Profit contracts and Fiscal contracts: A general analysis

Into the reform period, the first step in reforming the traditional fiscal and taxation system in China was to implement the profit and fiscal contract systems (利潤承包及財政包干). The idea was to avoid the problems of separating revenue/profit from usable funds (收支兩條線) and provide incentives to the enterprises and local governments, while requiring them to fulfill certain responsibilities.

References:

(i) (ii) Jospeh C.H. Chai, "Incentive and Profit sharing in Chinese Industry", Hong Kong Economic Papers, no.21, 1991, 47-57.

(ii) 平新喬,《財政原理與比較財政制度》,上海三聯出版社,1992 年,第 10 章與第 13 章;

Profit contracts			Fiscal contracts		
$P_E = aP + b$		(1)	$P_L = aP + b$		(1')
$P_S = (1-a)P - b;$	$0<a<1$	(2)	$P_S = (1-a)P - b;$	$0<a<1$	(2')

where P_E is the profit for the enterprise; P_L the profit for the local government; P_S is the profit for the state---i.e., the central government.

Three possible systems:

(1) a = 0, the enterprise/local government receives a lump sum equal to b and the rest of the profit accrues to the state (基金/留利);

(2) b = 0, the pure profit sharing scheme(利潤留成/分成/比例包干----江蘇上海模式); e.g. Jiangsu (1-a: a)----1977: 58%:42%; 1978-80:

57%:43%; 1980- : 61%:39%

(3) a = 1, and b < 0: similar to the rental system (租賃制: 利潤包干/定額包干----廣東模式), where the enterprise/local government pays a fixed sum to the state for the use of the capital and is entitled to keep the rest of the profit; e.g. Guangdong---1979- : Rmb1 billion per year.

Variations:

Of course, the system can be a mixture of the three prototypes. For example:

(4) 0<a<1 and b<0: the enterprise/local government pays a "rent" (like the situation in (3)) but the state will share a proportion of profit (1-a) (as in (2)). (定額包干、超收分成)

(5) 0<a<1 and b>0: the enterprise/local government receives a lump sum (like in (1)), but then shares a proportion of profit (1-a) with the state (as in (2)). (留利加分成)

(6) 0<a<1 and b<0: the enterprise/local government pays a "rent" (like the situation in (3)) but the state will share a proportion of profit (1-a) (as in (2)). Moreover, the state can impose some targets for the enterprise to fulfill e.g. the "two-guarantee-and-one-link-up" (兩保一掛) system under the "management contract system" (企業承包經營責任制), which was widely adopted in 1987 after the failure of the tax-for-profit (利改稅) reforms.

The optimal choice depends on:

i. the incentive effect (誘因);

ii. the risk sharing (風險分担) effect;

iii. the supervision cost (監察成本);

iv. the impact on fiscal revenue of the state.

In general, we can characterize these four effects as follows:

Given the specific situations of a socialist economy under reform, when the price mechanism and enterprise autonomy have not been effectively established, the state has to use the following matrix to decide on the optimal mixture.

	(1) lump-sum 基金/留利	(2) sharing 分成	(3) rental 包干
the incentive to enterprise /local government	low	medium	high
the risk to enterprise/local government (from the state's perspective)	low (high)	medium (medium)	High (low)
the supervision cost for the state	medium	high	low
the impact on fiscal revenue	uncertain	uncertain	stable

Overall, in the 1980s, China's enterprise profit system converged to model (3); while that of central-local fiscal relations varied around models (2) or (3).

The ideals and the reality

Theoretically, if the price mechanism and enterprise autonomy can be established, there is no need to implement any contracts for state enterprises. The incentives should be in the market, enterprises should take risk (or strike the right risk-returns tradeoff) without direct administrative supervision from the state; while the state as the representative owner of the people would enjoy dividends (not profit remissions) from the enterprises. Any public services provided by the state should be funded by taxation (not profit remissions or dividends).

With regard to central-local fiscal relations, the functions of the central and the local governments should be clearly defined. Then those functions should be funded by the appropriate types and amounts of taxation. This is the basis of the so called tax assignment system (分税制).

However, in the 1980s, price and enterprise reforms were not completed. Prices did not reflect scarcity; whereas enterprises were still under a great deal of administrative and political influences. So the market place did

not serve as an effective mechanism to allocate resources efficiently and to guide the behaviour of the enterprises. Hence, a second-best method, the contract system, was adopted.

Likewise, the functions of even the central government were not clearly defined, as China was still struggling with the type of economy that it should be transformed into: “planning supplemented by the market” (計劃為主、市場為輔) ? “linking planning and the market” (計劃與市場相結合)? “first stage of socialism” (社會主義初階段)? Or, as decided later, “socialist market economy” (社會主義市場經濟) ?

If the central government could not define its own functions, which would be different under the various reform directions, it was an even more ominous task to have clear division of labour between itself and the local governments and to implement the tax assignment system.

Appendix

An example of principal-agent theory.

One bonus scheme that takes into account these problems and which has often been used is like this: the planners **(principal)** suggest a target output $\bar{q}$ to the enterprise **(agent)** and receive a feedback target $\hat{q}$ proposed by managers, which after negotiated may be adjusted and accepted. Planners then stipulate that if $\hat{q}$ is fulfilled exactly, managers will receive the bonus $\hat{B}$ where

$$\hat{B} = \bar{B} + \beta(\hat{q} - \bar{q})$$

---------- (10)

where $\bar{B}$ is the bonus for plan fulfillment, $\bar{q}$ is the initial target suggested by the planners and β is a parameter fixed as the "bonus coefficient". So $(\hat{q} - \bar{q})$ provides a motivation for the CPEs to raise their targets.

The planners also stipulate how the bonus will vary from $\hat{B}$ if $\hat{q}$ is under-fulfilled or over-fulfilled by actual output q:

$$B = \begin{cases} \hat{B} + \alpha(q - \hat{q}) & \text{if } q \geq \hat{q} \\ \hat{B} - \gamma(\hat{q} - q) & \text{if } q < \hat{q} \end{cases} \qquad \text{---------- (11)}$$

For the scheme to have the desired effect, the coefficients in (11) must be so fixed that

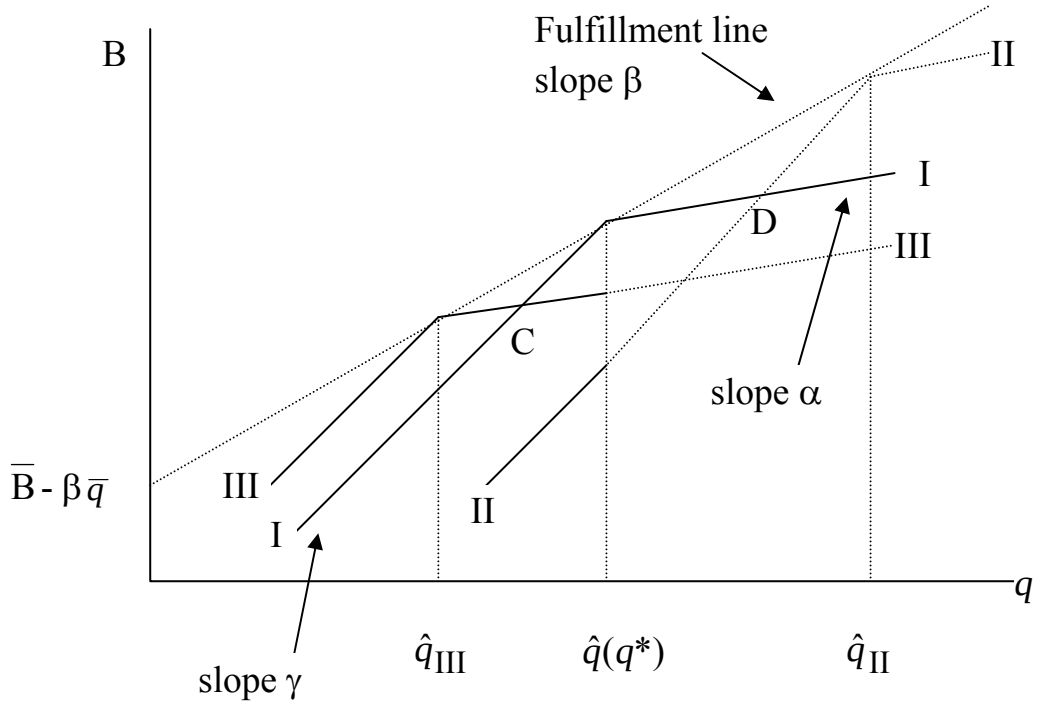
$$0 < \alpha < \beta < \gamma$$

---------- (12)

[if not, what problems?]

Combining (10) and (11), we obtain

$$B = \begin{cases} \bar{B} + \beta(\hat{q} - \bar{q}) + \alpha(q - \hat{q}) & \text{if } q \geq \hat{q} \\ \bar{B} + \beta(\hat{q} - \bar{q}) + \gamma(q - \hat{q}) & \text{if } q < \hat{q} \end{cases} \qquad \text{---------- (13)}$$



I is defined by eq. (13). It is kinked because $\gamma > \beta$. We call I the "kinked bonus function".

Now, we can prove that if eq. (12), i.e. $0 < \alpha < \beta < \gamma$, is fulfilled, the enterprise will actually choose $\hat{q}$, which is equal to its maximum possible output level q^*.

The bonus scheme will ensure $\hat{q} = q^*$, even if q^* is known just to the CPE but not to the planners.

The reason is simple: the CPE's problem is to choose $\hat{q}$ and q to maximize B. However, since for a given $\hat{q}$, B increases with q (the I function is positively sloped despite the kink). So the CPE's problem is reduced to that of choosing $\hat{q}$ to maximize B given that $q = q^*$, its maximum capacity.

Now look at the diagram on this page. We have drawn three bonus functions I, II and III. Function II represents setting target above q^*. The achievable portion of it is depicted in solid lines, while the "notional" part is in dotted line. Note that it lies under I in $(0, \hat{q})$. So it is out! Function

III represents setting a lower target $\hat{q} < q^*$ (i.e. $\hat{q}_{III}$). Up to point C, it is a superior strategy compared with I ($\hat{q}$). However, function I actually gives a higher bonus payment at $\hat{q} = q^*$. So, the manager of the CPE should set $\hat{q} = q^*$! This scheme seems so nice and it solves both the **informational** problem and the **execution** problem!

References:

J. P. Bonin, "On Soviet Managerial Incentive Structures", Southern Economic Journal, 1976, pp.490-495.

M. Weitzman, "The New Soviet Incentive Model", Bell Journal of Economics, 1976, pp.251-257.