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Creative Destruction and Regional Competitiveness

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ABSTRACT
New firms stimulate competitiveness via market selection and competitive pressures, by forcing less efficient incumbents to exit or to improve their productivity. This way, both the creation and destruction of firms (turbulence) may improve competitiveness. In this paper the effect of turbulence on regional competitiveness (measured as total factor productivity and employment growth) is analysed in 40 regions in the Netherlands over the period 1988-2002. Our analyses suggest that turbulence leads to productivity growth in services but not so in manufacturing. Employment growth appears to benefit from firm dynamics in manufacturing.

KEYWORDS: turbulence, entry and exit, productivity, employment, regional competitiveness

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INTRODUCTION

In the last decades, entrepreneurship has increasingly been linked with economic growth (Wennekers and Thurik, 1999; Carree and Thurik, 2003). There is now a widespread agreement that entrepreneurship is important for competitiveness (Porter 1990). In most studies that have investigated this presupposed link empirically, entrepreneurship has been measured as new firm formation rates and regional competitiveness as employment growth in regions (see e.g. Van Stel and Storey 2004; Acs and Armington 2004). These studies in general equate entrepreneurship with new firm formation and claim to be inspired by Schumpeter's (1934; 1942) work on the mechanisms of economic development, especially the role of entrepreneurship. However, Schumpeter's (1934) theory of "creative destruction" involves both creation (new firm formation) *and* destruction (firm exit). This latter aspect reflects the selection mechanism that is a crucial outcome of the process of competition and an important driver of competitiveness and economic growth. In addition, not all new firms contribute to progress in a regional economy, and although employment is an important feature of economic development, competitiveness might better be measured with other indicators.

Regarding competitiveness, authors like Porter (1990; 1998) and Krugman (1991) have made a plea for using productivity as the indicator of competitiveness. A rising standard of living in the long run depends on the productivity with which a nation's resources are employed (cf. O'Mahoney and Van Ark 2003). An important empirical drawback of this indicator is that there is hardly any data available at the sub-national scale (Kitson et al. 2004), and from other industries than manufacturing (Bartelsman and Doms 2000). Another possible drawback is that it might reveal perverse effects, when labour shedding (e.g. with an extensive shakeout of workers and closure of plants) is the cause of improved (labour) productivity. Ideally, both employment growth and productivity growth should go together (Kitson et al. 2004): increasing productivity causes an improved competitive position, which leads to higher demands of the goods and services produced, which in turn leads to an increased demand for labour inputs. The question of how entrepreneurship affects (regional) productivity growth is still unanswered (Acs and Armington 2004, p. 925).

An important mechanism to stimulate regional competitiveness is competition among economic actors. Competition can be enforced by new entrants, but only if these new entrants push less efficient or less effective firms out of the market or when they provide a threat to incumbents, which subsequently improve their efficiency. The driving force of competitiveness is cost reduction through productivity improvements, which ensures that on the long run, the “fit” firms prosper and the “unfit” firms do not. Competition is therefore a central mechanism in economic evolution seen as the progressive selection of more and more efficient techniques embodied in new and existing firms (cf. Geroski 1989; Gowdy 1992). This competition will lead to improved total factor productivity (TFP), but not necessarily to higher employment levels. However, if new entrants are less efficient than incumbents, the efforts involved in the emergence of these entrants waste valuable resources. In the latter situation entrepreneurship – measured as new firm formation – is not a driver of competitiveness at all. This situation has been identified in the literature as a revolving door regime: entrants that have to exit relatively soon after start-up due to an insufficient level of efficiency (Audretsch and Fritsch 2002). This revolving door regime reflects a situation with high entry rates, but with no subsequent improvement of either employment levels or productivity.

A more structural view of economic change provides a different role of entrepreneurship. New entrants cause structural change when they introduce innovations that create completely new knowledge (Metcalfe 2002) and possibly new markets. This kind of entry does not necessarily drive out incumbents, but might do so when the new markets substitute existing markets (e.g. the personal computers driving out typewriters, and digital cameras driving out analogue film cameras). The former situation might be called creative *construction* (Audretsch et al. 2006), in contrast to the latter, which reflects creative *destruction*. This structural change might improve both TFP and employment if the newly created market does not cannibalise existing markets.

INSERT TABLE 1 ABOUT HERE

Table one summarises the three mechanisms discussed above. In this paper we will analyse the effects of firm entry and exit on regional competitiveness. The key question of this study is: to what extent do firm entry and exit affect the competitiveness of regions? We contribute to the existing literature by investigating both TFP and employment growth as measures of competitiveness. We also make a distinction along manufacturing and services. By separating these sectors we allow for different implications as regards the relation between creative destruction and regional competitiveness. Furthermore, we account for various determinants (control variables) and in particular the business cycle effect on competitiveness.

ENTREPRENEURSHIP AND REGIONAL COMPETITIVENESS

Measuring regional competitiveness

The past decade has seen an emerging set of empirical studies relating entry (and to a lesser extent, exit) to competitiveness. Competitiveness is often measured with either employment growth or growth in total factor productivity (TFP). There are some notable differences between these measures of growth. For example, during recessions the efficiency measures by managers in incumbent firms might lead to employment loss and TFP growth on the short term. On the medium term, unemployment push entrepreneurship might absorb the employment loss, and decrease TFP. In our model explaining TFP growth, rates of firm dynamics are hypothesized to be a factor influencing regional growth additional to labour and capital. Basically, we investigate whether firm entry and exit, apart from growth in labour and capital stock (whether induced by existing or by new firms), invoke a certain degree of economic growth. This approach relates to the one applied by Acs et al. (2005). In this approach it should be acknowledged that entry of firms involves labour and capital input. Therefore equating entrepreneurship to entry of firms (or self-employment rates) may produce interdependencies between the input measures. Exit, however, involves capital and labour losses. Therefore, turbulence rates may be seen as the best measures for entrepreneurship dynamics to be included in the model explaining TFP growth. Although we focus on total factor productivity as an economic performance measure we do acknowledge that for economic development in general, employment growth is highly important; increased productivity caused by reductions in employment can have a negative short-run effect in the form of unemployment. Kitson et al. (2004) argue that, if regional competitiveness can be measured at all, it should be determined by productivity, employment and the degree of social welfare[1].

Entry-exit: competitive selection

In the literature on productivity and economic growth two mechanisms are often distinguished: productivity growth from market selection or "passive learning" which leads to reallocation of output across firms, and productivity growth resulting from "active learning" which contributes to productivity improvements within firms (and possibly a shift of market shares). According to Jovanovic' (1982) model of passive learning and noisy selection, new firms are started by entrepreneurs that do not know the (future) efficiency of their firm. In the post-entry period, entrepreneurs learn about the efficiency of their firm by receiving signals from the market, i.e. whether their firm is profitable or not (cf. Alchian 1950). These signals will be used by the entrepreneur to decide on the continuation or exit of the firm. The efficient (profitable) entrants will survive, while the inefficient ones will be pushed out of the market. If more efficient firms substitute less efficient firms, this will improve the productivity of the economy. This will happen at a faster speed when relatively many new firms enter which force less efficient incumbents to exit: i.e. a high level of turbulence.

In addition to passive learning, Ericson and Pakes (1995) also consider active learning by firms. By nature, firms invest in R&D in order to raise their productivity. New entrants might trigger incumbents to actively improve their productivity even further in order to survive. Carlin et al. (2001) refer to this effect of competition on productivity as 'incentives': encouraging improvements in technology, organisation and effort on the part of existing establishments and firms. Pakes and Ericson (1998) found that the empirical value of these models is contingent on the industry context: post-entry performance in manufacturing was better explained by active learning, while post-entry performance in retail confirmed the passive learning model, possibly reflecting the relatively low entry and exit barriers in the latter industry. In the active learning model, turbulence is not a necessary condition for productivity improvement. More important is (the threat of) the supply of new, relatively more efficient, entrants.

[1] Davidsson et al. 1994 found some evidence of the impact of regional start-up rates on an indicator for economic well-being, in Sweden.

Competitive selection may affect productivity and employment levels. Several studies have shown that entry and exit contributes to aggregate productivity growth, or total factor productivity (TFP) in manufacturing (Bailey et al. 1992; Liu 1993; Carlin et al. 2001; Callejon and Segarra 1999). However, Caves (1998, p.1973) concludes in his review that the effect of turbulence on subsequent productivity growth is marginal on the short run, but that this effect improves on the longer run. Geroski (1989) found that higher entry rates lead to higher productivity growth. He explains this by assuming that entry stimulates competition, and greater competition spurs productivity growth. Innovation turned out to be an even more important driver of productivity (Geroski 1989; cf. Baily and Chakrabarti 1985). Until now, almost all studies on the effect of firm dynamics on TFP concern manufacturing; studies in other industry contexts have hardly been executed due to lacking (productivity) data.

Therefore, examining both TFP growth and employment growth, enables to make inferences of firm dynamics and its impact on TFP growth, while keeping linked to the existing set of empirical studies that generally focused on employment growth. Ever since the asserted linkage of entrepreneurship with economic growth (documented in e.g. Wennekers and Thurik, 1999; Carree and Thurik, 2003), there have been multiple studies that emphasise the positive effect of entrepreneurship (measured as new firm formation) on employment rates (Acs and Armington 2004; Audretsch and Keilbach 2004; Reynolds 1999). Recently this effect of entrepreneurship on employment growth has been refined with taking into account variations in the spatial and temporal contexts in which this takes place (Audretsch and Fritsch 2002; Fritsch and Mueller 2004; Van Stel and Storey 2004; Van Stel and Suddle 2006). Fritsch (2006) concludes that the impact of entry rates on employment growth in general takes an S-shape: direct positive returns in the first year are followed by 2-5 years of negative returns in which the new firms have to improve efficiency and the inefficient entries will exit the market. After this process, the long-term effect turns out to be positive, i.e. regions with higher entry rates reflect higher employment growth in the long run.

Studies on the effect of turbulence (thus including exit rates) on employment growth show more mixed evidence: while Reynolds (1999) found a positive effect in the US, Audretsch and Fritsch (1996) and Fritsch (1997) found a negative effect of turbulence in both the manufacturing and the service sectors in Germany. Audretsch and Fritsch (1996) argued that innovative activity played a smaller role in Germany than in the US, forcing less inefficient incumbents to exit more often in the latter than in the former. In a more recent study, Audretsch and Fritsch (2002) show that the effect of turbulence on employment depends on the type of region: a positive effect in regions with an entrepreneurial regime, and a negative effect in regions with a revolving door regime. In the latter context, new relatively inefficient firms enter and also exit within a short period. This could be qualified as vicious turbulence, as there are (opportunity) costs attached to such wasteful entrepreneurial efforts, and incumbents are not triggered to improve either.

Innovative entry and regional growth

According to Eliasson (1996) there are four mechanisms of Schumpeterian creative destruction leading to economic growth: 1) innovative entry that enforces (through competition); 2) reorganization; 3) rationalization; 4) exit (shut down). The initial mover of economic growth is entrepreneurship in the form of the entry of innovative firms. The innovation that is introduced may be complementary to existing products, and thus involve additional employment, but it may also be a (better) substitute of an existing product and thus improve productivity. In the latter situation there will be rivalry between the innovative entrant and incumbents, possibly forcing the incumbents to reorganize and/or rationalize, or even to die (exit). Depending on the newness of the innovation, incumbents can reorganize themselves in order to integrate this innovation in their production process. When the innovation is too radical, the incumbents will be forced to rationalize (contract) or even to shut down. The entry process is therefore critical for economic growth, pushing the productivity of the industry in the region upwards, by stimulating incumbents to improve their productivity, and/or forcing inefficient firms unable to adapt to exit. This implicates that entry may invoke improvements in regional productivity which are difficult to capture when analysing firm-level data without information on the interlinkages between firms[2]. Exit is important for not keeping 'losers' (inefficient or ineffective

[2] In these kinds of studies at the firm-level, productivity of entrants is compared to that of incumbents and exiting firms. While these kinds of decomposition analysis are valuable, the impact of entry on performance of incumbents cannot be measured.

firms) on for too long. It releases resources for more remunerable and more efficient economic activity in other economic sectors.

DATA AND METHOD

Entry and exit at the regional level

In this paper we measure entry and exit, but also take into account turbulence (gross turnover) as measures of entrepreneurship and selection. As regards measuring firm dynamics, the industry under consideration is situated in a certain territorial context. In general industrial economic studies take this for granted, implicitly assuming that the national level is the most relevant territorial context. However, especially for entry, competition and learning, the regional level might be more relevant than the national level (Fritsch and Schmude, 2006).[3] Considering economic growth, globalization has also led to the belief that regional allocations of industrial excellence (possibly transcending national borders) are overshadowing national economic progress (Eliasson, 2003). In this study we specify regional firm dynamics (annual numbers of entry and exit) relative to the stock of firms in the region.

Dataset

We have specified two sectors: manufacturing and services. The distinction between these two major sectors is primarily data-driven, i.e. the availability of TFP and firm dynamics data in the Netherlands. In our paper the manufacturing sector includes the International Standard Industrial Classification code D, while the services sector includes the ISIC codes J, K, N, O and P. We have used the most suitable level of territorial aggregation for the Netherlands: the Corop-level of analysis (EU Nuts 3) (cf. Van Stel and Nieuwenhuijsen 2004, Kleinknecht and Poot, 1992). The division in 40 Corop regions is based on regional commuting patterns that indicate regional labour markets.

The regional panel dataset on annual entry and exit for the Netherlands in 40 regions is available for a 14 year period (1988-2002). Registrations and deregistrations are provided by the Dutch Chambers of Commerce. Entry includes independent new

[3] Competition in product-markets, but especially in labour markets is likely to be concentrated in the home-region of the firm. Even more localized is probably the learning that takes place through knowledge spillovers (see Jaffe et al., 1993, Breschi and Lissoni 2003).

businesses as well as new subsidiaries; exit includes bankruptcies as well as other modes of firm exit. Unfortunately we cannot distinguish between exit due to business closure (varying from simply finishing economic activity to forced liquidation) and exit due to changes in ownership (i.e. mergers or acquisitions).

Figure 1 depicts turbulence and net entry rates of the 40 Dutch regions over time. There appears to be a substantial variation between these firm dynamics measures across regions, especially where turbulence is concerned (not pictured).[4] Also, the average turbulence rates during 1996-2004 are higher as compared to 1988-1995. Apart from this long-term trend we also observe a business cycle pattern, notably in the period 1996-2004. We thus experience regional and business cycle patterns, as well as a general trend of increasing firm dynamics in the Netherlands.[5] Since business cycle effects are obviously also at play in our analysis of competitiveness (see figure 2), we will account for business cycle effects on our regression model in order to minimize the possible effects of spurious correlations.

Data on annual employment, value added and investment at the Corop level have been taken from Statistics Netherlands and are available for the period 1988-2002.[6] We excluded five regions from the analysis in the manufacturing sector because their regional growth rates are heavily determined by extraction (gas and electricity), which could possibly interfere with our model. The capital stock has been calculated using the Perpetual Inventory Method (PIM). Based on investments at sector and regional level, an initial capital stock level was derived. The capital stock for every following year has been calculated as the sum of the depreciated capital stock, plus investments in the current year. The depreciation rates for both sectors have been estimated using the initial levels of the capital stock in 1989 and investment levels from 1960-1976.

[4] The F-statistics with respect to variance between regions amounts to 20.7, 13.0 and 5.9 for respectively turbulence, volatility and net entry in services. In manufacturing the corresponding F-values are 9.0, 10.7 and 2.3; all significantly different from zero ($p<0.05$).

[5] See Bosma et al. 2005 for explanations of the trendwise increase in entrepreneurship for the Netherlands. There is one noteworthy issue as regards the economic slowdown of 1991-1993. This period was also characterized by intensive start-up stimulation by the Dutch government. Specifically, in 1993 there was an important relaxation of requirements to start new ventures (see Carree and Nijkamp, 2001). This relaxation, along with the increasing importance of the ICT sector with its low barriers to entry has probably overshadowed diminishing incentives to start a business from the business cycle's point of view

[6] Value added and investments have been corrected for inflation.

Figure 2 demonstrates that the development in TFP differs from the development in employment growth (employment is measured in full time equivalents and excludes the self-employed). The difference is particularly striking in manufacturing in the early 1990s, where employment growth is negative and TFP growth is positive: this is a case of labour shedding in which a reduction of employment leads to a (short term) increase in TFP. In services, TFP and employment also diverge in the early 1990s but in a different way than in manufacturing: an increase in employment growth goes hand in hand with a decrease in TFP. Overall, there is hardly any employment growth in manufacturing, while TFP hardly increases in the service sector. The interregional variance appears to be smaller for services, especially for TFP.[7]

FIGURE 2 ABOUT HERE

We will control for variables that are believed, in addition to firm dynamics, to impact regional competitiveness. These are R&D intensity, population density and related variety. A short note on our measure of related variety might be useful. Entropy statistics have been used to measure sector variety (see Frenken et al. 2007). Related variety measures the variety within each of two digit classes. The degree of population density is measured by the percentage of people living in a highly urbanized or urbanized area and supplied by Statistics Netherlands. It captures general benefits of locating in dense regions. Related variety and population density are both indicators of urbanization but to some extent their pattern differs over regions. Figure 3 displays related variety and population density for the 40 regions in the Netherlands. Both indicators are time independent in our model. R&D intensity is taken from Van Oort (2002) and is measured as the share of wages in innovative sectors with respect to total wages, per region.

INSERT FIGURE 3 ABOUT HERE

Empirical Model

Following Geroski (1989) and Calléjon and Segarra (1999) we model firm dynamics as a component of the total productivity in region *i* and year *t*, controlling for the

[7] The interregional variance for TFP in services is weakly significant different from zero (p-value<0.10), while this variance for employment growth is significant with p<0.05. Both measures have a significant interregional variance for manufacturing (p<0.05).

effects of labour and capital. For region *i* and year *t*, the quantity of output (value added) Y_{it} is the result of the combination of capital and labour:

$$Y_{it} = F(A_{it}, K_{it}, L_{it}) \tag{1}$$

where output depends on the number of employees (*L*), the stock of physical capital (*K*) and a 'productivity index' (*A*) that captures the variations in production that are not attributable to changes in the use of labour and capital. Considering Hall's proposed general value added equation (Hall, 1986), the percent change of output depends on three components. The first is the percent change in the productivity index. The second is the product of the elasticity of scale and the percentage change in capital. The third is the effect of market power, i.e. the percent change in the labour-capital ratio weighted by the price-cost ratio (mark-up μ) and the share of labour in value added (α_{it}).

$$\mathrm{d}y_{it} = \mathrm{d}a_{it} + \gamma_{it}\mathrm{d}k_{it} + \mu\alpha_{it}(\mathrm{d}l_{it} - \mathrm{d}k_{it}) + \varepsilon_{it}, \tag{2}$$

where the operator d reflects growth rates, expressed as first differences in logarithms. By subtracting $\alpha_{it}\mathrm{d}n_{it} + (1-\alpha_{it})\mathrm{d}k_{it}$ on both sides we get an expression in which the dependent variable is Solow's residual:

$$\theta^{s}_{\mathrm{it}} = \mathrm{d}a_{it} + (\gamma - 1)\mathrm{d}k_{it} + (1-\mu)\alpha_{it}(\mathrm{d}k_{it} - \mathrm{d}l_{it}) + \varepsilon_{it}, \tag{3}$$

Suppose that the growth of the corrected productivity index (d*a*) can be modelled in several components for region *i* and year *t*: percentage changes in industry productivity which are constant over time and region (θ) and improvements in productivity resulting from firm dynamics (*FD*), regional R&D intensity (*RD*), the degree of related variety in the region (*RV*) and population density (*PD*). We minimise the danger of reversed causality by incorporating lagged effects of firm dynamics on TFP growth. In accordance with a previous study (Bosma and Nieuwenhuijsen, 2002) we model with lags of two years.[8] This extension of equation (3) leads to:

[8] We expect the effect of firm dynamics on TFP to have a shorter lag in comparison with the effect on employment since monetary effects generally precede employment decisions. Baptista et al (2005) find a significant positive

$$\theta_{\text{it}}^{s} = \theta + \beta_1 FD_{i,t-2} + \beta_2 RD_i + \beta_3 RV_i + \beta_4 PD_i + (\gamma - 1)\text{d}k_{it} + (1-\mu)\alpha_{it}(\text{d}k_{it} - \text{d}l_{it}) + \varepsilon_{it} \quad (4)$$

We control for general business cycle effects (affecting all regions) by including dummy variables representing every year of observation. Summarising, equation (4) measures total factor productivity (TFP) growth or Solow's residual for industry *i* and region *j* as the sum of: (1) technical industrial progress in the strict sense (θ_i), (2) additional efficiency caused by firm dynamics (elasticity β_1), regional intensity of R&D expenditures (elasticity β_2), the degree of related variety (elasticity β_3) and population density effects (elasticity β_4), (3) economies of scale measured by γ, (6) variations in the capital labour ratio weighted by the share of wages on value added, the price cost ratio (mark-up μ). We also explicitly model the possibility that benefits of creative destruction in one region spills over to neighbouring regions. We control for spatial autocorrelation by performing regression equation (4) in two rounds. In the first round averages of the residuals in neighbouring regions are obtained. These enter the regression in the second round, so that for each region some of the unexplained variance in the neighbouring regions (in the first round) will be accounted for. To prevent multicollinearity problems, we do not model entry and exit together in one single model but use the combined measure of turbulence.

In our model explaining TFP growth, rates of firm dynamics are hypothesized to be a factor influencing regional growth additional to labour and capital. Basically, we investigate whether firm entry and exit, apart from growth in labour and capital stock (whether induced by existing or by new firms), invoke a certain degree of economic growth. The derived equation explaining employment growth rather than TFP growth would be the following (assuming a standard Cobb-Douglas type function rather than Hall's equation, see Dekle 2002):

$$\text{d}l_{\text{it}} = -\frac{1}{\alpha_{it}}\text{d}w_{it} + \frac{1}{\alpha_{it}}(\theta + \beta_1 FD_{i,t-4} + \beta_2 RD_i + \beta_3 RV_i + \beta_4 PD_i) - \text{d}k_{it} + \frac{1}{\alpha_{it}}\text{d}p_{it} + \varepsilon_{it} \quad \text{(5a)}$$

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impact on employment using a lag of 4 years. Fritsch (2006) concludes that the impact of entry rates on employment growth in general takes an S-shape: direct positive returns in the first year are followed by 2-5 years of negative returns in which the new firms have to improve efficiency and the inefficient entries will exit the market. After this process, the long-term effect turns out to be positive, i.e. regions with higher entry rates reflect higher employment growth in the long run.

Although the Cobb-Douglas model implies a negative elasticity of wage growth (d*w*), the sign is arguably debated; generally the coefficient is estimated without specifying α (see Storey and Van Stel 2004; Van Stel and Suddle 2006). We will do the same by introducing coefficient λ. Since growth in regional prices (dp_{ij}) is generally unobservable, and in the case of the Netherlands changes in prices can be assumed not to differentiate substantially across regions, the estimated equation becomes

$$\mathrm{d}l_{\mathrm{it}} = \lambda \mathrm{d}w_{it} + \frac{1}{\alpha_{it}}(\theta + \beta_1 FD_{i,t-4} + \beta_2 RD_i + \beta_3 RV_i + \beta_4 PD_i) - \mathrm{d}k_{it} + \varepsilon_{it}\,. \tag{5b}$$

When the capital stock is also unavailable at the regional level the estimated equation is the following:

$$\mathrm{d}l_{\mathrm{it}} = \lambda \mathrm{d}w_{it} + \frac{1}{\alpha_{it}}(\theta + \beta_1 FD_{i,t-4} + \beta_2 RD_i + \beta_3 RV_i + \beta_4 PD_i) + \varepsilon_{it}\,. \tag{5c}$$

Note that, since $\overline{\alpha} < 1$, model (5a) predicts that the size of the estimated effects of firm dynamics from (5c) will be larger as compared to equation 4 where TFP growth is the dependent variable. We will use equation (5c) for making comparisons with the existing studies investigating the effect of entry rates on growth in regional employment (see e.g. Van Stel and Storey 2004; Van Stel and Suddle 2006).

RESULTS

Firm dynamics and TFP growth

Estimation results of equation (4) are depicted in table 2 and for manufacturing and in table 3 for services. The first column in both tables (model I) presents the results of a basic model excluding measures of creative destruction. The second model adds entry rates, R&D and related variety and increases the performance of the model for services but not so for manufacturing. Accordingly it is seen that there is no positive effect of gross entry and turbulence on productivity growth for manufacturing (related variety is significant), while there is a positive and significant effect for services (see table 3). An explanation for this outcome is that entry in manufacturing is more capital intensive and has a larger minimum efficient scale. Thus, barriers to entry are higher in manufacturing. In terms of Nelson and Winter (1982), manufacturing can be related to the routinized regime, whereas services can be related to the entrepreneurial regime.[9] However, we are aware that the high level of sector aggregation applied in the present empirical application could also interfere.

For services the designed spatial autocorrelation effect is, like in other empirical studies (e.g. Van Stel and Storey, 2004; Fritsch and Mueller, 2004; Van Stel and Suddle, 2006) significant. However, size and significance diminishes when we include time dummies in the regression model III to account for business cycle effects. This suggests that the designed spatial autocorrelation effect may unintentionally pick up some temporal autocorrelation as a result of business cycles. Therefore, one has to be cautious in interpreting the spatial autocorrelation as genuine regional spillover effects[10]. Summarising, our results suggest that in services both components of firm turbulence (i.e. entry and exit) positively influences TFP while controlling for the effects of economies of scale, market power and business cycles effects. Our analyses suggest that entrepreneurship (entry) and turbulence are important drivers of productivity in the service sector, but not in manufacturing for the Netherlands[11].

INSERT TABLES 2+3 ABOUT HERE

Turbulence and employment growth

Table 3 and 4 show the impact of creative destruction on employment growth in respectively manufacturing and services. Firm dynamics are lagged with 4 years. Wage growth is also lagged and set to the wage growth between t=t-4 and t-2. Again the results presented seem to underline the importance of controlling for business cycle effects in manufacturing and services. Contrary to our results on TFP growth, it is seen that firm gross entry and turbulence enhance employment growth in manufacturing but not so in services. This is in accordance with Van Stel and Suddle

[9] This highly connects to the two Schumpeter regimes (Schumpeter 1934, 1942) where manufacturing resembles Schumpeter II (routinized regime) and services resemble Schumpeter I (entrepreneurial regime), although the unit of analysis is quite different from Schumpeter's ideas.

[10] We have chosen to present a conservative measurement of business cycle effects in this paper; if we include time dummies, the coefficient measuring the designed spatial autocorrelation effect turns out to be insignificant in most regressions. Moreover, the size of the coefficient for entry decreases when year dummies are added, suggesting that not accounting for business cycle effects may result in overestimating the impact of firm dynamics on productivity.

[11] See Braunerhjelm and Borgman (2004) for a similar finding on the effect of entrepreneurship on labour productivity.

(2006) who also find the largest effects in manufacturing using a similar model[12]. Interestingly, exit does not appear to induce employment growth. These findings support Eliason's view that it is entry that triggers economic growth when measured by employment growth. It should also be stressed that employment growth does not include the number of self-employed, which may partly explain the lack of evidence for positive effects of firm dynamics in services. The increasing trend of choosing for self-employment status over employment-status while doing the same job has affected services considerably in the Netherlands.

INSERT TABLES 4+5 ABOUT HERE

Summarizing, the analyses on TFP and employment growth show that entry and exit positively affect regional competitiveness as measured by productivity in the services sector, but not in manufacturing. In manufacturing the most spectacular improvements in TFP revealed to go hand in hand with severe decline in employment, and thus indicating socially unwanted labour shedding processes. In this sector, firm dynamics has a positive impact on employment growth. The business cycle effect seems to be of some importance in explaining regional competitiveness. It only slightly impacts the effects of firm dynamics (especially in employment growth) but it seriously impacts the designed effects for spatial autocorrelation.

CONCLUSION

This paper has investigated the effects of entry and exit on regional competitiveness. The key question of this study was: To what extent do firm entry and exit affect the competitiveness of regions? We found that especially in services firm entry has an important effect on competitiveness as measured by TFP growth. In manufacturing, the effect of firm dynamics on total factor productivity seems negligible in our sample for the Netherlands, with the exception of the effect of entry and turbulence on employment growth. In our study the signs of positive influence of firm turbulence on economic growth appear to be highly contingent on the measures of competitiveness

[12] The main differences being that employment growth is not measured in logarithm, entry rates are scaled on employment rather than the stock of businesses and estimations are based on non-overlapping periods of 3 years. Also, construction is estimated separately from manufacturing in their analysis.

and on the type of sector. In addition, we found that the business cycle affects competitiveness more strongly than “creative destruction” in our analyses for the Netherlands. We did not find evidence for the presence of negative effects of firm turbulence in the Netherlands. So stimulating firm entry and not interfering in the selection process seem to be reasonable policy measures in order to improve the competitiveness of regions. Policy that is oriented towards saving firms from exit might not be productive for stimulating regional competitiveness.

We believe this paper’s effort leads to some challenging areas of future research. Due to data limitations there are some obvious drawbacks to our study. Apart from replicating the study to other geographic areas, improvements can be made in the following directions: (i) studying the effects of direct measures of innovative entry versus those of non-innovative entry, (ii) measuring the effect of improved incumbents on competitiveness and (iii) similar analysis of more disaggregated industries.

We could not directly trace whether productivity growth is helped with the entry of new efficient firms and the exit of old less inefficient ones. This would require microdata (Baldwin 2006; Haskel and Khawaja 2003) that makes it possible to track firms over time and calculate their productivity. One can then separate productivity growth into two effects. The first is the part of productivity growth due to productivity growth in incumbents that remain throughout the period. The second is the part of productivity growth due to the entry of new firms and closure of old ones. If entrants are above average productivity this raises productivity growth, and of course if firms that exit are below average productivity this also raises productivity growth. The micro-level approach applied in e.g. Baldwin et al. (2006) might therefore lead to additional valuable information. However the micro-level approach does not measure the impact new entrants have on the performance of incumbents. On aggregate a sizable wave of new entrants could, in their first years of existence, not be very efficient in terms of their own productivity but it could put pressure on the incumbents to keep improving on productivity. The regional approach adopted in this paper does acknowledge this possible effect – however without being able to specify its size. To estimate these effects is perhaps the most interesting challenge for future research in this area.

REFERENCES

Acs, Z. J. and C. Armington (2004) Employment Growth and Entrepreneurial Activity in Cities, *Regional Studies* **38**, 911-927.

Acs, Z.J., Audretsch, D.B, Braunerhjelm, P. and Carlson, B., Growth and Entrepreneurship: An Empirial Assessment, *Discussion Papers on Entrepreneurship, Growth and Public Policy* 2005-32., Max Planck Institute of Economics, Jena.

Alchian, A.A. (1950) Uncertainty, Evolution, and Economic Theory. *Journal of Political Economy* **58**, pp. 211-221.

Audretsch, D.B., and M. Fritsch (1996). Creative destruction: Turbulence and economic growth. In: Helmstäter, E. & Perlman, M. (Eds.), *Behavioral Norms, Technological Progress, and Economic Dynamics: Studies in Schumpeterian Economics* (pp. 137-150). Ann Arbor, MI: University of Michigan Press

Audretsch, D.B. and M. Fritsch (2002), Growth regimes over time and space, *Regional Studies* **36**, 113-124.

Audretsch, D.B. and M. Keilbach (2004) Entrepreneurship Capital and Economic Performance. *Regional Studies* **38,** 949-959.

Audretsch, D., Keilbach, M. and Lehmann, E. (2006). *Entrepreneurship and Economic Growth*. New York: Oxford University Press.

Baily, M.N., Alok K. Chakrabarti (1985) Innovation and Productivity in U.S. Industry *Brookings Papers on Economic Activity* **2**, 609-639

Baily, M.N., Charles Hulten and David Campbell, 1992, “Productivity Dynamics in Manufacturing Plants,” *Brookings Papers on Economic Activity: Microeconomics*, 187-267.

Baldwin, J.R and W. Gu, Plant turnover and productivity growth in Canadian manufacturing, *Industrial and Corporate Change* **15** (3), pp. 417–465.

Baptista, R., Escária, V. and Madruga, P. (2005): “Entrepreneurship, Regional Development and Job Creation: the case of Portugal”, *Discussion Papers on Entrepreneurship, Growth and Public Policy* #0605-2005, Max Planck Institute for Research into Economic Systems, Jena.

Bartelsman, E.J. and Doms, M. (2000) Understanding Productivity: Lessons from longitudinal microdata. *Journal of Economic Literature* 38: 569-594.

Bosma, N. & H. Nieuwenhuijsen (2002) *Turbulence and productivity; An analysis of 40 Dutch Regions in the Period 1988-1996*. EIM Scales Paper N200205, EIM: Zoetermeer.

Bosma, N.S., G. de Wit and M.A. Carree, 2005, "Modelling Entrepreneurship: Unifying The Equilibrium and Entry/Exit Approach", *Small Business Economics*, **25**, 35-48

Braunerhjelm, P. and Borgman, B (2004) Geographical concentration, entrepreneurship and regional growth: Evidence from regional data in Sweden, 1975-99. *Regional Studies* **38,** 929-947.

Breschi, S. and F. Lissoni (2003), Mobility and Social Networks: Localised Knowledge Spillovers Revisited, *CESPRI Working Papers* 142, CESPRI, Centre for Research on Innovation and Internationalisation, Universita' Bocconi, Milano, Italy.

Callejón, M. and A. Segarra (1999), Business Dynamics and Efficiency in Industries and Regions: The Case of Spain, *Small Business Economics* **13**, 253-271.

Carlin, W., Haskel, J. and Seabright, P. (2001) Understanding 'the essential fact about capitalism': Markets, competition and creative destruction. *National Institute Economic Review*, 175: 67-84.

Carree, M.A. and J. Nijkamp, Deregulation in retailing: the Dutch experience, *Journal of Economics and Business* **53**, 225–235.

Carree, M.A. & A.R. Thurik (2003) The impact of entrepreneurship on economic growth. Chapter 17 in Acs, Z. & D.B. Audretsch (eds) *Handbook of Entrepreneurship Research*. Dordrecht: Kluwer. pp. 437-472.

Caves, R. (1998), Industrial Organization and New Findings on the Turnover and Mobility of Firms, *Journal of Economic Literature* **36,** 1947-1982.

Davidsson, P., Lindmark, L. and Olofsson, C. (1994) New firm formation and regional development in Sweden. *Regional Studies* **28,** 395-410.

Dekle, R. (2002), Industrial Concentration and Regional Growth: Evidence From the Prefectures, *The Review of Economics and Statistics* **84,** 310-315.

Eliasson, G. (1996) *Firm Objectives, Controls and Organization*. Dordrecht: Kluwer Academic Publishers.

Eliasson, G. (2003), Global Economic Integration and Regional Attractors of Competence, Industry and Innovation **10**, 75–102.

Ericson, R. and A. Pakes, 1995, 'Markov-Perfect Industry Dynamics: A Framework for Empirical Work', *Review of Economic Studies* **62**, 53-82.

Frenken, K., Van Oort, Verburg, T. (2007). Related variety, unrelated variety and regional economic growth, *Regional Studies*, forthcoming.

Fritsch, M. (1997): New firms and regional employment change, *Small Business Economics* **9**: 437-448.

Fritsch, M., and P. Mueller (2004), The Effects of New Business Formation on Regional Development over Time, *Regional Studies* **38**, 961-975.

Fritsch, M. (2006), Introduction: The Effects of New Businesses on Economic Development in the Short, Medium and Long Run, *Small Business Economics* (forthcoming).

Fritsch, M. and J. Schmude (2006), 'Entrepreneurship in the Region', *International Studies in Entrepreneurship* **14**, New York: Springer Science.

Garofoli, G. (1994) New firm formation and regional development: the Italian case, Regional Studies 28, 381-394.

Geroski, Paul A. 1989, "Entry, Innovation and Productivity Growth," *Review of Economics and Statistics* **71**, 572-578.

Gowdy, J.M. (1992), Higher Selection Processes in Evolutionary Economic Change, *Journal of Evolutionary Economics* **2**, 1-16.

Hall, R. E., 1986, 'Market Structure and Macroeconomic Fluctuations', Brookings Papers on Economic Activity **2**, 285–322.

Jaffe, A.B, M. Trajtenberg, and R. Henderson (1993), Geographic Localization of Knowledge Spillovers as Evidenced by Patent Citations, *The Quarterly Journal of Economics* **108**, 577-98.

Jovanovic, B., 1982, 'Selection and the Evolution of Industry', *Econometrica* **50**, 649-670.

Kitson, M., Martin, R. and Tyler, P. (2004) Regional Competitiveness: An elusive yet key concept? *Regional Studies* **38,** 991-999.

Kleinknecht, A. & T. Poot (1992) Do regions matter for R&D. Regional Studies, 26, 221-232.

Krugman, P. (1991), Increasing Returns and Economic Geography, *Journal of Political Economy* **99**, 483-99.

Liu, L. (1993) Entry-exit, learning, and productivity change Evidence from Chile *Journal of Development Economics* **42**.2, 217-242

O'Mahoney, M. and B. van Ark, eds. (2003), *EU Productivity and competitiveness: An Industry Perspective. Can Europe Resume the Catching-up Process?*, prepared for the EU Enterprise Directorate General.

Metcalfe, J.S. (2002) Knowledge of growth and growth of knowledge. *Journal of Evolutionary Economics* **12**: 3-15.

Van Oort, F., Agglomeration, economic growth and innovation; *Spatial analysis of growth- and R&D externalities in the Netherlands*, PhD. Thesis, Tinbergen Institute, Erasmus University Rotterdam.

Pakes, A. and R. Ericson, 1998, 'Empirical Implications of Alternative Models of Firm Dynamics', *Journal of Economic Theory* **79**, 1-45.

Porter, M.E. (1990), *The Competitive Advantage of Nations*, New York: The Free Press.

Reynolds, P.D. (1999), Creative destruction: source or symptom of economic growth?, in Z.J. Acs, B. Carlsson and C. Karlsson (eds.), *Entrepreneurship, small and medium-sized enterprises and the macroeconomy, Cambridge*, Cambridge University Press, 97-136.

Schumpeter, J.A. (1934). *The Theory of Economic Development*. Cambridge Mass: Harvard University Press.

Schumpeter, J.A. (1942). *Capitalism, Socialism and Democracy*. New York, N.Y. : Harper and Row.

Van Stel, A.J. and H.R. Nieuwenhuijsen (2004), Knowledge Spillovers and Economic Growth: An Analysis Using Data of Dutch Regions in the Period 1987-1995, *Regional Studies* **38**, 393-407.

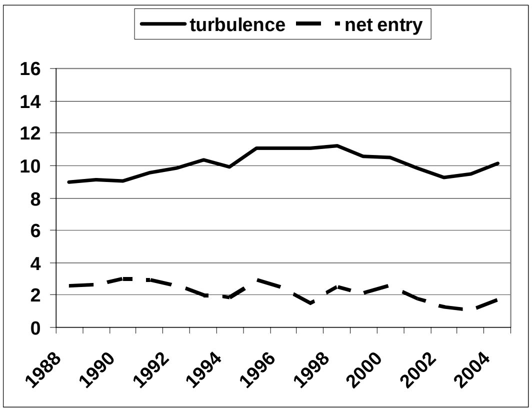
Van Stel, A.J. and D.J. Storey (2004), The Link Between Firm Births and Job Creation: Is there a Upas Tree Effect?, *Regional Studies* **38**, 893-909.

Van Stel, A.J. and K. Suddle (2006). The impact of new firm formation on regional development in the Netherlands. *EIM Research Report, H200604*, Zoetermeer: EIM.

Wennekers, S. & R. Thurik (1999), Linking entrepreneurship and economic growth. *Small Business Economics* **13,** 27-55.

Figure 1 Turbulence and net entry rates over time, averages over Dutch regions, 1988-2004

Manufacturing (35 regions)



Services (40 regions)

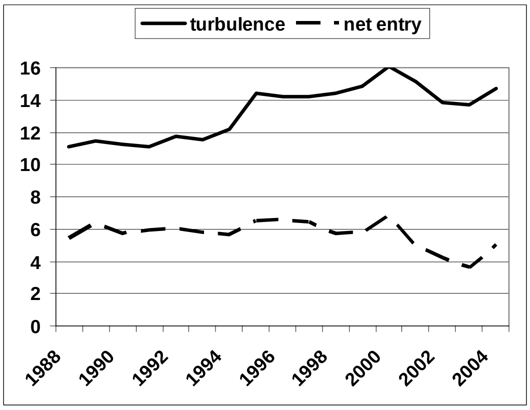
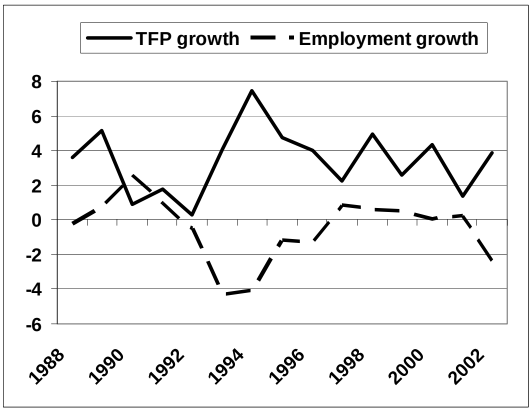


Figure 2 TFP and employment growth over time, averages over Dutch regions, 1988-2002

Manufacturing (35 regions)



Services (40 regions)

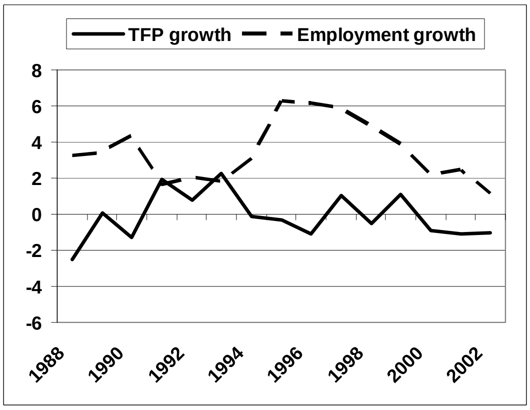


Figure 3

Related variety by Corop regions in the Netherlands, in quartiles	Population density by Corop regions in the Netherlands, in quartiles
	

Table 1. Proposed effects of entry and exit on employment growth and productivity growth

	Nature of entrants and exits		Effect on competitiveness	
			Employment growth	Productivity growth
Creative destruction / entrepreneurial regime	Innovative entrants	Inert obsolete incumbents	0	+
Revolving door	Non-innovative entrants	Inefficient recent entrants	0	0
Creative construction	Innovative entrants	0	+	+

Table 2. Regression results for TFP growth in manufacturing.

	I		II		III		IV		V	
Constant	0.04	**	-0.04		-0.01		-0.01		-0.03	
TFP (t-1)	-0.11	**	-0.14	**	-0.15	**	-0.15	**	-0.16	**
Entry (t-2)			0.04		-0.02					
Turbulence (t-2)							-0.04			
Exit (t)									0.04	
R&D			-0.08		-0.07		-0.08		-0.08	
Related variety			0.09	**	0.07	**	0.07	**	0.09	**
Population density			-0.01		-0.00		-0.00		-0.00	
Economies of scale (γ)	0.69	**	0.70	**	0.79	*	0.79	*	0.83	
Degree of market power (μ)	1.20		1.16		1.44	**	1.45	**	1.48	**
Spatial auto-correlation	0.28	**	0.29	**	-0.02		-0.02		0.05	
Year dummies					yes		yes		yes	
Number of obs.	459		459		459		459		459	
F statistic	9.80		5.99		5.55		5.56		6.53	
Adj. R2	0.08		0.08		0.16		0.16		0.18	

- p< .10, ** p< .05; for γ and μ the null hypothesis is γ=1 and μ=1

Table 3. Regression results for TFP growth in services.

	I		II		III		IV		V	
Constant	0.03	**	0.00		-0.02	**	-0.02	**	-0.01	
TFP (t-1)	-0.10	**	-0.11	**	-0.09	**	-0.09	**	-0.09	**
Entry (t-2)			0.17	**	0.20	**				
Turbulence (t-2)							0.14	**		
Exit (t)									0.25	**
R&D			-0.01		0.01		0.01		0.01	
Related variety			0.02		0.02	*	0.02	**	0.03	**
Population density			-0.01	**	-0.01	**	-0.01	**	-0.01	*
Economies of scale (γ)	0.53	**	0.49	**	0.53	**	0.53	**	0.55	**
Degree of market power (μ)	1.29	**	1.29	**	1.29	**	1.29	**	1.29	**
Spatial auto-correlation	0.62	**	0.65	**	-0.06		-0.07		-0.10	
Year dummies					yes		yes		Yes	
Number of obs.	459		459		459		459		459	
F statistic	107.9		59.0		36.1		35.8		35.8	
Adj. R2	0.48		0.50		0.59		0.59		0.59	

- p< .10, ** p< .05; for γ and μ the null hypothesis is γ=1 and μ=1

Table 4 Regression results for employment growth in manufacturing.

	I		III		III		IV		V	
Constant	-0.01	**	-0.07	**	-0.05	**	-0.04	**	-0.04	**
Empl growth (t-1)	0.17	**	0.11	**	0.05		0.07		0.09	*
Entry (t-4)			0.32	**	0.30	**				
Turbulence (t-4)							0.09	**		
Exit (t)									-0.01	
R&D			0.03		0.02		0.01		-0.01	
Related variety			0.05	**	0.05	**	0.06	**	0.06	**
Population density			-0.04	**	-0.04	**	-0.04	**	-0.03	**
Change in wage rate, average (t-4/t-2)	0.05		0.32		0.34		0.36		0.12	
Spatial auto-correlation	0.57	**	0.57	**	0.07		0.05		0.07	
Year dummies					yes		yes		Yes	
Number of obs.	389		389		389		389		389	
F statistic	29.13		16.13		11.63		11.31		10.67	
Adj. R2	0.18		0.21		0.30		0.30		0.28	

* p< .10, ** p< .05

Table 5 Regression results for employment growth in services.

	I		III		III		IV		V	
Constant	0.03	**	-0.02		-0.01		-0.00		-0.01	
Empl growth (t-1)	0.08	*	0.08	*	-0.07		-0.07		-0.07	
Entry (t-4)			-0.20	**	0.01					
Turbulence (t-4)							0.02			
Exit (t)									0.15	
R&D			0.11	**	0.10	**	0.10	**	0.10	**
Related variety			0.07	**	0.06	**	0.06	**	0.09	**
Population density			-0.02	**	-0.02	**	-0.02	**	-0.02	**
Change in wage rate, average (t-4/t-2)	-0.26		-0.31		0.31		0.32		0.37	
Spatial auto-correlation	0.67	**	0.63	**	0.27	**	0.26	**	0.26	**
Year dummies					yes		yes		Yes	
Number of obs.	389		389		389		389		389	
F statistic	41.51		17.57		12.49		12.50		12.35	
Adj. R2	0.24		0.24		0.32		0.32		0.33	

* p< .10, ** p< .05

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