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On the persistence of growth for South African firms

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On the persistence of growth for South African firms

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Abstract: The growth of firms has been shown to have a meaningful impact on the health of firms and the economy in general. As the body of literature dedicated to understanding high-growth firms has expanded, an interest in the persistence of growth has become even more relevant. This is because persistence of growth has significant implications for the outcomes that might reasonably be expected from public policy explicitly targeting high-growth firms. Using firm-level data, this paper adopts a quantile-regression approach and analyses whether the performance of firms at the tails of the growth distribution is persistent. It finds a strong, negative serial correlation of growth among South African firms, particularly among smaller firms and those at the tails of the growth distribution. This suggests that a more nuanced approach by policymakers is necessary in regard to high-growth firms.

Keywords: firm growth, high-growth firms, quantile regression, serial correlation, South Africa
JEL classification: C31, L11, L25

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1 Introduction

The analysis of firm growth has been a topic of consistent interest among scholars. Such analysis has produced empirical evidence on the relationship between firm growth and the size distribution of firms across the economy (Evans, 1987; Dunne and Hughes, 1994). These findings have in turn motivated the significance of the firm growth process in the health of firms and the economy in general.

A closely related question that has gained traction more recently has been regarding the process of firm growth. More specifically, the persistence of firm growth over time, and how this persistence varies across different firms, has been of increasing interest. As the body of literature dedicated to understanding high-growth firms (HGFs) has expanded, this interest in the persistence of growth has become even more relevant. The chief reason for this is that—as policymakers shift their focus away from traditional areas such as small and medium enterprises (SMEs) and towards policies that target and support HGFs—empirical evidence is necessary to inform whether the incidence of high growth is random, as well as whether the gains from growth episodes are maintained. Such evidence would have significant implications for the outcomes that might reasonably be expected by policymakers from designing policies that explicitly target HGFs, while it would also help scholars to better understand the process of firm growth.

This paper adopts a quantile-regression approach and builds on the literature regarding the persistence of firm growth across the growth distribution. Of particular interest is whether the performance of firms at the tails of the growth distribution is persistent, and if so, in what manner. It further analyses the serial correlation of growth rates of the best- and worst-performing firms in a given year by size classification, in order to examine whether persistence differs by firm size. The paper proceeds with a brief overview of the literature, then a discussion of the data and methodology employed, followed by a discussion of the results and further remarks.

2 Literature review

One question that has preoccupied scholars regarding firm growth is what determines the firm growth path. In his seminal work on the evolution of firm growth, Gibrat proposed that the proportional change in the size of a firm is independent of its absolute size. This proposition that a firm's contemporary growth essentially follows a random walk, known as the Law of Proportionate Effect, has since inspired much research on its applicability in modelling the process of growth. In his analysis of whether Gibrat's Law holds in the case of the Lower Saxony region of Germany, Wagner (1992) notes that the validity of the law is critical for regional and industrial policy, for if growth rates differ across the size distribution of firms, then outcomes such as employment creation may be targeted at the particular firm size that exhibits higher growth. As such, the random walk assumption has been tested empirically for a number of different countries over different time periods. Wagner (1992) finds that Gibrat's Law does not hold for the vast majority of firms in Lower Saxony, and firms that grew in previous periods exhibit higher chances of growth in subsequent periods. Singh and Whittington (1975) also find that there exists a positive relationship between firm size and growth among US firms, invalidating Gibrat's Law. Indeed, a body of evidence has developed which suggests that firm growth depends on size and previous growth.

Aside from the evidence regarding the determinants of growth, another important finding in the literature has been the distribution of firm growth. In their analysis of publically traded US manufacturing companies, Stanley et al. (1996) showed that firm growth rates exhibited an exponential distribution with fat tails. This evidence has since become a stylized fact as other studies covering different sectors and countries have replicated the result (e.g. Bottazzi et al, 2001; Coad et al, 2010), and has pointed to important findings regarding firm growth. In particular, the Laplace distribution of firm growth has suggested that most firms do not grow, and that all growth is experienced by a small subset of firms. This has spurred interest in a new strand of literature focused on those growing firms, which have come to be known as HGFs.

Much has been explored regarding the significance of HGFs. Birch and Medoff (1994) challenged the theory that small firms in general accounted for the bulk of employment creation by showing that it was in fact a small group of firms, defined independent of size, which generated most employment creation in the US. In an overview of studies covering several OECD economies, Schreyer (2000) finds that HGFs are consistently responsible for a disproportionate share of employment growth. They have also been found to account for considerable sales growth (Delmar, 2003). In Sweden these firms have been found to be more likely to hire young, less-educated and immigrant workers (Coad et al., 2014), while an increase in their prevalence has been associated with subsequent industry growth in the Netherlands (Bos and Stam, 2014). Such economic gains have led to a shift in policy orientation from SMEs in general toward entrepreneurship policy that fosters the emergence of HGFs (European Commission, 2011).

Others, however, have cautioned against formulating policy that specifically targets HGFs. The chief concern regarding such policy has been the long-term prospects of firms that experience rapid growth. In particular, if the growth of such firms is not persistent, or is followed by sharp decline, then policies that seek to identify or exclusively support HGFs may be misguided. Daunfeldt and Halvarsson (2015) analyse whether the high growth rates among Swedish HGFs tend to persist and find that high growth is not persistent over time. Furthermore, they find evidence that rapid growth periods tend to be followed by periods of decline, particularly among micro firms.

Coad and Hölzl (2009) employ a quantile regression approach to evaluate the persistence of growth among small firms in the Austrian services industries. They find that the fastest-growing firms in a given period are likely to have performed poorly in prior periods, such that growth exhibits negative autocorrelation. Moreover, this autocorrelation is found to vary with firm size, such that large firms tend to experience persistence of growth while smaller firms experience negative autocorrelation. Capasso et al. (2013), however, find evidence of a small cohort of fast-growing firms that are consistently among the fastest-growers over several years in the Netherlands.

This study seeks to analyse the persistence in growth of South African firms, with a particular focus on the firms at the tails of the growth distribution. Using a quantile regression approach, the research question of interest is whether the fastest-growing firms in a given year experience positive autocorrelation in subsequent years. Also of interest is whether those firms on the left tails of the growth distribution have significantly different likelihoods of exhibiting fast growth in subsequent periods. Similar to the approach adopted by Coad et al. (2009), we investigate whether the pattern of growth persistence is dependent on firm size. Furthermore, adopting a conventional definition of HGFs, we also analyse whether firms that are HGFs in a given period exhibit significantly different growth patterns in terms of serial correlation of growth.

3 Data and variables

We use the South African Revenue Service-National Treasury panel of administrative tax records. This anonymized, unbalanced panel features data for all tax-registered firms in South Africa, with data from company-income tax forms, custom records, value-added tax forms and employee data from employees' income tax returns. While the panel contains annual data for the period 2008–15, the period of interest in this study is 2010–15.

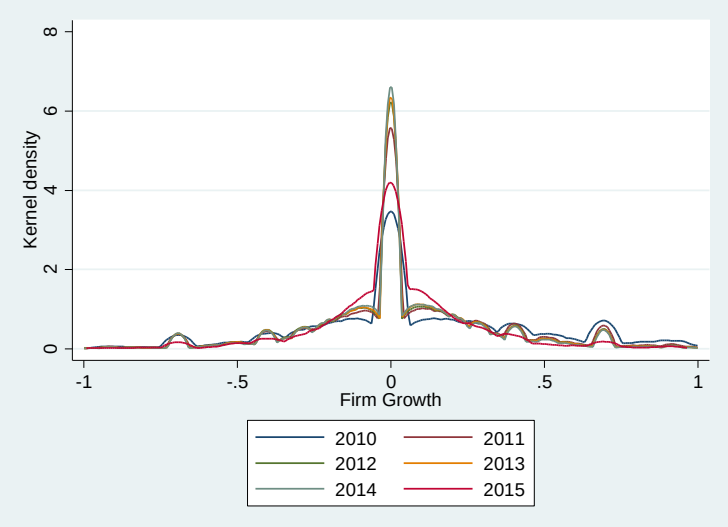
The unit of analysis in this study is the firm. To differentiate economically active firms from dormant and another inactive tax-registered entities, we restrict our sample to firms that have non-missing and non-zero sales data throughout the period, as well as non-missing and positive fixed capital stock or labour data.

Our main variable of interest in the analysis is firm growth and firm size. We define firm size as the number of employees that a firm has within a given year. The firm's growth rate for period t is then defined as

$$GR_{it} = \ln\left[{employment_t}/{employment_{t-1}}\right]$$

Figure 1 depicts the distribution of growth rates for the years 2010–14. All five distributions exhibit a tight, Laplace distribution with long tails. The majority of firms are found to experience no growth, while a small subset of firms exhibit rapid growth or decline. The distribution of growth rates in South Africa is thus consistent with findings in the literature (e.g. Stanley et al., 1996). We note, however, that this distribution is much sharper than those found in other economies, such that a greater proportion of firms in South Africa exhibit zero growth than in those economies. This further suggests that as the bulk of firms do not grow, most employment creation is generated by a small group of firms.

Figure 1: Firm growth rate distributions, 2010–15



Source: Author's figure based on SARS-NT panel.

4 Method

The main concern of this study is the existence of serial correlation in the growth of firms. We are interested in the sign and magnitude of such correlation, as well as how it varies across the distribution of growth rates. Furthermore, we are also interested in how the serial correlation of growth rates varies across the size distribution of firms.

In order to analyse the persistence of growth across the growth distribution, we adopt the quantile regression approach employed by Coad (2007). Specifically, we consider the basic regression model

$$GR_{it} = \beta_0 + \beta_1 \log(S_{i,t-1}) + \sum_{k=1}^{K} \beta_k GR_{i.t-k} + y_t + \epsilon_{it}$$

where *S* is the lagged firm size as the number of employees to control for the effect of firm size on growth, and *y* is a set of time dummies to control for time trends.

We consider the motivation for adopting a quantile regression approach. The non-Gaussian distribution of growth rate errors suggests that Ordinary Least Squares (OLS) is likely to produce biased estimates of serial correlation (Koenker and Bassett, 1978). OLS estimates are also problematic because they are highly sensitive to outliers. The regression quantile estimators suggested by Koenker and Bassett (1978) address these shortcomings of least squares estimators. This approach defines a conditional quantile function for the τ^{th} quantile given the vector of regressors X'. The τ^{th} regression quantile is then the solution for the minimization problem:

$$\min_{\beta} \left[\sum_{y_{it} \geq x'_{it}\beta} \tau |y - x'_{it}\beta| + \sum_{y_{it} \leq x'_{it}\beta} (1-\tau) |y - x'_{it}\beta| \right]$$

where the quantile τ=0.5 is the median. Solving for each quantile of interest, β_τ is the marginal effect of X' on the variable of interest y in the specified quantile τ (Angrist and Pischke, 2009).

This estimate β_τ is less sensitive to the effect of outliers, and it allows us to examine the differential impact of past growth on present growth for the firms on different parts of the conditional growth distribution. This is particularly significant in the analysis of firm growth as the bulk of firms lying in the middle of the distribution do not grow. Quantile-specific estimates of serial correlation, then, allow us to observe the effect of past growth on the firms at the tails of the distribution, and HGFs in particular, as discussed by Coad (2007).

While the basic regression model will provide serial correlation estimates for all firms in a given quantile, we also consider how these estimates may differ across different firm-size classes and industries. To this end, we classify firms as micro (1-9), small (10-49), medium (50-199) or large (200+) firms, according to the number of employees. We then produce distinct quantile-specific estimates for class of firm size.

5 Regression results

Table 1 compares the quantile regression results for the quantiles of interest with the OLS regression for all firms. The one-year lag, β_1, is highly significant and negative for the OLS regression and across all the quantiles. There is thus evidence of negative serial correlation for firms regardless of where they sit on the growth distribution. Similar to Coad (2007), we interpret

a sharp, negative coefficient as suggesting that firms which experience high growth in a given period were likely experiencing low growth in the prior period. With the exception of the 75 per cent quantile, the second lag, β_2, is also significant and negative such that the effect of growth in a given year persists beyond the following year. We also note that the coefficient for the first lag is always larger than the coefficient for the second lag.

The degree of correlation, however, differs by quantile. Firms that perform most poorly in a given year tend to have experienced high growth in previous years; the reversal in a given year's growth is sharpest among these firms. Firms that experience extreme growth events are thus unlikely to maintain such growth.

Table 1: Quantile regression estimation results for all firms

	OLS	10%	25%	75%	90%
β_1	-0.1155***	-0.0807***	-0.0291***	-0.0303***	-0.0660***
	(0.0019)	(0.0048)	(0.0022)	(0.0018)	(0.0030)
β_2	-0.0229***	-0.0342***	-0.0125***	0.0013	-0.0100***
	(0.0015)	(0.0026)	(0.0011)	(0.0012)	(0.0019)
Pseudo R^2	0.0293	0.0052	0.0116	0.0043	0.0375

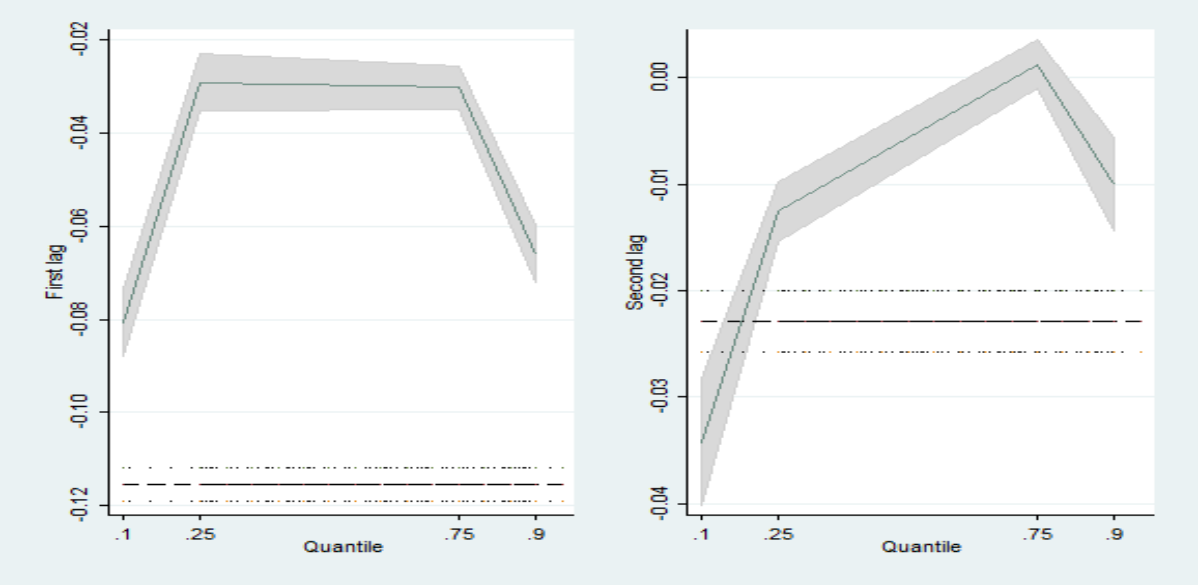
Note: *p>0.10. **p>0.05. ***p>0.01 The R^2 is reported for the OLS results.

Source Author's calculations based on SARS-NT panel.

On the other end of the distribution, firms that experienced the highest growth in a given year probably experienced a decline in the previous year. This autocorrelation, however, is much weaker for firms in the 25 per cent and 75 per cent quantiles, such that firms which exhibit the most extreme growth also exhibit the most whiplash in subsequent periods. This evidence of particularly negative serial correlation at the ends of the growth distribution is consistent with findings by Coad (2007) and Capasso et al. (2013). Figure 2 illustrates a summary representation for the coefficients of the different quantiles.

The initial evidence thus suggests that firms which experience rapid growth in a given period are unlikely to subsequently hold on to their gains. These results, however, may conceal a different growth path across the size distribution of firms. There is evidence suggesting that firm growth is significantly affected by the size of the firm (e.g. Evans, 1987), such that firms of different sizes may exhibit different growth patterns, and thus have different growth persistence.

Figure 2: Regression quantiles for employment serial correlation coefficients with 95% confidence intervals.



Source: Author's figure based on SARS-NT panel.

We consider whether the serial correlation for a given quantile varies with size class. Table 2 reports the quantile regression results for regressions disaggregated by firm size class. Micro firms are found to exhibit a different pattern of serial correlation than suggested by the pooled results. While poorer-performing micro firms exhibit no significant autocorrelation, those that are among the highest-growth firms in a given year probably experienced poor growth or decline in previous periods, with stronger negative serial correlation than firms in other size classes. Growth among micro firms is therefore unlikely to persist over time.

While all small firms across the growth distribution exhibit negative autocorrelation, the degree of impact is found to be dependent on the level of current growth. Firms that sit closer to the middle of the distribution tend to experience less reversal from growth in previous periods, while those at the ends of the distribution experience a stronger effect. The firms which undergo the most rapid growth in a given period exhibit the most autocorrelation, such that they probably performed poorly in previous periods. This effect, however, is smaller than among high-growth micro firms. This evidence of negative serial correlation with larger effects at the ends of the growth distribution is consistent with similar findings by Coad (2007), but diverges with Capasso et al. (2013) who find small, positive serial correlation among the best-performing small firms.

Table 2: Quantile regression estimation results for different size classes

	OLS	10%	25%	75%	90%
Micro firms, 109 169 observations					
β_1	-0.0617***	0	0***	-0.0865***	-0.0634***
	(0.0030)	(0.00)	(0.00)	(0.0063)	(0.0049)
β_2	-0.0113***	0	0***	-0.0118***	-0.0092***
	(0.0025)	(0.00)	(0.00)	(0.0032)	(0.0029)
Pseudo R^2	0.1803	0.1249	0.0987	0.0109	0.1649
Small firms, 97 285 observations					
β_1	-0.0759***	-0.0359***	-0.0274***	-0.0226***	-0.0480***
	(0.0021)	(0.0039)	(0.0026)	(0.0028)	(0.0036)
β_2	-0.0148***	-0.0116***	-0.0090***	-0.035**	-0.0043**
	(0.0016)	(0.0025)	(0.0017)	(0.0015)	(0.0021)
Pseudo R^2	0.384	0.1368	0.0831	0.1495	0.2659
Medium firms, 29 650 observations					
β_1	-0.0595***	-0.0124***	-0.0080**	-0.0075	-0.0440***
	(0.0031)	(0.0043)	(0.0034)	(0.0052)	(0.0076)
β_2	-0.0076***	-0.0050***	-0.0027	-0.0024	-0.0035*
	(0.0022)	(0.0022)	(0.0036)	(0.0026)	(0.0042)
Pseudo R^2	0.548	0.2149	0.1299	0.1992	0.3675
Large firms, 6 368 observations					
β_1	-0.0157***	-0.0034	0.0027	0.0029	0.0053
	(0.0054)	(0.0074)	(0.0073)	(0.0102)	(0.0134)
β_2	0.0058	-0.0016	0.0011	0.0115	0.0179*
	(0.0039)	(0.0051)	(0.0038)	(0.0064)	(0.0097)
Pseudo R^2	0.7425	0.2119	0.1586	0.3151	0.5136

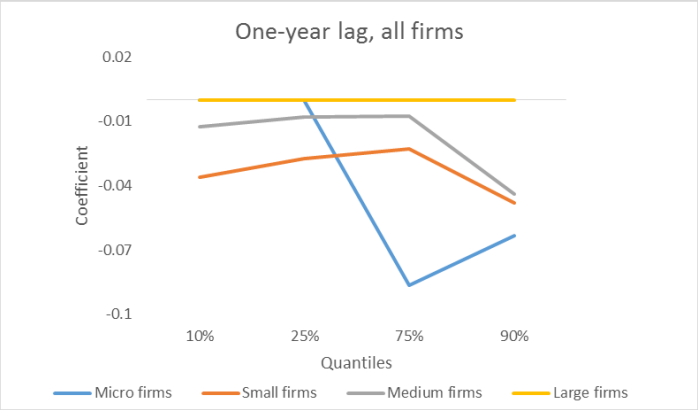
Note: *p>0.10. **p>0.05. ***p>0.01 The R^2 is reported for the OLS results.

Source: Author's calculations based on SARS-NT panel.

Medium-sized enterprises also experience negative serial correlation across the board, however the degree of this correlation tends to be much smaller than that exhibited by small firms. In particular, the firms closer to the middle of the distribution exhibit minor negative or even insignificant serial correlation, as is the case for the 75 per cent quantile, while the effect for firms on the bottom end of the distribution is much smaller than small firms. This suggests that medium-sized firms are more likely to hold on to gains from a rapid-growth event than smaller firms are.

Among large firms, we find no significant serial correlation for firms across the growth distribution. While the positive coefficients for the 25 per cent, 75 per cent and 90 per cent quantile suggest positive serial correlation such that large firms are able to sustain some momentum in growth, these coefficients are statistically insignificant. Past performance therefore has no significant impact on present growth for large firms. These results diverge from Coad (2007) who finds significant positive autocorrelation among large firms.

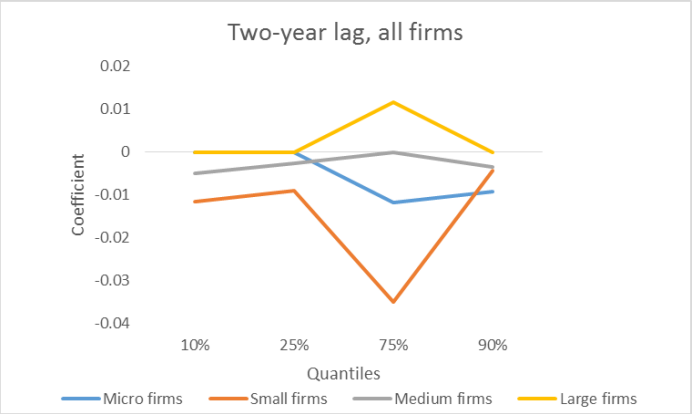
Figure 3: Regression quantiles for one-year employment growth serial correlation for size classes



Source: Author's figure based on SARS-NT panel.

The coefficients for the one-year and two-year lags are summarized for the different size classes in Figures 3 and 4 respectively. Micro enterprises experience the most negative autocorrelation throughout the growth distribution, while this effect is much less pronounced for medium large firms and even zero for large firms. With the exception of large firms, firms throughout the distribution exhibit negative serial correlation.

Figure 4: Regression quantiles for two-year employment growth serial correlation for size classes



Source: Author's figure based on SARS-NT panel.

A few implications arise from the findings regarding the growth pattern of firms across the size distribution. Firstly, we find zero or negative serial correlation for firms regardless of where they fall on the growth or size distribution. Hence, the winners in a given year are unlikely to also be the winners in the following year, irrespective of size.

Second, we note that firms at the tails of the growth distribution experience the most change in growth on a year-to-year basis. These firms are thus more dynamic than the bulk of firms which fall in the middle of distribution, which may suggest that these firms take more risks than the more stagnant firms. It may also suggest that firms with more drastic declines in a given year are more likely than those in the middle of the distribution to become the highest-growing firms in subsequent years.

Third, there appears to be a strong association between firm size and persistence of growth. That is, smaller firms appear to have stronger negative autocorrelation, such that their growth fluctuates

more than larger firms. As firms grow, the fluctuations in growth from year-to-year appear to be moderate, particularly among those firms in the middle of the growth distribution. Indeed, we find no significant relationship between current and prior firm growth among large firms.

These findings suggest that the growth patterns of firms differ, with some appearing more erratic than others, and growth patterns change as firms evolve. Therefore, in order to support firms at different points of the size and growth distribution, the factors impacting the growth of firms and those which distinguish dynamic firms from stagnant firms must be understood.

6 Persistence of growth among HGFs

A matter of interest is how these findings relate to the developing conventional wisdom regarding HGFs. The preliminary results suggest that an expectation of future growth cannot be supported by observing performance using present firm growth alone. This may imply that policies which seek to identify HGFs today with an expectation that these firms will also be the best-performing firms tomorrow may be misguided. Indeed, Bianchini et al (2017) note that an analysis of persistence that focuses on observing autocorrelations in annual growth rates may be misleading as it captures a short-term, restricted notion of persistence. A more nuanced approach to identifying whether there are consistent winners among firms, incorporating broader metrics than simply present growth rates, is warranted.

We therefore consider whether the persistence of growth among the best-performing firms, not identified by using annual growth distributions but rather by using a definition that encompasses a longer period, differs significantly from that of other firms in the economy. More specifically, we identify HGFs using the OECD's definition (Eurostat and OECD, 2007), where an HGF is a firm which experiences at least 20 per cent average annualized growth in employment over the three consecutive years in the period 2009–12. Using OLS, we then compare the annual serial correlation of growth of these firms with other firms in the economy. If the longer time-span over which the growth of these firms is observed results in the identification of firms that are also more likely to be consistent growers in future, then the concerns regarding policies that specifically target HGFs may be overblown. It may also suggest that there are lessons to be learned from the growth processes of HGFs that may help all firms to grow more consistently.

Table 3: Regression estimation results for HGFs

	All firms	HGFs	Other firms
β_1	-0.1155***	-0.0662***	-0.1689***
	(0.0019)	(0.0034)	(0.0024)
β_2	-0.0229***	0.0318***	-0.0841***
	(0.0015)	(0.0025)	(0.0019)
R^2	0.0293	0.0357	0.0488

Note: *p>0.10. **p>0.05. ***p>0.01 .

Source: Author's calculations based on SARS-NT panel.

Table 3 reports the serial correlation results of HGFs and other firms respectively. HGFs are also found to have a significant negative serial correlation of growth, such that a period of growth was likely preceded by poor performance. However, the coefficient of serial correlation is much smaller among HGFs than other firms. The aggregate result thus suggests that growth among HGFs tends to be less erratic than among other firms.

Table 4 reports the regression results disaggregated by size class. Consistent with other findings in our analysis, HGFs across most of the size distribution have a negative serial correlation of growth, and its magnitude varies by size. HGFs are also found to have a lower autocorrelation than other firms, suggesting that these firms exhibit less erratic growth.

Table 4: Regression estimation results for different HGF size classes

	All firms	HGFs	Other firms
Micro firms			
β_1	-0.0617***	-0.0326***	-0.1238***
	(0.0030)	(0.0059)	(0.0036)
β_2	-0.0113***	0.0155***	-0.0767***
	(0.0025)	(0.0049)	(0.0031)
R^2	0.1803	0.24	0.1769
Small firms			
β_1	-0.0759***	-0.0307***	-0.1179***
	(0.0021)	(0.0034)	(0.0028)
β_2	-0.0148***	0.0166***	-0.0534***
	(0.0016)	(0.0023)	(0.0022)
R^2	0.384	0.4294	0.371
Medium firms			
β_1	-0.0595***	-0.0423***	-0.0741***
	(0.0031)	(0.0046)	(0.0043)
β_2	-0.0076***	0.0048	-0.0251***
	(0.0022)	(0.0033)	(0.0033)
R^2	0.548	0.6388	0.4996
Large firms			
β_1	-0.0157***	0.0302***	-0.0409***
	(0.0054)	(0.0087)	(0.0070)
β_2	0.0058***	0.0262***	-0.0031***
	(0.0039)	(0.0062)	(0.0053)
R^2	0.7425	0.8448	0.6912

Note: *p>0.10. **p>0.05. ***p>0.01.

Source: Author's calculations based on SARS-NT panel.

It is among the large firms that the greatest difference between HGFs and other firms is evident. While other large firms exhibit negative serial correlation—albeit more moderate than smaller firms—large HGFs are found to have significant, positive serial correlation. This suggests that a period of growth among these firms is likely to be followed by more growth the following year, contrary to other firms. As such, we find evidence that large HGFs are able to gain momentum in regard to their performance by sustaining high growth. This contrasts evidence from Daunfeldt and Halvarsson (2015) who find that HGFs are unable to repeat high performance.

The above evidence suggests that while most HGFs also exhibit negative serial correlation in growth, this effect is less pronounced than among other firms in the economy. Thus, while a quantile-regression approach that focuses exclusively on year-on-year growth may suggest that the

best-performing firms in a given period are also among the least likely to perform well again in subsequent periods, an approach that identifies the best-performing firms by observing growth over a longer period does seem to identify firms that are more likely than the average firm to maintain previous growth.

We note, however, that the serial correlation of growth among HGFs remains significantly higher than among those firms in the middle of the growth distribution as seen in Table 2. This supports the notion that those firms which are most likely to grow in future are not predicted by past performance, hence supporting potential HGFs does not necessarily mean supporting today's best performers. Rather, a focus on other firm-level characteristics such as dynamic capabilities (e.g. Bianchini et al., 2017) and an enabling environment for all firms in the economy may be more successful in supporting the emergence of HGFs as well as more consistent growth among all firms in general.

7 Can public policy support more consistent corporate performance?

While there appears to be convincing evidence that there is indeed serial correlation in firm growth rates, there are other, fundamental factors determining a firm's growth path.

Parker et al. (2010) analyse the determinants of the performance among HGFs subsequent to their high-growth phase. They find that external factors such as market concentration have no significant impact on the subsequent growth of HGFs, while management strategies emerge as a differentiating factor between those HGFs that proceed to maintain their growth and those who do not. More specifically, the adoption of certain management strategies such as the establishment of marketing and sales departments is associated with those HGFs that continue growing past their initial high-growth phase. More generally, dynamic capabilities and management strategies have been noted as a binding constraint on the growth of firms, particularly SMEs (e.g. Abor and Quartey, 2010). This is especially relevant in the case where a firm experiences a high-growth episode and must adapt capabilities to the larger scale, as is the case among growing SMEs. This suggests that programmes which offer support in the form of skills enhancement may be useful.

Both the private and public sector can be leveraged to facilitate skills enhancement of managers. In the private sector, venture capitalists, accelerators, innovation hubs and startup incubators offer not only resources but also specialized and often intensive strategic support for growth-focused SMEs and scale-up firms. While ranging in the degree of support provided, these programmes can facilitate the sustained growth of HGFs and other high-potential enterprises. The public sector, on the other hand, can provide more broad-based support for businesses at different points of the size distribution. The Small Enterprise Development Agency (SEDA) in South Africa is the entity tasked with offering a wide range of services to SMEs, including assistance with business diagnostics and skills enhancement. These services can be further highlighted to expand their reach to more business owners and managers. Furthermore, government support in the form of the venture capital tax incentive also encourages increased support of firm growth by the private sector.

Another area in which the public sector can help support more persistent growth is in the provision of finance. Growing firms require access to working capital to take advantage of growth opportunities, but a lack of sufficient collateral combined with the perception of higher risk results in younger or smaller firms facing credit constraints in financial markets (OECD, 2010). The broad-based provision of finance for enterprises that satisfy some criteria can assist in this regard. Adequate signposting of the Small Enterprise Finance Agency (SEFA)—which provides an array

of funding solutions for SMEs in South Africa—can expand the reach of its facilities, while a more streamlined approach to accessing capital from the various development finance institutions (DFIs) can help larger firms fund growth opportunities.

More generally, there are public policy measures that can be taken to improve the operating environment of small and large firms in the economy. These include measures to address human capital constraints through skills development. To this end, the Sector Education and Training Authorities, which were designed to address skills development, must be strengthened and better aligned with the needs of firms to alleviate the skills constraints faced by firms (Chandra et al., 2001). Other measures can address the regulatory burden on enterprises, as South Africa has been noted for its declining ease of doing business in recent years (Doing Business, 2017). The establishment of the InvestSA initiative, which provides a one-stop-shop destination for investors in South Africa, is well-placed to tackle regulatory issues that frustrate both new entrants and incumbents. These measures are sufficiently broad in nature to serve to create an enabling environment not only for the fastest-growing firms in the economy, but for all firms in general.

8 Conclusion

This paper has analysed the persistence of growth among South African firms with a particular focus on those firms at the tails of the growth distribution. The central finding of this analysis is that firms which experience extreme growth episodes exhibit a strong, negative serial correlation in growth, such that the best-performing firms in a given year are highly likely to have performed poorly in the previous year. The results disaggregated by size suggest that this fluctuation in growth is more pronounced the smaller the firm is, such that larger firms are more likely to maintain the gains of a growth period. A comparison of these results with Powell's panel estimates broadly supports these findings.

Among HGFs, we find that while their growth tends to be more persistent than the average firm in the economy, their negative serial correlation remains notably higher than those of the more stagnant firms in the middle of the growth distribution. This supports the notion that public policy aimed at HGFs that identifies these firms based on current growth may be misguided. Rather, a focus on firm-level characteristics such as managerial skills and on the broader business environment may be more effective.

These findings have implications for the support of more persistent growth among firms. Private sector provision of strategic and other business support through incubators, accelerators and other programmes should be encouraged to facilitate the skills development of growth-focused entrepreneurs, while the work of the SEDA should be further publicized to increase access to its services among SMEs. Public support in providing access to capital can also ease the frictions of growth by enhanced signposting of SEFA and DFI services. Further, initiatives such as InvestSA, which seek to improve the operating environment, can also ease the fluctuations experienced by firms in the South African economy.

These measures address different constraints experienced by firms in the South African economy, which particularly frustrate the ambitions of growth-focused firms. By tackling these constraints, the long-term prospects of HGFs are improved, while the business environment of all firms in general is also enhanced. Furthermore, these different measures address the enhanced support required by growing SMEs, which are more prone than all other firms in the economy to fluctuating performance. By providing the assistance that allows such firms to take advantage of

growth opportunities while also offering broad-based support for other firms, the benefits of firm growth can be realized by the South African economy as a whole.

There remain, however, interesting questions for further research. First, an analysis of the founders and strategies of HGFs that examines what characteristics are associated with sustainable growth can be instructive for the analysis of the determinants of growth. Such an analysis can particularly focus on whether more sustainable HGFs employ different management strategies compared with other firms. Second, a consideration of whether firms that experience high-growth episodes have significantly different survival profiles than other firms may shed light on other implications of such growth episodes. Furthermore, an analysis of what firm-level characteristics determine the persistence of growth can also be instructive in terms of how the gains of growth can be maintained across more firms.

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