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de Jong, Gjalt; van Witteloostuijn, Arjen

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REGULATORY RED TAPE AND PRIVATE FIRM PERFORMANCE

GJALT DE JONG AND ARJEN VAN WITTELOOSTUIJN

Regulation may obstruct dynamic adaptation, innovative power, and entrepreneurial activity. On the other hand, regulation could be interpreted as a phenomenon which society just has to learn to live with, and which otherwise does no real economic harm. This article explores both of these hypotheses. We study the impact of three dimensions of regulatory red tape on the performance of private companies: regulation cost, regulation change, and regulation inconsistency. We analyse unique survey data from 530 Dutch private companies. The results show that regulation cost, inconsistency, and change limit sales turnover growth, and that regulation change hampers market competition performance.

INTRODUCTION

Regulation can have a positive or negative effect on private firm performance (Bozeman 2000; OECD 2010). The positive performance impact of regulation may run through increased action capability and organizational efficiency. Furthermore, private incumbent firms may benefit from regulation that restricts competition. Similarly, due to regulation, private firms may gain access to markets that previously were only open to government organizations. Many private firms, however, predominantly complain about the negative effects of regulation. For example, firms often argue that they need to comply with more and more rules that are frequently changed, and that increasingly require inside and outside legal expertise in order to understand the complex requirements and their implications for a firm's business practices, processes, and strategies.

The consequences of regulation are attracting increasing attention in Western democracies. The commonly held view that regulation constrains entrepreneurship and limits welfare (Djankov *et al.* 2008) induced policy-makers to review their regulatory practices and regulation stocks. Today, a reduction in regulatory requirements is on the policy agenda in almost all European countries and international organizations, which is exemplified by the growth of so-called 'better-regulation programmes' (Dunleavy 1986). The case of the Netherlands, our research context, is illustrative, which is often portrayed as a leading nation in this area of better-regulation policies (Linschoten *et al.* 2009).

In economics, Stigler (1971) was among the first to study the costs and benefits of regulation. Economists acknowledge that regulation is a means by which governments can achieve social benefits that are not directly related to private firms. For example, governments impose regulation to protect employee health and safety, to stimulate competition, or to guarantee access to public goods such as education and health services. This aligns well with Bozeman's (2000) theory of red tape. Most regulation starts out with some implied causal purpose that for someone things will be made better. These potentially positive effects, along with distribution of wealth concerns, are a legitimate basis for regulation irrespective of whether or not regulation makes firms less effective overall. We study the latter dimensions of regulation.

Gjalt de Jong is in the Faculty of Economics and Business, University of Groningen, The Netherlands. Arjen van Witteeloostuijn is in the Department of Organization and Strategy, University of Tilburg, The Netherlands.

Regulation studies in economics often apply indicators constructed by the OECD or World Bank, typically studying country- or industry-level phenomena. Djankov *et al.* (2008), for example, suggest that the growth of per capita GDP is negatively correlated with an aggregate index of business regulations in areas such as starting a business and getting bank credits, and Alesina *et al.* (2005) find that regulatory reforms are associated with increased investments. However, an ongoing debate questions the usefulness of these indicators for policy design. Muhlerin (2007), for instance, concludes that the two leading regulatory models in economics (i.e. public and special interest theories) have contrasting underpinnings that complicate empirical research, next to and on top of issues related to confounding events and imprecision in data due to the lengthy and noisy nature of the regulatory process.

Our first contribution is that we complement these country- and industry-level studies with a firm-level analysis, using new perceptual measures from a sample of private firm managers. As convincingly argued in the business literature (Lang *et al.* 1997), managers of private firms form cognitive maps based on perceived information and events, which subsequently impact the firms' strategic decisions. Similarly, the importance of perceptions is emphasized in studies of red tape in public administration (Rainey *et al.* 1995), as well as in research on political processes (Yackee 2012). For instance, a large number of studies investigate managers' perceptions of red tape, and how these perceptions are related to organizational commitment, job satisfaction, public service motivation, and performance (Feeney 2008; Bozeman and Feeney 2011), building on the National Administrative Studies Projects (NASP) in the USA.

The value of reliance on perceptions for studying red tape is highlighted in recent work by Moynihan *et al.* (2012). The crux of their argument is that perceptions of red tape make a difference because 'the experience and effects of red tape may be somewhat mutable ... Even if the rules that give rise to red tape cannot be changed, managerial actions can alter the organizational context in ways that change how employees experience red tape, and how they subsequently respond' (Moynihan *et al.* 2012, p. 316). Although private firms are included in the NASP projects, the majority of the NASP respondents work in public organizations. We complement this literature by focusing on private firms in a country other than the USA.

Our second contribution concerns the conceptualization and measurement of regulation. Most regulation research in public administration relies on the conceptualization introduced by Bozeman (2000), defining red tape as 'rules, regulations, and procedures that remain in force and entail a compliance burden but do not serve the legitimate purposes the rules were intended to serve' (p. 12). Hence, red tape is negative by definition, which is directly reflected in the measures of red tape (DeHart-Davis and Pandey 2005). This approach is increasingly challenged in methodological debates within the red tape research community (Bozeman and Feeney 2011). Our study complements red tape analyses of organizational performance not only by using another source of regulation (that is, rules issued by governments rather than by organizations themselves), but also by applying regression analysis to estimate the effects of a neutral and multi-dimensional conception of regulation on performance.

In order to achieve this, we (a) differentiate between regulation cost, change, and inconsistency, and (b) use separate measures of these dimensions and firm performance. With recent work in public administration research (e.g. Moynihan *et al.* 2012), we share the view that perceptions of red tape matter. We focus on red tape that may originate in three aspects of external regulation: perceived red tape due to the cost of regulation,

inconsistent regulation, and change in regulation. We transfer perception-based red tape concepts from studies of public organizations to the study of regulation of private organizations. Additionally, with this refined conceptualization, we intend to move beyond simple cost-benefit analyses that dominate in economics, as each of these aspects of regulation may have a separate effect on different aspects of private firm performance.

Our third contribution concerns the empirical study. To the best of our knowledge, firm-level studies on the consequences of regulation for private firm performance are few and far between, and the available firm-level studies offer mixed evidence at best. Athayde *et al.* (2008), for instance, suggest that the actual impact of regulation on firm performance is minimal, whereas Carter *et al.* (2006) report evidence for negative effects. Carter *et al.*'s study primarily obtains conclusions from directly asking respondents about the impact of regulation on their firms' innovativeness or productivity, raising methodological concerns similar to those related to red tape research. With the firm as the unit of analysis and starting from the notion that perceptions of red tape are key, we developed and implemented a business survey that offers the opportunity to formally test whether or not perceived red tape due to regulation cost, change, or inconsistency has a significant relationship with private firm performance.

THEORY

The identification of fundamental antecedents of regulation has been addressed at length in public policy research (March *et al.* 2000; van Witteloostuijn and de Jong 2010). The next step is to assess the consequences of regulation. Today, a variety of instruments, such as regulatory impact assessments and cost-benefit or cost-effectiveness analyses, are used to assess the effects of regulation (Helm 2006). We review insights from studies of red tape in public administration and public policy. Both adopt the organization as the unit of analysis: the former focus on government organizations, while the latter concentrate on private companies.

Red tape research

Research on red tape in public administration started in the 1970s with the seminal publication of Kaufman (1977), and gained momentum in the 1980s (e.g. Rosenfeld 1984; Wilson 1989). Rosenfeld (1984) offered one of the first definitions of red tape as 'guidelines, procedures, forms, and government interventions that are perceived as excessive, unwieldy, or pointless in relationship to decision making or implementation of decisions' (p. 603). The work of the first red tape researchers has been criticized for its conceptual ambiguity – in particular, the lack of an appropriate definition of red tape. Bozeman (2000) argues that Rosenfeld's definition does not distinguish between good and bad rules, and therefore fails to clearly define red tape as a negative phenomenon. Bozeman (2000) defines red tape as rules, regulations, and procedures that remain in force, but entail a compliance burden for the organization without having efficacy for the rules' functional object. Bozeman later revised his definition to link red tape specifically to performance rather than the rule's functional object, arguing that red tape essentially involves burdensome administrative rules and procedures that have negative effects on the organization's performance.

Public administration research in the 1990s and 2000s has made substantial progress in advancing our knowledge of red tape, with the number of empirical administrative red tape studies in public administration mushrooming (Rainey *et al.* 1995; Coursey and Pandey 2007). These empirical studies triggered a need to further refine Bozeman's definition in order to make the concept applicable in empirical research. Pandey and colleagues

defined red tape as ‘impressions on the part of managers that formalization (in the form of burdensome rules and regulations) is detrimental to the organization’ (Pandey and Kingsley 2000, p. 782). This implies that perceptions of respondents take centre stage in red tape research.

Evidence suggests that public sector managers perceive significantly more red tape than those in private and non-profit sectors (Rainey *et al.* 1995; Feeney and Bozeman 2009), as well as that red tape is related to work alienation, job tenure, and job satisfaction (Pandey and Kingsley 2000; De-Hart Davis and Pandey 2005), and hierarchical position (Brewer and Walker 2010). Red tape can mean different things to different managers, which may hamper construct validity. For that reason, the empirical studies focus on either organizational red tape in the organization at large or domain-specific red tape regarding functional policies such as HRM. While researchers have developed a variety of survey items to capture different types of red tape, they often use the following item as a global measure of organizational red tape: ‘If red tape is defined as “burdensome rules and procedures that have negative effects on the organization’s effectiveness”, how would you assess the level of red tape in your organization?’

Despite all achievements, red tape scholars notice a need to re-conceptualize the definition of red tape to enable researchers and respondents to better understand when a rule is red tape and when it is not (Bozeman and Feeney 2011). Because red tape often has an explicit negative connotation – substituting for all negative aspects of bureaucracy – the way the red tape question is worded may well trigger an overall negative response. For that reason, we will seek not only to develop and apply a neutral conception of regulation, one without any reference to its performance effect in the definition and measure, but also to distinguish different dimensions and measures of regulation that might differ in their effect on firm performance.

Business impact studies

Our work relates to studies that aim to quantify the costs of regulation for organizations or nation-states (OECD 2010). A few of these studies estimate the costs of regulatory burden for European countries to be 3–4 per cent of GDP, on average. Additionally, these studies reveal significant differences between sectors and across countries. Some of the international variety is due to differences in definitions of regulation costs, sample sizes, and estimation techniques. Country-level estimates of regulation costs are typically obtained by multiplying a weighted sample average by the total number of companies in a sector and country. This approach is sensitive to characteristics of the sample and the structure of the economy (Helm 2006). By and large, however, this line of research offers two insights.

A first insight is associated with the classification and definition of costs due to regulation. Business impact studies identify different types of costs. The costs for developing, administering, and enforcing regulations are absorbed by the public sector, and are labelled administrative costs. The private sector bears the costs of complying with regulation. The costs of regulation to businesses include direct financial, compliance, and long-term structural costs. Moreover, regulation may involve capital costs (when investments in, for example, ICT systems are needed to comply with regulations), opportunity costs (in terms of time and money spent on meeting regulations, which hence are not available for performance-enhancing activities such as innovation), and psychological costs (of frustration due to regulatory requirements). Business impact studies focus on administrative compliance costs, measuring these costs *ex post* and ‘net’ of potential benefits that

regulation may bring to the company. Private companies – irrespective of their size, sector, or legal identity – will always collect information for day-to-day management purposes. For that reason, self-imposed administrative costs are a natural element of business life. Business impact studies highlight the importance of costs that derive from regulation on top of and above the company's own administrative costs.

A second insight concerns the measure of regulation costs. Two different methods dominate in business impact studies. A first approach applies (a variation of) the Standard Cost Model (SCM). The main idea is to start from single information costs included in regulation, and to subsequently calculate the time (and hence costs) of work needed to comply with this obligation. The total costs calculated for each single information obligation of a regulation are regarded as the quantification of the administrative costs of this regulation. The sum of the costs of all regulations is considered to be the overall burden placed by regulation on businesses within a particular domain. The calculation of these costs is based on interviews or actual time measurement (Helm 2006).

A second approach starts from the assumption that companies do not and cannot administer in detail the costs of regulation, as is required in SCM methods (Godwin and Lawson 2009). These studies are applied to different rule domains, but research on tax compliance cost dominates (Evans 2003). It is difficult for firms to disentangle regular administrative activities from those that are specifically carried out for regulation purposes. Therefore, these studies advocate the use of predefined scales (response categories) linked to questions that are intended to measure regulation costs. This line of research provides evidence that perceived regulation costs correlate strongly with actual regulation costs.

From the empirical evidence, we know that, contrary to conventional wisdom, respondents generally report lower regulation costs than non-respondents (Allers 1994). It is sometimes suggested that business surveys are inadequate to measure regulation costs because respondents may show strategic behaviour, and hence may have an inclination to exaggerate regulation costs for 'political' purposes in an attempt to push policy-makers towards reducing regulation costs. A counterargument suggests that respondents may already have a general feeling that they are unreasonably burdened by regulation costs. This makes exaggerations unnecessary (Allers 1994).

Hypotheses

Regulation cost concerns the time and costs entailed in complying with regulation in order to deliver all the legally required information to international, national, or local government agencies. This includes all actions taken by companies to ensure compliance with formal legal requirements for licences, monitoring, subsidies, safety, etc. Although positive effects of regulation cost may exist – for example, because legal requirements cause companies to learn about their administrative organization and improve their efficiency – there are convincing reasons why regulation costs are likely to be an impediment to the performance of companies.

First, regulation cost may be associated with crowding out effects and opportunity costs. Such costs create disincentives for investment in innovation, which limits the potential scale and scope economies as financial and human resources are misallocated and wasted. Second, companies may not have control over the size of the cost of regulation, as regulation cost may be subject to an ecological upward dynamic (van Witteloostuijn and de Jong 2010): regulation cost today breeds extra regulation cost tomorrow. Companies that need to comply with regulation are more likely to be under bureaucratic control, and are therefore more exposed to legal requirements. Once a company is in the legal system, the demand

for additional requirements is boosted as officials are obliged to impose more regulation upon businesses, being aware of the potential to regulate. Third, findings in public administration reveal that perceptions of red tape dampen risk-taking among city-level public managers (Feeney and DeHart-Davis 2009) and negatively affect organizational commitment and job satisfaction in public organizations (DeHart-Davis and Pandey 2005), and that burdensome rules lower individual and organizational performance in government (Brewer and Walker 2010).

Hypothesis 1 (regulation cost): Regulation cost is negatively associated with private firm performance.

Many governments aim to increase *regulation consistency* by improving regulatory design and implementation from the perspective that such consistency aligns with legal certainty, policy effectiveness, and compliance (Rodrigo *et al.* 2009). Recent studies reveal a direct positive relationship between perceptions of regulation consistency and trade, per capita income, foreign direct investments, and economic growth (Bertelli and Whitford 2009). Regulation consistency is a somewhat elusive concept, and is defined in a variety of ways across studies. Radaelli (2010) suggests that these definitions share the notion that efficient, effective, coherent, and simple regulation is high-consistent regulation.

Low regulation consistency is a source of lower performance for companies that have to comply with this regulation. Government officials put regulation on paper. The literature review already revealed that, by its very nature, written text is a source of ambiguity – a conclusion that is grounded in the contract literature (Lyons and Mehta 1997) and transaction cost economics (Williamson 1985). Complex formal contracts or contracts with many clauses that are strictly specified allow for mitigating the risk of opportunistic behaviour. This line of work emphasizes contract incompleteness. A complete formal contract is extensive, with all necessary aspects covered, and specific, with clauses formulated such that they are verifiable and enforceable. Additionally, the legal enforceability of contracts depends on the consistency in the terms of the contract and the specificity of the contractual clauses. Transaction cost economics acknowledges that, due to the cognitive limitations of human beings, complete contracts cannot be written.

Nonetheless, businesses are expected to use extensive contracts to mitigate moral hazard, particularly in the context of great uncertainty and asset specificity. In a similar vein, the government applies regulation to enforce behaviour, and to mitigate contemporaneous and future risks. The government considers regulation to be a necessary instrument to control firm behaviour, but its effectiveness depends on regulation consistency. Some regulations are consistent – that is, they are transparent and easy to interpret by companies; others are inconsistent, requiring much paperwork and including conflicting requirements.

Hypothesis 2 (regulation inconsistency): Low regulation consistency is negatively associated with private firm performance.¹

Finally, we address *regulation change*, which is a key feature of legal systems in many nation-states (van Witteloostuijn and de Jong 2008). In the life cycle of national rules – births, changes, and repeals – changes are among the most important events. Rule changes tend to transform rule systems incrementally, in a gradual and persistent way. Rule changes are more common than other rule events. One reason for this is that policy-makers often take incremental decisions. They do so not only because there are few opportunities to do otherwise, but also because legislation is often the result of a social

interaction process involving negotiations and compromises between policy-makers and stakeholders.

The more frequently regulation changes, the more often companies need to adapt to new circumstances. Firms have to learn about new legal requirements, and new information systems must be developed or existing information systems have to be adjusted accordingly. The more frequently regulation is changed, (i) the higher the resulting costs, (ii) the more the flexibility with which a company can operate will be reduced, and (iii) the more managerial attention is diverted away from other strategic decisions that would foster firm performance.

Hypothesis 3 (regulation change): Regulation change is negatively associated with private firm performance.

METHODOLOGY

Research context, design, and sample

Among the advanced nation-states, the Netherlands is one of the most heavily regulated economies. Furthermore, the Netherlands is often portrayed as a leading country in the area of better-regulation policies (OECD 2010). The Dutch example is highlighted because of explicit policy targets (a 25 per cent reduction in administrative costs for firms in 2012), methods to measure administrative costs (SCM), and an institutional infrastructure that includes interdepartmental taskforces and the independent advisory board Actal. Ministries need agreement from Actal for the introduction of new regulations. For this, they have to perform and report regulatory impact assessments. For both reasons, the Netherlands offers a very suitable research context for what we try to do here.

We used a questionnaire that provides insight into managerial perceptions of different dimensions of regulation as well as organizational characteristics, context, performance, and strategies. In line with the common convention in public administration, regulation impact studies, business performance, and strategy research, we employ a convenience sampling approach that is appropriate for studies that primarily aim for hypothesis testing, focusing on small and medium-sized enterprises with 100 or fewer employees. A mail survey was implemented following well-documented response facilitation approaches (De Leeuw *et al.* 2008). We decided in favour of a mail rather than a web survey, anticipating negative experience with other survey methods for business research in general (Harzing 2000; Dennis 2003; Shih and Fan 2009) and those in the Netherlands in particular (Berkenbosch 2011). This experience indicates that many owners of small and medium-sized businesses are not web-enabled or are not willing to answer questionnaires via the internet – an issue that was also confirmed in the pilot-testing phase of our questionnaire. The mail method aligns with the results from a meta-analysis of Shih and Fan (2009), showing that the response rates of traditional mail questionnaires are superior to email surveys, regardless of other survey characteristics such as the use of reminders or incentives.

We aimed for personalization, a short and easy to understand questionnaire asking only for relevant information, appropriate business-like (black and white) layout and print, friendly presentation of the research, salience of the topic, feedback incentives, guaranteed anonymity of the results, university sponsorship, business-relevant support, stamped and university-addressed return envelopes, publicity for the research, pretesting and timing of the survey, and an integral follow-up. The study was framed in terms of the expected demographic changes in the country, inducing a need for more entrepreneurship and

public–private collaboration. It was presented as a joint effort between the local university, the chambers of commerce, and the leading employer associations.

The population of target firms is located in the three Northern provinces of the Netherlands: Friesland, Groningen, and Drenthe. From the databases of the chambers of commerce, we selected a random sample of 1,800 small and medium-sized companies (with 100 or fewer employees) stratified over the main industry sectors, as defined by the Dutch version of the UN Standard Industrial Classification (*'Standaard Bedrijfsindeling'*), covering all relevant economic activities in this region. For each of the target companies, we identified the director or senior manager directly responsible for leading the firm. We used this information to personalize the letter and questionnaire. The survey confirmed the accuracy of the database. Only 38 questionnaires were undeliverable, primarily due to relocation of the company or bankruptcy (2.1 per cent). After the two waves, accounting for occasional cases with missing values or outliers, 530 respondents had replied, yielding a 29.4 per cent response rate.

Of the respondents, 91.3 per cent confirmed that they were the owner or managing director of their company. In total, 28.2 per cent of the respondents had an intermediate vocational education degree, and 42.3 per cent had a polytechnic or university degree. A comparison of responding to non-responding firms indicated no significant differences as to firm size and sector. Additionally, we found no significant differences between early and late respondents on characteristics such as firm age, number of employees, and work experience of the respondent. Finally, we used Harman's (1967) single-factor test to assess whether or not our data may feature significant common variance (Podsakoff and Organ 1986). Unrotated factor analysis using the eigenvalue-greater-than-one criterion revealed ten factors, with the first factor explaining only 10 per cent of the variance in the data. A principal component analysis resulted in seven factors. So, in our case, it is unlikely that the findings can be attributed to common-method bias.

Performance

With privately owned firms, precise financial measures are frequently unavailable. Due to their size and legal status, many companies are not required to publicly or otherwise report financial data. Therefore, organizational performance studies increasingly rely on opinions of managers, following studies that revealed that the correlation between objective and subjective measures of performance tend to be high. Moreover, in the business literature, it has been argued that enterprises form their strategy and competitive maps on the basis of perceived information and events, making subjective performance assessments by key decision-makers essential (Lang *et al.* 1997). Both arguments imply that subjective perceptions are valid performance measures, being reliable and having material consequences.

We use two assessments of firm performance. The first indicator measures the firm's growth in sales turnover in the past two years on a 7-point scale. The respondents were asked: 'Did your sales turnover in the past two years ...' on a scale ranging from 1 = 'increase strongly (more than 10%)', 2 = 'increase moderately (5–10%)', 3 = 'increase a little (1–5%)', 4 = 'remain constant', to 7 = 'decreased strongly (more than 10%)'. The second indicator measures the firm's performance vis-à-vis its most important competitor on a 5-point scale. The respondents were asked: 'In comparison to your most important competitors, was the performance of your firm in the past two years ...' on a scale ranging from 1 = 'much better' to 5 = 'much worse'. We reverse-coded these items prior to entering them into the regression analysis.

Regulation

We measure *regulation cost* through the respondent's assessment of the firm's administrative burden. We provided the definition of administrative burden that is used in the SCM approach (OECD 2010) in the introductory paragraph of the questionnaire: 'The government (national, provincial and municipality) defines administrative burden as all time and costs for companies to comply with laws and regulations, and to provide all the information required by the government. This may include licences, control, governance, subsidies, safety on the shop floor and accountability information, but also requirements from Europe for the management of your business.' Note that this definition does *not* explicitly include a reference to tax payments. After providing the definition, we asked the respondent to quantify the administrative burden for their company using eight categories, ranging from 1 = 'less than 5000 euro' to 8 = 'more than 500,000 euro'.

We added two questions to measure *regulation inconsistency*. In developing this pair of items, we took into account studies examining business perceptions of regulation inconsistency (Rodrigo *et al.* 2009). Our items are designed to measure two key elements of regulation inconsistency by asking the respondents to evaluate the following two statements: 'The legislation of the government contains many inconsistencies', and 'The legislation of the government implies much unnecessary paperwork'. Each was measured on a 7-point scale, with categories ranging from 1 = 'strongly agree' to 7 = 'strongly disagree'. A factor analysis confirmed the uni-dimensionality of the two-item scale, with factor loadings for both items of 0.91. Cronbach's alpha of 0.80 is well above the threshold value of 0.70. We combined the two items into an overall index of regulation inconsistency.

Regulation change was measured through an item that asked the respondents to 'Assess the change in regulation compared to a year ago', with categories ranging from 1 = 'decreased', 2 = 'stayed about the same', to 3 = 'increased'. Note that, for the sake of symmetry, we reverse-coded the regulatory inconsistency and regulation change variables, in line with the prediction of a negative association with private firm performance.

Control variables

We include three sets of control variables. The first set concerns the context of the firms. We asked the respondents to indicate the most important branch or sector in which their company is active. We added four dummy variables to account for industry differences: manufacturing, construction, services, and transport, storage and communication (agriculture and other branches is the base case). The companies are located in municipalities with different local tax regimes. We measure the local tax regime by the property tax that companies are obliged to pay to local governments in their municipality. With this variable, we basically control for geographical heterogeneity.

The second set involves firm characteristics: the size, age, and strategy of the firm. Our sample includes firms with four main legal forms: limited liability companies, single proprietorships, partnerships, and foundations. It turns out that these different legal entities correlate strongly with our firm size measure. Limited liability companies are by definition larger than single proprietorships. We included firm size as control variable rather than the legal entity dummies because of its acknowledged importance in firm performance studies. Firm size was measured with the number of employees on a 7-point scale (ranging from 1 = '1–5 employees' to 6 = '51–100 employees'). The age of the company was calculated by subtracting the year the firm was founded from the current year.

Following Wijbenga and van Witteloostuijn (2007), we distinguish between an innovation and a cost-control strategy. An innovation strategy entails a firm's differentiation via (incremental) innovation, implying that a firm can command a premium price that exceeds the extra cost of the innovation (Miller 1988). We used one item to measure the innovation strategy of a firm by asking respondents to indicate, on a 5-point scale (from 1 = 'very important' to 5 = 'very unimportant'), the importance of frequent innovation of products or services. With a cost-control strategy a firm attempts to become a low-price producer in an industry, which requires much effort to control costs so that above-average returns can be obtained even with low prices (Miller 1988). We used one item to measure the cost-control strategy of a firm by asking respondents to assess, on a 5-point scale (from 1 = 'very important' to 5 = 'very unimportant'), the importance of the control of costs via detailed allocation of expenditures to departments or products.

The third set relates to the human capital of the respondent. Entrepreneurs may increase their human capital through work experience and formal education. Work experience was measured by a variable that indicated the total number of years the respondent had worked for both the focal firm and at other firms (with seven categories, ranging from 1 = 'less than a year' to 7 = 'more than 15 years'). The level of formal education was defined as having a degree as a result of full-time or long-term training, so measuring an individual's knowledge or competence base. Formal education was measured by a variable that accounts for the highest level of education (with six categories, ranging from 1 = 'elementary school' to 6 = 'university'). Finally, we controlled for the age of the entrepreneur. We measure age by an 8-point variable (using six categories, ranging from 1 = 'younger than 25 years' to 8 = 'older than 55 years').

EVIDENCE

Means, standard deviations, and correlations are provided in table 1. The correlation coefficient for both firm performance items is positive and significant ($r = 0.37$; $p < 0.01$). Cronbach's alpha of 0.38, however, is below regular threshold values, indicating that sales turnover growth and competitive market position are related but separate performance indicators. For that reason, we use LISREL to simultaneously estimate two equations, one for each of our pair of firm performance indicators (Jöreskog and Sörbom 1993, 1996; Pandey and Welch 2005; Athayde *et al.* 2008). LISREL allows us to correlate the errors of the dependent variable items and, in so doing, enables us to meet a requirement for seemingly unrelated regression specifications that fit with our type of data, with two imperfectly correlated dependent variables (Hair *et al.* 2007). In preparation for the regression analyses, we performed the regular tests: neither heteroscedasticity nor non-normality is an issue. We tested for possible biases caused by collinearity among variables by calculating the variance inflation factor (VIF) for each of the regression coefficients. Calculations of VIF ranged from a low of 1.09 to a high of 1.58, well below the cut-off value of 10 (Neter *et al.* 1985).

For both sets of equations, we ran a two-step hierarchical regression: the three dimensions of regulation were added in Model 2 vis-à-vis Model 1 with control variables only. The advantage of a two-step hierarchical regression method is twofold (Hair *et al.* 2007). First, we can now determine whether or not adding main variables to a model with controls only increases explanatory power. A significant increase in model fit is a first indication of the importance of the main variables. Second, we can determine the extra explanatory power of the independent variables.

TABLE 1 *Correlations, means, and SDs*

	Mean	SD	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
1. Sales turnover growth	3.84	1.93	1.00																
2. Market performance	3.33	0.71	0.37	1.00															
3. Manufacturing	0.07	0.26	0.04	0.08	1.00														
4. Construction	0.15	0.36	0.06	0.04	-0.12	1.00													
5. Transport	0.06	0.24	-0.06	-0.01	-0.07	-0.11	1.00												
6. Services	0.21	0.41	0.02	-0.01	-0.14	-0.22	-0.13	1.00											
7. Local tax regime	0.34	0.12	-0.03	0.00	0.01	-0.09	0.05	0.03	1.00										
8. Firm size	2.58	1.24	0.08	0.18	0.25	0.08	-0.03	0.06	0.04	1.00									
9. Firm age	24.32	25.94	-0.19	-0.10	-0.01	0.02	0.01	-0.08	0.00	0.12	1.00								
10. Innovation strategy	3.40	1.14	0.11	0.25	0.11	-0.10	-0.12	0.04	0.03	0.15	0.04	1.00							
11. Cost-control strategy	3.22	1.26	-0.06	-0.05	-0.16	0.12	-0.09	0.01	-0.06	-0.02	0.04	0.13	1.00						
12. Work experience	7.76	0.74	-0.16	-0.05	0.05	-0.01	-0.02	0.05	-0.02	0.03	0.16	0.04	0.02	1.00					
13. Entrepreneur age	6.27	1.64	-0.21	-0.17	0.05	-0.07	0.06	0.04	-0.02	0.03	0.19	-0.06	0.01	0.43	1.00				
14. Formal education	4.01	1.37	0.11	0.15	0.12	-0.09	-0.08	0.24	0.13	0.19	-0.10	0.07	-0.13	-0.09	-0.15	1.00			
15. Regulation cost	2.46	1.52	-0.03	0.15	0.18	0.13	-0.01	0.00	0.05	0.35	0.17	0.15	0.01	0.00	-0.05	0.17	1.00		
16. Regulation change	1.68	0.52	-0.09	-0.14	-0.02	0.02	0.04	0.05	0.04	-0.05	0.00	-0.04	-0.03	0.02	0.03	0.09	-0.14	1.00	
17. Regulation inconsistency	4.81	2.40	-0.03	-0.05	0.00	-0.04	-0.11	0.09	0.05	-0.09	-0.02	-0.07	-0.14	-0.10	-0.08	0.10	-0.11	0.20	1.00

The various fit parameters show that our full models fit the data better. For the estimates with respect to sales turnover growth, the R^2 improves from 9.3 per cent in Model 1 to 11.4 per cent in Model 2 ($F = 4.425$ with $p < 0.01$ and $F = 4.398$ with $p < 0.01$ for Models 1 and 2, respectively). For the estimates with respect to market competition performance, the R^2 improves from 11.8 per cent in Model 1 to 13.8 per cent in Model 2 ($F = 5.578$ with $p < 0.01$ and $F = 5.507$ with $p < 0.01$ for Models 1 and 2, respectively). The estimates remain robust in terms of signs and significance levels. Note that R^2 values of 11.4 and 13.8 per cent are good, since an R^2 of 15 per cent is regarded as excellent in the (large) literature on small firm performance (Carter *et al.* 2006).

The empirical results offer significant support for two of our three hypotheses. Table 2 shows that regulation cost has a negative and significant effect on sales turnover growth ($\beta = -0.130$ with $p < 0.01$), and a negative but non-significant effect on market competition performance ($\beta = -0.001$ but n.s.). Hence, hypothesis 1 receives partial support. Regulation inconsistency has a negative and significant effect on sales turnover growth ($\beta = -0.065$, with $p < 0.10$), and a negative but non-significant effect on market competition performance ($\beta = -0.023$ but n.s.). So, hypothesis 2 receives partial support, too. Table 2 reveals that regulation change significantly hampers both sales turnover growth ($\beta = -0.092$ with $p < 0.05$) and market competition performance ($\beta = -0.137$ with $p < 0.01$). Hypothesis 3 is fully supported. The significant results for the control variables are as expected, which therefore offers further confidence in the validity of the findings.

In robustness tests, we estimated models with non-linear relationships between a selected number of explanatory variables such as firm age, firm size, managerial experience and formal education, and our dimensions of regulation. We did not find significant evidence for non-linear relationships. This may be partly due to data limitations. Adding non-linear relationships for each variable simultaneously to our model may require a number of observations larger than is currently available. Also, many of our scales are not continuous, which hampers an appropriate study of non-linear relationships between variables. Additionally, we estimated models with interaction effects between a selected number of explanatory variables and our dimensions of regulation, not finding significant effects for any of these. The lack of significant non-linear relationships and interaction effects does foster confidence in the validity of the linear main relationships.

CONCLUSION

Democratic societies cannot do without regulation. Regulation can benefit large parts of society. Government interventions via regulation are key to, for example, protecting the economic position of citizens or preventing tacit collusion between companies that may have negative effects on the economy. Regulation, however, is a double-edged sword (Bozeman 2000; van Witteloostuijn and de Jong 2008): it may have benefits for society at large, but negative effects for individual firms. Of course, an evaluation of all benefits and costs of all rules is required in order to estimate the overall net effect of regulation for society. Such an evaluation is needed to assess whether there is too much or too little regulation overall. Such an assessment is outside the scope of the present study. Nonetheless, we do make an important first step in this direction by studying the impact of different dimensions of regulation on private firm performance from a perception-based perspective.

The content and structure of regulation vary over time and between nation-states. Most regulation starts out with some implied causal purpose that for someone things will be

TABLE 2 *Regulation and private firm performance*

	Model 1		Model 2	
	Sales turnover growth	Market competition performance	Sales turnover growth	Market competition performance
Control – context				
Manufacturing	–0.001 (0.046)	0.002 (0.045)	–0.003 (0.046)	0.001 (0.045)
Construction	–0.075* (0.046)	0.032 (0.045)	–0.066* (0.046)	0.039 (0.045)
Transport	–0.055 (0.044)	0.023 (0.043)	–0.056* (0.044)	0.027 (0.043)
Services	–0.018 (0.046)	–0.034 (0.046)	–0.012 (0.046)	–0.028 (0.045)
Local tax regime	–0.057* (0.043)	–0.030 (0.042)	–0.051 (0.042)	–0.025 (0.042)
Control – firm				
Firm size	0.065* (0.046)	0.160*** (0.045)	0.133*** (0.056)	–0.152*** (0.055)
Firm age	–0.134*** (0.044)	–0.106*** (0.043)	–0.128*** (0.044)	–0.113*** (0.043)
Innovation strategy	0.089** (0.044)	0.186*** (0.043)	0.089** (0.044)	0.182*** (0.043)
Cost-control strategy	–0.051 (0.044)	–0.054 (0.043)	–0.057* (0.044)	–0.060* (0.043)
Control – entrepreneur				
Work experience	–0.074* (0.047)	0.024 (0.046)	–0.077** (0.047)	0.026 (0.046)
Entrepreneur age	–0.138*** (0.048)	–0.126*** (0.047)	–0.141*** (0.048)	–0.121*** (0.447)
Formal education	0.050 (0.040)	0.088** (0.045)	0.071* (0.046)	0.102** (0.045)
Regulation				
Regulation cost			–0.130*** (0.055)	–0.001 (0.054)
Regulation change			–0.092** (0.043)	–0.137*** (0.043)
Regulation inconsistency			–0.065* (0.044)	–0.023 (0.043)
Fit Indices				
R ²	0.093	0.118	0.114	0.138
Adj. R ²	0.072	0.098	0.088	0.113
F	4.425***	5.578***	4.398***	5.507***
ΔR ²			0.021	0.020
F ΔR ²			3.980***	4.015***

Note: Standardized coefficients with standard errors in parentheses.

*p < .10, **p < .05, and ***p < .01.

made better. Regulation, however, can also be poorly designed and/or outdated. The introduction of new regulation is usually the outcome of lengthy institutional processes. In an analogy of Bozeman's (2000) theory of red tape, some regulation is 'born badly' due to, for example, inadequate understanding of the regulation's aim by regulation-makers. Other well-intended regulation may have gone bad due to misapplication in the implementation phase. Additionally, regulation may well target issues or problems

that no longer require intervention (March *et al.* 2000; van Witteloostuijn 2003). Then, the consequences of regulation may well be predominantly negative by creating unnecessary costs for organizations – for instance, by creating barriers to trade, or frustrating investment or other economic activities (Helm 2006; OECD 2010).

The relationship between regulation and private firm performance is largely an under-explored research area. This is particularly true for small and medium-sized enterprises that dominate in Western economies, and that form the drivers of national wealth by creating employment and income for large parts of society. Our study presents a new interdisciplinary perspective, and solves methodological issues that previously hampered an in-depth understanding of the relationship between regulation and private firm performance. Such an in-depth understanding is important for both economists who value interdisciplinary over monodisciplinary perspectives and public management scholars who seek to understand consequences of red tape due to national regulation, rather than internal rules, for the strategy and performance of private instead of government organizations. We believe that our study has important implications for these audiences.

First, studies of red tape convincingly argue that we need to investigate the antecedents and consequences of internal (dysfunctional) rules using a perception-based perspective (Bozeman and Feeney 2011). We incorporate the perception-based perspective and complement mainstream red tape research by studying external red tape. This is important because external, government-created, regulation can be considered to be one of the most important sources of internal red tape (see also Walker and Brewer 2008; Brewer and Walker 2010). We focus on regulation as a source of red tape. If small and medium-sized enterprises are important for economic growth and if regulation is one of the most important characteristic features of modern democratic societies (van Witteloostuijn and de Jong 2010), we need to have an in-depth understanding of whether – and if so, how – regulatory red tape determines their performance. Strategic decisions taken by these firms are crucial for long-term growth and prosperity, and are not taken in isolation from government regulation. For that reason, further studies are warranted that analyse whether – and if so, how – regulation-based red tape has a relationship with organizational performance.

Second, we have sought to advance research on relationships between private firm-level performance and regulation. We argue that variation in business performance may result from variation in regulation, next to and on top of the effect of other firm antecedents (such as type of strategy or legal status), circumstances external to the company (e.g. industry characteristics or local tax regimes), and the characteristics or background of the key decision-maker (such as tenure or type of education). In so doing, we highlight the importance of an interdisciplinary approach. We bring together key elements from four different domains, and complement these fields of research by showing how different dimensions of regulation relate to private firm performance from the perspective of the entrepreneur.

In studies in economics, regulation is related to country and industry performance (Djankov *et al.* 2008), but not, at least not directly, to firm-level outcomes. In public administration research, burdensome rules (red tape) are aligned with (perceived) organizational performance (Bozeman 2000) but not, at least not explicitly, with outside sources of rules. In the field of public policy, conceptual frameworks or country-level studies are used to examine the implications of regulation for business (OECD 2010), but these generally lack firm-level empirical underpinning. In business and strategic management studies, the

importance of aspects of the external environment for firm performance is acknowledged, but regulation tends not to be included in this (Wijbenga and van Witteloostuijn 2007). Our study bridges these different traditions by predicting effects from three dimensions of external regulation on individual firm performance: regulation cost, inconsistency, and change.

A third implication derives from the data collected and the empirical findings. The current study is based on collecting firm-level information for a substantial number of small and medium-sized private companies. Firm-level data are needed to understand the incidence, nature, and consequences of regulation in the world of entrepreneurs. A database like ours is the exception rather than the rule, showing that firm-level information on regulation can be collected by means of a carefully designed questionnaire and data collection strategy. We collected questionnaire data for a sample of 530 private firms in the northern Netherlands. The Netherlands offers an appropriate research context because this country is well known for its rule-producing institutional framework, as well as for its ongoing attempts to limit negative consequences of regulation. We developed a short series of simple questionnaire items that emerge as valid and consequential measures of regulation cost, inconsistency, and change. A major finding is that all three are detrimental to turnover growth of private firms, and that regulation change limits market competition performance.

Fourth, the significant findings have implications for policy-makers. Our study suggests that Dutch deregulation efforts have not been very successful, at least not as much as the various Dutch cabinets have claimed. To a large extent, local administration in the Netherlands has little opportunity to limit the regulation-making forces because they are simply obliged to implement new or change existing national regulation. For that reason, the Dutch government needs to reassess its current deregulation policy, and introduce more robust measures that limit their own regulation-making activities. For example, the Dutch cabinet may decide to introduce sunset clauses, attaching automatic repeal dates to new rules, or might require that the introduction of a new rule must be associated with the repeal of two existing ones. The results also have implications for managers. Our study suggests that regulation affects the competitive capabilities of companies because it raises costs, and reduces the flexibility with which a company can operate. Regulation diverts management attention away from strategic issues and may distort capital investment decisions. These problems are particularly severe for small and medium-sized enterprises because they are less well equipped to deal with such regulatory issues.

Given that our study is one of the first of its kind, we envision various opportunities for future research that could address its inevitable limitations. The use of cross-sectional data from small and medium-sized private firms in the (northern) Netherlands limits the generalizability of our results and our ability to make causal attributions. Cross-sectional data may suffer from endogeneity that can be addressed through instrumental variable estimation methods. A cross-country firm-level panel dataset would improve on this study. Our assessment relies on the questionnaire-based personal judgements of one respondent per company. Management research often obtains reliable information from single respondents. Given the size of the companies, our respondents have the knowledge, expertise, and management position to answer questions about strategy, performance, and regulation. Nonetheless, a multi-respondent replication of our study with more and other questions concerning regulation and firm performance would allow for cross-validation of the findings.

A next logical step would be to test our model in other countries to determine whether the role of regulation in driving private firm performance in other nation-states is similar. In this article, we focus on the performance of private firms. Regulation may also have consequences for public agencies such as law courts and healthcare organizations. Although our theoretical framework is generic, and is therefore applicable to not-for-profit and public organizations as well, we restrict our study to private for-profit firm performance, leaving an assessment of the relationship between regulation and behaviour and performance of other types of organizations for future research.

Further studies could also add complexity at the firm level by estimating moderator effects. In robustness analyses, we have not been able to find significant relationships in models with moderator specifications. Although this seems to suggest that moderator effects have little importance, future research is needed in order to overcome some of the data limitations in the present study that may hamper extensive two-way or three-way moderator specifications. Regulation is nothing new, at least not for companies that are old enough to have overcome liabilities of newness. Still, the variation in regulation cost and change is substantial, as is the relationship between these and private firm performance. Particular characteristics of entrepreneurs or firms other than those included in the present study may 'moderate away' the negative effect of regulation on firm performance. Future research should investigate these interactive effects that would help to design firm-level strategies that dampen the negative relationships between regulation and firm performance.

NOTE

¹ For the sake of symmetry, we here focus on *low* regulation consistency, implying a negative association, as in Hypotheses 1 and 3. This facilitates the interpretation of the sign of the associated coefficients in the regression analysis.

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