Do Small and Medium-Sized Enterprises Stabilize Employment? Theoretical Considerations and Evidence from Germany

By Ralf Fendel and Michael Frenkel*

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* Michael Frenkel, is professor at WHU - Koblenz School of Corporate Management, Vallendar/Germany (Burgplatz 2, D-56179 Vallendar, Germany; Tel. (+49)261-6509160, Fax (+49)261-6509111, e-mail: mfrenkel@whu-koblenz.de) and the 1995/96 Visiting Konrad Adenauer Professor at the Center for German and European Studies, Georgetown University, Washington D.C., USA.
Ralf Fendel is a junior faculty member and Ph.D. scholar at the WHU Koblenz School of Corporate Management and, during 1995/96, visiting researcher at the Center for German and European Studies, Georgetown University, Washington D.C., USA.

Abstract

The hypothesis that the behavior of firms in adjusting the number of their employees along a business cycle depends on the size of the firms has often been mentioned in the literature. Several authors argue that small and medium sized enterprises are more hesitant in hiring additional employees in a boom situation but also do not offset workers as fast as big enterprises in a recession. This implies that small and medium-sized enterprises stabilize economy-wide employment. However, up to now there is hardly any theoretical support and only very limited empirical evidence for this view. This paper addresses these shortcomings and presents a theoretical framework for a size-specific behavior of firms in hiring and laying off workers. We argue that the main reason for the difference stems from the existence of sunk costs associated with changes in employment. We also examine the empirical evidence for the industrial sector in Germany. Our findings confirm the view of a smaller employment response of small and medium-sized enterprises to changes in economic activity.

1. Introduction

The hypothesis that the behavior of firms in adjusting the number of their employees along a business cycle depends on the size of the firms has often been mentioned in the literature. Several authors argue that small and medium-sized enterprises (SME) are more hesitant in hiring additional employees in a boom situation but also do not offset workers as fast as big enterprises in a recession. This yields a less cyclical behavior of aggregate employment of SMEs and implies that SMEs stabilize economy-wide employment. However, up to now there is hardly any theoretical support and only very limited empirical evidence for this view.

Empirical evidence has so far been limited to relatively short time series and has focused on rather small segments of the economy. Gruhler (1979) analyzes the performance of German SMEs in the industrial sector for the period 1968-1975 and finds evidence for an employment-stabilizing role of SMEs but most of the evidence is derived only indirectly showing that regions with a relatively high share of SMEs experienced less pronounced unemployment cycles. In addition, he fails to find statistically significant causalities. Rothwell and Zegfeld (1982, p.80) report that Dutch SMEs remarkably contributed to employment stability during the period 1970-75. For the UK Fotherwill and Gudgin (1979) found for a limited number of regions that during a period of severe industrial stagnation in the 1970s, smaller manufacturing firms have been more buoyant than their larger counterparts. Hughes (1993) argues for the UK that, during the 1980s, changes in the shares of small businesses in employment mask an underlying stability in small-firm employment combined with major rationalization by large firms as manufacturing employment contracted in that period. For the US Solomon (1986) states that especially the rise of the mass-production industry caused swings in the business cycles to become more violent. He argues that due to their peculiar characteristics, smaller enterprises help to smooth out these swings. All these previous studies have in common that empirical evidence is limited to short time periods and to single regions, and they show a lack of explicit theoretical reasoning.

The purpose of this paper is to addresses the described shortcomings by presenting both a theoretical framework for the employment-stabilizing behavior of SMEs and a more comprehensive econometric analysis for Germany by looking at a longer time period and the

whole industrial sector. We choose the case of Germany because many analysts emphasize that particularly in Germany, SMEs (referred to as the "Mittelstand") have been very important for economic developments during the past four decades.

The paper is structured as follows. Section 2 develops the theoretical framework for a size-specific behavior of firms in hiring and laying off workers. We argue that the main reason for the difference in the response of larger and smaller firms to business cycle fluctuations stems from the existence of sunk costs associated with changes in employment. We argue that these sunk costs can be expected to be size dependent. Section 3 examines the empirical evidence for employment changes of firms of different sizes over the business cycle. In addition to studying the industrial sector of Germany as a whole we analyze some industry segments in which the share of SMEs is particularly high. Section 4 investigates whether firms of different sizes also exhibit differences in wages. Section 5 summarizes the results and presents the main conclusions.

2. The Model

In this section we present a simple model which describes the optimal employment level of a representative firm at different stages of the business cycle. We assume that business cycle fluctuations stem from changes in aggregate demand which translate, at least partly, into price changes. We examine the optimal response of a firm to the price changes occuring in its output market under competition. There are two crucial features in the theoretical framework we employ. First, we assume that firms incur sunk costs when they change the number of their employees. In the case of an expansion, these costs are mainly associated with the hiring process and the building-up of firm-specific human capital through training.[1] In case of a temporary output reduction, sunk costs include compensation payments to laid-off workers and disadvantages of not being able to increase as fast as otherwise production in the future when demand picks up again. Second, we assume that output variations take a discrete form which

[1]Firm-specific human capital includes the familiarity of the production process and the knowledge of the firm's product.

implies that there is a certain minimum quantity for output changes which we refer to as the *lot size*. For example, when market prices rise, an entrepreneur has to decide whether or not to expand production by at least this lot size. The lot size depends on technical characteristics of the production process and can be expected to be larger for larger firms.

We now formalize the optimal strategy of the firm. Assume a firm is in a situation of average economic activity along the business cycle when suddenly, due to higher economic activity, the price (p) for its output rises. The producer now considers increasing his output in response to the price increase. For simplicity, we assume that variations in production require a change in the number of workers and cannot be accomplished by an increase in the number of hours worked by already employed worker. In addition, any increase has to be at least of the quantity of one lot, which we denote by $\bar{x}$. In order to focus on short-term changes in output, we abstract from the effects of investment and assume that the firm does not operate at its capacity limit. Thus, variations in output can take place with a given physical capital stock. We also assume that the firm can hire additional workers at the current wage rate and that the firm is small in its output market so that it cannot affect the price. The present value of expanding output (π_E) by one lot is

$$\pi_E = (p - c)\bar{x} + \sum_{j=1}^{\infty} \frac{(p_j^e - c_j^e)\bar{x}_j}{(1+i)^j} - S,$$

where c, i, and S denote variable costs, the interest rate and total sunk costs of hiring the required new employees, respectively. The first term on the right hand side shows the difference of revenue and variable costs during the first period, i.e. when production changes. Variable production costs of the marginal lot are denoted by c. Since we focus on employment variations, we assume that variable costs only comprise labor costs. The second term represents the present value of profit contributions in future periods with the superscript “e” denoting expected values. The third term reflects total sunk costs of increasing production by one lot. These costs have to be spent once additional workers are hired. These cost are sunk because they cannot be retrieved when the workers are laid off again later.

In order to keep the model as simple as possible we assume static expectations so that expected prices and costs are equal to their current levels. Although this assumption may seem to be restrictive, a more complicated expectation structure would have no impact on the qualitative results of our analysis. Using these simplifications in equation (1) yields

$$\pi_E = \frac{1+i}{i}(p-c)\bar{x} - S .$$

The total amount of sunk costs depends on the number of workers by which employment changes (N) and the sunk costs per new employee (s). The latter is assumed to be a decreasing function of both the number of new employees and the size of the firm approximated by total output (x). Thus, total sunk cost can be expressed as

$S = s(N,x) \bullet N ; \qquad s_N < 0,\ s_x < 0,\ S_N > 0 .$

It seems plausible to argue that the training costs per worker are declining with the number of new workers due to economies of scale in the search and in the training process. It also seems plausible to assume a negative relationship between the size of the enterprise and the per (new) worker sunk costs. We argue that larger companies have an advantage of size. One could think of already existing training units in larger firms which imply relatively low marginal costs of training compared to firms in which no such department exists and other (for such events relatively unexperienced) workers have to do this job. This advantage could also reflect economies of scope since larger firms tend to centralize their training efforts for various production activities.

Expressing the size of a lot as

$\bar{x} = N \bullet \mu ,$

where μ denotes labor productivity, we can rewrite total sunk costs in equation (3) as

$S = s(\bar{x} / \mu, x) \bullet \bar{x} / \mu$

Assuming that the entrepreneur's objective is to maximize profits, we can calculate a critical price above which it is optimal to expand production in the case of a price increase in the output market. This critical price (p^{high}) is associated with zero profits of an expansion of production (π_E=0). Combining equations (1) and (5) this threshold can be derived as

$$p^{high} = c + \frac{s(\bar{x} / \mu, x) \bullet i}{\mu(1+i)}$$

Whenever the actual price rises above this level, the firm will expand production and will hire additional workers. Assuming that marginal costs, the interest rate, and labor productivity are the same for all firms, the critical price p^{high} is lower for larger firms because their per worker sunk costs are lower. The difference between large firms and smaller firms is greater the bigger the differences in $\bar{x}$ and the firm size are and the greater the advantages resulting from these differences (e.g., economies of scale and economies of scope in hiring and training) are.

We now turn to the production decision of an entrepreneur when economic activity declines and, as a consequence, the market price for the firm's output drops. This could, for example, be the case when the economy moves into recession. In such a situation, the entrepreneur determines the lowest possible price at which the production of the marginal lot does not yield losses. This price corresponds with a non-negative (zero) value of discounted profits. When the price falls below this critical value (p_{low}) production will be reduced. We denote the present value of profits resulting from a one-lot reduction in output by π_R. Using basically the same assumptions as before, the present value of profits resulting from contracting output can be expressed similarly to equation (2):

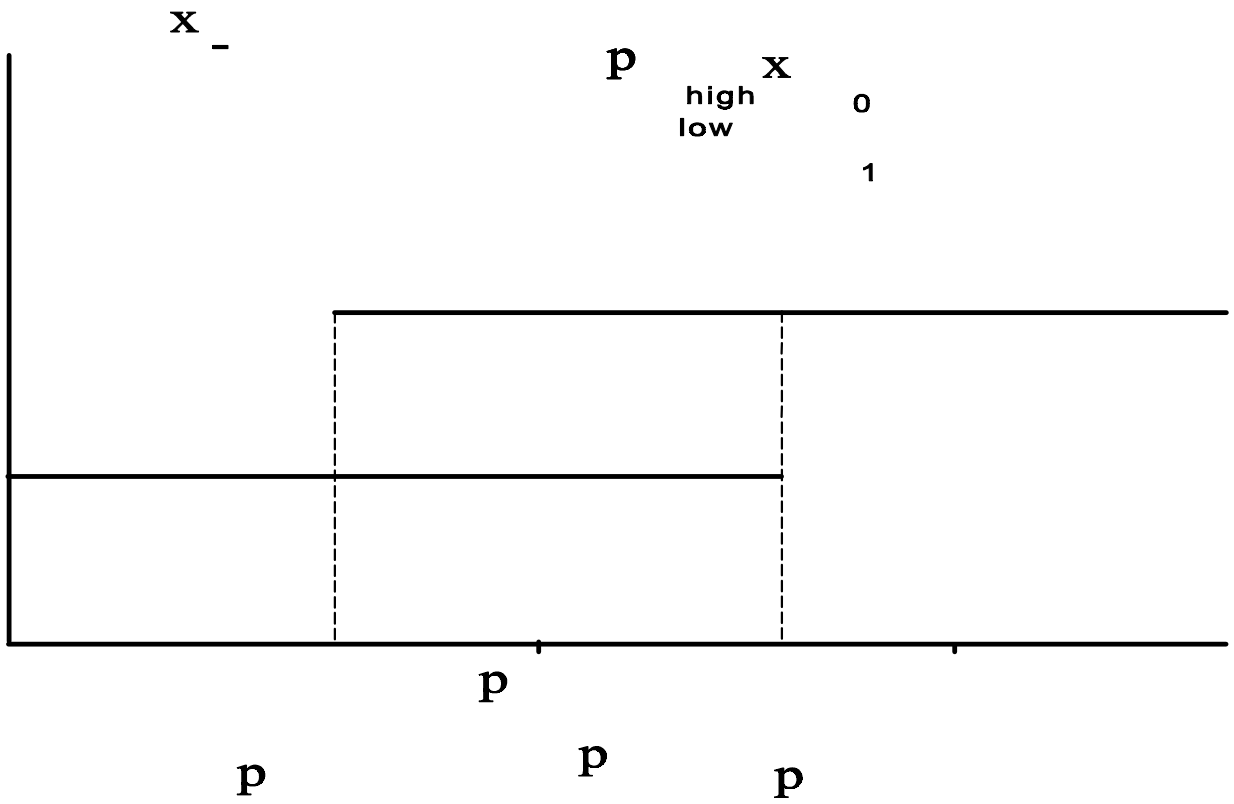
$$\pi_R = \frac{1+i}{i}(c - p)\bar{x} - S_R \ .$$

Sunk costs of laying off workers can take two forms: first, direct cost associated with reducing the staff and, second, future costs of hiring workers once prices increase again. To keep the analysis as simple as possible, we assume that S_R depends on the same factors as S with the same signs of the first derivatives. This implies that sunk costs per worker are a negative function of both firm size and the number of employees per lot, although the functional form of S_R can be

different from S. Thus, large firms have relatively lower sunk costs per employee than SMEs. The critical market price (p_{low}) below which the firm reduces output can be derived from equation (7) using a similar expression as in equation (5). This yields

$$p_{low} = c - \frac{s_R(\bar{x}/\mu, x) \bullet i}{\mu(1+i)},$$

where s_R denotes sunk cost per layed off worker. The critical price p_{low} is determined by the level of variable costs and by an additional term which represents the sunk cost aspect. The



entrepreneur is willing to accept a price below variable costs if the difference is smaller than the sunk costs he has to take into account. On the basis of the sign of the first derivatives of the s_R function discussed above, the critical price p_{low} is lower for smaller firms because of higher per worker sunk costs.

Combining the results in equations (6) and (8) implies that the critical price triggering an increase in production lies above the price that leads to a reduction in output. This asymmetry is well known in the literature on investment and is applied here to employment decisions of the

firm.[2] Assuming a positive value of S, Figure 1 shows the dynamics that can arise during the emergence of a business cycle. On the horizontal axis the price is shown, while the amount produced and, implicitely, the level of employment is indicated on the vertical axis. We first assume that beginning at a low price, p_0 , the firm experiences an economic upswing and produces along the lower curve. If the price rises above p^{high} during a boom to, for example, p_1 the firm increases its production and incurs the sunk costs. The supply function exhibits a discrete jump to a higher level of production. Similarly, if beginning at p_0 the price falls under p_{low} the firm reduces output and the supply function shows a discrete jump downwards. In general, during a boom the behavior of the firm is described by a rightward movement beginning on the lower branch, while a recession means a movement to the left beginning on a higher level of production.[3] Any price fluctuation (business cycles) within the range between p_{low} and p^{high} does not cause the firm to change its output. We call this the "band of inaction". Thus, relatively moderate price variations do not yield employment changes. Higher sunk costs enlarge the band while higher variable costs shift the band to the right.

Fig.1: The Band of Inaction

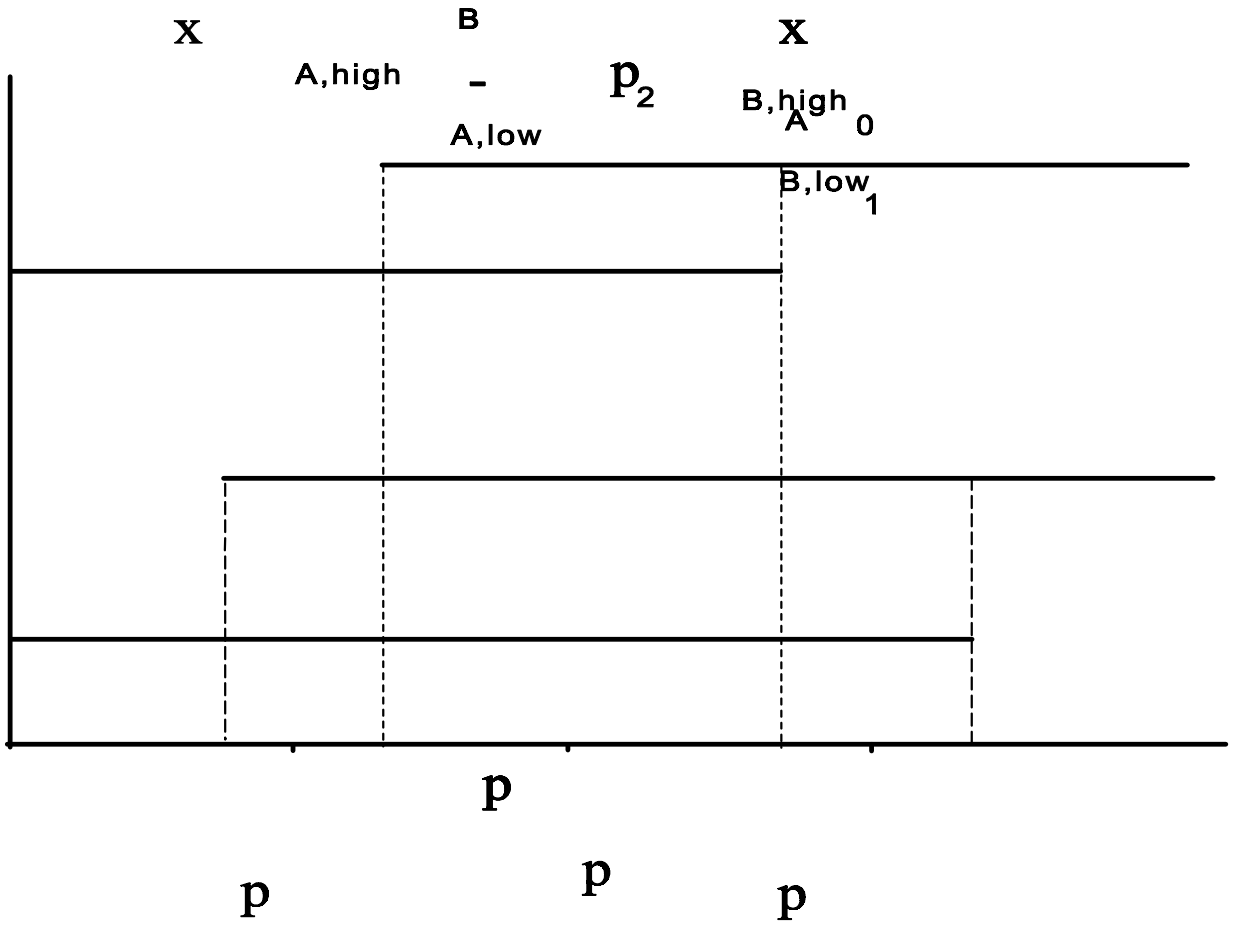
In order to show the effects of price changes on output and employment decisions of firms of different size, we compare two firms (see Fig. 2): a smaller firm, A, which is assumed to be small and produces an output level of x_A, and a larger firm, B, which produces an output level x_B. The small enterprise faces higher sunk costs per worker for the two reasons described above. First, it

[2] Modern investment theory emphasizes that irreversible sunk costs, uncertainty and the possibility of postponing the investment are major factors influencing the investment decision (Dixit and Pindyck (1994)).

[3] The analysis also shows that in between the two critical price levels the level of production is not determined uniquely.

has a lower level of production and, second, it has a lower lot size. Thus, assuming identical variable costs and labor productivity, the “band of inaction” of firm A is an envelope of B’s “band of inaction”.

Fig.2: The Dynamics in Aggregate Employment with Firms of Different Size



The dynamics caused by price fluctuations are straightforward. Consider a price p_o in the first period and assume that both firms are on the higher branch of their supply function. If, in the

subsequent period, a recession occurs, the price will fall below its initial level. If the fluctuation is relatively moderate, the new price level can be described by p_1. While the large firm B reduces output and employment, the smaller firm A does not alter production. If, during a subsequent boom, the price rises above $p^{B,high}$, say to p_2, firm B increases production again. Thus, the fluctuation in demand leads to a fluctuation in B's employment while firm A did in fact stabilize aggregate employment. However, if the business cycle is very pronounced prices can be expected to fluctuate more, too. For example, if the price level falls in a recession below the level of $p_{A,low}$, both enterprises reduce output and are forced to lay off workers. Now, B will increase employment sooner than A when economic activity and prices rise again. Thus a relatively severe recession does not show the feature of a employment stabilization by A. These considerations imply that smaller firms can be expected to serve as an employment buffer if the recessions are mainly relatively mild.

Our analysis has an additional implication which we will test for in the subsequent section. Since employment fluctuations are likely to be less pronounced in SMEs, the risk of getting unemployed is smaller for jobs with smaller firms. This should be reflected in lower wages paid by SMEs compared to wages in large firms. If this holds variable costs are not the same for all firm sizes as assumed above but they are lower for larger firms. Taking this into account in equations (6) and (8) reinforces the results of our analysis regarding the response of different firm sizes to price changes.

3. Firm size and employment changes

The empirical analysis of the influence of firm size on employment changes focuses on Germany because of its traditionally strong group of small and medium-sized enterprises (SMEs) employing nearly half of the economy's labor force. Since this group of enterprises, which is often referred to as the "Mittelstand," has a particularly strong root in German industry, the analysis concentrates on the industrial sector as a whole as well as on industry segments that have

a relatively high share of SMEs.

A first analysis examines Germany's industrial sector as a whole. We employ data on enterprises rather than on establishments because of the higher autonomy of enterprises compared to establishments and because the analysis focuses on what has traditionally been defined as the "Mittelstand." We also follow the conventional definition of firm sizes used in the literature: large firms are enterprises with more than 500 employees; SMEs have between 20 and 500 employees; firms with less than 20 employees (often referred to as micro-enterprises) are not taken into account. We use annual data for the group of large firms and SMEs for the period 1978-1992 and regress for both large firms and SME an employment variable on a variable reflecting the extent of economic activity. Table 1 shows the results of four specifications we employed in the regression analysis. Equation (1) examines the response of large firms (denoted by L) and of SMEs (denoted by M) to the difference between real GNP growth and productivity growth. One could argue that productivity increases reflect changes along the growth path of the economy and GNP growth corrected for productivity changes indicates the business cycle component. The estimates for equation (1) imply that a one percentage change in the adjusted GNP growth rate leads to a change in employment in large firms by 1.43 percent and in SMEs by 1.39 percent. This suggest that large firms respond to fluctuations in economic activity somewhat stronger than SMEs which is in line with the theoretical arguments presented in the previous section.[4] With the exception of the test for autocorrelation, the regression results have very good statistical properties.[5]

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[4]The coefficient can be expected to exceed one since any productions theory suggests that any productivity increase of capital or labor may increase the demand for labor.

[5]We tried different AR processes in equation (1). The results suggest that, for large firms, there is a significant AR(1) process. It increases the D.W. in equation (1a) to 1.54 while leaving the coefficient of adjusted GNP growth relatively unchanged. A significant AR(1) process cannot

Since it can be expected that an increase in total factor productivity also impacts on employment, equation 2 uses growth in value added as the explanatory variable. Not surprisingly the coefficients are now smaller. However, the main result for our analysis is that, again, the estimates suggest a slightly stronger employment response of large firms to business cycle fluctuations than is the case for SMEs.[6] While a change in value added of one percent in large enterprises leads to an employment increase of 0.55 percent, the coefficient for SMEs is 0.52. The thrust of these findings is also confirmed if value added enters the estimated equation with a one-period lag as indicated by equation (3).

Tab.1: Regression Results on Employment in German Industry (1978 - 1992)

Eq.	Explained variable	Const.	GNP growth minus prod. growth	Value added growth	Value added growth (-1)	Employ-ment (-1)	R^2	D.W.
(1a)	Rel. change in employment L	-1.82 (-2.91)	1.43 (3.50)				0.49	0.83
(1b)	Rel. change in employment M	-1.08 (-2.56)	1.39 (5.05)				0.66	1.24
(2a)	Rel. change in employment L	-2.86 (-3.03)		0.55 (3.06)			0.42	1.28
(2b)	Rel. change in employment M	-2.11 (-3.44)		0.52 (4.67)			0.63	1.74
(3a)	Rel. change in employment L	-2.51 (-2.02)			0.43 (1.87)		0.23	0.92
(3b)	Rel. change in employment M	-1.23 (-1.34)			0.33 (1.97)		0.24	0.89
(4a)	Employment L	651506.5		23918.9		0.83	0.80	1.44

be found in equation (1b).

[6]The smaller coefficients are due to the fact that in this equation employment changes are explained by higher growth rates for each year than in equation 1.

		(1.14)	(3.08)	(6.50)		
(4b)	Employment M	359669.9	16232.1	0.85	0.93	2.18
		(1.55)	(5.46)	(10.38)		

t-statistics in parentheses
Source: Federal Statistical Office and own calculations

If SMEs react less pronounced to business cylcle developments it can be expected that their employment levels are more determined by past employment levels. To examine this implication, equation 4 uses value added growth and past employment levels as explanatory variables and employment level as the dependend variable. The results show that past employment has indeed a stronger effect on current employment in SMEs than in large firms. The small difference in the coefficients (0.85 vs. 0.83) can easily be misleading. The coefficients imply that the share of large firm employment levels changing with economic activity is two percent higher than the corresponding share of SMEs.

We also apply the regression analysis to industry segments in order to see whether our finding for the industry sector as a whole are particularly pronounced in industry segments with high shares of SMEs. The segments of German industry in which SMEs have traditionally been very successful are capital goods and durable consumer goods. Equations (5a) through (5d) apply the specification of equation (1) to the different class-sizes of firms. The empirical evidence (see Table 2) is indeed more pronounced at these industry segment levels than at the total industry level. The higher coefficients for large firms again indicate a stronger "hiring and firing" among large firms than among SMEs.[7] Equations (6a) through (6d) use again value added growth in the regressions as an alternative variable for changes in economic activity. All results are consistent with the finding on the industry level but are now more pronounced. For example, in consumer durables the cofficient for consumer goods producers is 0.89 for large firms, while it is only 0.69 for SMEs. By analogy with equation (4), equations (7a) through (7d) examine whether past employment levels determine current employment more in SMEs than in large firms. The

[7]Again the low D.W. values change with the inclusion of an AR(1) process which, as it turns out, does not substantially change the coefficients important for our analaysis.

estimates support this position for both industry segments studied here.

The macroeconomic implication of the results in Tables 1 and 2 is that SMEs stabilize employment over the business cycle, because they do not change their employment as much as large firms when economic activity changes. Thus, the empirical evidence supports the view of an employment buffer function of SMEs as discussed in the previous section.

Tab.2: Regression Results on Employment in Selected German Industry Segment (1978 - 1992)

Eq.	Explained variable	Const.	GNP growth minus prod. growth	Value added growth	Employ-ment (-1)	R^2	D.W.
(5a)	Rel. change in employment L capital goods	-1.14 (-1.43)	1.41 (2.72)			0.36	0.82
(5b)	Rel. change in employment M capital goods	-0.22 (-0.42)	1.36 (4.06)			0.56	1.02
(5c)	Rel. change in employment L cons. durables	-4.24 (-3.94)	2.22 (4.45)			0.58	1.05
(5d)	Rel. change in employment M cons. durables	-1.77 (-2.69)	1.26 (2.86)			0.37	1.09
(6a)	Rel. change in employment L capital goods	-3.11 (-2.79)		0.68 (3.46)		0.48	1.53
(6b)	Rel. change in employment M capital goods	-2.04 (-2.86)		0.55 (5.24)		0.70	1.80
(6c)	Rel. change in employment L cons. durables	-4.77 (-11.57)		0.89 (14.33)		0.94	1.99
(6d)	Rel. change in employment M cons. durables	-3.77 (-7.36)		0.69 (6.79)		0.78	1.78
(7a)	Employment L capital goods	290727.5 (0.77)		15779.8 (3.09)	0.86 (5.86)	0.76	1.49
(7b)	Employment M	-116306.6		7061.3	1.07	0.98	2.13

	capital goods	(-1.71)	(5.56)	(19.9)		
(7c)	Employment L	12034.6	3985.3	0.92	0.98	2.12
	cons. durables	(0.73)	(12.94)	(26.2)		
(7d)	Employment M	3859.1	6324.9	0.96	0.98	1.80
	cons. durables	(0.09)	(6.48)	(22.69)		

t-statistics in parentheses
Source: Federal Statistical Officce and own calculations

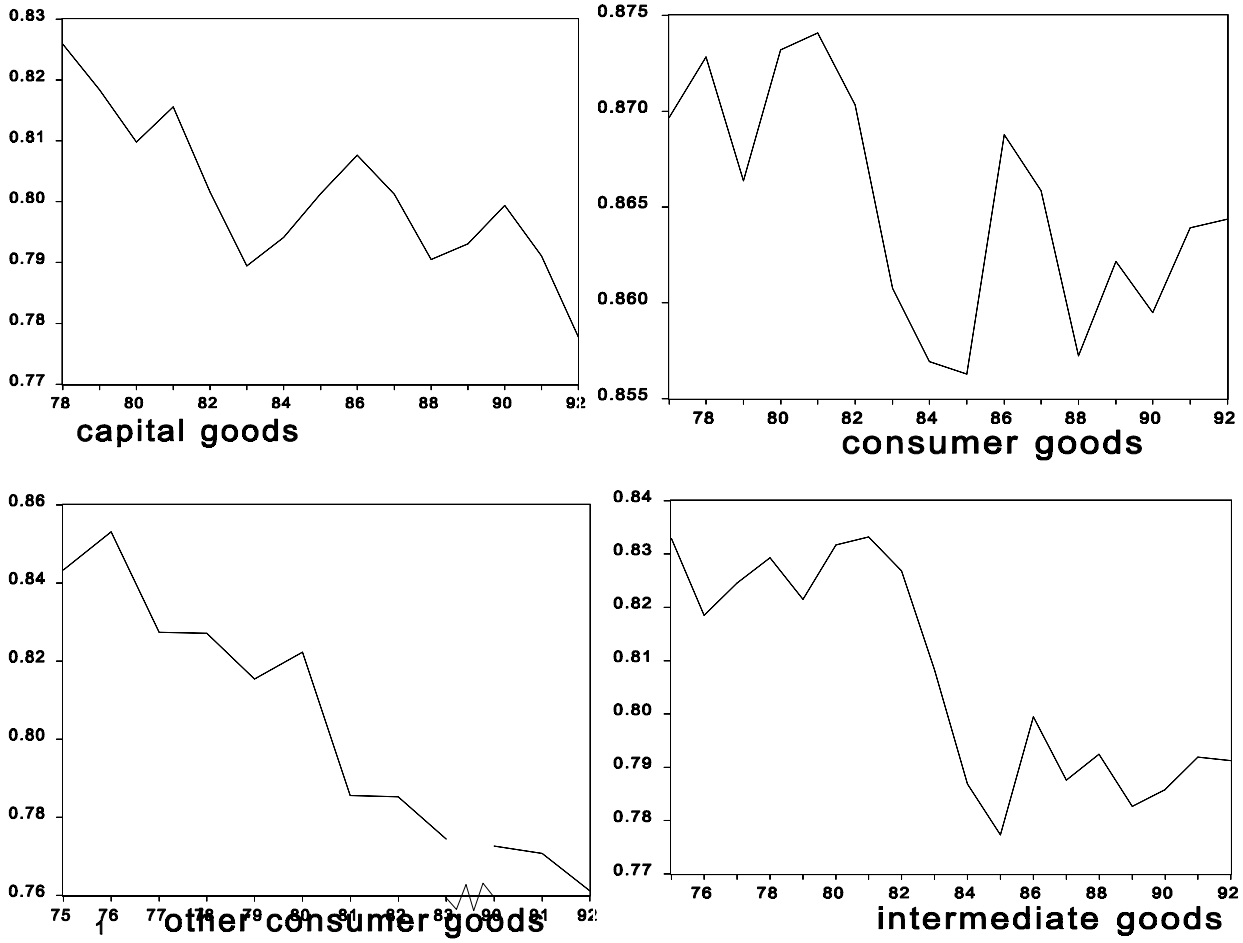
4. Firm size and wage developments

The results on the influence of firm size on employment developments also have a microeconomic implication. They suggest that SME jobs are saver than those in large firms. The latter implication gives rise to the question whether wages in the two groups are different reflecting the differences in the workers' risk of getting unemployed. Figure 3 shows the ratio of SME salaries to the pay in large firms for different industry segments. Although it is difficult to compare wages of different companies because the job content may be different, the time series clearly indicate that SME wages are lower than wages paid by large firms. This wage differential is also well documented for the US. Brown, Hamilton and Medoff [1990] show that workers in big enterprises earn over 30 percent more than their counterparts in small enterprises. The authors refer to this as "the size-wage premium." The time series for Germany shows that the difference between wages paid by large firms and wages paid by SMEs has increased over the past two decades. An explanation suggested by our analysis would be that this is due to the increase in unemployment over this period which drives up the workers' risk of getting unemployed.

Since the wage ratios in Fig. 3 show significant changes over time it is interesting whether these changes can be explained with arguments implied by our analysis. Since we interpret the deviation of the ratio of SME wages to wages in large firms, at least partly, as a reflection of the difference of the workers' risk to get unemployed, fluctuations over time should also reflect changes in this risk. Those changes would result if the overall risk of getting unemployed increases. We therefore examine whether the development of the unemployment ratio has a

significant influence on the wage ratio (relative wages). We regress relative wages on the unemployment ratio for different industry segments and report the results in Table 3. For all segements analyzed, there is a significant negative effect of changes in economy-wide unemployment on relative wages. The negative coefficients indicate that an increase in unemployment lowers the wage ratio which implies that the gap to wages paid by large firms widens.

Fig.3: The Development of Relative Wages in Different Segments of German Industry



[1] Data for 1984 through 1989 are not available

Source: Federal Statistical Office

Tab.3: Response of relative Wages to Unemployment in Selected German Industry Segments (1978 - 1992)

Explained variable	Const.	ALQ	ALQ (-1)	R^2	D.W.
Relative wages capital goods	0.82 (81.56)		-0.32 (-2.24)	0.28	0.69
Relative wages consumer goods	0.88 (245.1)		-0.22 (-4.41)	0.60	1.99
Relative wages other cons. goods	0.85 (66.29)	-0.72 (-3.87)		0.52	0.64
Relative wages intermed. goods	0.86 (46.32)	-1.12 (-3.61)		0.59	0.72

t-statistics in parentheses
Source: Federal Statistical Office and own calculations

In order to find out more about the wage developments in large firms compared to SMEs we now ask whether wages vary less in SMEs. The rationale behind this question is as follows. If jobs are saver in SMEs one would expect that wages of SMEs do not respond as much to changes in economic activity as they do in large firms. Therefore, we regress wages in the industry segments with a strong SME share on value added of the respective industry segments and the lagged wage level. The results are shown in Table 4 and indicate that for both the capital goods and the durable consumer goods sector there is a slight difference between large firms and SMEs in the response of their wages to the value added performance of the previous period.

Table 4: Determinants of Wages in Selected German Industry Segments (1978 - 1992)

Explained variable	Const.	Value added (-1)	Wages (-1)	R^2	D.W.
Wages L capital goods	2.24 (1.59)	1.28 (3.98)	0.61 (5.24)	0.99	1.31
Wages M capital goods	3.74 (4.27)	1.25 (5.98)	0.76 (15.17)	0.99	1.74
Wages L dur. cons. goods	-0.73 (-1.42)	2.74 (6.60)	0.91 (40.15)	0.99	2.05
Wages M dur. cons. goods	-1.81 (-3.96)	2.32 (7.93)	0.81 (25.62)	0.99	1.58

t-statistics in parentheses
Source: Federal Statistical Office and own calculations

5. Summary and conclusions

The paper examines the often-expressed view that business cycles lead to smaller employment fluctuations in small and medium-sized firms compared to large firms. We first develop a simple model that serves as a theoretical framework. The crucial element responsible for the different response is the presence of sunk costs associated with employment changes. These are smaller for large firms, mainly due to economies of scale and economies of scope. The empirical analysis is applied to German industry because it is often used as an example for a relatively strong group of SMEs. We also examine the group of capital goods producers and durable consumer goods producers since they exhibit the highest share of SMEs in the different industry segments. Our findings confirm the view of a smaller employment response of SMEs to changes in economic activity.

A conclusion of our results is that, for the case of Germany, SMEs serve as an employment stabilizer over the business cycle. In additon, the results imply that jobs seem to be saver in SMEs than in large firms. As we show, a lower unemployment risk of jobs in SMEs is reflected in lower wages and a lower wage response to output changes.

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