Redundancy duration and business alteration

- Consequences of establishment closures in Sweden

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Abstract

This thesis follows and analyses what happens to individuals who work at establishments that are closed down. I examine if and when the displaced workers are re-employed. Furthermore, I examine to what extent individuals have moved, changed industry of work, have started to commute or have become self-employed. Additionally I examine, if the workers become self-employed after displacement, how many of them that does so within the same industry of work as they initially got displaced from. A unique longitudinal matched employer-employee data incorporating all firms, establishments and their employees in Sweden between the years 1997-2008 is used. All individuals between 25 and 55 years of age at the time of displacement that were displaced between 2000 and 2003 due to establishment closures are followed over a five-year period of time. Consistent with previous empirical research, it is shown that an absolute majority of the workers that are displaced one given year also recovers within that same year. The results moreover express that the longer the displaced workers are out of employment, the larger is the willingness to change industry of work, change municipality of living or move into self-employment. The willingness to commute is however found to be fairly constant over time. Finally, I find that those who become self-employed to a greater extent start business in other industries than they were displaced from as time passes.

Key-words

Establishment closure, displacement, joblessness, re-employment, structural transformation

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Contents

1. Introduction

Business cycles are determined by times of booms and recessions, and in 2008 Sweden was drawn into the global financial crisis. The crisis led to a variety of occurrences in Sweden as well as globally, which have had a negative impact on companies and thereby also their employees. In January 1990 the Swedish unemployment level was at about 1.4 per cent, which can be compared to January 1994, and one financial crisis later, where the level was about 9.9 per cent. The recent financial crisis stipulates similar figures, 5.6 per cent in April 2008 compared with 9.1 per cent just one year later (World Bank, 2013). Such an outcome is not specific for these crises, rather the other way around; financial crises often lead to business restrictions, establishment closures, unemployment and labour mobility. Establishment closures and displacement of workers are part of a continuous process in society, and during the recent decades the frequency has increased. Workers become displaced as incumbent firms exit; and the recent financial crises, increased competition from low wage countries in combination with extensive technological progress may be explanations for why displacement of workers seems to have become more frequent in the western societies over the past years (von Greiff, 2009). In 2012, 26464 workers were affected by the 7471 bankruptcies in Sweden, an increase of workers affected by 11 per cent compared to the year before (Tillväxtanalys, 2013).

Displacement of workers, as a result of establishment closures, is a constant matter of interest on the Swedish political agenda. It is a discussion about labour policies and structural changes, but not just that; it is also a dialogue about policy in combination with measures to promote entrepreneurship and self-employment. As being one of the largest business closures in Swedish history, the recent closure of the Swedish car manufacturing company Saab received much attention. The closure of Saab may be seen as a part of the process of creative destruction (Schumpeter, 1934), and as the specific skills of the Saab employees could be absorbed by other similar industries such as Volvo, positive spill over effects may occur, generating growth. The labour mobility, in this case the transfer of workers from Saab to Volvo, can be costly, both to the society at large as well as to the specific displaced worker. If an establishment closure pushes the labour force into long-term unemployment, the process of creative destruction becomes very costly and could then be more destructive than creative (Huttunen et al., 2003). However, if the tools on the labour market are well working, establishment closures would result in an increased positive labour mobility rather than increased unemployment that, in the long run, could create lasting positive spill over effects. If so, the process can be understood as a start of a new phase giving rise to new and/or further advanced profitable businesses that, in the long run, results in increased economic growth. In order to detain such development, which captures the positive effects from labour mobility, strong and dynamic policy measures are required before, under and after an establishment closure.

If directing a decrease in the over all unemployment rate as well as the length of unemployment it is important to construct labour market policies that strengthen the position for those workers that are displaced. This needs to be done since, as discussed by Jans (2009), the share of displaced workers of the stock of unemployed is greater than the share of displaced workers of the flow into the unemployment pool. This implies that the unemployment duration is longer for displaced workers than for those that are unemployed as a result of other reasons. While there are some studies examining the duration of joblessness concerning single specific establishment closures (Gonäs et al, 1978 and Storrie 1993), and a few on the alterations needed to be done in order to reach employment again after

displacement (von Greiff, 2009), there are to my knowledge none that incorporates *all* establishment closures that occurs over a longer period of time in Sweden. Furthermore, no research has been, to the best of my knowledge, conducted on the duration of worker displacement during the 21st century in Sweden. It would, thereby, be interesting to examine the duration of joblessness within the set of all displaced workers in the beginning of the 21st century as well as studying the transformations made in order to get re-employed within the same period of time. If given a broader understanding of how and when recovery after displacement is reached one increases the understanding of how establishment closures affect labour mobility. An understanding that will help in the creation of advantageous labour market policy measures beneficial both for the single displaced worker as well as for the society at large.

The purpose of this paper is to contribute to the stock of literature by (1) following and analyse what happens to those individuals who work in establishments that are closed down. I aim to investigate what happens to employees that loose their employment through an establishment closure and examine when the set of displaced workers are re-employed. Furthermore, (2) if the displaced workers get into employment again, examine to what extent individuals have moved, changed industry of work, have started to commute or have become self-employed. Additionally, (3) if the workers become self-employed after displacement, examine how many of them that does so within the same industry of work as they initially got displaced from.

The study aims thereby to investigate the effect of displacement on employment *within* the group of displaced workers, and not to compare it to those individuals that are not displaced. Consequently, in contrast to most present literature, the aim of this paper is not to study the duration of unemployment for displaced workers relative to those that are not displaced, but rather to study the effect of displacement and the time of joblessness exclusively for the set of displaced workers. Furthermore, I do not aim to examine the effects of labour mobility at large, but within the group of individuals that are affected by the closure. Hence, the aim is to further expand the knowledge of the patterns of labour mobility as an effect of establishment closures. The structure that directs the empirical work includes elements from human capital theory, labour mobility theory as well as self-employment theory. I will trace what happens to the displaced workers over a five-year period of time and the establishment three years before the closure. This, since an establishment closure is a procedure over time in which we cannot determine the starting date but only when the process ended. Previous research has set an upper limit for the duration of the closure to three years (Eliason, 2005), as the closure process, from public announcement to when the plant is actually closed, mainly is just under three years in Sweden (Storrie, 1993).

The paper consists of eight sections, in which section two provides a theoretical background, which is followed by a review of previous empirical research in section three. Section four presents a brief description of the Swedish labour market covering the time of the study, thereafter, the selection of data as well as variable definitions are presented in section five. Moreover, the results from the empirical study are presented and discussed in section six. Conclusions, policy implications and suggestions for further research are outlined in section seven.

2.0 Theoretical background

This theory section starts with discussing theories concerning patterns of entry and exit, which in turn, is followed by a section presenting labour mobility and endogenous growth theory. Thereafter duration of joblessness and theories regarding determinants of transmission and self-employment are outlined. Numerous models of search and quit behaviour as well as of labour market equilibrium exists and a particular of these become useful when analysing the movement of displaced workers. Even though the main purpose of this thesis' is not to distinguish overall and typical labour market patterns and rules, such theories need attention in order to widen the basic understanding and to sufficiently be able follow and analyse what happens to individuals who work in establishments that are closed down. Reviewing theories of entrepreneurship and self-employment entry that focus on describing the reasons for why individuals become self-employed and how different labour market policy measures might affect the choice of self-employment entry helps us understand how displacement, due establishment closures, might affect the choice and duration of entering self-employment. Therefore, I will discuss selected parts of the literature on self-employment entry and its determinants.

2.1 Dynamics of entry and exit, labour mobility and endogenous growth theory

The dynamics of businesses entry and exit on markets, resulting in labour mobility, is a part of the continuous process of economic growth. Business closures implies re-allocation of resources signified in a process of creation and destruction of jobs. If developed positively the process will result in more efficient utilisations of resources; and it represents one of the most important foundations of economic growth - creative destruction. Creative destruction is the notation of the process in which old and obsolete technologies, businesses, skills and equipment are forced to exit due to the entry of new and more productive firms (Schumpeter, 1934). The reallocation of resources associated with creative destruction also includes the reallocation of labour, which is, by definition, labour mobility. This can, depending on the duration of the displacement, be exorbitant, both to the displaced individual as well as to the society at large. If the objectives of the process of creative destruction are to be more creative than destructive, then the knowledge-spill over effects, gained from the closed establishment, must be successfully and positively transferred between the displaced worker and the new establishment. With the same logic, if a closure of an establishment results in lasting joblessness, the progression stand to be more destructive than creative.

Labour mobility that results in increased productivity and economic growth is an important factor within a well functioning labour market (Andersson & Thulin, 2008). Labour mobility that incorporates the occupational as well as the regional movement of workers may depend on several diverse factors such as industry specific business cycles and/or the overall economic climate (Hedberg 2005). When workers become displaced, the labour movement is involuntary meaning that the workers are forced to change employment due to the establishment closure. As workers move between different industries, regions and/or establishments the knowledge spill overs generally increase. According to modern growth theories such as Romer (1986) and Lucas (1988) knowledge spill overs, initiated by labour mobility, is essential for increased productivity and thereby economic growth. The spill over effects may be accessible as untainted knowledge and technology moves between plants and industries. This arises from that labour mobility generates knowledge flows positive for industry development and thereby, correspondingly, economic progress (Andersson & Thulin, 2008). It is therefore adequate to emphasise the importance of these knowledge flows in endogenous growth theory. One example is Romers (1986) model of endogenous growth in

which the stock of knowledge is assumed to be non-rivalrous as well as non-excludable. In the model, the production per worker is dependent on the firm's own capital per worker as well as on the overall level of capital per worker in the economy, since the benefits from the investment in other firms increase the own firm's production through spill over effects. The study reveals that human capital is accumulated by spending time on learning new skills and thus, the mobility of labour increases the positive spill overs that in turn increase economic growth (Andersson & Thulin, 2008). Human capital accumulation and augmented knowledge spill overs through adequate matches between employer and employees as well as the interaction between individuals represent important sequences for displaced workers as well as receiving plants. Robert Lucas (1988) presents a model of economic growth but, compared to Romer (1986), he focuses more on human capital as a foundation of productivity. It is assumed that the overall level of human capital affects the general productivity, and that each individual's human capital affects its own productivity. Lucas (1988) found that human capital externalities are influential enough to illuminate the dissimilarities between rich and poor countries in terms of long-run economic growth rates. The model also provide, in accordance with previous labour mobility theory, support for the relation between labour mobility and productivity, hence, economic growth (Lucas, 1988).

Following the reasoning of endogenous growth theory, human capital is regarded as an important factor in order to obtain positive growth and economic development. Much of the individual specific human capital has generally been accumulated through learning-by-doing and learning-by-interacting at the establishment and/or with a complement of education (Boschma et al., 2009). When individuals move across establishments, perhaps due to displacement, they will apply their knowledge in new contexts and constellations in which they thereby efficiently transfer knowledge between firms, which eventually result in operative knowledge spill overs (Song et al., 2003). The transfer of the labour force may moreover create social linkages across firms, in terms of former colleagues and associates, which can facilitate knowledge flows between firms. This makes labour mobility theorists to repeatedly emphasise its significance for increased productivity and thereby economic growth (Andersson & Thulin, 2008). One can, by this logic and with support from Lucas (1988), argue that displacement of workers is not only negative for an economy, rather, to a certain extent, it can be important in order to increase the productivity. However, it is equally important to ensure that the workforce is not out of employment for a *too* long, if any, period of time by creating good and virtuous conditions for the displaced workers; this in order to make sure that the unemployed doesn't fall into exclusion at the labour market. Nevertheless, this labour market policy is most likely not developed into perfection, and it is therefore central to study the time the displaced workers are out of employment, and what they have to alter and amend in order to get into employment again.

2.2 Duration of joblessness

The duration of joblessness may in it self affect the time the displaced individuals remains out of employment as the intensity to look for a new job may change as the time of joblessness increase. Theory of positive duration dependency helps to explain why job-search intensity may increase as time out of employment increase, and is suggested to be a result of decreased reservation wages. For example, as individuals stop receiving unemployment benefits the individual get a depression of income that in turn makes the reservation wage decline resulting in increased job-search intensity (Acemoglu, 1995). This may also help to explain why individuals, after a long period of joblessness, may chose to move in to practically any type of employment, change municipality of living, start to commute or become self-employed. On the other hand, job-search theorists also stresses negative duration dependency

that incorporates the negative relationship between re-employment probability and the duration of redundancy spell. One reason for negative duration dependency could be that as the length of the redundancy spell increase, the human capital declines and the individual might find re-employment prospects hopeless (Acemoglu, 1995). Furthermore, Blanchard and Diamond (1994), discusses how the set of individuals that are out of employment for a long period of time are less likely to find employment than those who have recently become unempolyed. This means that employers possess ranking approaches when hiring workers; implying that the time the displaced worker stays out of employment in itself affect the time the workers stays unemployed. Negative signals about the displaced workers' productivity may be outlined if those individuals remain out of employment for a long period of time. If so, it would negatively affect the displaced workers probability of finding employment and thereby increase the duration of joblessness (Blanchard & Diamond, 1994).

2.3 Displacement of workers- determinants of transformations

When being displaced there might be certain sacrifices or alterations that needs to be done in order to get into employment again. These could include, naming some, moving to another region, starting to commute, change industry of work and become self-employed.

2.3.1 Industrial mobility

Hammermesh (1987) states that the loss of firm specific capital, as a result of displacement, is the single largest short-term cost of it. In order to minimise such cost, relatedness of work has been shown to play a significant role in a comprehensive variety of practices. Within the research upon firm diversification and frim strategy, relatedness theory has been an essential principle (Neffke et al., 2011). The concept of skill-relatedness implies that in order for jobless workers to get into employment again they may have to change line and/or industry of work. If doing so, relatedness theory suggests that they mainly would change to industries that are related and not just to *any* other industry. Correspondingly, a fundamental principle within relatedness theory implies that qualified individuals, frequently highly educated, generally change jobs between industries where they can benefit from past experiences and competencies (Neffke & Henning, 2010). A common used example of this describes the many engineers who were employed in aircraft manufacturing throughout World War 1. When Germany's war-industrial production decreased, as a consequence of the end of the war, many of these engineers entered the car manufacturing industry and used their knowledge of aerodynamics to improve the car design (Neffke & Henning, 2010). This example illustrates how skills developed and attained in one industry may successfully be transferred and used in another industry. Following this logic, in order to take advantage of the labour force as much and as efficient as possible, displaced workers should remain or transfer into industries that value the competence they have settled in their former work (Neffke & Henning, 2010). However, as human capital depreciates over time, being displaced and out of employment over time makes the industry-specific knowledge depreciate. The depreciation will consequently make it harder for the displaced worker to get into employment within the same industry as it got displaced from. The effect stands in accordance with negative duration dependency stressed by Acemoglu (1995), discussed in section 2.2. Conversely, the lasting joblessness does not have to be a result of a displaced worker that has given up, rather a consequence of that, over time, the industry specific knowledge is not worth as much as in the immediate time of displacement. The value of the industry specific knowledge may have declined for different reasons; it may be a consequence of the displaced workers limitation to recall its expertise after a period without continuous usage of it. Furthermore, it can also be an effect of the fact that machinery and technology are constantly evolving; resulting in that the displaced worker are not updated with the technique after only a short period without daily

work with them. Correspondingly changing industry may be easier for junior workers in comparison to more senior ones as more experienced workers has greater firm specific human capital that can be difficult to transfer to new establishments and new industries. This means that more junior workers may not have as much accumulated individual-specific human capital, in terms of education and added know-how, which is directed exclusively towards one type of industry as their senior colleagues. Additionally, it can also be so that the junior workers may not have found one absolute direction of work and are more willing to try many types of industries and lines of work in order to find out what they really want to work and specialise in.

The most common form of transformation in Sweden is the change in industry of work (Hedberg, 2005). In accordance with relatedness theory, similarities must however exist between industries in order for workers to successfully transfer between them while keeping use of earlier reviled expertise and competences. Present literature mainly uses three methods in order to measure relatedness between industries. One arises in the idea that, due to economies of scope between industries, different industries are to be found in the same regions. This means that it can be inferred from the co-occurrence of industries in specific regions. Another technique of measuring relatedness is more resource-based; meaning that it attempts to capture similarities in the resources used in different industries in order to determine if there is prospect of relatedness. The third approach relies on catalogued country specific industry standard classification systems mediating the relatedness (Neffke & Henning, 2010). In order to measure skill-relatedness Neffke and Henning (2010) yet use Swedish employer-linked data to derive a quantification of skill-relatedness for the industries classified in their sample and thereby create a skill-relatedness index that is used to investigate the corporate diversification moves and the importance of relatedness when diversifying. Even though this thesis' main purpose, in contrast to Neffke and Henning (2010), is not to study the corporate diversification of firms and the importance of skill-relatedness when diversifying, the concept and method may be transferred into worker displacement and altered industry of work.

As discussed, accumulated human capital is generally specific to the job of a particular individual and its capabilities. Consequently, specific individuals may be of significant importance for the competitive advantage of a particular establishment. Skill-relatedness theory concludes that regions should focus on providing a virtuous environment for its existing industries by encouraging entry of establishments that are related to the regions already established industries (Henning, 2012). One example of this could be to encourage more car manufactures to enter a region where there already exists a number of car manufactures; denoting that if an establishment closure occurs, and similar industries are attracted to one region, it is likely to believe that the probability of adequate employer employee match for the displaced worker is increased. Supplementary research outline that the spatial structure of an economy is expected to have a significant influence on the movement of the workforce and unsurprisingly; regions with more potential employers seem to have a higher labour turnover than others (Andersson & Thulin, 2008). Consequently, it may also be so that workers that get displaced within a region with high potential employer density also get into employment quicker after displacement; and if so, the displaced workers may benefit from starting to commute or move to a more potential employer-dense municipality. On the other hand, it can be argued that regions specialising in only one or two industries get more vulnerable as a large part of their labour force solely depend upon the selected industries of specialisation. Hence, these regions could be very negatively exposed to changes in the economy.

2.3.2 Geographic mobility

Geographic mobility incorporates the measure of migration within a population and its associated theories suggests that individuals that are out of employment have a higher propensity to move compared to employed workers (Gross & Schoening, 1984). Theories that treat willingness to move for work suggests that economic incentives play an important role in the composition of labour mobility, and that the job-finding probability is significantly higher for those individuals that have positive migration attitudes (Ahn et al., 1998). Accordingly, Huges and McCormick (1985), discuss how the longer an individual are out of employment, the more willing he or she is to move, meaning that unemployment duration increases its migration intention. Job-search theories treat the behaviour of individuals when seeking a new job. A fundamental principle within job-search theory is that the willingness to accept a certain job will depend on that specific individuals search costs, its predictions about future job-offers and its reservation wage. The reservation wage may be region-specific meaning that individuals may have one reservation wage for every non-local market and another for the local labour market (Ahn et al., 1998). Furthermore, job-search theory stresses the importance of joblessness duration on the willingness to move where it is suggested that the longer workers are out of employment the more willing they are to accept any job-offer, independent of its location. This is in accordance with previously outlined theory incorporating positive duration dependency, presented by Acemoglu (1995). It is suggested as individuals being out of the labour force for an extensive period of time has shattered unemployment benefits and insurances, which could decrease their reservation wage and thereby increase their willingness to accept a job-offer independent of its location (Ahn et al., 1998). However, it has also been argued that the longer workers are out of employment the better they have become to manage without a stable paid employment. Subsequently the reservation wage of movement for a job would increase meaning that job offers from other regions become less attractive and the willingness to move for a new job deceases (Ahn & de la Rica, 1997). Moreover, as Holmlund (1984) discusses, individuals that change jobs or area of living often tend to change again; a relation that seems to account both between professions and industries as well as for geographic locations. Following this logic, those that have recently moved are more likely to move again. This may be a consequence of that an individual whom is used to alter workplace or area of living might suffer less from the movement itself, as a result of its previous experience, and may consequently be less reluctant towards a move (Holmlund, 1984). The literature upon workers willingness to move as a result of joblessness finds that young and unmarried adults are most willing to move in order to get into employment again (Ahn et al., 1998). This finding could make one consider time-effects on displaced workers willingness to move specifying that as time passes after displacement, displaced workers may change their attitude towards movement for job. Time could make the displaced workers either more averse towards movement as they may have started a family that they are unwilling to move from; or the other way around, they could be more positive to movement as they have gotten children that have grown up making them more willing to move. Nevertheless, in accordance with findings by Ahn et al., (1998), Hedberg (2005) also displays that the willingness to change municipality of living in order to get into employment seems to be closely related to the age of the displaced workers; meaning that more junior displaced workers are more willing to move in order to get re-employed compared to its counterparts. The total geographical mobility, incorporating commuters as well as individuals changing municipality of living, included, year 2000, in Sweden about 400 000 individuals representing about 10 per cent of the total work force. In the mid 1980's this figure was approximately 7 per cent (Israelsson et al., 2003). Although the figures displays an increase in propensity to move and commute over time, previous research finds that one third

of the Swedish population generally has a negative attitude towards commuting (Hedberg, 2005).

2.3.3 Mobility into self-employment

Entrepreneurship stimulates growth and may be desirable in order to, among others, identify and develop new products; force incumbent firms to further develop already existing products and to create important knowledge. Entrepreneurship has, in modern economic theory, been acknowledged as a vital instrument driving aggregate wealth accumulation and growth rate processes (Parker, 2009). Entry of self-employment is a rational choice when the expected utility of self-employment exceeds the expected utility of all other available options. If an individual has an employment where the expected earnings from being employed is higher than from being self-employed, individuals will not choose to become self-employed. This means that the reservation wage for self-employment is *at least* on the same level as the present wage. This is a result of the logic that individuals always, if rational, strive to maximise their own utility (von Greiff, 2009). Even though some entrepreneurs become economically very successful after entering self-employment, the common entrepreneur would earn more money on being employed rather than being self-employed (Parker, 2009).

As displacement include increased risk of lasting unemployment and decreased earnings in employment, it's likely to believe that the reservation wage of self-employment is decreased. One year after displacement, previous research finds that the probability of entering self-employment almost doubles. This means that displaced workers may get pushed into self-employment due to the business closure (von Greiff, 2009). The concept is followed by the logic of the recession-push hypothesis that suggests that as the reservation wages for self-employment decreases as a probable consequence of the displacement, there will be a positive relationship between unemployment and self-employment entry rate. The idea is that for every day the unemployment proceeds, the displaced workers opportunity to get a paid-employment decreases, which correspondingly pushes people into other types of occupation such as self-employment (Congregado et al., 2011). So, if the individual were to be jobless the reservation wage is expected to decrease to the level of earnings gained when being out of employment. This rationale denotes that individuals that enter joblessness should be more likely to become self-employed than those that are already employed. This is supported by findings of Andersson and Wadensjö (2007) who propose that inactive individuals are more likely to become self-employed than unemployed whom in turn are more likely to become self-employed than those that are employed workers. Accordingly Evans and Leighton (1989) finds that unemployed are more likely to become self-employed than those with employment and correspondingly, those that are classified as inactive are more likely to become self-employed than the unemployed.

If the objective is to decrease displaced worker joblessness duration through, among others, entering self-employment one must take some barriers of entry self-employment into consideration. These barriers may also serve as explanations to why, if so, it takes long time for the set displaced workers to enter self-employment after displacement. One of the largest barriers for entering self-employment is known to be the access to external funding. Prior research expresses a positive correlation between entrepreneurship and credit market deregulations. This means that limiting competition among banks lending to small business owners could result in increased levels of self-employment entry (Parker, 2009). However, lending to potential entrepreneurs might be associated with a large amount of risk since it can take a long time, if ever, before the entrepreneur is able to pay back their loans. Certificates and licences required in order to get products approved for trade are likewise a barrier for

entry of self-employment (Parker, 2009). The approval might be important in order to control the quality of the products and to make sure that the production has taken place in an acceptable manner. Such regulation may not only be negative for the self-employed as the risk of individuals copying their product is reduced. Nevertheless, the net effect on entrepreneurial activity of this type of regulation may however be negative. The literature also stipulates that countries where bankruptcy does not result in any charges tend to have a higher entrepreneurial activity compared to its counter parts (Parker, 2009). This means that if the self-employed know that failing does not incur any penalties then the risk incorporating self-employment entry is reduced. Thus, a potential policy measure in order to further stimulate entry of self-employment is to reduce the costs associated with bankruptcy.

Dynamic selection theory explains how entrepreneurs only can learn about their entrepreneurial ability through the process of starting a new firm (Jovanovic, 1982). This denotes that from self-employment entry, the self-employed learn about their poor individual specific deprived entrepreneurial abilities and will, in turn, be averse towards re-entering self-employment. On the other hand, Evans and Leighton (1989) find a positive relationship between previous self-employment and the probability of re-entering self-employment. Meaning that if one has been self-employed before, regardless of the success of the self-employment, he or she are more willing to enter self-employment compared to individuals that haven't been into self-employment before. Furthermore, it is suggested that employees in larger firms are more unlikely to become self-employed compared to employees of small firms. This can be a consequence of variety of reasons. Primary, in larger firms, the working conditions may be favourable resulting in that workers in those firms are more unwilling to leave their paid employment compared to their counterparts. Also, in smaller firms there could be more of an entrepreneurial environment providing their employees an advantage in self-employment entry, since they stand more familiar with the practice and process of running a business (Boden, 1996).

3.0 Previous empirical research

The purpose of this section is to outline some previous empirical research on displacement as a consequence of establishment closures. It is notable to keep in mind that the results from the previous research on establishment closures summarised in this section solely concerns single specific establishment closures, mainly between the 1960's and 1980's, whereas the results presented in this thesis incorporates all establishment closures in Sweden within the given years of observation.

3.1 Literature overview

Since the objective of this paper is to examine the effects of job displacement in terms of duration and direction one needs to define and describe the terms *displaced worker* and *establishment closure*. There is a substantial inconsistency in the literature of how to define the term displaced worker that consequently results in that the number of displaced workers, even within the same country of study, depending on definition used, varies vastly (Fallick, 1996). Hammermesh (1987) distinguish three different characterisations of displaced workers, characterisations that do not depend upon their current labour force status but convey to the nature of workers estrangement from their previous jobs. A wide definition of displaced workers incorporates all workers that loose their jobs because the employer closed the firm or the establishment. A more narrow classification includes those who get out of employment exclusively as a result of competition from imports. The widest definition adds to the workers

who lost their job because of redundancies that were not a particular part of the closing of the entire business or establishment (Hammermesh, 1987). Displacement can be understood as the involuntary separation from job, not initiated by individual specific job performance, but by exogenous distresses (Huttunen et al., 2003). There is a possible risk of sample bias when performing analysis on worker displacements. If one accepts that the displacement is due to an exogenous shock rather than poor individual performance the notation should by definition be exogenous to the workers. Using a sample of displaced workers due to business or establishment closure reduces the risk of sample bias, but must, however, be kept into consideration when performing the study. Throughout an establishment closure process there may be a ranking of the employees of who to let go first. It is likely to believe that employers will let the least productive workers go first and try to keep the most productive workers for as long as possible. On the other hand, if knowing that there is a risk of business or establishment closure, it is likely to believe that some workers will leave their employment voluntary, as they fear that they will loose their job. This could result in that that those whom are most productive, thus most attractive to other employers, will choose voluntarily to leave their employment before the business or establishment closure in order to ensure stabile work. Huttunnen et al., (2003) deliberates nevertheless how those who stay the longest at an establishment through closure suffer the least. This would mean that the most esteemed workers, the productive ones, would leave at the very end rather than being the ones that, out of strategy, leaves the closing business first.

As for displaced workers, different definitions and durations of establishment closures can be used. Eliason and Storrie (2004) use a flexible three-year period where as, for example, Bender et al., (2002) use a fixed two-year time period for all business closures. The use of a flexible time period, as used in Eliason and Storrie (2004), increases the risk of including those who were separated from their job due to other reasons, not directly linked to the actual establishment closure. However, if using a fixed time period, only workers who are displaced during the business last year prior to closure will be included in the sample, while the workers that are displaced earlier will be excluded. Advantageously, a flexible time period allows for inclusion of all workers displaced due to the closure and allows control for the effect of being early- or late-leaver. By using the same selection method as Eliason and Storrie (2004), von Greiff (2009) also uses a flexible three-year time window for the closure process; as it is claimed to be superior to the use of fixed time windows. Accordingly, I will in this paper use the same method to measure the establishment closure and define the term displaced worker as someone who has lost his or her job not because of poor individual performance but because of an establishment closure. The construction of the variable displaced worker and the establishments closure process will be further explained in the section treating my data.

Existing literature on job displacement mainly put their emphasis on the effects of being displaced on future employment, earnings or individual specific characteristics, either with a long- or short-term perspective. Hammermesh (1987) define the difference between the value of resources before and after business closure, as well as the sum of the alteration as the labour market moves to a new equilibrium after a closure, as one of the largest costs of job displacement. He moreover states that the loss of firm specific capital, as a result of job displacement, is the single largest short-term cost and consequence of displacement. This means that when the employees are forced to change employer, due to an establishment closure, they will have non or little, use of the firm-specific knowledge retrieved before the establishment closure. As outlined in the introduction, Jans (2008) finds that displaced individuals seem to be unemployed for longer periods than other unemployed individuals. Even though displaced individuals count as a smaller part of the unemployed, compared to

non-displaced, there is a need to strengthen the competitiveness of these individuals in the labour market. If not, she discusses, there a great risk that these individuals leave the labour force permanently as a direct consequence of being out of employment for a too long period of time (Jans, 2008). This is likewise in accordance with former previous research upon displacement of workers that identifies how this set of individuals experience, compared to non-displaced workers, more joblessness. However, it is concluded that this difference seems to be withdrawn four years after displacement (Fallick, 1996). Furthermore, Eliason and Storrie (2004) study, in accordance with von Greiff (2009), all workers who lost there job 1987 in Sweden over a 13-year period. They identify, in terms of employment, a significant large gap between the displaced workers and the control group at the time of the business closure. These figures, however, got significantly reduced over a short period of time (Eliason & Storrie, 2004). The gap most strongly decreased the first year after the business closure, and in various samples there were no evidence of differences between the displaced workers and the control group in employment two years after the business closure. Nevertheless, Eliason and Storrie (2004) finds that the displaced workers are more sensitive to changes in the overall economic climate than the non-displaced workers, which, as for example, allowed the gap to increase at the time of the recession in the early 1990's (Eliason & Storrie, 2004). However, as noted before, when studying this previous literature one must take in to consideration that they predominantly compare the set of displaced workers to a control group of non-displaced workers where as I measure the duration and transformations needed to be done *within* the set of displaced workers.

As outlined, Eliason and Storrie (2004) suggests that displaced workers are more sensitive to changes in the labour market and the over all economic climate. Moreover they discuss how worker displacements also have a significant long-term effect on earnings (Eliason & Storrie, 2004). This is similarly found by Huttunnen et al., (2003) who ascertains that job displacement have enduring negative effects on workers future earnings and employment. The research on long-term joblessness outlined by Böheim and Taylor (2002) additionally finds that the costs, as an effect of the displacement, streams though diverse straits, which include depreciation of overall human capital, not only during the specific time of joblessness, but permanently. These short- and long-term effects may consequently influence the time the displaced workers remain unemployed. Research conducted by Stevens (1997) concludes that the negative effect on long-term earnings of the displacement mostly is due to multiple job-losses; a consequence of bad employer employee matches. As suggested by Hall (1995) these multiple job-losses is highly dependent on the state of the labour market and the overall economic climate. A virtuous overall economic climate may result in better employer employee matches that, in turn, would result in decreased multiple job-losses, which is positive for the set of displaced workers.

Research on establishment closures and its implications for specific workers have been relatively limited in Sweden. However, Gonäs et al., (1978) presents a summary of earlier studies on business closures and discuss the results from the research within this period. The summary incorporates plants and establishments that closed in the 1960's and 1970's and identifies what happened to the employees after the phase of business restrictions and plant closures. The authors find that the unemployment duration after displacement is rather short with a median spell of about seven weeks; somewhat depending on the business cycle. (Gonäs et al., 1978). A case study that examines the effect of a closure of a major textile company in Norrköping in the 1960's finds that, half a year after the closure, 27 per cent of the women and 10 per cent of the men where still out of employment. However, within a year, a majority of the displaced workers had moved into employment again. It was furthermore found that a

very small part of the displaced workers changed industry of work, an outcome that is primarily considered to be a consequence of that Norrköping, at the time of the research, was dominated by the textile industry (Gonäs et al., 1978). Jössefors Bruk, a sulphate pulp mill owned by Billerud, demonstrates another research project of an establishment closure, which was started in 1968. The authors find that 46 per cent of the displaced workers had been out of employment for more than four weeks and 34 per cent suffered from joblessness for more than twelve weeks. Moreover it is also found that, within the year of displacement, a majority of the displaced workers had relocated into employment again. Additionally, those that changed municipality of living in order to find a job after displacement were primarily found to move to a location where they could keep the same occupation rather than move to a geographically closer location. This may have been the reason of why, two and a half years after the first closure notice, 30 per cent of those who had got a new job had moved from the former location of work into another city or region (Gonäs et al., 1978). In accordance with the study at Jössefors Bruk, the study of the closure of a shipyard in Oskarshamn during the 1960's displays that the workers that changed municipality of living did put less weight on the distance to move and more on the possibility of remaining within the same industry and profession of work (Gonäs et al, 1978). The entry rate of self-employment as a result of displacement is analysed in von Greiff (2009). In accordance with Eliason and Storrie (2004), von Greiff (2009) compares the displaced workers 1987 and 1988 to a non-displaced control group and follows these individuals over a fourteen-year period, three years before displacement and eleven years after in order to examine the effect of displacement on self-employment entry. Her findings concludes that, as a response to displacement, those with the worst prospectives on the labour market are significantly more disposed to become self-employed compared to their counterparts. Likewise, she finds that individuals with high initial income, or a high level of wealth, have an increased propensity to enter self-employment when becoming displaced and are thus additionally prone to become self-employed. Von Greiff (2009) furthermore concludes that the willingness to enter self-employment increases over time after displacement. Only one year after displacement, she suggests that the probability of entering self-employment nearly doubles as a consequence of the joblessness (von Greiff, 2009).

4. Swedish labour market 2000-2008

As suggested by most previous empirical research, e.g. Eliasson and Storrie (2004) and Hall (1995), the labour market and the over all economic climate have a significant effect on displacement of workers and their re-employment prospects. Hence, the economic situation in Sweden during the given period of observation may affect the results derived within this paper. Thereby, in order to increase the understanding of the economic situation in Sweden and subsequently facilitate an adequate analysis of my results, this section briefly reviews the economic climate during that period.

During the early 2000's Sweden rode out the aftermath of the large financial crisis during the 1990's. It was a time in which relatively new established companies within the ICT-sector grew very fast under a short period of time and got highly over-valued. The period came to be known as the dotcom-bubble and by the early 2000's, the bubble burst. The downturn was widespread all over the world and Sweden was no exception (Cassidy, 2002). The Swedish economy recovered however relatively fast, and the period up until the subprime-crisis, which began in 2008, was a time of a comparatively increasing GDP-growth. As to enlarge the

understanding of the economic situation in Sweden 2000-2008, Figure 1 and Figure 2 shows GDP-growth and the unemployment rates within the given period of time respectively.

Figure 1. GDP-growth in Sweden, 2000-2008. Source: World Bank (2013)

Figure 1 shows a significant decrease in the GDP-growth between 2000 and 2001, an expected effect of the dotcom-crisis. Conversely, one can see that the Swedish economy starts the path of recovery relatively fast, and period from 2001 up until the subprime-crisis can be concluded as a period with rather fluctuating, yet increasing, growth.

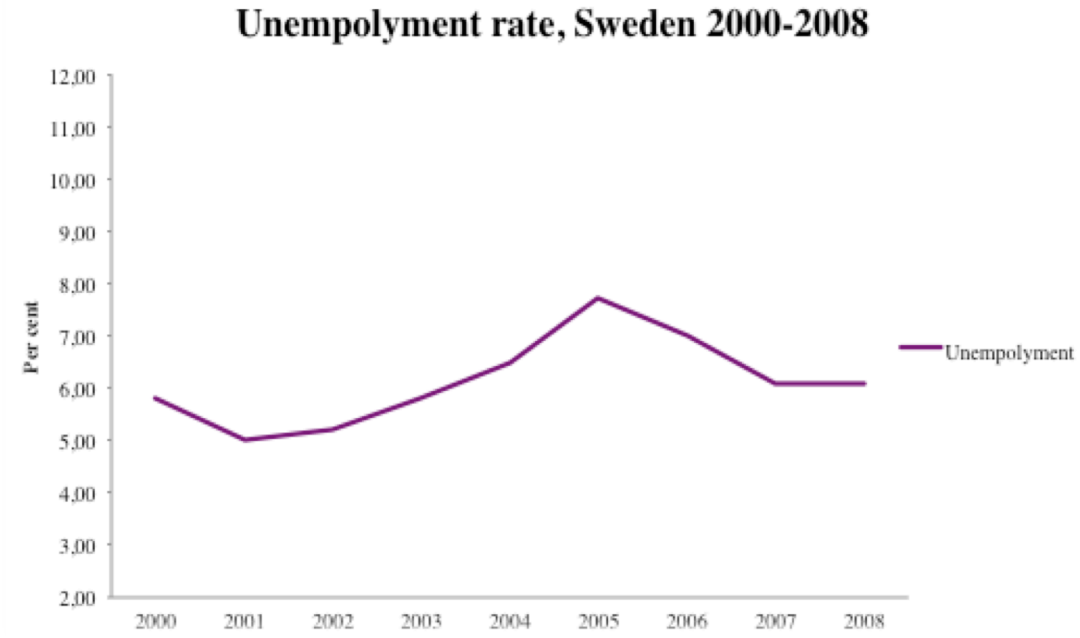

Figure 2. Unemployment rates in Sweden, 2000-2008. Source: World Bank (2013)

The unemployment rates the years of observation have been relatively stable between 5 and 7.5 per cent. It reached its highest level, 7.7 per cent, in 2005, which could be a lagged effect of the dotcom-crisis. Nevertheless, it returns relatively fast and the global subprime crises seem not yet to have affected the level of unemployment when my period of observation ends.

5.0 Data and methodology

5.1 Data selection

The dataset used are longitudinal and is of matched employer-employees. It is provided through a database known as Micro Data Online Access, MONA, which in turn is distributed by Statistics Sweden. The data, containing information on all individuals that were connected to a firm or establishment in November each year, is available from 1986-2008. The data are built upon a register that include information on establishments, firms and individuals. The dispensation in the register is based on each individual's connection to a firm or establishment. The establishments, firms and individuals are all identified either through an establishment or firm-identification number or through a personal identification number, which in turn links all individuals to an establishment or firm each year. Individual specific information such as gender, age, education, location of living and work are also represented. Additionally, information about industrial classification and employment are, moreover, exemplified in the dataset. These variables are, subsequently, used in the formation of the variables used in order to fulfil the objective of this paper and are to be further described in the section incorporating the variable definitions.

An establishment, which identification number was existing in November one year but non-existing in November the following year, is coded as a closed establishment. Either it has been closed due to a split or a merger, or the establishment has closed due to an exit. In order to avoid problem with false firm death I use the latter alternative. False firm death is the notation of a methodological problem that is specific to administrative-data-based studies of displaced workers (Kuhn, 2002). Firm closures are acknowledged by the disappearance of the establishment's identity number in the data set, and the disappearance of the identification number may be due to a shut down of a business. However, it could also include structural changes such as reorganisation of and between plants, which give rise to the problem of false firm death. The problem is then raised by the inclusion of merged or acquiesced establishments when one really intend to include the numbers lost due to a closure. The acquisition of one firm by another would cause the bought firm's employer identity number to disappear (Kuhn, 2002). When two establishments merge, the same problem could arise, as one of the establishments will loose its identification number and thus seem to have disappeared even though a majority of its workers still are employed and just have moved to a new, merged, establishment. In order to control for such problem I only use the establishments that have closed due to an exit. Although the data is constructed in a way that allows one to make a distinction among establishments closed due to mergers rather than due to other causes; if a majority of the employees at an establishment that closes is employed at another establishment at the time of the closure, it is possible that some of the individuals that work at an establishment that is closing are transferred to another establishment within the same firm. These individuals are coded not to be considered as displaced. A disadvantage of the data is the uncertainty of what the displaced workers that are out of employment really do during the period of joblessness. The construction of the data makes it impossible to distinguish which individuals that are unemployed and receive unemployment insurance

benefits, and which are without work and are searching for a job. Another drawback of the data is, unsurprisingly, that it is being recorded annually. Weekly, monthly or quarterly recordings would have facilitated an analysis on a closer time-interval making it possible to follow the displaced workers even more attentively after displacement. It would also have been fortunate if the data included all individuals, even if they did not recover at all. However, the data only displays individuals that get re-employed at the latest 2008.

5.2 Worker displacements and the establishment closure process

As the intention of this paper is to follow what happens to employees that loose their employment through an establishment closure and examine if and when the set of displaced workers are re-employed; I first decide upon the definition of establishments closure process as well as the definition of displaced workers. In accordance with Eliasson and Storrie (2004) as well as von Greiff (2009), I will use a flexible three-year time-window to define the establishment's closure process. Based on the size of the establishment and its worker flows each closure process in the dataset is defined to be either one, two or three years long. If the workforce was reduced by at least 20 per cent each year and if the number of employees at the firm three years prior the closure was 50 or more, the closure process are defined to be three years. If these requirement are not satisfied and if there, however, has been a reduction of the workforce by 20 per cent, corresponding to a minimum of 10 employees, and if the number of employees two years prior the closure was at least 25; then the closure process is defined to be two years. The establishments that do not satisfy the requirements of either a three-year or a two-year closure process are conclusively defined to have a one-year closure process.

When using a flexible time window for the closure process there is a risk of inclusion of not only the individuals that are displaced, but also some of the normal labour turnover that consequently would bias the results (Kuhn, 2002). However, as discussed by Eliason (2005), setting an upper limit of three years minimises the risk of including normal labour turnover. All individuals that got displaced during an establishment's closure process will be treated as displaced workers. In accordance with von Greiff (2009) I use a method where I disregard workers younger than 25 and older than 55 in the year prior to displacement as young workers may leave to educational activities and the old workers are tending towards retirement within the observational period. Furthermore, alike von Greiff (2009), I disregard individuals who were self-employed prior to the displacement since I investigate self-employment *entry* ratio. Fulfilling the conditions outlined above, I use, in contrast to Storrie (1993), Eliason and Storrie (2004) and von Greiff (2009), *all* individuals affected by *all* establishment closures in Sweden between 2000 and 2003. This leaves me with a set of 381284 displaced workers.

5.3 Transformation variables

As I, in addition to the exceeding issue, aim to study if the displaced workers re-employ due to a move, if they seek another industry of work, starts to commute or become self-employed; and if the workers that become self-employed after displacement starts their business within the same industry as when they got displaced; I have created four transformation variables. The transformation variables make it possible for me to calculate whether the displaced workers make any of these transformations when getting re-employed. As the data used is on a yearly basis, the transformation variables are thus constructed to give expressions based on the recordings in November each year. Notably, previous research upon worker displacement in Sweden, e.g. Gonäs et al., (1978), uses data that is constructed on a weekly basis. This can be done as it exclusively measures the closure of *one* establishment. However, this is not possible in my case as I measure the displaced workers at *all* closed establishments in Sweden over numerous given years where weekly, monthly nor quarterly data is not available.

Become commuters
In order to examine whether the re-employed displaced workers have moved, I have created the variable *become commuters*. Each individual is connected to a municipality and an establishment where they work each year. The variable become commuters is calculated by giving an expression of one if the displaced worker did not commute before displacement and when recovered, i.e. in employment again, started to commute. This indicates that the individual has started to work in another municipality than where they live when re-employed. One must however take into consideration that this does not include displaced workers that only change municipality of living in order to get employed again, but it may include those who have had to change municipality of living *and* become commuters.

Change municipality of living
In order to examine weather the displaced workers get employed again due to a move I have created the variable *change municipality of living*. As each individual, each year, is connected to a three- or four-digit numeric combination clarifying their municipality of living, the variable changed municipality of living adds an expression of one if the displaced worker, the year of recovery, has changed municipality of living since the time of displacement. Notable is, however, that there may be other reasons for the displaced workers move rather than just the displacement itself. Thus, the transfer of municipality of living could be a result of other reasons not directly correlated with the displacement itself.

Same industry
In order to see if the displaced workers change industry of work I have created the variable *Same industry*. The standard industrial classification code is in accordance with standards for Swedish industry classification, which describes the main activity carried out in a business or at an establishment. This means that the code identifies to which industry a business or establishment belongs. The variable Same standard industrial classification code is calculated by connecting the standard industrial classification digits each year for all displaced workers within the years 2000-2008. It, continuously, adds an expression of one if the displaced worker has the same code the year of displacement as when recovered. I have used this in order to see weather or not the displaced worker change industry when getting re-employed. In order to abbreviate the calculations and the analysis of the results I am using a two-digit level of the standard industrial classification codes. It is possible to use up to five digits but that would, however, be *too* detailed and would not be imperative nor beneficial for my analysis. Real estate activities, Restaurants and Construction are example of classifications when using a two-digit level of the code. All standard industrial classification codes on a two-digit level are to be found in Table 4 in Appendix. Notable is however that changing standard industrial classification code does not necessarily mean that the displaced worker change line of work. It may keep working with the same thing as it did when they got displaced even though the industry they do so in is changed. One example of this could be an accountant that work with accounting at a car-manufacturing company before displacement that later, after recovery, continues working as an accountant at a real estate-firm.

Become self-employed
Information about which main activity each specific individual declared in November each year is used to define self-employment. Since I disregard individuals who were self-employed at the time of the displacement it is possible to investigate the self-employment *entry* ratio. In order to do so, I have created the variable *become self-employed*. The variable is calculated by linking the individuals by the time of displacement and recovery. If the displaced worker

becomes self-employed when recovering, the variable become self-employed adds an expression of one.

6.0 Empirical results

In this section, the results from the estimations are defined and presented. This includes both the results of redundancy duration estimators, the transformation results as well as the results concerning industry of work after recovered as self-employed. The summarising presentations of the tables and figures are followed by an analysis and discussion of the recounted results.

6.1 Redundancy duration and transformations

Table 1 and its associated graphs show the percentage, for each of the five observed years of displacement, of recovery each year after the given year of displacement. It is calculated by dividing the amount of recovered individuals each period by the total amount of displaced workers the specific year of interest. The table moreover displays how many, of the total amount of displaced workers a given year, that change industry of work. This is calculated by dividing a variable of all that has changed standard industrial classification code with the total amount of displaced workers. Furthermore, the table present the percentage, of the workers that got displaced a specific year, of the workers that becomes commuters or change municipality of living after displacement. The figure is calculated by dividing the variable of becoming commuters or the variable indicating a move, by the total amount of displaced workers. Conclusively, the figures also demonstrate the percentage, of the workers that got displaced a specific year, that enters self-employment. This outcome is calculated by dividing the self-employment variable with the total amount of displaced workers. The results of these calculations are, in addition to be presented in Table 1, exposed graphically for each year of displacement in Fig. 3, Fig. 4, Fig. 5 and Fig. 6.

Table 2 and its associated graphs turn deeper into each specific year after displacement for each of the four observation-years. This is made in order to be able to distinguish, analyse and clarify changes in transformations for the displaced workers *over time* within and after the year of displacement. These figures are calculated by dividing each of the four transformation variables each year by the number recovered workers each year. Still, these recovered workers are all displaced within the same given year. Notably, this is not to be mixed with the previous outlined calculations that divide the transformation variables each year by the *total* amount of displaced workers for one given year and not the recovered workers within each year. The results of these calculations are, in addition to be presented in Table 2, exposed graphically for each year of displacement in Fig. 7, Fig. 8, Fig. 9 and Fig. 10.

TABLE 1									
Year	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**
Displacement year 2000									
Number of displaced workers	97983	97983	97983	97983	97983	97983			
% Recovered	83,65022	8,059562	3,593481	2,188135	2,281008	1,492096			
% Change industry of work	35,55209	4,81308	2,438178	1,497198	1,541084	1,061409			
% Move	9,321005	0,9420002	0,40109	0,2582081	0,2286111	0,1806436			
% Commuters	5,217232	0,9042385	0,563363	0,4153782	0,413337	0,300052			
% Self employed	1,613545	0,497025	0,2367758	0,1765612	0,3633283	0,1245114			
All recovered	81963	7897	3521	2144	2235	1462			
All move	5112	886	552	407	405	294			
All change sni	34835	4716	2389	1467	1510	1040			
All become commuters	9133	923	393	253	224	177			
All become self-empolyed	1581	487	232	173	356	122			
Displacement year 2001									
Number of displaced workers		100929	100929	100929	100929	100929	100929		
% Recovered		81,77531	8,807181	3,734308	3,37465	1,998435	1,89341		
% Change industry of work		39,75864	5,291839	2,568142	2,235235	1,41981	1,367298		
% Move		8,492108	0,9680072	0,4597291	0,3368705	0,2585976	0,2259014		
% Commuters		5,053057	1,1087	0,6261827	0,6033944	0,4518028	0,4418948		
% Self employed		1,774515	0,5607902	0,3091282	0,450812	0,1426746	0,1079967		
All recovered		82535	8889	3769	3406	2017	1911		
All move		5100	1119	632	609	456	446		
All change sni		40128	5341	2592	2256	1433	1380		
All become commuters		8571	977	464	340	261	228		
All become self-empolyed		1791	566	312	455	144	109		
Displacement year 2002									
Number of displaced workers			96709	96709	96709	96709	96709	96709	
% Recovered			81,12688	8,237082	5,112244	3,065899	2,502352	1,910887	
% Change industry of work			38,87849	5,024352	3,391618	2,067026	1,80645	1,323558	
% Move			8,846126	0,9016741	0,5987033	0,3598424	0,2895284	0,2264526	
% Commuters			4,955071	0,9957708	0,7631141	0,5625123	0,5573421	0,4301564	
% Self employed			1,827131	0,6121457	0,6255881	0,2305887	0,1613087	0,1778532	
All recovered			78457	7966	4944	2965	2420	1848	
All move			4792	963	738	544	539	416	
All change sni			37599	4859	3280	1999	1747	1280	
All become commuters			8555	872	579	348	280	219	
All become self-empolyed			1767	592	605	223	156	172	
Displacement year 2003									
Number of displaced workers				85663	85663	85663	85663	85663	85663
% Recovered				77,71383	11,7472	4,991653	3,911841	2,518007	1,417181
% Change industry of work				37,4409	6,659818	3,446062	2,889229	1,77206	1,043624
% Move				7,88205	1,158026	0,6257077	0,463444	0,2906739	0,1879458
% Commuters				4,438322	1,272428	0,7879715	0,722599	0,524147	0,3688874
% Self employed				2,032383	1,197717	0,3607158	0,2276362	0,207791	0,1389164
All recovered				66572	10063	4276	3351	2157	1214
All move				3802	1090	675	619	449	316
All change sni				32073	5705	2952	2475	1518	894
All become commuters				6752	992	536	397	249	161
All become self-empolyed				1741	1026	309	195	178	119

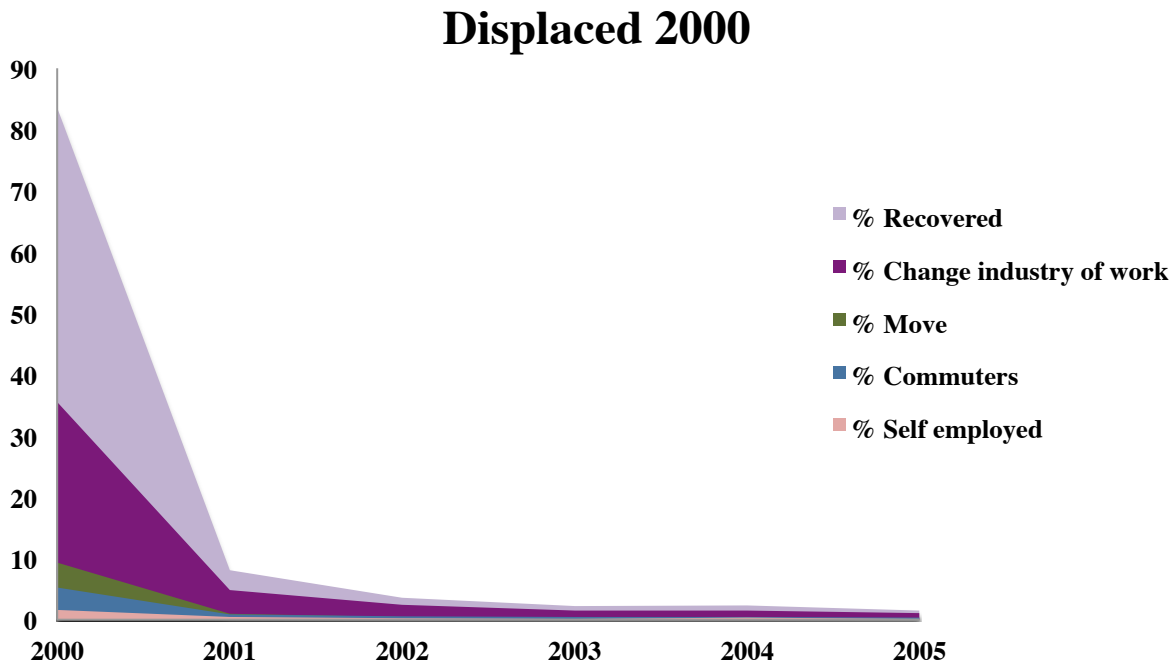

Figure 3. Workers displaced 2000- displaying percentage of recovery each year, becoming commuters, becoming self-employed, change industry of work and move.

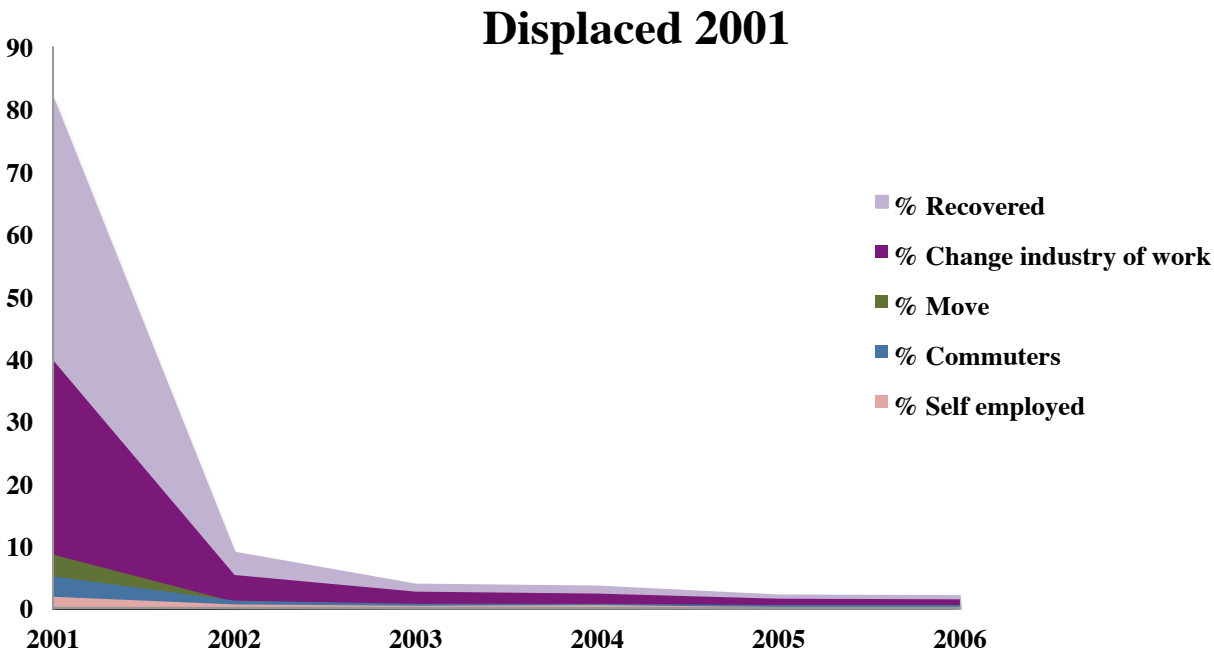

Figure 4. Workers displaced 2001- displaying percentage of recovery each year, becoming commuters, becoming self-employed, change industry of work and move.

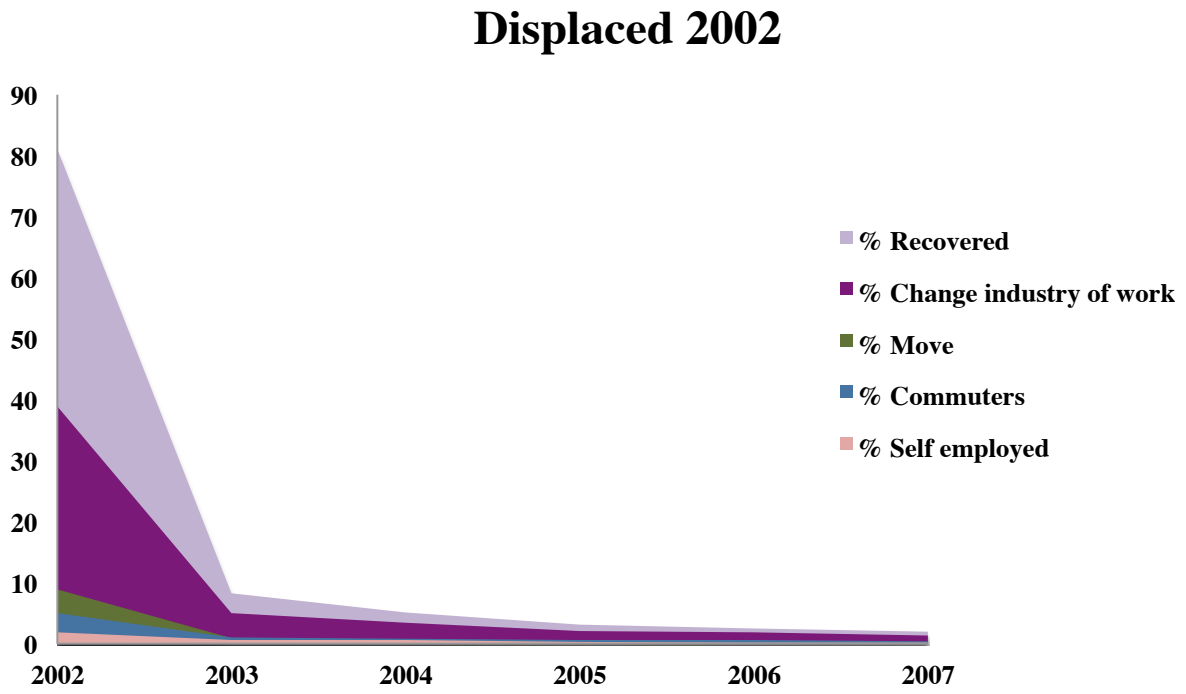

Figure 5. Workers displaced 2002- displaying percentage of recovery each year, becoming commuters, becoming self-employed, change industry of work and move.

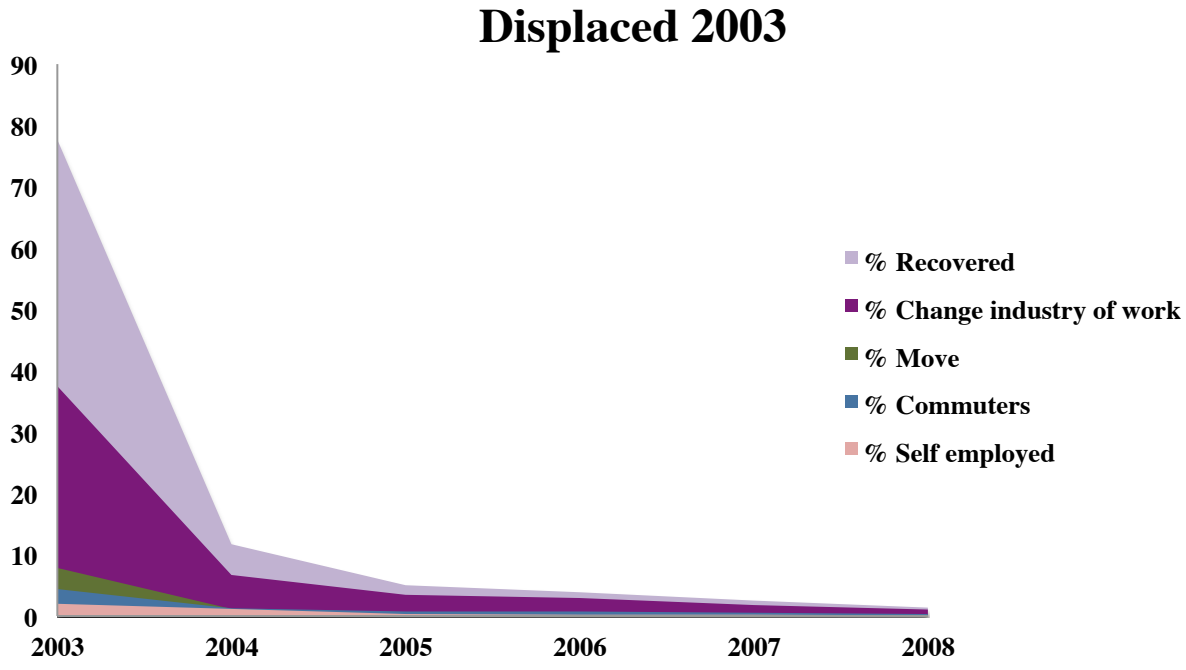

Figure 6. Workers displaced 2003- displaying percentage of recovery each year, becoming commuters, becoming self-employed, change industry of work and move.

The results from each year of displacement are considerably equivalent and can thereby be generally summarized. As can be comprehended, for each of the observed years of displacement, a distinctive majority, between 78-84 per cent, of all workers that got displaced a given year also recovered within the same year. Out of these individuals, about 35-40 per cent had changed industry of work. Yet, this correspondingly means that 60-65 per cent of all individuals that recovered within the year of displacement also got re-employed within the same industry as they initially got displaced from. As to reach re-employment, between 5 and 9 per cent of the displaced workers changed municipality of living, among 8 per cent began to commute and about 2 per cent moved into self-employment.

As outlined, the following table, Table 2, and its associated graphs displays each specific year after displacement for each of the four observation-years. By doing this one can distinguish and thereby analyse changes in transformations for the displaced workers over time within and after the year of displacement.

TABLE 2									
Year	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**
Displacement year 2000									
All recovered	81963	7897	3521	2144	2235	1462			
Change industry of work	42,50089	59,71888	67,85004	68,42351	67,56152	71,13543			
Move	6,23696	11,21945	15,67736	18,98321	18,12081	20,10944			
Commuters	11,14283	11,68798	11,1616	11,80037	10,02237	12,1067			
Self employed	1,928919	6,166899	6,589037	8,06903	15,92841	8,344733			
All move	5112	886	552	407	405	294			
All change sni	34835	4716	2389	1467	1510	1040			
All become commuters	9133	923	393	253	224	177			
All become self-empolyed	1581	487	232	173	356	122			
Displacement year 2001									
All recovered		82535	8889	3769	3406	2017	1911		
Change industry of work		48,61937	60,0855	68,77156	66,23605	71,0461	72,2135		
Move		6,179197	12,58859	16,76837	17,88021	22,60783	23,33857		
Commuters		10,38469	10,99111	12,31096	9,982384	12,94001	11,93093		
Self employed		2,169988	6,36742	8,278058	13,35878	7,139316	5,70382		
All move		5100	1119	632	609	456	446		
All change sni		40128	5341	2592	2256	1433	1380		
All become commuters		8571	977	464	340	261	228		
All become self-empolyed		1791	566	312	455	144	109		
Displacement year 2002									
All recovered			78457	7966	4944	2965	2420	1848	
Change industry of work			47,92307	60,99673	66,34304	67,4199	72,19009	69,26407	
Move			6,107804	12,08888	14,92718	18,34729	22,27273	22,1082	
Commuters			10,90406	10,94652	11,71117	11,73693	11,57025	14,4186	
Self employed			2,252189	7,431584	12,23705	7,521079	6,446281	9,30736	
All move			4792	963	738	544	539	416	
All change sni			37599	4859	3280	1999	1747	1280	
All become commuters			8555	872	579	348	280	219	
All become self-empolyed			1767	592	605	223	156	172	
Displacement year 2003									
All recovered				66572	10063	4276	3351	2157	1214
Change industry of work				48,17791	56,69284	69,03648	73,85855	70,37552	73,64085
Move				5,71111	10,83176	15,78578	18,4721	20,81595	26,02965
Commuters				10,1424	9,857895	12,53508	11,84721	11,54381	13,26194
Self employed				2,615214	10,19577	7,22638	5,819159	8,252202	9,802306
All move				3802	1090	675	619	449	316
All change sni				32073	5705	2952	2475	1518	894
All become commuters				6752	992	536	397	249	161
All become self-empolyed				1741	1026	309	195	178	119

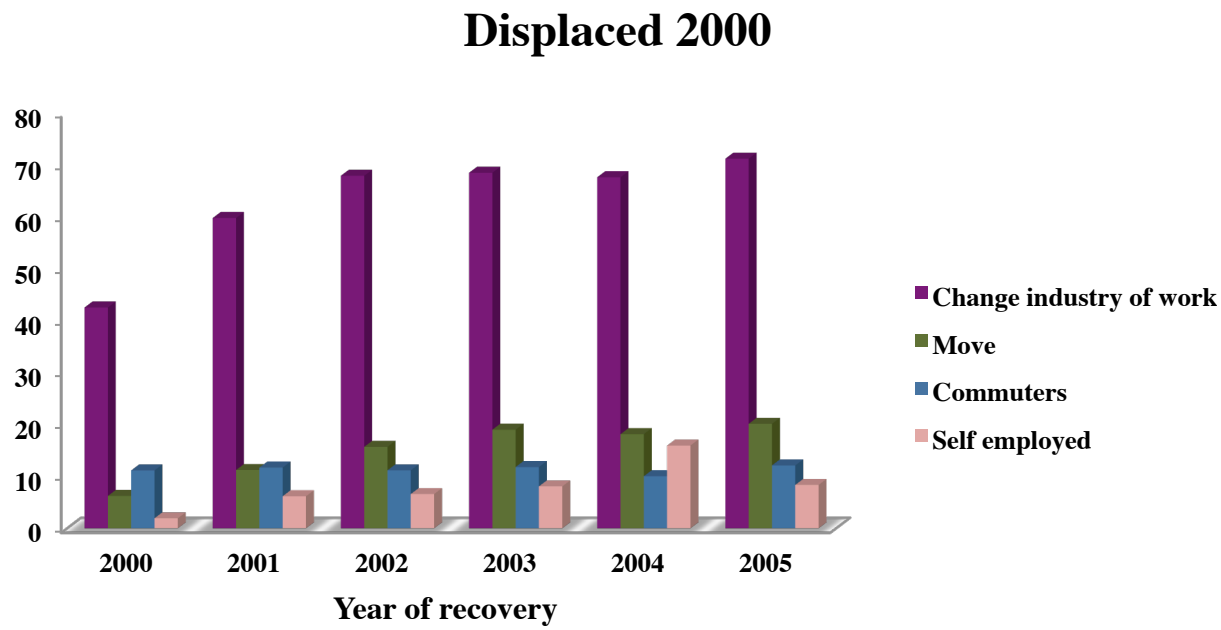

Figure 7. Workers displaced 2000- changes in transformations for the displaced workers over time

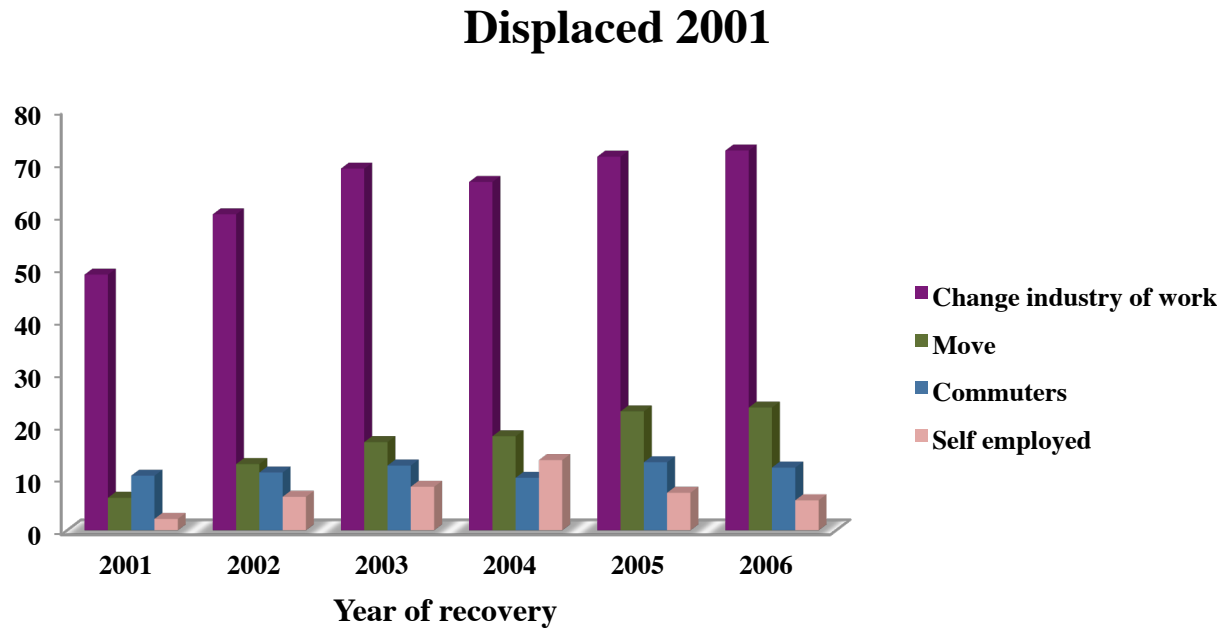

Figure 8. Workers displaced 2001- changes in transformations for the displaced workers over time

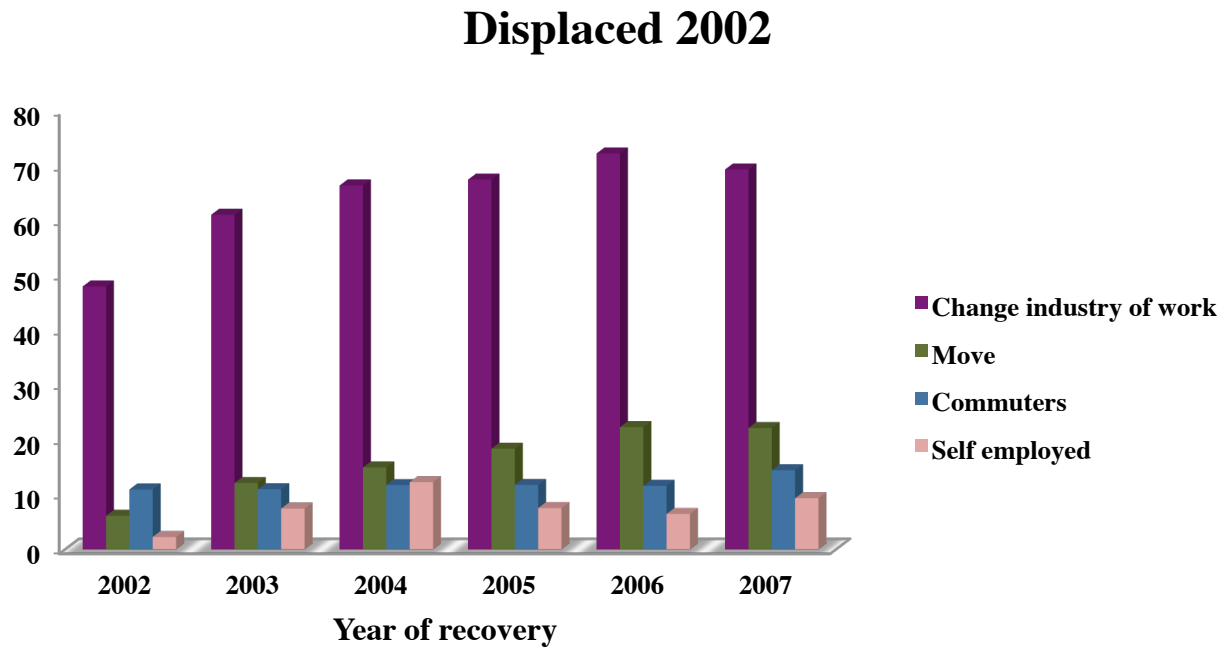

Figure 9. Workers displaced 2002- changes in transformations for the displaced workers over time

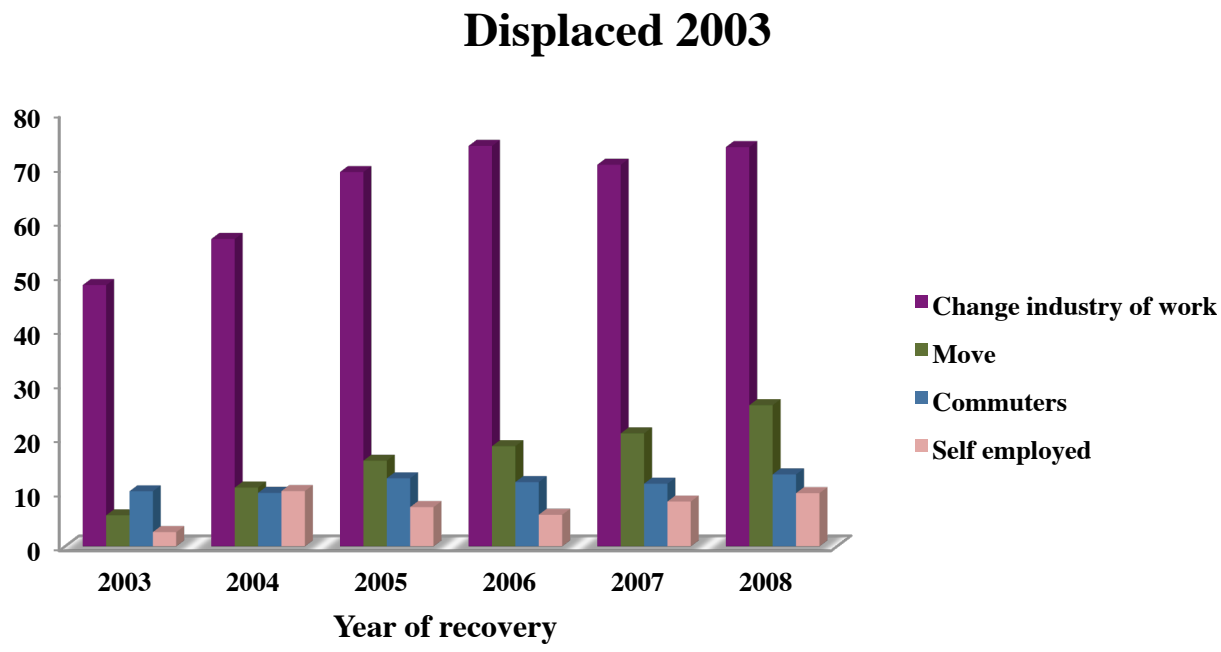

Figure 10. Workers displaced 2003- changes in transformations for the displaced workers over time

The results from each year of displacement are considerably equivalent and can thereby be generally summarized. It is evident that the self-employment entry rate increases over time. In order to exemplify this rationale one may observe that out of all that got displaced in 2002 (Figure 9), and also recovered that observed year, the self-employment entry rate has increased from 2.3 per cent to 12.2 per cent only two years after displacement. Accordingly, displacement year 2001 (Figure 8) shows that self-employment entry rate nearly triples

between the displacement year and the following year. This means that out of all individuals that got into employment the year after displacement, 6.4 per cent got self-employed, which can be compared to a 2.2 per cent self-employment rate out of all individuals that got displaced and recovered within the same year. The change in industry of work as well as alteration of municipality of living also progressively increases with years out of employment. For example, out of all workers that were displaced in 2000 (Figure 7), and got re-employed within the same year, 42.5 per cent had to change industry of work, which compared to a figure of 71.1 per cent five years later. Furthermore the results shows that 6.3 per cent of all individuals that got displaced in 2000 (Figure 7), and re-employed again within the same year was due to a move, a figure to be compare with a number of 20.1 per cent five years later. However, the percentage of individuals that start commute seem to be fairly constant, although slightly increasing, regardless of how many years one has been displaced.

6.2 If recovered as self-employed, is another industry of work sought?

Table 3 and its associated graphs show the percentage, for each of the four observed years, of the workers that recovered as self-employed that starts a business within the same industry of work as they got displaced from. In order to perform this, I have created a variable combining all individuals that got displaced one given year and became self-employed within the same standard industrial classification code as when they got displaced throughout the period of observation. Subsequently, the per cent of the workers that recovered as self-employed and that starts a business within the same industry of work as they got displaced from is calculated by dividing the number of all workers that became self-employed within the same industry of work by all individuals that recovered as self-employed for a given year.

Table 3 furthermore moves into each specific year after displacement for each of the four observed displacement-years. This is made in order to be able to clarify changes of industry of work when becoming self-employed over time. It is calculated by dividing each variable containing all individuals that become self-employed within the same industry of work as they got displaced from each year by the number of workers that recovered as self-employed each year. Notably, these recovered workers are all displaced within the same given year. This is not to be mixed with the previous outlined calculations that divide the workers that recovered as self-employed and starts a company within the same industry of work as they got displaced from each year by the *total* amount of workers that recovered due to self-employment for one given year and not the recovered workers for each year. The results of the latter attained calculations are, in addition to be presented in Table 3, exposed graphically for each year of displacement in Figure 11.

TABLE 3										
Year	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**	
Displacement year 2000										
Number of displaced workers	97983	97983	97983	97983	97983	97983				
All become self-empolyed	1581	487	232	173	356	122				2829
All become self-empolyed & same SNI	496	136	62	41	53	15				803
Proc become self-empolyed & same SNI, per year	31,37255	27,720739	26,7241379	23,699422	14,8876404	12,295082				
Proc become self-empolyed & same SNI										28,38459
Displacement year 2001										
Number of displaced workers		100929	100929	100929	100929	100929	100929			
All become self-empolyed		1791	566	312	455	144	109			3377
All become self-empolyed & same SNI		581	190	82	77	23	13			966
Proc become self-empolyed & same SNI, per year		32,439978	33,5689046	26,2820513	16,9230769	15,9722222	11,9266055			
Proc become self-empolyed & same SNI										28,60527
Displacement year 2002										
Number of displaced workers			96709	96709	96709	96709	96709	96709		
All become self-empolyed			1767	592	605	223	156	172		3343
All become self-empolyed & same SNI			624	198	140	57	31	31		1081
Proc become self-empolyed & same SNI, per year			35,3140917	33,4459459	23,1404959	25,5605381	19,8717949	18,0232558		
Proc become self-empolyed & same SNI, total										32,33622
Displacement year 2003										
Number of displaced workers				85663	85663	85663	85663	85663	85663	
All become self-empolyed				1741	1026	309	195	178	119	3568
All become self-empolyed & same SNI				582	257	89	46	29	21	1024
Proc become self-empolyed & same SNI, per year				33,4290638	25,0487329	28,802589	23,5897436	16,2921348	17,6470588	
Proc become self-empolyed & same SNI										28,6995516

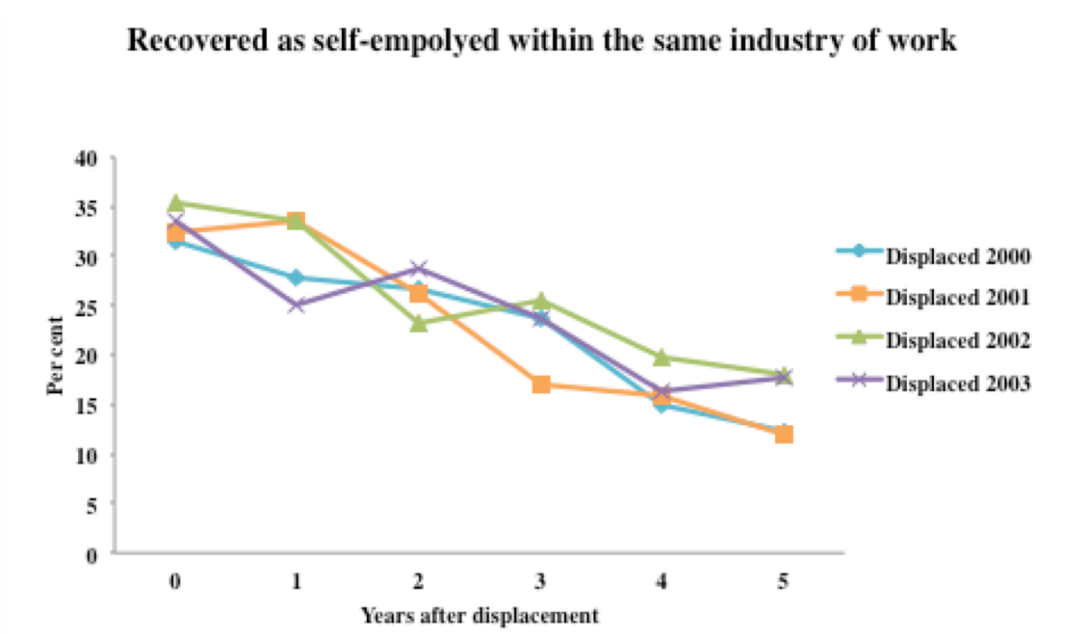

Figure 11. All displaced workers recovered as self-employed within the same industry over time with the displacement year 0.

Out of the workers that get displaced any of the four years of observation and recovers as self-employed, it seems to be so that over time, the willingness to start a business within the same industry of work as when they got displaced decreases. It can be seen that, out of all individuals that got displaced 2001 and recovered as self-employed within the same year, 32.4 per cent started a business within the same industry of work as they got displaced from. Five years later, only 11.9 per cent did so. Accordingly it is shown that for all individuals that got displaced 2000 and recovered as self-employed within the same year, 31.4 per cent started a business within the same industry of work as they got displaced from while, five years later, only 12.3 chose to do so. The average of all four years of displacement presents that, within the displacement year, 33.1 per cent of those that recovers as self-employed did so within the same industry as the one of displacement. Five years later, about 16.2 per cent decides to move into self-employment within the same industry as of displacement.

6.3 Discussion of results

Although previous research suggests that displaced workers are more sensitive to changes in the over all economy, the dotcom-crisis, considered in section 4.0, does not seem to have had a particularly large effect on the rates of recovery for the set of individuals. This could be supported by findings of previous research, for example Braunerhjelm and Thulin (2011) who find that the self-employment entry rate was less affected by the dotcom-crisis than the previous crisis. This implies that the dotcom-crisis did have a relatively little influence on the rates of transformation. Thus, as all four observation-years demonstrate similar figures the results seem to be robust allowing me to make a general analysis of them.

Predominantly, it appears to be so that an absolute majority, 78 to 84 per cent, of the workers that get displaced a given year also get re-employed within the same year. A displaced individual in Sweden has thus, approximately 80 per cent chance of getting into employment again within the year of displacement. This is in accordance with previous empirical research (Gonäs et al., 1978) who displays that a majority of those individuals that got displaced a given year, also got re-employed within the same year including a median duration of

joblessness for seven weeks. The resolved results are furthermore in accordance with the research made at Jössefors bruk in which the authors found that, within the year of displacement; a majority of the displaced workers got re-employed again (Gonäs et al., 1978). Although 80 per cent of the displaced workers move into employment again within the year of displacement, we do not know the quality of the jobs they enter. Since displacement include increased risk of lasting joblessness and decreased earnings, it is likely to believe that the reservation wage for any job is decreased. This may give result to lasting negative consequences for the specific displaced worker if that worker accepts a job that is not of a good employer-employee match or accept an offer in which he or she is overqualified. It could be so that the recovered displaced workers quit or loose their new job quickly again after re-employment due to this that, in turn, could be highly costly for the displaced worker as well as to the society at large. This logic is in accordance with Hall (1995) and Stevens (1997) who conclude that the negative effect on long-term earnings of the displacement is mostly due to multiple job losses and is highly dependent on the state of the labour market and the over all economic climate.

However, the results display that a set of transformations as well as alterations from the displaced workers may be required in order for the displaced workers to become re-employed. Approximately, 35 to 40 per cent of those that got displaced and recovered within the same year had to change industry of work. This result implies that, in order to increase the chance of getting into employment again after a displacement, the displaced worker should not be averse to the option of changing industry of work if necessary. This is in accordance with theory outlined by Ahn et al. (1998) suggesting that the job-finding probability is significantly higher for those individuals that have positive relocation attitudes. In order to take advantage of the labour force as efficient as possible, previous research treating relatedness shows that displaced workers should remain in the same industry or transfer to industries that value the competence they have settled in their former work. My results correspondingly demonstrates that around 60-65 per cent gets re-employed within the same industry of work as from where they got displaced. This implies that a majority of the displaced workers that recover within the year of displacement presumably get use of their prior knowledge and competences as they can implement them within their new employment. This factor may increase the chances of keeping the new employment over time and could thereby decrease the risk of multiple job losses. As previously outlined, this is highly beneficial for the displaced worker as a large negative effect of displacement is multiple job losses. If accentuating previous theory of relatedness; stressing that less qualified or more junior workers more easily change industry of work, one may draw the conclusion that these workers probably account for a dominant part of the 35-40 per cent that actually change industry of work. However, the study of both Jössefors bruk and the shipyard in Oskarshamn outlined by Gonäs et al. (1978) evidently finds that, for a great part of the displaced workers, it is out of most importance to keep their profession and industry of work. Subsequently, many of those displaced workers concluded that they rather move than change industry and profession of work in order to get re-employed (Gonäs et al., 1978). In contrast to these studies, however, my data is not based on surveys meaning that I did not have the possibility to control whether the displaced workers that had to change industry of work did so as they were obligated to do so in order to get into employment again at all. Furthermore, the industry-specific knowledge the worker has accumulated will depreciate after displacement if the worker is not re-employed within the same industry again. Therefore, the value of being re-employed within the same industry is highest at the time of displacement and then depreciates.

Among the displaced workers that got recovered within the same year as they got displaced, the results settles that between 5 and 9 per cent had to change municipality of living and among 8 per cent began to commute. In accordance with previous theory, e.g. Huges and McCormick, 1985, Gross and Schoening, 1984 and Ahn et al., 1998, the duration of joblessness seem to affect the rate of geographical mobility. This could explain why the percentage of workers that get re-employed after a move seem to be fairly low within the year of recovery compared to just a few years after displacement. Negative duration dependency, outlined by Acemoglu (1995), may also help explaining this results as the set of displaced workers, within the year of displacement, still have a such high expectancy to get a new job within the same municipality of living making them more reluctant towards a move. This reasoning stands, however, in opposition the results presented by Gonäs et al. (1978), suggesting that displaced workers are more sensitive to changes in industry of work and occupation rather than to an alteration in municipality of living. Something that could explain our different interpretation's is that the results summarised in Gonäs et al. (1978) concerns *single* specific establishments whereas the results presented in this thesis incorporates *all* establishment closures in Sweden within the years of observation. Furthermore, since the research presented in Gonäs et al. (1978) was conducted such along time ago, it is likely to think that the attitudes towards joblessness and work has changed between the 1960's and 1970's compared to the 2000's, which might have a significant effect on the results. Thus, the results summarised by Gonäs et al. (1978) helps explaining the condition for single establishments closures in the 1960's and 1970's, whereas the results presented in this thesis provides a larger picture of joblessness duration and transformations accompanied after establishment closures within the beginning of the 21st century.

The results reveal that, among the displaced workers that got recovered within the year of displacement, only about 2 per cent moved into self-employment. This outcome implies that there may be extensive barriers to entry self-employment that may be time-consuming to overcome. As outlined in section 2.3.3, these barriers may include access to external financing, be of a more administrative character or may include control regulations; and may serve as explanations to why such few displaced workers enters self-employment within the year of displacement, and why it increases over time. Moreover, it could also be so that the duration of the displacement *itself* affects why relatively few individuals enter self-employment within the actual year of displacement. This implies that the self-employment reservation wage of displaced worker is still high in the first year of joblessness such that the worker values being jobless higher than being self-employed at early stages of joblessness. This approach could be a result of negative duration dependency (Acemoglu, 1995) in that sense that the set of displaced workers, within the year of displacement, still expects to get a wage-earning employment in a near future making them reluctant towards entering self-employment. Dynamic selection theory may however help explaining why there is a part of the set of displaced workers that recovers as self-employed within the year of displacement. As it is likely to believe that some of the displaced workers already have been self-employed before the paid-employment in which they got displaced from; it is also likely to believe that they have access to factors that facilitate and eases the entry of self-employment. Such factors could include, among others, that they have a dormant registered company; an elaborate business plan or simply that they already know how to overcome a large part of the barriers to entry self-employment. Furthermore, if the displaced worker expected to be displaced prior to the closure he or she may already have prepared a move into self-employment before the actual displacement. If so, that would result in a quicker entry of self-employment compared to workers without such preparations. Following this reasoning by Evans and Leighton (1989), it is probably also so that a part of the displaced workers that recovers as self-

employed within the year of displacement got displaced from a small company. Small companies are often found to be having a more entrepreneurial attitude and atmosphere that in turn offers an entrepreneurial experience that may serve as an advantage in self-employment entry making them to enter quicker compared to workers without this experience (Boden, 1996).

When examining the results for each year after displacement, revealed graphically in Fig.7, Fig. 8, Fig.9 and Fig. 10, it appears to be so that the longer the displaced worker is out of employment the more willing it is to change industry of work, become self-employed or change municipality of living in order to get re-employed again. These results can be explained through duration theory and by determinants of transformation. As outlined, the duration of displacement may in itself affect the time the displaced individuals remains out of employment as the intensity to look for a new job changes as time of joblessness increase. Positive duration dependency, explained by Acemoglu (1995), can serve as an explanation for these results. When becoming displaced, the search intensity of a new job is expected to equal the potential compensation during the period of joblessness plus, if any, additional income. Over time, these benefits and compensations may decrease causing the reservation wage for any other job to decrease making the displaced worker more positive for transformations in order to get re-employed. This includes, amongst other, working within another industry, change municipality of living and moving into self-employment. This logic is furthermore in accordance with recession-push hypothesis that suggests that the reservation wage for transformation decreases with the duration of joblessness. The presented results could thereby be a product of that for every day the joblessness proceeds, the displaced workers' opportunity to get a paid-employment within the same industry as they got displaced from or within their municipality of living decreases. These factors may correspondingly push them into other industries of occupation or solely into other types of occupation such as self-employment. Moreover, as reviewed, workers that are out of employment for a longer period of time are less likely to find employment than those who are employed, if they were to become unemployed, at the same period of time (Blanchard & Diamond, 1994). This rationale could also assist in explaining why the set of displaced workers that have been out of employment for a longer period of time may have to attain certain transformations. As employers use ranking methods; the long-term jobless workers may not be seen as valuable as short-term jobless workers, forcing the long-term jobless workers into another part of the economy in order to get into employment again. This reasoning implies that time itself not only affect the duration of joblessness, as argued by Blanchard and Diamond (1994), but also affects the direction of employment denoting that over time, displaced individuals are required to broaden their search options. This could be seen as the turning point in which negative duration dependency turns into positive duration dependency. However, the transformations over time do not have to be a direct consequence of positive duration dependency or other push determinants. It can be so that time itself affects the transformations in another way than previously discussed. For instance it could be so that the displaced worker retrains during the time of displacement causing a shift in industry of work; a shift that is not a direct consequence of that he or she is unable to get a job within the same industry as before displacement, just an outcome of his or hers newly added knowledge. Another example of this could be that at the time of displacement, the displaced worker has children living at home causing difficulties in changing municipality of living. However, over time, these children could have moved away from home initiating an opening in which the displaced worker more easily can change municipality of living. Under such circumstances the transformation is not a direct consequence of positive dependency or any other push determinants, its just that a transformation fits better after a period of time.

As outlined, out of all re-employments each year, the share of self-employment entries increases as the time from the year of displacement increases. The result is expected and is in accordance with previous research that stipulates that, only one year after displacement, the probability of entering self-employment doubles (von Greiff, 2009). This altering behaviour may be a consequence of the basics within the recession-push hypothesis and be because of the fundamentals within positive duration dependency (Acemuglo, 1995). But, it is however also likely to assume that the reason for that the self-employment entry increases drastically between the year of displacement and the years after is that it takes time to start a new business. Not just that the displaced worker have to figure out what type of business it wants to start, but also it has to overcome all barriers of entering self-employment, which can be very time-consuming. In accordance with positive duration dependency theory, it is likely to believe that the reservation wage of self-employment entry decrease with joblessness duration, causing an increase in the displaced workers propensity to enter self-employment over time.

My results demonstrate furthermore that the amount of the displaced individuals that start commute seem to be fairly constant, possibly slightly increasing, regardless of how many years one has been displaced. This does not mean, however, that displaced workers do not start to commute at all- rather the other way around. In each year after the displacement, a constant fraction of the remaining jobless workers start to commute in order to become re-employed. The logic behind this has to do with the reservation wage of entering employment in a location that is possible for the displaced worker to commute to. Changing municipality of living may be tedious affecting a number of other individuals more than the displaced worker, which would cause the reservation wage, within the year of displacement, to be rather high. However, because of positive duration dependency this will, over time, reduce. But, in the case of beginning to commute, it is likely to believe that the reservation wage is quite constant over time, and not as high as changing municipality of living is initially, resulting in that the amount of displaced workers that start to commute in order to get into employment again is fairly constant, and not very increasing, over time.

Out of the workers that get displaced any of the four years of observation and recovers as self-employed, it is clearly so that, over time, the willingness to start a business within the same industry of work as where they got displaced from decreases. About 33 per cent of the workers that recovered as self-employed within the year of displacement did so within the same industry of work as they got displaced from. Five years later, only about 16 per cent out of those that recovered as self employed did so within the same industry of work as when they got displaced. Initially I was surprised that, even within the year of displacement, such low percentage of those that recovered as self-employed did so within the same industry of work as they got displaced from. However, one can explain this as the industry they got displaced from perhaps is facing a downturn causing the establishment where they got displaced from to close. The downturn of that industry is probably the result for why such small number of workers wants to enter self-employment within that industry. The reason for why the results, suggesting that the proportion of displaced workers that recovers as self-employed starts a business within the same industry as of displacement, faces such decline over time is probably a consequence of several different things. In particular, time itself must have a fairly large effect. Over time, the displaced workers may have chosen to re-educate and thereby are more willing to start a business within that line of profession. It may also be so that the displaced workers generate other experiences and know-how over time making them more willing to start a business within another industry rather than the one it got displaced from. The distance that arises from not being active in the industry of displacement can also make the displaced

worker realise that he or she is unwilling to work within that industry, making that worker to start a business within another industry than that of displacement. Moreover, it could also be so that the specific knowledge, gained through their last employment, no longer have the same value as instantly after displacement; not only for the new employer as outlined above, but maybe not for the displaced worker who is moving into self-employment as well. Additionally, another possible explanation is that individuals who become self-employed might change industry but remain within the same occupancy. For example, an accountant at a large car-manufacturing firm is more likely to start a small accountancy bureau than a car manufacturing plant if he or she was to be displaced.

7. Conclusions, policy implications and suggestions for further research

The purpose of this thesis is to follow and analyse what happens to individuals who work at establishments that are closed down. Unique longitudinal matched employer-employee data incorporating all firms, establishments and their employees in Sweden between the years 1997-2008 are used in the empirical analysis. Consistent with previous empirical research it is shown that an absolute majority of the workers that get displaced one given year also recovers within that same year. This paper moreover expresses that the longer the displaced workers are out of employment, the larger the willingness to change industry of work, change municipality of living or move into self-employment seem to be. The propensity to commute is however fairly constant over time. Finally, it is also presented how, over time, those who become self-employed to a greater extent start business in other industries than they were displaced from.

Since the results show that most individuals are re-employed within the year of displacement the positive spill over effects from labour mobility could outcompete the negative effects from the closure and increased unemployment. Correspondingly, the closure of the establishment could in itself be a part of the process of creative destruction such that the establishment was pushed out of business due to the entry of a new and more productive alternative. Something that in itself is positive, however this doesn't count for all employees and that work at establishments that are closed down. Yet, if directing a decrease in the over all joblessness rate as well as the duration of joblessness it is important to construct labour market policies that strengthen the position for those workers that are displaced. As discussed in section 2.1, facilitating labour mobility will increase the positive knowledge spill overs to firms and employers, and thereby increase the overall economic growth. Helping the displaced workers with the worst labour market positions into employment again would be beneficial to the society at large as the cost of the loss in human capital is minimised. Using the results obtained in this paper, an increase in competitiveness of the displaced workers and a decrease in the duration of joblessness can be reached in diverse ways, and cross-sectorial policy measures must be applied. A satisfactory suggestion of which type of policy to implement is dependent upon the specific characteristics of an economy. However, it can be argued that an adequate policy must support the efficiency of the market where there are failures, and cannot destabilise the efficiency when it is successful. This implies that the policy must be well-targeted denoting that it should not affect those that it does not intend to affect and vice versa.

In order to maximise the utility of the labour force including an increase in the displaced workers re-employment rate, economies are required to ease the movement and commuting prospects for these workers. Such a development obligates improvement of the infrastructure,

which would increase the general mobility level as well as make it easier for the displaced worker to start to commute or move. If accomplishing improved infrastructure it could make it easier for the displaced workers to move with respect to improved travel possibilities such that visiting family and relatives still living in former area of residence would be facilitated. Moreover, if undertaking an improvement in the infrastructure, resulting in that individuals always can trust the departure as well as arrival time of the traffic; certainly a larger amount of the displaced workers will consider the option to change municipality of living or start to commute in order to get re-employed. Hence, such improvements would reduce the cost of moving and commuting and thus decrease the reservation-wage for jobs in other regions. On the other hand, it could also be argued that assisting in constructing an environment in which the displaced workers do not have to move at all also would be a way to facilitate displaced workers re-employment rate. Therefore, it would be highly interesting to study the possibilities of work on distance as a way of recovery after displacement. Teleworking could serve as an alternative to changing municipality of living as well as commuting and could thus have a positive effect on the displaced workers re-employment probabilities. Moreover, in order to broaden the understanding of this issue; occupational relatedness would have been of significance to consider. If doing so it would be interesting to examine what proportion of the displaced workers that have change occupation in order to get re-employed again. Unfortunately, the lack of data following the individuals' type of occupation through my given years of observation made me unable to examine such relationship.

As suggested by van Praag and Versloot (2007) entrepreneurs create, relative to their size, more jobs than their counterparts. This reasoning forces politicians, whom direct a decrease in displaced worker joblessness duration, to consider stimulation of entrepreneurship as a feasible alternative. Economic regulations, changes in structural policy measures, a favourable tax system, advisory systems and subsidies and grants are some of the policy measures governments may initiate in order to stimulate the entrepreneurial climate and thereby enhance the positive effects of entrepreneurship. However, as entrepreneurs tend to create more low quality jobs than their counterparts (Praag & Versloot, 2007), all self-employment entries are not positive. This accordingly stresses the importance for politicians to construct the policy measures in such way that it targets the self-employed that are most valuable to society at large. Thus, encouraging entry of self-employment to *all* displaced workers that are out of employment is not a good solution if aiming long run reduced redundancy. Thereby, in order to add to the understanding of when self-employment is a good choice, both for the individual displaced worker as well as to society at large, it would be interesting to further investigate the success rate of the ones that become self-employed after an establishment closure. Moreover, if the closure of an establishment were not just due to a decreased space at the market or a downturn in the economy, it would be interesting to study the dynamics affecting the decision of becoming self-employed. An increased understanding in this field may help when evaluating entrepreneurship policy, and would thereby merit further attention from entrepreneurship researchers.

Within this field of study it would also be interesting to see when, if ever, the set of displaced workers reach full recovery. However, as I did not have data on those who never recovered, examining this relationship would just have shown that all displaced workers, independent of year, would some point in time have reached full recovery; an outcome that would have been completely misleading, making me unable to study this relationship within this thesis. Furthermore, it would also be interesting to study if there are any industry specific aspects of the duration of joblessness. This could include examining whether displaced workers in some specific industries have a shorter or longer duration of joblessness than others. Moreover, in

some cases of establishment closures in Sweden, e.g. the closure of Ericsson in Norrköping (Ahlstrand, 2010), the closing company has *itself* been very much involved in the re-employment process of their displaced workers, a method that has been argued to work very successfully for this set of workers (Ahlstrand, 2010). Thus, the potential effects of the closing establishments involvement in the recruitment process for their displaced workers would merit further attention in future research. Conclusively, as human capital and individual characteristics are likely to affect the mobility of workers, it is also likely to believe that the same characteristics affect the possibility of becoming re-employed after being displaced. Therefore, it would be interesting to further investigate the relationship between individual specific characteristics and the probability of becoming re-employed after displacement. Likewise, it would also be interesting to see if these individual characteristics affects on the probability of changing industry of work, changing municipality of living, starting to commute or entering self-employment.

8. References

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Appendix

TABLE 4

Two-digit standard industrical classification code

Code	*Industry*
01	Agriculture, hunting and related service activities
02	Forestry, logging and related service activities
05	Fishing, operation of fish hatcheries and fish farms; service activities incidental to fishing
10	Mining of coal and lignite; extraction of peat
11	Extraction of crude petroleum and natural gas; service activities incidental to oil and gas extraction excluding surveying
12	Mining of uranium and thorium ores
13	Mining of metal ores
14	Other mining and quarrying
15	Manufacture of food products and beverages
16	Manufacture of tobacco products
17	Manufacture of textiles
18	Manufacture of wearing apparel; dressing and dyeing of fur
19	Tanning and dressing of leather; manufacture of luggage, handbags, saddlery, harness and footwear
20	Manufacture of wood and of products of wood and cork, except furniture; manufacture of articles of straw and plaiting materials
21	Manufacture of pulp, paper and paper products
22	Publishing, printing and reproduction of recorded media
23	Manufacture of coke, refined petroleum products and nuclear fuel
24	Manufacture of chemicals and chemical products
25	Manufacture of rubber and plastic products
26	Manufacture of other non-metallic mineral products
27	Manufacture of basic metals
28	Manufacture of fabricated metal products, except machinery and equipment
29	Manufacture of machinery and equipment n.e.c.
30	Manufacture of office machinery and computers
31	Manufacture of electrical machinery and apparatus n.e.c.
32	Manufacture of radio, television and communication equipment and apparatus
33	Manufacture of medical, precision and optical instruments, watches and clocks
34	Manufacture of motor vehicles, trailers and semi-trailers
35	Manufacture of other transport equipment
36	Manufacture of furniture; manufacturing n.e.c.
37	Recycling
40	Electricity, gas, steam and hot water supply
41	Collection, purification and distribution of water
45	Construction
50	Sale, maintenance and repair of motor vehicles and motorcycles; retail sale of automotive fuel
51	Wholesale trade and commission trade, except of motor vehicles and motorcycles
52	Retail trade, except of motor vehicles and motorcycles; repair of personal and household goods
55	Hotels and restaurants
60	Land transport; transport via pipelines
61	Water transport
62	Air transport
63	Supporting and auxiliary transport activities; activities of travel agencies
64	Post and telecommunications
65	Financial intermediation, except insurance and pension funding
66	Insurance and pension funding, except compulsory social security
67	Activities auxiliary to financial intermediation
70	Real estate activities
71	Renting of machinery and equipment without operator and of personal and household goods
72	Computer and related activities
73	Research and development
74	Other business activities
75	Public administration and defence; compulsory social security
80	Education
85	Health and social work
90	Sewage and refuse disposal, sanitation and similar activities
91	Activities of membership organizations n.e.c.
92	Recreational, cultural and sporting activities
93	Other service activities
95	Activities of households as employers of domestic staff
99	Extra-territorial organizations and bodies

Source: Scb (2004)