

Succession and firm growth: results from a non-parametric matching approach

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Abstract The article analyses the relationship between succession and firm performance. Applying a non-parametric matching approach on a panel of roughly 4,000 Austrian family firms we evaluate the impact of actual (past) succession as well as planned (future) successions on employment growth. Analysing succession plans, we do not find a significant difference in employment growth between firms that plan to transfer the firm in the next 10 years and those who do not. In contrast, past succession exerts a significant and positive employment growth effect, which becomes stronger over time.

Keywords Succession · Family firms · Employment growth · Matching · Austria

JEL Classification C14 · L25 · L26

1 Introduction

Most firms in the world are family firms.¹ In recent years, family firms have received growing attention in different fields of economics: literature on entrepreneurship focusses on the decision to enter into family businesses, labour market economists investigate the entrepreneurs' decisions to retire and, from the perspective of the corporate governance literature, family firms allow economists to study the patterns of separation of ownership and control. Recent work by Bertrand and Schoar (2006) investigates the linkage between family firms, family values and economic performance. On the basis of a cross-section analysis (macro-type evidence) the analysis suggests that stronger family ties are significantly related to worse economic outcomes. The authors stress that “our understanding of the nexus between family and firm should improve with more microeconomic studies that analyze how the structure of a given family—including its size, gender and age composition—alters the strategic choices and eventual performance of the family firm. Because of the very detailed data required to perform such analysis, future micro

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¹ Gersick et al. (1997) report that family firms account for 65–80% of all worldwide business, and for about 40% of the Fortune 500 companies. Although many family firms are small, in aggregate they represent about half of the US gross domestic product (Aronoff et al. 1997) and employ more than 80% of the work force (Neuberg and Lank 1998).

research on this work might be forced to proceed on a country by country basis” (p. 95).

Using a large data set on Austrian family firms within a specific culture and institutional framework² the present article provides micro-level evidence on one particular aspect of family firms: the issue of family succession. The circumstances of family succession are of key importance not only for the family members directly involved but also (per definition) for the long-run survival and success of family firms. In an extensive review of the early literature on family businesses Handler (1994) finds: “researchers in the field of family business agree that succession is the most important issue that most family firms face” (p. 133).³ The economic analysis of succession has further gathered considerable momentum in academic literature in the last several years. Correspondingly, Chrisman et al. (2003) find that over 30% of the articles on family firms have succession as the primary or secondary topic.⁴

The present article analyses the relationship between succession and firm growth. Two interrelated dimensions of succession will be addressed: succession plans and actual succession behaviour. First, we investigate empirically whether future succession plans cast their shadows on employment growth even before the transfer actually takes place. This effect can either be positive or negative. In an unpublished paper Kimhi et al. (1995) argue that the occurrence of succession within the family in the near future might motivate entrepreneurs to invest and raise current firm size. Kimhi et al. call this the ‘shadow of succession’ effect.⁵ By way of contrast, Stiglbauer and Weiss (2000) argue that firm operators probably have an aversion to make long-term decisions immediately

before transferring the firm to a successor and presume a negative relationship between succession plans and current firm growth. Empirical evidence on this relationship is scarce. Whether future succession plans have a positive or negative impact on current firm growth remains an open question, which will be addressed empirically in this article.

Second, we evaluate whether there is a significant difference in employment growth between two groups of firms: firms where succession has taken place during the last few years and otherwise identical firms that did not experience succession. Previous empirical work on the consequences of succession typically compares the corporate performance of firms that were handed down to a family member to firms that were transferred to a non-family member. On the basis of data for 124 family controlled firms in Canada Smith and Amoako-Adu (1999) find that stock prices decline by 3.20% during a 3-day event window when family successors are appointed. No significant change in stock prices is found when non-family members are appointed. Similar results are reported for the USA (Pérez-González 2006). The authors investigate the impact of inherited CEO positions on the performance of 335 US publicly traded companies. They find that firms where the incoming chief executive officer is related by blood or marriage to a founder or a large shareholder of the corporation undergo a substantial reduction in returns on assets (−18%) and market-to-book ratios (−14%) within 3 years, relative to firms that promote unrelated CEOs. For more than 5,000 firms in Denmark, Bennedsen et al. (2006) also observe a large negative causal effect of family successions on firm performance. Focussing on the transfer of business in private small- and medium-sized firms in Italy, Cucculelli and Micucci (2006) report a substantial drop in the post-succession performance of family-run businesses.

A related issue is addressed in a series of empirical papers that investigate the performance of family firms based on different CEO status, i.e. founder controlled, descendant controlled and family outsider controlled. This provides some indirect evidence on the performance of firms that were handed down to a family member. Using cross sectional data on US firms, Anderson and Reeb (2003) find a positive performance effect when family members serve as CEOs relative to unrelated CEOs. However,

² For a description of the institutional aspects in Austria, see Mandl and Voithofer (2005).

³ Succession is so central that Ward (1987) chooses to define family firms in terms of the potential for succession: ‘we define a family business as one that will be passed on for the family’s next generation to manage and control’ (p. 252).

⁴ For a more recent literature review on family firms, see also Chrisman et al. (2005).

⁵ The authors allude to Griliches and Regev (1995) who analyse firm exits and find firms that will exit in the future to have significantly lower growth rates in the years before exit compared to surviving firms. This phenomenon is called the ‘shadow of death’. Recent empirical evidence on this issue is provided by Almus (2004).

descendant-CEOs are observed to perform worse than founder CEOs, indicating that succession lowers corporate performance. Similar results are reported by Morck et al. (2000). Using a sample of Canadian firms, they find that firms controlled by heirs of the founder show lower profitability than founder and family outsider controlled firms in the same industry. Evidence provided by Villalonga and Amit (2006) supports this finding, albeit the negative effect of descendant-CEOs on firm value is observed to be entirely attributable to second-generation family firms. In contrast, evidence provided by McConaughy et al. (1998) does not support a negative relationship between family successions and corporate performance. Using data on US founding family controlled firms, they document that descendant-controlled firms are more efficient than founder-controlled firms. They generate significantly higher sales growth rates, sales per employee and cash flow per employee than the founder-controlled firms, indicating that successors were able to enhance firm performance. In explaining their results the authors argue that “descendants are in a position to consolidate the advantages passed on to them by the founders” (p. 15). Evidence on the corporate performance of family firms in Europe is provided by Sraer and Thesmar (2007). Analysing a sample of 750 corporations listed on the French stock market, they do not find a significant difference in firm performance of founder-controlled firms and descendant-controlled firms. Both, founder CEOs and descendant CEOs are associated with better corporate performance than unrelated CEOs.

The present article differs from these studies in various ways. The first concerns the sample characteristics. With the exception of Cucculelli and Micucci (2006) all studies mentioned above focus mainly on large, stock corporations. There is reason to believe that the consequences of succession in large companies will differ from the consequences in small- and medium-sized firms, making it difficult to extrapolate from the existing literature on succession and firm performance (Wasserman 2003). Given that small- and medium-sized firms constitute the clear majority of family firms, it seems particularly important to investigate the effects of succession in this group of firms. Focussing on small- and medium-sized firms also implies that we cannot use stock values as our performance measure. Instead we

analyse the consequences of succession for firm employment growth. Finally, the present article does not investigate different consequences of family and non-family successions, but compares the performance of firms where succession has occurred in the past (or is expected to take place in the future) with those without any succession event.

A comparison of the growth performance of companies with and without succession requires that selection effects are adequately taken into account, since the occurrence of succession is not an exogenous event but will be influenced by individual firm characteristics and in particular, by the expectations on future growth perspectives.⁶ This leads to a non-experimental setting since the probability of succession is not random. The present article applies a non-parametric matching approach, which assigns to every firm with succession a ‘comparable’ firm without succession. Our results indicate no significant difference in employment growth between the group of firms that plan succession in the near future and otherwise identical firms without succession plans. On the other hand, actual (past) succession exerts a significant and positive employment growth effect, which becomes stronger over time. Our findings thus suggest a significant succession effect following the actual transfer.

2 Data and estimation method

Our analysis is based on a 10-year panel (1995–2004) of more than 4,000 Austrian small- and medium-sized manufacturing companies, of which an overwhelming majority are family firms. The data are provided by the Austrian Institute for SME Research, which is the largest research institute in Austria focussing on small- and medium-sized enterprises (SMEs).⁷ Unfortunately, a complete record on employment numbers for all firms over the entire

⁶ A large number of empirical studies, particularly for the farm sector, suggest a significant impact of farm characteristics as well as of characteristics of the farm operator’s family on the probability of (planned and actual) succession (Kimhi 1994; Stiglbauer and Weiss 2000; and Glauben et al. 2004; Bennedsen et al. 2007).

⁷ The institute annually collects economic performance data on a random sample of roughly 4,500 small- and medium-sized manufacturing firms in 19 industries.

period is not available. To guarantee that only a minimum of observations is lost, we use three-year averages covering the periods from 1996 to 1998, from 1999 to 2001 and from 2002 to 2004. Each firm, for which at least one observation over the relevant three years is available, is considered in our sample. This procedure also reduces short-run performance fluctuations. Observations with missing values for firm characteristics are excluded. We finally end up with 1,101 firms for which a complete set of variables is available.

In 1999 the Austrian Institute for SME Research also collected survey information on firm owners' future succession plans and previous succession experiences. Two questions were addressed in the questionnaire. The first one to be answered was, *Do you plan to transfer your company within the next ten years?* The second question to be answered was, *Within the last three years, was the company handed over to you or has there been a substantial change in ownership structure?* Around 40% of the respondents (440 firms) indicate that they plan to transfer the firm within the next 10 years. In the same year, 12.5% of the respondents (136 firms) report that their firms have been handed over to them or experienced some sort of ownership changes during the last 3 years.

Unfortunately, the question design does not address exactly whether transfer of management control, transfer of legal ownership or a combination of the two has happened (or is planned) in a particular firm. Given that (family) owner-management, where ownership and management are concentrated in the hands of one person, is probably the most common governance style in small- and medium-sized firms, it is plausible to assume that most of the reported succession cases capture both management control transfer and legal ownership transfer. Another issue which has been shown to be of particular interest in previous literature is the distinction between succession to a member of the family ('family succession') and succession to an unrelated person ('non-family succession'). As indicated above, succession is broadly defined in the data-set at hand and a differentiation with respect to various modes of succession in the 1999 survey is not possible.⁸ The

focus of this analysis lies on the comparison of the growth performance of companies with succession to those without succession. In what follows, companies that experienced succession in the past and/or plan succession in the future will be denoted 'succession firms', whereas companies without any such succession event will be labelled 'continuation firms'.

Additional firm characteristics (such as firm age, the firm owner's age and the number of ownership changes since the foundation of the firm) were matched to this data set from a new survey conducted by the Austrian Institute for SME Research in 2005. Descriptive statistics of all variables used are reported in Table A1 in the appendix.

Assessing the impact of succession (planned or actual) requires making an inference about the outcomes that would have been observed for 'succession firms' (treatment group) had they not been transferred (counterfactual). Denote by ΔY_i^1 the outcome (growth rate of employment) conditional on experiencing succession ($S = 1$) and by ΔY_i^0 the outcome (growth rate of employment) conditional on non-succession ($S = 0$). For each individual firm, either ΔY_i^1 or ΔY_i^0 is observable. The difference between the two cannot be observed for the same firm. The most common evaluation parameter of interest is the mean impact of treatment on the treated, $ATT = E(\Delta Y_i^1 - \Delta Y_i^0 | S_i = 1) = E[\Delta Y_i^1 | S_i = 1] - E[\Delta Y_i^0 | S_i = 1]$, which measures the average impact of

Footnote 8 continued

February 2007. From the 136 firms in the sample that experienced succession in the past, 94 were successfully contacted. Half of them (47 firms) refused to participate in the follow-up survey, 17 indicated that they are unable to recall details of the succession event (which took place about 10 years ago), and the remaining 30 firms provided additional information. Although this number is too small to carry out a detailed statistical analysis, the results nevertheless are helpful to make some first inferences. From these 30 firms, six companies (20%) experienced a transfer of management only (with ownership unchanged), another six companies (20%) experienced a transfer of ownership only (with management unchanged) and the remaining 18 companies (60%) reported both, a change in ownership and management. With respect to the differentiation between 'family succession' and 'non-family succession' the follow-up survey reveals that the transfer took place within the family in 24 succession cases (80%). Non-family members were involved in six cases (20%) only. This gives some justification to the assumptions made above.

⁸ To shed some additional light on the specific circumstances of the succession events a follow-up telephone survey was conducted by the Austrian Institute for SME Research in

succession among ‘succession firms’.⁹ Data on $E(\Delta Y_i^1 | S = 1)$ is available from the survey participants. The problem is to find $E(\Delta Y_i^0 | S = 1)$, since data on ‘continuation firms’ in the sample enables one to identify $E(\Delta Y_i^0 | S = 0)$ only. The solution advanced by Rubin (1977) is based on the assumption that given a set of observable covariates X , potential (non-treatment) outcomes are independent of the participation status (conditional independence assumption-CIA): $\Delta Y_i^0 \perp S_i | X$. Hence, after adjusting for observable differences, the mean of the potential outcome is the same for $S = 1$ and $S = 0$ ($E(\Delta Y_i^0 | S = 1, X) = E(\Delta Y_i^0 | S = 0, X)$). This permits the use of matched non-transferred firms to measure how the group of firms with succession in the past would have grown, had they not been transferred.

Instead of conditioning on X , Rosenbaum and Rubin (1983) suggest to condition on a propensity score (‘propensity score matching’). The propensity score is defined as the probability of succession for firm i given a set $X = x_i$ of firm characteristics: $p(X) \equiv \Pr(S_i = 1 | X = x_i)$. In the present context, the propensity scores are derived from two probit models where planned and actual successions serve as endogenous variables. The estimated propensity scores are then used to construct the comparison groups. Given that both potential control groups are rather large, ‘multiple nearest neighbours matching’ (the five nearest neighbours with replacement) will be applied.¹⁰

3 Empirical results

Propensity score matching requires estimation of probit models on the two dichotomous variables for

actual and planned succession. Table A2 in the appendix reports the parameter estimates for both models, we will only briefly mention some results here. The estimated models are statistically significant at the 1% level or better, as measured by the likelihood ratio test. They correctly classify 87.4% and 60.94% of all observations. However, when it comes to explaining actual classifications the predictive power of the models differs substantially between the individual categories. Whereas 99.69% (88.35%) of all firms without actual succession (without succession plans) are correctly predicted, the percentage of families reporting actual succession (succession plans) being correctly classified is substantially lower with 0.74% (19.77%). The fact that only 0.74% of all successions that actually occurred between 1996 and 1998 are classified in the correct category by the model indicates that a number of important explanatory variables are missing in this specification. Nevertheless, a few variables turn out significant which justifies the application of the propensity score matching model.

From the parameter estimates of the probit models, the unbounded propensity score is calculated for every observation.¹¹ Matching is considered successful if the means of the relevant variables do not differ significantly between the treatment group and the control group after the matching procedure. Table 1 measures the ‘similarity’ of observations that remain after the matching procedure. Columns (1) and (2) ((4) and (5)) indicate that prior to the matching analysis significant differences in the means of several firm characteristics exist between ‘succession firms’ (the treatment group) and their potential controls. The null-hypothesis of no differences in means is rejected for the company’s size, the generational level, the industry- and the regional classification of the firm. Column (3) (column (6)) reports the means of the relevant variables for the control group after the matching procedure. The differences to column (1) and (4) now are small and not statistically significant at the 5% level as indicated by a t -test. Further, the means of the unbounded propensity scores do not differ significantly between both groups, indicating a good fit of the matching procedure applied.

⁹ A detailed discussion of the matching approach as well as a survey on its applications in labour-market evaluation studies is available in Heckman et al. (1999). An interesting empirical application of the matching-technique, which is closely related to the present issue, is reported in Almus (2004). The author investigates the growth rates of firms in the years before market drop-out and compares this to the performance of surviving firms.

¹⁰ The different propensity score matching schemes used in the empirical literature are discussed in more detail in Heckman et al. (1997), Smith and Todd (2005) as well as Becker and Ichino (2002). Since there is no consensus on the best matching estimator to adopt, we compare our results from 5-nearest neighbour matching with those obtained from one-to-one nearest neighbour matching, kernel matching and radius matching (the latter two applying kernel weights).

¹¹ We use the unbounded $x_i' \hat{\beta}$ rather than the bounded propensity score $\Phi(x_i' \hat{\beta})$ because of its preferable distribution properties (Hujer et al. 1997).

Table 1 Mean comparison of selected variables

Variable	Actual successions			Planned successions		
	(1) Treatments	(2) Potential controls	(3) Selected controls	(4) Treatments	(5) Potential controls	(6) Selected controls
Ln(size9698)	2.664	2.380	2.707	2.491	2.352	2.485
First generation	0.669	0.410	0.688	0.473	0.431	0.467
Second generation	0.191	0.365	0.182	0.327	0.339	0.312
Third generation	0.103	0.098	0.091	0.100	0.103	0.117
Fourth or earlier generation	0.037	0.127	0.038	0.100	0.127	0.104
Age of the company	50.500	48.646	46.568	48.714	47.918	49.382
Burgenland	0.066	0.063	0.076	0.057	0.064	0.054
Carinthia	0.073	0.092	0.065	0.084	0.092	0.082
Lower Austria	0.213	0.217	0.182	0.255	0.198	0.258
Upper Austria	0.199	0.173	0.231	0.184	0.169	0.189
Salzburg	0.015	0.008	0.016	0.011	0.006	0.011
Styria	0.176	0.139	0.169	0.123	0.156	0.131
Tyrol	0.081	0.073	0.100	0.045	0.095	0.037
Vorarlberg	0.096	0.090	0.090	0.077	0.098	0.084
Vienna	0.081	0.144	0.071	0.164	0.121	0.154
Production oriented	0.728	0.691	0.732	0.657	0.714	0.661
Service oriented	0.272	0.309	0.268	0.343	0.286	0.339
Unbounded propensity score	-0.934	/	-0.935	-0.203	/	-0.204
Number of observations	136	957	136	440	661	440

Notes: Bold numbers indicate significantly different means between observations from the treatment group and from the potential or selected control group in a t-test for equality of means at the 5% level

The effect of succession on employment growth is evaluated by comparing the employment growth rates between ‘succession firms’ (ΔY_i^1) and their matched counterparts (ΔY_i^0). The impact of treatment on the treated (‘causal effect’ of succession) is estimated by computing the mean difference across both groups: $ATT = \frac{1}{N_1} (\sum_{i=1}^{N_1} \Delta Y_i^1 - \sum_{i=1}^{N_1} \Delta Y_i^0)$. A positive (negative) and statistically significant value for ATT suggests that succession increases (decreases) employment growth. An insignificant test statistic points to the absence of a ‘shadow of succession effect’.

Table 2 reports the employment growth rates for the treatment group in column [1] and their matched counterpart in column [2]. Results for future succession plans are reported in rows (1) to (8), the effects of actual (past) successions are shown in rows (9) to (16). Analysing succession plans, we do not find a significant impact on employment growth. The causal effect is small and not statistically significant. This holds for the short-run (i.e. the difference in growth

rates over a 3-year period in row (1)) as well as the long-run (i.e. the difference in growth rates over a 6 year period in row (2)) and is also confirmed by the results from the year to year changes (rows (3) to (8)). The fact that no significant relationship between future succession plans and employment growth is found may have two reasons. First, succession plans could be very vague due to the long planning horizon of 10 years used in the survey. This reduces the reliability of the answers and increases the probability of an intention-behaviour discrepancy.¹² The

¹² Authors from different fields of economics (and, in particular, from economic psychology and marketing) have challenged the usefulness of intention measures (such as succession plans) as a predictor for actual behaviour. Foxall (1983), for example, argues that a high intention-behaviour correspondence should be expected only under strictly limited (and unrealistic) conditions. Empirical support for the intention-behaviour discrepancy in succession plans is provided by Väre et al. (2005).

Table 2 Causal Effects: Firm Specific Employment Growth

Time period analysed	Growth rate in percent				
	Number of firms	'Succession firms' [1]	'Continuation firms' [2]	ATT Causal effect = [1]–[2]	Test statistic
<i>Planned successions</i>					
(1) $\overline{9698} - \overline{9901}$	430	–0.048	–0.039	–0.009	–0.66
(2) $\overline{9698} - \overline{0204}$	440	–0.100	–0.078	–0.021	–0.93
(3) $\overline{9698} - 99$	388	–0.047	–0.046	–0.002	–0.18
(4) $\overline{9698} - 00$	394	–0.049	–0.051	0.001	–0.02
(5) $\overline{9698} - 01$	401	–0.092	–0.089	–0.003	–0.17
(6) $\overline{9698} - 02$	396	–0.117	–0.092	–0.025	–1.06
(7) $\overline{9698} - 03$	398	–0.121	–0.111	–0.010	–0.40
(8) $\overline{9698} - 04$	437	–0.115	–0.088	–0.027	–0.97
<i>Actual successions</i>					
(9) $\overline{9698} - \overline{9901}$	134	–0.016	–0.041	0.025	1.08
(10) $\overline{9698} - \overline{0204}$	136	0.026	–0.122	0.148	4.37***
(11) $\overline{9698} - 99$	120	–0.026	–0.054	0.029	1.02
(12) $\overline{9698} - 00$	124	–0.006	–0.039	0.034	1.15
(13) $\overline{9698} - 01$	125	–0.066	–0.111	0.045	1.32
(14) $\overline{9698} - 02$	121	–0.036	–0.142	0.106	2.82***
(15) $\overline{9698} - 03$	120	0.014	–0.110	0.125	3.38***
(16) $\overline{9698} - 04$	136	0.028	–0.143	0.171	4.23***

Notes: Asterisks denote statistical significance in a t-test for equality of means at the 1% (***), 5% (**), or 10% (*) level. Five-Nearest neighbour matching

second interpretation would lead one to reject the hypothesis that future succession plans cast their shadows on firm performance.

Actual (past) successions, on the other hand, are found to exert a significant and positive impact on employment growth at least in the long-run (row (10)). While the average growth rate for firms without succession is negative (–12.2%), otherwise identical firms with succession on average report a positive growth rate (2.6%). The difference (i.e. the causal effect) amounts to 14.8 percentage points and is statistically significant at the 1% level. Given an average level of employment in our sample of around 18 employees over the 1996–1998 time period (see Table A1), this corresponds to 3 additional jobs per firm. According to row (9), no significant effects of succession are found in the short-run. More detailed results for individual years reveal a very similar picture. The causal effect is positive but not significantly different from zero in the years immediately following the succession event. From the fourth year

onwards (rows (14) to (16)), Table 2 suggests a highly significant and positive relationship between actual succession and subsequent employment growth. After some years of consolidation successors start expanding and hire additional employees. Since the observable differences between the two groups of firms at the time of succession are considerably small (see column (4) and (6) in Table 1), the reported growth effects can be attributed directly to the occurrence of succession. These results remain unchanged when alternative matching estimators are applied as documented in Table A3 in the appendix.

It should however be noted that the present analysis is based on a sample of surviving firms only and does not explicitly consider firm exits. Empirical evidence for the farm sector suggests that (past) succession reduces the probability of farm exits in the next few years (Weiss 1999). This result would imply that the positive relationship between actual (past) succession and subsequent employment growth reported here is biased downwards (the 'true' effect

would be even stronger) since the very unsuccessful firms (firms with a very low or negative growth rate) with no succession in the past will already have exited the market and thus are not represented in our sample.

4 Conclusion

This article investigates the relationship between succession and firm performance. Using a unique panel data set on roughly 4,000 Austrian family firms for a 10-year period (1995–2004) we evaluate empirically the impact of actual succession as well as planned succession on employment growth. Evaluation studies are faced with two problems: first, ‘succession firms’ and ‘continuation firms’ might differ significantly in a number of important characteristics (and thus cannot be compared directly) and second, it is not known how a ‘succession firm’ would have grown if succession would not have taken place. This study applies a non-parametric (propensity score) matching approach to deal with these problems.

Analysing past successions, we find a significant and positive effect on employment growth which becomes stronger over time. The causal effect amounts to 15 percentage points over a 6 year period. Our findings thus provide support for the existence of a positive and significant succession effect following the actual transfer. In contrast, we do not find a significant difference in employment growth between firms that plan to transfer the firm in the next 10 years and those who do not. The ‘shadow of succession’ hypothesis, according to which succession casts its shadow upon employment growth even prior to the actual transfer, thus has to be rejected. This may have different reasons. First, succession plans could be very vague due to the long planning horizon of 10 years used in the survey or an inappropriate survey design. Actual succession decisions involve actions of different family members, whereas surveys typically are addressed to one individual only. Surveys often consider the firm operator’s point of view without paying enough attention to the children’s opinion. The firm operator’s plans, however, do not always materialise as the designated successor may decide to develop a career in a different business, for example.

Similarly, anecdotal evidence suggests that succession within family firms often is the result of sudden and unforeseen events. Accidents, health problems, family conflicts and other unanticipated shocks often require that another family member takes over the firm on short notice. ‘Rushed successions’ (Steier 2001) by definition are not reflected in succession plans. These factors reduce the reliability of the answers and might explain the insignificance of succession plans in influencing firm growth.

Some additional limitations should also be mentioned. First, succession is very broadly defined and a differentiation between different modes of succession is not possible. In particular, it would be interesting to additionally investigate the consequences of actual (past) as well as planned (future) succession separately for ‘family succession’ and ‘non-family succession’. Further, the specific moment at which succession is planned to take place in the future is not reported. This information could be interpreted as an indication for the reliability of plans, since it seems plausible to assume a higher chance to realize plans for the near future compared to those for the distant future. Further research should therefore try to incorporate these topics into the survey design. In that way, surveys could be particularly useful to better understand the consequences of past succession and future succession plans.

The results reported in the present study (and in particular the positive employment effects of actual successions) suggest that this is an important task. An estimated 51,500 Austrian small- and medium-sized enterprises will face the challenge of succession over the decade 2004–2013, potentially affecting 438,000 employees or 17% of all jobs in Austrian industry (Mandl 2004). A comprehensive understanding of the causes and consequences of succession thus is of great importance for designing and evaluating policy measures to improve the performance of individual firms as well as the aggregate labour market.

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Appendix

Table A1 Descriptive statistics

Variable	Actual succession		Planned succession	
	Mean/share	STDV	Mean/share	STDV
Average size $\overline{9698}$	17.507	20.691	17.350	20.309
<i>Average growth rate in</i>				
$\overline{9698} - \overline{9901}$	-0.006	0.268	-0.005	0.263
$\overline{9698} - \overline{0204}$	-0.021	0.393	-0.021	0.386
$\overline{9698} - 99^a$	-0.002	0.290	-0.002	0.280
$\overline{9698} - 00^a$	-0.002	0.297	-0.003	0.297
$\overline{9698} - 01^a$	-0.030	0.335	-0.027	0.335
$\overline{9698} - 02^a$	-0.040	0.368	-0.038	0.358
$\overline{9698} - 03^a$	-0.028	0.416	-0.029	0.414
$\overline{9698} - 04^a$	-0.006	0.520	-0.005	0.515
<i>Generation</i>				
First generation	0.442	0.497	0.448	0.497
Second generation	0.343	0.475	0.334	0.472
Third generation	0.099	0.299	0.102	0.302
Fourth or earlier generation	0.116	0.321	0.116	0.321
Age of the company	48.877	33.507	48.636	33.512
<i>Region</i>				
Burgenland	0.063	0.243	0.061	0.239
Carinthia	0.090	0.286	0.089	0.285
Lower Austria	0.217	0.412	0.221	0.415
Upper Austria	0.177	0.381	0.175	0.380
Salzburg	0.009	0.095	0.008	0.090
Styria	0.144	0.351	0.143	0.350
Tyrol	0.074	0.262	0.075	0.264
Vorarlberg	0.091	0.287	0.090	0.286
Vienna	0.136	0.343	0.138	0.345
<i>Industry</i>				
Service oriented	0.305	0.460	0.309	0.462
Production oriented	0.695	0.460	0.691	0.462
Actual succession $\overline{9698}$	0.124	0.330	—	—
Planned succession	—	—	0.400	0.490
Number of observations (<i>N</i>)	1,093		1,101	

Note that the number of observations in the sample differs between the model on actual and planned succession

^a The number of observations used is different since each firm, of which at least one observation over 3 years is available, is considered

Table A2 Results of the probit estimations

Dependent variable	Actual succession		Planned succession	
Independent variables	Coef.	z-value	Coef.	z-value
$\ln(\text{size}_{9698})$	0.602	2.24**	0.384	2.00**
$\ln(\text{size}_{9698})^2$	-0.081	-1.65*	-0.052	-1.43
Second generation	-0.847	-6.42***	-0.129	-1.38
Third generation	-0.619	-3.28***	-0.238	-1.62
Fourth or earlier generation	-1.684	-5.77***	-0.492	-2.95***
Age of the company	0.009	4.76***	0.003	2.01**
Burgenland	0.565	2.15**	-0.193	-1.02
Carinthia	0.223	0.91	-0.234	-1.41
Lower Austria	0.330	1.64	-0.021	-0.16
Upper Austria	0.429	2.10**	-0.157	-1.14
Salzburg	0.739	1.48	0.195	0.45
Styria	0.480	2.29**	-0.346	-2.37**
Tyrol	0.476	1.92*	-0.645	-3.53***
Vorarlberg	0.423	1.77*	-0.315	-1.87*
Service oriented	-0.062	-0.52	0.207	2.41**
Intercept	-2.430	-6.34***	-0.746	-2.87***
Number of observations		1093		1101
LogL		-367.346		-718.932
LR chi-squared (15)		86.49		43.78
Prob > chi-squared		0.0002		0.0001
Pseudo R^2		0.1053		0.0296
% Correct predictions		87.37		60.94

Notes: The left out categories are 'First Generation' and 'Vienna'. Asterisks denote statistical significance at the 1% (***), 5% (**) or 10% (*) level. All explanatory variables refer to the year 1998

Table A3 Causal effects using different matching estimators: Firm specific employment growth

Growth rate in	Firms	Succession (percent)	No succession (percent)	Causal effect (percentage points)	Test statistic
<i>Actual succession</i>					
$\overline{9698} - \overline{9901}$					
One-to-one nearest neighbour	134	-0.016	-0.008	-0.007	-0.21
5-Nearest neighbour	134	-0.016	-0.041	0.025	1.08
Radius (radius < 0.05)	133	-0.016	-0.042	0.026	1.47
Kernel (Gaussian Kernel)	134	-0.016	-0.040	0.025	1.46
$\overline{9698} - \overline{0204}$					
One-to-one nearest neighbour	136	0.026	-0.095	0.121	2.57**
5-Nearest neighbour	136	0.026	-0.122	0.148	4.37***
Radius (radius < 0.05)	135	0.025	-0.106	0.131	5.16***
Kernel (Gaussian Kernel)	136	0.026	-0.102	0.128	5.38***

Table A3 continued

Growth rate in	Firms	Succession (percent)	No succession (percent)	Causal effect (percentage points)	Test statistic
<i>Planned succession</i>					
$\overline{9698} - \overline{9901}$					
One-to-one nearest neighbour	430	-0.048	-0.051	-0.003	-0.08
5-Nearest neighbour	430	-0.048	-0.039	-0.009	-0.66
Radius (radius < 0.05)	430	-0.048	-0.038	-0.010	-0.75
Kernel (Gaussian Kernel)	430	-0.048	-0.038	-0.010	-0.73
$\overline{9698} - \overline{0204}$					
One-to-one nearest neighbour	437	-0.100	-0.128	0.028	0.88
5-Nearest neighbour	437	-0.100	-0.078	-0.021	-0.93
Radius (radius < 0.05)	437	-0.100	-0.094	-0.005	-0.27
Kernel (Gaussian Kernel)	437	-0.100	-0.094	-0.006	-0.29

Notes: Asterisks denote statistical significance in a t-test for equality of means at the 1% (***), 5% (**), or 10% (*) level

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