

This is a self-archived version of an original article. This version may differ from the original in pagination and typographic details.

Author(s): Mansikkamäki, Susanna

Title: Firm growth and profitability : The role of age and size in shifts between growth–profitability configurations

Year: 2023

Version: Published version

Copyright: © 2023 The Author. Published by Elsevier Inc.

Rights: CC BY 4.0

Rights url: <https://creativecommons.org/licenses/by/4.0/>

Please cite the original version:

Mansikkamäki, S. (2023). Firm growth and profitability : The role of age and size in shifts between growth–profitability configurations. *Journal of Business Venturing Insights*, 19, Article e00372. <https://doi.org/10.1016/j.jbvi.2023.e00372>



Firm growth and profitability: The role of age and size in shifts between growth–profitability configurations

Susanna Mansikkamäki ^{*}

Jyväskylä University School of Business and Economics, University of Jyväskylä, P.O. Box 35, FI-40014, Jyväskylä, Finland

ARTICLE INFO

Keywords:

Firm performance
Growth
Profitability
Firm age
Firm size
Replication

ABSTRACT

To investigate the routes toward profitable growth, this study partially replicates and extends the work of Davidsson et al. (2009) on firm growth–profitability dynamics with multi-industry data on over 66,000 Finnish firms. The results support prior findings on initial profitability being more important than initial growth for achieving high performance in both performance dimensions. Additional investigations on the role of firm age and size reveal further interesting dynamics: Very small young firms face fewer risks from growing at a low profitability level than other firms, and the benefits of firm size for future performance depend on the firm's current profitability. The results advance the understanding of the reasons and consequences of the different modes (i.e., profitable vs. non-profitable) of firm growth.

1. Introduction

Firm growth is a central theme in entrepreneurship research and it is generally seen as a positive performance outcome (Pierce and Aguinis, 2013, p.321). Yet, it may not always be that, unless accompanied by sufficient financial performance (Brännback et al., 2013; Kiviluoto, 2013; Ramezani et al., 2002), and the question of interest thus is how to achieve profitable growth. More precisely, does profitability follow from growth or vice versa (i.e., which one should be prioritized in the pursuit of profitable growth; Davidsson et al., 2009; Steffens et al., 2009).

Davidsson et al. (2009) addressed this question by investigating shifts in firm growth–profitability configurations in Swedish and Australian settings. Here, I start with a partial replication of their work. Following their categorization of firms into different growth–profitability configuration groups based on the relative (to other firms in the industry) level of these two performance indicators, I replicate their investigation of how firms move between the different configurations in short- and medium-term time frames.¹ I then extend the investigation to the role of firm age and size in the firms' navigation, or drift, within the growth–profitability space. While the work subsequent to that of Davidsson et al. (2009) has indicated that the two variables may affect moves toward the highest and lowest-performing configurations (Ben-Hafaïedh and Hamelin, 2022; Jang, 2011; Steffens et al., 2009), the investigation here digs deeper into the role of age and size with a comprehensive investigation of the full range of transitions between the different configurations of high and low levels of growth and profitability by age and size groups.

The dataset used is from Statistics Finland and covers over 66,000 Finnish firms in multiple industries. The replication results confirm the findings of Davidsson et al. (2009) and subsequent work (see Ben-Hafaïedh and Hamelin, 2022; Brännback et al., 2009;

^{*} Corresponding author. Jyväskylä University School of Business and Economics, University of Jyväskylä, P.O. Box 35, FI-40014, Jyväskylä, Finland

E-mail address: susanna.r.e.mansikkamaki@jyu.fi.

¹ Davidsson et al. (2009) also test two hypotheses on the moves between specific performance configurations. Here I focus on observing the behavior emerging from the data due to theoretical ambiguity on how firms move in the growth–profitability space (explained in the next section).

<https://doi.org/10.1016/j.jbvi.2023.e00372>

Received 6 June 2022; Received in revised form 23 December 2022; Accepted 3 January 2023

Available online 9 January 2023

2352-6734/© 2023 The Author. Published by Elsevier Inc. This is an open access article under the CC BY license (<http://creativecommons.org/licenses/by/4.0/>).

Jang, 2011), showing that the state of high growth and high profitability more likely follows when reaching for high profitability first than when going for high growth first. The extended investigation reveals interesting interactions between firm age, size, and profitability in relation to firm growth, showing that a carefully crafted growth strategy that avoids non-profitable growth becomes increasingly important with age, and that size either benefits or hinders future performance, depending on current profitability. The contribution of the work (further addressed in the discussion section) lies in advancing the understanding of the qualitatively different modes of firm growth.

2. Literature review — firm growth–profitability dynamics and the role of age and size

The theoretical approaches to whether growth drives profit or profitability, or vice versa, if they are correlated in the first place, rely on explanations related to market dynamics, on the resource-based view, where firms' internal factors play the main role, or on the evolutionary economics hypothesis of *the growth of the fitter* (Federico and Capelleras, 2015; Schlichter et al., 2021; Senderovitz et al., 2016). The first one generally supports the idea of growth driving profitability via cost or positional advantages achieved with growth. This happens through various mechanisms that affect market dynamics, such as economies of scale, experience effects, network externalities, or first-mover advantages (see Steffens et al., 2009, p. 131).

On the other hand, the resource-based view (Barney, 1991) perspective suggests that profitable growth follows from achieving profitability first because it requires achieving competitive advantage (indicated by high profitability) and then pursuing those growth opportunities that fit the resource advantage (Davidsson et al., 2009). Similarly, *the growth of the fitter* principle from evolutionary economics suggests that profitability drives growth. Because of their financial constraints, *weaker* (i.e., less profitable) firms are unable to grow, while the *fitter* (i.e., more profitable) firms grow and gain market share (Coad, 2007).

Empirical work on the growth–profitability relationship has provided evidence of growth being a significant predictor of profitability (e.g., Delmar et al., 2013; Senderovitz et al., 2016; Federico and Capelleras, 2015) and profitability being a significant predictor of growth (e.g., Cowling, 2004; Goddard et al., 2004; Yazdanfar and Öhman, 2015), but also suggested a non-significant or only weak correlation between the two (e.g., Bottazzi et al., 2010; Markman and Gartner, 2002; Roper, 1999). A trade-off between these performance dimensions is also possible (Reid, 1995), as the organizational challenges that growth brings can hamper profit generation (Gartner, 1997).

The seemingly competing theoretical approaches introduced above may not be strictly exclusive as firms may simultaneously pursue a favorable market position to attain market advantages and construct a unique resource base to achieve growth, and moderating factors might affect how the growth–profitability dynamics unfold (Schlichter et al., 2021). Age and size, both broadly recognized as factors affecting firm performance (see Bakker and Josefy, 2018; Coad, 2018; Josefy et al., 2015), could be such moderating factors as work subsequent to Davidsson et al. (2009) has shown that both variables may play a role in a firm's ability to achieve or sustain the performance state of high growth with high profitability or end up in the state where both are at a low level (Ben-Hafaïedh and Hamelin, 2022; Jang, 2011; Steffens et al., 2009). From the theoretical point of view as well, young and small firms may form a special case for the growth–profitability dynamics. Their resource constraints and suboptimal size may force them to grow before significant profits can be made (Federico and Capelleras, 2015).

In conclusion, there is theoretical ambiguity on whether growth follows profitability or vice versa and no clear guidance on how age and size affect this dynamic. Thus, the analysis part focuses on observing the patterns that emerge from the data in order to further elucidate these relationships.

3. Materials and methods

3.1. Data

The data consists of over 66,000 Finnish limited companies. It comes from the Financial Statement Data Panel, which provides yearly financial information on close to the full population of Finnish enterprises, and the Business Register, both from Statistics Finland. The data set was restricted to limited companies with at least one employee (in the initial year of the analysis, measured as full-time equivalents) and non-zero sales. Some industries with potential data quality issues were excluded (see Statistics Finland, 2019). The industry division of the data is shown in the electronic supplementary material. The firms with data available at the beginning and end of the observed transition period and one year prior (required for growth calculation) were included. The period studied is 2015–2018. As Statistics Finland corrects the Financial Statement Data Panel to rectify missing or erroneous inputs in the raw data, all main analyses were run also with a second data set that excludes firms with corrected data to check that data imputation does not affect the results.

3.2. Variables

Growth is measured as the relative change in sales from the previous year (growth at the beginning of the observed transition period) and from the beginning of the observed transition period (growth at the end of the transition period). The size measure is also sales (in euros).

Profitability is measured as the return on assets, calculated as the sum of net profit, financial expenses, and taxes divided by the balance sheet total. Age is the legal age of the independent business enterprise, calculated in years since the start date of the enterprise.

3.3. Method

To investigate firm movements in the growth–profitability space, I have followed Davidsson et al. (2009) by cross-classifying firms

based on their performance state at the beginning and the end of the observation period. To do this, firms are divided into quartiles based on profitability and growth separately and the performance group is then defined based on combinations of these quartiles. The quartile division is done separately for each industry (each firm is compared to the firms in the same industry) to account for potential industry-level performance differences. The final categorization involving five possible performance states is shown in Fig. 1.

The *poor* group firms have low growth and profitability (no higher than the second quartile, and in the lowest quartile at least in one of the dimensions). The *star* group firms perform high in both dimensions (no lower than the third quartile, and in the highest quartile in at least one dimension). The *growth* group firms have high growth (the 3rd or the 4th quartile) but low profitability (below median), whereas in the *profit* group the firms have high profitability (the 3rd or the 4th quartile) but low growth (below median), excluding those firms that fall in the *middle* category. The *middle* group includes average performers (2nd or 3rd quartile in both growth and profitability) and it is separated from other groups to be able to rule out the possibility that small shifts in performance around the medians would drive the results. All firms are assigned to one of the categories at the start and the end of the period and transitions between the initial and final categories are the point of interest. See Davidsson et al. (2009, p. 395) for the original description of the categories.

4. Results

The investigated transition periods are one and three years. The results for the full data are reported for both periods. The age and size group results are reported only for the three-year transition due to space limitations, but differences to the (unreported) results obtained with the one-year data are noted where relevant. The Stata software version 16.0 (StataCorp, 2019) was used for the analyses.

4.1. Transitions between performance configurations with the full data

Table 1 shows firm movements between the five performance configurations. The results confirm the findings of Davidsson et al. (2009) on Australian and Swedish multi-industry data and from the consequent work of Ben-Hafaïedh and Hamelin (2022) on European SMEs, Brännback et al. (2009) on small Finnish biotechnology firms, and Jang (2011) on US restaurants: Firms are highly likely to remain in the category they started in, and the *star* (*poor*) position more (*less*) often follows from the *profit* state than from the *growth* state. That is, pursuing profitability, rather than growth, first is a better route toward profitable growth.

The difference in the likelihood of the *growth* group and the *profit* group members reaching the *star* position narrows down over time (see Table 1) which may indicate a delay in the materialization of the profitability benefits from growth. Yet, even in the medium-term (three years), the *growth* firms are outperformed by both the *profit* firms (in the likelihood of ending up in the *poor* group and of becoming a *star*) and the *middle* firms (in the likelihood of ending up in the *poor* group). Growth and profitability also appear to be connected as it is more common (see the far-right column in Table 1) to have them both at a low (*poor*), medium (*middle*), or high (*star*) level than to have one on a high and the other on a low level (*growth* or *profit*).

As a supplementary analysis, the analysis of the three-year transition was rerun after defining the final year growth not as the change from the initial year (as in the results reported above), but as the average yearly growth for 2016–2018 and the final year profitability as the average profitability for 2016–2018. The results were in line with the above-reported ones.

4.2. Transitions by firm age and size groups

Table 2 shows the share of firms by age and size groups. Fig. 2a–d presents the share of firms moving between the four performance groups representing the highest- and the lowest-performing firms (i.e., *poor*, *growth*, *profit*, and *star*) for the three-year transition period by age groups. Fig. 3a–d shows the same information by size groups.

In line with the findings of Steffens et al. (2009) and Ben-Hafaïedh and Hamelin (2022), older firms move less (more) often into the *star* (*poor*) state than young firms (Fig. 2). Yet, in contrast to the findings of Steffens et al. (2009) on young firms being less likely to maintain a *star* position, the finding here holds regardless of initial performance (also when starting from the *star* state). With younger firms also more often maintaining a *growth* position (Fig. 2b), the results on both high- and low-profitability growth are, instead, in line with the observation of young firms undergoing positive growth rate autocorrelation most often (Coad et al., 2018), and being most likely to reach and sustain a high-growth firm status (e.g., Esteve-Pérez et al., 2022).

Fig. 2 further shows that the greater tendency of older firms to end up in the *poor* position is especially attributable to the initial state of *growth*. For firms starting from the other three groups, the differences between the age groups are more subtle. Also, the higher

		Growth			
		1st	2nd	3rd	4th
Profitability	1st	"Poor"			"Growth"
	2nd		"Middle"		
	3rd				
	4th	"Profit"			"Star"

Fig. 1. Categorization of firms based on profitability and growth quartiles (adapted, with permission, from Davidsson et al., 2009³).

Table 1

Shares of firms transitioning to each growth–profitability end state from each initial state. One-year transitions on the upper row, three-year transitions on the lower row. Figures in percentages (except for n).

		Initial performance group					
		Poor (n = 50,595) (n = 15,096)	Middle (n = 61,718) (n = 18,244)	Growth (n = 30,903) (n = 9191)	Profit (n = 28,854) (n = 8682)	Star (n = 49,922) (n = 14,922)	Total (n = 221,992) (n = 66,135)
Final performance group	Poor	35.50	18.53	29.25	17.74	16.41	23.31
		32.56	20.60	27.51	20.20	18.24	23.71
	Middle	21.63	46.82	18.95	23.66	19.04	27.94
		22.88	41.37	20.16	25.64	21.73	27.71
	Growth	20.37	8.83	27.97	5.49	6.87	13.25
		17.57	10.00	23.45	7.35	9.47	13.13
	Profit	6.40	8.02	7.03	23.59	21.53	12.58
		9.59	8.45	9.31	19.57	17.32	12.29
Star	16.11	17.80	16.80	29.51	36.14	22.92	
	17.40	19.58	19.57	27.24	33.23	23.17	
Total	100.0	100.0	100.0	100.0	100.0	100.0	
	100.0	100.0	100.0	100.0	100.0	100.0	

Table 2

The number of firms in the age and size groups (three-year data). Firm age and size are defined at the beginning of the transition period^a.

Age group	1–3	4–6	7–9	10–14	15–19	≥20	Total
Number of firms	7980	9522	9080	8437	7762	23,354	66,135
Size group	X ≤ 100K	100K < X ≤ 300K	300K < X ≤ 500K	500K < X ≤ 1M	1M < X ≤ 3M	X > 3M	Total
Number of firms	6287	19,475	9947	11,369	10,928	8129	66,135

^a The youngest age group is underrepresented in number because size information from one year before the initial year was required to calculate the initial growth. The final age group was set to ≥20 because the reliability of the start date-based categorization may decrease in age groups older than that. (The source data are based on the Business taxation register data from 1994 onwards and have narrower coverage until that year.)

likelihood of shifting into the *poor* group vs. the *star* group from *growth* (Table 1) does not hold for the youngest group of 1–3-year-old firms (Fig. 2b). For this group, a move to the *star* state is a more common (in the analysis with the one-year data about equally common) outcome than a move to the *poor* state.

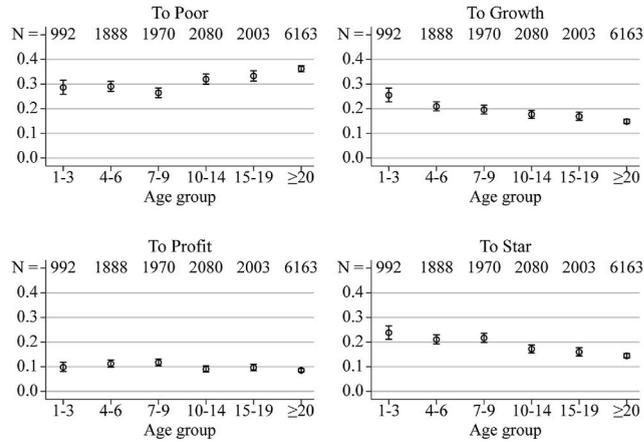
It appears that young firms outperform older ones, but this is not necessarily a result of superior strategizing. They reach not only the *star* but also the *growth* position more often and likely pursue all kinds of growth opportunities (profitable and non-profitable) more often (as also noted by Steffens et al., 2009, pp. 140–141). However, for the youngest age group, this appears to be a sensible strategy. This group, unlike the other age groups, turns the low profitability *growth* position into a *star* position more often (in the three-year analysis) or as often (in the one-year analysis) as into a *poor* position. For the youngest firms, the better prospects from a profit-first (compared to growth-first) approach arise mostly from an increased likelihood of *star* performance whereas for older firms the difference arises increasingly from both the higher likelihood of *star* performance and a decreased likelihood of *poor* performance. Thus, the risks from “blind” growth (i.e., pursuing any growth despite its profitability level) are smaller for young firms.

For size, Fig. 3 shows that the likelihood of sustaining a *star* position is greater for larger firms than the small ones (Fig. 3d). Yet, among the *poor* group, it is the smallest size group of firms that most likely transitions away from the *poor* status (Fig. 3a). Size seems to create benefits for firms starting from the highly profitable configurations (*profit*, *star*), with the largest firms in these categories more likely to reach the *star* position than the smallest size groups. In the low-profitability states (*poor*, *growth*), small size seems beneficial, with smaller firms more often turning *growth* into profitable growth (i.e., *star*) and the smallest firms being least likely to stay in the *poor* position. Thus, the size-related benefits materialize for initially profitable firms, while for the low-profitability firms, size brings no benefits or even relates to a disadvantage.

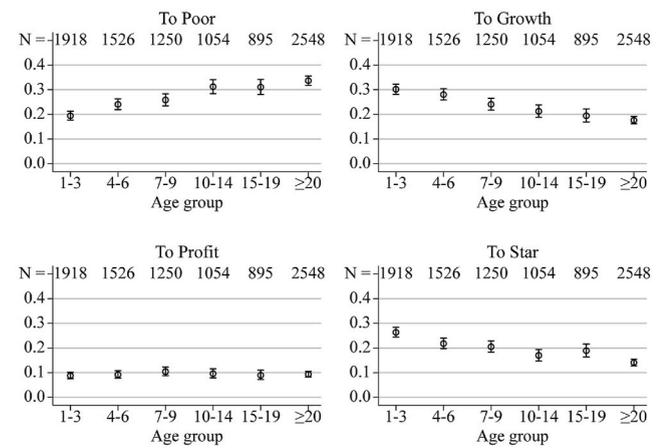
Additional analyses with the one-year data, and with the averaged final-year performance measures (explained at the end of the previous section) confirmed the results. To rule out the possibility of the results following from a survival bias, the analyses in Figs. 2 and 3 were also rerun after including the exiting firms. This analysis is reported in the electronic supplementary material and it shows that the results hold when accounting for exits, although survival has some effect on the steepness of the observed age/size trends.

An additional analysis with the firm size scale included in the dataset restricted to firms with at least ten employees (in the above analyses, firms with at least one employee are included) was also conducted. This was because the robustness tests for whether their main results hold in different age and size groups by Davidsson et al. (2009) and Ben-Hafaïedh and Hamelin (2022) reflect more

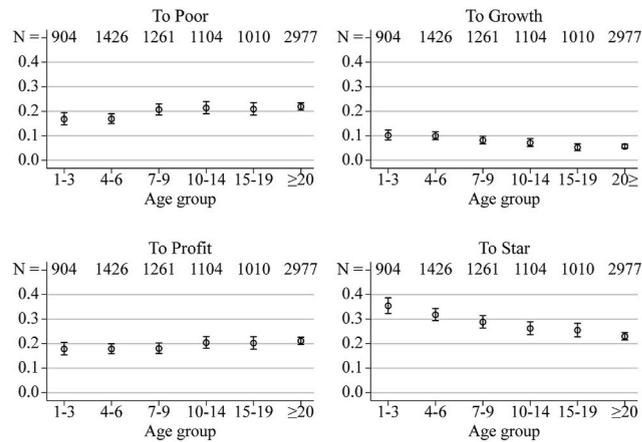
a: From Poor



b: From Growth



c: From Profit



d: From Star

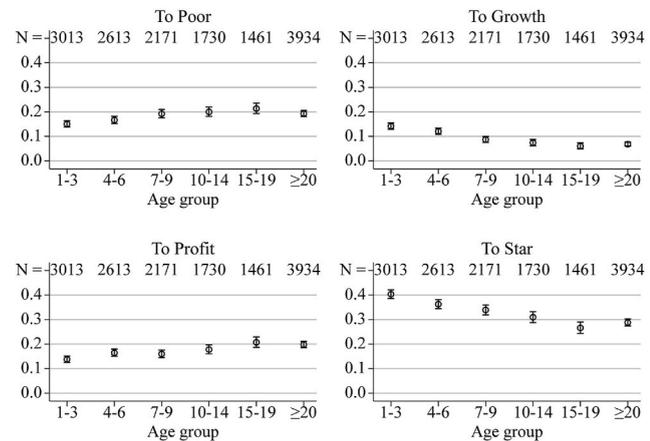


Fig. 2. Share of firms transitioning to different final performance groups by age groups for firms starting from the group *poor* (2a), *growth* (2b), *profit* (2c), and *star* (2d) with 95% confidence intervals for the three-year transition. N is the number of firms in each age group starting from the initial performance group in question.

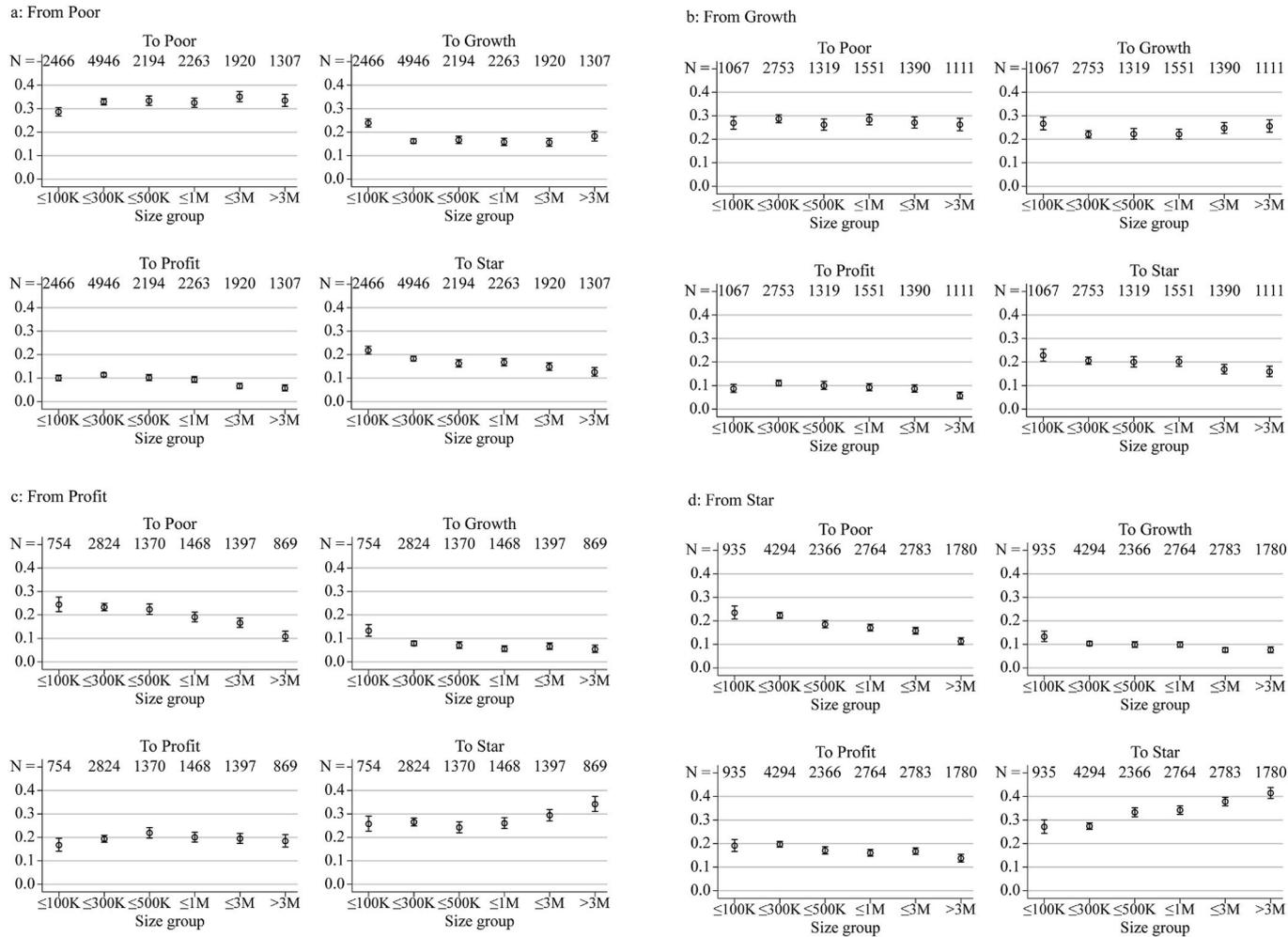


Fig. 3. Share of firms transitioning to different final performance groups by size groups for firms starting from the group *poor* (3a), *growth* (3b), *profit* (3c), and *star* (3d) with 95% confidence intervals for the three-year transition. The size groups are as in Table 2. N is the number of firms in each size group starting from the initial performance group in question.

non-linear age patterns than the trends in Fig. 2² and the data of Ben-Hafaïedh and Hamelin (2022) and one of the two datasets of Davidsson et al. (2009) is on small and medium-sized firms. The results corresponding to Fig. 2 for the data set with this additional size restriction are reported in Fig. 4. There the age trends become more non-linear, showing more resemblance with the results of Davidsson et al. (2009) and Ben-Hafaïedh and Hamelin (2022).

In a comparison of Figs. 2 and 4, the superiority of young firms reported above erodes or even disappears when the sample is restricted to firms with at least 10 employees. For example, with the smallest firms excluded from the data in Fig. 4, younger firms in the *poor* category are no longer less likely to stay there than the older ones, and the youngest age group in the *growth* category is no longer more likely to move to the *star* than to the *poor* state. The benefits of young age observed in the original analysis (in Fig. 2) seem to partly arise from being young *and* small. Moreover, although non-profitable growth still is less harmful to younger than older firms in Fig. 4b if the slightly increasing (decreasing) age trend for firms moving to the *poor* (*star*) group is considered, the downsides of the growth-first strategy for young firms are clearer than in Fig. 2. Thus, the “blind” growth strategy as an alternative for carefully selecting only profitable growth options might be a reasonable choice only when a firm is both young and very small.

To conclude this section, Table 3 summarizes the main findings and addresses the relationship of the study with the work of Davidsson et al. (2009) and other prior work building on their work.

5. Discussion and conclusions

Firm growth studies often remain in the growth domain, overlooking the simultaneous development in other performance dimensions. This study has joined the small but growing number of studies that highlight the importance of assessing such simultaneity to acknowledge the qualitatively different modes of firm growth, some more successful than others (e.g., Ben-Hafaïedh and Hamelin, 2022; Brännback et al., 2013; Coad et al., 2020). The study also responds to the need for more replication studies to reduce the uncertainty of research findings (van Witteloostuijn et al., 2021). The results, together with the original work of Davidsson et al. (2009) and other studies continuing from their work (Ben-Hafaïedh and Hamelin, 2022; Brännback et al., 2009; Jang, 2011), begin to provide strong support for profitability first, rather than growth first, more likely leading to high performance in both performance dimensions.

The age and size group analyses show that, although the above result holds for different age and size groups, very small young firms have the greatest likelihood to succeed despite the growth strategy (profitability-first vs. growth-first) because they face the fewest risks from non-profitable growth. A carefully planned growth strategy that avoids non-profitable growth becomes increasingly important with age and size.

The study contributes to the literature on firm growth by tackling the question of *how firms grow* (McKelvie and Wiklund, 2010) from the perspective of broader firm performance (i.e., whether they grow profitable or non-profitable). The question partially tackled, but also in place for further work is what leads to the different performance modes and their durability. In addition to confirming the important role of the preceding performance configuration, firm age and size were identified as affecting factors. Yet, they are unlikely the only variables affecting the growth–profitability dynamics (see Schlichter et al., 2021) and consequently the performance configuration of a firm. An interesting factor to look further into in this regard could be innovation (i.e., are innovating firms better off in achieving profitable growth) as innovation is often considered a positive driver of both growth and profitability, although the empirical evidence is inconclusive (see e.g., Grillitsch et al., 2019, p. 235; Rosenbusch et al., 2011).

Another suggestion for further work is to further assess the role of potential interactive effects of firm characteristics on firm performance. Here the initially observed benefits of youth eroded when the smallest firms were excluded from the data, implying that it is the firms that are young *and* very small that do not significantly suffer from non-profitable growth. In a similar vein, the recent results from Coad and Karlsson (2022) show that old micro firms have different growth prospects from other firms. Indeed, groups such as “young firms” or “small firms” are rather heterogeneous, and looking at the interactive effects, such as that of age and size, could allow more accurate predictions of future performance than looking at the variables independently.

Furthermore, an interesting interaction to further investigate in the growth context is that of size and profitability. Size is often seen as a negative driver of firm growth (Coad, 2009, p. 42). The results here imply that in the case of profitable growth, size can be beneficial, at least if the firm initially stands in a profitable position. As the findings are from a descriptive analysis, there is room for further validation and investigation of the size–profitability–growth dynamic.

The fundamental message for practitioners is that growth should not be pursued for the mere sake of growth by assuming that profitability follows. Instead, the profitability side of performance should be carefully considered when crafting a growth strategy. The findings also add further nuances to this message for firms in different developmental stages. Avoiding non-profitable high growth is increasingly important with growing age and size. For young and very small firms the non-profitable high growth is least risky. As these firms may also lack resources (due to their small size) and skills (due to their short experience) for scanning and evaluating different growth opportunities, a growth strategy of “blind” growth may be a smart one as it, in addition to the lower risk, also saves their scarce resources from scanning and planning to other uses. Furthermore, larger firms may have a size-based competitive advantage but only if they stay profitable. When profitability drops, the advantage can become a disadvantage.

From the policy viewpoint, the results support the argument of Davidsson et al. (2009, p. 401) on the importance of supporting firm profitability rather than growth directly when aiming for policies that encourage job creation through firm growth: Through high

² The size results better align with those of Ben-Hafaïedh and Hamelin (2022) and Jang (2011).

³ This article was published in Journal of Business Venturing, 24, Davidsson, P., Steffens, P., & Fitzsimmons, J. Growing profitable or growing from profits: Putting the horse in front of the cart? 388–406, Crown Copyright (2008), Published by Elsevier Inc.

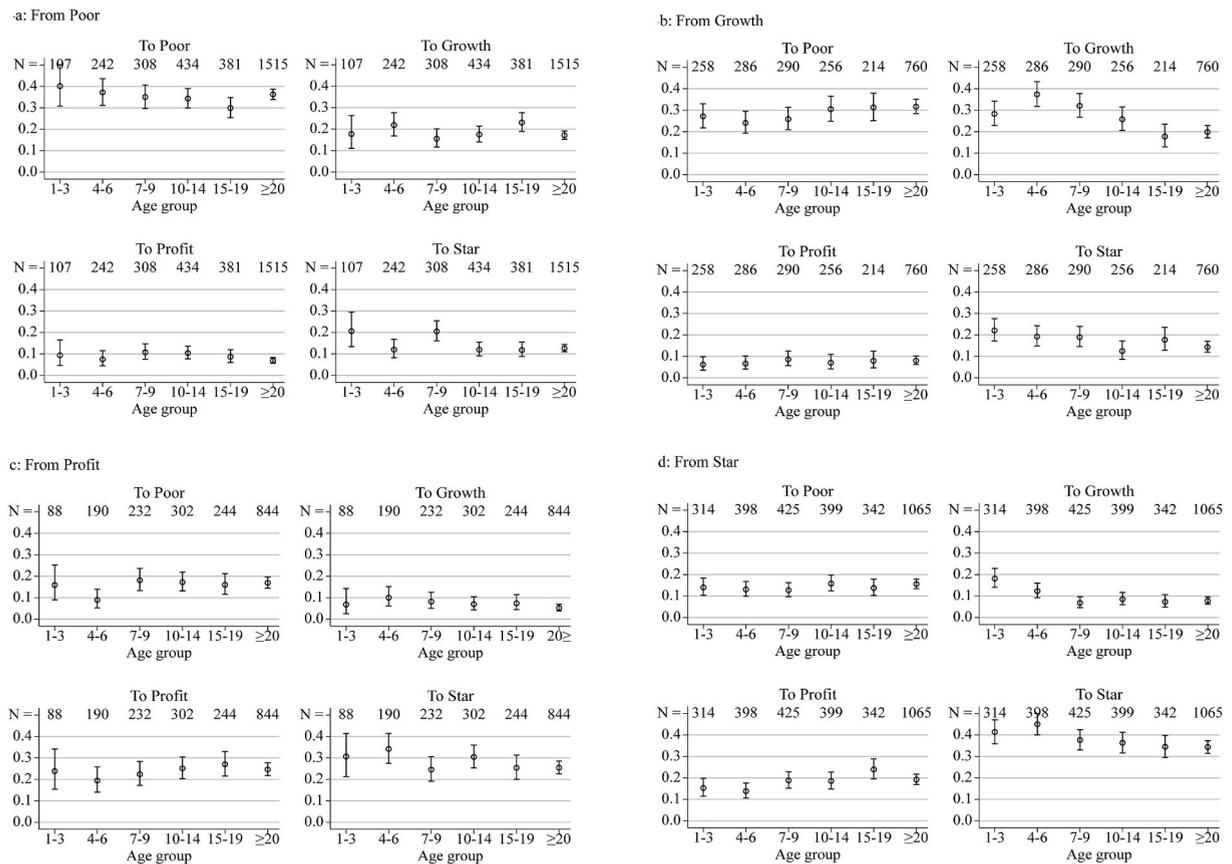


Fig. 4. Analysis of Fig. 2 rerun after limiting the data to firms with at least 10 (full-time equivalent) employees for firms starting from the group *poor* (4a), *growth* (4b), *profit* (4c), and *star* (4d).

Table 3
Summary of the main findings and their relationship with prior work on the topic.

	Main findings	Relationship of the study and findings with the study of Davidsson et al. (2009) and other prior work building on their study
General findings	<p>The state of high growth with high profitability (<i>star</i>) more likely follows from the state of high profitability (with low growth; <i>profit</i>) than from high growth (with low profitability; <i>growth</i>). The reverse is true for ending up in the state of low growth with low profitability (<i>poor</i>).</p> <p>The above result holds for different age and size groups of firms but there appears to be age- and size dependence in the movements between the different performance configurations.</p>	<p>Confirms the similar prior findings of Davidsson et al. (2009) and the consequent work of Ben-Hafaïedh and Hamelin (2022), Brännback et al. (2009), and Jang (2011).</p> <p>Disconfirms the notion of Davidsson et al. (2009) on no clear age (or size) pattern in the transitions (indicated by robustness tests of the main findings) and confirms the findings of Ben-Hafaïedh and Hamelin (2022), Jang (2011), and Steffens et al. (2009) on age and/or size affecting the transitions.</p>
Age-related findings in more detail	<p>The risks of non-profitable high growth (for future performance) increase with age. The group of firms that is both very young and very small differs from other firms in its growth-related risk as it is able to turn the non-profitable high growth into a <i>star</i> status more or as often as into a <i>poor</i> status (for other firms the <i>poor</i> status is the more likely outcome).</p>	<p>Inspired by previous findings on firm age (Ben-Hafaïedh and Hamelin, 2022; Steffens et al., 2009) and size (Ben-Hafaïedh and Hamelin, 2022; Jang, 2011) affecting the likelihood of a firm reaching different performance configuration states, potentially in interaction with the initial orientation toward growth vs. profitability (Jang, 2011; Steffens et al., 2009), the present work extends the investigation of the role of age and size in the growth–profitability space dynamics by building a comprehensive picture of how differently aged and sized firms move between the configurations of high and low growth and profitability. The findings extend the general findings (in the rows above) by elucidating the change in the relative risks and benefits of the different growth strategies when firms grow in age and size.</p>
Size-related findings in more detail	<p>Size is beneficial for future performance when the firm is initially positioned in a high profitability configuration (<i>profit</i> or <i>star</i>). For firms starting from the low profitability configurations (<i>poor</i> or <i>growth</i>), size brings no benefits or even relates to a disadvantage.</p>	

profitability firms more often achieve a sustainable state of growth, the one that combines high profitability and growth and best satisfies both the business and policy goals. The age and size results further imply that policies “blindly” (i.e., without considering the profitability side) supporting firm growth are likely to work with young and very small firms but become increasingly misguided later. This finding is in line with the recent suggestion by Coad and Karlsson (2022, p. 5) in the context of high-growth firms about public support targeted for potential growth firms perhaps being more effective if its criteria differed for different types of firms. Looser criteria could apply for small young firms whereas the requirements of sufficient prior profitability could be in place for older and larger firms.

The limitations of the study also leave room for future work. First, the results from Ben-Hafaïedh and Hamelin (2022) show that the superiority of the *profit* position over the *growth* position holds also for longer time frames (than the short- and medium-term investigated here) but the difference between the categories decreases over time. Such longer-term testing could be in the future research agenda for the age and size results introduced here as well. Second, the data does not allow a distinction between organic and inorganic growth. Yet, the growth–profitability dynamics could differ between the two (Ben-Hafaïedh and Hamelin, 2022, p. 15; Davidsson et al., 2009, p. 401). Third, the focus here was on limited companies (due to potential issues in comparing financial information between legal forms; see Statistics Finland, 2019). Evidence from the firm exit context (Cefis et al., 2021) indicates, however, that firm performance patterns with age may differ between legal forms. Lastly, the start dates used in the firm age calculation link to firm identifier codes in the source data. A new identifier usually means a new firm, but sometimes a continuing entity can get a new code (e.g., a merger can create a newly formed entity of continuing firms). In both types of births, the firm is legally new, but only in the first case, it starts from scratch. Thus, the results here could be flatter than if only truly new firms were followed.

Author statement

The corresponding author is the single author of the paper and is solely responsible for all aspects of the research and reporting.

Declaration of competing interest

The authors declare the following financial interests/personal relationships which may be considered as potential competing interests: Susanna Mansikkamäki reports financial support was provided by Foundation for Economic Education. Susanna Mansikkamäki reports financial support was provided by Central Finland Fund.

Data availability

The data that has been used is confidential.

Acknowledgements

I thank the editor, Professor Pablo Munoz, and an anonymous reviewer for the insightful comments that greatly helped to improve the manuscript. I am also grateful to Dr. Mirva Peltoniemi and Associate Professor Mikko Rönkkö for their helpful comments at the early stage of the research process. Partial financial support from the Foundation for Economic Education (Liikesivistysrahasto) and the Central Finland Regional Fund is gratefully acknowledged. The data utilized in the study comes from Statistics Finland’s enterprise-level research data sets. An access right to the data can be applied from the Research Services of Statistics Finland.

Appendix A. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.jbvi.2023.e00372>.

References

- Bakker, R.M., Josefy, M., 2018. More than just a number? The conceptualization and measurement of firm age in an era of temporary organizations. *Acad. Manag. Ann.* 12 (2), 510–536. <https://doi.org/10.5465/annals.2017.0035>.
- Barney, J., 1991. Firm resources and sustained competitive advantage. *J. Manag.* 17 (1), 99–120. <https://doi.org/10.1177/014920639101700108>.
- Ben-Hafaïedh, C., Hamelin, A., 2022. Questioning the Growth Dogma: a Replication Study. *Entrepreneurship Theory and Practice*. Advance online publication. <https://doi.org/10.1177/10422587211059991>.
- Bottazzi, G., Dosi, G., Jacoby, N., Secchi, A., Tamagni, F., 2010. Corporate performances and market selection: some comparative evidence. *Ind. Corp. Change* 19 (6), 1953–1996. <https://doi.org/10.1093/icc/dtq063>.
- Brännback, M., Carsrud, A.L., Kiviluoto, N., 2013. *Understanding the Myth of High Growth Firms: the Theory of the Greater Fool*. Springer.
- Brännback, M., Carsrud, A., Renko, M., Östermark, R., Aaltonen, J., Kiviluoto, N., 2009. Growth and profitability in small privately held biotech firms: preliminary findings. *N. Biotech.* 25 (5), 369–376. <https://doi.org/10.1016/j.nbt.2009.03.006>.
- Cefis, E., Malerba, F., Marsili, O., Orsenigo, L., 2021. Time to exit: “Revolving door effect” or “Schumpeterian gale of creative destruction”. *J. Evol. Econ.* 31 (5), 1465–1494. <https://doi.org/10.1007/s00191-020-00701-8>.
- Coad, A., 2007. Testing the principle of ‘growth of the fitter’: the relationship between profits and firm growth. *Struct. Change Econ. Dynam.* 18 (3), 370–386. <https://doi.org/10.1016/j.strueco.2007.05.001>.
- Coad, A., 2009. *The Growth of Firms: a Survey of Theories and Empirical Evidence*. Edward Elgar Publishing.
- Coad, A., 2018. Firm age: a survey. *J. Evol. Econ.* 28 (1), 13–43. <https://doi.org/10.1007/s00191-016-0486-0>.
- Coad, A., Daunfeldt, S.-O., Halvarsson, D., 2018. Bursting into life: firm growth and growth persistence by age. *Small Bus. Econ.* 50 (1), 55–75. <https://doi.org/10.1007/s11187-017-9872-8>.

- Coad, A., Frankish, J.S., Storey, D.J., 2020. Too fast to live? Effects of growth on survival across the growth distribution. *J. Small Bus. Manag.* 58 (3), 544–571. <https://doi.org/10.1080/00472778.2019.1662265>.
- Coad, A., Karlsson, J., 2022. A field guide for gazelle hunters: small, old firms are unlikely to become high-growth firms. *J. Bus. Ventur. Insights* 17, e00286. <https://doi.org/10.1016/j.jbvi.2021.e00286>.
- Cowling, M., 2004. The growth–profit nexus. *Small Bus. Econ.* 22 (1), 1–9. <https://doi.org/10.1023/B:SBEJ.0000011568.42714.c9>.
- Davidsson, P., Steffens, P., Fitzsimmons, J., 2009. Growing profitable or growing from profits: putting the horse in front of the cart? *J. Bus. Ventur.* 24 (4), 388–406. <https://doi.org/10.1016/j.jbusvent.2008.04.003>.
- Delmar, F., McKelvie, A., Wennberg, K., 2013. Untangling the relationships among growth, profitability and survival in new firms. *Technovation* 33 (8–9), 276–291. <https://doi.org/10.1016/j.technovation.2013.02.003>.
- Esteve-Pérez, S., Pieri, F., Rodriguez, D., 2022. One swallow does not make a summer: episodes and persistence in high growth. *Small Bus. Econ.* 58 (3), 1517–1544. <https://doi.org/10.1007/s11187-020-00443-8>.
- Federico, J.S., Capelleras, J.-L., 2015. The heterogeneous dynamics between growth and profits: the case of young firms. *Small Bus. Econ.* 44 (2), 231–253. <https://doi.org/10.1007/s11187-014-9598-9>.
- Gartner, W.B., 1997. When growth is the problem, not the solution: an interview with Earl Eisenberg. *J. Manag. Inq.* 6 (1), 62–68. <https://doi.org/10.1177/105649269761012>.
- Goddard, J., Molyneux, P., Wilson, J.O.S., 2004. Dynamics of growth and profitability in banking. *J. Money Credit Bank.* 36 (6), 1069–1090.
- Grillitsch, M., Schubert, T., Srholec, M., 2019. Knowledge base combinations and firm growth. *Res. Pol.* 48 (1), 234–247. <https://doi.org/10.1016/j.respol.2018.08.009>.
- Jang, S.C., 2011. Growth-focused or profit-focused firms: transitions toward profitable growth. *Tourism Manag.* 32 (3), 667–674. <https://doi.org/10.1016/j.tourman.2010.05.023>.
- Josefy, M., Kuban, S., Ireland, R.D., Hitt, M.A., 2015. All things great and small: organizational size, boundaries of the firm, and a changing environment. *Acad. Manag. Ann.* 9 (1), 715–802. <https://doi.org/10.5465/19416520.2015.1027086>.
- Kiviluoto, N., 2013. Growth as evidence of firm success: myth or reality? *Enterpren. Reg. Dev.* 25 (7–8), 569–586. <https://doi.org/10.1080/08985626.2013.814716>.
- Markman, G.D., Gartner, W.B., 2002. Is extraordinary growth profitable? A study of *Inc.* 500 high-growth companies. *Enterpren. Theor. Pract.* 27 (1), 65–75. <https://doi.org/10.1111/1540-8520.t01-2-00004>.
- McKelvie, A., Wiklund, J., 2010. Advancing firm growth research: a focus on growth mode instead of growth rate. *Enterpren. Theor. Pract.* 34 (2), 261–288. <https://doi.org/10.1111/j.1540-6520.2010.00375.x>.
- Pierce, J.R., Aguinis, H., 2013. The too-much-of-a-good-thing effect in management. *J. Manag.* 39 (2), 313–338. <https://doi.org/10.1177/0149206311410060>.
- Ramezani, C.A., Soenen, L., Jung, A., 2002. Growth, corporate profitability, and value creation. *Financ. Anal. J.* 58 (6), 56–67. <https://doi.org/10.2469/faj.v58.n6.2486>.
- Reid, G.C., 1995. Early life-cycle behaviour of micro-firms in Scotland. *Small Bus. Econ.* 7 (2), 89–95. <https://doi.org/10.1007/BF01108684>.
- Roper, S., 1999. Modelling small business growth and profitability. *Small Bus. Econ.* 13 (3), 235–252. <https://doi.org/10.1023/A:1008104624560>.
- Rosenbusch, N., Brinckmann, J., Bausch, A., 2011. Is innovation always beneficial? A meta-analysis of the relationship between innovation and performance in SMEs. *J. Bus. Ventur.* 26 (4), 441–457. <https://doi.org/10.1016/j.jbusvent.2009.12.002>.
- Schlichter, J., Klyver, K., Haug, A., 2021. The moderating effect of ERP system complexity on the growth–profitability relationship in young SMEs. *J. Small Bus. Manag.* 59 (4), 601–626. <https://doi.org/10.1111/jsbm.12502>.
- Senderovitz, M., Klyver, K., Steffens, P., 2016. Four years on: are the gazelles still running? A longitudinal study of firm performance after a period of rapid growth. *Int. Small Bus. J.* 34 (4), 391–411. <https://doi.org/10.1177/0266242614567483>.
- StataCorp, 2019. *Stata Statistical Software: Release 16*. StataCorp LLC.
- Statistics Finland, 2019. FIRM FSS Financial Statement Data Panel - Data Description. https://taika.stat.fi/en/aineistokuvaus.html#!?dataid=YA211_19862016_jua_tppaneeli_001.xml. Accessed 15th May 2022.
- Steffens, P., Davidsson, P., Fitzsimmons, J., 2009. Performance configurations over time: implications for growth- and profit-oriented strategies. *Enterpren. Theor. Pract.* 33 (1), 125–148. <https://doi.org/10.1111/j.1540-6520.2008.00283.x>.
- van Witteloostuijn, A., DeJardin, M., Pollack, J.M., 2021. Replication in entrepreneurship. *J. Bus. Ventur. Insights* 16, e00271. <https://doi.org/10.1016/j.jbvi.2021.e00271>.
- Yazdanfar, D., Öhman, P., 2015. The growth-profitability nexus among Swedish SMEs. *Int. J. Manag. Finance* 11 (4), 531–547. <https://doi.org/10.1108/LJMF-01-2015-0005>.