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## Closing Costs in Ailing Industries

Comment on the Schneider paper

by

HORST SIEBERT

Long-run structural change destroys economic sectors that have become obsolete. The stage coach is driven out by the railroad, and the railroad is substituted for by cars and planes. A new rival product, a production technology with lower costs, declining demand, a new international supplier may force a firm to close when in the long run the average costs of production cannot be recovered or when in the short run the price does not cover the variable costs. The closing of firms causes social and human hardship best described in Gerhard Hauptmann's drama "*Die Weber*" (The Weavers). In order to reduce the social problems, the closing of firms has been subject to regulation. As Robert Solow puts it: "... the world may have its reasons for being non-Walrasian."<sup>1</sup>

### I.

Laws regulating the closing of plants or firms impose restrictions upon their doing so, establish procedures for market exit, and require compensation payments to workers losing their job and in some countries restitution payments to the communities affected (McKENZIE [1986]). For instance, in West Germany a consensus has to be reached on a "social closing down plan" (*Sozialplan*) with the trade union dominated "*Betriebsrat*" (works council). Bankruptcy laws apply when the firm is unable to meet its financial obligations. More specifically, bankruptcy laws define procedures and hierarchies of financial claims including the compensation payments<sup>2</sup>.

There are also institutional rules relating not merely to the phenomenon of closing, but to the post-closing situation as well. Thus, stipulations require the internalization of externalities such as the afforestation of open pits. Liabi-

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<sup>1</sup> Quoted according to SCHULTZE [1985], p. 1.

<sup>2</sup> For instance, in 1984, the national labor court of the Federal Republic of Germany has changed the position of compensation payment (social closing plans) from rank 0 to rank 6.

*Table 1:*  
*Compensation Payments in the Federal Republic of Germany 1983<sup>4</sup>*

Years of employment	10	20	30
Average	15.327	27.386	36.995
Minimum	4.500	6.500	8.500
Maximum	45.850	71.700	97.500

lity rules may specify costs even when the firm has discontinued production, e.g. in the case of long-run environmental damage and of human damage in the case of pharmaceutical products.

The closing of firms is also affected by rules relating to the pre-closing situation such as lay-off restraints in each period of operation and taxation rules. For instance, the carrying forward of a financial loss to next year's tax statement allows a firm to continue its operation if it expects to make profits in the future. The carrying backward of losses into tax statements of previous years prolongs the life of a firm. This possibility of balancing actual losses with future or past profits is usually limited with respect to time and the financial amount involved<sup>3</sup>.

Closing costs vary among countries. It is generally believed that closing costs are higher in Europe than in the U.S. According to a survey conducted by the INSTITUT DER DEUTSCHEN WIRTSCHAFT [1982], in the period 1970–1979 an average of 8881 German marks was paid per employee laid off, an amount corresponding to three months salary. For 1980, an amount of 25.000 DM has been quoted (INSTITUT DER DEUTSCHEN WIRTSCHAFT [1982]). A survey of 93 social closing plans in 1983 concludes that, on the average, 36.995 DM was paid to a 50 year old employee with a thirty year membership in the firm (Table 1).

## II.

Closing restraints aim at protecting employees either by preventing or postponing closing or by giving them financial support for the time of job search. This objective cannot be reached without costs. In the following, some of the opportunity costs of institutional rules for closing are discussed.

When closing restrictions are introduced, those actually employed are protected. It can be shown, however, that the firm anticipates the costs of closing and reduces its demand for labor prior to closing. In the realistic setting of a firm facing a price which first increases and then decreases, demand for labor peaks earlier and is generally lower. Thus, workers employed will

<sup>3</sup> In the Federal Republic, the limit is 8 years and 10 million DM.

<sup>4</sup> Amounts in DM for a fifty year old employee. Source: SCHELLHAASS [1984], p. 288.

be protected by closing plans but less workers will be employed (LONG and SIEBERT [1983, 1985]).

Closing costs reduce the marginal efficiency of capital. Consider the usual investment calculus with  $K$  denoting capital value,  $Q$  initial cost of investment,  $R_1, R_2 \dots R_T$  the expected earnings in each period,  $C$  closing costs and  $r$  the rate of return. Then

$$(1) \quad K = -Q + \sum_{t=0}^T R_t \frac{1}{(1+r)^t} - C \frac{1}{(1+r)^T} = 0$$

which defines an implicit function

$$F(Q, R_t, r, T, C, t) = 0 .$$

This implies<sup>5</sup>

$$(2) \quad dr/dC = - \frac{1}{(1+r)^T \left\{ \sum_{t=0}^T t R_t \frac{1}{(1+r)^{t+1}} - TC \frac{1}{(1+r)^{T+1}} \right\}}$$

Closing costs reduce the internal rate of return if the denominator is positive. Define the present value of the sum of period earnings  $\tilde{R} = \sum R_t (1+r)^{-t}$ . Assume a time profile of given period earnings. Then

$$(3) \quad d\tilde{R}/dr = -t \sum R_t (1+r)^{-t-1} < 0$$

denotes the way in which the present value of all period earnings changes with the discount rate  $r$ . Let  $\tilde{C} = C(1+r)^{-T}$  be the present value of closing costs. Then

$$(4) \quad d\tilde{C}/dr = -TC(1+r)^{-T-1} < 0$$

denotes the change in the present value of the closing costs with respect to  $r$ . Define the net present value of profits  $\pi$ . Then, the denominator is positive if

$$(5) \quad d\pi/dr|_{\tilde{Q}} = d\tilde{R}/dr - d\tilde{C}/dr > 0 ,$$

i.e. if a marginal change in the discount rate has a stronger influence on the present value of closing costs than on the present value of all period earnings. This is a rather intuitive condition. Closing costs only arise in periode  $T$ , and their present value is strongly reduced by a higher discount rate. Period

<sup>5</sup> By the implicit function rule we have  
 $dr/dC = -F'_c/F'_r$  and

$$F'_c = -\frac{1}{(1+r)^T}$$

$$F'_r = -\sum_{t=0}^T t R_t \frac{1}{(1+r)^{t+1}} + TC \frac{1}{(1+r)^{T+1}}$$

$$dr/dC = - \frac{1}{(1+r)^T \left\{ \sum_{t=0}^T t R_t \frac{1}{(1+r)^{t+1}} - TC \frac{1}{(1+r)^{T+1}} \right\}}$$

earnings are also reduced, but the impact on the earnings in the earlier period is not felt too strongly.

The negative impact of closing costs on the rate of return implies that closing costs will influence capital accumulation. Assume given time preference rates of consumers and consider an economy in which closing costs are introduced. Then the rate of return is reduced, savings become less attractive, consumption increases and capital accumulation is reduced. Closing costs introduce a bias in favor of consumption.

When closing costs have a differential impact on the sectors of an economy, the introduction of closing costs will affect the sectoral structure of capital accumulation. It becomes less worthwhile to allocate capital to sectors with high closing costs. Restraints on plant or firm closings are not of too great a significance for firms expanding rapidly, but they are felt strongly in ailing industries. Due to their impact on the rate of return, closing costs aggravate the problem faced by ailing industries in attracting capital. A similar argument holds with respect to depressed areas characterized by an obsolete industrial structure.

In an open economy, closing costs influence the international allocation of capital. Consider two countries with different institutional settings of closing costs and let  $C$ ,  $C^*$  be a parameter denoting closing costs at home and abroad. Then

$$C > C^* \rightarrow r < r^*$$

*Ceteris paribus*, closing costs determine the flow of capital. In this context, the procedural and time costs of closing may be even more important than purely monetary costs.

In an international comparison, closing costs may make it less attractive to open firms in another country. In the U.S., the argument is heard that, despite the favorable exchange rate in the early eighties, American firms were reluctant to open subsidiaries in Europe "because it is too expensive to close them down." As a limiting theoretical case, closing costs define market entry conditions. Existing firms cannot adjust to the introduction of closing procedures by not entering the market. But for a newcomer to the market, market exit conditions are anticipated when entering the market.

Closing costs and closing procedures define an institutional characteristic of an economy relating to its flexibility. The term institutional sclerosis (OLSON [1982]) has been applied to mature economies that have become less and less Walrasian or Schumpetrian, and to European economies in particular ("Euro-sclerosis", GIERSCH [1984]). Apparently, closing restrictions impede structural change and adjustments to new economic conditions. Social closing plans and restraints on closing can be interpreted as a measure to shift part of the employee's labor market risk (unemployment risk) to the employer. Employers can reduce their risk by providing fewer jobs. Moreover, if institu-

tional settings have an impact on preference formation, for instance for the younger participants in the labor market, it may well be that the reduction of risk in the economy does not induce people to take greater risks but increases risk aversion in individual preference functions.

### III.

Closing costs may be borne by the individual firm as in the case of refinery closings in Germany. But in ailing industries such as steel, shipbuilding and coal, closing costs become especially relevant. The political economy of closing implies that closings are postponed, that exemptions of closings are provided or that the government steps in with subsidies in order to keep the firm going. It can be argued that closing restraints are very likely to induce additional interventions. This, at least, is the German experience in the steel and shipbuilding industry. Supposedly, the subsidies are used to modernize the firms, but insiders report that a large part of these subsidies is actually used to finance "social closing plans". Thus, each job at Arbed Saarstahl has been subsidized to the amount of 200,000 DM (CHRIST and REINSCH [1985], p. 69). In 1981, the German government paid hidden or open subsidies per employee of 37,840 DM in the railroad industry, 23,830 DM in the coal industry, 14,660 DM in the aerospace industry, and 12,710 DM in shipbuilding (CHRIST and REINSCH [1985], p. 63). In the shipbuilding industry, subsidies per employee (in 1983) amounted to 107,000 DM in the period 1975–1983 (LAUMER [1984]).

It is highly questionable whether government subsidies make employment more secure. For instance, in shipbuilding, investment per employee fell from 6,000 DM in 1975 to 3,300 DM in 1981 in spite of heavy subsidies.

Subsidies or exemptions induce additional distortions. Some firms in an industry may receive subsidies such as Saarstahl, while others may not, for instance Korf. The subsidized firm drives out the non-subsidized firm. Of course, subsidizing an existing firm makes market entry more difficult for a newcomer. Moreover, capital allocation is distorted in favor of old firms. Of course another phenomenon which accompanies closing restrictions is import barriers (or export subsidies)<sup>6</sup>. Thus, there is a strong expectation that an increase in closing costs will be another little oil drop of interventionism that will spread through the Walrasian world and pollute it a little bit more.

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<sup>6</sup> Finally, another example is provided by environmental policy. For instance, German air quality management relying upon a permit system requires permits for new facilities only. Existing plants have a "grandfather clause" which can be viewed as an exemption from closing costs.

## IV.

Restricting closing reduces the risk for employees of being laid-off; compensation payments reduce their risk of being without income for a period after the lay-off. The risk of the employee is shifted to the firm or, in case of government subsidies, to the government budget. The negative effects of closing restraints could be prevented if the reduced risk for individual employees is interpreted as a part of their life-cycle income position and if it is considered as part of the real wage determined in the bargaining process between the employers and the trade union (SCHELLHAASS [1984]). Then the individual employee who has the benefit of risk reduction also bears its cost. In such a setting, the behavior of the firm, for instance its demand for labor, is not negatively affected by closing costs. Also, compensation payments should vary with the length of membership to the firm, possibly commencing only after some years of membership.

From a theoretical point of view, taking out private insurance may accommodate some of the risks of individual employees. Such a spreading of risk, however, depends on the institutional features of the insurance. A quasi-government insurance for closing costs increases the political pressure to shift financing to the government budget. Getting the individual member firms to finance the insurance costs, i.e. by those firms not closing, is another way of socializing the risks of individual employees or the costs of individual firms. Experience with the industry's pensions insurance in the case of Germany's AEG settlement suggests that such an institutional arrangement introduces a general inefficiency. Thus, in a political scenario, the insurance concept is very likely to degenerate into an institutional arrangement with government interference.

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