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FIRM SIZE AND GROWTH OPPORTUNITIES: A SURVEY

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ABSTRACT

The qualifying aspect of the ongoing changes in firm growth processes seems to be the increased heterogeneity of size and a trend towards a broader fluctuation in average size. Exogenous factors (market size, demand trends, technological innovations, higher competition) determine a different impact on firms will to increase their own size, while endogenous variables play a greater role than in the past. The outcome is represented by a growth *pattern* that characterises some firms, but not all of them. Growth appear to be an asymmetric phenomenon, involving selectively but not casually a subgroup of firms. In the present paper it is hypothesized that growth stems from the asymmetric distribution of internalized resources (both material and immaterial), allowing some firms (regardless of the original size) to enter evolutionary paths that others don't want or simply can't enter.

Keywords: Firm Growth, Size Distribution, Gibrat's Law, Industrial Dynamics, Human Capital, Intangible Assets, Industrial Policy.

JEL codes: L11, L25.

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1. AN “ENDLESS STORY”³

‘*Growth is a subject of all times*’ (Philipsen and Kemp 2003), and it couldn’t be otherwise since few economic phenomena appear to be so important on the empirical level, as complex and elusive on the interpretative one. The increase of manufacturing output is indeed due to the expansion of existing firms’ activities, resulting in their size growth (in terms of turnover, added value, sometimes employment): two thirds of the increase of production experienced in western countries in the past decades has its roots in the expansion of existing structures, and one third only is linked to the creation of new firms (Rajan and Zingales 1998). If the expansion of the firm is such a crucial issue for the overall growth of an economic system, it is of little surprise to note how intense and relatively continuative – even if to some extent frustrating – the research has been on the determinants of firm size, and on the constraints on activity extension (Kumar et al. 1999). The number of surveys on the issue, both recent and not, seems surprisingly high and the same goes for single contributions.⁴

However, as in every *endless story*⁵, even in the field of firm growth some characters change, as well as the contexts and the narration rhythm, even if the conclusion of the plot is still far away. The study of firm growth has many milestones that appear constant, even if there are many questions still unanswered, while other questions need a new formulation. It is perhaps the very nature of the issue that, changing through time and assuming different forms, won’t allow an ultimate definition. In recent years, moreover, applied research seems to focus on new issues. This is due not only to the fact that old approaches to the problem are now out-of-date, but also to the emerging of new dynamics in industrial structures and organizational assets, so that a rethinking of the categories on which all previous considerations were based appears to be necessary.

Starting from understanding *why* and *how* firms grow (Delmar 1997; Davidsson et al. 2005; Traù 1996; Sutton 1997; Coad 2007), the question shifted on *which* firms actually increase their size. The issues appear to be similar, as answering the first would provide an answer to the second as well, and vice versa. Indeed, the differences are broad and regard the assumptions the precede both the issues. The first question – which are the determinants of size growth – presumes that economic organizations, on average similar, face a unique evolutionary path based on size growth and selective processes that discriminate less efficient (or less *fit*) firms. The growth is spurred by exogenous forces (technological supply, end-products demand, market size, etc), while the single organisation reacts more or less swiftly to the context and its changes. At any time all firms can benefit of growing opportunities, even if some firms grasp such opportunities while others

⁴ A proxy of the numerical relevance of contributions on the issue can be excerpted by clicking the keyword “firm growth” on Google Scholar (15.900 results as of April 2008)

⁵ The expression refers to a twentieth century narrative model, structured to develop without an end (soap operas, comics etc). See Reynolds (1992) and Butler (1986)

don't. What is really relevant is the average rate of growth (thus the trend of average firm size) and the confirmation that the size distribution results *skewed* as provided for by the Gibrat law.

In the second approach – which are the firms that actually grow - the reasoning appears reversed: the starting point becomes the final result of the previous analytical scheme. The main question regards explaining why few firms do actually grow, and the identification of the features differentiating growing firms from not-growing ones. The focus hence shifts from exogenous to endogenous components and concerns the asymmetric distribution of internalized resources (both material and immaterial), allowing some actors (regardless of the original size) to enter evolutionary paths that others don't want or simply can't enter.

Two further distinctions can be drawn with respect to the traditional approach. The first regards the idea that the size (whatever unit is adopted for the measurement) hides a great organizational heterogeneity as far as across size categories (small vs large) and within size class (small vs small, large vs large) are concerned. The second element refers to the fact that growth is only apparently linked to a casual evolutionary path (the *random walk* envisaged by the contributions *à la* Gibrat - 1931). Indeed, assuming a high variety within the same size category, it is possible that only certain firms will prove to be adapt to the growth: some possess organizational and strategic resources that allow them to benefit from the evolving context, while many other organizations will not.

The approach considering growth as an asymmetric phenomenon, involving selectively but not casually a subgroup of firms, appears to be particularly useful as a contribution on the debate on the structural change in manufacturing industry, which has been for a long time restrained to the small-large size dichotomy.

There is plenty of evidence suggesting that the shift in the structure of industrial systems goes beyond such dichotomy as sector structures seem to evolve towards more complex configurations. The first signal is represented by the consolidation of a set of firms of intermediate size, not small nor large, characterised by a great vitality in terms of turnover and added value expansion, but also in terms of employment, performance on international markets and a specific focus on innovation related investments. The success of this new type of firm represents a new interpretational challenge, and several recent contributions try to investigate on the issue.⁶ Moreover, industrial clusters display a greater size stratification than in the past (Dei Ottati 1996; Coltorti 2008), there is the strengthening of *larger* organisations within the SME context, external growth via acquisitions regards more and more SMEs (Iacobucci 2002, 2008, Iacobucci and Rosa 2005). Also de-verticalisation processes are now experiencing relevant transformations as far as both transaction management and exchange contents are concerned (Giunta *et al.* 2008).

The qualifying aspect of the ongoing changes seems to be the increased heterogeneity of size and a trend towards a broader fluctuation in average size. Exogenous factors (market size, demand trends, technological innovations, higher

⁶ International literature paid little attention to the issue of “medium” enterprises. See Clifford and Cavanagh (1985), Simon (1996), Lindqvist (1997), Perks and Bell (2002), Arrighetti e Ninni (2008).

competition)⁷ determine a different impact on firms will to increase their own size, while endogenous variables play a greater role than in the past. The outcome is represented by a growth *pattern* that characterises some firms, but not all of them. This ends in diverging growth paths (some firms do increase their size, while others don't), but it doesn't always have an impact on the number of active organisations.

Growth selectivity does not regard quantitative-structural aspects alone (which firms grow, which don't). It deals with qualitative components regarding the composition of internalised resources, as well. From such perspective, the signals of an increased average size in given sectors are due to the growing impact of endogenous factors such as the need to strengthen the hierarchical or semi-hierarchical control over intermediate goods exchange, the presence of threshold effects in the valorisation of extra-productive functions and the impossibility to acquire such "outer" inputs on the market. The incorporation of *production coordination resources* determines an increase in fixed costs that spurs the firm, for both prudential and profitability reasons, to increase the level of the output and raise the operating scale (Arrighetti and Traù 2006, 2007).

In such a context, the size growth and the "new hierarchy" are hence characterised by: a) the strengthening and completion of the tertiary functions within the organisation, and the subsequent increase in their relevance in comparison with strictly manufacturing activities; b) the experimentation of solutions for the coordination of processes through the adoption of the group structure (as event successive to the decision of acquiring pre-existing units, containing the risk linked to the "organic" growth); c) the further exploration of hybrid organizational mechanisms and "incomplete" contractual models; d) the re-positioning within the sector or sometimes the entry in supra-national oligopolies.

Size growth, from such perspective, doesn't represent a process of proportional (radial) dilatation of internalised resources, but rather the exit from the elementary structure of a small firm, towards a broader variety and organisational complexity⁸.

The following part of the work is articulated as follows: next paragraph will be aimed at verifying the matching of empirical evidence with theoretical models of size growth, gaining insights on the hypothesis of selective growth in terms of coherence with main stylized facts on this issue. Paragraph 3 focuses on the subjective features that influence firm growth paths. Paragraph 4 analyses the role of intangible assets and human resources as elements enhancing growth chances. Paragraph 5 focuses on the relationship between intangible assets accumulation and firm size, providing an explanation for the pouring of intermediate organisational models. Paragraph 6 gains further insights on the links between growth and external bonds, especially financial ones, while paragraph 7 consists of remarks over the *rationale* of an industrial policy aimed at the size growth.

⁷ On the effects of higher competition on firm organisation, see Rajan and Wulf (2006) and Powell (2001)

⁸ Cfr Traù (1996)

2. OLD AND NEW STYLIZED FACTS

The main stylized fact regarding this issue is represented by the persistency – in the long run - of a *right-skewed* distribution of firms that can be rounded to a lognormal, Pareto or Yule (Bottazzi *et al.* 2003). The law of proportional effects describing such order presumes independence of growth rates from starting size of a given firm, and hence an erratic trend of size expansion. Even if the Gibrat law is not universally confirmed, it represents a key reference in the debate, being able to grasp some recursive components that are basically constant in different sectors and industrial systems. The attempt of making the available econometric evidence consistent with the theoretical prescriptions provided relevant results. As stressed by Geroski (1999), current knowledge states that: a) growth appears to be a *path dependent* process (Barney and Zajac 1994), b) size seem not to converge within or between sectors⁹; c) growth rates tend to be idiosyncratic (absence of serial correlation). These facts are still lacking of an adequate interpretation and to be unified within a theory of firm. However, the hypothesis foreseeing discontinuous growth rates and differentiated access to development opportunities by incumbent firms is consistent with available evidence. Geroski (1999) stresses that the erratic trend of size changes shouldn't be regarded as dominated by pure randomness. Stressing that growth stems from unexpected shocks doesn't mean "*that growth is driven by "mere chance" or "good luck"*". Since unpredictability of an event depends on the set of information available for each player, it is possible that what appears as unexpected to a player outside the sector is easy to predict from another inside it. Moreover, assuming non-uniformity in the distribution of information within a sector, or different reactivity of firms to external shocks, it is consistent with the evidence that some firms, in a given moment, have access and can exploit the emerging opportunities, while others are not able to grasp such opportunities. In other words, *« it is, of course, possible to argue that exogenous factors are entirely responsible for the unpredictable nature of corporate growth rates. But this is hard to believe. Many firms do not react quickly or well to market shocks, and others try to resist innovation. This inertia makes the timing of corporate activity difficult to predict, and, hence, it often makes corporate behavior seem erratic »* (Geroski 1999, p.20).

The emerging of growth paths characterised by elements of *selectivity* seems consistent with some conclusions of recent works: a) the check of the growth proportionality hypothesis has provided either a confirmative outcome only in reference to specific size categories (Lotti *et al.* 2001, 2003; Becchetti and Trovato 2002) while the growth dynamics appear constantly asymmetric between firms (Cefis *et al.* 2001; Bottazzi *et al.* 2002). As a consequence, the chances of growth could be higher in specific groups of firms and lower in others¹⁰; b) the dynamics of industrial concentration (Pryor 2001, 2002; Dosi *et al.* 2000) stress both the consolidation of oligopolistic systems and the survival of a wide range of other

⁹ See also Geroski *et al.* (2000) and Farinas and Moreno (2000)

¹⁰ For a theoretical interpretation of differences between growth rates of small and large firms, see Cabral (1995) and Cabral and Mata (2003)

firms playing a relevant role¹¹. As a consequence, we experience the strengthening of a *path dependency* effect: firms with relevant size enabling them to enter the oligopolistic structure grow to achieve such goal, while others result even more confined in a state of size stability; c) a *fat-tailed* distribution of growth rates (Stanley *et al.* 1996; Bottazzi *et al.* 2002) in most industrial systems states that only few productive units expand their size, while most of them have a static, zero-growth dynamics; d) the conditions spurring the emerging of general trends (*big business* for Chandler (1977) or fragmentation for Langlois (2003)) seem to be substituted for by ambivalent forces strengthening labour division between firms (McLaren 2000) and speed up the internalisation of coordination functions (Sturgeon 2002); e) finally, opening of international markets calls for a qualitative upgrading of manufacturing goods as well as for a strengthening of managerial skills to avoid being exposed to a fierce price competition with newcomers. Not all firms can adopt such approach, as firms need sufficient internal organisational and technological resources to enter the development path. Moreover, in the oligopolistic arena being formed, the competitive space is limited and only few firms can enter. Those who are not able to enter should focus on smaller, specialised demand segments, repositioning themselves in market of intermediate goods and services which don't provide for a relevant increase in size of productive units.

3. SUBJECTIVE GROWTH INCLINATION

The assumption that firms – all of them – are born to grow and must grow to survive is so much common (Sexton 1997) as wrong. From such perspective, firms are naturally oriented towards growth and only external ties hinder the pursuit of such goal. This universal tendency to growth appears inconsistent from a theoretical point of view, as it doesn't encompass the role played by organisations of different size in the division of labour. Furthermore it assumes the existence of optimal firm size, differentiated from sector to sector but univocal within each one of them¹². Even from an empirical perspective, it is apparent that only a minority of firms actually expand their size in a given timeframe, as the tendency to grow seems to be strictly subjective and linked to the personality and will of the entrepreneur¹³: as demonstrated by a wide literature, firms grow for different reasons and following different paths (Heinonen *et al.* 2004)¹⁴, while many display

¹¹ Dosi *et al.* (2000) stress the possible affirmation of a sort of neo-dualism in the international organisation of production and services, with changed oligopolistic cores and a turbulent and broad “galaxy” of smaller organisations. Among these, the pool of potential Schumpeterian innovators; others remain small for the mechanisms of labour division (p.31)

¹² This is in conflict with the evidence of the idiosyncrasy of firms growth process, previously highlighted (cf Geroski 1999, Cabral 2007). The absence of size convergence among industrial systems of different countries is a further confirmation (Dunne and Hughes 1994; Hart 2000; Geroski and Gugler 2004; Bottazzi *et al.* 2003; Dosi *et al.* 2000).

¹³ For the analysis of the relationship between entrepreneurial orientation, growth and performance see Wiklund and Shepherd (2005)

¹⁴ Delmar *et al.* (2003) reach the same conclusions in analysing a group of firms with high growth rates

no tendency to grow at all (Davidsson 1989; Storey 1994; Gundry and Welsch, 2001).

The individual inclination towards growth¹⁵ seems to have an important impact (even if influenced by the context in which they operate) on firm performance (Baum and Locke 2004; Baum *et al.* 1998; Delmar and Wiklund 2003; Wiklund 2001; Wiklund and Shepherd 2003), and the distribution of the growth will seem to be very different among firms.¹⁶ Moreover, entrepreneurial orientation to expand firm size seems to be function of variables such as independence, control and quality of the labour context: motivations that differ from income related objectives. Finally, the consequences of growth can be regarded as negative or however capable of undermining the positive results achieved with the original size (Wiklund *et al.* 2003; Mosakowski 2002; Davidsson *et al.* 2005).

Given such framework, it is hence of little surprise to see how most firms, once achieved a given size threshold and overcome the start-up hindrances, tend to maintain their size without relevant changes over time (Brown *et al.* 1990; Storey 1994; Spilling 1996; Aldrich 1999; Reynolds and White 1997). Davidsson and Delmar (1997), analysing the evolution of Swedish firms over the 1987-96 period, stress how only 10% display positive (and modest) growth rates, while others have a stationary or even negative trend. Growth doesn't seem to be typical of a specific size class of firms, even if larger organisations (>50 employees) are over-represented. Most of the growth is due to mergers and acquisitions of pre-existing units, so that "*most firms start small, live small and die small*" (Davidsson *et al.* 2005).¹⁷¹⁸

Moreover, it appears that only a limited number of small firms is explicitly oriented towards strategies of size expansion.¹⁹ Smallbone *et al.* (1995) in their work on high-growth firms observe that 67% of firms of the sample maintained their original size for a lack of orientation towards expansion rather than for hindrances that occurred on its path.²⁰

¹⁵ As highlighted by Coad (2007), the intentional character of growth is already explicit in Penrose (1955 and 1959): "Unused managerial services are a key determinant in a firm's capacity to expand. Firms must then decide upon the direction for growth. Managers must search for potential growth opportunities and draw up growth plans. As a result, growth is an informed and intentional process. Growth is seen primarily as a result of managerial decision and 'human will' rather than being a response to technological factors. If, on the other hand, these unused managerial services are involved in growth projects that are unstructured or ill-prepared, then they are unlikely to succeed" (Coad 2007, p.44).

¹⁶ Moreover, as stressed by Hart (2000), differences in entrepreneurial skills and attitudes are sufficient to generate a positively skewed firms distribution. The issue has been developed in Tuck (1954) and Lucas (1978), or more recently in Arrighetti and Traù (2007).

¹⁷ It's been stressed how firms operating in a restricted oligopoly can contain growth as to avoid supply increase to determine a reduction in prices (Nelson 1987).

¹⁸ Moreover, as confirmed by some studies (Storey 1994), a small share of fast-growing firms explains in every reference period most of the jobs created. Bruderl and Preisdorfer (2000), studying a set of new firms, notice that 4 years after the establishment, the labour demand grew, but most of such growth refers to a 4% of high-growth firms.

¹⁹ Cfr Curran (1986), Stanworth and Curran (1986)

²⁰ On the relationship between managers' optimising behaviours and growth, see Traù (1996)

4. HUMAN CAPITAL, INTANGIBLE ASSETS AND GROWTH OPPORTUNITIES

In an attempt to summarise the conclusions agreed upon by recent literature, we can note that: a) the hypothesis of the existence of an optimal firm size (linked to both the sector and other factors) and the interpretation of growth as a path towards such optimum are not consistent with the emerging empiric evidence. b) growth concerns a limited number of firms active in a given timeframe; c) the orientation to growth is closely linked to the personality and individual attitudes of managers; d) when growth does occur, it is not a linear, constant process. It is rather characterised by swift speedups followed by sudden standstills or even downsizing (absence of positive serial autocorrelation between growth rates).

The state of the art of current knowledge excludes deterministic factors of growth, while it gives ground to other, less prescriptive alternative hypothesis, in line with the above mentioned evidence, linking internal organizational features and resources to the *likelihood of growth*. Growth could be hence explained by firms' suitability to exploit market and technology opportunities, minimising at once risks connected to scale expansion.

Such a *suitability* is linked to the redundancy of specific intangible assets (organisational and administrative competences, broadness of control and coordination structures, human capital, information and quality systems, relationship with customers and suppliers, innovation protection, etc). Such resources and their availability either support or hinder the grasping of opportunities of growth (Penrose)²¹. There is no direct relationship of cause and effect between the availability of such resources and the effective growth of an organisation. Sometimes intangible assets are used to grow, while in other cases they are needed to strengthen and balance the internal organisational structure. Intangible assets, indeed, can be used simultaneously or sequentially for a plurality of applications (while tangible assets cannot). Moreover, there are no certainties regarding future growth: the resources we are debating on explain how an economic opportunity in a given time can be turned into a growth opportunity, but they are not able to provide any further indication whether the growth will last or not and the path is linear or not.

Not all firms have redundancy of intangible assets. Since their stock depends on onerous investments, the incentive to increase such assets varies from a firm to the other. The fixed (or semi-fixed) nature of costs associated to intangible assets spurs such investments in some but not all firms. The differentiation in entity, quality and composition of intangible assets between firms brings back to the idea of selectivity and partiality, which characterizes size growth, especially in recent years.

These features appear in some works analysing the link between the distribution of growth opportunities and subgroups of organisations. Bottazzi and

²¹ The link to Penrose (1959) is evident. As highlighted by Garnsey (2003), in Penrose contribution growth origins from a "‘productive opportunity’ in a cumulative, endogenous process of interaction between the firm’s productive base and market opportunities, which are reflected respectively in the firm’s ‘organizational capabilities’ and its ‘entrepreneurial judgement’".

Secchi (2005) re-examine the *island models*, originally elaborated by Ijiri and Simon (1977) and later by Sutton (1998). In every single sub-market (island) and regardless of what happens in others, it is assumed the existence of a definite flow of new growth opportunities. Such opportunities take the form of random events that can have a relevant impact on the firm evolution. They can be represented by *shocks* on the demand side, technological rather than managerial or organisational innovations, and so on. The actual growth of firms is dependant on the number of projects that they are able to grasp. The authors stress how the assumption of balance in the chances of grasping opportunities by single firms (as in the original models) generates a distribution of growth rates which is inconsistent with empirical evidence, highlighting a *tent-shaped* density. To overcome such limit, it is sufficient to remove the previous assumption and hypothesize that the above mentioned skill in exploiting opportunities varies from firm to firm. In the suggested model, the chances for a firm to acquire a specific project are dependent on the number of opportunities already exploited in the past. As a consequence, some firms with stronger attraction skills (due to scale economies, network economies and learning economies) will be better able to exploit opportunities and grow at a faster pace than other organisations with lower stash of acquired projects. The *clusterisation* of projects and growth opportunities in a limited set of firms is consistent with the empirical statement of a *fat-tail* distribution of growth rates.

Moreover, growth opportunities appear to be differentiated as regards the “organisational architectures”. Arrighetti and Traù (2006), implementing an analytical scheme developed in Sah and Stiglitz (1986 e 1988), stress how different organisational structures react to the dimensional and qualitative features of the flow of projects crossing a given sector. In poliarchic structures, the decisional process is spread between many individual players (micro firms), deciding what and how to produce simultaneously but independently from each other. On the other hand, in hierarchical structures there is a limited number of big players (large firms), making their decisions through a central authority and using sequential procedures.

In such approach, the size of single production units is function, *ceteris paribus*, of the composition of opportunities flow and the degree of information imperfection on one hand, and exit costs that firms must afford in case of mistakes in selecting projects, on the other. The opportunities’ features vary overtime, determining a systematic effect favourable to different architectures from time to time. From the empirical point of view, phases favourable to the success of elementary production units, in contexts of great demographic turbulence (many firms starting and ending their activities) and little individual growth (poliarchy), are followed by phases when larger organisations, with adequate intangible assets such as management and decisional skills, provide a better persistence (few births and few death) and higher chances of size growth (hierarchy).

The skill of identifying and selecting the opportunities, turning them into projects, is strictly linked to the coherence of the firm with the flow of such emerging opportunities. Sometimes, newcomers have comparative advantages over incumbents in grasping opportunities. In these circumstances, the flow of new chances stems from advances in labour division and exploitation of specialisation economies. As a consequence, active firms tend to increase with a prevalence of small units. On the other hand, when opportunities are represented by projects of

relevant scale which can be better exploited in large organisational contexts, with an adequate articulation of internal functions as well as of property rights protection, it is incumbents (or at least some of them) that are better able to exploit new opportunities. Incumbents hence grow while newcomers play a smaller role in the overall picture.

The ability to incorporate such kind of projects seems to be linked to the redundancy of intangible assets internalised by firms. Jensen and McGuckin (1997) indeed state that *"the vast majority of variation in firm performance is not associated with traditional observables such as location, industry, size, age or capital; rather it is associated with unobservable factors specific to the firm or business unit, many of which appear to be permanent attributes of the business unit. One such attribute is the managerial capital of the firm, another is the skills of its workforce"* (p. 44).

Such assumption is consistent with the survey of Davidsson *et al.* (2005), stressing how managers education and experience, the number or founding members and skills within the organisation have a positive impact on growth. Cohen and Levinthal (1989) show how the accumulation of R&D resources generates knowledge influencing firm performance. Such knowledge produces *absorptive capacity* assuming the form of an ability to single-out, incorporate and adapt external knowledge for the pursuit of commercial and productive goals (see Laursen *et al.* 1999). The level and character of human resources amplify firm skills in developing fruitful relations with external actors, strengthening their position on the market. Raffa *et al.* (1996) conclude in their longitudinal study that technical human capital of managers spurs an increase in commercial competences, due to higher skills of cooperation with large firms, valorisation of consultants' activities and exploitation of diversification opportunities. Abernethy *et al.* (2003) stress how the development of *intangibles* is the result of specific investments in personnel training, product development, R&D, supply chain relationships, communication technologies and so on. Such expenditures appear to be pre-requisites for the strengthening and expansion of firms on the market, playing at once as *enablers* of internal organisation optimisation.

Chandler and Hanks (1994) believe that a high level of intangible assets increases the odds of the firm taking advantage of the identified opportunities, surviving longer and growing at a faster pace (Limere *et al.* 2004).

In recent years, a growing number of empirical studies focused on analysing human capital as a component of intangible assets and as a determinant of growth. Colombo and Grilli (2005) provide econometric assessments showing how college years (especially in the economic and managerial field) of entrepreneurs do indeed have a positive impact on the growth of organisations. And the same goes for the experience acquired in previous activities within the same sector. Most of the researches on the issue agree on the fact that human capital (managers and employees education, managerial skills etc) has positive effects on the proneness to growth, on the perception of opportunities as well as on actual growth rates (Storey 1994; Laursen *et al.* 1999; Nurmi 2004; Garnsey *et al.* 2003; Almus 2002; McPherson 1996).

The relationship between human capital and growth appears to be complex and subject to interactions with other variables. Particularly interesting is the evidence documented by Wiklund and Shepherd (2003), stressing how skills acquired

through experience and education do not “force” deterministically managers to expand their organisations (Davidsson *et al.* 2005). The role of human capital is strongly emphasised in presence of a considerable subjective management inclination towards growth. It is the simultaneous combination of high levels of both variables that triggers the growth process.

5. INCENTIVES SPURRING AN INTERMEDIATE SIZE.

The link between size expansion and intangible assets is hence not mechanical. A consistent endowment of intellectual and organisational skills does not generate automatically an increase in firm size, as it represents a pre-condition for the exploitation of external shocks in opportunities for internal development. The accumulation of intangible assets plays as an increase in the non-tradable component of a firm’s value, generating risks of informative opacity on investments earnings and hence of bad allocation of resources (Hart 1995; EC 2003). Moreover, it increases the incidence of fixed costs over variable costs, with relevant effects on profitability, in contexts of great demand variability.

As a consequence, the balance between benefits and disadvantages of an intangible asset incorporation can vary significantly, not only between sectors and organisations of different age, but also as regards the size variable. The immediate postulate is that if the accumulation of intangible assets is inhomogeneous among size, the odds of having access to new growth opportunities are not entirely unrelated to the initial firm size.

The hypothesis that some size classes have better access to growth opportunities is only partially consistent with the emerging evidence. However, the proposed analytical framework seems to fit available information concerning the advantages of medium size enterprises and their recent success in terms of both performance and growth.

The strengthening of an intermediate size, for the proposed scheme, is the result of two factors: a) variables affecting the forsaking of smaller size on one hand and b) variables affecting the forsaking of larger size on the other.

5.1 Variables spurring firms to abandon small size.

If the exploitation of external opportunities is less and less bound to physical assets, and evermore to intangible ones, and if the investments on the latter out-tower those on the former (Nakamura 2001), not only we are experiencing a shift in the composition of controlled assets, but also a relevant change of firm behaviours. Access and appropriability of intangible assets indeed vary according to firm size. Intangible assets appear idiosyncratic to the firm, and less imitable than physical ones, even if they are characterised by relevant indivisibility constraints and hence high access thresholds. They can be hence acquired by firms operating on a large productive scale, while smaller organisations face hindrances in internalising them. Moreover, the optimisation of intangible investment’s *cost spreading* is deeply influenced by the scale of firm activities. Cohen and Klepper (1996), by stressing the “fixed” nature of R&D investments and the uncertainty of

linked income-related benefits, note the existence of incentives for such expenditures directly linked to firm size. Indeed, the larger an organisation, the bigger the volume of output on which innovation benefits can be shared (hence the smallest the R&D unit costs). The benefits of redistribution of costs are not due to the large size of the organisation itself, but rather to the fact that in most cases the results of internal innovation cannot be separated from the physical output incorporating innovation (not always the innovation is *tradable*). Moreover, being firm uncertain about the effects of innovation on turnover growth, they tend to spread costs at the current output value rather than at future expected value. Grossmann (2008) states that a positive relationship between R&D expenditures and size is associated to the imperfection of capital markets (larger organisations have easier access to external funding of such investments), to greater capability of internalising *spillover* (see also Geroski 1998) and to greater opportunities of diversifying R&D investments. In general, larger, diversified firms are better able to spread the risk of innovation over a large number of projects, increasing the propensity to sustain such expenditures (Geroski 1998; Coad 2007). Empirical evidence confirms such hypothesis (Cohen and Levin 1989; Cohen and Klepper 1996 a and b, Kumar *et al.* 1999; Bosma and de Wit 2004; Pagano and Schivardi 2003).

Previous conclusions could be adapted to other components of intangible assets. Grossmann (2008) stresses the existence of a positive correlation between size, marketing/promotion expenditures and R&D investments. An increase in advertising expenditures determines indeed an increase of both industry concentration and firm size. Simultaneously, an increase in market shares (due to higher concentration) increases the earnings of R&D investments, since such costs are to be spread on a larger volume of output. Also informational fixed costs have similar bounds. Audretsch and Thurik (2004) believe that small firms bear a disadvantage in sustaining indivisible *sunk* investments, such as the acquisition of knowledge on international markets, the development of long distance communication tools and the negotiation with local governments.²² Finally, observing the higher stability of larger organisations, Fogel et al (2006) retrieve Holmstrom (1989) thesis that with an increase in size, managers and employees appear to be more inclined to invest in firm-specific human capital. The explanation is that the incentive to large investments in such form of individual human capital, having a postponed and uncertain profitability, is strong only in contexts guaranteeing an extended operational life of the organisation over time. Intangible assets, moreover, have high degrees of complementarity. Their productivity in terms of earning benefits is linked to the variety and completeness in different investment lines. Even from such perspective only larger organisations are able to diversify their investments in intangible capital.²³²⁴

²² Similar conclusions are reached by Dean et al (1998). In their study on the impacts of structural components on the entry in the market of small or large organisations, they assess that sunk costs influence negatively the former, but not the latter

²³ The protection of intangible assets property rights could be positively linked to firm size (see also Kumar et al, 1999)

²⁴ The size-productivity relationship can be (at least indirectly) associated with the ability to internally cumulate intangible assets. Recent works stressed a productivity differential in favour of larger firms. Pagano and Schivardi (2003) and Bartelsman et al (2003) find that, focusing on the manufacturing

Finally, Dosi *et al.* (2000) observe that, if size doesn't affect positively productive efficiency and innovation capabilities, it is very likely that threshold effects will come into action so that firms underneath such threshold will not be able to implement innovative productive procedures, characterised by organisational complexity. Such bounds appear to be also relevant as far as logistics, distribution, post-sale service, marketing and financial functions are concerned.

5.2 Variables spurring firms to abandon large size.

The success of medium enterprises is the result of opposite forces, pushing towards an increase in organisational size on one hand, and the shift to smaller structures on the other. It is also important to observe (Powell 2001) how goods and services demand became in recent years more and more differentiated. Potential size of single markets hence shrink, acquiring the typical features of monopolistic competition, reducing economic space for larger organisations. There are indeed many exceptions, even if the clear trend is towards supply segmentation and strengthening of entry barriers is becoming more and more common. The size of single markets is hence such to allow growth, being however incompatible with organisations of huge size. Uncertainty and other external factors suggest, moreover, the adoption of flattered hierarchical structures (Rajan and Wulf 2006) and promote downsizing processes (Baumol *et al.* 2003). All these phenomena explain the success of organisations of intermediate size. The development of intermediate markets allows the separation of turnover expansion from the internal availability of production inputs. Even in this case it is possible to grow without becoming "too big". Finally, uncertainties on future demand ask for the minimisation of exit costs in case of failure. This explains the success of the *group* form, with players maintaining juridical independence, avoiding the expansion of the productive scale of original organisation (Iacobucci 2008).

Even the outcome of recent studies on labour division confirm that productive de-verticalisation represents a face of a broader process of re-thinking of the overall structure of larger firms. Literatures on the modularisation and co-evolution of supply chain systems (Prencipe *et al.* 2003; Lewin and Koza 2001; Lewin and Volberda 1999; Baldwin and Clark 1997) show that the extension of labour division, even if spurring the withdrawal of firm boundaries, leads to the formation of firms with variable productive scale, and usually of intermediate size (Sturgeon 2002). Also in this case, present trends seem to head towards firm downsizing; not an absolute productive fragmentation, however, but rather an increase in variety and pluralism of size configurations.²⁵

industry of developed countries, higher productivity growth rates correspond to larger size. Foresti, Guelpa and Trenti (2008) show how the productivity gap between Italian and European firms can be largely explained by the size gap that hinders Italian organisations.

²⁵ The shift in the technological nature of products seems to operate in a similar direction, as well. A growing number of goods (or services) has multi-technological features, result of the harmonisation of distinct technological inputs originally developed by different organisations (Hobday 1999). The combination of different technological families in a single product represents a challenge to vertical integration as well as to the concept and production of such products within a single firm. External links and long-term cooperation schemes represent a deep-rooted component of present organisational assets. If it is of great appeal to set up a long-term cooperative network, there is on the other hand little interest in internal growth.

The emerging and consolidation of a broad set of medium sized enterprises is the result of a process of reorganisation, which is now influenced by opposite forces. Growth has marked character of selectivity, and is tempered by diseconomies and constraints linked to large size. Firms that grew actually exploit intangible assets mainly developed within the organisation and then deployed in operational contexts that are new in terms of market extension, competitive factors and competition regimes. Growth would not be an option open to all existing production units. It doesn't appear to be mechanically determined by exogenous factors, nor it has an epidemic nature. It doesn't imply, in other words, a change in the average size of plants, or an univocal change in industrial structures, as it used to happen in past decades, either towards smaller or larger size.

The interpretative scheme here adopted, moreover, doesn't provide any insights on future evolutions of medium sized enterprises. If growth was not inevitable in the past, it is not to be considered as certain for the near future. On the contrary, the previously discussed issues lead to the cancellation of a positive relationship between present and past growth.

6. EXTERNAL CONSTRAINTS TO INTERNAL GROWTH: THE FINANCIAL FACTOR AND THE ROLE OF "PRIVATE EQUITY"

In previous paragraphs, the focus was on the role of internal assets, especially intangible ones, in firm growth. In the framework of the well-known Kumar classification (Kumar *et al.* 1999), technological and organisational analytical schemes were put in the spotlight. In other approaches such as the institutional one, the role played by other external variables influencing internal growth is relevant; it is the case of the efficiency of judicial system and the development of financial markets. The importance of the former has been stressed in recent years, being capable of reducing internal coordination costs (Becker e Murphy 1992) and, by protecting external investors, facilitating the funding of larger organisations (La Porta 1997). However, the issue is difficult to be empirically assessed, as only cross-country analyses are available.

On the other hand, the role of financial markets (especially the existence of the financial constraint) are traditional themes, with plenty available literature as well as empirical evidence. Focusing on recent works, Rajan and Zingales (1998) provide a broader generalisation of King and Levine (1993) results, assessing the positive role of the financial component on the growth process of manufacturing firms, through both the development of existing firms and facilitating the entry of newcomers.

More cautious results appear in Cabral and Mata (2003); the focus here is on the size distribution of firms. For young firms, such distribution is piled up on the left (firms are usually small when they begin operating), while older firms have a distribution which is more evenly spread. The reason is to be identified in the financial constraints (fc): the size of a given firm at start up stage is given by the minimum value of MES (technology linked) and the financial availabilities of the entrepreneur. In case of fc, hence, the firm is forced to adopt a sub-optimal size. However, the effects of fc on size distribution are ambiguous: in every sector, the

mitigation of *fc* involves the growth of size (thus increasing the average size) as well as the entry of newcomers (obtaining the opposite result). Beck et al (2004) confirm that the growth effect caused by financial availability is favourable to small firms rather than large ones.

Angelini and Generale (2005)²⁶ believe that there is indeed a *fc*, influencing firm growth and especially new organisations. However the constraint itself is not significant (as in Cabral and Mata 2003) on the overall economic activity, as it affects a minority of firms within each size class.²⁷ The scant relevance of *fc* (which in the World Bank database doesn't refer to bank credit alone) is typical of OECD countries, while the situation is different in non-OECD countries; this means that financial binds are not relevant in case of mature financial systems.

Moreover, we should stress that *fc* not only have different impacts on smaller/larger organisations or in OECD/non OECD countries, but also the specific local context within a given country appears to be relevant (Guiso *et al.* 2003). Guelpa and Tirri (2004) analysis demonstrates that the tighter the relationship with the bank and the higher the concentration of cash points in the area, the lower the chance for the firm to suffer restrictions in bank credit.²⁸ Lastly, *fc* differ as far as their underlying motivations are concerned. Demircug-Kunt *et al.* (1996) observed how firms in different countries used to finance with external funds the development of assets in the short-term, resorting to self-financing when they invest in fixed capital; according to a recent (2007) Gallup survey for the Observatory of European SMEs,²⁹ the role of *fc* is perceived as of medium-low relevance as far as the ordinary management of the firm³⁰ is concerned, and of higher (but not preponderant) relevance as regards the financing of innovation. Note how the perception of the relevance of *fc* as obstacles to both ordinary activity and innovation tends to diminish as the firms either grow in size, or localise in European countries with well developed financial markets.

It appears to be universally agreed that the importance of *fc* as barriers to growth is greater for firms in early stages of their activity, while after a certain size threshold, it doesn't appear to be a significant constraint. However, it is also necessary to keep into adequate account other variables such as the development of financial markets, either "local" or not.

Particularly severe appears to be the scarcity of self-financing funds for firms wishing to adopt a strategy of innovation. In such cases, it should be advisable for firms to resort to external capital risk (private equity) rather than financing through borrowed capital and bank loans.³¹ This is explained by the existing information

²⁶ Angelini and Generale use Mediocredito (1992, 1995, 1998 and 2001: firms with more than 10 employees) and WBES (World Bank, World Business Environment Survey 1998 and 2000: firms with more than 5 employees) sources, thus referring to non-Italian contexts, as well.

²⁷ In Italy, the financial constraint is relevant for less than 5% of the firms of Mediocredito sample (5.6% for firms with less than 6 years of activity). The incidence grows and differentiates for age-classes (16.7% overall, 21.2% for "young" firms) if we adopt broader *fc* definitions, considering those organisations that need heavier credit, and fail to obtain it.

²⁸ Firm age and size, on the other hand, seem to play marginal roles

²⁹ EC Eurobarometer Team (sample of over 16.000 firms)

³⁰ Other structural factors play a bigger role, such as administrative regulation, lack of qualified work, labour cost and infrastructures-related issues

³¹ For the Italian case, see Del Colle et al (2006) and Magri (2007)

asymmetry since most innovative small enterprises tend to hide the features of their competitive advantage (new product or process), fearing imitation by competitors. It is thus difficult for banks to exert an aware activity of selection, monitoring and financing, since the intangible assets of the firm, representing its source of competitive advantage, are kept secret.³²

It hence appears that private equity and venture capital³³ are the better choice for small and innovative enterprises³⁴. Private equity real benefit is that of providing managerial skills as well, which are often lacking in firms at the start-up phase (which on the other hand possess relevant technological competences). Moreover, the presence of private equity represent a signal useful to reduce information asymmetry, making new capital available: a mix of financing, expertise and reputation, and “informed capital” to use Susi’s words (2002). This function is highlighted by Gompers and Lerner review (2001).

Firms exploiting private equity show far better performances than average organisations. In the USA, over the 2000-2003 period, the growth rate of employment in venture-backed firms was 7%, while other firms set a 2% decrease, with even broader ranges within specific sectors.³⁵ These differences between venture capital and non venture capital backed organisations are present even if we focus on other variables such as turnover growth rather than added value or firm profitability (EBITDA).

Actually, for the above mentioned variables, the effective causality link between venture capital and innovation (hence growth) is not ascertained. Firms backed by forms of venture capital could be better able to pursue innovative strategies, thanks to the ability of venture capitalists to adequately select firms to be supported (which would have anyhow introduced advanced technologies, no matter what the nature of funding was).

This second interpretation, emphasizing the role of technological systems (technological opportunities, appropriability conditions, innovation sector systems and demand nature and dynamics, Malerba 2004) and hence giving an ancillary role to venture capital, is also suggested by the anecdotic annotation that private equity approves a little share of interventions being proposed (around 3% in Italy), while the share of self-declared innovative firms is much higher (44% in Europe in 1998-2001, according to the 2003 Community Innovation Survey (CIS), EC 2004).

³² This part is influenced by the discussions held with Luciano Balbo and Anna Gervasoni, whom we thank

³³ Private equity activities can be divided into venture capital (financing firms’ startup and development) and buyout (financing the substitution of property structure). We here focus only on venture capital.

³⁴ Innovative enterprises seem to play an important role in the industrial scenario, as 36% of Italian firms with more than 10 employees declared having performed R&D activities during the 2002-2004 period of time (mainly, process innovations). The figure slightly decreases (33%) for 10-49 employees firms (ISTAT 2006).

³⁵ For instance, in the biotechnology sector, venture-backed firms score a +23% (overall score: 5%), while in the Energy sector the results are +1% and -9%, respectively.

7. TASKS AND ROLE OF INDUSTRIAL POLICY SUPPORTING FIRM GROWTH: AN OVERVIEW

Economic policies, and specifically industrial policies for growth, represent a further external variable SMEs should carefully take into account. These firms³⁶ should avail a favorable treatment due to their occupational importance: European micro-firms (1-9 employees) represent 29.8% of jobs in the private sector, small firms (10-49) represent 20.8% and medium firms (50-249) a further 16.5%, for an total of 67% (European Commission 2007).

The increase in the number of SMEs can be viewed as one of possible development triggers: micro-entrepreneurship allows avoiding unemployment, thus SME-supporting policies (at least at the start-up stage) can be justified taking into account the significant positive externalities they produce. As far as the growth phase is concerned, Bianchi *et al.* (2004, p. 381) mention a number of SME market failures, suggesting the implementation of *defensive* policies tailored to the specific needs of such type of enterprise. They can be articulated in three main groups, and we can note that, depending on what triggers them:

- limited resources imply difficulties in access to information as well as in attracting high-profile human capital (wages cannot stand competitors' levels);
- SMEs suffer a form of discrimination in accessing the financial market due to the information asymmetry with the subjects according loans;
- if SMEs share specific markets with larger organisations, they can only play a subordinate role, given the potential dominant position³⁷ of the latter³⁸.

There is a broad range of tools and policies that can be implemented favouring SMEs, even in those national contexts where the preservation of competition is a milestone of public intervention in economy. EU³⁹ constituted a specific Policy for SMEs within DG "Enterprise and Industry"; there is an exemption from the

³⁶ In Europe: micro-firms 1-9 employees; small firms 10-49 employees; medium firms 50-249 employees.

³⁷ Which seldom develops in an abuse of dominant position, to be prosecuted by competition legislation. It is hence a gap that cannot be adjusted through legal actions and which, in absence of product differentiation and local markets, would develop in a situation where small firms either grow or end their activities: which is partially what actually happens.

³⁸ This would be the result of the presence of lower costs (thanks to traditional scale economies) and lower profit margins (or at least in line with those of SMEs, so that they can practise lower costs for a given product); it could also regard the capability of larger organisations to practice a differentiated offer, sharing upstream costs that SMEs cannot afford (lack of adequate human resources, R&D, marketing activities etc)

³⁹ WTO holds a neutral position as far as subsidies to SMEs are concerned (export aids within the Agreement on Subsidies and Countervailing Measures, SCM)

prohibition of State aids⁴⁰ and *de minimis*⁴¹ mechanism, and they have facilitations in the field of R&D and Innovation.⁴²

As far as public procurement is concerned, many Countries (not the EU legislative framework) set specific “reserves” for SMEs; moreover the US and Canada obtained exemptions to general rules of WTO’s Government Procurement Agreement (Ninni, 2001).⁴³ In Italy, such support for SMEs created a sort of institutional dualism, a “particular form of regulation that introduced incentives, protection forms and externalities that vary from small to large firms” (Arrighetti and Seravalli, 1997).

However, it is up to debate whether the relevance of SMEs as regards both employment and innovation, as well as the market failure they face, justify a selective behaviour in their favour. There is little doubt as far as the creation of the firm is concerned. Public aid is justified not only by the creation of new jobs⁴⁴, but also by the strengthening of entrepreneurship in those that are momentarily unemployed, increasing at once innovation offer.

Regarding the phase of development and size growth, public intervention could turn out to be counterproductive in terms of internal growth, as this might cause losing benefits linked to small size. This sort of disincentive might have a limited empirical relevance, however it is certainly a possibility to be taken into account.

From the point of view of general welfare, this discouraging effect might add up with the partial pointlessness of selective aids for firm growth, as the latter should be transferred from the demand side to the supply side. Indeed, most of the aids provided for by Bianchi *et alii* either lack a specific motivation to be triggered (e.g intervention regarding access to financial markets, which on the other hand are relevant in the creation of a firm) or they should focus on supply, increasing the availability of human resources recurring for instance to immigration. It is somehow what happened to information access, since the increase in supply made access broader and cheaper even for SMEs. A policy strengthening the supply of scarce resources, along with the legislative framework adopted by the EU, is relevant especially as far as intangible assets availability is concerned, which probably represent a fundamental variable in orientating internal growth of firms.

⁴⁰ Commission Regulation 70/2001, January 12th 2001:(on the application of art 87-88 of the Treaty): aid to SMEs investments in tangible and intangible immobilization is consistent with the common market, and is not subject to notification, as long as such aid doesn’t exceed 15% or 7.5% of costs for small and medium enterprises, respectively (nor exceeding 10% and 15%, respectively, of Regional aid ceiling for those Regions providing for such form of support).

⁴¹ All firms can benefit from these support measures (for an amount not exceeding 200.000 Euros in three years, exempted from notification duty), and SMEs are the type of organisation exploiting this opportunity the most.

⁴² Especially as far as property rights and high-profile personnel costs are concerned.

⁴³ EU itself is trying to simplify the procedures for Public Procurement, where the role played by SMEs is marginal due to administrative costs and bureaucratic hindrances.

⁴⁴ While the gross creation of jobs in developed countries is mainly related to SMEs, the role of these in creating net employment is less clear, as empiric evidence is lacking a generalised and agreed-upon conclusion. Moreover, in many emerging economies (e.g. Africa), it is larger firms that contribute the most to the gross job creation (Biggs, 2006).

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