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The ASSD Firm Panel**

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Extracting Firm Information from Administrative Records: The ASSD Firm Panel[*]

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Abstract

This paper demonstrates how firm information can be extracted from administrative social security records. We use the Austrian Social Security Database (ASSD) and derive firms from employer identifiers in the universe of private sector workers. To correctly pin down entry end exits we use a worker flow approach which follows clusters of workers as they move across administrative entities. This procedure enables us to define different types of entry and exit such as start-ups, spinoffs, closures, or take-overs. We show that our firm definition results in a demography which is comparable to official statistics of firm registers. The resulting database, covering the period of 1976 to 2006, is a valuable resource for future research on industry evolution in Austria.

Keywords: administrative data, definition of firms, entry and exit types, worker flows
JEL classification:

1 Introduction

It has long been recognized that net flows play an important role for the analysis of aggregate economic development. On the one hand, a detailed analysis of job creation and job destruction shows that a large amount of employment turnover is hidden behind slow moving aggregate employment indicators.[1] On the other hand, empirical observations about the evolution of industries and turnover of firms allow us to explain important economic phenomena such as productivity reallocation (Caves, 1998; Geroski, 1998). Consequently, the empirical analysis of firm dynamics has become a major input in the development of theoretical insights (Asplund and Nocke, 2006; Hopenhayn, 1992; Jovanovic, 1982).

For the analysis of firm turnover administrative linked employer employee data are an alternative to the commonly used firm surveys (Abowd and Kramarz, 1999). This type data has the advantage of covering the full population of enterprizes at a high frequency and over long time periods, an important criterion for the analysis of entry and exit. However, because administrative social security records are not primarily designed for the study of firms, but rather record insurance relevant information about individuals, some problems with the firm concept have to be addressed in order to extract relevant information. Our analysis is based on the Austrian Social Security Database (ASSD, Zweimüller et al. (2009)) containing records of employment and wages for the universe of private sector workers over the period 1972 - 2006. Firm information is provided from employer identifiers, which are assigned to employment spells. Before we present results on firm demographics and dynamics in Austria we address two important concerns with the firm concept in the ASSD.

First, there is no clear regulation in the ASSD whether a firm identifier should be used for a firm or for single establishments. To confront this problem we compare summaries on the number of employer identifiers and their distribution in different size classes with official numbers from the Austrian statistical office, which explicitly refer to firms as the unit of recording. This comparison shows a remarkable similarity of the descriptive statistics from both sources, with the number of employer identifiers only being slightly higher than the

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[1]See Davis and Haltiwanger (1999) for an excellent survey on job flows and Stiglbauer et al. (2003) for Austrian results.

number of firms in the official statistic. This makes us confident that multi-establishment firms are not an important component in the Austrian firm demographic. Although some establishments are likely to be recorded, we conclude that the majority of employer identifiers in the ASSD refers to firms. We will therefore use firm and employer identifier synonymously.

Second, firm entries and exits are observed in the ASSD with the hire of the first employee and the layoff of the last one, so that the life span of a firm is given by the time between these two events. The total number of entries and exits of employer identifiers may exaggerate actual firm turnover, however, if administrative employer identifiers change, a new identifier is assigned to a spinoff of a unit from an existing firm, or to a smaller unit joining an existing firm. Our strategy to confront this problem is a *worker flow approach*, which follows workers leaving exiting firms to their next jobs and tracks the last employer of workers moving into entering firms. We look for patterns in groups of workers with joint firm transitions to define types of entry and exit such as renames, spinoffs, genuine start-ups, takeovers, or closures of firms.

The worker flow approach to identify firm turnover has been applied to administrative register data in several other countries. Benedetto et al. (2007) demonstrate how the approach provides conceptual insights into the changing structure of businesses and employer-employee relationships in the US. They show that many worker-cluster flows involve changes in industry, and that a nontrivial fraction of firm entry is associated with such flows. Applying the approach to worker flows between all establishment in the German establishment history panel of the Institute of Employment Research in Nuremberg, Hethey and Schmieder (2009) identify and classify types of entry and exit and analyze establishment turnover in Germany. In Portugal de Morais Sarmento and Nunes (2009) derive business demography indicators from the Quadros de Pessoal.

The paper proceeds as follows. In the next section we sketch the Austrian firm demographics derived from the ASSD for the year 2005 and compare it to official statistics. Section 3 studies firm dynamics over the years 1976 to 2005. We outline the definition of different types of entry and exit, and show results on Austrian firm dynamics. Again we compare dy-

namics in the ASSD in 2005 to the official statistics. Further, we investigate the development of firm dynamics over the past three decades. Section 4 summarizes the findings.

2 Data and firm demographics in 2005

The Austrian Social Security Database (ASSD) is a linked worker-firm data set which covers the universe of private sector employment in Austria over the years 1972-2006 (Zweimüller et al., 2009). At the individual worker's level the data record information on employment, wages, and other insurance relevant labor market states on a daily basis. For every employment spell the data also record an *employer identifier*. The ASSD universe thus provides a wealth of workforce characteristics for every employer identifier at any point in time. There is precise information on the size and composition of the workforce via the workers' socio-economic characteristics. Further, the data provide information on annual wages per worker and employer identifier and thus a detailed account of the employer's payroll. From the longitudinal structure of each worker's labor market career additional information can be extracted.

While workforce related characteristics that can be extracted from the ASSD are very detailed, other information at the employer identifier level is restricted to time-invariant regional and industry indicators at the postal code and 4 digit NACE levels, respectively. This implies that we have no knowledge about the owner or ownership structure of the firm. Neither is there any information on profits, other measures of output, prices, or technology.

In the ASSD we can measure the life span of a firm by the time between appearance and disappearance of an employer identifer.[2] This way, the birth of a firm is characterized with the first employee entering the firm and the death of a firm occurs when the last worker is leaving the firm. We start the analysis of firms in the ASSD by constructing a quarterly panel of employer identifiers. On February 10, May 10, August 10, and November 10 of each year we count the number of blue collar and white collar employees with each employer identifier, which is our measure of firm size. In total we observe 962,726 employer identifiers with at

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[2]We use firm and employer identifier synonymously here. In the next section we aim at a clearer differentiation.

least one employee on a single quarter date between 1976 and 2006.

Table 1 reports a summary of the resulting firm demographics by size for the year 2005. On any of the four quarter dates in this year the ASSD reports 266,550 firms with a total of 3,018,789 employees. As already noted by Stiglbauer et al. (2003) the structure of Austrian firms is dominated by small and medium size businesses. The vast majority of firms, i.e. 179,819, have only one to four employees. There are 42,037 firms with five to nine employees; 40,586 with 10 to 99 employees; 3,560 with 100-499 employees; and 548 with more than 500 employees. It is important to note, that although small firms with 1-4 employees make up about 67% of all firms in 2005, they contribute only to 11% of total employment. The opposite holds for firms with 10 or more workers, who represent about 80% of employment but only 17% of the firms.

Based on the employer identifiers assigned by the social security administration we cannot distinguish between firms or establishments.[3] In other words, we do not know if any establishments are connected by a firm, or if an employer identifier corresponds to a collection of even smaller establishments. To shed light on the importance of this distinction, we compare the summaries from the ASSD with the "Unternehmensdemographie" provided by Statistik Austria, the Austrian statistical office (Statistik Austria, 2009).[4] Specifically, this source constructs data on firm demographics combining information from the *Austrian firm register*, the *Austrian tax authorities*, as well as information in the *ASSD*. According to Statistik Austria a firm is defined as a legal or organizational unit that produces goods or services and autonomously decides the allocation of its current resources; the firm may carry out one or more activities at one or more locations. The statistic includes all firms which had a revenue of more than Euro 10,000 or at least one employee in 2005 (Statistik Austria, 2009). An important difference between our employment based firm definition and the official data is that the Austrian firm register provides a direct account of the date of firm incorporation and the date of firm closure, whereas in the ASSD a firm is only observable with its first or last

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[3]The social security administration also has no strict rule as to what type of unit should be reported with an employer identifier. To the best of our knowledge the employer identifier can be applied to the firm as well as to a single plant in case of a multi-establishment enterprize.

[4]2005 is the first year when Statistik Austria started reporting firm demographics conform with the standards of the Eurostat-OECD Business Demography Statistics (Eurostat/OECD, 2007).

employee. This accounts for differences in the total number of active firms in both statistics. A second difference may be due to different treatment of public sector firms. Our sample includes all firms that employ blue collar or white collar workers, which means that we also capture workers with private sector contracts employed in public sector institutions such as universities, schools, hospitals etc.[5]

The lower panel in Table 1 reports Austrian firm demographics in 2005 according to Statistik Austria (2009). Overall, the official data confirm the observation from the ASSD that the Austrian firm demographic is dominated by small firms. For 2005, Statistik Austria (2009) reports a total of 372,706 firms with 3,098,163 workers. These numbers include firms with zero employees (133,961) and self employed workers. The numbers for firms with at least one employee in the different size classes are comparable to the ASSD results. Statistik Austria reports 159,821 firms with one to four employees; 40,255 with five to nine employees and 38,671 with 10 of more employees. The size distribution is very similar in both data sources: The relative share of firms with 1-4 firms is 67% in both the ASSD and in the official statistic, shares of firms with 5-9 employees are 16% and 17% and shares of firms with more than 10 employees are 17% and 16%, respectively.

For all size classes we find higher numbers in the ASSD, i.e. the ASSD not only captures firms but also establishments. But the difference is small. For the firms with at least one employee we report 12% more units in the ASSD than the official statistic. For the size classes the differences are +13% among units with 1-4 employees, +4% among those with 5-9 employees, and +16% among units with 10 or more employees.[6] This comparison makes clear, that although the ASSD seems to record some establishments, the majority of the units refers to firms. Considering also the small average size of firms in Austria, we conclude that multi-establishment firms are not very common in the Austrian market. This means that the distinction between firms and establishments is not particularly relevant in our case. Therefore we decide to refer to employer identifiers in the ASSD synonymously as firms.

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[5]The restriction with respect to public sector firms applied by Statistik Austria is not known.
[6]The difference in the largest size group may be due to public sector firms.

3 Firm Dynamics

3.1 Definition of Types of Entry and Exit

Worker flows With respect to firm dynamics the problem posed by the administrative concept of employer identifiers is the identification of firm entries and exits. We exploit the richness of longitudinal information on the individual workers in the ASSD and analyze worker flows – i.e. transitions of one or more workers from one employer identifier to the other – to classify entries and exits of firms.

To motivate our approach, consider the example of a firm whose employer identifier is changed form A to B for administrative reasons without any economic consequence for the workforce. In the data we observe this event as the exit of employer identifier A and the entry of employer identifier B, falsely giving the impression of excess turnover. The analysis of the previous employer identifier of workers hired by firm B and the next employer identifier of the workers laid off by firm A, discloses the nature of the change in the identification number, however.

Our strategy is therefore to follow each worker leaving an exiting firm A to their next jobs and to identify the largest group among those workers who jointly move from firm A to the same employer identifier B. Analogously, we analyze the flow of workers entering a new firm B and identify the largest group who have jointly transited from the same previous employer A. In the following we outline a set of rules on worker flows form exiting and into entering employer identifiers, which allow us to identify the type of entry and exit for a subset of firms. Specifically, we aim at categorizing entry events into *renames* (or administrative changes of firm identifiers), genuine *start-ups*, and *spinoffs*. With respect to exits we distinguish between *rename* exits (or administrative changes of firm identifiers), genuine *firm closures*, and *takeovers*.

The period of observation in the ASSD and our worker flow approach require two restrictions on the set of firms for which we can classify entry or exit. First, the aggregate number of firms is very volatile during the early years of recording in the ASSD, therefore we analyze

entry and exit events only between 1976 and 2006. Second, the worker flow approach requires a minimum number of workers in order to identify groups with joint transitions. We therefore restrict the entering and exiting firms, to which we apply our approach, to have at least 5 workers in the first year of entry or at least 5 workers in the last year before exit, respectively.

Types of firm entry and exit   Now we proceed to an exact definition of entry and exit types. The main rules are summarized in Table 2.

Renames: Our first goal is to identify changes in employer identifiers without consequences for the workforce. These events might be due to firm specific circumstances, e.g. a change in the legal status of a firm. We call this administrative change of the employer identifier a renaming procedure. The main characteristic that allows us to identify renames in the ASSD is that most of the workforce will remain unchanged. Conceptionally, a rename affects not only an entering firm identifier but also an exit. In other words, for each rename exit there must be a corresponding rename entry. Therefore the definition of renames imposes conditions on a pair of entering and exiting firms and on the worker flow between those firms. A rename event is defined by an exiting firm A leaving the database between 1976 and 2007 with at least 5 employees in the last year of its existence. The corresponding entering firm B has at least 5 employees in the first year of its existence. Firm B's entry occurs directly after firm A's exit form the data (in the quarterly panel this is the subsequent quarter). In addition firm A and firm B have to be of comparable sizes; we allow for a difference of +/ 20%. On the workers' level the condition is that the largest group of workers moving from firm A to firm B must be either larger than 70% of A's total number of employees in the last year before exit or larger than 70% of B's total number of employees in the first year of entry.

Spin-offs: A spin-off is defined as a group of workers breaking up from an existing firm and constituting the entry of a new employer identifier. In terms of the entering firm B, the criterion is that a large group of workers hired in the first year of the firm's existence transited from the same previous employer identifier A. Note, here we impose no restrictions on the characteristics of firm A. A "large group" of workers is defined as a group of at least 50 workers or a group consisting of at least 50% of firm B's workforce in the first year.

Start-ups: All remaining entries of employer identifiers, which are not classified as renames or spin-offs constitute the group of start-ups. Thus, a start-up of a firm corresponds to the entry of a new firm, whereby no large group of workers transited jointly to the new firm from any other firm during the first year. To be identified as a start-up the firm needs to enter after 1976 and must employ at least 5 workers in its first year of its existence.

Take-overs: Analogous to spin-offs, a take-over is reflected by the exit of an employer identifier A, whereby a large group of workers is jointly moving from this firm to another employer identifier. The large group is to consist either of at least 50 workers or of a group with at least 50% of firm A's workforce in the last year. Firms which have previously been classified as rename exits are excluded from the take-overs.

Closures: A firm closure concerns the exit of firm, whereby no large group is moving jointly to another firm. Firms, which have previously been classified as a reassignment or rename exit are excluded from closures. To be considered a closing firm, the firm needs to employ at least 5 workers in its last year of existence and to exit before 2006.

For the definition of entry and exit types we have chosen arbitrary cutoff values for the relative size of worker flows transiting jointly between two employer identifiers. With this choice we aim at a conservative restriction on startup entries and closure exits. This means that the resulting categorization may falsely classify genuine startups (or closures) as spinoffs (or takeovers), but the likelihood that we classify a genuine rename, spinoff, or takeover among the startups and closures should be small.

How well the cutoff values correspond to natural thresholds in the distribution of worker flows in the data is shown in the following graphs. Figure 1 presents the distribution of worker flows leaving exiting firms, defined as the relative size of the largest group of workers leaving an exiting firm A and moving jointly to a firm B. The four panels show flows for different firm sizes. While the distribution appears to be unimodal for smaller firms with a peak at less than 20% of the workforce, the distribution becomes bimodal for larger firms. There is a second peak at about 80% and a low intermediate value at the 50% level. Our definition attributes this second peak to renames. From the graph it is obvious that the worker flow

definition will give a more meaningful distinction of entry and exit types in the case of larger firms, which is not surprising. The corresponding distribution for worker flows moving into entering firms is shown Figure 2. The overall patterns are comparable to the exits, which means that we can confidently apply the same cutoff values to exiting and entering employer identifiers.

3.2 Austrian Firm Dynamics

Table 3 reports entry and exit types for the set of the 962,726 firms we observe over the years 1976 - 2006 in the ASSD. Starting with entries, we notice that for 87% of employer identifiers the entry type is undefined. This is partly due to left censoring, but in most cases the entering firm is too small to apply the worker flow approach. It seems that our approach is not applicable for a large number of firms, but we should keep in mind that 80% of these very small entrants never employ more than 3 workers. This group of firms is responsible for a lot of turnover in the data, but it makes a small contribution economic activity. For the remaining 122,957 firms we can identify the entry type. The results demonstrate how important it is to distinguish between entry types: only 71,302 firms or 58% of the identified entries can be attributed to start-ups. The remaining firms are either classified as renames or spinoffs. An administrative change in the employer identifier is not uncommon at all, as we observe 16,686 rename entries. The distribution of exit types is similar to the entries. Again, for 88% of firms the exit type is undefined, either because of right censoring or because of a too small exit size. Among the 116,604 firms with identified exits we classify 65,456 firms or 56% as closures.

For the year 2005 we can compare firm dynamics in the ASSD with the official numbers published by Statistik Austria (2009). Table 4 reports entries and exits by size class. In this table the ASSD sample consists all entering firms regardless of whether we can identify the entry/exit types or not, because the main focus is a comparison of ASSD firm dynamics with the official statistics. To interpret the numbers correctly, we emphasize the different definitions of the entry and exit dates used by both data sources. In the ASSD the entry and exit dates

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correspond to the entry and exit of the first and last employee, respectively. The concept applied by Statistik Austria, on the other hand, defines the entry date as the date of firm incorporation, which may be a while before the first hire takes place. Correspondingly, the exit date refers to the date of firm closure, which may be after the exit of the last employee.[7]

The number of firm entries in the official statistics is about 8% larger than the number of entries we observe in the ASSD, potentially because the Statistic Austria also considers firms with zero employees. The earlier entry date in the official statistic results in a high share of entries with zero employees in the official statistics, while the class of small entrants with 1-4 employees is lower than the corresponding number in the ASSD. In the remaining size classes we also observe larger numbers of entrants in the ASSD than in the official statistic. This difference can be explained by the presence of renames and spinoffs among firm entries in the ASSD sample. The distribution of entry employment across size classes between ASSD and Statistik Austria resembles the number of entrants. Note that the official statistic also counts self employed.

For exiting firms the numbers reported by Statitik Austria are much smaller throughout all size classes than in the ASSD. While the distribution entry rates and exit rates is roughly similar in the ASSD, exit rates are considerably lower than entry rates in the official statistic. The same difference is visible with respect to entry and exit employment in Statistic Austria, with exit employment being only half the size of entry employment. This inconsistency suggests measurement problems in the official statistic.

After looking at all entries during the period 1976 - 2006 and detailed statistics for 2005, we now focus on the development of firm dynamics over time. Table 5 shows averages for the five year periods from 1981-2005 in the ASSD. We also report the respective numbers for each entry and exit type. Over time we observe an increasing trend in the number of firms. The number of firms in Austria has risen from 320,480 registered firms in the early 1980s to 379,520 firms registered in during the years 2001-2005. The average firm size remained roughly constant over this period, however. With the growing numbers of firms also firm turnover has increased, reflected by the numbers of entering and exiting firms. Austria's entry into

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[7]This also implies that the concept of Statistik Austria leads to longer firm survival times.

the European Union in 1995 has certainly contributed to this trend. When looking at the different entry and exit types we cannot detect a significant change in the distribution over time. The number of start-ups has almost doubled from 8,308 during 1981-1985 to 15,161 in 2001-2005. But we observe similar increases for spinoffs rising from 4,116 to 7,897; closures 8,655 to 15,035 and takeovers from 3,927 to 7,599. Notably, average firm sizes have stayed roughly constant for start-ups and closures, while spin-offs and takeovers have grown in size.

Figure 3 compares net entries with the movements of the business cycle. Here we define net entry as the difference between start-ups and closures and as the differences between takeovers and spinoffs. To eliminate some of the noise from the graph, we focus on larger firms with 10 or more employees. The Austrian economy is comparatively stable and did not experience strong fluctuations in economic activity over the past half of a century. GDP growth has been moving between a minimum of 1 percent and a maximum of 4. Net firm entry rates seem to trace the mild booms and recessions pretty well during the 1980's and early 1990's. As of the mid 1990's the volatility of net entry rates increases, probably as a consequence of the changes in the business structure due to the EU membership and opening of the Eastern European economies.

4   Summary and Discussion

In this paper we have demonstrated how valuable firm infirmation can be extracted from individual based matched firm-worker register data. Based on the universe of private sector workers in the Austrian Social Security Database (ASSD, Zweimüller et al. (2009)) we define firms using employer identifiers. Following clusters of workers as they move across administrative entities, allows us to define different types of entry and exit such as start-ups, spinoffs, closures, and take-overs.

We compare the results from the ASSD with official numbers provided by Statistik Austria, the Austrian statistical office. The comparison of the number of firms, entrants, and exits in different size classes makes us confident that the ASSD is indeed accurate and informative enough to evaluate firm demographics or industry dynamics. This poses a unique opportunity

to exploit administrative data sources for the purpose of firm behavior and industry dynamics.

Our analysis leads to a couple of interesting findings about firm demographics and dynamics in Austria. The first striking feature is that small businesses with 1 to 4 employees are dominating firm demographics. In 2005 about 67% of all firms were in this smallest size class. Moreover, the small businesses contribute disproportionately to firm turnover. From 1976 to 2005 83% of all new entrants had fewer than 5 employees during the first year. Austrian firm dynamics is characterized by frequent entries and exits of small short lived firms. The importance of small firms in firm demographics and dynamics is, however, by no means equivalent to their share in economic activity. Firms with 1 to 4 workers only account for about 11% of total employment. While small entrants end exits create a huge amount of firm turnover, the vast majority of those firm never increases their employment above 3 workers. This implies that the contribution of small firms to worker turnover is of a much smaller scale.

The second finding is that large firms are basically absent from the Austria market. This result appears not only in the ASSD but is strongly supported by official numbers reported by Statistik Austria, the Austrian Statistical Institute, which explicitly refer to firms and not to establishments as units of investigation. In this respect the Austrian economy differs a lot from larger economies like the United States or to some extent Germany. A large share of small and medium sized businesses is, however, not untypical for other European economies especially in the Southern Part of Europe. Consequently, the most interesting group of firms in the Austrian demographics, which is economically important, and for which we can extract meaningful information based on workforce characteristics are medium sized firms with 5 to 500 employees. With respect to these firms our data provide a promising resource for future research.

Finally, looking at the development of firm dynamics over time we observe an increase in the number of firms and firm dynamics over the last three decades, but hardly any change in the size distribution of firms in Austria. Firm entries and exits have almost doubled over that period most noticeably since the mid 1990's. It is an interesting question for future research how much of this change was driven by domestic development versus the increase of

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international competition along with the Austrian EU membership and the opening of Eastern European economies.

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Table 1: Firm demographics in 2005

Firm size	Number of firms	Number of workers
ASSD		
total	266,550	3,018,789
1-4	179,819	330,714
5-9	42,037	274,126
10-99	40,586	1,009,100
100-499	3,560	709,594
$\geq$500	548	695,255
Statistik Austria		
total	372,706	3,098,163
0	133,961	135,980
1-4	159,821	454,142
5-9	40,255	294,092
>10	38,671	2,213,950
Employer firm	223,872	n.a.

Notes: ASSD firms correspond to employer identifiers in the Austrian Social Security Database. The sample consists of all firms with at least one employee at one of 4 quarter dates in 2005. Numbers published by Statistik Austria are based on data from the Austrian firm register, Austrian tax authorities as well as information in the ASSD and are dated from December 17, 2008. Employer firms are defined as firms with employees and their numbers are also published by Statistik Austria, but are based on another concept. Therefore the number of employer firms is not necessarily the same as the number of firms with employees (Statistik Austria, 2009).

Table 2: Summary of firm definitions

Firm Type	Firm Condition	Worker Condition
Types of entry		
Rename Entry	Firm A exits and firm B enters. Firm B employs at least 5 workers in its first year of existence. The size of firm A is approximately the same size as firm B. Firm B enters after 1976.	A team of workers is jointly moving from firm A to firm B. The team consists of more than 70% of firm B's workers in its first year.
Start Up	Firm B enters. Firm B employs at least 5 workers in its first year of existence. Firm B enters after 1976.	No large team (see spinoff definition) of workers is jointly moving from another firm A to firm B.
Spinoff	Firm B enters and it is not a *rename* entry. Firm B employs at least 5 workers in its first year of existence. B enters after 1976.	A team of workers is jointly moving from firm A to firm B. The team consists of more than 50% of firm B's workers in year 1 or at least 50 workers move to firm B.
Types of exit		
Rename Exit	Firm A exits and firm B enters. Firm A employs at least 5 workers in its last year of existence. The size of firm A is approximately the same size as firm B. Firm A exits before 2006.	A team of workers is jointly moving from firm A to firm B. The team consists of more than 70% of firm A's workers in its last year.
Closure	Firm A exits. Firm A employs at least 5 workers in its last year of existence. Firm A exits before 2006.	No large team of workers (see takeover definition) is jointly moving from firm A to another firm B.
Takeover	Firm A exits and it is not a *rename* exit Firm A employs at least 5 workers in its last year of existence. Firm A exits before 2006.	A team of workers is jointly moving from firm A to firm B. The team consists of more than 50% of firm A's workers in the last year or at least 50 workers move away from firm A.

Table 3: Summary enrty and exit firms types 1976 – 2006

Firm Type	Number of firms
Overall	962,726
Types of entry	
Undefined	
Entry before 1976	217,546
Less than 5 workers in first year	620,365
Renames	16,686
Spinoffs	34,969
Start-ups	71,302
Types of exit	
Undefined	
Exit after 2006	228,741
Less than 5 workers in last year	617,381
Renames	16,945
Takeovers	34,203
Closures	65,456

Notes: Firms correspond to employer identifiers in the Austrian Social Security Database. The sample consists of all firms, which are active for more than 90 days and have at least one worker on any of the quarter dates from 1976 to 2006. For the definition of entry and exit types see Table 2.

Table 4: Firm dynamics in 2005

| Firm size	Number of entrants	Entry employment	Entry rate	Number of exiters	Exit employment	Exit rate
ASSD						
total	27,321	119,675	10.2	28,545	107,375	10.7
1-4	23,584	34,040	13.1	24,197	46,211	13.5
5-9	2,049	13,189	4.9	2,175	13,974	5.2
10-99	1,560	37,104	3.8	1,675	34,853	4.1
100-499	115	23,288	3.2	86	14,663	2.4
≥500	13	12,054	2.4	6	4,241	1.1
Statistik Austria						
total	29,542	72,608	7.9	22,367	41,337	6.0
0	17,005	17,001	12.7	15,241	15,738	11.4
1-4	10,115	26,273	6.3	6,262	n.a.	3.9
5-9	1,484	10,356	3.7	610	n.a.	1.5
>10	938	18,978	2.4	254	n.a.	0.7

Notes: ASSD firms correspond to employer identifiers in the Austrian Social Security Database. The sample consists of all firms entering on one of the quarter dates in 2005 with at least one employee. Numbers published by Statistik Austria are based on data from the Austrian firm register, Austrian tax authorities as well as information in the ASSD (date of publication is December 17, 2008). The entry date for Statistik Austria is the date of firm incorporation, exit date is the date of closure.

Table 5: Entry and exit variables by type

| Variable	1981-1985	1986-1990	1991-1995	1996-2000	2001-2005
Number of firms	320,480	330,837	354,204	385,156	379,520
Average size	10.12	10.36	10.61	10.45	11.00
Number of entering firms					
All entering firms	96,348	108,208	122,852	144,113	144,682
Undefined entry or rename	83,924	92,312	104,513	122,354	121,570
Start-ups	8,308	10,895	12,402	14,765	15,161
Spinoffs	4,116	5,001	5,937	6,994	7,897
Entrant size					
All entering firms	2.82	3.08	3.27	3.07	4.09
Undefined entry	1.30	1.30	1.32	1.33	1.37
Rename	12.94	12.06	14.35	12.44	23.72
Start-ups	8.03	7.62	7.72	7.24	7.49
Spinoffs	18.12	21.76	23.56	19.29	26.73
Number of exiting firms					
All exiting firms	97,851	99,485	113,161	150,264	138,941
Undefined exit or rename	85,269	85,971	96,630	128,297	116,307
Closures	8,655	8,584	10,941	14,185	15,035
Takeovers	3,927	4,930	5,590	7,782	7,599
Exiter size					
All exiting firms	2.24	2.44	2.52	2.88	3.77
Undefined exit	1.27	1.30	1.30	1.36	1.33
Rename	13.17	12.33	14.5	12.01	27.58
Closures	5.59	5.73	5.48	6.67	7.29
Takeovers	10.48	12.03	12.87	14.93	20.95

Notes: Firms correspond to employer identifiers in the Austrian Social Security Database. The samples consist of all firms, entering firms, or exiting firms, respectively, with at least one employee on one of the quarter dates during the selected five year periods. For the definition of entry and exit types see Table 2.

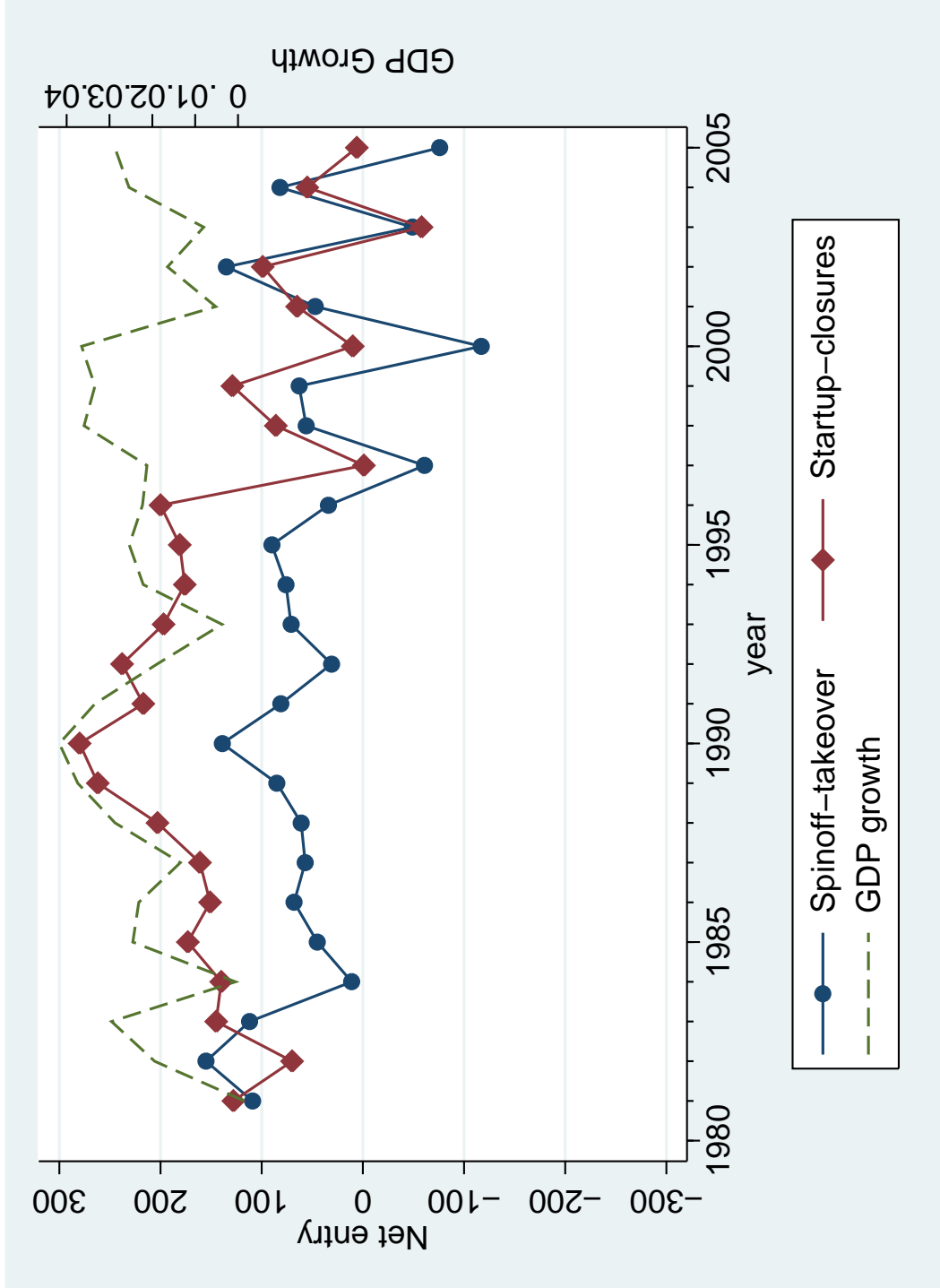Figure 1: Histogram Worker Flows from Exiting Firms
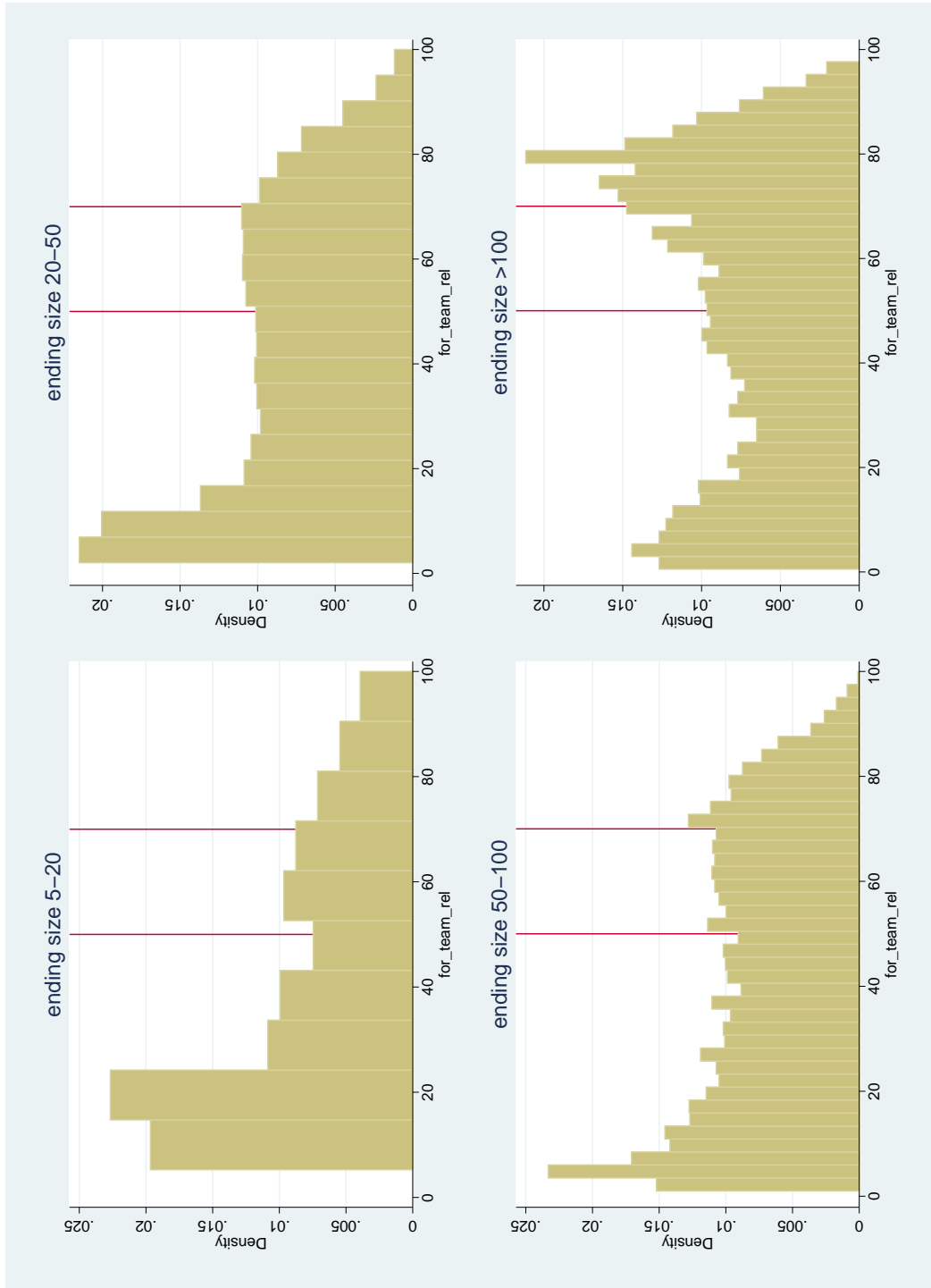
Notes: Firms correspond to firm identifiers in the Austrian Social Security Database.

Figure 2: Histogram Worker Flows into Entering Firms
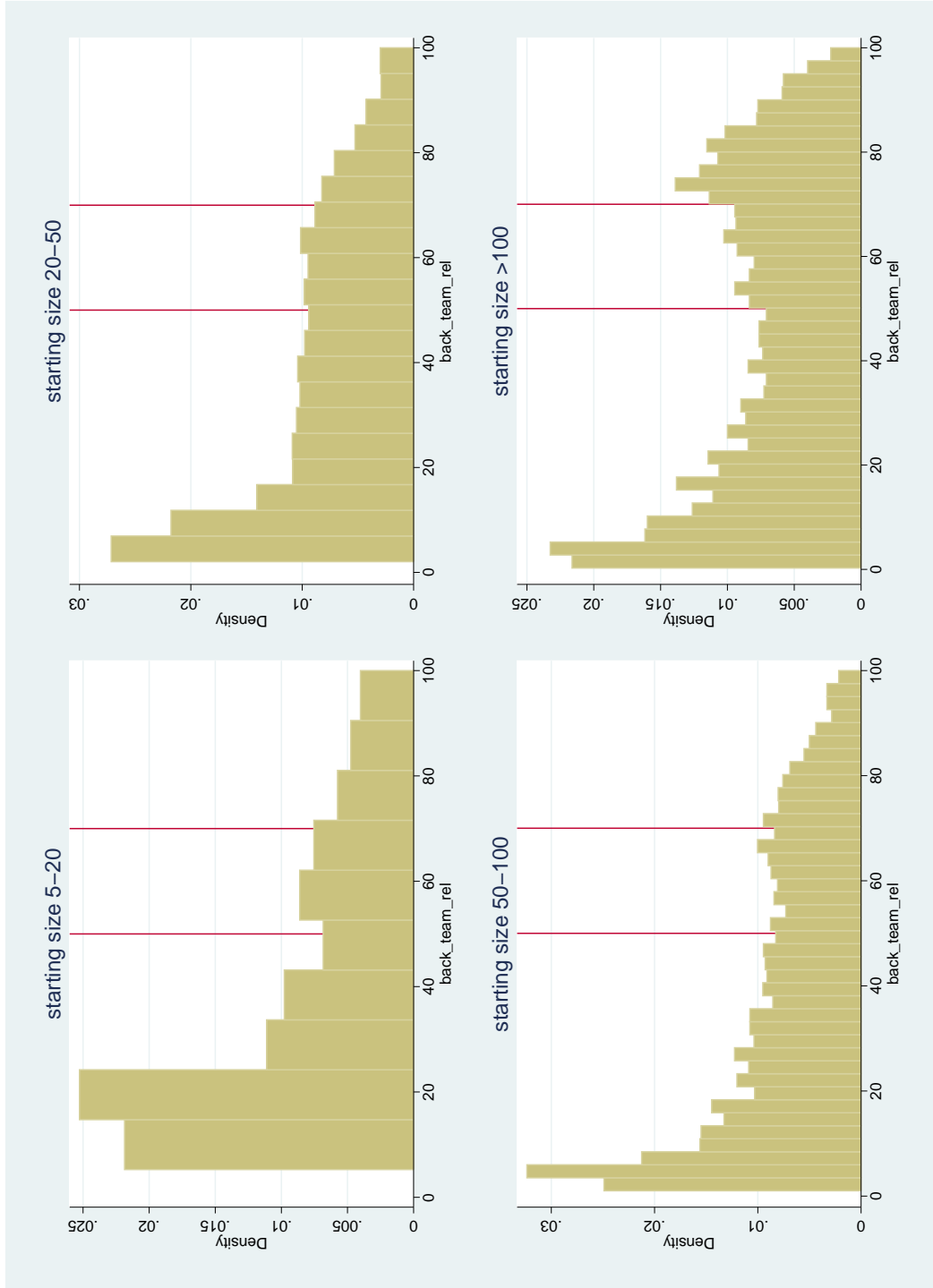
Notes: Firms correspond to firm identifiers in the Austrian Social Security Database.

Figure 3: Net entry of firms with 10 or more workers compared to growth in GDP

Notes: Net entry is defined as the number of entering minus exiting employer identifiers in the ASSD. The lines distinguish between net entry of startups-closures and net entry of spinoffs-takeovers. For the definition of entry and exit types see Table 2.