Plant closures, temporary workers and a management controlled setting: Further evidence on the Closedown effect

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**Abstract**

The Closedown effect is a human-driven productivity increase effect that appears during the process of plant closure. This effect has been reported to exist in multiple cases from various countries. A pattern of explanations to this complex phenomenon is emerging. Burawoy (1979) develops our understanding with an analysis of the “games” that occur regarding a continuous process of negotiating and re-negotiating the wage/effort bargain, labor productivity and causes of alienation. In the context of plant closure research results indicate that this “manufacturing consent” is dramatically changed.

Recent research point to the explanatory importance of how management and control systems vanish. Following a diminished management and control system the frontiers of control are shifting in the labor process, in the favor of the workers. This shapes a new institutional order, with an “unrestricted

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autonomy” and lack of group pressure towards “restricted work practices”. Empirical evidence points to the fact that a broader scope for rationalizations appear during the closedown period. New types of rationalizations and improvements and changes in work design are implemented.

Previous research indicated that when there is a scope for autonomy certain dynamics comes into play. Workers start to practice their innovative skills and conduct day-to-day rationalizations. Such rationalizations involve radical and/or incremental type of improvements and/or rationalizations of work methods, increased discipline and/or enhanced efforts (Wigblad et al. 2012). Typical for the majority of these cases are that they represent a long-term closedown period (over twelve months).

This paper challenges the reach of these results by analyzing the Scania’s closure of two plants in Sweden between 2005-2008. In contrast to previously reported closedown cases, Scania maintained their management and control system and kept on “business as usual” throughout the closedown processes. Still, a Closedown effect was recorded. In our analysis, we elaborate on a set of complementary yet challenging explanations to the Closedown effect and put specific emphasis on two aspects; a maintained socially responsible management and control system and the high level of temporary workers that were present in operations during the closedown process. By doing so, this paper extends both the theoretical and empirical domains of the plant closure research. Theoretically, the paper elaborates on possible implications with these new empirical findings on hand concerning further understanding of the Closedown effect. Empirically, this paper encounter one case in which corporate management initiated both capital investments and implemented a newly designed product and production process, during the closedown process, i.e. practicing a strong management control.

**Key words:** Closedown, Labor productivity, Management control, Plant closure, Temporary workers
INTRODUCTION

Downsizing and plant closures are events that come into practice in corporate restructurings. This is something that has been widely reported in the media in the perspectives of global financial crises and, for example, as a consequence of outsourcing or relocation of production to low-wage countries (Marks & Vansteenkiste, 2008; Hansson, 2008).

The extant and oft-cited literature on downsizing indicates that workforce reductions often lead to job insecurity and negative performance outcomes among survivors (Gandolfi & Hansson, 2011, 2010). These outcomes are often manifested through the ‘survivor syndrome’. The survivor syndrome is, typically, associated with negative performance outcomes, low worker commitment (Cameron et al., 1993; Littler, 2004, 2003a, b, 1999, 1994), decreased employee efforts and adaptability, increased propensity to leave (Dawkins, et al., 1999; Littler, et al., 2004, 2003a, b,), increased resistance to change (Brockner, et al., 1992, 1987; De Meuse, et al., 1997, 1994; Greenhalgh & Rosenblatt, 1984; Mische, 2001, Morris, Cascio & Young, 1999), decreased morale, loss of trust, increasing conflicts, lack of teamwork and lack of leadership (Cameron, 1994).

On the other hand, plant closures seem to result in high performance outcomes, often after a short period of performance reductions, some factories have recorded their all time high in productivity during their closedown process (Hansson, 2011; Wigblad et al., 2012). The increase in productivity as well as the improvements in product quality is primarily being driven but human efforts, rather than being driven by capital investment (Hansson & Wigblad, 2006a, b; Sutton, 1987; Häsenen, Hellgren & Hansson, 2011). These increases and improvements have in the extant literature been labeled as the Closedown effect to which researchers have provided a broad set of explanations (Bergman & Wigblad, 1999; Hansson, 2008). This effect has been reported to exist in multiple cases from various countries (Wigblad et al., 2012).

Researchers have pointed to that a closedown decision function as a trigger of certain dynamics that comes into play during the plant closure process (e.g., Hansson & Wigblad, 2006b). A main driver of these dynamics is the management control becomes diminished. Managers become busy in, for example, managing the closedown process as such, running negotiations with different stakeholders (e.g., labor unions, the municipality, government, etc.). A diminished management control implies that the day-to-day management, previously established control systems as well as objectives for productivity also become abandoned (Hansson, 2008). This in turn serves as a foundation from which a new institutional order develops. Diminished management control generates an unrestricted autonomy and reduced group pressure towards restricted work practices, dramatically changing the manufacturing consent (Wigblad, Lewer & Hansson, 2007; Wigblad et al 2012).

With unrestricted autonomy workers enjoy a broader scope for practicing innovative skills and rationalizations including improvements and changes in work design, including radical and/or incremental type of improvements and/or rationalizations of work methods, increased discipline and/or enhanced efforts (Wigblad et al. 2012).
On the other hand, Häsenen, Hellgren and Hansson (2011) indicate that a Closedown effect was possible to record in a plant closure where management maintained their management control system, employing high goals for productivity and efficiency during the closedown process. Following this result this paper challenges the reach of the extant plant closure research by analyzing the closures of two plants. In contrast to previously reported closedown cases, the day-to-day management, the control systems as well as objectives for a positive productivity development were maintained, running business-as-usual, throughout the closedown processes. In both cases productivity continued to increase, indicating a Closedown effect.

Common for a broad range of plant closures is that both management and labor unions are often restrictive in the use of temporary workers. Primary reasons to this is an anti-management approach where the workers are reluctant to help management out, rather scape-goating them for the closedown decision as such (cf. Hansson, 2012; Häsenen, Hellgren & Hansson, 2011).

In our analysis, we elaborate on a set of complementary yet challenging explanations to the Closedown effect and put specific emphasis on two aspects; a maintained socially responsible management and control system and the high level of temporary workers that were present in operations during the closedown process. By doing so, this paper extends both the theoretical and empirical domains of the plant closure research. Theoretically, the paper elaborates on possible implications with these new empirical findings on hand concerning further understanding of the Closedown effect. Empirically, this paper encounters a case in which corporate management initiated both capital investments and implemented a newly designed product and production process, during the closedown process.

THEORETICAL FRAMEWORK

Closures demises, in contrast to workforce reduction, and displaces in the vast majority of cases all members and it also causes the loss of an important network of mutual obligations of the employees (Littler & Hansson, 2007, Hansson & Wigblad, 2008; Bell & Taylor, 2011). Closures also destroy the major social arena in which members have spent much of their time. Because of this loss, a plant closure is emotionally charged, causing mourning, anger, depression, sorrow and fear of the unknown, the future, and the ambiguous present (Blau, 2007).

Extant research on plant closures has indicated that during the process of closedown certain dynamics comes into play such as: diminished management control, increased space for decision-making by non-managerial employees and the development of informal groups, changed leadership patterns and a growing individualization (Hansson, 2008; Wigblad et al., 2012). Also, a common feature of plant closures is that a temporary organization replaces the previously permanent organization and is prevalent throughout the closedown process (Wigblad, Lewer & Hansson, 2007).

Scholars have indicated that plant closures seem to result in high performance outcomes and increased productivity and even enhanced product quality, given a situation of certainty of job loss (e.g., Bergman & Wigblad, 1999; Hansson & Wigblad, 2006b; Häsenen, Hellgren & Hansson, 2011; Wigblad, et al.,
Evidently, certain dynamics come into play during a plant closure process where diminishing management control, reordering of the economic and institutional structure, increased operative space, development of informal leadership and informal groups are often reported as typical outcomes (e.g., Bergman & Wigblad, 1999; Hansson & Wigblad, 2006a, b; Wigblad, Lewer & Hansson, 2007; Wigblad, et al., 2012).

Researchers have provided a wide range of explanations to these outcomes. For example, it is believed that various types of retrenchment programs, which involve socially responsible management approaches in handling the closedown process, including educational programs, early retirement programs, job search aid, severance payments and bonus programs (Bergman & Wigblad, 1999; Brown, Schmitt & Schonberger, 2004; Hansson & Wigblad, 2006b). However, when closure is managed in a non-socially responsible way similar positive productivity increases are still observed (Hansson & Wigblad, 2006a, b; Sutton, 1987, 1990).

Other explanations focus on employee motivation. The improved productivity outcomes are dependent on workers’ motivation and effort, and thus sensitive to management actions, information provided, and the provision of a ‘credible’ closure story (cf. Hansson, 2011, 2008). One line of argument is that diminishing control and management linked to closedown leads to an increase in workers’ job autonomy (Wigblad, et al., 2012). This provides opportunities for development of innovative skills, reduction of job-rotation and informal leadership and self-organizing work groups, while planning is deployed to the lower hierarchal levels and the levels of standardization and formalization of work decline (Bergman & Wigblad, 1999; Lewer, 2001). In addition, some studies suggest that workers in closure contexts have maintained significant job pride, striving to show that the management made a wrong decision in the instant hope for prolongation of business processes at the plant or facility (Hansson, 2011; Häsenen, 2010; Bergman & Wigblad, 1999; Lewer, 2001).

Central the arguments in the extant plant closure research have revolved the diminishing management control and dismantling of the management control system (cf. Hansson, 2008). Managerial actions influence worker’s interpretations, their perceived level of threat as well as the relations between management and the workers, which can have either positive or negative productivity outcomes (Shaw & Barrett-Power, 1997). Productivity rises when the means of control over everyday production operations are reduced, when investment is lacking and management’s commitment and attention are both low. Management diminishes the means of control and operative space is gained for the workers. This increased operative space provides opportunities for worker autonomy, day-to-day rationalizations, collective action and self-organizing activities (Bergman & Wigblad, 1999; Wigblad et al., 2007, 2012 Cunningham, 1997; Lewer, 2001; Sutton, 1987).

Further, scholars have argued that management’s interest in maintaining the established order at the workplace diminishes and so does the management control over daily operations, affecting the given institutional and economic structure (Hansson, 2008). Workers find increased operative space and previously negotiated levels of productivity become abolished. Here, the increased operative space implies that workers can go beyond previously established routines and procedures and even rationalize production (cf. Hansson, 2008, 2011).
Operations can also be speeded-up since workers can focus solely on the production task and are not distracted by problems or issues in the organization. This is sometimes possible as a wear-down strategy is often prevalent in a closedown context. This provides less interruption for (long-term) maintenance and repair of production equipment. Fewer projects, such as production or productivity enhancing ones, are likely to be initiated during a closedown process, providing the workers with more time in production. This provides more up-time and also enhances productivity (Ichniowski, Shaw & Prennushi, 1997).

On the other hand, Häsenen, Hellgren and Hansson (2011) indicated that it is possible to detect enhanced performances during closedown processes in which managers have maintained their control systems and a continued goal setting approach in a closedown process that lasted for 26 months. Also, managers tried to maintain the workforce throughout the closedown period, without contracting temporary workers. In closedown contexts, individuals’ current goals suddenly become obsolete, meaning that their preferred end state will not be attained, and perhaps new goals have not been adopted or created for that specific context (Shah & Kruglanski, 2008). During such changes, the goal theory suggests that performance motivation will drastically decrease as people learn what the situation allows and determine what they currently want (Shah & Kruglanski, 2008). In comparison, closures have one advantage over the other organizational changes, as they constitute clear goals (plant closure) in conjunction with a high certainty of end outcome (job loss), and this environment may prove more conducive to the cognitive process of creating new goals.

**Labor processes during plant closures**

The traditional labor process theory focuses on the contradictions between capital and labor (Marx 1997 [1867]; Braverman, 1974), control strategies over the labor process (Edwards, 1979; Hill, 1979) and on workers resistance (Friedman, 1977; Hodson, 1995).

Burawoy (1979), on the other hand, emphasized how manufacturing consent arises within the capitalist mode of production. He argued that “consent” in the workplace arises from the organization in the workplace which leaves personnel with the perception that they have choices and the “participation in choosing ... generates consent” (p. 27). Burawoy (1979, 1985) handle the “the game of making out” as a core concept in his manufacturing consent theory. The games are organized around constantly negotiation and re-negotiation the wage/effort barging, labor productivity and causes of alienation. Industry sociology provides evidence that workers construct games in order to reduce the negative effects of the subjective alienation and sometimes directly adjust the levels of output (e.g. Burawoy, 1985; Roy, 1960).

Despite the “game of making out” had a ceiling and a rule of how much work were permitted to be reported (140 percent) among the “players” it, at the same time, contributed to good performance where Burawoy – in his ethnographic study – found himself; “breaking (his) back to make out, to make the quota ... risking life and limb for an extra piece” (Burawoy, 1979, p. xi). However, the labor process theory and Burawoys theory in particular have, in the extent plant closure literature, been used as a
theoretical framework in order to understand how the frontiers of control shift during the closedowns process (Wigblad et al., 2012). Indeed, empirical evidence has showed that the manufacturing consent dramatically changes during closedown processes and consequently the frontiers of control shifts, in favor for the workers. In other words, the game of making out has reached “the end of the game” (Wigblad et al, 2012). Hence it is argued that new frontiers of control come into practice and management do no longer demand increased performance. Consequently opportunities arise for the employees to have greater control over the labor process and they are able to influence the “rules”, which in turn, evolve into “unrestricted autonomy”. This changed context contributes to that group pressure towards restricted output disappears and, hence, creates increases levels of productivity during the closedown process. (Wigblad et al 2012)

**Temporary workers, plant closures and performance**

Temporary workers are often hired in order to achieve numerical flexibility or stability and to handle fluctuations in the work load (Relly, 1998; Atkinson & Merger, 1986; Neshiem, 2003; Housman, 2001). In plant closure contexts it has seldom been reported that some companies hired temporary employees to handle fluctuations in the production (Weber & Taylor, 1963).

In closedown contexts there is a tension between management and the workers and their representatives. The labor unions are, in the vast majority of reported closedown cases, reluctant to and to a high degree negative to the use of temporary workers. Management is also reluctant to the use of temporary workers, rather focusing on planning for and successively dismantling the closing plant (Hansson, 2011).

Addressing productivity behavior among temporary workers during normal operations the extent research shows conflicting and inconsistent results. One stream of research indicates that temporary workers have lower productivity compared to permanent employees (Nollen, 1996; Dias-Mayans & Sanchez, 2004; Nollen & Axel, 1996). Explanations to such outcomes are dependent of that temporary workers are only present at the company for a limited time, and the cost of training for the company will not always be recovered, even if temporary employees receive less training compared to their permanent counterparts (Nollen, 1996 Albert et al, 2005). According to the labor economic models for training, the return on investment for employers is increased productivity (Forrier & Sels, 2003: 645).

Another stream of research has indicated that there are no significant differences when it comes to productivity among temporary and permanent worker (e.g., DeCuypers & DeWitte, 2005). And on the contrary to the first stream, indicated an increased productivity among temps compared to their permanent counterparts, arguing that temporary workers would prefer to become core workers and therefore they establish a similar relationship to the organization as the core workers (Engellandt & Riphahn, 2005). If direct-hired temps perform well they may increase their chances to become core workers due to management more likely will convert the high performance temps to core workers. It is plausible that direct-hired temps are trying to signal to the employer that they will be good core workers.
(Chambel & Castanhira, 2007). Temporary employees may not be able to signal their characteristics to the employer by low absenteeism rates and therefore put in more effort (Engellandt & Riphahn, 2005).

Temporary workers seem to affect the permanent workers productivity. For example, permanent workers productivity is higher when temporary workers are present (Osterman, 1988). This is argued depending on an increased perceived ‘job security’ among the permanent workers. Permanent employees with low job security that are feeling threaten by the temporary employees and experience a decreased obligation to perform well. To the contrary, permanent employees with high ‘job security’ are more likely to perform well when temporary employees are present (Kraimer et al, 2005). Temporary workers increased the tension and conflicts between workers as well as between workers and management (Geary, 1992).

An analytical distinction should also be made, regarding temporary workers. There are differences in temporary workers that are filling a temporary position, being employed by a contractor and a temporary worker that is hired temporarily. The latter risk ending up in unemployment as the temporary contract is expired where as the temporary worker from the contractor is likely to go back to the contractor for another assignment (cf. Barley & Kunda, 2006: 177ff)

In the context of plant closures, Wigblad (1995) reported one case with more than 25 percent of the workforce was temporary workers throughout the restructuring process, and during the countdown period the factory reported an all time high productivity. There is therefore a reasonable presumption that the temporary workers had a high productivity and performed well in this case.

**RESEARCH DESIGN**

This article draws on a case study of two closing plants that were situated in the Scania corporation. Both plants were closed in parallel during the period 2005-2008. Case study research can provide in-depth knowledge and an opportunity for the researcher to generate a broader understanding of a complex phenomenon such as the closedown effect. These cases were selected because it was possible to enter the firm shortly after the public announcement in order to gather prospective data and to follow the process of closedown. Full access was granted, both in time (e.g. for interviews and observations) and materials (e.g. collection of documents, productivity statistics, reports and protocols).

Semi-structured interviews were carried out as a part of a larger interpretative case study of how a plant closure process unfolds. The study involved multiple interviews with key participants, primarily blue collar workers, and was combined with the use of various types of company specific documents. The case study was longitudinal in its nature, following the closedown process from its initial decision to the final closure, over a period of eighteen months. Repeatable studies are almost impossible to conduct, why instead comparative studies can both add new information to and validate previous studies.

In the case presented below we analyze production statistics and performance measures outlining analytical scheme (See: Table 2). We adopt the same performance indicators as were applied within the
corporation of the closing plants. In the analysis, we take into account and elaborate on the level of temporary workers in relation to permanent workers, given the managerial strategy of utilizing temporary workers during the closedown period. Notably, we did not find any significant market related restrictions, affecting the possibilities to increase the production rate, or any changes in relation to suppliers or customers, design and production methods that could have affected the product quality or delivery reliability.

The calculation of change in production rate is based on the continuous data that were retrieved during the broader data collection for these cases. We calculate for average, mean and standard deviation values for the continuous annual data. We also apply the same statistical test as Hansson and Wigblad (2006b) testing for parallelism (of the two linear trend lines, regarding the productivity development, before and after the closure announcement) in order to distinguish the statistical significance of positive or negative changes in outcomes, here comparing annual data of the production rate post the closedown decision (Kleinbaum, et al, 1998, p. 321ff 1998; Hair, et. al., 1998: 169ff). The reason for this is as a consequence of the fact that we did not receive data for the periods before the closure announcement.

In order to distinguish the strength of the closedown effect, here represented by the changes in the production rate we apply the same measure as Wigblad et al., (2012) for calculating a comparative value, enabling an inter-case comparative analysis.. This value is based on a test of the use of a single multiple regression model comparing intersecting lines, given unequal slopes and unequal intercepts between the periods pre and post the closedown decision (cf. Kleinbaum et al, 1998, p. 327ff).

We also analyse the following performance measures; Product quality level, Delivery reliability and Attendance (Negative absenteeism) by calculating for average, mean and standard deviation values, and by doing so broadening the analysis of performance measures that seldom have been tested in closedown contexts (see: Hansson, 2008: 45ff).

The Scania case not an analytical typical case, given the extant plant closure research - rather this case serves a negative case in the aspect of a present management, maintained management control system and objectives for the productivity development as well as utilized temporary workers (cf Lincoln & Guba, 1986: 309). The contrasting empirical cases reported in the plant closure literature have appeared not only in Scandinavian contexts, but also in North America (Sutton, 1987; Cameron & Lavine, 2006; Brown, Schmitt & Schonberger, 2004), Europe (Hansson 2008; Hansson & Wigblad, 2006b; Wigblad et al., 2012) and Australia (Lewer, 2001 ; Littler, 1999).

Following the categorization scheme of Hansson and Wigblad (2006b) it possible to categorize the Scania closures to other reported closedown cases of being of a long-term character where management provided a socially responsible setting:

<table>
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<tr>
<th>Setting</th>
<th>Time frame</th>
<th>Long-term (&gt;12 months)</th>
<th>Middle range (7-12 months)</th>
<th>Short range (0-6 months)</th>
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BHP Billiton [3, 4]  
Marmaverken [10, 11]  
SSAB [11]  
*Scania Falun*  
*Scania Sibbhult*  

**Strategic Non-socially responsible, Tactic Socially responsible**  
Fundia Steel [5, 8]  

**Non-socially responsible**  
Gislaved, Studding [5, 8]  
Rocky Flats [7]  
Hammars Glass Work [11]  

**Socially responsible**  
Cabinet Factory [5]  
Hospital [9]  
Auto plant [9]  
Gislaved, Tire Manuf. [5]  
Boston Scientific [6]  
Electric car company [9]  
Sporting goods store [9]  
Retail store [9]  
Center for disabled [9]  
Academic unit [9]  
Research organization [9]  

**References in the table**  
[4] Littler, 1999  

**Table 1 Overview of plant closure cases, their setting and time frame**

**The Scania closedown cases 2005-2008**

In the Swedish context, socially responsible closures in history are recognizable from when Stora Kopparberg AB closed its operations in Vikmanshyttan and when Korsnäs AB closed its operations in Marmaverken 1985 – 1990 (Wigblad, 1995). These closures and those of Scania (Falun and Sibbhult, 2005 - 2008) are similar in that they all:

- had unusually long closure periods,
- recruited temporary manpower so that permanent employees could take other job opportunities,
- involved management that took deliberate action to mitigate the effects of the closures on all affected parties.

The manner in which Scania AB (Ltd.) closed its Falun and Sibbhult plants is commendable in terms of corporate social responsibility (CSR). The company considered all parties that would be affected by the closures, from the individual employee to the communities at large.

The outcome of the Scania restructuring was that eighty-three percent of the 1250 employees at the two plants were offered alternative employment opportunities, replacements, or retirements while up
to 55 percent of established jobs in the two respective communities were sustained as a result of reorganization.

It was possible for Scania to be responsible for those parties who were affected by the plant closures, just as it is possible for other corporate groups that are facing reorganization. The pre-requisites for such a corporate social responsibility during the time of plant closure are that:

- restructuring is proactively planned and managed,
- restructuring occurs in a positive phase of a business cycle,
- the firm addresses any job concerns that employees might have with employability as well as the needs of local communities to sustain levels of employment.

There are mainly three principal actors that are involved in the restructuring of a plant: these are management, employees, and local community. Satisfying all three is a challenge because each typically has a different perspective. In the case of Scania, the perspectives and solutions were as follows:

- Top management sought efficiency and increased competitiveness by the closedown of operations in Falun and Sibbhult. The outcome was a payback time for restructuring, phased between 2005 and 2008, and estimated to be shorter than three years, which is fast for such a strategically motivated restructuring.
- Employees focused on finding and adapting to new job opportunities. The outcome was that 83% of the permanent workforce found alternative work (or other opportunities) and 17% were left redundant.
- The local communities were concerned with sustaining employment in their respective region. The outcome was that up to 55% of Scania’s industry structure was replaced with new operations in the region.

The first public information concerning the closedown decision was 10th October 2005, which started the negotiations between involved parties with the aim to create coordinated actions. The board decision to close down operations were due to 14th March 2006. The final negotiations concerning the terms for the closedown period was finalized 27th October 2006. The agreement meant among other things that the former maximum level of 15 percent for temporary employees was removed by the local trade unions in exchange for the implementation of SR on the part of management. Based on this the top management of Scania made active efforts to maintain their management and control system and kept on “business as usual” throughout the closedown processes.

During the Scania (2005-2008) advance notice period both plants operated with similar conditions. Capacity increased during restructuring by approximately 30–40 percent in both plants and employee performance was evaluated by management as continuously good. Scania also made a big effort to outsource manufacturing work during this advance notice period in both locations which created four new subcontracting plants to Scania.
During the last part of the closedown period approximately 50–55 percent of the workforce was directly hired as temporary employees at both production units. Additionally, approximately 10 percent were employees hired from temporary staffing agencies – more in Sibbhult and less in Falun. An evaluation of the temporary employees in the Scania Falun plant showed that more than 55 percent reached a relatively high level of qualifications, comparable to the qualification levels of the permanent employees, and only 33 percent stayed at the lowest level of qualifications (Hinders and Wahlberg, 2008).

The production unit at Sibbhult was unique in that it also worked on the basis of a 2004 agreed investment program, to develop and install a new product and production line, which achieved notable good results. Scania decided to continue with this investment plan during the closedown period. Directly before the plant closed, the new production line for the assemblage of gear boxes was put into operation in Sibbhult.

One measure taken was to temporary relocate 58 workers from the main plant in Södertälje (closely situated at the corporate headquarters) to the Falun plant to restore the downturn in productivity directly after the public announcement of the closedown decision. When the productivity was restored in the Falun plant two months later the workers was back in Södertälje.

Another forceful measure taken by top management was to replace the local management in Sibbhult with management personnel from the corporate headquarters, when the local management at the Sibbhult plant decided to transfer the local management staff to a new subcontractor to Scania that was a spin off from the Scania plant.

**Performance during the process of plant closure**

In this section we outline an analysis of the performance development in the both plants. We adopt similar measures testing for parallelism in-between different periods (cf. Hansson & Wigblad, 2006b; Wigblad, et al., 2012). We adopt the performance measures as they were used in each respective plant.

**The Sibbhult plant**

Performances in the Sibbhult plant came to increase throughout the closedown period. Production rate was seen as a critical performance indicator. The production rate increased to such extent that it was possible to detect a statistically significant effect between the three periods measured (see: table 3). The strongest increase was between 2006-2007 (T=962,0) that can be compared to the period 2007-2008 (T=142,3). This clearly indicates the presence of a Closedown effect (see also: Hansson & Wigblad, 2006b).

The delivery reliability remained on a high, to very high level during 2004-2007, on average >99%, which is on a comparable high levels before the closure announcement. The attendance among the workers
The Falun plant

Compared to the Sibbhult plant another productivity measure was applied in the Falun plant. Productivity was calculated as an average productivity per worker and day. The productivity remained relatively stable throughout the closedown period. It was not possible to detect a significant change (increase or decrease) in the productivity levels for the measured periods.

The delivery reliability remained on a high, to very high level during 2004-2007, on average >99%, which is on a comparable high levels before the closure announcement. The attendance among the workers also remained on a high level throughout the closedown period.

At the Falun plant product quality was measured through three different types of faults/100 units. On an aggregated level of analysis we show that the product quality came to successively improve between 2004 and 2006, and decrease during 2007.

Table 2 Productivity analysis

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<td>Production rate development (%)</td>
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<td>Average productivity/worker/day</td>
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<td>Mean production rate (%)</td>
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<td>Standard deviation (%)</td>
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<td>Standard deviation (production rate)</td>
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The Falun plant

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Table 2 Productivity analysis

**ANALYSIS and CONCLUSIONS**

Wigblad et al., (2012, 2007) argue that in comparably long closedown processes the closedown effect is due to shifting frontiers of control. This conclusion seems to integrate several explanatory factors such as; unrestricted autonomy and reduced group pressure towards restricted work practices, dramatically
changing the manufacturing consent. This paper challenges the reach of these results concerning diminished management and control system shifting the frontiers of control in the labor process, in the favor of the workers.

Häsenen, et al., (2011) recorded a closedown effect although the control system was maintained in one closedown case, which indicates that the explanatory factors for the closedown effect are not only related to the shifting frontiers of control. The Scania case, that is outlined, provides support to these new results disseminating one plant in which corporate management initiated both capital investments and implemented a newly designed product and production process during the closedown process, i.e. practicing a strong management control. Also the Scania case indicates that the management control system was operating in the both closing plants.

The psychological mechanisms that are coming into play connected to the closedown decision can be assumed to still be valid in situations where the control system is operating. The psychological reactions to the closedown decision that usually creates a downturn in the productivity can single down to the phases; denial, anger, bargaining, depression, acceptance (cf. Kübler-Ross, 1969, 1975), which are present during the first months of the closedown period. The closedown case reported by Häsenen, et al., (2011) lasted for 29 months and the closedown period was 32 months for the Sibbhult plant vis-à-vis 38 months for the Falu plant. These are comparably long closedown periods, which we argue creates space for new conditions (cf Hansson & Wigblad, 2006b).

The socially responsible management approach in the Scania closedown cases caused the situation with maintained management control, with a high degree of temporary workers involved during the closedown period, to enable workers to connect to new jobs in the local labor market. During the closedown period both production units had approximately 50-55 percent temporary workers and also approximately 10 percent hired workers from temporary staffing agencies. We propose that these temporary workers accepted new psychological contracts that were established based on the temporary assignment and this contributed substantionally to the work climate in the plants.

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Our proposition is based on the Burawoy (1979) analysis of the manufacturing consent that occur regarding games of making out which is a continuous process of negotiating and re-negotiating the wage/effort bargain, labor productivity and causes of alienation. The majority of the employees in the closedown plants during the end of the closedown period were temporary hired and controlled by the new temporary game. Our findings from the Scania case illustrate that many young unemployed people were hired to work in the plants during the closedown process when the permanent workers found new
jobs. Hence, a lot of unemployed workers gained experience and increased their employability for the future. An evaluation made by Hinders & Wahlberg (2008) concerning the temporary employees in the Scania Falun plant, empirically validated that more than 55 percent reached a relatively high level of qualifications, comparable to the qualification levels of the permanent employees. Only 33 percent stayed at the lowest level of qualifications. This is due to the long restructuring period, and consequently a lot of the temporary employees had comparably long contracts.
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