We can therefore conclude that the choice of incentive payments is compatible with the constraints if:

$C_{bp} \leq C_p + C_b$ i.e. if there are economies of scope;

$C_b \leq C_p$ if the task of the central bank is more demanding (this is clear if one thinks of the fact that the central bank is also responsible for banking stability as lender of last resort);

$P_{3b} < P_{1b}$ it is natural to expect this given the definition of these probabilities (in other words it is normal to expect that it is easier to achieve banking stability if the authority responsible makes an effort in this direction).

In these cases, in the election period it is to the politician's advantage to appoint a single agent for the two roles.

7. Contract with a single agent in the non-electoral period.

In the post-electoral period, government authorities will want to contain the negative effects, in terms of inflation, deriving from the non-socially beneficial decisions taken, during the election period, to maximize the probability of re-election.

For this reason in the non-electoral period the politician will prefer price stability and stability in the banking system. He will therefore offer the CB the following payments

T_{11} if $E_1 = Bs \cap Ps$

T_{10} " $E_2 = Bs \cap -Ps$

T_{01} " $E_3 = -Bs \cap Ps$

T_{00} " $E_4 = -Bs \cap -Ps$

with (presumably)

(33) $T_{11} \geq T_{10}$, $T_{01} \geq T_{00}$.

The politician's expected net utility in the non-electoral period will be:

$$E(U\text{-}u \mid e_{11}) = H' - K'$$

where

$$H' = G\, P_{2b}\, (1 + P_{1p}\, R) + g\, (1 - P_{2b})\, (1 + r\, P_{2p})$$

and

$$K' = P_{2b}\, [u(T_{11})\, P_{1p} + u(T_{10})\, (1 - P_{1p})] + (1 - P_{2b})\, [u(T_{01})\, P_{2p} + u(T_{00})\, (1 - P_{2p})]$$

The first one (H') is the benefit expected by the politician, while (K') is the cost for the politician.

The incentive expected by CB will be:

$$E(I_p \mid e_{bp}) = T_{11}\, Pr(E_1 \mid e_{bp}) + T_{10}\, Pr(E_2 \mid e_{bp}) + T_{01}\, Pr(E_3 \mid e_{bp}) + T_{00}\, Pr(E_4 \mid e_{bp}) - C_{bp}(e_{bp}).$$

The incentive and participation constraints become :

$$(34) \quad \begin{aligned} g_1 &= E(I_p \mid e_{11}) - E(Ip \mid e_{10}) \geq 0 \\ g_2 &= E(I_p \mid e_{11}) - E(Ip \mid e_{01}) \geq 0 \\ g_3 &= E(I_p \mid e_{11}) - E(Ip \mid e_{00}) \geq 0 \\ g_4 &= E(I_p \mid e_{11}) \geq 0 \end{aligned}$$

or

$$(35) \quad \begin{aligned} g_1 &= g_4 - E(I_p \mid e_{10}) \geq 0 \\ g_2 &= g_4 - E(I_p \mid e_{01}) \geq 0 \\ g_3 &= g_4 - E(I_p \mid e_{00}) \geq 0 \\ g_4 &= E(I_p \mid e_{11}) \geq 0 \end{aligned}$$

The costs of effort will assume the same values already seen in (32), that is[25]:

$$(32) \quad C_{bp}(e_{bp}) = \begin{cases} 0 & \text{if } e_{00} \\ C_{bp} & \text{if } e_{11} \\ C_{bp} - C_p & \text{if } e_{10} \\ C_{bp} - C_b & \text{if } e_{01}. \end{cases}$$

25 For the problem of constrained optimization, see appendix D. We will not examine any particular case, but we will go straight on to compare the two contracts: the two-agent and the single-agent contract.