Ownership and high-growth firms

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Abstract Empirical studies demonstrate that most net job-growth originates from a small number of high-growth firms (HGFs). The purpose of this paper is to analyze whether firm ownership – family, or private non-family – matters for being a HGF, using data covering all firms in Sweden during 1993-2006. Firm growth is measured in terms of absolute employment growth, relative employment growth and as a combination of absolute and relative employment growth (the so-called Birch-index). We find that family ownership decreases the probability of exhibiting high growth. Changing ownership from family to private non-family increases the probability of being a HGF, whereas a change from private non-family to family ownership decreases the probability of being a HGF. The results are robust, irrespective of measurement of firm growth, suggesting that ownership and changes in ownership are important determinants of rapid firm growth.

Keywords high-growth firms, gazelles, firm growth, firm ownership, family firms

JEL Classifications D24; L25; L26

1 Introduction

Empirical studies have shown that high-growth firms (HGFs) are crucial for net job-creation (Henrekson and Johansson 2010 survey the empirical evidence). Accordingly, interest in the factors explaining the prevalence of HGFs has increased. Some researchers have studied the impact on rapid firm growth of firm demography by which is meant firm age, firm size, and firm ownership, as well as the industry affiliation, geographic location, and legal form.[1] Firm ownership refers to whether a firm is independent, i.e., not belonging to an enterprise group, or dependent, i.e., belonging to an enterprise group. HGFs have been found to be overrepresented among dependent firms (Schreyer 2000; Delmar et al. 2003), though Brüderl and Preisendörfer (2000) found the opposite. Our study uses a unique data-set in detail and extent that enables us to explore firm ownership further by distinguishing family owners from other private owners – and this for all private firms in the whole economy.

The purpose of our study is to analyze whether family-owned firms or other private firms are more likely to exhibit high growth. This question has not been addressed previously even though the influence of family ownership on firm performance, such as return on assets and Tobin's q, has received an increasing amount of attention in the corporate governance literature (e.g., La Porta et al. 1999; Claessens et al. 2000; Faccio and Lang 2002; Anderson and Reeb 2003).[2] Our data also permit us to analyze whether firms that changed ownership during the study period were more likely to exhibit high growth. The data include more than 5 million observations on all Swedish private firms of all sizes and industries during 1993-2006.

[1] The starting resources of the entrepreneurs, founder characteristics, firm strategy and institutional conditions are examples of other factors studied to explain firm growth (e.g., Storey 1994, Delmar 1997, Delmar and Davidsson 1998, Delmar et al. 2003, Barringer et al. 2005, Davidsson and Henrekson 2002, Stam et al. 2007 and Henrekson and Johansson 2009). These factors are not addressed in this paper.

[2] This research is generally delimited to large listed firms. For an exception, see Chu (2009) who studies a sample of 341 small- and medium-sized public firms. There is also an emerging field of Family Business Research (FBR), which can be seen as a sub-field of management focusing on issues such as succession processes in family firms and family relations in family business (Casillas and Acedo 2007).

Traditionally, it has been proposed that family ownership has a negative impact on firm performance. One prominent argument is that of the agency-problem (Fama and Jensen 1983), stating that the dispersion of ownership and control means that families have the incentives as well as the possibilities to benefit themselves on the behalf of other shareholders (Shleifer and Vishny 1997; DeAngelo and DeAngelo 2000; Morck 2000; Gomez-Meija et al. 2001). Moreover, it has been argued (Kepner 1983; Lansberg 1983; Westhead et al. 2001) that the institutional overlap in family firms, i.e., the co-existence of the family institution and the business institution, means that family-owned firms tend to place social goals (e.g., need for belonging and sense of identity) before economic goals such as return on assets.

On the other hand, family firms have been recognized as a major source of technological progress and entrepreneurial activity (Astrachan et al. 2003; Zahra, 2005). They also tend to develop long-term relations with, for example, employees, banks, and suppliers, creating trust that results in long-term positive economic outcomes (Poza 2007). Furthermore, family businesses often possess superior information, decreasing transaction costs making it easier to monitor and control the firm (Ben Porath 1980; Pollak 1985; Smith and Amoako-Adu, 1999). As families also tend to have a large part of their wealth as well as their reputation invested in their businesses, they also have an incentive to promote firm performance (Anderson and Reeb 2003). Hence, the theoretical predictions are inconclusive and the question whether family ownership is correlated with the probability of being a HGF must be settled empirically.

Our study indicates that family-owned firms are less likely to be HGFs irrespective of the choice of growth measurement, and that a change in ownership from private non-family to family ownership decreases the likelihood of being a HGF. Changing ownership from family to private non-family, on the other hand, increases the likelihood of being a HGF. Our analysis concludes that ownership and changes in ownership is correlated with the probability

of exhibiting high growth, suggesting that future studies on HGFs should take ownership into account if possible.

We begin by reviewing the empirical literature on HGFs as job creators. The data are presented in Section 3, the empirical model in Section 4, and the results in Section 5. Section 6 summarizes and draws conclusions.

2 High-growth firms and job growth

For a long time, mostly big companies, reaping the benefits of economies of scale in production and in R&D (Schumpeter 1942), were thought to create new jobs and generate economic growth. Small firms were regarded as inefficient, and economic policy was targeted towards large firms, encouraging the reallocation of resources from small to large firms. New entry was regarded as less important and was largely ignored. Birch (1979) challenged this view in a pioneering empirical study, concluding that small firms generated most net jobs.[3] Birch's findings were contrary to common belief and were thus regarded as highly controversial. They were questioned by Brown et al. (1990), Davis et al (1996a, 1996b), Haltiwanger and Krizan (1999), and others; Kirchhoff and Greene (1998) summarize this debate. Birch's findings initiated a research field, which today has largely confirmed his original results[4], even when using the methods of his critics (Van Praag and Verslooten 2008: page 135, footnote 1). Most small and new firms have in fact been found not to grow at all,

[3] Acs et al. (2008) argue that Birch's contribution was twofold. He asked questions that almost no one had asked before, and he compiled a data-set making it possible to analyse these questions. The so-called Bolton report (1971) had concluded that a lack of small enterprises partly explained the poor economic performance of Great Britain at that time, inspiring research and changes in economic policy there. Dahmén (1950) had already addressed the job creation of large and small firms, as well as many other issues, in an extensive study of Sweden during the interwar period. Hence, Swedish research in this field preceded international research by nearly thirty years. This tradition largely faded away, however, at least among economists (Johansson 2001, 75-77) and had little impact on research and economic policy.

[4] See for example Audretsch (2002) that emphasizes the dynamic role of small and medium sized firms in the U.S. economy.

while net job growth originates in a few high-growth firms, so-called "gazelles" (Birch and Medoff 1994).

Henrekson and Johansson (2010) survey the empirical evidence on HGFs as major job-creators. They identified 20 studies published since 1990, which was fewer than expected, considering the importance of the topic. This might be explained by the high costs associated with gathering extensive longitudinal data sets covering a large numbers of firms in many industries and all sizes classes, and thus the lack of data for many countries.

Henrekson and Johansson (2010) summarized the results regarding HGFs as follows:

i) All studies conclude that HGFs are crucial for net job growth. They create a large proportion of all new net jobs, and sometimes even more than the absolute number of net jobs (in the cases where non-HGFs decrease their employment). This is especially evident during recessions, when HGFs continue to expand, while non-HGFs decline or exit.

ii) Several of the studies, especially those in the U.S, found that HGFs created a large proportion of new net jobs relative to total job growth and to total unemployment. HGFs can be of all sizes, but small firms are often overrepresented. Larger firms are important job creators in absolute terms, especially a small sub-group of large HGFs, the so-called Superstars or Super Gazelles.

iii) Firm age is more important in explaining rapid firm-growth than is firm size. All studies reporting firm age have found HGFs to be younger on average. Super Gazelles have also been found to be relatively young.

iv) Young and small HGFs grow organically more than do older and larger HGFs, thereby making a larger contribution to net job-growth.

v) There is no evidence that HGFs have been overrepresented in high-tech industries: they have been found in all industries. If anything, they appear to be overrepresented in service industries.

vi) Out of six studies reporting the effect of ownership on rapid growth, five found a positive relationship with dependence (Schreyer 2000 for France, Canada, Netherlands, and Spain, and Delmar et al. 2003), while Brüderl and Preisendörfer (2000) found a positive relationship with independence.

3 The data

The data are register data from Statistics Sweden (SCB) covering all private firms with at least one employee, including the self-employed, during 1993-2006. The data include 350,000 - 440,000 observations per year, and more than 5 million observations in total.

Important decisions in analyzing HGFs include the indicator of growth, the measurement of growth, the period studied, the definition of HGFs, and the process of growth (Delmar et al. 2003, p. 192–197).

Employment, sales, and market-share are among the most commonly used indicators of growth, but employment have been used almost exclusively in studies of HGFs. We report results using both absolute and relative employment growth. We also apply the so-called Birch index, i.e., the combination of employment growth measured in absolute and relative numbers, as a growth measurement to relate to previous literature (Schreyer, 2000).

Firm growth fluctuates substantially over time. The period for which growth is measured can thus affect the results. Growth is usually measured over three- or four-year periods (Henrekson and Johansson 2010), though Fritsch and Weyh (2006) used the longest time

period, 18 years (1984-2002). We report results for 1-, 3-, 5- 7- and 10-year periods calculated stepwise; e.g., we report three 10-year periods (1994-2004, 1995-2005, and 1996-2006).[5]

There is no commonly accepted definition of HGFs. They are usually identified either as a certain share of the fastest-growing firms or as those growing at a particular rate, measured either as total growth or as annualized growth over the period.

The population is continuing firms – i.e., those existing during the whole study period – or new firms, or both. Often, some size threshold is applied. For example, the Organization for Economic Cooperation and Development (OECD) recently proposed defining HGFs as those with 10 or more employees at the beginning and average employment growth exceeding 20 percent over a three-year period (Ahmad 2006). The term "gazelle" is applied to those HGFs less than five years old.

We define HGFs as the one percent of fastest growing firms. We considered other definitions, such as five percent or ten percent, but growth fell off rapidly after one-percent (Table 1). For instance, applying the ten-percent definition over a 10-year period would include firms that had grown by only 3 employees, and this for a period that started at the end of the most severe recession of the twentieth century, with the possible exception of that in the 1920s (Edvinsson 2005), and ended during a business upturn.[6]

[5] Since we use lagged variables in the regressions, no periods start in 1993.
[6] Davidsson and Delmar (2006) also found that applying a ten-percent definition to Swedish firms with more than 20 employees during 1987-1996, only 7.75 new employees were required to be classified as a HGF.

Table 1 The average growth in absolute employment required to enter as the last firm for various percentage definitions of HGFs, by period

	Time period				
Threshold	1-year	3-year	5-year	7-year	10-year
1%	6	12	19	25	35
3%	3	5	7	9	13
5%	2	3	4	5	8
7%	1	2	3	4	5
10%	1	2	2	2	3

Beyond the one-percent definition, there were no reasonable cut-off points, since most firms had no or very little change of employment. For instance, applying the ten-percent definition for the one-year period from 2005 and 2006 would include firms that grew by any where from zero to 1500 employees. Firms with zero growth in fact ranged from the 84th to the 93rd percentile of the fastest growing firms within the population. Applying the 10 percent criteria would then imply drawing the cut-off line in the middle of these firms, and therefore not being able to distinguish the 16 percent fastest growing firms from the 7 percent fastest growing firms.

Finally, the literature on HGFs distinguishes among three growth processes: organic (internal), acquired (external), or total growth. Organic growth refers to new employment internal to a firm, while acquired refers to gaining employment through external acquisitions or mergers. Total growth is the sum of both. Our data did not enable us to distinguish between organic and acquired growth, we therefore studied total growth.

There is also no commonly accepted definition of family firms[7], and family ownership is not identified directly in our data. Following La Porta et al. (1999), Claessens et al. (2000),

[7] The European Commission (2009, page 9) identifies more than 90 definitions, whereof most are not operational.

and Faccio and Lang (2002), we defined family-owned firms as those in which an individual or family is the largest owner and controls at least twenty percent of the votes.

We proceeded stepwise to identify family-owned firms among all private firms. First, we excluded all those that legally could not be family-owned according to our definition, such as non-profit organizations. Family firms could then be either partnerships, incorporated firms or sole-proprietorships. All sole-proprietorships were taken to be family-owned by definition.

The vast number of private partnerships and incorporated firms has heretofore made it impossible for researchers to individually classify them as family-owned or not, but we used a tax reform introduced in the early 1990s to identify them. The tax reform made high labor income more heavily taxed than capital income. Special rules for so called closely-held firms, applying to partnerships and non-listed incorporations (but not listed incorporations), were introduced to prevent high-labor-income earners from benefiting from the more favorable treatment of capital income. Since 1993, all partnerships and non-listed incorporations are thus classified by Swedish Tax Authority as closely-held or not.

Closely-held firms are defined as those in which four or fewer owners together control more than 50 percent of the firm (Swedish Tax Authority 2008, part 3, chapter 9; and SFS 1999). Family members are regarded as one owner (Swedish Tax Authority 2008, chapter 9, page 206). Firms with five or fewer owners were thus classified as family firms (i.e., at least one owner controlled over 20 percent of the firm). Choosing a lower cut-off level of control would have little effect on the results. In 2006, for example, approximately 99.5 percent of all closely-held firms had five or fewer owners.

Finally, we used the standard work on ownership of listed firms in Sweden, *Owners and Power in Sweden's Listed Companies* (Sundqvist 1993-2006), to identify listed firms that were controlled by a family or a single individual.

Definitions of the variables included in the empirical analysis, as well as their means and standard deviations, are given in Table 2. The variables are further discussed in the next section.

Table 2 Descriptive statistics

Variable	Mean	s.d	Definition
Change absolute employment	0.01	0.10	Change in absolute employment of firm *i*.
Change relative employment	0.03	0.16	Change in relative employment of firm *i*.
Firm age	5.37	5.20	Year since establishment of firm *i*.
Firm size (L)	7.55	95.90	Number of employees in firm *i* in period *t-1*.
Enterprise group (D)	0.09	0.29	A dummy variable taking the value one if firm *i* belongs to an enterprise group, otherwise zero.
Ownership, Family (D)	0.24	0.43	A dummy variable taking the value one if firm *i* is owned by a family, otherwise zero.

Note: L = lagged variable; D = dummy variable

4 Empirical model

To analyze whether ownership affects the probability of being a HGF, we estimate the fixed effects probit model[8]:

$$\Pr(HGF_i = 1) = F(\boldsymbol{\theta}_j' \mathbf{X}_{it} + \boldsymbol{\lambda}_k' \mathbf{O}_{it} + \boldsymbol{\mu}_m' \Delta \mathbf{O}_{it} + a_L + a_I + \varepsilon_i) \quad (1)$$

where the dependent variable HGF_i takes the value one if firm i is among the one-percent fastest growing firms; $\mathbf{X}_{it}$ is a vector of firm demographics assumed to influence the probability of being a HGF; $\mathbf{O}_{it}$ is a vector of firm ownership dummies; $\Delta\mathbf{O}_{it}$ is a vector of changes in ownership; and $\boldsymbol{\theta}_j'$, $\boldsymbol{\lambda}_k'$, and $\boldsymbol{\mu}_m'$ are the corresponding parameter vectors. To control for heterogeneity across industries and legal forms, an industry-specific fixed effect, a_I, and a legal-form specific fixed effect, a_L, are also included in the model.

The firm-demographics vector $\mathbf{X}_{it}$ includes the age and size of the firm, plus a dummy indicating whether it belongs to an enterprise group. Firm age is measured as the number of years the firm has been registered in the employment statistics. This data are available only since 1986, meaning that the maximum possible age of a firm in 2006 is 20 years, even if it was founded prior to 1986. Size is measured as absolute employment in the previous year.

The ownership vector $\mathbf{O}_{it}$ includes a dummy for family-owned firms, so that private non-family ownership is used as the baseline case. The ownership-change vector $\Delta\mathbf{O}_{it}$ includes two dummies indicating whether or not the firm has changed from or to family ownership during the study period.

[8] Almus (2002), López-Garcia and Puente (2009) and Wyrwich (2010) also use a Probit model in their analyses of HGFs.

Industry-specific and legal-form-specific fixed effects are included to measure whether family or non-family ownership matters when one controls for differences across industries and legal forms. Industry affiliation is classified according to the NACE-system, and legal form according to law.[9]

5 Results

Results using absolute employment as the growth indicator are presented for 1-, 3-, 5-, 7-, and 10-year periods (Table 3). For all periods, family-owned firms were less likely to be HGFs than were private non-family firms, while family firms that changed to private non-family ownership were more likely to be HGFs. Private non-family firms that changed to family ownership were less likely to be HGFs. The effects were significant at the one percent level in all regressions. Thus ownership – and changes of ownership – seem to be important in determining the likelihood of being a HGF.

Larger firms were also more likely to be HGFs, though at a decreasing rate; while firm age in most cases was insignificantly determined. Firms in an enterprise group were also more likely to be HGFs. The results regarding size and enterprise group are in line with previous studies (Delmar et al. 2003).

The fixed effects for industries and for legal-forms are not presented to save space, but are available from the authors upon request. The results seem to indicate that the probability of being a HGF is influenced by both.

[9] Nomenclature Générale Activités Economiques dans les Commonautés Européennes (NACE) is the industrial classification system used in the European Union.

Table 3 Determinants of HGFs, one-percent definition, absolute employment (z-values in parentheses)

Variable	1-year	3-year	5-year	7-year	10-year
Firm demographics					
Firm age	2.13E-03	0.01	7.93E-04	-0.01	-0.03
	(0.98)	(2.43)	(0.11)	(-0.65)	(-0.74)
Firm age ^{2}	2.16E-04	-2.35E-04	2.34E-04	5.70E-04	1.41E-03
	(2.02)	(-1.32)	(0.81)	(1.18)	(1.00)
Firm size (L)	1.77E-03	1.84E-03	1.70E-03	1.81E-03	1.73E-03
	(12.63)	(9.41)	(8.20)	(23.28)	(8.91)
Firm size^2 (L)	-1.73E-07	-1.94E-07	-1.71E-07	-1.96E-07	-2.22E-07
	(-6.20)	(-5.08)	(-4.43)	(-12.90)	(-4.37)
Enterprise group (D)	0.74	0.84	0.93	0.91	0.81
	(95.36)	(80.74)	(72.09)	(58.58)	(30.42)
Ownership					
Ownership, Family (D)	-0.39	-0.42	-0.41	-0.43	-0.48
	(-41.10)	(-30.97)	(-23.23)	(-21.12)	(-14.38)
Change in ownership					
Family to private non-family (D)	0.16	0.16	0.17	0.17	0.17
	(16.90)	(12.32)	(10.42)	(7.85)	(5.22)
Private non-family to family (D)	-0.22	-0.23	-0.25	-0.25	-0.26
	(-25.91)	(-19.43)	(-16.63)	(-15.32)	(-9.30)

Note: L = lagged variable; D = dummy variable

Results using relative employment as the growth indicator are presented in Table 4. Again ownership and changes in ownership had a statistically significant effect. Family firms were again less likely than private non-family firms to be HGFs, and firms that changed ownership to family ownership were also less likely to be HGFs. Family firms that changed to private non-family ownership were statistically more likely to be HGFs.

Contrary to the results when measured by absolute employment, although in line with earlier research, younger and smaller firms were more likely to be HGFs. Similarly to the results on absolute employment, firms in an enterprise group were more likely to be HGFs. These results are in line with previous findings confirming the importance of including age, size, and membership in an enterprise group when analyzing HGFs. As with absolute employment, we conclude that ownership – and changes of ownership – seem to be important in determining the likelihood of being a HGF.

Table 4 Determinants of HGFs, one-percent definition, relative employment (z-values in parentheses)

Variable	1-year	3-year	5-year	7-year	10-year
Firm demographics					
Firm age	-0.04	-0.07	-0.11	-0.08	-0.08
	(-33.89)	(-24.38)	(-24.91)	(-7.29)	(-2.36)
Firm age ^{2}	1.52E-03	1.71E-03	3.06E-03	9.65E-04	4.91E-04
	(22.46)	(11.86)	(16.21)	(2.29)	(0.43)
Firm size (L)	-0.14	-0.15	-0.05	-0.04	-0.02
	(-5.64)	(-11.62)	(-7.85)	(-6.00)	(-6.03)
Firm size^2 (L)	-4.07E-03	7.94E-06	2.85E-06	2.59E-06	2.17E-06
	(-1.09)	(11.62)	(7.85)	(6.00)	(6.01)
Enterprise group (D)	0.03	0.11	0.10	0.20	0.34
	(4.54)	(7.97)	(5.50)	(8.02)	(12.22)
Ownership					
Ownership, Family (D)	-0.15	-0.16	-0.17	-0.11	-0.01
	(-23.39)	(-16.83)	(-16.35)	(-6.50)	(-0.46)
Change in ownership					
Family to private non-family (D)	0.06	0.05	0.10	0.07	0.11
	(8.85)	(5.16)	(10.26)	(5.02)	(4.91)
Private non-family to family (D)	-0.03	-0.02	-0.06	-0.04	0.01
	(-5.25)	(-2.04)	(-6.12)	(-2.61)	(0.24)

Note: L = lagged variable; D = dummy variable

Finally, results using the Birch-index as the growth indicator are presented in Table 5. The results regarding family ownership confirms the findings presented in Table 3 and 4. Family owned firms and firms that change ownership to family firms were less likely to be HGFs, whereas firms in an enterprise group as well as younger and larger firms were more likely to be HGFs.

Table 5 Determinants of HGFs, one-percent definition, Birch index (z-values in parentheses)

Variable	1-year	3-year	5-year	7-year	10-year
Firm demographics					
Firm age	-0.03	-0.02	-0.01	-0.03	-0.09
	(-16.01)	(-5.44)	(-1.54)	(-2.11)	(-2.06)
Firm age ^{2}	1.62E-03	1.17E-03	1.05E-03	1.94E-03	3.95E-03
	(15.91)	(7.73)	(4.33)	(4.47)	(2.99)
Firm size (L)	1.61E-03	1.63E-03	1.85E-03	1.89E-03	2.16E-03
	(17.77)	(18.48)	(17.53)	(15.63)	(16.74)
Firm size^2 (L)	-1.25E-07	-1.25E-07	-1.67E-07	-1.77E-07	-2.24E-07
	(-8.39)	(-9.08)	(-8.72)	(-7.51)	(-10.00)
Enterprise group (D)	0.48	0.50	0.49	0.47	0.41
	(66.12)	(59.10)	(45.88)	(33.36)	(17.53)
Ownership					
Ownership, Family (D)	-0.35	-0.40	-0.41	-0.52	-0.56
	(-38.45)	(-35.88)	(-28.97)	(-27.03)	(-18.20)
Change in ownership					
Family to private non-family (D)	0.09	0.10	0.13	0.18	0.17
	(9.43)	(8.68)	(8.82)	(9.20)	(5.71)
Private non-family to family (D)	-0.17	-0.18	-0.21	-0.26	-0.31
	(-20.63)	(-18.72)	(-16.25)	(-15.55)	(-10.73)

Note: L = lagged variable; D = dummy variable

6 Conclusions

Using a comprehensive data set that includes all private Swedish firms with employees (included the self-employed) during 1993-2006, we studied whether family or non-family ownership influenced the likelihood of being a HGF, a question that has not been studied previously.

Our analysis confirms the relevance of taking the age and size of firms and membership in an enterprise group into consideration when analyzing HGFs. Larger firms were more likely to be HGFs when employment growth is measured in absolute terms or by the Birch index; whereas smaller and younger firms are more likely to be HGFs when employment growth was measured in relative terms. Belonging to an enterprise group had a positive effect on the likelihood of being a HGF irrespective of how employment growth was measured.

Our main finding is that ownership – and changes in ownership – help to explain why certain firms are HGFs, which suggests that, when possible, ownership should be taken into account in future studies. Family-owned firms were less likely to be HGFs, changing ownership from family to private non-family ownership increased the probability of being a HGF, whereas a change to family ownership from private non-family decreased the likelihood of being a HGF. The results hold irrespective if we measure firm growth in absolute or relative terms or in terms of the Birch index.

The results indicate that family ownership has a negative effect on the probability of being a HGF, supporting theories that suggest family ownership to have a negative impact on firm performance. However, another interpretation is that certain forms of ownership may be efficient in different phases of the life cycle of the firm. Our results – that firms with dispersed ownership and firms that get more dispersed ownership are overrepresented among HGFs – highlights the importance of ownership dynamics. Thus, supporting empirical findings (Gompers and Lerner 2001; Lerner 2009) that new owners, in particular venture capitalists providing capital, but foremost management skills, networks and industry specific knowledge, are critical for boosting firm growth.

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