ dac\u0103 } BL_{reveal} > BL_{exp}$$

This means that the expected exchange rate change is zero, and that the exchange rate devalues upon a negative surprise. If reserves would allow to a preelection crisis not to occur, and if the size of bad loans is higher than the level that would have triggered a crisis before the election, a crisis will eventually take place.

The third result is the election anticipation result: if reserves are small, a currency attack can't be avoided in the elections period. Taking into consideration the non-transparency problem, market participants can compute the trajectory of the maximum size of bad loans, and they can form expectations regarding the actual size of the bad loan problem. The size of the expected bad loans BL_{exp} depends on the probability distribution of α .

In order to avoid a reserve run during the non-election times, the central bank needs to maintain a minimum amount of M1 in reserves. In order to avoid a reserves run during the elections, the central bank needs to have a "war chest". The size of the additional reserves in order to avoid a pre-election crisis depends on the size of the jump in bad loans α^s and on the impact of bad loans on growth and the speed of adjustment. It is improbable that an independent central bank has insufficient reserves in order to cover the expected bad loan problem if it already covers M1, unless it misreads the market's expectations regarding the quality of the banking sector and if the problems are serious. In such situations, the exchange rate crises will occur after the election period. The misreading of market expectations may occur, especially when the problems are sizeable, and when the negative market perception of the bad loan problem manifests in a large scale by withdrawing the interbank credit lines and loans.

7. Why banks are fragile, and need regulation

During financial crises, banks suffers from runs or liquidity problems. The illustration of the bank balance sheets should be edifying in understanding the fragility of banks, and the need for regulation. Figure 9 illustrates the balance sheet of a "traditional" bank. "There are two types of assets (liquid assets and illiquid loans) and two types of liabilities (capital and retail deposits). The main characteristic of banks that leads to fragility is the mismatch in maturity between assets and liabilities. Customers usually require only withdrawal of funds on a random basis, so the bank may survive with low levels of liquid assets (cash and short term government bonds) and may invest other in higher yielding but illiquid long term loans, while providing "liquidity insurance" to deposit clients at all times" (Davis, 2010).

If the depositors believe that the banks are unable to pay them back, the banks may face a deposit run, where all depositors require funds in the same time. This liquidity problem that rapidly finishes the liquid assets, determine the bank to be unable to sell its illiquid assets at full value (due to the asymmetric information

problem) and may become insolvent. A bank may also become insolvent because of the simple losses on assets in excess of capital. In the case where customers believe that there are more banks with similar balance sheet weaknesses and/or counterparty links to the failing bank, bank runs become contagious across the system.

Assets	Liabilities
Liquid assets	Capital
Illiquid loans	Retail deposits

Figure 9. “Traditional” bank

Bank regulation aims to reduce risks. Capital adequacy regulation makes sure that the level of capital is enough to cover expected losses during loan defaults in a downturn. Liquidity regulation aims to ensure sufficient liquidity that can be accessed, in order to cover peak demands for deposit withdrawals. When liquid assets are inadequate, the lender of last resort function of the Central Bank is providing liquidity to the banks. Deposit insurance aims to prevent runs by providing depositors a guarantee of the nominal value of the assets.

But the changes and developments in recent years are different from this framework. First, deregulation removed the limits to competition between banks, and put a higher weight on the prudential regulations. Second, the growth of wholesale financial markets (short term borrowing from other banks; for example, corporate treasurers and money market funds) have offered an alternative to retail deposits for funding the needs of the banks. Third, there has been a great development of securitisation, so the banks needed no more to hold loans on balance sheet, providing incentives to package and sell them to other investors, taking advantage from the great front-end fees from loan origination. Securitisation and wholesale markets have been a result of the development of globalisation of financial markets and information technology.

“On balance sheet”

Assets	Liabilities
Liquid assets	Capital
Illiquid loans	Retail deposits
Illiquid securities	Wholesale deposits

“Off balance sheet”

Loans being securitised	Illiquid securities
Illiquid securities in SIV/conduit	Asset backed commercial paper with bank back up line of credit

Figure 10. “Modern” bank

Figure 10 illustrates the balance sheet of a “modern” bank, which is a response to the developments that seeks to maximise profitability. Therefore, the liquid assets are reduced to the lowest possible level, due to their low return, in comparison with other assets. Capital is maintained at the required level. In order to grow the balance sheet quicker than the situation with rigid retail deposits, the bank has a great volume of wholesale funding (“liability management”); this type of funding, although it is not typically covered by deposit insurance and held by well-informed investors, is much more subject to runs than retail deposits (Davis, 2010). Loan growth can exceed the given capital and deposits by securitisation of loans.

Regulation of the modern bank is more complex. One key issue is the liquidity regulation, which should take into consideration both the risks of wholesale funding and low liquid asset holdings. Capital adequacy also needs to take account of more complex risks involved by this new structure.

8. Regulations on consolidated supervision

The regulations also involve amendments that affect regulations regarding the consolidated supervision of financial groups. Some of these amendments give the possibility that each financial group is supervised and assessed as a single unit. Therefore, the relationships’ network and the risk-taking behavior through the network are more transparent and easier to supervise (Kálmán and Hamecz, 2003). Moreover, the elaboration of decree-level regulations will allow financial intermediaries to provide better information for supervisory authorities.

The importance of group-level regulations is emphasized by both domestic and international busts, which provides signals that the assessment and inspection of a certain institution on its own is inadequate in order to assess the stability or evaluate the financial position of such institution if there have been cosy institutional or personal links between the institutions supervised and other institutions or even natural persons or if they had vested interests, since such links or interests led to dependence (Kálmán and Hamecz, 2003). The supervision of hierarchical groups requires a different supervisory approach than the supervision of individual institutions. Because of their size, this type of groups is the most important and is a dominant agent in the national and international markets, which underlines the importance of regulations.

The risk of contagion in a single institutional framework leads to contagion between multiple and various financial markets (banks, insurance companies, investment services providers); the effective regulations and supervision are essential in maintaining financial stability.

The aim of this regulations and supervision is to treat institutions dependent on each other (seen as one unit that tries to take advantages from risk taking, that tries to exploit the regulatory arbitrage or tries to avoid special restrictions).

8.1. Regulations pertaining to groups including a controlling credit institution

Provisions pertaining to financial groups that comprise a controlling credit institution and/or a financial holding company that owns the credit institution should be implemented to two circles of institutions. The supervisory authority should: a) keep a record of all institutions and individuals which or who may influence the operations of a credit institution; b) keep a record of all enterprises that may be linked to the business operations due to influences from credit institutions (the close link relationship). Therefore, a supervisory authority should only be entitled to record data and request information in order to properly supervise the credit institution (in Figure 11, the widest possible circle).

The second circle includes: a) investment firms and credit institutions with identical prudential requirements; b) financial companies complementing or ancillary undertakings directly supporting banking operations (Kálmán and Hamecz, 2003). Credit institutions and financial holding companies (Figure 12) should improve these aspects in their balance sheets, in their profit and loss accounts and in their records of positions. Therefore, inter-linked transactions and external risk-taking as a whole are included in various accounts, reflecting risk-taking as if they were one single institution.

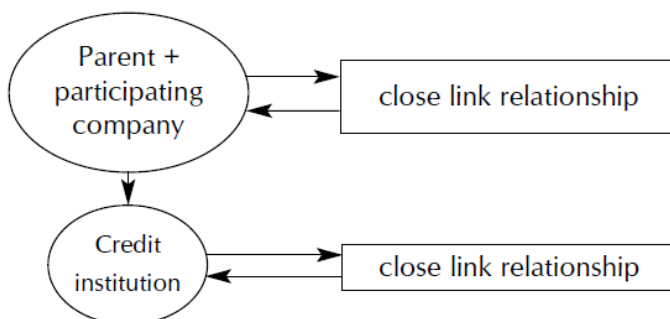


Figure 11. Record-keeping and provision of information

8.2. Regulations pertaining to groups including a controlling investment firm

Credit institutions and investment firms are considered as mutual competitors in the investment services market; they have the same limits of risk-taking, assets assessment, capital requirements and rules of consolidation.

The personnel hierarchy affected by consolidated supervision is similar to the one of credit institution groups (Figure 13). Record-keeping and data provision obligations pertain to entities having a close link relationship with investment firms and their respective parent and participating companies (Kálmán and Hamecz, 2003).

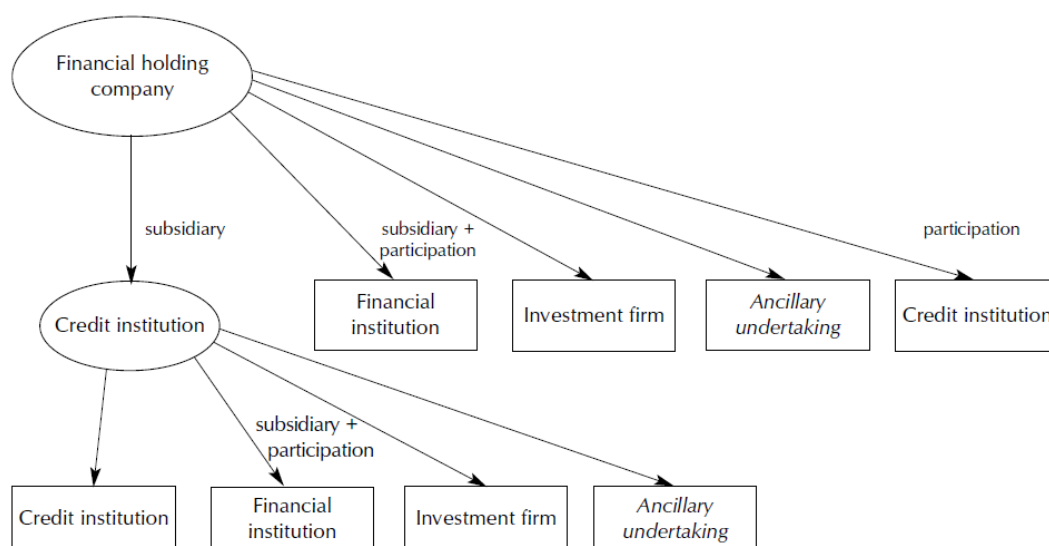


Figure 12. Consolidated requirements

8.3. New organizational obligations of controlling entities

A credit institution or investment firm should be subject to consolidated supervision in the case of a parent company- subsidiary relationship or a participating company relationship (close link relationship) between a institution or firm and a regulated institution. The supervised investment firm or credit institution should inform the supervisory authority of these kind of relationships.

Regarding the business operations of the group, the top management of the controlling entity has the responsibility to meet the consolidation requirements,

due to the fact that the legal regulations should assign responsibility of the supervision of the business operations of subsidiaries to a member of the board of directors.

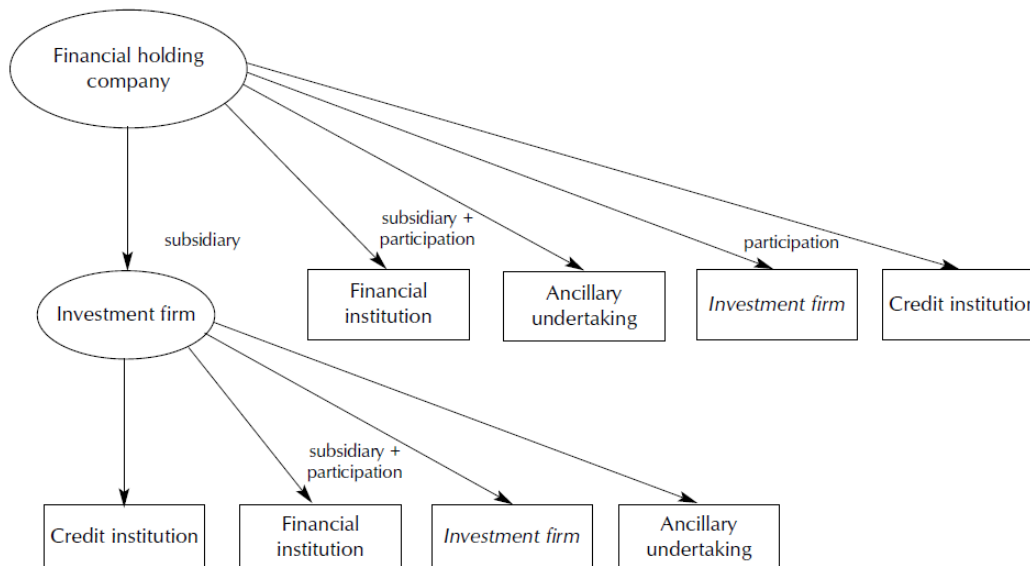


Figure 13. Consolidated requirements

Amendments should not only require supervised companies to comply with the new requirements, but also to facilitate the implementation of the requirements. For example, a controlling entity should request its subsidiaries to meet the group-level requirements, and that the persons that have a close link relationship with the controlling entity should provide to supervisory authorities the needed information regarding the investment firm, financial holding company, controlling credit institution.

For an adequate provision of consolidated data, a controlling entity should have a comprehensive information network that covers the entire group, including an IT system that provides data and a system of internal supervision.

9. Conclusions from a simple cost-benefit analysis of tighter regulation

Changing capital and liquidity ratios leads to changes in probability of financial crises. Thus, it is possible to calculate the expected gross gain from increasing

capital and liquidity, and to compare the gain to the gross costs in terms of output. If it is taken under consideration the net present value of the costs and benefits of a tighter regulation, it would be necessary to take account of the costs of the post crisis recession. This would involve an analysis of the effects of changes in capital and liquidity on bank costs and on the path of consumption and investment over the short-run. The short-run costs of a crisis may be very high, and may outweigh any other costs.

The flow costs of a financial crisis can be computed as a difference between the output

that would have been at time t (yp_t) in the case of no crisis and the output after the crisis (yc_t). If these costs are multiplied by the change in the probability of the crisis that would arise as result of a policy action (tightening capital adequacy) before the crisis, the gross benefit at time t from a tighter regulation of scale j (b_{jt}) may be calculated as following:

$$b_{jt} = dprob_j \times (yp_t - yc_t)$$

These probabilities are seen as high estimates of the probability of preventing the loss of expected output, even if they are adequate estimates of the probability that the improved policy would prevent crises.

Lower value added in the financial services sector also contributes to lower levels of gross domestic product in the future. Capital gains are recorded as a source of income and they are seen as part of gross domestic product, but the losses are not included in income. It is possible that several opportunities for the financial services industry to transform some gains into recorded income, leading to a lower gross domestic product, due to a misclassification of income, and not due to a loss of output, and so not reflecting the lower welfare. These types of losses should not be included in the costs of the crisis.

A complete cost benefit analysis must evaluate the costs of policy actions (c_{jt}). Therefore, the new targets for capital ratios and liquidity requirements should be immediately achieved, either by a rights issue or by an injection of capital by the government.

The cost benefit calculations should take into consideration the net present discounted value of the difference between b_{jt} and c_{jt} using a real discount factor (rr) (Barrell et.al., 2009):

$$NPV_j = \sum_{t=1} (b_{jt} - c_{jt}) / (1 + rr)^t$$

But the tighter capital and liquidity requirements does not necessarily imply the reduction in the probability of a crisis; moreover, tighter regulatory requirements decrease the gain, although it always remains positive.

There are many factors that affect the “optimal” increase in capital and liquidity. For example, policy changes could be less effective in calming the asset price bubbles and in reducing the probability of crisis, so the benefits would be lower (Barrell et.al., 2009), although the estimation of the scale of the reduction in benefits is difficult to compute. Taking into consideration that the benefits increase at a declining rate and that costs increase linearly, any reduction in benefits or costs may lead to different outcomes regarding the policy change that induces the highest expected net benefits.

References

- Elsa Orgiazzi (2007). “Financial Development and Instability: the Role of the Labour Share”, *Munich Personal RePEc Archive*
- Emilio Fernandez-Corugedo and Price Simon (2002). “Emilio Fernandez-Corugedo and Price Simon”, *Bank of England*
- Gianni De Nicolò, Andrea Gamba and Marcella Lucchetta (2012). “Capital Regulation, Liquidity Requirements and Taxation in a Dynamic Model of Banking”, *International Monetary Fund*
- J.-P. Allégret and Ph Dulbecco (2003). “Financial Liberalization and Stability of the Financial System in Emerging Markets: the Institutional Dimension of Financial Crises”, *Review of International and Political Economy*
- Matthieu Bussiere and Christian Mulder (1999). “Political instability and economic vulnerability”, *International Monetary Fund*
- Philip Davis (2010). “Banking on Virtue – exploring the approaches of economics and theology to the financial crisis”, *National Institute of Economic and Social Research*
- Philippe Aghion, Philippe Bacchetta and Abhijit Banerjee (2004). “Financial Development and the Instability of Open Economies”, *National Bureau of Economic Research*
- Ray Barrell, E Philip Davis, Tatiana Fic, Dawn Holland, Simon Kirby and Iana Liadze (2009). “Optimal regulation of bank capital and liquidity: how to calibrate new international standards”, *National Institute of Economic and Social Research and Brunel University*
- Tamás Kalman and István Hamecz (2003). “Report on financial stability”, *Magyar Nemzeti Bank*