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**Working Paper**

## Closing costs in ailing industries

Diskussionsbeiträge - Serie A, No. 201

**Provided in Cooperation with:**

Department of Economics, University of Konstanz

*Suggested Citation:* Siebert, Horst (1985) : Closing costs in ailing industries, Diskussionsbeiträge - Serie A, No. 201, Universität Konstanz, Fakultät für Wirtschaftswissenschaften und Statistik, Konstanz

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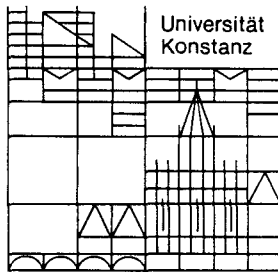
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Wirtschaftswissenschaften  
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**Closing Costs  
in Ailing Industries**

Diskussionsbeiträge

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Postfach 5560  
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Serie A — Nr. 201  
July 1985

11. SEP. 1985

Wirtschaftswissenschaften  
Kiel

CLOSING COSTS IN AILING INDUSTRIES

Horst Siebert

Serie A - Nr. 201

July 1985

Serie A: Volkswirtschaftliche Beiträge

Serie B: Finanzwissenschaftliche Arbeitspapiere

Serie C: Betriebswirtschaftliche Beiträge

## Closing Costs in Ailing Industries

Horst Siebert

### Abstract

The closing of firms causes social and human hardship and consequently has been subject to regulation, especially in Western Europe. Laws regulating closing are especially relevant in ailing industries. Closing restrictions establish procedures for market exit, reduce the demand for labor prior to closing when anticipated by the firm and reduce the marginal efficiency of capital. Moreover, they define an institutional characteristics of an economy with respect to flexibility. The political economy of closing suggests that part of closing costs in ailing industries are borne by the government in form of subsidies.

### Zusammenfassung

Die Schließung von Unternehmen verursacht soziale und den einzelnen betreffende Härten und ist deshalb - besonders in West-Europa - gesetzlichen Regelungen unterworfen. Schließungsvorschriften, die besonders relevant in sterbenden Wirtschaftszweigen sind, etablieren Regeln für das Ausscheiden aus einem Markt, reduzieren, wenn antizipiert, die Nachfrage nach Arbeit und verringern die Grenzleistungsfähigkeit des Kapitals. Außerdem definieren sie eine institutionelle Eigenschaft einer Volkswirtschaft in bezug auf Anpassung und Flexibilität. Die politische Ökonomie der Schließung läßt erwarten, daß Teile der Schließungskosten in sterbenden Wirtschaftszweigen vom Staat in Form von Subventionen übernommen werden.

Long-run structural change destroys economic sectors that have become obsolete. The stage coach is driven out by the rail road, and the rail road is substituted 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 variable costs are not covered by the price. 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 restrict closing, establish procedures for market exit, and require compensation payments to workers losing their job and in some countries restitution payments to the affected communities (McKenzie 1985). 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>

Institutional rules not only relate to the phenomenon of closing, but to the post-closing situation. Thus, stipulations require the internalization of externalities such as the afforestation of open pits. Liability rules may specify costs even when the firm has discontinued production, e.g. in the case of long-run environmental damages and of human damages 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 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 usually is limited with respect to time and the financial amount involved.<sup>3)</sup>

Closing costs vary among countries. It is a general opinion that closing costs are higher in Europe than in the U.S. According to a survey conducted by the Institute of the German Economy (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 were paid for a 50 year old employee with a thirty year membership in the firm (Table 1).

Table 1: Compensation payments in the Federal Republic 1983 <sup>\*)</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



## II.

Closing restraints intend to protect the employee either by preventing or postponing closing or by giving him 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 off earlier and is generally lower. Thus, workers employed will 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 we have

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

which defines an implicit function

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

This implies<sup>5)</sup>

$$(2) \quad \frac{dr}{dC} = - \frac{1}{(1+r)^{\tau} \left[ \sum_{t=0}^{\tau} tR_t \frac{1}{(1+r)^{t+1}} - TC \frac{1}{(1+r)^{\tau+1}} \right]}$$

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

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

denotes how the present value of all period earnings

changes with the discount rate  $r$ . Let  $\tilde{C} = C(1+r)^{-\tau}$

be the present value of closing costs. Then

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

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

$$(5) \quad \left. \frac{d\pi}{dr} \right|_{\bar{q}} = \frac{d\tilde{R}}{dr} - \frac{d\tilde{C}}{dr} > 0,$$

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 period  $T$ , and their present value is strongly reduced by a higher discount rate. Period 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 where 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 different impact on the sectors of an economy, the introduction of closing costs will

affect the sectorial structure of capital accumulation. It becomes less interesting to allocate capital to sectors with high closing costs. Restraints on plant or firm closings are not too interesting for the 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 of ailing industries to attract 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 pure monetary costs.

In an international comparison, closing costs may make it less attractive to open firms in another country. In the U.S., one can hear the argument that despite the favor-

able exchange rate in the early eighties American firms are 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 (Euroclerosis, 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. The employer can reduce his risk by providing fewer jobs. Moreover, if institutional settings have an impact on preference formation, for instance for the younger participants in the labor market, it may well be that risk reduction in 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 by 200.000 DM (Christ und Reusch 1985, p.69). In 1981, the German government paid hidden or open subsidies per employee of 37.840 DM in the railroad, 23.830 DM in the coal industry, 14.660 DM in the air- and space industry, and 12.710 DM in shipbuilding (P.Christ und H. Reusch 1985,p.63). In the shipbuilding industry,

subsidies per head of employee (in 1983) amounted to 107.000 DM in the period 1975 - 1983 (Laumer 1984).

It is highly questionable whether government subsidies will make employment more secure. For instance, in shipbuilding investment per employee fell from 6000 DM in 1975 to 3300 DM in 1981 in spite of heavy subsidies.

Subsidies or exemptions induce additional distortions. Some firms in an industry may receive subsidies as Saarstahl, others may not, for instance Korf. The subsidized firm drives out the non-subsidized firm. Of course, subsidizing an existing firm makes market entry for a newcomer more difficult. Moreover, capital allocation is distorted in favor of old firms. Of course, another companion of closing restrictions are 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.

#### IV.

Restricting closing reduces the risk for the employee to be laid-off; compensation payments reduce his risk to be 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 the individual employee is interpreted as a part of his 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 (Schellhaas 1984). Then, the individual employee who has the benefit of risk reduction also bears the cost of risk reduction. 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 only starting after some years of membership.

From a theoretical point of view, a private insurance may accommodate some of the risks of individual employees. Such a risk spreading, 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. Financing the insurance costs by the individual member firms, i.e. by those firms not closing, is another way of socializing the risks of individual employees or the costs of individual firms. The experience with the



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industry's pensions insurance in the case of Germany's  
AEG's settlement suggests that such an institutional  
arrangement introduces a general inefficiency. Thus,  
the insurance concept is very likely to degenerate in  
a political scenario.

## Footnotes

- 1) Quoted according to C.L. Schultze (1985), p.1.
- 2) For instance, in 1984, the national labour court of the Federal Republic of Germany has changed the position of compensation payment (social closing plans) from rank 0 to rank 6.
- 3) In the Federal Republic, the limit is 8 years and 10 million DM.
- 4) Amounts in DM for a fifty year old employee.  
Source: Schellhaaß (1984), p. 288.
- 5) By the implicit function rule we have

$$dr/dC = -F'c/F'r \text{ and}$$

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

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

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

- 6) Finally, another example is environmental policy. For instance, German air quality management relying on 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.

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