Contract-Theoretic Analyses of Consultants and Trade Unions

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Till min familj

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Acknowledgements

In retrospect, I realise that I have always been fascinated by organisations. As a young and not very talented footballer, as a student, during my military service and my professional spells, I was thinking a lot about how organisations work and how their design effects their performance. And while I have not yet decided whether a five-a-side team in football should play 1-2-1 or 2-2, I believe I have concluded that it is often a good idea to split up school classes between primary and secondary school.

Considering this inclination, it was perhaps not surprising that one of the most rewarding courses during my first years as an SSE undergraduate was basic Organisation and Management. Nevertheless, I soon found an important aspect of organisation that was missing in that course. During an exchange semester at LSE I took a course called Analysis of Strategy, taught by Saikat Datta, and back at SSE I took Tore Ellingsen's Institutional Economics as well as Karl Wärneryd's Strategies and Incentives. These courses excellently illustrated the power of microeconomic theory in understanding organisations.

It felt natural to make organisations the theme of my thesis when I returned to academia a year after graduation. It was equally natural to ask Tore to be my supervisor, which he, fortunately, accepted. With his great ability to understand, develop and package ideas, Tore has provided priceless help during the work on this thesis. Whereas Tore certainly was the King in the card deck of supervisors, there were a Queen and a Jack considerably enhancing the hand. Åsa Rosén put in a lot of effort in co-supervising my essay on trade unions. Richard Friberg agreed to read and comment on the empirical consulting essay on short notice.

However, before any thesis work could be commenced at all, I had to survive the first year of courses at the Ph.D. programme. Luckily, there were five quite remarkable guys entering the programme with me at the SSE Economics Department. Milo Bianchi, Ola Granström, Erik Höglin, Henrik Lundvall and Björn Tyrefors have become great friends of mine and have all influenced my studies and life a lot. After a year or so, Fredrik Wilander became an integral and welcome part of the bunch. In the first year I was also happy to meet Marieke Bos, Camilo von Greiff, Mia Hinnerich, Sara Åhlén and other eager SDPE newcomers. During these five years of thesis work and courses,

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By now I can hardly imagine what my life would have been without these last five years. However, the decision to return to SSE and doctoral studies was not obvious, although in retrospect a very wise choice. While Ola Bengtsson has been the prime challenger of my academic curiosity for a decade, other friends like Erik Eldhagen, Jens Henriksson, Martin Holmberg, Helena Holmlund, Daniel Karlsson, Janne Pettersson, David Philipson and Sebastian de Toro were also important contributors in my decision process.

Before and during the work on this thesis, my friends and family have been a great support to me. While most of my friends will have to feel my gratitude remaining anonymous here, I cannot leave out Anna and Dada, and their families. My studies

and my other curiosity-driven projects have always been supported by my mother Boel, my father Claes and my sister Maria, as well as by their respective partners.

Family members, friends and colleagues – you have proven that an organisation, although informal, can support an individual tremendously. I thank you all.

Finally, the most important outcome of these five years is my getting to know Mikaela and her fantastic family. Mikaela's support is invaluable, and after finishing this thesis I hope to explore many new chapters with her.

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Per Sonnerby

Summary

Introduction

At least since Coase's 1937 article *The Nature of the Firm*, economists have been concerned with the design and operations of firms and other organisations. While classical economics takes the firm for granted, modern microeconomics asks about the boundaries of the firm. Why are some firms big and others small? Why are some activities conducted inside a firm while others are bought? How does the internal organisation of a firm effect its production, and how do external factors effect the internal organisation?

Following the thoughts of Ronald Coase, Oliver Williamson, Bengt Holmström, Oliver Hart, Paul Milgrom, Jean Tirole and many others have developed theories of how organisations of rational people work and interact with their environment. The perhaps best review and synthesis of the theory evolution is found in Gibbons (2005). A common denominator is that organisations are seen as systems of incentives, which affect the actions of people and thereby the function of the organisations. The main theoretical foundation has been contract theory. In its application, organisational economics has influenced neighbouring fields, perhaps particularly management, corporate finance and labour economics.

The three self-containing essays of this thesis are in this borderland of applied theory. Two of the thesis chapters deal with management consultants and how they could interact with client firms. The last essay studies trade unions and how workplace conditions could affect labour organisation.

As a first-year undergraduate at Stockholm School of Economics, I found the management consulting industry as elusive as promising. Particularly fascinating were the high costs and high salaries. Why does the manufacturing industry pay so much for analyses conducted by people who have never seen industrial robots? The management literature is divided on the issue. The ideas I got during a year at a management consultancy after my graduation were complemented by the analytical tools of micro theory. Since questions of trust seem to be unavoidable in analyses by strategy and organisational consultants, while outcomes are difficult to measure, there may be a special role for outsiders. Combined with reasonably good Swedish data and some

industry knowledge, econometric methods made it possible to test the theory against empirics.

Trade unions are widespread and influential in the Swedish community, as well as in other countries, and thereby interesting per se. Organisational structure and activities differ between unions for blue-collars, white-collars and professionals. In most parts of the world, the two latter categories do not even have trade unions. A book on Swedish labour market history (Lundh, 2002), which I read during a graduate course, answered some questions regarding the evolution of trade unions for different labour categories, but it raised about as many new. In their pioneering 1988 study, Horn & Wolinsky turned to microeconomic ideas about production complementarity. In order to explain the division of the trade union market in Nordic countries, I applied the complementarity theories on the trade union itself, rather than the firms where union members are employed.

Below is a closer introduction to the essays of this thesis.

What Do Consultants Do?

"What Do Consultants Do?" presents a theoretical model, showing that an independent consultancy can play an important role when a firm's management has not yet achieved full confidence among investors or other stakeholders. The model shows that there is a trade-off between being an expert and being an independent truth-teller, and that branding may be more important for the latter category, which is reflected in the segmentation of the management consulting market. Furthermore, the model shows that there are natural barriers to entry among truth-tellers, which helps explain the high fees of the most well-renowned players.

Management research can be split into two strands with respect to the views on management consulting, described for instance by Hellgren, Löwstedt, Tienari, Vaara & Werr (2004). The *critical* strand is very sceptical to the work of management consultants, and questions the value of managers bringing in help from the outside in order to strengthen their legitimacy. The *rationalistic* (or *functionalistic*) strand, on the other hand, stresses the role of the consultant as an expert. The globalisation of management consulting in recent decades is explained by the value of managing expertise in a global knowledge network. Few economists have studied the role of management consultants.

The first part of the model illustrates a situation in which a manager and a stakeholder have potentially conflicting interests. The manager is dependent on an investment from a stakeholder, and the latter is in turn dependent on the manager's talent. The problem is that the manager has the opportunity to use the investment for her own

purposes, and can then only be punished by losing her reputation on the market. The model shows that a stakeholder who does not know the manager's type may choose to abstain from making a large investment.

Thereafter a third party – a consultant – is introduced. The consultant can provide both expertise, which raises the probability of a successful investment, and truth-telling, which verifies that the manager uses the investment in the interest of the stakeholder. In order to succeed with the latter mission, and not be tempted to collude with a manager intending to act against the stakeholder's wishes, the consultant must be of a type that values the future highly relative to the present. The model shows that the risk for collusion is higher if the investment is large relative to earlier investments, if the consultant is not paid well for her regular mission and if the consultancy possesses a large expertise. Thereby the model explains patterns on the management consulting market. A more turbulent environment, where many projects are large relative to earlier experiences, is more demanding for the consultants. In order to keep their credibility, the consultants have to earn a lot from their business and limit the range of expertise offered to clients. In the eyes of the model, this explains why the number of top strategy consultancies is limited and why these make large profits with a small portfolio of services. Furthermore, the model shows that the expertise that can be offered without compromising the ability to sell truth-telling is proportional to the credibility of the consultant's brand.

The model explains the strong globalisation of the management consulting industry with the result that a global branding reduces the risk for collusion. Because the consultant has many projects all over the world, and thereby is severely hurt from losing credibility, each individual projects poses a relatively small temptation for opportunistic collusion. This may explain why a global brand seems more important for consultants working with relatively 'soft' strategy than for consultants working with more technology-related issues, even if the latter knowledge is probably easier to disseminate between different companies, countries and cultures.

The Nature of Management Consulting

"The Nature of Management Consulting" evaluates the theoretical results of "What Do Consultants Do?", using data from the management consulting market in Sweden. The introduction presents the truth-telling theory and some studies indicating that truth-telling may be at least as important to buyers of management consulting services as expertise.

The first part of the study uses econometric methods to map patterns on the Swedish management consulting market. The data, representing about 50 observations per annum during 8 years, are mainly from *Konsultguiden*, an annual publication by the leading Swedish business weekly *Affärsvärlden*. The prime results are three regularities. First, management consultancies with global brands charge higher fees than those with local (Nordic) brands. The effect associated with this amounts to, on average, at least SEK 1.2 million (EUR 130,000) per year and consultant. Second, consultancies offering only management consulting charge higher fees than less specialised firms. This effect is at least SEK 200,000. Third, the upward price effect associated with a global brand is smaller for management consultants with a broad range of services. The difference between the groups is at least SEK 700,000 on average. Both the truth-telling theory and economies of scale in knowledge management predict that global consultancies can charge higher fees than those with local brands. However, if there are economies of scope in providing management services, expert theories cannot easily explain why some consultancies restrict their range of services, or why those charge higher fees. Finally, the traditional view has a hard time explaining why possessing a global brand is less important for management consultants with a broad range of services, or, conversely, why the downward price effect associated with offering other types of consulting is stronger for global consulting brands than for local.

In the second part, the evidence is reinforced and the mechanisms further explored by results from structured interviews with practising management consultants, representing a vast majority of both the 20 largest management consulting firms and the total turnover on the Swedish management consulting market. All interviewees are relatively senior, either project managers or partners. Coherent with the truth-teller theory, there is a strong relation between the frequency with which consultancies work in truth-telling situations – for instance when client managers are new, client firms have changed ownership or are going through rapid expansion or downsizing –, the business scope concentration of consultancies and their bargaining power – measured as inverse price sensitivity and frequency of directly competitive purchasing among clients. Connecting interview responses to the market data results, I find that this is mainly driven by the global strategy consulting firms charging the highest fees per consultant – those that the theory prescribes be the most typical truth-tellers.

A Guild Theory of the Trade Union

"A Guild Theory of the Trade Union" is an independent essay, developing a model that explains the market for trade unions. The model links the organisational form and the focus of unions to the human capital that can be built at the workplace, the

workplace technology and their interaction. The predictions resemble evidence from the Nordic labour market.

In the model, agents have two characteristics: the cost of building human capital at the workplace and external productivity, i.e. what share of the production at their workplace is independent of human capital. The organisational decisions of workers are to form an industry-specific or a profession-specific union, or not to unionise at all, to decide whether members should negotiate wages collectively or individually, and finally to allocate the union budget between investments in wage bargaining power and in human capital of members. Profession-specific unions are assumed to turn investments into human capital more effectively, while industry-specific unions have a comparative advantage in collective wage negotiations.

In the model, human capital and external productivity are substitutes, while individual and union investments in human capital are complements. Therefore trade unions will specialise in either wage negotiation strength, which is enhanced by collective bargaining, or in fostering human capital, which is enhanced by individual wage-setting. Due to the comparative advantages of the respective union types, the most common forms will be the traditional industry-specific, collectively bargaining trade union and the profession-specific union where members bargain individually. It turns out that those who prefer the first type are agents with typical blue-collar characteristics – a large degree of external productivity and high costs of building human capital –, whereas the other type is preferred by those with low contractible productivity and low costs of enhancing their human capital, which seems more typical for professional labour. Finally, non-unionisation will be preferred by those with low external productivity and low or intermediate costs of building human capital.

The external productivity of a group could be interpreted in several ways, all consistent with empirical evidence. One of the simplest is to see it as a production technology largely independent of human capital, where the Fordistic assembly line is one example. Another interpretation is the degree to which the work of other groups enhances the output, regardless of the first group's human capital. A third interpretation is to see it as the market power of the firms where the group is employed.

The model's predictions resemble stylised evidence. The model predicts for instance that professionals have a steeper wage profile than blue-collar workers, and are less vulnerable to involuntary unemployment. The segmentation between different groups on the labour market in Sweden and the other Nordic countries is similar to that predicted by the model. The model can also help explain why unions for professionals keep growing when blue-collar unions decline, but do not emerge in countries where they do not exist.

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Inledning och sammanfattning på svenska

Åtminstone sedan Coases artikel *The Nature of the Firm* från 1937 har national-ekonomin intresserat sig för företag och andra organisationers uppbyggnad och interna funktionssätt. Medan den klassiska nationalekonomin tar företaget för givet ställer sig modern mikroteori frågan var enskilda företags gränser går. Varför är vissa företag stora och andra små? Varför utförs vissa aktiviteter inom ett företag medan andra köps in? Hur påverkar ett företags interna organisation dess produktion, och hur påverkar yttre faktorer den interna organisationen?

I spåren av Ronald Coase har Oliver Williamson, Bengt Holmström, Oliver Hart, Paul Milgrom, Jean Tirole och många andra utvecklat teorier för hur organisationer som består av rationella människor kommer att fungera och samverka med sin omvärld. Den kanske bästa genomgången och syntesen av teorins evolution är gjord av Gibbons (2005). Gemensamt är att organisationer ses som system av incitament, vilka påverkar människors handlingar och därmed organisationernas funktionssätt. Basen för teori-utvecklingen har huvudsakligen funnits inom kontraktsteori. I sin tillämpning har den nationalekonomiska organisationsteorin fått inflytande på angränsande områden, kanske särskilt management, corporate finance och arbetsmarknadsekonomi.

De tre självständiga studierna i denna avhandling befinner sig i detta gränsland av tillämpad teori. Två av uppsatserna behandlar managementkonsulter och hur de kan fungera hos klientföretag. Det sista studerar fackförbund och hur arbetstagares villkor kan påverka organisationsformen.

Som en ny student på Handelshögskolan fann jag managementkonsultbranschen lika mystisk som löftesrik. Särskilt fascinerande tyckte jag att de höga kostnaderna och lönerna var. Varför betalar verkstadsindustri dyrt för analyser av folk som aldrig sett en robot? Företagsekonomisk litteratur är delad i frågan. De idéer jag fick under ett års arbete på en managementkonsultfirma efter min civilekonomexamen komplet-terades med mikroteorins analysverktyg. Eftersom förtroendefrågor förefaller särskilt närvarande i den typ av analyser som strategi- och organisationskonsulter gör, medan resultaten är svårmätbara, kan det finnas en speciell roll för outsiders. Tillsammans med någorlunda bra svenska data och en viss branschkännedom gav ekonometriska metoder möjlighet att göra en empirisk studie att testa teorin med.

I det svenska samhället är fackförbund stora och inflytelserika, och därmed intressanta i sig. Struktur och uppträdande skiljer sig åt mellan fackförbund för arbetare, tjänstemän och akademiker, och de sista typerna är ovanliga på många håll i världen. Då jag i en kurs på forskarutbildningen läste en bok om svensk arbetsmarknadshistoria (Lundh, 2002) väcktes fler frågor än vad som besvarades gällande utvecklingen av fackförbund för olika yrkesgrupper. I sin pionjärstudie från 1988 vände sig Horn & Wolinsky till teorier om produktionskomplementaritet. För att tydligare förklara uppdelningen på den nordiska fackförbundsmarknaden tillämpar jag idéerna om komplementaritet på fackförbunden snarare än de företag fackmedlemmarna arbetar i.

Nedan följer en närmare introduktion till de studier som utgör denna avhandlings kapitel.

What Do Consultants Do?

"What Do Consultants Do?" presenterar en teoretisk modell som visar att en oberoende konsult har en viktig roll att fylla då en företagsledning ännu inte byggt fullt förtroende hos investerare eller andra intressenter. Modellen visar att det finns en avvägning mellan att vara expert och att vara oberoende sanningssägare, samt att kända varumärken kan vara viktigare för den senare kategorin, något som avspeglas i segmenteringen på managementkonsultmarknaden. Dessutom visas att det finns naturliga konkurrenshinder bland sanningssägare, vilket kan bidra till de höga arvoden som de mest välrenommerade kan ta.

I huvudsak kan den företagsekonomiska forskningens syn på managementkonsulter delas upp i två riktningar, vilka beskrivs exempelvis av Hellgren, Löwstedt, Tienari, Vaara & Werr (2004). Den *kritiska* inriktningen ser mycket skeptiskt på managementkonsulters arbete och ifrågasätter värdet av att företagsledare tar in hjälp utifrån för att stärka sin legitimitet. Den *rationalistiska* (eller *funktionalistiska*) litteraturen, å andra sidan, betonar konsultens roll som expert. Att managementkonsultbranschen globaliserats starkt under de senaste årtiondena förklaras med värdet av att kunna samla expertis i ett globalt kunskapsnätverk. Få nationalekonomer har studerat managementkonsulters roll.

Den första delen av modellen illustrerar en situation då en företagsledare och en intressent har potentiellt motstridiga intressen. Företagsledaren är beroende av en investering från en intressent, och denne är i sin tur beroende av företagsledarens kompetens. Problemet är att företagsledaren har möjlighet att använda investeringen för sina egna syften, och i så fall bara kan straffas genom att förlora sitt rykte på marknaden. Modellen visar att en intressent som inte känner till företagsledarens typ kan välja att avstå från att göra en större investering.

Därefter introduceras en tredje part – en konsult – som dels kan tillföra expertis (vilket ökar sannolikheten för att investeringen blir lyckad) och dels kan verifiera att företagsledaren använder investeringen i intressentens intresse. För att lyckas med det sistnämnda, och inte frestas till samarbete med företagsledare som tänker agera mot intressentens önskan, måste konsulten vara av en typ som värderar framtiden högt i förhållande till nuet. Modellen visar att risken för samarbete mot intressentens intresse är högre om investeringen är stor relativt vad som investerats tidigare, om konsulten har svårt att ta bra betalt för sitt ordinarie uppdrag och om konsulten besitter en stor expertis. Därigenom ger modellen en förklaring till mönstret på marknaden för managementkonsulter. I en mer turbulent miljö, där många projekt är stora jämfört med tidigare, krävs mer av konsulterna. För att behålla sin trovärdighet måste dessa tjäna mycket pengar på sin verksamhet och begränsa den expertis de erbjuder klienterna. Med modellens ögon förklarar det varför antalet toppstrategikonsultföretag är begränsat och varför dessa företag gör stora vinster med en smal portfölj av tjänster. Modellen visar vidare att den expertis som kan erbjudas klienterna, utan att förlora förmågan att sälja verifiering, står i proportion till trovärdigheten i konsultens varumärke.

I modellen förklaras den starka globaliseringen av managementkonsultmarknaden med att ett globalt varumärke minskar risken för samarbete mot intressentens intresse. Genom att konsulten har många projekt världen över, och därmed har mycket att förlora på att tappa sin trovärdighet, erbjuder varje enskilt projekt en relativt liten frestelse för kortsiktigt samarbete. Detta kan förklara varför ett globalt varumärke verkar vara viktigare för konsulter som sysslar med relativt 'mjuk' strategi än för konsulter som ägnar sig åt mer teknikrelaterade frågor, trots att de sistnämnda sannolikt är lättare att sprida kunskaper om mellan olika företag, länder och kulturer.

The Nature of Management Consulting

"The Nature of Management Consulting" utvärderar de teoretiska resultaten i "What Do Consultants Do?" med hjälp av data från marknaden för managementkonsulter i Sverige. Introduktionen presenterar den teoretiska modellen – här kallad verifieringsteorin – och visar på studier som ger skäl att misstänka att verifieringsuppdrag är lika viktigt som expertis för delar av managementkonsultmarknaden.

Studiens första del använder sig av ekonometriska metoder för att kartlägga mönster på den svenska managementkonsultmarknaden. Datamaterialet, som representerar ungefär 50 observationer om året under 8 år, kommer bland annat från Konsultguiden, en årlig publikation från tidskriften Affärsvärlden. Framför allt framkommer tre regelbundenheter. För det första kan managementkonsulter med globala varumärken ta mer betalt än de med nordiska märken. Effekten motsvarar i genomsnitt minst 1,2 miljoner

svenska kronor per år och konsult. För det andra kan konsultföretag med snävt fokus på managementtjänster ta mer betalt än dem som är mindre specialiserade. Effekten skattas till minst 200 000 kronor. För det tredje är den positiva effekten av ett globalt varumärke mindre för konsulter med en bredare portfölj av tjänster än för dem med en snävare. Skillnaden mellan de olika grupperna är i genomsnitt minst 700 000 kronor. Både verifieringsteorin i "What Do Consultants Do?" och den mer konventionella teorin om konsultföretag som kunskapsnätverk förutsäger den första av dessa regelbundenheter. Däremot kan kunskapsnätverksteorin bara förklara att snävt fokuserade konsulter kan ta mer betalt om den gör antagandet att det inte finns synergier mellan olika typer av konsulttjänster. Slutligen kan den traditionella expertsynen inte förklara varför ett globalt varumärke är mindre viktigt för konsulter med ett brett tjänsteutbud eller, omvänt, varför den negativa priseffekten av att ha flera typer av konsulttjänster är större för globala konsulter än för nordiska.

Studiens andra del vidareutforskar mekanismerna genom resultat från strukturerade intervjuer med praktiserande managementkonsulter, vilka representerar en stor majoritet av såväl de 20 största managementkonsultföretagen som den totala omsättningen på den svenska managementkonsultmarknaden. Alla intervjuade är relativt seniora konsulter, på projektledar- eller partnernivå. I enlighet med verifikationsteorin finns ett starkt samband mellan den frekvens med vilken konsulter arbetar i verifieringssituationer – exempelvis när ansvariga hos klienten är nya, när klientföretag har genomgått ägarskapsförändringar eller genomgår snabb expansion eller rationalisering –, ett snävt fokus på management i utbudet av konsulttjänster och konsulternas förhandlingsstyrka – mätt som klienternas inverterade priskänslighet och hur ofta de upphandlar konsulttjänsterna i direkt konkurrens. När intervjusvaren kopplas till studiens första del framgår att sambanden främst drivs av de globala strategikonsultföretagen, vilka tar mest betalt per år och konsult – de som teorin förutser vara de typiska verifieringskonsulterna.

A Guild Theory of the Trade Union

"A Guild Theory of the Trade Union" är en självständig studie som utvecklar en modell för att förklara marknaden för fackförbund. I modellen knyts fackförbunds organisatoriska form och verksamhetsfokus till medlemmarnas möjligheter att bilda humankapital och till produktionstekniken på arbetsplatsen. Modellens resultat liknar mönster på framför allt den nordiska marknaden.

Individer i modellen karakteriseras av två olika egenskaper: hur svårt det är för dem att bygga humankapital på arbetet och extern produktivitet, det vill säga hur stor del av produktionen på deras arbetsplats som är oberoende av humankapital. De

organisatoriska beslut individerna ska ta är om de vill bilda ett branschspecifikt eller professionsspecifikt fackförbund, eller inte organisera sig alls, bestämma om fackförbundets medlemmar ska förhandla kollektivt eller individuellt, och till sist avgöra hur fackförbundets budget ska delas upp mellan investeringar i löneförhandlingsstyrka och i medlemmarnas humankapital. Professionsspecifika fackförbund antas vara effektivare på att omvandla investeringar till humankapital än branschspecifika, medan de senare har en konkurrensfördel vid kollektiva löneförhandlingar.

I modellen råder ett substitutförhållande mellan humankapital och extern produktivitet, medan förhållandet mellan individers och fackförbunds investeringar i humankapital är komplementärt. Därför kommer i huvudsak fackförbund att specialisera sig på antingen löneförhandlingsmakt, vilken stärks av kollektiva förhandlingar, eller på humankapitalbyggande, vilket främjas av individuell lönesättning. På grund av de olika fackförbundstypernas respektive konkurrensfördelar kommer de vanligaste typerna att vara det traditionella branschspecifika, kollektivt förhandlande fackförbundet och det professionsspecifika förbundet där medlemmarna förhandlar individuellt. Det visar sig också att de som främst kommer att föredra den första typen är individer med egenskaper typiska för många arbetaryrken – en hög grad av extern produktivitet och höga kostnader för att bygga humankapital –, medan den andra typen föredras av dem med låg icke-humankapitalberoende produktivitet och låg kostnad för att öka humankapital, något som kan ses som mer typiskt för högutbildade tjänstemän. Icke-organisering, slutligen, kommer att föredras av dem med låg extern produktivitet och låga eller medelhöga kostnader för humankapitalskapande.

Den externa produktiviteten kan tolkas på flera sätt. Ett av de enklaste är att se den som en produktionsteknisk lösning oberoende av individens humankapital, där det löpande bandet är ett exempel. En annan tolkning är att extern produktivitet är den grad i vilken en annan yrkesgrupps arbete ökar produktionen, oavsett den första yrkesgruppens humankapital. Ett tredje är att se det som den marknadsmakt, exempelvis genom bristande konkurrens, som yrkesgruppens arbetsgivare har.

Modellens prediktioner följer mönster som kan observeras i verkligheten. Exempelvis förutsäger modellen att akademikergrupper får en brantare lönetrappa än arbetare, och mer sällan drabbas av ofrivillig arbetslöshet. Den uppdelning som finns mellan olika grupper på svensk och nordisk arbetsmarknad liknar den som förutsägs av modellen. Modellen kan också hjälpa till att förklara varför professionsspecifika fackförbund där de finns kan fortsätta växa medan traditionella fackförbund tappar medlemmar, men inte bildas på andra håll.

Papers

PAPER 1

What Do Consultants Do?

ABSTRACT. Why do firms pay large fees to outsiders in core activities like management? Standard explanations that see the consultant only as an *expert* fail to rationalize several industry phenomena. This paper instead focuses on the consultant's role as a *truth-teller* in a corporate governance setting. Employing a model of reputation, where management consultancies can provide credible judgments, I find a trade-off between providing expertise and truth-telling, and that branding is associated with credibility. Moreover, there are natural barriers to entry in the truth-telling segment. The model's predictions fit stylised phenomena in the industry better than a pure expertise explanation.

1. Introduction

Management consulting has been booming in recent decades. The high fees and the profitability of leading firms reflect their exceptional popularity. Yet, there is no generally accepted explanation as to how management consultants create value. While most literature on management consulting has seen consultants as *experts*, the present work explores the view that consultants are *truth-tellers*. The model provides an explanation for the success of the management consulting industry within a framework of fully rational agents. Its predictions are consistent with a number of industry facts, including the price premium and limited business scope of top strategy consulting firms[1], the dominance of global brands, and the limited entry in the highly profitable top segment.

[1] Examples of global brands exclusively devoted to management consulting include McKinsey & Company, Boston Consulting Group, Bain & Company, Booz Allen Hamilton, Arthur D. Little and AT Kearney. Werr & Stjernberg (2003) discuss the puzzle that these players have less senior staff than many local consultancies, yet are able to charge higher fees.

Outsourcing of business services has grown rapidly since the 1970s. Temporarily hired support staff, software engineers and PR consultants have become frequent guests or colleagues at many workplaces. More surprisingly, outside consultants play an increasingly important role also in decision-making at operational and strategic levels – for instance in marketing strategies, competition and investment analyses, reorganisations or operational improvements. According to FEACO, the European Federation of Management Consulting Associations, the growth figures of the market were double-digit between 1994 and 2001 and took management consulting as percentage of GDP from 0.12 to 0.44 percent, even though the industry had grown strongly for at least a decade before that.[2] With a liberal definition of management consulting, FEACO estimates the industry to be worth over USD 100 billion, half of which in Europe.[3] The fastest growing providers are large multinational firms, usually of American origin. Management consultancies are always among the most frequent employers of graduates from top business schools.

Obviously, a project team of management consultants is much more costly during the project than employing people of the same profile would have been.[4] There are several possible rationales for the use of expensive consultants, including productivity differences on an individual level, fixed costs of employment and knowledge transfer. All of these belong to the traditional view, in which consultants are seen as experts. However, for many management consultant assignments, these explanations are unsatisfactory. Even if there might be large productivity differences between individuals and organisations, it is hard to see why firms in need of excellent staff would not be able to mimic the structures and salaries required to attract those, at least in the long run. High fixed costs of employment could certainly deter firms from employing people for temporary projects outside their core competence, but it is hard to argue that improvements of strategy and operations would be outside the core activities of any firm. The need for knowledge transfer is probably valid in many cases, but if consultants primarily bring knowledge, worse-performing and less experienced firms should

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[2] Clark (1995) concludes that management consulting in the U.K. grew by some 200 percent between 1985 and 1992. For an overview with a longer historical perspective on management consulting, see McKenna (1995).

[3] FEACO include HR and IT related services in its definition of the industry. The pure management consulting activities 'Operations Management' and 'Corporate Strategy Services' are approximately half of the market.

[4] The internal fee for a junior management consultant in Sweden could exceed EUR 1,500 per day, and usually the client is expected to pay expenses for travelling and accommodation. As a comparison, the daily salary (including taxes and social fees) of this consultant could be around EUR 300. A project team from one of the leading firms in Sweden for one month, under the leadership of a managing partner and a senior project manager working part-time on the assignment, and three junior consultants putting in the bulk of the hours could cost the client about EUR 350,000 plus expenses.

be more likely to buy consulting services. If anything, the converse seems to be true: leading corporations hire management consultants at least as often as laggards.[5]

In addition, the evolution of the management consulting industry displays patterns that are difficult to explain within the framework of expert theories. Sonnerby's (2007) empirical study of the Swedish management consulting market finds that the upward price effect associated with possessing a global brand is smaller for management consultants with a broad range of services than for those with a narrow focus. This is hard to reconcile with the standard expertise explanation behind the globalisation of management consulting – economies of scale in knowledge management – but is consistent with the truth-telling theory. Interviews with experienced management consultants support this interpretation and several other predictions from the present paper.

In this study I propose a complementary view, where management consultants create value by being truth-tellers. Consultancies that can maintain a high reputation and trustworthiness have an important role in the governance of client corporations. Rather than only enhancing operations, they help select and possibly implement projects considered by a client manager, thereby allowing the management of the client company to make commitments to investors or other stakeholders. This can in turn be beneficial to the client company and the management itself, by inducing investment on behalf of the investors when the outcome is otherwise non-verifiable. Hence, whereas most other studies of consulting focus on the direct relation between the consultant and the client, this work widens the scope and sees management consultants as potential third parties under incomplete contracting between the client and her stakeholders – investors, employees, owners or regulatory bodies. The theory takes aim at non-contractible actions left to managerial discretion, where interests between managers and stakeholders may be conflicting and a credible third party can yield ex-ante efficiency gains – much in the same way as sports teams admit the need of a referee when playing an opponent with a potentially conflicting view on what constitutes fair play.

This gives the truth-telling consultant a role similar to that of an auditor.[6] Management consulting and other business service activities were divested from auditing firms at the turn of the century, anticipating or following the Sarbanes-Oxley Act of 2002 in the U.S., in fear of consulting branches providing a channel for side payments

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[5] Admittedly, I am not aware of any systematic study linking client characteristics to procurement of management consulting. However, many business insiders claim that industry leaders are more likely to use consultants. The website of BearingPoint indicates that the company works with almost all top 10 global corporations in pharma and biotech, telecom, consumer products and banking. The website of Bain & Company claims that the firm's clients "outperform the market 3 to 1". Another example is a study for the Confederation of Swedish Enterprise by Jagrén & Morell (2002).

[6] Ernst & Kieser (2002), Furusten (2003) and McKenna (2006) suggest this point by comparing management consultants to auditors working with strategy and organisation.

from managers to lax auditors.[7] And just like auditing firms have been forced to divest
their activities in other business services areas, this paper suggests that top strategy
consulting firms have to restrict the scope of expertise offered in order to keep their
credibility. However, as opposed to other corporate monitors – primarily boards of
directors, auditors, equity and debt market analysts, and financial authorities – con-
sultants are employed at the will of managers, as noted for instance by Ernst & Kieser
(2002).[8] This is not to say that management consultants add little value. Even when
they do not possess exclusive information, they enlarge the contract space and enhance
cooperation possibilities between the management and other corporate stakeholders,
as illustrated in the results of the model.

Related literature. There is an extensive management literature on the topic of
management consultants. Interestingly, most of the arguments produced in more recent
management studies are put forward already by Dean in Harvard Business Review as
early as 1938. Sketching a normative framework, where some success factors are treated
almost like stylised facts in today's literature, Dean summarises the reasons for relying
on outside players rather than inhouse staff:

> *Problems having high functional similarity* [between industries], *requiring specialized*
> *knowledge, occurring infrequently, necessitating independent verification, requiring*
> *outside arbitration, or involving damaging personal relationships appear particularly*
> *appropriate.* (p. 464)

While virtually all recent studies emphasise brand reputation in the client base as
a key success factor, the management literature can roughly be divided in two strands
(see for instance Hellgren, Löwstedt, Tienari, Vaara & Werr, 2004). The *rationalistic*
(or *functionalistic*) strand has relied on Dean's three first arguments – focusing on
expertise – and mainly explains the success of management consulting with the need
for better knowledge management, broadly defined. Global management consultancies
exploit economies of scale and benefit from a brand that gives information about what
expertise level could be expected from a consultancy. The *critical* strand, on the other
hand, has more frequently studied the last three arguments – related to the consultant
as an outsider. This literature sees the provision of legitimacy to decision-makers as

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[7] Kornish & Levine (2004) discuss the conflicting roles of firms providing both management advice
and auditing services. The Sarbanes-Oxley provisions for division of auditing and other business
service activities are found in Title II, Section 201 of the act.

[8] There are indications that the role as strategy auditors is becoming more explicit. A senior
management consultant interviewed for the parallel paper (Sonnerby, 2007) stated that his firm occa-
sionally was hired for strategic reviews by corporate boards, which was unheard of ten years ago.

an important rationale for the widespread use of management consultants. Yet the interpretations often suggest that this adds little value to client firms.[9]

Economists have leant towards the more positive side in their views on consulting. The advantage of outsiders providing managerial advice is studied for instance by Will (1998).[10] Will concludes that if the manager's problem stems from outside, it should be studied inhouse, whereas consultants should be hired if the problem is internal. The principal-agent framework in this model differs from that of Will in its focus on the reputation of consultants and client managers, thereby emphasising the role of external consultants under any potential conflicts of interest in governance situations. Marcoul (2003) explicitly discusses managerial advice, and studies the effect of the manager's incentives. Interestingly, Marcoul also finds that increasing the consultant's expertise may harm the client. Since Marcoul's focus is the information conveyed between the consultant and the client, this effect arises because the manager's information acquisition incentives are crowded out. However, the present paper stresses that the consultant's engagement to some extent make otherwise concealed information verifiable, and the phenomenon of reverse expertise effects arises because truth-telling incentives within the consulting firm are distorted. Kofman & Lawarree (1993) study internal versus external auditing. While Kofman & Lawarree mainly investigate a number of issues more relevant for hard audit information, the present paper explores under what circumstances the need for credibility is decisive for the use of an outsider, and the conditions under which the outsider actually will be credible. Another related topic is

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[9] In the rationalistic literature, there is a series of articles that discuss the role of management consultants and reasons behind the growth of the industry. Sarvary (1999) and Werr & Stjernberg (2003) stress the role of management consultants in disseminating knowledge, and argue that increasing returns to scale be the driving force of globalisation in the sector. Hansen, Nohria & Tierney (1999) suggest a division of consultants pursuing 'codification' and 'personalization' as knowledge management strategies, while Creplet, Dupouet, Kern, Mehmanpazir & Munier (2001) use a similar distinction to brand consulting firms into 'consultants' and 'experts'. Kitay & Wright (2003) make a related argument by recognising a division between 'technical' and 'esoteric' knowledge. In a paper that touches the present argument, Glückler & Armbrüster (2003) argue that consultants by and large compete with trust and reputation in networks. The critical perspective is represented for instance by Clark (1995). Chapter 1 in Bäcklund (2003) describes the views on consulting globalisation from both strands. An anthology edited by Kipping & Engwall (2002) occupy the middle ground between rationalists and critics, and some texts give counterexamples where hiring an outsider's legitimacy is beneficial to the parties involved. Similar arguments are presented by Kelley (1979) in a study of the relative strengths of outside and inside consultants. The mentioned study by Ernst & Kieser (2002) sees this in a more critical light. An overview of this discussion can be found in Hellgren, Löwstedt, Tienari, Vaara & Werr (2004). In its excellent example of a process where legitimacy as such can create value – in post-merger integrations – the paper approaches the truth-telling view. None of these arguments is presented in a formal model.

[10] To a large extent, Will's paper is a formalisation of Kelley (1979), even though the latter is not referred to.

the internal organisation of professional services firms, discussed for instance by Koch
& Peyrache (2003) and Levin & Tadelis (2005).

The classic reference in managerial reputation-building is the career-concerns model
by Holmström (1999), which derives the effort profile of a manager establishing her
reputation on the market. The critical quality of managers in Holmström's model is
productivity, which is perfectly inferred by principals in equilibrium. In my asym-
metric information framework, on the other hand, managerial ability is measured by
the discount factor, of which the principal updates his prior imperfectly in a Bayesian
fashion, which in turn determines the principal's investment threshold. In this sense,
the basic model in this paper is somewhat similar to reputation acquisition in credit
markets in the spirit of Diamond (1989). Tadelis (1999, 2002) shows that the market
for well-renowned brands may be a way to discipline opportunistic managers vis-à-vis
their clients. This paper instead models the brand reputation of consultancies as a
governing device in managerial relations with other stakeholders. It also sketches an
answer to Gibbons' (2000) question how an employer can switch from one relational
contract to another while still keeping the employees' trust. According to the model,
she can do so by hiring consultants that credibly verify that it is necessary (for the
future of the firm, say) for the manager to implement a new equilibrium.

Another reputation-based literature is that about underpricing in initial public of-
ferings and the reputation of underwriters and auditors. In general, the studies find
a negative correlation between reputation and underpricing, which is explained by the
lower risk premium that investors require when well-renowned brands are involved in
the IPO.[11] The present model studies management consultants in settings similar to
that of an IPO, in the sense that there is asymmetric information between managers
and investors. In the spirit of some studies in the underwriter literature – for instance
Michaely & Womack (1999) on biased analysts' recommendations and Kanatas & Qi
(2003) on the comparison of independency and informational advantages – this model
disentangles the qualities necessary for credibility (represented by a commonly observ-
able discount factor) from pure expertise and contrasts them to each other. By and
large, the tradeoff between expertise and credibility found here is analogous with the
(informally modelled) question in Michaely & Womack of whether investment banks
should use their equity research teams to support their corporate finance activities,
even though this practice seems to spoil the objectivity of the former.

Finally, Andersson (2002) models brand reputation for multi-product firms and
finds that there are economies of scope also in absence of cost side economies. In

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[11] See for instance Carter & Manaster (1990) or Fernando, Gatchev & Spindt (2005) for underwriters
and Michaely & Shaw (1995) for auditors.

my model, this mechanism is at play when a truth-telling consultancy strengthens its credibility by expanding the client base. However, since truth-telling and expertise – as opposed to the goods in Andersson's model – are conceptually different, broadening the scope of services from truth-telling to expertise actually weakens credibility.

2. A Model of Managerial Reputation

In the initial model we consider two types of rational and risk-neutral players – long-lived managers and short-lived stakeholders. Later we shall introduce a third kind of player – a long-lived consultancy.

Each manager wishes to build her reputation vis-à-vis a market of stakeholders, so as to be trusted with important investments. In each period $t = 1, 2, 3, ...$ the manager is faced with an opportunity requiring an investment e_t from one of the stakeholders.[12] The required investment size is stochastic, with $e_t \in \{e_L, e_H\}$, and the probability of $e_t = e_H$ is θ. Accordingly, $E[e] = \theta e_H + (1 - \theta) e_L$. The opportunity is relation-specific in the sense that it needs the manager's expertise and the stakeholder's investment. The project could be managed in a good way or a bad way, but this choice is non-verifiable. If the manager is loyal and chooses the good way, the project has a gross return of αe_t with probability p and 0 with probability $1 - p$. If she is disloyal and chooses the bad way, the returns and probabilities are the same, but the successful return is a non-verifiable private benefit. The stakeholder's gross return share on a successful well-managed project, γ, is exogenously given. For reasons that will be apparent, we assume that $2\gamma > \alpha > \gamma > 1/p$. Outside opportunities have zero worth for both parties.

Once the stakeholder has invested, a manager in effect chooses whether to use the resources for the intended purpose or divert it.[13] The manager's expected period gain from steering resources to a project benefiting only herself is $p\alpha e_t - p(\alpha - \gamma) e_t = p\gamma e_t$.

Manager i's private discount factor β_i is unknown to the stakeholder, but it is known that it is drawn from the cumulative distribution $F(\beta)$ on the support $[0, 1]$. Since there are many stakeholders, each of them cares only about expected profits in the period of their investment. The timing in each period is as follows:

1. Both parties observe e_t.

2. Taking into account any information about the manager's β_i, the stakeholder decides whether to invest or not.

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[12] Likely examples of stakeholders are investors, owners or employees, but could also include governmental bodies. In a corporate governance setting, the investment is typically financial, while in an industrial relations context it may be a human capital investment.

[13] This is a common simplification in modern corporate finance; see for instance Hart (1995), pp. 101–106.

3. The manager chooses whether to be loyal or disloyal.

4. The project outcome is realised. If the investment was loyally managed and successful, γe_t is returned to the stakeholder.

5. The stakeholder and the market learn the true outcome, and the market updates its beliefs about β_i.

The model thus focuses on situations where there is a need for an investment from stakeholders, where the manager has a large degree of discretion over the operational use, and where the outcome is non-verifiable but observable, possibly with some time lag. A CEO may advocate a new and more ambitious marketing strategy that the board of directors has to decide on. A branch executive may need devoted cooperation from her employees during a major restructuring of the organisation. A small private equity firm may need to convince large international banks about the prospects of an investment proposal. In these situations the action preferred and pursued by the manager may not be the one that maximises the utility of stakeholders. Even though it would not constitute outright fraud, the pursued action may thus represent mismanagement from the viewpoint of the stakeholders.

We restrict attention to the equilibrium stemming from the following strategies. The manager diverts in period t if she sees an e_t exceeding the (possibly time-dependent) threshold value e_i^* invested, but not otherwise. The stakeholder in period t invests if e_t is weakly smaller than the (possibly time-dependent) threshold value e_t^P, but not otherwise. This gives the highest investment volume consistent with individually rational behaviour when stakeholders are short-lived.[14]

Basic results. The basic results rely on a credible threat that a manager diverting an e_H investment will be ousted and not entrusted even with e_L thereafter. The conditions for this are explored below.

In each period t, the stakeholder will invest only if the return, adjusted for the risks of failure and diversion, is (weakly) positive. Let us define $\widehat{e}_t \in \{0, e_L, e_H\}$ as the previous investment at time t that requires the highest discount factor for a manager to be loyal and that has not been diverted. To save on notation, we shall use $F(e_t)$ synonymously with $F(\beta(e_t))$ to denote the fraction of managers that would divert e_t. If e_t requires a larger discount factor than any previous realisation, the threshold value is given by the e_t^P satisfying

(2.1)
$$\frac{1 - F\left(e_t^P\right)}{1 - F\left(\widehat{e}_t\right)} p\gamma = 1.$$

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[14] This equilibrium is not unique. Another equilibrium, for instance, is that the manager diverts any invested e_t and that stakeholders never invest e_t.

Here, the fraction indicates the probability that a manager that has not previously diverted will not do so under the investment of e_t^P.

The stakeholder does not condition his investing e_t on time, so that it will be invested as soon as a profitable opportunity is realised. In the appendix we see that a time-contingent strategy would not be part of an equilibrium.

The threshold discount factor for e_H, β_H^*, will be given by

$$(2.2) \qquad p\gamma e_H = \sum_{s=t+1}^{\infty} (\beta_H^*)^s \, p\,(\alpha - \gamma)\, E\,(e)\,.$$

That is, the manager is indifferent between diverting e_H and being loyal in all future periods. The threshold value is

$$(2.3) \qquad \beta_H^* \equiv \frac{\gamma e_H}{\gamma e_H + (\alpha - \gamma)\, E\,(e)}.$$

If future values were equal, the cutoff discount factor for an e_L investment would be $\gamma e_L / (\gamma e_L + (\alpha - \gamma)\, E\,(e)) < \beta_H^*$. But then there would be managers that would divert e_L but not e_H. So the relevant equivalent for e_L is the solution to

$$(2.4) \qquad p\gamma e_L = \sum_{s=t+1}^{\infty} (\beta\,(1 - \theta))^s \, p\,(\alpha - \gamma)\, e_L + \sum_{s=t+1}^{\infty} \beta^s\,(1 - \theta)^{s-1}\, \theta p \alpha e_H,$$

i.e. the discount factor that makes the manager indifferent between being disloyal at e_L on the one hand and behaving at e_L and then be disloyal when an e_H investment is made on the other. The value is

$$(2.5) \qquad \beta_L^* = \frac{\gamma e_L}{\alpha E\,(e)},$$

which is smaller than β_H^*.

LEMMA 1. *For both realisations of the required investment* $e_t \in \{e_L, e_H\}$, *there is a threshold discount factor* β_t^*, *with* $\partial \beta_t^* / \partial e_t > 0$ *and* $\beta_H^* > \beta_L^*$, *such that a manager with* $\beta_i < \beta_t^*$ *will divert* e_t.

Using Lemma 1 and rewriting equation (2.1) as

$$(2.6) \qquad 1 - \frac{1 - F\,(\widehat{e}_t)}{p\gamma} = F\,(e_t^P)\,,$$

we see that $F\,(e_t^P)$ is a monotone, weakly increasing and positive function of $\widehat{e}_t$, where p affects β and F only via its effect on e_t^P. Hence, a higher p increases the left-hand side and thereby e_t^P.

LEMMA 2. *There exists a history-dependent threshold investment size* e_t^P, *increasing in* p, *above which the stakeholder will not invest.*

In particular, the stakeholder will invest e_L only if

(2.7) $(1 - F(e_L))p\gamma \geq 1.$

He will invest e_H under the condition that the manager has previously managed e_L if

(2.8) $\dfrac{1 - F(e_H)}{1 - F(e_L)}p\gamma \geq 1.$

He will invest e_H without any information about the manager only if

(2.9) $(1 - F(e_H))p\gamma \geq 1.$

Thus, the market gradually builds confidence in the manager if inequalities (2.7) and (2.8) hold but (2.9) does not.[15] For reputation-building to take place over time, e_L must be small enough for the first stakeholder to make a pilot investment, and large enough to convince the next stakeholder to increase the stake and invest e_H after having seen the manager being loyal with e_L. The result is easily generalised to several states of e_t and other distributions of β_i. If states are close enough, the manager's reputation can be built over time. Stakeholders then gradually invest more, since the small risk of diversion each time the investment exceeds the previous maximum is offset by the higher gains from larger projects.[16]

For the threat to oust all disloyal managers to be credible we need either a commitment among stakeholders not to deal with managers that have diverted e_H investments, or a restriction on parameters such that it will never be optimal to invest e_L with a manager that has been disloyal at e_H.

If stakeholders can commit not to deal with disloyal managers, such a commitment will be beneficial if a randomly drawn manager will on average be better than a manager who has been disloyal under an e_H investment. This amounts to

$$(1 - \theta)(p\gamma - 1)e_L < \theta(1 - F_H)(p\gamma - 1)e_H + (1 - \theta)(1 - F_L)(p\gamma - 1)e_L,$$

which can be rewritten as

$$F(e_L)(1 - \theta)e_L < (1 - F(e_H))\theta e_H.$$

That is, if the fraction of randomly drawn managers that will divert e_L investments, weighted by the frequency and size of those investments, is dominated by those that will be loyal under e_H investments, weighted by their frequency and size, stakeholders as a collective are better off if they can enforce a boycott of disloyal managers.

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[15]   The appendix presents a mixed-strategy equilibrium that relaxes the constraint given by inequality (2.8) at the expense of tightening inequality (2.7).

[16]   A previous version of this paper computes this for e_t drawn from a continuous support. The calculations are available upon request.

If stakeholders cannot act in a coordinated manner, a parameter restriction makes it individually rational for stakeholders not to deal with disloyal managers. Obviously, it is never optimal to invest with a manager who has been disloyal when trusted with an investment e_L. A manager that will only be entrusted with e_L investments will be loyal if her discount factor exceeds $\gamma / (\theta\gamma + (1 - \theta)\alpha)$. This expression is weakly larger than β_H^* of expression (2.3) if

$$(2.10) \qquad\qquad \theta \geq \frac{e_H - e_L}{2e_H - e_L}.$$

For this restriction on θ, there is no interval of β where managers that have diverted e_H would be loyal with e_L investments.

If neither of the conditions for ousting disloyal managers holds, the threshold discount factor for an e_H investment will be higher, namely

$$\beta_H^{**} \equiv \frac{\gamma}{(1 - \theta)\gamma + \alpha}.$$

Thus also $F(e_H)$ is higher, so inequalities (2.8) and (2.9) are less likely to hold. If the confidence-building has not taken place, or cannot happen, the manager may consider other ways of substituting personal reputation in order to realise profitable investments that would otherwise be forfeited. We shall therefore analyse the prospects that an outside third party may improve the situation.

3. The Role of Consultancies

This section introduces the option of hiring a consultancy in the manager-stakeholder relation. We consider two types of consultancies – the traditional expertise provider and the alternative truth-teller. In both cases, consultancies are hired at the discretion of the manager. The pure expert consultancy raises the probability of success in the project where it is engaged, while the pure truth-teller does not effect the outcome, but instead helps ensuring adequate decision-making by verifying that the manager manages the project in a good way. Thereafter, we shall consider consultancies that can provide both expertise and truth-telling.

In the traditional view, consultants are experts bringing in knowledge that the client corporation does not possess or cannot use on its own. In terms of our model, it seems natural to interpret this as an increase in the success probability of each project. This degree of expertise is measured as $\kappa \in [0, 1 - p]$.[17] We assume that the decision to hire an expert consultancy is made, or can be contracted on, before the stakeholder invests e_t.

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[17] An alternative interpretation is that the consultancy can eliminate risk (i.e. add $1 - p$ to the success probability) with probability $\kappa \in [0, 1]$ in all projects. The results of the subsequent analysis hold in this case also.

The manager will hire the expert consultancy provided its price exceeds the value added to her. The project value is the direct value stemming from a higher expected outcome of the investment, which equals $\kappa (\alpha - \gamma) e_t$ if the manager intends to manage the investment and $\kappa \alpha e_t$ if it is to be diverted. We shall assume that the manager and the consultancy can write a binding contract stipulating that the manager pay the consultancy a share $\psi \in (0, 1)$ of the project value created to the manager.[18] Even though it is likely that hiring an expert consultancy increases the market's willingness to invest, it will not in general be enough to induce larger investments if the distance between e_L and e_H is large, to the disadvantage of both the manager and the stakeholders on the market.

From the story so far there seems to be an obvious role for someone who could help the manager committing to her being loyal by verifying her choice. We therefore extend the model to allow for the consultancy to provide credibility rather than expertise. The assumption is that having a credible consultancy verifying the way of management implies that the investment will not be diverted, unless the consultancy is colluding with the manager. As an example, imagine a venture capital or private equity firm asking its investors for money. The investors cannot ex ante know whether the investment is wise or not, but the judgment of a management consultancy can confirm that the investment proposal is sensible, even though the recommendation as such does not affect the prospects of the investment. Another example is when a manager asks her employees to exert high effort in a new venture, the benefits of which are uncertain to them. It is likely that work morale be enhanced if a credible outsider verifies that the project is in the long-term interest of the company.

Management consulting strategies. At least to some extent, expertise and truth-telling capabilities are likely to be complementary, not least because any credible truth-teller would need to possess a considerable knowledge in the relevant field. We shall endogenise the strategy choice of a consultancy that has the opportunity of selling both. We see that there is a Perfect Bayesian Equilibrium in which consultancies are divided into two groups – truth-tellers and pure experts –, and that truth-tellers generally can charge higher fees, but have to restrict the amount of expertise that they offer.

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[18]   The total value also includes a reputational value. This is the value to the manager that is generated by changes in the stakeholder's threshold investment size e_t^P, and thereby the manager's current and future payoffs. This could be either positive or negative. The option of an expert consultancy increases the value of a certain project, but it also increases the temptation to divert the invested resources. If the expertise offered is the same in all periods, it will not change the manager's incentives, except for its positive effect on the stakeholder's willingness to pay. If the expertise changes over time, periods with a high expertise offer may create a temptation for the manager that is not offset by future gains.

A consultancy is characterised by its discount factor δ and the level of expertise κ it decides to offer, both of which are commonly observable. A consultancy can potentially sell both expertise and truth-telling. If it decides to sell only expertise, another, less efficient, truth-telling player[19] will verify the chosen strategy if investments exceed the stakeholder's threshold. Since this player by assumption is less efficient, the manager will prefer to hire a truth-telling consultancy if the latter is accepted by the stakeholder. If the consultancy decides to sell truth-telling as well, it is paid for doing so only by client managers facing investments that would otherwise not have been made, i.e. over e_t^P. For assignments below the threshold, the client will only reward expertise. Hence, the strategic decision of the consultancy is to choose whether it should offer only expertise or both truth-telling and expertise, and what level of expertise to offer.

In each period, the consultancy is faced with a new potential client with a separate $e_t \in \{e_L, e_H\}$, with $e_L < e^P < e_H$. Similarly, the client meets a new consultancy each period. The consultancy can keep a share ψ of the expected project value to the manager. Since we focus on the demand for consulting services, we normalise all costs of the consultancy to zero. Each consultancy will thus face a pool of long-lived managers, which in turn each needs investments from a sequence of short-lived stakeholders.

The crucial question is whether truth-telling consultancies can sustain their objectivity. The potential temptation is to collude with the manager to help her divert the investment, by falsely verifying that she is loyal. We allow for the case where a disloyal manager will not be automatically detected if she colludes with a truth-telling consultancy. A consultancy producing hard evidence in favour of the pursued managerial policy makes it harder for the market to evaluate decision-making ex post. It may be difficult for a disappointed stakeholder to claim mismanagement when a credible consulting report has been followed. The manager could counter complaints from the stakeholder with a statement that the consultants were there to do the thinking, and that objections on behalf of the manager would have been considered suspicious.

Moreover, it may be possible to disguise side payments to a consultancy as regular assignments. In line with the concern expressed in the Sarbanes-Oxley Act that a variety of activities may facilitate side payments, it is likely that these fake projects will be harder to reveal if the consultancy offers a wide assortment of expert services. We shall therefore assume that the probability of detecting collusion, $D(\kappa)$, is weakly negatively related to the degree of expertise, so $D'(\kappa) \leq 0$.[20]

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[19] This player could for example be an experienced auditor, board member or employee representative.

[20] This is not crucial for the results obtained. In fact, any detection probability in the interval $(0, 1]$ which is not too positively dependent on κ yields qualitatively the same results.

If the fraud is discovered, the trustworthiness of both the manager and the consultancy are lost on the market. The manager will be ousted from the market, as in our basic model. After having been caught, the consultancy can only sell its expertise. However, as the consultancy's judgment is the single verifiable document, there can be no legal punishment. A consultancy selling only expertise cannot be bribed, since it does not provide any credibility.

The timing in each period is then the following.

1. The manager and the stakeholder observe e_t.

2. The manager is randomly matched with a consultancy. If the consultancy is accepted as a truth-teller, it can be hired as such. Otherwise the manager will engage a non-consultancy truth-teller if $e_t = e_H$.

3. Observing the consultancy's δ and taking into account any information about the manager's β, the stakeholder decides whether to invest or not.

4. If a truth-teller was hired, the client manager chooses whether to bribe the consultancy in order to divert the investment or not.

5. If offered a bribe, a truth-telling consultancy decides whether to accept or reject it.

6. The manager chooses whether to be loyal or disloyal.

7. The project is realised and ψ times the expected project value to the manager is paid to the consultancy. If the investment was loyally managed and successful, γe_t is returned to the stakeholder.

8. Unless a truth-teller has accepted a bribe, the stakeholder and the market learn the true outcome, and the market updates its beliefs about β_i. If the truth-teller did obfuscate the project information, this is detected with probability $D(\kappa)$, in which case the manager is ousted from the market and the consultancy loses its truth-telling capacity from then on.

The manager's expected per-period value of a consultancy selling only expertise is $V^{\exp} = (1 - \theta)(\alpha - (1 - F(e_L))\gamma)\kappa e_L + \theta(\alpha - \gamma)\kappa e_H$. The analogous expression for consultancies selling both is $V^C = (1 - \theta)(\alpha - \gamma)\kappa e_L + \theta(\alpha - \gamma)(p + \kappa)e_H$. The difference $V^C - V^{\exp}$ at expertise level κ is

$$(3.1) \qquad \Delta V(\kappa) = \theta(\alpha - \gamma)pe_H - (1 - \theta)F(e_L)\gamma\kappa e_L.$$

From the expression we see that the gain from selling truth-telling in addition to a given expertise κ is positive, unless there are many managers that would divert the small projects, i.e. unless $F(e_L)$ is large. This observation is one of our main results, and could help explain the premium charged by the most prestigious consulting firms, devoted to advising top management.

The gain is greater if the projects above the stakeholder's threshold are large or frequent, if the value generated is large, while it is smaller if expertise is highly valuable or the manager can gain a lot from deviating. All factors decreasing the difference stem from private benefits for the manager and are socially offset by corresponding losses for the stakeholder.

Let $b\left(\beta_i, \kappa, \psi\right)$ denote the manager's gain from a fake testimony by the consultancy, i.e. the value of what is gained from diverting $(p + \kappa)\gamma e_H$ minus the value of a clean track record reputation (determined by β_i) times the risk of getting caught. Then

$$(3.2) \qquad b\left(\beta_i, \kappa, \psi\right) = \max\left\{(p + \kappa)\gamma e_H - \tau\left(\beta_i\right), 0\right\},$$

where

$$(3.3) \qquad \tau\left(\beta_i\right) \equiv D\left(\kappa\right) \sum_{s=t+1}^{\infty} \left(\beta_i\right)^s \left(\begin{array}{c} (1 - \psi)(p + \widehat{\kappa})(\alpha - \gamma)\theta e_H + \\ + (p + (1 - \psi)\widehat{\kappa})(\alpha - \gamma)(1 - \theta)e_L \end{array} \right),$$

where $\widehat{\kappa}$ indicates the expertise offered to the client by future consultancies, a value exogenous to the consultancy engaged at time t. The term $\tau\left(\beta_i\right)$ denotes the detection probability times the present value of a good reputation from the point of view of the manager with β_i. From the stakeholder's viewpoint, $\tau\left(\beta_i\right)$ and thus $b\left(\beta_i, \kappa, \psi\right)$ are stochastic variables, dependent on $\widehat{e}_t$. A manager that has previously been loyal with an e_L investment is less likely to offer the consultancy a large bribe ($\tau\left(\beta_i\right)$ when $\widehat{e}_t = e_L$ first-order dominates $\widehat{e}_t = 0$) and thus poses a lower risk for corruption.

In order for the manager not to bribe the consultancy selling both truth-telling and expertise with discount factor δ, we need that the consultancy will never accept a bribe when it is worthwhile for the manager (that is, when $b\left(\beta_i, \kappa, \psi\right) > 0$). This condition, which we shall refer to as the collusion constraint, equals

$$(3.4) \qquad b\left(\beta_i, \kappa, \psi\right) + D\left(\kappa\right) \sum_{s=t+1}^{\infty} \delta^s \psi V^{\exp} + (1 - D\left(\kappa\right)) \sum_{s=t+1}^{\infty} \delta^s \psi V^C \leq \sum_{s=t+1}^{\infty} \delta^s \psi V^C.$$

The threshold value for the consultancy's discount factor is

$$(3.5) \qquad \delta \geq \delta_1^{CC} \equiv \frac{b\left(\beta_i, \kappa, \psi\right)}{b\left(\beta_i, \kappa, \psi\right) + D\left(\kappa\right)\psi\Delta V\left(\kappa\right)}.$$

Differentiation of δ_1^{CC} yields our first proposition.

PROPOSITION 1. *The threshold value δ_1^{CC} and thereby the corruption propensity is higher (i) if e_H is large relative to $\widehat{e}_t$ and (ii) if κ is large. For small values of ψ, the threshold value and the corruption propensity is decreasing in ψ, whereas for large values it is decreasing or increasing, depending on β_i.*

PROOF. See Appendix. □

First, the corruption propensity is higher the larger is the investment e_H relative to what has earlier been invested, $\widehat{e}_t$. This opens up for a segmentation of the truth-telling consulting market according to the difficulties in the manager-stakeholder relation. Increased project variance leads to higher requirements on the consultancy. Large projects in comparison to previous investments give opportunities for collusion that will be resisted only by patient consultancies. If we are willing to say that project size variance has increased for many firms since the 1970s, we may have an explanation to the success of well-renowned strategy consulting brands in recent decades.

Second, the corruption propensity is positively dependent on κ. Increasing expertise may harm the consultancy's incentives to maintain its independence. The differential between the fees charged under truth-telling and those under expertise is what disciplines truth-tellers. High expertise increases the value of future payments, even if truth-telling credibility is lost. In addition, a higher expertise may facilitate the payment of bribes.[21] Hence, even without any costs of building and maintaining expertise, a consultancy can choose to refrain from enhancing expertise in order to keep the focus on more general skills aimed at expanding the contract space between the client and its stakeholders.

The final result is that for most values of ψ – in particular when the consultancy's share of value created is relatively small – the corruption propensity is higher the weaker is the consultancy's bargaining position ψ. Hence, a consultancy anticipating intense competition might not be able to sustain its credibility. This suggests a barrier to entry in the top segment of the management consulting market. By trying to outbid existing players potential challengers would drive down the consultancies' margins, and exactly those margins form the future payment stream that counterweight today's collusion opportunities. Therefore all clients would want to be with profitable consultancies, and the degree of competition in the truth-telling segment might be restricted in equilibrium.[22] The result helps explain the dominance of a relatively small number of global players, and the high fees they charge, in the top-management strategy niche. On the other hand, if ψ approaches 1, managers with intermediate β_i will see a considerable part of their future value – which helps discipline them – being cut into by the consultancies. As explained in the proof, in this case the corruption risk would decrease should the consultancies' bargaining power weaken a little. In all, we can say

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[21] The first explanation may be referred to as the Shapiro-Stiglitz effect, since it resembles their 1984 efficiency wage model, in which too good an outside option leads to workers slacking. The second may be called the Sarbanes-Oxley effect, as it expresses the same fears of increased corruptibility under multi-area consulting as the 2002 act.

[22] This is formally modelled later in this section. In brief, the number of truth-telling consultancies will in equilibrium be a fraction of the clients, and consist of the players with highest discount factors.

that truth-telling consultancies may need considerable market power, but consultancies in general cannot be too strong vis-à-vis their clients.

Combining the analysis of the collusion constraint with our basic results we can identify the discount factor that a stakeholder finds acceptable. From equation (2.1), we know that in absence of a consultancy, a stakeholder will invest e_H if $(1 - F(e_H)) p\gamma \geq (1 - F(\widehat{e}_t))$. When hiring truth-tellers is an option, the relevant investment history does not only include $\widehat{e}_t$, but also what has happened to previous e_H investments, which we shall denote $\widehat{h}_t$. It is possible that a reported failure could be an occasion of collusion between the manager and the alleged truth-teller. Obviously, such suspicions are strengthened if reported failures coincide with truth-telling assignments where consultancies have a relatively low δ. The relevant investment history is thus the pair $\left\{ \widehat{e}_t, \widehat{h}_t \right\}$. From the viewpoint of a stakeholder knowing the history $\left\{ \widehat{e}_t, \widehat{h}_t \right\}$ and the distribution $F(\beta(e))$, the cutoff δ_1^{CC} is a stochastic variable dependent on $\widehat{e}_t$, $\delta_1^{CC} \left| \left\{ \widehat{e}_t, \widehat{h}_t \right\} \right.$. For a given $\widehat{h}_t$, $\delta_1^{CC} \left| \left\{ e_L, \widehat{h}_t \right\} \right.$ first-order dominates $\delta_1^{CC} \left| \left\{ 0, \widehat{h}_t \right\} \right.$. The risk that the manager will be able to bribe a consultancy with discount factor δ and divert the investment is $F(e_H) \cdot \Pr \left[\delta < \delta_1^{CC} \left| \left\{ \widehat{e}_t, \widehat{h}_t \right\} \right. \right]$, i.e. the product of the probability that a randomly chosen manager would divert e_H and the probability that a truth-telling consultancy with δ would accept the bribe. Hence, even if the consultancy's discount factor is smaller than the maximum value δ_1^{CC} can take on given the investment history, the stakeholder will invest if the corruption risk is sufficiently small. Clearly, for $\delta = 1$ the inequality will always hold, for $\delta = 0$ it will never be satisfied, and for some $\delta_1^{acc} \in \left(0, \delta_1^{CC} \right)$ it holds with equality. With a higher δ_1^{CC} and a lower $\widehat{e}_t$, δ has to be higher to satisfy the equation, so δ_1^{acc} is increasing in δ_1^{CC}. We state this in a lemma.

LEMMA 3. *The stakeholder will not accept a truth-teller with a discount factor δ below a threshold value δ_1^{acc}, increasing in δ_1^{CC}, where*

$$\delta_1^{acc} \equiv \delta \; such \; that \; \frac{1 - F(e_H) \cdot \Pr \left[\delta < \delta_1^{CC} \left| \left\{ \widehat{e}_t, \widehat{h}_t \right\} \right. \right]}{1 - F(\widehat{e}_t)} p\gamma = 1.$$

This lemma gives us our next proposition, which establishes the existence of an equilibrium.

PROPOSITION 2. *For each history $\left\{ \widehat{e}_t, \widehat{h}_t \right\}$, there exists a Perfect Bayesian Equilibrium with the following properties: A consultancy with δ equal to or larger than δ_1^{acc} will sell a limited amount of expertise to a manager facing e_L projects, truth-telling and a limited amount of expertise to a manager facing e_H projects, and will collude with the manager only when $\delta \in \left(\delta_1^{acc}, \delta_1^{CC} \right)$, whereas a consultancy with δ smaller than δ_1^{acc}*

will sell only expertise. Stakeholders accept a consultancy with $\delta \geq \delta_1^{acc}$ as truth-teller
unless the consultancy has colluded and been detected before, but not a consultancy with
$\delta < \delta_1^{acc}$.

PROOF. By definition of δ_1^{acc}, stakeholders have no incentive to accept a consultancy
with a discount factor below that value. Furthermore, trusting a consultancy with
discount factor larger than δ_1^{acc} unless a fraud has actually been revealed will be rational,
given beliefs that it will collude with managers only when $\delta \in \left(\delta_1^{acc}, \delta_1^{CC}\right)$. Managers
will never offer a bribe exceeding that of expression (3.2) to a consultancy hired for
truth-telling. A consultancy with a discount factor below δ_1^{acc} will not be hired for
truth-telling, given the strategy of stakeholders. A consultancy with a discount factor
above δ_1^{acc} would not collude with the manager unless their discount factor is below
δ_1^{CC}, given that they will be trusted. Hence, all parties act in their best interest and
beliefs follow (degenerately) from Bayes' rule.   □

Proposition 1 above shows that selling expertise is sometimes detrimental to selling
truth-telling. We now consider the strategic choice of product mix as a function of
project and consultancy characteristics. To illustrate the next points in a tractable
way, we study the consultancy that will survive as a truth-teller in the long run.[23]
That is, the consultancy will be able to turn down the potential bribe $(p + \kappa) \gamma e_H$.
This includes the most challenging case where $e_t = e_H$ and $\widehat{e}_t = 0$, i.e. when the
stakeholder has not yet any confidence in the manager and they are confronted with a
project of size e_H. [24]

Furthermore, we assume that the consultancy cannot extract any gains from di-
version, so that $\Delta V = \theta (\alpha - \gamma) p e_H$.[25] We shall study the two cases where $D(\kappa)$
is constant and where $D(\kappa) = (1 - p - \kappa) / (1 - p)$. These are extreme cases of a
more general function $D(\kappa) = C(1 - p - A\kappa) / (1 - p)$. Since intermediate cases are
qualitatively equivalent, we again use the extremes for tractability.

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[23] In line with the observation and analysis of Fishman & Rob (2005), firms in the top strategy
segment stress a long history in company presentations.

[24] In principle, this limits the strategy set too much. An optimally chosen strategy may be to sell
truth-telling and set κ so as to satisfy $\delta > \delta_1^{acc}$, but rationally plan to accept a large bribe and switch
to pure expertise consulting. The consultancy may also plan to sell truth-telling only to clients with
$\widehat{e}_t = e_L$, as discussed below. Nevertheless, we restrict the analysis to the time-invariant strategies, i.e.
offering maximum expertise and no truth-telling at all, or to be able to resist every possible bribe.
This allows for explicit and relatively simple solutions. At the expense of clarity, intermediate cases
would introduce a few more (computationally complicated) threshold values without yielding much
more insight.

[25] If we were to include the second term of ΔV as well, the consultancy's decision space would be
even more restrictive.

This threshold discount factor will be

(3.6)
$$\widetilde{\delta}_1 \equiv \frac{\gamma}{\gamma + D\left(\kappa\right)\psi\left(\alpha - \gamma\right)\frac{p}{p+\kappa}\theta}.$$

The problem for a consultancy with the discount factor δ is to decide which strategy gives the highest profit under this requirement – selling maximum expertise or selling truth-telling and a restricted amount of expertise. We have the following propositions.

PROPOSITION 3. *For $\widehat{e}_t = 0$ and $D\left(\kappa\right) = C$, where $C \in \left(0,1\right)$, a consultancy selling both truth-telling and expertise with*

$$\delta < \frac{\gamma}{\gamma + C\psi\theta\left(\alpha - \gamma\right)p}$$

must restrict its expertise to

(3.7)
$$\kappa_1^* \equiv \frac{C\psi\theta\left(\alpha - \gamma\right)p}{\left(\frac{1-\delta}{\delta}\right)\gamma} - p.$$

For $\widehat{e}_t = 0$ and $D\left(\kappa\right) = \left(1 - p - \kappa\right)/\left(1 - p\right)$, a consultancy selling both truth-telling and expertise must restrict its expertise to

(3.8)
$$\kappa_1^* \equiv \frac{\psi\left(\alpha - \gamma\right)\theta - \left(\frac{1-\delta}{\delta}\right)\gamma}{\left(\frac{1-p}{p}\right)\left(\frac{1-\delta}{\delta}\right)\gamma + \psi\left(\alpha - \gamma\right)\theta}\left(1 - p\right),$$

which is smaller than $\left(1 - p\right)$ for all $\delta < 1$. If $\kappa_1^* < 0$, the consultancy cannot sell truth-telling.

PROOF. This is given by solving for κ in equation (3.6) under the respective conditions. Expression (3.7) is smaller than $1 - p$ for all $\delta < \gamma/\left(\gamma + C\psi\theta\left(\alpha - \gamma\right)p\right)$, while (3.8) is smaller than $1 - p$ for all parameter values. $\square$

PROPOSITION 4. *For $\widehat{e}_t = 0$ and $D\left(\kappa\right) = C$, where $C \in \left(0,1\right)$, a profit-maximising consultancy should sell both truth-telling and a constrained amount of expertise if its discount factor δ exceeds the threshold value*

(3.9) $\delta_1^{PM} \equiv \dfrac{\gamma\left(\left(1 - \theta\right)e_L + \left(1 - p\right)\theta e_H\right)}{\gamma\left(\left(1 - \theta\right)e_L + \left(1 - p\right)\theta e_H\right) + C\psi\theta\left(\alpha - \gamma\right)p\left(\left(1 - \theta\right)e_L + \theta e_H\right)} \in \left(0, 1\right).$

For $\widehat{e}_t = 0$ and $D\left(\kappa\right) = \left(1 - p - \kappa\right)/\left(1 - p\right)$, a profit-maximising consultancy should sell both truth-telling and a constrained amount of expertise if its δ exceeds the threshold value

(3.10) $\delta_1^{PM} \equiv \dfrac{\gamma\left(1 - p\right)\left(\left(1 - \theta\right)e_L + \left(1 - p\right)\theta e_H\right) - p^2\theta^2 e_H\psi\left(\alpha - \gamma\right)}{\gamma\left(1 - p\right)\left(\left(1 - \theta\right)e_L + \theta e_H\right)} \in \left(0, 1\right).$

PROOF. See Appendix. $\square$

The truth-telling-compatible amount of expertise is a fraction of the maximum, which increases in the level of the consultancy's credibility. Again we find that the higher is the consultancy's share of the value created, the more can the clients rely on its truth-telling capability for any amount of expertise provided.

Hence, the analysis provides one explanation why some consultancies refrain from extending their portfolio and selling other managerial services, even though there might otherwise be significant economies of scope in both production and marketing of these services. This enables them to keep their credibility, which in turn allows them to reach the high-revenue truth-telling segment, which explains why those with the highest turnover per consultant are found in this group. The entry to this segment is limited by the need for consultancies to have a strong bargaining position and a high discount factor.

Combining these results with Proposition 1, we can state the following:

PROPOSITION 5. *For $\widehat{e}_t = e_L$, κ_1^* is larger and δ_1^{PM} is smaller than for $\widehat{e}_t = 0$.*

PROOF. By Proposition 1, the derivatives of δ^{CC} with respect to $(e_H - \widehat{e}_t)$ and κ go in the same direction. Hence, a smaller distance between e_H and $\widehat{e}_t$ allows for a higher incentive-compatible κ. This increases the relative benefit of selling both truth-telling and expertise, which lowers the δ_1^{PM} threshold.   □

The maximum truth-telling-compatible expertise is decreasing, and the threshold discount factor increasing, in the relative size of the large investment to the maximum previous investment. A consultancy that wishes to stress its truth-telling capacity, even under challenging conditions – i.e. a high e_H-to-$\widehat{e}_t$ ratio – will not emphasise operational expertise in its general marketing strategy.[26] We shall now see that it is not a coincidence that almost all of these high-margin consultants have global brand names.

The importance of global brands in consulting. If the consultancy is matched with two clients in each period, there will be occasions on which both clients would be willing to bribe the consultancy, i.e. when large e_t investments have been made in both firms. On the other hand, in most of the cases the temptation is weakened, if it arises at all. We shall assume that if the consultancy has accepted a bribe and is revealed,

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[26] However, in a particular client relationship the focus of the assignments may develop to more of expertise as the manager of the firm builds her reputation vis-à-vis the market. While this might yield revenues to consultancies with free resources, a consultancy with a high discount factor would wish to redeploy its efforts in truth-telling projects, either in larger projects or in other manager-stakeholder settings, to reap the profits from its credibility. This is in line with a statement from a consulting partner interviewed for the parallel study. He claims that his firm is doing more operations work than people think, but is marketing only strategy services.

the information is spread also to all future clients and their stakeholders. This helps us illustrate the main mechanisms of branding.

Consider a manager that faces an e_H investment and a stakeholder that should accept or reject a truth-telling consultancy with a discount factor just below δ_1^{acc}. Clearly, if the consultancy has only one client it will not be accepted by the stakeholder, by definition of δ_1^{acc}. However, if the consultancy has two identical clients in each period, chances are that the other project will involve a small investment, in which case the average bribe to the consultancy will be smaller. The probability that the other project is large is of course θ. Then the bribe will be twice as large, but the value of a future clean track record is also twice as large. In that case the collusion constraint requires that the consultancy's discount factor exceeds

$$\frac{2b\left(\beta_i,\kappa,\psi\right)}{2b\left(\beta_i,\kappa,\psi\right)+2D\left(\kappa\right)\psi\Delta V\left(\kappa\right)}=\frac{b\left(\beta_i,\kappa,\psi\right)}{b\left(\beta_i,\kappa,\psi\right)+D\left(\kappa\right)\psi\Delta V\left(\kappa\right)}=\delta_1^{CC}.$$

With probability $(1-\theta)$ the other project is small, in which case the consultancy will not be bribed by the manager in the other project. Then the collusion constraint only requires a discount factor larger than or equal to

$$\frac{b\left(\beta_i,\kappa,\psi\right)}{b\left(\beta_i,\kappa,\psi\right)+2D\left(\kappa\right)\psi\Delta V\left(\kappa\right)}<\delta_1^{CC}.$$

Defining

$$(3.11)\quad \delta_2^{CC}\equiv\theta\frac{b\left(\beta_i,\kappa,\psi\right)}{b\left(\beta_i,\kappa,\psi\right)+D\left(\kappa\right)\psi\Delta V\left(\kappa\right)}+\left(1-\theta\right)\frac{b\left(\beta_i,\kappa,\psi\right)}{b\left(\beta_i,\kappa,\psi\right)+2D\left(\kappa\right)\psi\Delta V\left(\kappa\right)},$$

we see that $\delta_2^{CC}<\delta_1^{CC}$. The acceptance level is then given by

$$(3.12)\qquad \delta_2^{acc}\equiv\delta \text{ such that } \frac{1-F\left(e_H\right)\cdot\Pr\left[\delta<\delta_2^{CC}\,|\widehat{e}_t\right]}{1-F\left(\widehat{e}_t\right)}p\gamma=1,$$

and since δ^{acc} is increasing in δ^{CC}, also $\delta_2^{acc}<\delta_1^{acc}$. Repeating the exercise when there are three clients gives

$$\delta_3^{CC}\equiv\theta^2\frac{3b\left(\beta_i,\kappa,\psi\right)}{3b\left(\beta_i,\kappa,\psi\right)+3D\left(\kappa\right)\psi\Delta V\left(\kappa\right)}+$$

$$(3.13)$$

$$+2\theta\left(1-\theta\right)\frac{2b\left(\beta_i,\kappa,\psi\right)}{2b\left(\beta_i,\kappa,\psi\right)+3D\left(\kappa\right)\psi\Delta V\left(\kappa\right)}+\left(1-\theta\right)^2\frac{b\left(\beta_i,\kappa,\psi\right)}{b\left(\beta_i,\kappa,\psi\right)+3D\left(\kappa\right)\psi\Delta V\left(\kappa\right)}.$$

Employing some algebra we find that $\delta_3^{CC}<\delta_2^{CC}$. If there are three or four other clients, it will be even more seldom that all clients will be offering large bribes. By

the law of large numbers, it is clear that there will be fewer and fewer cases when the discount factor needed is very high.[27]

Recognising that the average bribe offered will be lower the more clients the consultancy has, we shall consider the case where the truth-telling consultancy is matched with a large number, n, of new firms in each period. The total bribe offered ex ante will be close to $n\theta b\left(\beta_i, \kappa, \psi\right)$.

The truth-telling constraint therefore equals

$$(3.14) \qquad \delta_n^{CC} \equiv \frac{\theta b\left(\beta_i, \kappa, \psi\right)}{\theta b\left(\beta_i, \kappa, \psi\right) + D\left(\kappa\right)\psi\Delta V\left(\kappa\right)}.$$

Comparing this with δ_1^{CC}, we can establish the following proposition.

PROPOSITION 6. *The threshold discount factor δ_n^{CC} is smaller than δ_1^{CC} for all parameter values. Therefore also δ_n^{acc} is smaller than δ_1^{acc}.*

There exists an interval for the consultancy's discount factor $\left(\delta_n^{CC}, \delta_1^{CC}\right)$ where the collusion constraint is dependent on the law of large numbers, or that the consultancy has a large enough client stock. For a consultancy with numerous important clients, the potential bribe offered by an average client with intentions to divert becomes relatively smaller. There is also another effect from establishing a large stock of clients, further distinguishing global brands. Using the same assumption as earlier, that the consultancy must be able to resist a bribe of $(p + \kappa)\gamma e_H$ and that $\Delta V = \theta\left(\alpha - \gamma\right)pe_H$, we have a new maximum expertise under large number conditions for a player with discount rate δ, namely

$$(3.15) \qquad \kappa_n^* \equiv \frac{C\psi\left(\alpha - \gamma\right)p}{\left(\frac{1-\delta}{\delta}\right)\gamma} - p,$$

for $D\left(\kappa\right) = C$ and

$$(3.16) \qquad \kappa_n^* \equiv \frac{\psi\left(\alpha - \gamma\right) - \left(\frac{1-\delta}{\delta}\right)\gamma}{\left(\frac{1-p}{p}\right)\left(\frac{1-\delta}{\delta}\right)\gamma + \psi\left(\alpha - \gamma\right)}\left(1 - p\right),$$

if $D\left(\kappa\right) = \left(1 - p - \kappa\right)/\left(1 - p\right)$.

---

[27] If there are N independent firms with investment history $\widehat{e}_t$, the average per-client bribe is a binomial distribution $f\left(N, \theta\right) \cdot b\left(\widehat{e}_t\right)$. Its average is $\theta b\left(\widehat{e}_t\right)$, and the standard deviation of an N-sized sample is $\sqrt{\theta\left(1 - \theta\right)b\left(\widehat{e}_t\right)/N}$, which approaches zero as N grows large. In a numerical example with $\theta = 0.5$, the probability that all clients should face large projects fall below 1 percent if there are seven firms and below 0.1 percent if there are ten. Conversely, the probability that there are more than seven out of ten large projects is smaller than 6 percent.

COROLLARY 1. *The maximum expertise compatible with truth-telling with a large client stock, κ_n^*, is larger than κ_1^*.*

PROOF. In both cases, we are effectively replacing $\theta < 1$ in expressions (3.7) and (3.8) with 1. Since this affects the numerator proportionately more, the κ_n^* values are larger than their κ_1^* equivalents. $\square$

COROLLARY 2. *For all parameter values, the threshold discount factor δ_n^{PM} is smaller than δ_1^{PM}.*

PROOF. See Appendix. $\square$

Relative to the case in which consultancies face one client at a time, the threshold discount factor and the risk for corruption when consultancies have many clients are lower. This is one of our main results and constitutes the truth-teller theory behind the globalisation of management consulting, which is faster relative to many other outsourcing areas and most pronounced in the top strategy segment.

As hinted in the introduction, management literature suggests that knowledge management be the driving force behind the growth of global players. Global management consulting firms exploit economies of scale in deploying methods of analysis and disseminating knowledge worldwide, and can easily also offer services abroad for a client's international business. This is certainly the case for many consultancies specialising in providing expertise. However, it cannot explain why being global seems even more important to players offering a narrower range of consulting services.

The result of this analysis, on the other hand, provides at least two explanations as to why a global brand may be at least as important for a truth-telling consultancy, voluntarily restraining its portfolio of expertise. First, a global brand makes the consultancy more credible, by its effects on the required discount rate. A global firm risks losing relatively more from opportunistic behaviour. For example, we could imagine that a small consultancy with a discount factor allowing only some truth-telling – in cases with a low e_H-to-$\hat{e}_t$ ratio – could start taking on more challenging projects when it shows that it expands its client stock. Second, as an indirect effect, while expertise must still be restrained, a global brand relaxes the constraint on the expertise offer slightly, which enhances the per-period value of the consultancy.

Endogenous entry and market size. We shall make an extension that endogenises the scope and size of the market for truth-telling consultancies. To that end, we shall abstract from any expertise and assume that only truth-telling is sold to a share θ of client managers facing e_H, and instead concentrate on the bargaining power of the consultancies and on the workforce costs of the consultancy.

Following up on the last statement of Proposition 1, we assume that the bargaining position of the consultancy is a function of supply and demand on the market. In particular, we say that

$$(3.17) \qquad\qquad \psi(M, m) = \frac{M - m}{M},$$

where $M > 1$ is the number of clients and $m \leq M$ the number of truth-telling consultancies. Thus, if there are exactly as many consultancies as clients, the consultancies can reap nothing of the value created, whereas a consultancy with monopoly can get almost all of it. Under the assumption of a constant e_H, a consultancy with

$$(3.18) \qquad\qquad \delta > \frac{\gamma}{\gamma + (\alpha - \gamma)\theta\frac{M-m}{M}}$$

can enter. If $\delta = 1$ it can enter anytime as long as the number of entrants is below M, and it can never enter if $\delta < \gamma / (\gamma + (\alpha - \gamma)\theta)$. In equilibrium, the number of consultancies will be restricted and consist of the m^* consultancies with the highest discount factors, where

$$(3.19) \qquad\qquad m^* = \max\left\{ M, \left(1 - \frac{\left(\frac{1-\delta_{\min}}{\delta_{\min}}\right)\gamma}{\theta(\alpha - \gamma)}\right)M \right\},$$

where $\delta_{\min}$ is the smallest of these. The value of $\delta_{\min}$ will in turn of course depend on the density of potential truth-telling consultancies over the support of δ. We note that a marginal consultancy (the one with exactly a high enough δ) will always have to leave the truth-telling market if another consultancy with a higher δ enters. Then we see from equation (3.18) that the more consultancies there are in the market, the higher will the lowest sufficient δ be. Hence, the more consultancies that have δ close to 1, the more of them will find a place in the market.

Evidently, m^* is a fixed share of the client stock, and we see that under these assumptions, the endogenous bargaining position is

$$(3.20) \qquad\qquad \psi = \frac{\left(\frac{1-\delta_{\min}}{\delta_{\min}}\right)\gamma}{\theta(\alpha - \gamma)}.$$

The expression shows that the consultancy's bargaining position is stronger the higher is the stakeholder's share of a successful project, γ. Intuitively, γ is a measure of the agency problem, i.e. the extent to which the interests of managers and stakeholders diverge. If the problem is severe, the need for an independent consultancy is dire.

Assume now that client firms are heterogeneous in size, while still facing e_H projects with probability θ and e_L with the complementary likelihood. The client firm size E is uniformly distributed from $\underline{E}$ to $\overline{E}$, and $e_t = \varepsilon_t E$, so for a given $\varepsilon_t = \{\varepsilon_L, \varepsilon_H\}$,

investment sizes are larger for large firms than for small. Furthermore, to serve a subset $E_i \in [\underline{E}, \overline{E}]$ of firms, a consultancy needs an amount of labour services proportional to the number of firms in the subset. For simplicity, we assume that all assignments require the same amount of labour input, regardless of client size. The employees of the consultancy are heterogeneous in terms of their productivity, but they all have to be paid the same salary.[28] This per-head remuneration will be a function of an exogenous outside opportunity and the number of clients that the consultancy wishes to serve. Assuming that the individual productivity is linearly distributed, so that the (fictive) top individual can provide a labour unit at zero cost, whereas the last individual needed to serve the whole range of potential clients faces a cost proportional to the distance $\overline{E} - \underline{E}$, we can express the salary cost per labour unit $c\left(\overline{E} - \underline{E}\right)$.

Consider one of the m consultancies that can sell truth-telling under the conditions above, and that has to decide on what range of clients to serve. Obviously, it would like to serve the largest firms, because there the value added will be largest. Similarly, it would like to recruit the employees with the highest productivity. Hence, it will sell services in the segment $[E^*, \overline{E}]$. Extending the client stock by lowering the threshold client size increases revenues at a decreasing rate. At the same time the labour costs increase and accelerate, because the marginal labour recruited will be less productive and increase salaries of inframarginal employees. We assume that the m firms on the market will split the serviced range evenly, while treating the number of competitors as exogenous to the individual firm. Then the profit-maximising problem of the individual firm is

$$\max_{E^*} \psi\theta\left(\alpha - \gamma\right)p\varepsilon_H\left(\frac{\overline{E} + E^*}{2}\right)\left(\frac{\overline{E} - E^*}{m}\right) - c\left(\overline{E} - E^*\right)\left(\frac{\overline{E} - E^*}{m}\right)$$

with the solution

(3.21) $$E^* = \max\left\{\underline{E}, \frac{2c}{2c + \psi\theta\left(\alpha - \gamma\right)p\varepsilon_H}\overline{E}\right\}$$

or, using equation (3.20),

(3.22) $$E^* = \max\left\{\underline{E}, \frac{2c}{2c + \left(\frac{1-\delta_{\min}}{\delta_{\min}}\right)\gamma p\varepsilon_H}\overline{E}\right\}.$$

---

[28] An equal base salary for all consultants at a certain level (e.g. the junior associate or analyst level where most recent graduates start) seems to be the usual practice among the leading management consultancies. Bonuses and promotions are then based on perceived merit. An economic analysis of the career ladder and the widespread up-or-out policy in professional firms could be found in Koch & Peyrache (2006) or Levin & Tadelis (2005). The latter work also stresses the importance of profit-sharing and *not* paying all partners their marginal product.

PROPOSITION 7. *The range of client firms served is larger, and the size of the marginal firm serviced, E^*, smaller (i) if c is small, (ii) if p is large, (iii) if ε_H, the relative project size, is large and (iv) if γ is large.*

The threshold project value served will be a fraction of the maximum value, implying that the range served is decreasing in the exogenous alternative cost of labour, and increasing in the parameters that make the project valuable to the consultancy, p and ε_H. The range of clients served also increases if the stakeholder's share increases, since this strengthens the need for a truth-telling consultancy and hence its bargaining position, as argued above.

Model summary. The theoretical model with a setting of double reputations – those of the manager and the consultancy – replicates phenomena observed in the data. The model shows that under stochastic investment sizes, there might be occasions in which stakeholders have not developed enough confidence in the manager for large investments to take place. Then there is scope for a credible outsider to ensure good management of the investment. The value of this type of truth-telling assignment could be considerable relative to more traditional expertise consulting. However, truth-telling puts some constraints on the expertise that the consultancy could provide, since a larger portfolio of service offers implies better options without truth-telling credibility, and possibly also more opportunities for side payments from the manager to the consultancy. Moreover, truth-telling consultancies are dependent on market power to resist short-term collusion temptations. These results suggest an explanation for the segmentation of the management consulting market – one high-fee part devoted to pure strategic and selected operational issues, and one lower-margin part, often offering also other consulting services.[29] The model explains why truth-telling consultancies may stand to gain from global branding, namely that a broad client stock strengthens credibility, thereby enabling consultancies to take on difficult assignments or increase the level of expertise that the consultancy can offer.

An extension that endogenises entry and market size gives additional insights. Modelling the market power of consultancies as a function of the competition, we see that a high density of players with high discount factors allows more truth-telling consultancies on the market. Furthermore, under endogenous market power, the consultancies reap a share of the investment size that is increasing in the level of misalignment of interest between stakeholders and managers. These shares, together with the opportunity

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[29] In reality, a specialisation will of course take place, augmenting these effects. Targeting different clients in marketing and dedicating staff for different assignment types will further promote market segmentation.

cost of potential recruits, also determine how small firms truth-telling consultancies are willing to serve.

4. Conclusions

Management consulting is not just another outsourcing business. Management consultants seem to provide more than expertise. As opposed to other consultants, from lawyers through IT specialists, they are active in the core competences of the clients. Services of that nature are not traditional candidates for specialisation and outsourcing.

This paper focuses on the role of management consultants in situations with incomplete contracts. In this setting, management consulting can add value by providing trust and extending the scope for contracting. The theoretical model shows that the value of a consultancy whose only task is to verify a non-contractible selection and implementation of projects can be as high as that of an expert increasing the expected value of said projects. This value is higher the larger is the project size variance of client firms. The application demonstrates that there is a trade-off between the expert and truth-teller strands of management consulting, and that branding could be important to sustain the credibility of a truth-telling consultant. Moreover, there might be natural barriers to entry in the truth-telling segment, which could further explain the predominance of a few global players in the market for top strategy consultancies.

These theoretical results also seem to fit data better than a plain expertise view. The growth of the management consulting industry cannot be explained by expertise arguments alone. The industry shows a pattern that is not consistent with many standard explanations for the use of consultants. Consulting firms that do not exploit economies of scope and expand into other consulting services charge higher prices than those who do. Furthermore, for these consultancies global branding is more important than for those offering a wider range of services, an observation questioning the need for knowledge dissemination as the main driving force behind the internationalisation of management consulting.

A refinement of the basic model would be to study the dynamics of a long-term manager-stakeholder relation, where the manager interacts with the same, indispensable, stakeholder over time. In this case, the stakeholder will have a private interest in getting to know the manager's true discount factor, and will therefore take the relational continuation value into account when investment decisions are being made. This turns the managerial reputation-building into a confidence-building exercise on behalf of the stakeholder.

Finally, the question of whether expertise or credibility is more important is certainly not confined to the world of management consultants. Many other spheres offer illustrative examples. The similarity with the role of equity analysts in corporate finance activities has already been mentioned. Sensitive R&D activities may have to trade off researchers' alignment of incentives against their objective competence. For sports referees and for judges in legal courts impartiality is often more important than extensive situational knowledge. Occasionally media seem to be willing to give up unbiasedness in exchange for more initiated or entertaining journalism. The recent crisis in the US subprime mortgage market has raised questions about the trustworthiness of well-informed rating agencies. There are thus several applications of the theory in this paper and a rich testing ground for its empirical implications.

Appendix

Remarks on the basic results.

Proof that conditioning the investment of e_t on time cannot be an equilibrium. Clearly, waiting to invest the first e_L does not change future stakeholders' problem, because no information about the manager is ever revealed. In equilibrium, no stakeholder would abstain from investing e_t after having seen loyalty at that investment level before, because if a manager would anticipate that, her threshold discount factor would have been higher than if she had not, and then she will not be disloyal the second time that e_t is invested. Moreover, if e_L has been invested and the first stakeholder does not find it sufficient to invest e_H, later stakeholders will not either. Suppose that the first W stakeholders after having seen the manager loyal at e_L would follow the strategy not to invest e_H. Anticipating this, only a manager with a discount factor larger than some $\beta_L^W > \beta_L^*$ would be loyal at e_L. If this β^W would be enough to induce an e_H investment from the $(W+1)th$ stakeholder, we know that

$$\frac{1 - F\left(\beta_H^*\right)}{1 - F\left(\beta_L^W\right)} p\gamma \geq 1.$$

But then this would hold also for the first stakeholder that observed the manager being loyal at e_L, and the stakeholder's strategy cannot be part of an equilibrium, Q.E.D.

A mixed-strategy equilibrium when inequality (2.8) does not hold. There is a mixed strategy that improves the outcome when loyalty at e_L, which would prove a discount factor larger than β_L^*, is not sufficient to induce investments of e_H. If stakeholders mix between investing e_H or not with probability η and $(1 - \eta)$, respectively, then the critical discount value given by

$$p\gamma e_L =$$

$$= \sum_{s=t+1}^{\infty} \left(\beta\left((1 - \theta) + \theta\left(1 - \eta\right)\right)\right)^s \frac{(1 - \theta)}{(1 - \theta) + \theta\left(1 - \eta\right)} p\left(\alpha - \gamma\right) e_L + \sum_{s=t+1}^{\infty} \beta^s \left(1 - \theta\right)^{s-1} \theta\eta p\alpha e_H.$$

Since for any given β the right-hand side is smaller than equation (2.4), its solution β_L^{mix} will be larger than β_L^*. For this to be optimal for stakeholders, it must be that

$$\frac{1 - F\left(\beta_H^*\right)}{1 - F\left(\beta_L^{mix}\right)} p\gamma = 1.$$

If, in addition

$$\left(1 - F\left(\beta_L^{mix}\right)\right) p\gamma \geq 1,$$

so that e_L would be invested, the outcome is improved relative to the equilibrium in pure strategies.

Proof of Proposition 1. The first claim of the proposition follows from $b\left(\beta_i, \kappa, \psi\right)$ and thereby δ_1^{CC} being increasing in e_H and decreasing in e_L, as long as $b\left(\beta_i, \kappa, \psi\right) > 0$. The second follows from $D\left(\kappa\right)$ and ΔV both being decreasing in κ, while $b\left(\beta_i, \kappa, \psi\right)$ is increasing.

As for the last claim, the derivative of δ_1^{CC} with respect to ψ is

$$
\frac{\partial\left[b\left(\beta_i, \kappa, \psi\right) / \left(b\left(\beta_i, \kappa, \psi\right) + D\left(\kappa\right)\psi\Delta V\left(\kappa\right)\right)\right]}{\partial\psi} =
$$

$$
= \frac{\frac{\partial b}{\partial\psi} \cdot \left(b + D\left(\kappa\right)\psi\Delta V\left(\kappa\right)\right) - \left(\frac{\partial b}{\partial\psi} + D\left(\kappa\right)\Delta V\left(\kappa\right)\right) \cdot b}{\left(b + D\left(\kappa\right)\psi\Delta V\left(\kappa\right)\right)^2} =
$$

$$
= \frac{\frac{\partial b}{\partial\psi} \cdot D\left(\kappa\right)\psi\Delta V\left(\kappa\right) - D\left(\kappa\right)\Delta V\left(\kappa\right) \cdot b}{\left(b + D\left(\kappa\right)\psi\Delta V\left(\kappa\right)\right)^2},
$$

or, solving explicitly,

$$
\frac{\partial\delta_1^{CC}}{\partial\psi} = \left[D\left(\kappa\right) \sum_{s=t+1}^{\infty} \left(\beta_i\right)^s \left(p + \widehat{\kappa}\right)\left(\alpha - \gamma\right)\left(\theta e_H + \left(1 - \theta\right)e_L\right) - \left(p + \kappa\right)\gamma e_H\right] \cdot
$$

$$
\cdot \frac{D\left(\kappa\right)\Delta V\left(\kappa\right)}{\left(\begin{array}{c} \left(p + \kappa\right)\gamma e_H + D\left(\kappa\right)\psi\Delta V\left(\kappa\right) \\ -D\left(\kappa\right)\sum_{s=t+1}^{\infty}\left(\beta_i\right)^s\left(\left(1 - \psi\right)\left(p + \widehat{\kappa}\right)\left(\alpha - \gamma\right)\theta e_H + \left(p + \left(1 - \psi\right)\widehat{\kappa}\right)\left(\alpha - \gamma\right)\left(1 - \theta\right)e_L\right) \end{array}\right)^2}.
$$

Since the denominator and $D\left(\kappa\right)\Delta V\left(\kappa\right)$ are both positive, the expression is positive if

$$
\left(p + \kappa\right)\gamma e_H < D\left(\kappa\right) \sum_{s=t+1}^{\infty} \left(\beta_i\right)^s \left(p + \widehat{\kappa}\right)\left(\alpha - \gamma\right)\left(\theta e_H + \left(1 - \theta\right)e_L\right)
$$

and negative if

$$
\left(p + \kappa\right)\gamma e_H > D\left(\kappa\right) \sum_{s=t+1}^{\infty} \left(\beta_i\right)^s \left(p + \widehat{\kappa}\right)\left(\alpha - \gamma\right)\left(\theta e_H + \left(1 - \theta\right)e_L\right).
$$

Furthermore, if $\psi = 0$, the second inequality above holds for all cases where a bribe is offered, i.e. when $b\left(\beta_i, \kappa, \psi\right) > 0$, and thus close to 0, we know that $\partial\delta_1^{CC}/\partial\psi < 0$. If $\psi = 1$, all managers but those with the highest β_i,

$$
\beta_i > \frac{\left(p + \kappa\right)\gamma e_H}{\left(p + \kappa\right)\gamma e_H + D\left(\kappa\right)\sum_{s=t+1}^{\infty}\left(p\left(\alpha - \gamma\right)\left(1 - \theta\right)e_L\right)},
$$

would offer a bribe. Then, for managers with an intermediate β_i,

$$
\beta_i \in \left(\frac{\frac{\left(p+\kappa\right)\gamma e_H}{\left(p+\kappa\right)\gamma e_H + D\left(\kappa\right)\sum_{s=t+1}^{\infty}\left(p+\widehat{\kappa}\right)\left(\alpha-\gamma\right)\left(\theta e_H+\left(1-\theta\right)e_L\right)}}{\frac{\left(p+\kappa\right)\gamma e_H}{\left(p+\kappa\right)\gamma e_H + D\left(\kappa\right)\sum_{s=t+1}^{\infty}\left(p\left(\alpha-\gamma\right)\left(1-\theta\right)e_L\right)}}\right),
$$

the first inequality will hold and $\partial\delta_1^{CC}/\partial\psi > 0$, so the corruption propensity would be smaller for a smaller ψ. On the other hand, for managers with a low β_i, the effect

of a decrease in ψ on the future value is relatively small, and cannot compensate for the decrease in the disciplining future profit margins of the consultancy. Hence, for low values of ψ, we have $\partial \delta_1^{CC}/\partial \psi < 0$ for all β_i, whereas for high values we have $\partial \delta_1^{CC}/\partial \psi > 0$ where β_i is large, Q.E.D.

Proof of Proposition 4. For $D(\kappa) = (1 - p - \kappa)/(1 - p)$, the profit-maximising problem for the consultancy is

$$\max \left\{ \begin{array}{c} ((\alpha - \gamma)(1 - p)(1 - \theta) e_L + (\alpha - \gamma)(1 - p) \theta e_H), \\ ((\alpha - \gamma) K(\delta)(1 - p)(1 - \theta) e_L + (\alpha - \gamma)(p + K(\delta)(1 - p)) \theta e_H) \end{array} \right\}.$$

The former argument is the per-period profit when only selling expertise to the full extent, $\kappa = 1 - p$; the latter that when selling both, restricting expertise to $\kappa = K(\delta)(1 - p)$, where

$$K(\delta) \equiv \left(\frac{\psi(\alpha - \gamma)\theta - \frac{1-\delta}{\delta}\gamma}{\left(\frac{1-p}{p}\right)\frac{1-\delta}{\delta}\gamma + \psi(\alpha - \gamma)\theta} \right).$$

The former is larger than the latter if

$$(1 - \theta) e_L + \theta e_H > K(\delta)(1 - \theta) e_L + \left(\frac{p}{(1 - p)} + K(\delta) \right) \theta e_H,$$

which equals

$$(1 - \theta) e_L + \theta e_H > K(\delta)(1 - \theta) e_L + \left(\frac{p}{(1 - p)} + K(\delta) \right) \theta e_H.$$

Rearranging and using the full expression for $K(\delta)$ we have

$$\left(\frac{\frac{1-\delta}{\delta}\gamma}{(1 - p)\frac{1-\delta}{\delta}\gamma + p\psi(\alpha - \gamma)\theta} \right)(1 - p)((1 - \theta) e_L + \theta e_H) > p\theta e_H.$$

Solving for δ gives the condition

$$\delta < \delta_1^{PM} \equiv \frac{\gamma(1 - p)((1 - \theta) e_L + (1 - p)\theta e_H) - p^2\theta^2 e_H \psi(\alpha - \gamma)}{\gamma(1 - p)((1 - \theta) e_L + \theta e_H)} \in (0, 1),$$

Q.E.D.

For $D(\kappa) = C$, selling only expertise is more profitable than selling both if

$$((1 - \theta) e_L + \theta e_H)(1 - p) >$$

$$> \left(\frac{C\psi\theta(\alpha - \gamma)p}{\left(\frac{1-\delta}{\delta}\right)\gamma} - p \right)(1 - \theta) e_L + \left(p + \left(\frac{C\psi\theta(\alpha - \gamma)p}{\left(\frac{1-\delta}{\delta}\right)\gamma} - p \right) \right) \theta e_H.$$

Simplifying and rearranging we find that the inequality could be written as

$$\left(\frac{1}{\delta} - 1\right)\gamma\left((1-\theta)\,e_L + \theta e_H\right) - C\psi\theta\left(\alpha - \gamma\right)p\left((1-\theta)\,e_L + \theta e_H\right) > p\theta e_H\left(\frac{1}{\delta} - 1\right)\gamma.$$

Solving for δ gives the condition that

$$\delta < \delta_1^{PM} \equiv \frac{\left(\gamma\left((1-\theta)\,e_L + (1-p)\,\theta e_H\right)\right)}{\gamma\left((1-\theta)\,e_L + (1-p)\,\theta e_H\right) + C\psi\theta\left(\alpha - \gamma\right)p\left((1-\theta)\,e_L + \theta e_H\right)} \in (0,1),$$

Q.E.D.

Proof of Corollary 2. Equivalently to the proof of Proposition 4 above, we have that under $D\left(\kappa\right) = \left(1 - p - \kappa\right)/\left(1 - p\right)$, the per-period profit when only selling expertise to the full extent is larger than that when selling both if

$$\left(1-\theta\right)e_L + \theta e_H > K\left(\delta\right)\left(1-\theta\right)e_L + \left(\frac{p}{(1-p)} + K\left(\delta\right)\right)\theta e_H.$$

Solving this in the same fashion as above, we find that

$$\delta < \delta_n^{PM} \equiv \frac{\gamma\left(1-p\right)\left((1-\theta)\,e_L + (1-p)\,\theta e_H\right) - p^2\theta e_H\psi\left(\alpha - \gamma\right)}{\gamma\left(1-p\right)\left((1-\theta)\,e_L + \theta e_H\right)} \in (0,1).$$

For $D\left(\kappa\right) = C$, selling only expertise is more profitable than selling both if

$$\left((1-\theta)\,e_L + \theta e_H\right)\left(1-p\right) >$$
$$> \left(\frac{C\psi\left(\alpha - \gamma\right)p}{\left(\frac{1-\delta}{\delta}\right)\gamma} - p\right)\left(1-\theta\right)e_L + \left(p + \left(\frac{C\psi\left(\alpha - \gamma\right)p}{\left(\frac{1-\delta}{\delta}\right)\gamma} - p\right)\right)\theta e_H,$$

which also could be written as

$$\delta < \delta_n^{PM} \equiv \frac{\left(\gamma\left((1-\theta)\,e_L + (1-p)\,\theta e_H\right)\right)}{\gamma\left((1-\theta)\,e_L + (1-p)\,\theta e_H\right) + C\psi\left(\alpha - \gamma\right)p\left((1-\theta)\,e_L + \theta e_H\right)} \in (0,1),$$

For all $\theta \in (0,1)$, both of these are smaller than their δ_1^{PM} equivalents, Q.E.D.

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PAPER 2

The Nature of Management Consulting

ABSTRACT. Why do firms pay large fees to outsiders in core activities like manage-
ment? This paper evaluates the theory that top management consultants create value
by being truth-tellers in corporate governance settings, and not only through exper-
tise. Using market data from Sweden, the study finds that the upward price effect
associated with a global brand is smaller for management consultants with a broad
range of services than for those with a narrow focus. This is hard to reconcile with the
standard expertise explanation behind the globalisation of management consulting –
economies of scale in knowledge management – but is consistent with the truth-telling
theory. Interviews with experienced management consultants support this interpre-
tation and several other predictions from the truth-telling theory, including the link
between a global brand and a narrow focus on the one hand, and the ability to sell
truth-telling on the other.

1. Introduction

Management consulting has been booming in recent decades. The high fees and
the profitability of leading firms reflect their exceptional popularity. Yet, there is no
generally accepted explanation as to how management consultants create value. While
most literature on management consulting has seen consultants as *experts*, the present
work explores the view that consultants are *truth-tellers*. Using market data as well as
interview responses from practising management consultants, the study finds support
for the hypothesis that management consulting firms with a focus on strategy and
organisation – especially the leading global players that charge the highest fees[1] – are
used at least as much for their credibility as they are in the role of pure expertise

[1] Examples of global brands exclusively devoted to management consulting include McKinsey &
Company, Boston Consulting Group, Bain & Company, Booz Allen Hamilton, Arthur D. Little and
AT Kearney. Werr & Stjernberg (2003) discuss the puzzle that these players have less senior staff
than many local consultancies, yet are able to charge higher fees.

providers. This finding is in line with the parallel applied theory paper by Sonnerby (2007).

Outsourcing of business services has grown rapidly since the 1970s. Consultants play an increasingly important role also in decision-making at operational and strategic levels – for instance in marketing strategies, competition and investment analyses, reorganisations or operational improvements. According to FEACO, the European Federation of Management Consulting Associations, the growth figures of the market were double-digit between 1994 and 2001 and took management consulting as percentage of GDP from 0.12 to 0.44 percent, even though the industry had grown strongly for at least a decade before that.[2] The fastest growing companies are large multinational firms, usually of American origin.

Obviously, a project team of management consultants is much more costly during the project than employing people of the same profile would have been.[3] There are several possible rationales for the use of expensive consultants, including productivity differences on an individual level, fixed costs of employment and knowledge transfer. All of these belong to the traditional view, in which consultants are seen as experts.[4]

What in this paper shall be denoted expert theory corresponds to the *rationalistic* (or *functionalistic*) strand in the management literature. As described for instance by Hellgren, Löwstedt, Tienari, Vaara & Werr (2004), this strand sees management consultants as providers of industrial, functional or procedural expertise. (Its antithesis, the *critical* strand, suggests that management consultants often provide legitimacy to clients, but that this merely creates an impression of value.) The expert theory explains the growth of management consulting with an increase in the need for specialised expertise, and the industry's globalisation with the efficiency gains from a large international expertise network, i.e. economies of scale in knowledge management. Examples are Sarvary (1999) and Werr & Stjernberg (2003). Sometimes, the literature distinguishes between different kinds of expertise. Hansen, Nohria & Tierney (1999) suggest a division of consultants pursuing 'codification' and 'personalization' as knowledge management strategies, while Kitay & Wright (2003) make a related argument by recognising a division between 'technical' and 'esoteric' knowledge. I have found little

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[2] Clark (1995) concludes that management consulting in the U.K. grew by some 200 percent between 1985 and 1992. For an overview with a longer historical perspective on management consulting, see McKenna (1995).

[3] The internal fee for a junior management consultant in Sweden could exceed EUR 1,500 per day, and usually the client is expected to pay expenses for travelling and accommodation. As a comparison, the daily salary (including taxes and social fees) of this consultant could be around EUR 300. A project team from one of the leading firms in Sweden for one month, under the leadership of a managing partner and a senior project manager working part-time on the assignment, and three junior consultants putting in the bulk of the hours could cost the client about EUR 350,000 plus expenses.

[4] This section and the theory content of subsequent sections borrows heavily from Sonnerby (2007).

academic discussion of economies of scope in consulting. Nevertheless, many consulting firms – mainly those pursuing 'codification' and focusing on 'technical' knowledge in the studies mentioned – also offer other managerial services, perhaps most commonly IT consulting.   —

However, for many management consultant assignments, the expert explanations are unsatisfactory. It is hard to see why firms in need of excellent staff would not be able to mimic the structures and salaries required to attract those. Improvements of strategy and operations are core activities of any firm, and thereby not obvious outsourcing candidates. If consultants primarily bring knowledge, worse-performing and less experienced firms should be more likely to buy consulting services, but, if anything, the converse seems to be true.[5]

In this study I analyse a complementary view presented in Sonnerby (2007), where management consultants create value primarily by being truth-tellers. According to the theory, consultancies that can maintain a high reputation and trustworthiness have an important role in the governance of client corporations. Rather than only enhancing operative performance, they help select and possibly implement projects considered by a client manager, thereby allowing the management of the client company to make commitments to investors or other stakeholders. This can in turn be beneficial to the client company and the management itself, by inducing investment on behalf of the investors when the outcome is otherwise non-verifiable. Hence, whereas most other studies of consulting focus on the direct relation between the consultant and the client, the theory widens the scope and sees management consultants as potential third parties under incomplete contracting between the client and her stakeholders – investors, employees, owners or regulatory bodies. The theory takes aim at non-contractible actions left to managerial discretion, where interests between managers and stakeholders may be conflicting and a credible third party can yield ex-ante efficiency gains – much in the same way as sports teams admit the need of a referee when playing an opponent with a potentially conflicting view on what constitutes fair play. This gives the truth-telling consultant a role similar to that of an auditor.[6] Management

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[5] Admittedly, I am not aware of any systematic study linking client characteristics to procurement of management consulting. However, many business insiders claim that industry leaders are more likely to use consultants. The website of BearingPoint indicates that the company works with almost all top 10 global corporations in pharma and biotech, telecom, consumer products and banking. The website of Bain & Company claims that the firm's clients "outperform the market 3 to 1". Another example is the study by Jagrén & Morell (2002) mentioned below.

[6] Ernst & Kieser (2002), Furusten (2003) and McKenna (2006) suggest this point by comparing management consultants to auditors working with strategy and organisation. While most consultants are employed at the will of managers, there are indications that the role as strategic auditors is becoming more explicit. One of the interviewees in the present study stated that his firm occasionally was hired for strategic reviews by corporate boards, which was unheard of ten years ago.

consulting and other business service activities were divested from auditing firms at the turn of the century, anticipating or following the Sarbanes-Oxley Act of 2002 in the U.S., in fear of consulting branches providing a channel for side payments from managers to lax auditors.[7] And just like auditing firms have been forced to divest their activities in other business services areas, the truth-telling theory suggests that top strategy consulting firms have to restrict the scope of expertise offered in order to keep their credibility. This is due to two factors. The first is that a broad range of expertise makes the threat of losing credibility relatively less harsh. A consultancy that possesses a large degree of technical or other specialised expertise that could be sold directly to clients will be relatively less concerned about losing reputation vis-à-vis third parties. The second is that a wide scope of other services may facilitate bribes from the client manager should the truth-teller not live up to his mission, in line with the reasoning behind the Sarbanes-Oxley Act.

In order to take on large truth-telling projects, the theory prescribes that the consultancy must stand to lose from opportunistic behaviour. Since the threat of losing truth-telling business in the future is what counterweights short-term temptations, the threat should be large. Apart from the limited scope for outside business, the present work shall study two other mechanisms described by the truth-telling theory. To ensure that consultancies value the future highly, they need a relatively strong bargaining position vis-à-vis the client. The limited competition and the high profit margins observed among top strategy consultancies is a necessary prerequisite for them to keep truth-telling credibility. Another mechanism is a global brand. Business across the world with multinational clients implies that any individual project, even if it is large in itself, becomes relatively small to the firm and thus offers only limited opportunities for collusion damaging the consultancy's credibility. In the truth-telling view, this explains the globalisation of the management consulting industry, and especially the top strategy segment.

The truth-telling theory is consistent with findings in the management literature and in non-academic studies. Two examples from the geographic theatre of this paper, Sweden, point in the direction that truth-telling may be at least as important to buyers of management consulting services as expertise.

In a non-academic study for the Confederation of Swedish Enterprise, Jagrén & Morell (2002) survey companies that have bought management consulting services.

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[7] Kornish & Levine (2004) discuss the conflicting roles of firms providing both management advice and auditing services. The Sarbanes-Oxley provisions for division of auditing and other business service activities are found in Title II, Section 201 of the act.

Among eight reasons for engaging a consulting firm, the 'catalyst' function and 'independence' were most frequently mentioned as the single most important rationale, at 20 and 16 percent, respectively.

In a study of a merger between an IT consulting firm and a management consulting firm, Löwstedt, Schilling, Tomicic & Werr (2003) explain how the merger was motivated by seemingly obvious synergies between IT and consulting services. IT consultants felt the need for a managerial perspective, and management consultants wanted to offer technical implementation. The integration were to be realised through a common sales force, selling IT projects, management projects and projects that combined the two fields. However, the integration of services was no success. Soon the structure with a separate sales force had to be abandoned. The management consultants took back responsibility for selling management consulting, and business units containing people from both backgrounds were split into their original parts. The story suggests that economies of scope may be limited when it comes to combine management consulting with other services.

In spite of narrative descriptions, few management studies have focused on value creation in the consultancy's role as an independent outsider.[8] Moreover, I am not aware of any previous empirical economic study of the globalisation of the management consulting industry, which seems to be more pronounced than in any other consulting area, with the possible exceptions of investment banking and auditing.

In the first part of this study, we observe three regularities on the Swedish management consulting market. First, management consultancies with global brands charge higher fees than those with local brands. Second, consultancies that offer management consulting only charge higher fees than less specialised firms. Third, the upward price effect associated with a global brand is smaller for management consultants with a broad range of services. Both the truth-telling theory and economies of scale in knowledge management predict that global consultancies can charge higher fees than those with local brands. However, the observation that consultancies restricting their range of services charge higher fees seriously question the idea that economies of scope in management services generally outweigh specialisation losses. Finally, the traditional view has a hard time explaining why possessing a global brand is less important for management consultancies with a broad range of services, or, conversely, why the

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[8] Nevertheless, there are counterexamples, all of which are modelled informally. In a study of the relative strengths of outside and inside consultants, Kelley (1979) suggests that an outsider's legitimacy could be beneficial to the parties involved. Ernst & Kieser (2002) mention – in a critical fashion – that "[c]onsultants increasingly take over the role of certifiers of rationality". In its excellent example of a process where legitimacy as such can create value – in post-merger integrations – the paper by Hellgren, Löwstedt, Tienari, Vaara & Werr (2004) approaches the truth-telling view.

downward price effect associated with offering other types of consulting is stronger for global consulting brands than for local.

In the second part, the evidence is reinforced and the mechanisms further explored by results from structured interviews with practising management consultants. Coherent with the truth-teller theory, there is a strong relation between the frequency with which consultancies work in truth-telling situations – for instance when client managers are new, client firms have changed ownership or are going through rapid expansion or downsizing –, the business scope concentration of consultancies and their bargaining power – measured as inverse price sensitivity and frequency of directly competitive purchasing among clients. Connecting interview responses to the market data results, I find that this is mainly driven by the global strategy consulting firms charging the highest fees per consultant – those that the theory prescribes to be the most typical truth-tellers.

2. Market Data: Globalisation and the Paradox of Expertise

To empirically evaluate the truth-telling theory with market data, I use evidence to study its predictions concerning business scope and brand globalness. The theory generates clear predictions. A consultancy that wants to sell truth-telling must restrict its business scope and preferably possess a large client stock. To sell it to the largest corporations and in the most difficult cases, the consultancy should do both. Working with the largest clients under challenging circumstances is likely to generate the highest revenues per hour worked. In addition, truth-telling consultancies need some market power, as argued above, which adds to profit margins. The truth-telling theory therefore predicts that consultancies with global brands can charge more than those with a local brand, that consultancies with a broad scope charge less than those with a narrow scope, and – in particular – that those with a global brand and a narrow business scope charge the most. In other words, the coefficient on the interaction between a global brand and broad scope should have a negative sign.

Although there is very little variation in the data, business scope and brand nationality are variables chosen by the consultancies in the long run. The decision is certainly influenced by the fees that clients could be charged. Therefore the effects associated with certain characteristics in this study are not strictly causal. The objective is rather to map patterns on the management consulting market and see that they are consistent with the truth-telling theory, but are difficult to reconcile with a pure expertise view.

Data description. Firm data are mainly from *Konsultguiden*, an annual publication by the leading Swedish business weekly *Affärsvärlden*, which has sampled the 60 management consultancies with the highest turnover in each year from 1997 through

2004. We use the variable 'invoicing per consultant' as our price measure to capture
the average value of services provided by the firm. It is of course sensitive to the deal
flow and the proportions of junior and senior consultants, but it also has the advantage
that it adjusts the time unit fee for the actual use of the consultants. Where that
entry has been missing for a top player, the value has been reconstructed by using the
consultant-per-employee ratio available that is closest in time. If that is not feasible,
the observation is omitted. In the same fashion, variables controlling for different fields
of consulting assignments have been reconstructed by using nearby observations.

The final number of observations is 412, representing over 100 individual consulting
firms. The annual number of observations is about 50. With the exception of omitted
observations and the very small firms, this captures virtually the whole of the manage-
ment consulting market in Sweden. In 2004, the 10 largest players accounted for 68
percent of the total turnover in the top 100, the 20 largest for 79 percent, and the 60
largest for 95 percent. The 60th firm on the list reported a turnover of SEK 15 million
or 1.6 million euro.

We assign two characterising dummies to all observations. The first dummy indi-
cates whether the brand of the consultancy is global as opposed to Nordic. The second
takes on the value 1 if the consultancy sells other business services as well, as judged
from the companies' website as of January 2007. The most common other activities are
IT consulting, accounting and management control or HR services. This latter dummy
corresponds to a distinction treated like a stylised fact in the management literature.[9]

Brand nationality and the scope of services could potentially be associated with
invoicing capacity in several ways. For instance, certain combinations of these may be
correlated with human resources policies, attractiveness among potential recruits, or
with specialisation within different fields of management consulting. Since the theory
predictions primarily concern the direct effect associated with an international brand
and a broad service portfolio, we shall employ available measures to control for the
indirect ways in which these phenomena could affect earnings ability. Apart from year
dummies to control for time effects (like business cycles and trends), we therefore use
Konsultguiden's estimate of activities in different management consulting areas, and
the staff head count as controls. The activity variables are percentages in each of
the fields *Strategy & Business Development, Organisational Development, Financial
Consulting, Human Resources & Competence Development, Accounting & Managerial*

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[9] For instance, Frankenhuis (1977) draws a division line between exclusive management consultan-
cies and the (now divested) management consulting branches of the auditing firms. Hansen, Nohria
& Tierney (1999) argue that these two categories have distinct knowledge management strategies.
Furusten & Bäcklund (2000) distinguish between 'Americans', 'semi-Americans' and 'Swedes', where
the difference between the two former to some extent is the scope of the services offered.

Control, IT Strategy, Procurement & Logistics and *Other Consulting*. To control for the potential problem that certain firms may attract a particularly productive workforce, and therefore be able to charge higher fees, control variables include data on popularity of Swedish consultancies and the recruitment at American business schools. Using information from Sweden's leading business school, Stockholm School of Economics (SSE), we hope to reveal the preferences of well-informed university graduates that constitute most of the junior workforce.[10] The popularity variable is data from an annual employer popularity study, conducted by Wahlund (2001, 2003, 2004). The variable contains information about the percentage of respondents that have mentioned the consulting firm among the three most attractive employers in the year preceding the invoicing observation. On a small school like SSE, popularity in the student body is very likely to indicate the destination of top graduates. In total, 18 observations, representing 5 individual firms, have positive entries for this variable. Furthermore, information about recruitment at four leading American business schools is used to provide a measure of competence of the global firm, which certainly could affect the earnings ability of the Swedish subsidiary. We sample data from the placement reports of Columbia Business School (1996–2003), Chicago Graduate School of Business (1998–2003), Wharton Business School (1999–2003) and MIT Sloan (1999–2003)[11] and compute the percentage of MBA graduates accepting employment that enter the respective firms. In the years where data are available from several schools, an average percentage has been used. In the sample, 51 observations from 9 separate firms have positive entries.

Descriptive statistics of the most important variables are found in Table 1. Dividing the statistics in the four possible combinations of local/global brand, narrow/broad scope, we get Table 2. Judging by the activity shares and their variation, global and local firms do not look very different from each other. The raw pattern shows that firms in the global brand, narrow focus group seem to be able to charge considerably more for their services than other groups, in line with the truth-telling theory. However, we also

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[10] In the studied period, SSE offered a four-year program in business and economics that annually admitted about 300 students. Entry requirements are among the most selective in the Swedish university system. On average, SSE graduates earn significantly more than people with business degrees from other Swedish universities. Approximately 15 percent of the graduates in 2005 went to management consulting (7 percent to other consulting) upon graduation, while the share was about twice the size around 2000.

[11] In February 2006, these were available at the following URLs:
www.columbia.edu/cu/business/career/employmentreport/ (Columbia),
gsbwww.uchicago.edu/gsbcar/place.shtml (Chicago),
mycareer.wharton.upenn.edu/mbacareers/report/CR_past.cfm (Wharton), and
mitsloan.mit.edu/mba/careers/emp_report.php (MIT Sloan)

TABLE 1. Descriptive statistics for key variables in market data regressions

	# Obs	Mean	Std dev	Min	Max
Invoicing per consultant, thousands of SEK, 2004 prices	412	2,017.39	1,132.74	541	6917
Log of invoicing per consultant, thousands of SEK, 2004 prices	412	7.4891	0.4676	6.2932	8.8417
Staff*	412	68.8216	115.1074	4	724
Staff per consultant*	412	1.2378	0.3238	0.2143	4.45

	# Obs, all	Mean, all	# Obs, > 0	Mean, > 0
SSE popularity	412	0.8481	24	14.5583
MBA recruitment	412	0.2746	51	2.2184

	# Obs	Mean value
Global brand	412	0.3083
Other services	412	0.4029
Global brand · other services	412	0.1723

* Some firms (7 observations) have reported more consultants than total number of employees

see that staff density and indicators of workforce productivity are higher in this group. Moreover, the distribution of variables within groups is dispersed and skewed. We will therefore not draw conclusions until we have analysed the material more carefully.

Methodology. In a regression analysis, the main variables of interest – the brand and scope dummy variables and their interaction – will yield a difference-in-difference estimate where the effect associated with being global is being estimated for firms with a narrow and a broad service portfolio, respectively, or, equivalently, the effect associated with a broad portfolio for players with local and global brands. The panel comprises most of the Swedish management consulting market in each year. Since only the largest 60 firms in each year have been sampled, some series for individual firms are disrupted, and consulting firms with a small turnover are selected away. This would be a problem if we think that the effects associated with the variables of interest differ between small and large firms, but in general there is no reason to believe so. If anything, the underrepresentation of small firms in the sample will bias the effect associated with a global brand downwards, since global brands and high invoicing per consultant are both more frequent among the larger consultancies.

Two common methods in analysing panel data are the fixed-effect and the random-effect models. The fixed-effect model imposes the mildest assumptions by allowing for correlation between the firm-specific effect and the explanatory variables. However, it cannot distinguish the effects of time-invariant variables, and in our context the

TABLE 2. Mean values for key variables, divided in brand-scope combinations (standard deviations in parentheses)

	Local brand, narrow scope (190 observations)	Global brand, narrow scope (56 obs.)	Local brand, broad scope (95 obs.)	Global brand, broad scope (71 obs.)
Invoicing per consultant, thousands of SEK, 2004 prices	1,799 (833)	3,856 (1,359)	1,506 (515)	1,837 (794)
Staff*	30.8 (40.6)	99.7 (69.0)	61.9 (107.9)	155.5 (203.9)
Staff per consultant*	1.17 (0.18)	1.58 (0.39)	1.23 (0.43)	1.16 (0.22)
SSE popularity	0	5.59 (9.29)	0	0.51 (1.75)
MBA recruitment	0	1.48 (1.75)	0	0.43 (0.93)
Activity percentages				
Strategy	40.5 (29.2)	36.5 (28.2)	24.0 (25.0)	13.6 (11.2)
Organisation	16.7 (14.9)	12.9 (8.9)	13.7 (13.2)	15.5 (16.5)
Finance	3.0 (14.0)	7.2 (16.6)	3.4 (12.1)	14.2 (25.4)
Human Resources	6.4 (12.2)	1.5 (8.1)	19.9 (26.2)	11.8 (24.4)
Accounting	3.0 (7.6)	1.6 (6.0)	6.4 (16.9)	11.8 (13.2)
IT Strategy	6.0 (13.0)	9.1 (8.5)	12.2 (25.8)	18.1 (20.6)
Logistics	12.0 (25.0)	15.7 (21.8)	3.7 (11.7)	4.5 (8.1)
Other	12.3 (25.3)	14.6 (16.7)	16.8 (24.8)	10.5 (24.0)

* Some firms (7 observations) have reported more consultants than total number of employees

dummies of interest do not vary over time. The random-effect model assumes that the explanatory variables are strictly exogenous, which does not hold if we want to allow for firm-specific properties to be correlated with our variables of interest, as stated above. A third common method is the pooled OLS regression with clustered standard errors, which instead of the assumption of strict exogeneity makes the slightly less restrictive assumption that the firm-specific effect is orthogonal to the explanatory variables. Again, this does not allow for a systematic correlation between explanatory variables and firm-specific effects.[12]

The problem is studied in an article by Plümper and Troeger (2007), who suggest that the dilemma be resolved by a three-step method denoted fixed-effect vector decomposition or FEVD. This method first estimates fixed effects in a panel data regression without time-invariant variables, then regresses fixed effects on the time-invariant variables and, finally, includes the residuals from the second step, alongside with time-invariant variables, in a pooled OLS regression. Although the estimates in general will be biased, the authors provide some evidence that the estimator gives a mean squared error at least as small as other techniques (RE, pooled OLS and Hausman-Taylor)

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[12] For a more thorough discussion, see for instance Wooldridge (2002).

when estimating of variables correlated with the unit effect, including time-invariant variables like those in our data.

It is thus hard, if not impossible, to find consistent estimators that can do the job. Nevertheless, we shall work with available estimators – the FEVD technique and pooled OLS – and apply a conservative interpretation to the results.[13] The identifying assumption will be that the error term is orthogonal to the variables of interest once the control variables are included in the regression. To see that results in general and significance in particular are not driven by repeated sampling of the same firms in the panel data, we shall also report the between-effect estimates, i.e. an OLS estimate over the mean observations for each firm.

Apart from the possible correlation between firm-specific properties and the explanatory variables, we may also suspect that residuals are serially correlated. It is easy to imagine that a consultancy that was relatively successful in one year would be more likely to be successful in the next year as well. We shall therefore test for autocorrelation, and employ a method that allows for serial correlation of the error term.

The dependent variable in the regressions is the logarithm of invoicing per consultant, in thousands of SEK. The model we estimate is

$$\log(invoicing_{it}) = \beta_0 + \beta_1 \cdot global_i + \beta_2 \cdot other_i + \beta_3 \cdot global_i \cdot other_i + \gamma_1 \cdot X_{it} + \gamma_2 \cdot P_{it} + \delta \cdot t + \varepsilon_{it},$$

where X_{it} is a vector of firm characteristics (staff and activities), P_{it} is a vector of productivity measures, and t is the year dummies.

Among the controls in X_{it}, staff is measured both as the total number of employees at the firm and as number of employees per consultant. The activity percentages are the controls for business composition discussed in the data description. The productivity measure is the two-entry vector containing observations on SSE popularity and MBA recruitment. In the regressions we make the assumption that P_{it} fulfils the requirements on a proxy, i.e. that it is closely enough related to the actual productivity that the other explanatory variables are not partially correlated with productivity. Given that only few firms have positive entries in the P_{it} vector, this may be a strong assumption. Nevertheless, we hope that any bias is smaller with the productivity measures than without them.

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[13] In a previous version, propensity score matching gave similar estimates. OLS on a yearwise basis overall shows the same pattern, but of course with lower significance due to the small samples in each year.

Panel data regression results. Our strategy will be the following. First, we run a pooled OLS where we cluster on firm identity to correct for the possible firm-specific effect. Then we employ the FEVD using heteroskedasticity-robust standard errors. Thereafter, we control for autocorrelation and use FEVD with an AR(1)-correction. Finally, we use the between-effect estimator to see that results hold also for firm averages. For the FEVD regressions, we use a STATA program kindly provided by Plümper and Troeger.

TABLE 3. Effects on invoicing per consultant (in logs of thousand SEK), results from pooled OLS regressions with clustered and heteroskedasticity-robust standard errors

	POLS 1	POLS 2	POLS 3	POLS 4
Intercept	7.4617	7.3815	7.4097	7.4439
Global brand	0.7636***	0.7305***	0.5614***	0.5764***
Monetary value (SEK)	1,995,000	1,728,000	1,244,000	1,333,000
(t-value)	(6.62)	(6.24)	(4.52)	(4.19)
Other services	−0.1608**	−0.1859**	−0.1768**	−0.1619*
Monetary value (SEK)	−258,470	−272,000	−268,000	−256,000
(t-value)	(−1.98)	(−2.09)	(−2.01)	(−1.94)
Global brand · other services	−0.5767***	−0.5164***	−0.3740**	−0.4483***
Monetary value (SEK)	−1,394,000	−1,117,000	−757,000	−935,000
(t-value)	(−3.56)	(−3.29)	(−2.37)	(−2.70)
Year controls	yes	yes	yes	yes
Activity and staff controls	no	yes	yes	yes
Productivity controls	no	no	yes	yes
Leading five omitted	no	no	no	yes
R^2	0.3788	0.4231	0.4499	0.2980
Observations	412	412	412	375

* Significant at the 90 percent level
** Significant at the 95 percent level
*** Significant at the 99 percent level

The results, including interpretations in real currency for an average consultancy in 2004, from regressions using a pooled OLS estimator with clustered and robust standard errors are found in Table 3. The estimates for the global coefficient are around 0.55 (about SEK 1.2 million at the sample average for a consultancy in 2004) when all controls are included, falling from more than 0.75 (about SEK 2 million) without controls. The coefficient on other services dummy is between −0.16 and −0.19

(SEK 255,000–275,000), and the interaction dummy coefficient between 0.37 and 0.58 (SEK 750,000 to 1,400,000). All estimates are significant at the 95-percent level and most at 99 percent.

TABLE 4. Effects on invoicing per consultant (in logs of thousand SEK), results from fixed-effect vector decomposition regressions with heteroskedasticity-robust standard errors

	FEVD 1	FEVD 2	FEVD 3	FEVD 4
Intercept	7.3970	7.1662	7.1699	7.1192
Global brand	0.7623***	0.7529***	0.7229***	0.6256***
Monetary value (SEK)	1,865,000	1,454,000	1,378,000	1,074,000
(t-value)	(483.11)	(497.14)	(347.71)	(240.61)
Other services	−0.1552***	−0.1704***	−0.1690***	−0.1729***
Monetary value (SEK)	−234,000	−203,000	−202,000	−196,000
(t-value)	(−162.76)	(−170.01)	(−167.20)	(−168.30)
Global brand · other services	−0.5810***	−0.4541***	−0.4292***	−0.4132***
Monetary value (SEK)	−1,319,000	−846,000	−789,000	−658,000
(t-value)	(−277.98)	(−237.59)	(−186.69)	(−155.67)
Year controls	yes	yes	yes	yes
Activity and staff controls	no	yes	yes	yes
Productivity controls	no	no	yes	yes
Leading five omitted	no	no	no	yes
Adjusted R^2	0.7630	0.7784	0.7776	0.7102
Observations	412	412	412	375

* Significant at the 90 percent level
** Significant at the 95 percent level
*** Significant at the 99 percent level

The FEVD estimates are illustrated in Table 4. Standard errors are very small, yielding rather extreme t-statistics. The values of the coefficients for the global, other services and interaction dummies are 0.72, −0.17 and −0.43, respectively, when all controls are included. (This corresponds to SEK 1.4, 0.2 and 0.8 million, respectively.) Without controls, the first two are similar, while the latter is sizeably larger at − 0.58 (SEK 1.3 million). The Hausman test statistic is 1.96. The STATA test for autocorrelation is not significant at the 95-percent level, but has a p-value of 0.056. Running the FEVD model with AR(1)-corrected standard errors yields results similar to those with heteroskedasticity-robust standard errors, as shown in Table 5.

TABLE 5. Effects on invoicing per consultant (in logs of thousand SEK), results from fixed-effect vector decomposition regressions with AR(1)-corrected standard errors

	FEVD-AR 1	FEVD-AR 2	FEVD-AR 3	FEVD-AR 4
Intercept	7.3782	7.2446	7.2419	7.1770
Global brand	0.7910***	0.8126***	0.8009***	0.6314***
Monetary value (SEK)	1,930,000	1,756,000	1,715,000	1,152,000
(t-value)	(21.87)	(20.41)	(16.73)	(12.14)
Other services	−0.1498***	−0.1842***	−0.1838***	−0.1773***
Monetary value (SEK)	−223,000	−236,000	−234,000	−213,000
(t-value)	(−4.49)	(−5.03)	(−5.03)	(−4.83)
Global brand · other services	−0.5867***	−0.3393***	−0.3326***	−0.3792***
Monetary value (SEK)	−1,349,000	−755,000	−732,000	−651,000
(t-value)	(−10.81)	(−5.94)	(−5.53)	(−5.86)
Year controls	yes	yes	yes	yes
Activity and staff controls	no	yes	yes	yes
Productivity controls	no	no	yes	yes
Leading five omitted	no	no	no	yes
Adjusted R^2	0.8426	0.8881	0.8841	0.8255
Observations	274	274	274	243

* Significant at the 90 percent level
** Significant at the 95 percent level
*** Significant at the 99 percent level

The pattern in the between-effect regressions is not different from that in the previous panel-data studies. If anything, the interaction effect is stronger when we only use firm-level means, as reported in Table 6.

Hence, for all varieties of controls, the methods estimate the effect associated with a global brand is above 0.56, corresponding to at least SEK 1.2 million for an average 2004 consultancy. The effect associated with a broad service portfolio is negative and estimated between 0.15 and 0.19, equivalent to more than SEK 200,000. Finally, the interaction effect estimates are negative and between −0.33 and −0.44 or SEK 0.73–1.14 million when all controls are included. Furthermore, the first effect is significant at 99 percent in all specifications, the second at least at 90 percent, and the third at 95 percent or more.

Potentially, these results could be driven by a few leading players that have an inherent higher ability to attract managerial competence, high-performing employees

TABLE 6. Effects on invoicing per consultant (in logs of thousand SEK), results from between-effect regressions

	BE 1	BE 2	BE 3	BE 4
Intercept	7.5965	7.6753	7.6774	7.6968
Global brand	0.7694***	0.7622***	0.5555***	0.6036***
Monetary value (SEK)	1,854,000	2,463,000	1,604,000	1,824,000
(t-value)	(6.49)	(5.60)	(3.36)	(3.44)
Other services	−0.1653**	−0.1538*	−0.1518*	−0.1442*
Monetary value (SEK)	−244,000	−307,000	−304,000	−296,000
(t-value)	(−2.19)	(−1.82)	(−1.82)	(−1.72)
Global brand · other services	−0.6461***	−0.6240***	−0.4350**	−0.4962**
Monetary value (SEK)	−1,394,000	−1,838,000	−1,140,000	−1,363,000
(t-value)	(−4.20)	(−3.60)	(−2.25)	(−2.46)
Year controls	yes	yes	yes	yes
Activity and staff controls	no	yes	yes	yes
Productivity controls	no	no	yes	yes
Leading five omitted	no	no	no	yes
Adjusted R^2	0.3753	0.4014	0.4301	0.3164
Observations	412	412	412	412
Groups	114	114	114	114

* Significant at the 90 percent level
** Significant at the 95 percent level
*** Significant at the 99 percent level

or well-paying clients and, at the same time, are found in the global-brand, narrow-services group. Therefore, to check the sensitivity of the specifications with respect to the top consulting firms, we run the same regressions including quadratic forms of our productivity measures (which all are positive only for major global players) or excluding leading players that may have a disproportional influence on the results. However, including quadratic forms of the SSE popularity and the MBA recruitment measures hardly changes the estimates for our coefficients of interest in any of the specifications. Omitting five leading players on the Swedish management consulting market over the studied period (McKinsey, Bain and Boston Consulting Group from the global, narrow portfolio group, and Accenture and Cap Gemini from the global, wide service range category) does not induce any major changes in neither of the specifications, as seen in the rightmost columns of Tables 3–6. The results are thus not driven solely by industry leaders.

Theory fit. Judging by the panel data techniques, there is a strong upward price effect associated with having a global brand in the management consultancy market. There is also a negative effect on management consulting fees associated with selling other business services. Most importantly, the effect associated with being global is weaker for consultancies offering a wide range of services. We summarise the empirical results in Figure 1, where $\lesssim$, $<$, $\ll$ and $\lll$ indicate increasing degrees of significance. The quantitative picture is given by the range estimated with the panel data methods using all controls for an average consultancy in 2004.

FIGURE 1. Summary of empirical results, yearly invoicing per consultant

local brand, wide service range MSEK 1.10–1.38	$<$	global brand, wide service range MSEK 1.69–2.14
$\lesssim$		$\ll$
local brand, narrow service range MSEK 1.30–1.65	$\lll$	global brand, narrow service range MSEK 2.68–3.11

The empirical results fit the predictions of the truth-telling story rather well. As argued in the introduction, local brands have a hard time selling truth-telling for major projects, since the relatively small client stock puts them at a disadvantage when it comes to sustain credibility. Some of these instead try to reap economies of scope by having a wide range of services to suit other client needs, whereas others can still sell truth-telling to local clients with smaller investments and a high degree of confidence between managers and stakeholders. Those that maximise pure expertise by diversifying the service portfolio could exploit conventional economies of scale in a global firm. We therefore see that global brands can charge higher prices in this segment. However, the effect associated with a global brand is even stronger for the players restricting the service range and selling truth-telling. Not only can they reach scale advantages in the level of expertise that they provide, but the increased client stock allows them to take on major strategic projects in large multinational corporations without being tempted to abandon the truth-telling mission.

These findings are in line with the truth-telling theory, but are problematic for a pure expertise view on management consulting. An expert theory that relies on economies of scale in knowledge management can certainly explain why global brands earn more than local. If economies of scope are relatively small, expert theory would also predict that players with a narrow service portfolio will charge higher fees than those with a broad scope, since management consulting services generally are more expensive than many other managerial services. However, expert theory would expect this effect to be most pronounced among the smaller local brands that do not possess a global knowledge network, and less important among the global players. Nevertheless,

our empirical evidence suggests the opposite. For instance, in the pooled OLS spec-
ification, a global brand corresponds to a 75 percent higher invoicing for those with
a narrow scope, compared to 35 percent for consultancies with a broad portfolio. A
global brand is more important for consultants selling exclusively management services,
raising some questions about the explanatory value of seeing management consultants
as pure suppliers of expertise. The truth-telling view suggests an explanation for the
paradox, offering a better fit with the empirical regularities.

3. Firm-level Data: Characteristics of Truth-Telling Consultancies

So far, we have found a market-level pattern that is hard to explain only with exper-
tise arguments for management consulting, but can be reconciled with the truth-telling
theory. In itself, this is not proof that the truth-telling theory is correct. However,
the result and the other evidence mentioned in the introduction point in the direction
that truth-telling may be more important to buyers of management consulting services
than expertise, at least for a considerable segment of the market.

To further explore the links between characteristics of management consultancies,
the purpose for which they are hired, and the resulting profit margins, I use data from a
series of structured interviews with practising management consultants from the largest
firms in Sweden. As mentioned, the large players represent a disproportionate share of
the market. Out of the 20 largest firms in Sweden, as reported by Konsultguiden 2006,
representatives of 15 firms have participated in the project. Two of the remaining five
companies did not have representation in Sweden as of April 2007, while appointments
could not be arranged with the other three. In total, the firms represented by the inter-
viewees account for 72 percent of turnover in the top 100, according to Konsultguiden.
All representatives have been at a senior level – either partners or project managers –
in order to ensure an extensive experience from the management consulting industry.
A list of interviewees is found in Appendix A.

The interviews took place in March, April, May and June 2007, mostly face to face,
but in one case over telephone. The interviewees were informed that the objective
of the study was to map relations between characteristics of management consulting
firms and of clients, respectively, but were not introduced to any particular theory
framework. The interviewees were then asked to give an introduction to their firm and
their own work. Thereafter, the questions in Appendix B were asked in a discussion-like
setting, during which the interviewer marked the answers closest to the interviewee's
responses. When this was not clear, interviewees were asked to clarify the answer. In
some cases, the interviewees chose not give a precise statement. Occasionally, answers
were between two of the alternatives. If needed, interviewees were asked to refer to

their companies' Swedish business and a 'typical' or 'average' client in Sweden. Since some firms are staffed on a Nordic, or even European, level, a few interviewees preferred to give answers referring to the Nordic (or European) business.

To allow for quantifying the relationship between the variables of interest, interview responses (with the exception of activity percentages) have been numbered from 1 to 5, as explained in Appendix B. In a vast majority of the cases, these are integers. As described, however, some answers were between the alternatives, in which case they are ranked as halves. To be able to use the rough statements of activity percentages in the analysis, vague answers have been interpreted literally.[14] One of the interviewees did not state the activity percentages.

There are some potential sources of errors in the interview data. First, interviewees may misinterpret questions. Second, interviewees may want to convey a certain image of their firm's operations. Third, answers may be misinterpreted by the interviewer. However, I find it unlikely that possible sources of errors on the side of the interviewees should be systematic. While I cannot say much about my own possible miscomprehension or bias, I remain convinced that anyone who would conduct a similar study would to a large extent replicate my findings.

To see how interview findings fit results from the theory and from the market data analysis in the previous section, we first take a look at the theoretical predictions. Thereafter, we report correlations between variables of interest and see that they are coherent with predictions from theory. For instance, measures of situations where clients are likely to be in need of outside credibility (like a new ownership of the client company, a newly appointed client manager, a company in strong expansion or downsizing) are strongly correlated with measures of the consulting firm's bargaining position (price sensitivity and frequency of project bids in direct competition) and expertise in non-management consulting fields in our sample. Finally, we group answers using the classification in global/local and broad/narrow and see that the answers differ between groups in a way that strengthens the case for the suggested mechanism behind the results in the market data analysis.

Predictions from the truth-teller theory. As stated in the introductory section, the theory presented in Sonnerby (2007) has testable implications for the operations of management consulting firms. Most importantly, it postulates certain conditions for consultancies in the truth-telling segment. The previous section showed that

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[14] To exemplify, a hypothetical description like 'In total, management consulting accounts for approximately half of the firm's European turnover. The Swedish business looks like Europe in general. M&A work is a smaller part of this than strategy, organisation and operations, which are about equally large' would be interpreted as 15 percent in each of the activities Strategy, Organisation and Operations, and 5 percent in M&A.

if truth-telling is the most highly priced segment, the need for a global brand and a limited range of services is consistent with the market pattern. In this section, we shall concentrate on firm-level characteristics.

The theory predicts that consultancies working with truth-telling in large projects must restrict its range of services and have a strong bargaining position vis-à-vis the clients. They also gain a lot of credibility from a global brand. The restricted service range enhances credibility by worsening outside opportunities for the consultancy, and possibly also by closing off channels for side payments from client managers. The strong bargaining position makes future truth-telling profitable and thus counterweights the temptation for short-term exploitation of the good name. A global presence indicates that the number of major clients in the future is large enough to balance the temptation of collusion with a few client managers against the interest of other client stakeholders.

Therefore we would expect the following connections.

- Consultancies working more often in truth-telling situations are more likely to have a small share of sales outside management consulting.
- Consultancies working more often in truth-telling situations are more likely to have a strong bargaining position and less price sensitive clients.
- Consultancies working more often in truth-telling situations are more likely to have a presence on large foreign markets, known to the firm's clients.

To complete the link to the previous section and establish this as the mechanism driving the market analysis results, we would also expect that firms categorised as 'global brand, narrow service range' in the market data will have more projects in truth-telling situations, a lower price sensitivity and a smaller share of sales outside management consulting when interviewed in this part of the study.

Correlation study. In the interview material, the question of the consultancies' revenue distribution indicates how much non-management consulting services that a consultancy is selling. The fields Strategy, Organisation, Operations and Mergers & Acquisitions are counted as pure management consulting. The sum of these will be denoted *standard management consulting*. In an alternative interpretation, we narrow the definition of management consulting to include only Strategy, Organisation and Mergers & Acquisitions – fields where truth-telling seems to be more important than in operational performance improvement. We call this sum *narrow management consulting*.

There are three questions clearly related to truth-telling situations. According to the theory, truth-telling or outside verification is most important when investments in a relationship, broadly defined, are large relative to previous experience. Hence,

new relationships and drastic changes in relationships are examples when we expect the need for truth-telling consultancies to be stronger. The questions whether a client firm is more likely to have a new owner, whether a client manager is more likely to be new in her position and whether a client firm is more likely to be in a phase of strong expansion or downsizing will therefore form our core measure of truth-telling. We denote the average of these three *narrow truth-telling*. Questions on the dispersion and nationality of ownership may also be related to the need for outside verification. We then believe that a dispersed ownership and many foreign investors would increase the need for corporate governance mechanisms like truth-telling consulting services. The average of the three narrow truth-telling measures and these two will be called *broad truth-telling*.

There are two questions designed to catch the competition intensity, and thereby the bargaining position of the consulting firm. Low scores on the questions how often clients procure projects in direct competition and how important price is as a competition factor should indicate that the consultancy's bargaining position is relatively strong vis-à-vis its clients. This measure is called *price sensitivity of clients*. Finally, brand geography is caught in two questions. The firm's real geographical presence is an objective measure, whereas how clients perceive the brand is more subjective. The average is denoted *global brand*. The main correlations are presented in Table 7, while all correlations are found in Appendix C. The interviews also include a question addressing whether clients are active on markets where regulatory knowledge is important. However, the answer is not strongly correlated with other variables of interest.

The frequency of clients in either of the three narrowly defined truth-telling situations is negatively related to the percentage of sales outside management consulting. The correlation between *narrow truth-telling* and the share of sales outside *standard management consulting* is –0.62, significant at 1.8 percent. Using the more narrow definition of management consulting, the correlation is –0.59, also significant. All of these correlations are negative also for each of the variables. The corresponding correlation and significance levels for *broad truth-telling* are virtually the same. Correlations are –0.62 and –0.61, respectively, both with a p-value below 2 percent.

Also the relation between truth-telling situation frequency and the competition intensity is strongly negative. The correlation between *narrow truth-telling* and *price sensitivity of clients* is –0.65, with a significance level below 1 percent. All correlations are negative between individual variables. Again, the relation to the broader truth-telling measure is more or less the same in magnitude and significance.

TABLE 7. Correlations between main aggregate measures in interview responses (p-values in parentheses)

	Narrow truth-telling	Broad truth-telling	Price sensitivity of clients	Global brand
Narrow management consulting	0.5931** (0.0254)	0.6111** (0.0202)		
Standard management consulting	0.6194** (0.0182)	0.6158** (0.0191)		
Narrow truth-telling	1.0000			
Broad truth-telling		1.0000		
Price sensitivity of clients	−0.6456*** (0.0093)	−0.6515*** (0.0085)	1.0000	
Global brand	0.5838** (0.0284)	0.5833** (0.0286)	−0.1730 (0.5542)	1.0000

* Significant at the 90 percent level
** Significant at the 95 percent level
*** Significant at the 99 percent level

As predicted by the truth-telling theory behind the globalisation of management consulting, there is a strong positive connection between the global presence of a consultancy and the truth-telling situation frequency of its clients. The correlation between *narrow truth-telling* and the average of the objective international presence and the subjective brand recognition is 0.58, with a *p*-value of 0.028. Also individually these correlations are all positive. Not surprisingly, there is a positive connection between the nationality of client ownership and a global consulting brand, whereas the relation to ownership dispersion is weaker. In total, the correlation between *broad truth-telling* and *global brand* is the same as that for narrow truth-telling.

The correlation analysis thus shows a pattern consistent with the mechanisms predicted by the truth-telling theory. Consultancies working more often in situations where outside verification seems to be important have a more concentrated business scope and a stronger bargaining position. On average, they are also more global than their peers. We also see that a global brand in itself is not very strongly correlated with the market power. Instead it is correlated with truth-telling, which in turn is strongly connected to a strong bargaining position of consultancies, as suggested by the theory.

To get a robustness check, we omit interview responses from the firms that were in the leading five category, as defined in the previous section (in total three, four or five responses; due to anonymity considerations this cannot be specified more precisely). Of course this implies a lower significance in most of the cases, but the signs on the correlations are unchanged. The correlations between *narrow truth-telling* on the one hand and *standard management consulting, price sensitivity of clients* and *global brand,* on the other, are 0.58, –0.57 and 0.73. The *p*-values are 0.102, 0.085 and 0.025, respectively. One of the other sampled firms is slightly different from the others, in that it does not offer project teams to clients, but rather individual consultants. With this firm omitted from the correlation analysis, the correlations between narrow truth-telling and the other aggregate measures become stronger in magnitude and more significant than in the full sample. Hence, while individual observations are necessarily influential in a small-sample analysis (the leading five alone account for almost half of the turnover in the top 100), the pattern is fairly robust.

Linking to the market data analysis. The theoretical predictions in the previous section suggest that the mechanism described in the firm-level analysis is driving the results in the market data analysis. To explore this, we see how interview responses differ between categories in the local/global and broad/narrow matrix. Most importantly, the truth-telling theory claims that the high fees charged by global firms with a narrow focus stem from their superior ability to sell truth-telling projects to large clients. We would then expect that this group will be more active in truth-telling situations and show a lower price sensitivity.

Out of the 15 participants in the interview study, 5 are representatives of firms categorised as global firms with a narrow service range in the market data analysis. In all measures of truth-telling situation frequency this group shows a higher average value than other firms. This is illustrated also by narrative descriptions in interviews. For instance, while an interviewee from a local, wide service range firm says that it is particularly difficult to sell projects to a client in the year after it has changed ownership, interviewees from two global brand, narrow focus firms claim that the year after a change in client ownership is when they do most business. One of the two latter states that the business is driven by 'discontinuities'. This group also reports a lower price sensitivity among clients, both in terms of the occurrence of direct competition in project procurement and the importance of price for competitiveness. By the nature of the classification, they are also more global and have a smaller share of sales outside management consulting. The figures are found in Table 8.

Two of the firms not classified as global brand, narrow service range in the market-data analysis are rather similar to that category anyway. One of these was founded in

TABLE 8. Responses of interviewees from 'global brand, narrow service range' and from other consultancies (standard deviations in parentheses)

	Average value among firms characterised as global, narrow scope	Average value among other firms in market data analysis
Strategy	27.0% (5.7 p.p.)	21.8% (25.1 p.p.)
M&A Due Diligence	18.3% (10.9 p.p.)	5.2% (6.9 p.p.)
Organisation	21.8% (3.9 p.p.)	14.2% (10.4 p.p.)
Narrow management consulting	*67.0% (10.9 p.p.)*	*37.5% (30.1 p.p.)*
Operations	30.5% (9.9 p.p.)	18.6% (9.4 p.p.)
Standard management consulting	*98.0% (4.5 p.p.)*	*54.0% (30.2 p.p.)*
Strong expansion/downsizing	4.5 (0.7)	3.7 (0.5)
New ownership	4.3 (0.4)	3.0 (0.9)
New client position	4.5 (0.7)	3.1 (0.9)
Narrow truth-telling	*4.4 (0.5)*	*3.2 (0.4)*
Dispersed ownership	3.3 (0.8)	3.3 (0.5)
Foreign ownership	3.0 (0.0)	3.1 (0.6)
Broad truth-telling	*4.1 (0.5)*	*3.2 (0.4)*
Competitive procurement	2.0 (0.4)	2.8 (1.0)
Price importance	2.0 (0.4)	2.9 (1.0)
Price sensitivity of clients	*2.0 (0.3)*	*2.8 (0.9)*
Geographic market reach	5.0 (0.0)	4.4 (1.1)
Client brand perception	5.0 (0.0)	3.9 (1.4)
Global brand	*5.0 (0.0)*	*4.2 (1.1)*
Regulated client market	3.0 (0.8)	3.1 (0.6)

Sweden by American and Swedish partners, and has operations on both sides of the Atlantic. The other sells management consulting services under a brand including the name of a multi-service consulting company. If these two particular cases are instead treated as global brand, narrow service range, the average score difference on the three narrowly defined truth-telling situations goes from 4.4 for global brand, narrow service range versus 3.2 for others to 4.2 versus 3.2. The average score difference on the measures of competitiveness increases, from 2.0 versus 2.8 to 2.0 versus 3.2.

Together with the correlation analysis, this link supports the truth-teller theory as the explanation behind the pattern observed in the market data study. Global firms with a narrow focus can possess the brand credibility necessary to sell truth-telling projects. The theory predicts that these firms should be able to charge higher prices than other consultancies – as we observe in the market data analysis. This price

premium is partly due to the nature of truth-telling assignments, which makes them valuable to the client, and partly a result of the mechanism that consultancies must be able to make long-term profits from truth-telling services in order to resist short-term collusion temptations, and therefore need some market power – as we observe in the firm-level analysis. The theory further predicts that truth-telling consultancies must restrict the services they offer outside the truth-telling projects, which is consistent with the negative relation that we observe between truth-telling situations frequency and share of sales outside standard management consulting.

4. Conclusion

Management consulting is not just another outsourcing industry. Narrative and anecdotal arguments suggest that the role of management consulting is more extensive and complicated than to simply be subcontractors for managerial analysis. The analyses in this study support the theory that management consulting firms, especially in the most expensive segment, serve as an important mechanism in corporate governance by guaranteeing the adequacy of pursued strategies. Factors contributing to the credibility of consultancies in these situations are a global brand, a concentration of business to a narrowly defined management consulting field, and some degree of market power.

The analysis of data from the Swedish management consulting market displays three stark regularities with respect to the importance of global brands and the scope of consultancies' service portfolios. The price premium of global brands is consistent both with the truth-teller theory and explanations focusing on scale economies in managing knowledge. The price premium of consultancies with a narrow scope is in line with the truth-teller theory, and can be reconciled with expertise arguments. However, the observation rules out expertise arguments in combination with strong economies of scope between management consulting and other outsourcing areas. Most importantly, the observation that a global brand and a narrow service portfolio are complements is very problematic for any explanation focusing on economies of scale and scope in knowledge management, but is consistent with the truth-teller theory.

Interviews with practitioners representing a large share of the Swedish market provide further evidence for truth-telling as an important mechanism on the management consulting market. As predicted by the theory, we observe strong relations between the frequency of client situations in which truth-telling would be important, global brands, business scope concentration, market power indicators, and belonging to the most highly priced segment.

This paper and its parallel theoretical study suggest an updated view on management consulting, especially in the top segment. Researchers and practioners that have seen management consultants only as analysis subcontractors may find it useful to take corporate governance and industrial relations aspects into account to explain the evolution of the industry. Scholars that see consultants as witch doctors may find a rational explanation as to why experienced clients pay huge amounts for advice from seemingly inexperienced consultants when they recognise the need for outside verification in order to substitute trust between client managers and third parties. Of course, the results of this study do not suggest that all consultancies should strive to be of the truth-telling type. Most consulting firms are probably more interested in total profits than in high per-consultant revenues. There is obviously a demand for consulting in various sub-markets, and a profit-maximising entity should be working in all fields where marginal revenues exceed marginal costs.

Evidently, the empirical analysis in this study is not comprehensive. The data is only from the supply side, i.e. from the consultancies. A natural extension of this work would be to complement the evidence with a more in-depth study of the demand side. Perhaps firm-level data from clients could provide direct evidence on the extent to which firms use management consultants to substitute personal confidence. Since most firms are reluctant to give away data about their use of consultants, and few consultancies reveal their client portfolios, getting access to relevant information would not only yield a unique and interesting data set, but also help us to shed further light on economic rationales behind the use of management consultants.

Appendix A: List of Interviewees

Below is a list of the people who generously shared their time, thoughts and experience in the interview series. I express my gratitude for their helpfulness.

Project manager at a global firm, 17 March 2007

Camilla Carlell, Project Manager, XLENT, 11 April 2007

Victor Kotnik, Managing Director, BearingPoint, 12 April 2007

Project manager at Applied Value, 13 April 2007

Gunnar Tolf, Project Manager, PA Consulting, 13 April 2007

Partner at a global firm, 17 April 2007

Björn Olofsson, Partner, Acando, 20 April 2007

Jan Beckeman, Partner, Arthur D. Little, 4 May 2007

Peter Svensén, Project Manager, Mercer Oliver Wyman, 4 May 2007

Björn Daltveit, Manager, Bain & Company, 23 May 2007

Project manager at a global firm, 23 May 2007

Rolf Greve, Vice President, Cap Gemini, 25 May 2007

Petra Karmteg, Manager, Accenture, 1 June 2007

Helen Lagergren, Business Area Manager,
        Manpower Professional Executive, 19 June 2007

Jari Välimäki, Vice President, Gartner, 27 June 2007

Appendix B: Interview Questions

These are the questions that were asked in all interviews. The numerical interpretation is indicated in brackets or in text below answers.

1. On which geographic markets does your firm have an active business?

| In Sweden | In other Nordic countries | In non-Nordic European countries | In North America | On other continents |

Presence in Sweden and other Nordic countries has been ranked 2.
Presence in Sweden, other Nordic and non-Nordic European countries has been ranked 3.
Presence in Europe and North America has been ranked 4.
Presence on several continents, including Europe and North America, has been ranked 5.

2. How do you believe that clients of your firm perceive its brand?

As mainly Swedish	As mainly Nordic	As mainly European	As mainly American	As global	Cannot answer
(1)	(2)	(3)	(4)	(5)	

3. For what percentage of the turnover of your firm do strategy, organisational development, operations management or due diligence project account? Please disregard support, systems integration and the like.

Strategy	percent
Organisation	percent
Operations	percent
M&A Due Diligence	percent

If a percentage was given for several fields, it has been split equally among those.

4. When your firm is hired for a project, how often are there other immediate competitors in the procurement?

Almost always	Most often	In about half of the cases	Most often not	Almost never	Cannot answer
(5)	(4)	(3)	(2)	(1)	

5. How important is the price as a competition factor when your firm is selling projects?

Decisive	Of great importance	Not unimportant	Less important	Of marginal importance	Cannot answer
(5)	(4)	(3)	(2)	(1)	

6. Compared to similar companies, is a typical client company more or less likely to be strongly expanding or downsizing?

Considerably more likely	Somewhat more likely	Neither more nor less likely	Somewhat less likely	Considerably less likely	Cannot answer
(5)	(4)	(3)	(2)	(1)	

7. Compared to similar companies, is a typical client company more or less likely to have a new owner?

Considerably more likely	Somewhat more likely	Neither more nor less likely	Somewhat less likely	Considerably less likely	Cannot answer
(5)	(4)	(3)	(2)	(1)	

8. Compared to similar companies, is a typical client company, provided it is not VC- or PE-owned, more likely to have a dispersed ownership or a dominant owner?

Considerably more likely to have a dispersed ownership	Somewhat more likely to have a dispersed ownership	None of those	Somewhat less likely to have a dominant owner	Considerably less likely to have a dominant owner	Cannot answer
(5)	(4)	(3)	(2)	(1)	

9. Compared to similar companies, is a typical client company more or less likely to have a large share of foreign ownership?

Considerably more likely	Somewhat more likely	Neither more nor less likely	Somewhat less likely	Considerably less likely	Cannot answer
(5)	(4)	(3)	(2)	(1)	

10. Compared to similar companies, is a typical client company more or less likely to be on a market with extensive regulations?

Considerably more likely	Somewhat more likely	Neither more nor less likely	Somewhat less likely	Considerably less likely	Cannot answer
(5)	(4)	(3)	(2)	(1)	

11. Compared to persons in similar positions in similar companies, is a typical client manager more or less likely to be new in his or her position?

Considerably more likely	Somewhat more likely	Neither more nor less likely	Somewhat less likely	Considerably less likely	Cannot answer
(5)	(4)	(3)	(2)	(1)	

Appendix C: Interview Response Correlation Table

TABLE 9. Correlations between interview responses

	Expansion/downsizing	New ownership	New client position	*Narrow truth-telling*	Dispersed ownership	Foreign ownership	*Broad truth-telling*
Strategy	–0.03	0.29	0.20	*0.16*	–0.04	0.37	*0.20*
M&A Due Diligence	0.37	0.56*	0.57*	*0.63***	–0.48	0.39	*0.47*
Organisation	0.36	0.40	0.38	*0.38*	0.49	–0.09	*0.50*
Narrow management consulting	*0.42*	*0.57***	*0.59***	*0.59***	*0.22*	*0.39*	*0.61***
Operations	0.34	0.35	0.48	*0.43*	0.36	0.33	*0.51***
Standard management consulting	*0.42*	*0.59***	*0.65***	*0.62***	*0.21*	*0.29*	*0.62***
Strong expansion/downsizing	1.00						
New ownership	0.47	1.00					
New client position	0.36	0.57**	1.00				
Narrow truth-telling				*1.00*			
Dispersed ownership	0.25	0.15	0.00	*0.13*	1.00		
Foreign ownership	0.10	0.52	0.08	*0.34*	0.48	1.00	
Broad truth-telling							*1.00*
Competitive procurement	–0.46*	–0.77***	–0.48*	*–0.60***	–0.08	–0.20	*–0.57***
Price importance	–0.23	–0.76***	–0.62**	*–0.59***	–0.41	–0.51	*–0.64***
Price sensitivity of clients	*–0.35*	*–0.82****	*–0.59***	*–0.65****	*–0.22*	*–0.38*	*–0.65****
Geographic market reach	0.40	0.65**	0.29	*0.58***	0.15	0.54*	*0.59***
Client brand perception	0.24	0.61**	0.67***	*0.69****	0.01	0.45	*0.66***
Global brand	*0.29*	*0.57***	*0.40*	*0.58***	*–0.13*	*0.61***	*0.58***
Regulated client market	0.40	0.04	–0.15	*0.08*	0.11	0.28	*0.10*

* Significant at the 90 percent level
** Significant at the 95 percent level
*** Significant at the 99 percent level

TABLE 10. Correlations between interview responses, continued

	Competitive procurement	Price importance	Price sensitivity of clients	Geographic market reach	Client brand perception	Global brand
Strategy	−0.42	−0.55*	−0.49*	−0.10	0.16	−0.09
M&A Due Diligence	−0.58**	−0.65**	−0.63**	0.14	0.35	0.27
Organisation	−0.55*	−0.67**	−0.59*	−0.05	0.17	−0.17
Narrow management consulting	−0.66**	−0.81***	−0.75***	−0.15	0.39	0.19
Operations	−0.44	−0.58*	−0.51*	0.25	0.44	0.39
Standard management consulting	−0.69***	−0.82***	−0.77***	−0.17	0.45	0.24
Strong expansion/downsizing						
New ownership						
New client position						
Narrow truth-telling						
Dispersed ownership						
Foreign ownership						
Broad truth-telling						
Competitive procurement	1.00					
Price importance	0.74***	1.00				
Price sensitivity of clients			1.00			
Geographic market reach	−0.23	−0.38	−0.31	1.00		
Client brand perception	−0.23	−0.48*	−0.39	0.79***	1.00	
Global brand	−0.04	−0.27	−0.17			1.00
Regulated client market	−0.05	−0.18	−0.08	0.24	−0.02	0.18

* Significant at the 90 percent level
** Significant at the 95 percent level
*** Significant at the 99 percent level

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PAPER 3

A Guild Theory of the Trade Union

ABSTRACT. The paper presents a model in which unions, like pre-industrialisation guilds, have to strike a balance between strengthening the bargaining position and fostering human capital. It links the organisational form of unions to investments in human capital and bargaining power. The predictions resemble evidence from the Nordic labour market. Non-contractible productivity and good possibilities of building general skills at work are complementary to profession-specific unionisation, individual wage-setting and union resources being allocated to increasing general human capital. Closer monitoring and small opportunities to build general skills give rise to industry-specific unions and a strong focus on collective wage setting. Furthermore, there is path dependency in union formation, which fits the international pattern of unionisation rates.

"There is power in the union"
J. Hill (1913)

1. Introduction

Why do blue-collar workers organise themselves in industry-specific unions involved in collective wage bargaining, while white-collar workers – if they unionise at all – often organise according to educational or professional background in unions that focus on strengthening individual human capital?

This paper develops a model that links the organisational form and the focus of unions to the human capital that can be built at the workplace, the workplace technology and their interaction. The role of unions in the model is guild-style in the sense that the organisations seek to strengthen both their members' bargaining position and their professional skills. The model explains why a representative union agent may

choose to organise according to industry rather than profession and allocate resources to strengthening collective wage bargaining rather than the individual position of members, or vice versa. Groups with white-collar characteristics will be more prone to form profession-specific unions and advocate individual bargaining than blue-collar groups, due to comparative advantages of sector- and profession-specific unions and their complementarity with workplace characteristics. The predictions fit stylised facts of union market segmentation, of wage profiles and of unemployment, as well as international divergence in unionisation.

While blue-collar unions are frequent in most industrialised countries – although their power and membership rates vary depending on legislation and economic success – the importance of white-collar unions differs a lot.[1] In many industrialised states white-collar unions are virtually non-existent, or exist only for government employees. On the other hand, the Nordic countries probably show the highest unionisation rate among salaried employees. In Sweden, just below 80 percent of white-collars, including professionals, are unionised, a figure almost comparable to that of blue-collar workers.[2] Moreover, in countries with white-collar unions – most notably the Nordic countries and Germany – unions for professionals appear to be holding on in a time of decline for the larger blue-collar unions. Organisations encompassing the most well-educated 10 or 15 percent of the labour force are important economic phenomena that are understudied by economists.

In Sweden, the unionised labour force is mainly divided in three confederations.[3] As a rule, blue-collar workers belong to LO (*Landsorganisationen* – the Swedish Trade Union Confederation), white-collar labour without traditional academic degrees to TCO (*Tjänstemännens Centralorganisation* – the Swedish Confederation of Professional Employees) and professionals to SACO (*Sveriges Akademikers Centralorganisation* – the Swedish Confederation of Professional Associations). Only 3 out of the 16 trade unions in LO are organised specifically according to their professions, whereas most of the 26 unions in SACO are related to an educational background.[4] TCO forms an intermediate case with unions mainly related to industry, but where many have

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[1] The information in this paragraph comes from EIRO, the European Foundation for the Improvement of Living and Working Condition (www.eiro.eurofound.ie), and from the websites of the mentioned organisations (www.saco.se, www.akava.fi and www.ac.dk).

[2] The organisations for professionals with higher education in Sweden, Finland and Denmark – SACO, AKAVA and AC – organise some 550,000, 440,000 and 250,000 people, respectively, in workforces of almost 4.5 million in Sweden and in the 2.5–3 million range in Denmark and Finland.

[3] A comprehensive list of all unions in these three major confederations could be found in the appendix.

[4] Admittedly some of these, like *Officersförbundet* (the Officers' Union) and *Lärarförbundet* (the Teachers' Union) are rather industry-specific as well. However, we will see that there are reasons why these groups – like electricians and painters, police officers and nurses – are organised in this fashion.

quite explicit requirements regarding educational background (for instance nurses and police officers).

While the industry-specific blue-collar unions tend to focus on the collective wage bargaining process, profession-specific white-collar unions are more concerned with issues related to enhancing human capital or labour market mobility among their members, and prefer a more individualised wage-setting process. The following quotes from LO and SACO illustrate the policy differences:

> *Members of LO unions are bearers of an idea – a view that pursuing issues together pays off. [...] This is also why LO unions present common bargaining demands. In order to agree we need to negotiate with the employer, who has a stronger position of power. In order for us employees not to lose we need to unite. Therefore we need the union and therefore we need coordination within the union.* (Website of LO, 'Our idea', own translation)

> *The strength of SACO and the SACO unions is that the organisations serve two functions. On the one hand they are union organisations, on the other they are professional organisations. [...] The role of SACO and the SACO unions will increasingly be directed at being a preventive, forward-looking and supportive counsellor, making it easier for members to act independently. [...] In order to achieve a realistic pace of wage growth the fixation to central negotiations must be broken. Instead of seeing growth as a constraint for wage formation, the wage formation should focus on being as beneficial for productivity as possible. Then we need a local and individual wage formation, rewarding those who contribute most to activities and work joy.* (Strategic policy guideline document of SACO, 'Direction 2002-2005', own translation)

Even though many blue-collar unions spend resources on enhancing human capital[5], organisations for white-collar professionals stress member services outside wage bargaining power even more. Judging from accessible accounting information, items related to educating members (education and union journals) make up around 10 percent of costs for a sample of LO unions and a bit more for some TCO unions.[6] On the other side, half of the budget of the Swedish Medical Association consists of revenues from the member journal, which at the same time is a scientific publication. This is not an exclusively Nordic feature. In several European countries, trade unions are helping members with employment service, career development, training and even international mobility, as reported by Bibby (2004).

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[5] For instance, in the 2003 annual report of Swedish Industrial Workers' Union there is a paragraph reading: "The schooling, training and competence development work of the Industrial Workers' Union aims to get more people a technical or scientific secondary education, and to increase competence development for employees in companies. Thus industrial work becomes more interesting and stimulating, and Swedish industry more competitive."

[6] A number of recent annual reports from Swedish unions are mentioned among the references.

Hence, while blue- and white-collar (especially professional) unions seem to have developed on different tracks, they both show a resemblance to pre-industrialisation guilds. The guilds served a dual purpose, explained for instance by Booth (1995, p. 15). While they were striving to enhance the bargaining position of the trades' practioners by restricting competition, they were also responsible for training younger generations into the respective vocations.

The stylised facts described above do not follow immediately from the simplest theory of a rent-seeking monopoly union. Instead, it seems like different types of labour have different needs and different ways of increasing their labour market position or general efficiency. The idea here is to investigate to what extent these different characteristics can explain the differences we observe in union organisation and activity. Using the terminology of Milgrom & Roberts (1990) and Holmström & Milgrom (1994), there seem to be complementarities in the production function of a union as well as in that of a firm. Worker freedom and educational skills go hand in hand not only with each other, high-powered incentives and asset ownership, as shown by Holmström & Milgrom, but also with profession-specific unionisation and union actions increasing labour mobility. On the other hand, weaker individual incentives, tighter monitoring and skills built on the workplace match industry-specific unions and a focus on collective wage-setting.

The literature closest related is that of encompassing versus separate unions following Horn & Wolinsky (1988). This strand of research, including Westermark (1999) and Beniers & Dur (2003), derives optimal union formation from bargaining theory under different assumptions about markets and technologies. The results of Horn & Wolinsky suggest that encompassing unions will be more frequent if labour types are substitutes and if the market is imperfectly competitive, whereas separate unions will be more attractive if they can be used to exploit the complementarity of labour to strengthen the bargaining position. This is also what Beniers & Dur find, while Westermark's results suggest that complementarity may instead lead to sectoral unionisation. By linking the organisational form of unions to the endogenous choices of human capital and bargaining regimes, the present paper provides a new approach on union formation.

The discussion is related also to theories on general versus specific skills on the labour market, described by Acemoglu & Pischke (1999) and others. Acemoglu & Pischke argue that unions affect human capital by compressing the firm wage structure, thereby extracting general training from employers for its members. These results are empirically tested on European data by Booth, Francesconi & Zoega (2003) and Dustmann & Schönberg (2004). Using British data for full-time male workers, Booth, Francesconi & Zoega find that union-covered workers receive more training and get

a higher return on training than do non-unionised workers. Dustmann & Schönberg conclude that wage setting and union-driven wage compression in Germany favours apprenticeship training by the firm. The present paper to some extent provides a new explanation as to why unionised labour get more training and benefit more from it.

There are other theories on why unions are not necessarily harmful for productivity. Unions may help to remedy market imperfections – for instance under employer monopsony –, by channelling suggestions from employees, by complementing exit with voice or by creating a managerial commitment to employment, which promotes relation-specific investments among employees. These arguments are found alongside with productivity-decreasing effects of unions in the US-focused studies by Freeman & Medoff (1984) and Hirsch & Addison (1987), as well as in the international survey by Metcalf (2003). Another survey-style example of modern union research, namely Boeri, Brugiavini & Calmfors (2001), discusses differences between blue- and white-collar labour, as well as non-bargaining activities of trade unions. Especially Chapters 3 and 4 open up for efficiency-increasing actions of unions. Examples mentioned are cooperation with management in organisational improvement, structural change forced by tough wage demands, and member services where unions have a competitive advantage. However, the role of unions to foster human capital among its members is not very emphasised in the study.

In spite of many related ideas, there is to my knowledge no model theoretically linking the organisational form of unions to bargaining regimes and human capital formation. The next section describes a theoretical model and solves for the equilibrium. Section 3 discusses the results in light of stylised facts. Section 4 concludes.

2. The Model

In the model, individual workers exert high or low effort $e \in \{e_L, e_H\}$, with $e_H > e_L$, in order to develop personal and general (non-relation-specific) human capital. The high effort is non-contractible and entails an extra cost to the individual, but increases the output and thereby possibly her wage. For simplicity, we assume that utility is additively separable in wage and effort costs.

All workers belong to some group G, which represents people of one profession in one industry, e.g. engineers in construction, nurses in health care or service staff in retailing shops. Thus, if the labour market is depicted as a matrix where industries are columns and professions are rows, each group represents a cell. Every group G is characterised by the effort cost of developing human capital, determined by the parameter $\delta_G > 0$, and the degree of productivity that is contractible, μ_G. The individual cost of exerting effort is $\delta_G \cdot e$. The interpretation of μ_G is discussed below. Workers are homogenous

within groups, and the number of individuals in a group is large, so that each individual disregards her impact on group averages.

Workers are either non-unionised, indicated by $\varnothing$, or members of a union, organised either according to profession or to industry. The indices for these will be $O \in \{P, S\}$, where S denotes sector. The unions choose a bargaining system, which is either collective or individual, denoted $N \in \{K, I\}$. Furthermore, all union members pay a fixed fee of $M + M_0$, where M_0 is a per-member measure of the union's bureaucratic costs, and M the resources per member available for operative use. We normalise M to 1. The effective per-member budget is allocated with an amount m to strengthening the bargaining power and thus $1 - m$ to enhancing the members' human capital.

The general skills denoted 'human capital' consist of individual effort investments and resources spent on human capital enhancement by the individual's union, according to the multiplicative function

$$H\left(e, (1 - m)\right) = e \cdot \left(h + \omega\left(1 - m\right)\right),$$

where ω is the comparative advantage of profession-specific unions in human capital promotion. We therefore have $\omega > 1$ for profession-specific unions and $\omega = 1$ for sector-specific unions. For non-unionised labour, $H = e \cdot h$.

The production of individual i in group G, Π_G^i, is an additive function of the degree of contractible output and the individual's human capital, i.e.

$$\Pi_G^i = \mu_G + H_G^i.$$

The bargaining power for a non-unionised group is

$$\beta_\varnothing = \beta_0.$$

Obviously, $\beta_0 \in (0, 1)$. A union with individual bargaining has bargaining power

$$\beta_I = \beta_0 + \overline{\beta} m,$$

where $\overline{\beta}$ is a measure of the effectiveness of union resources devoted to bargaining. To reflect that a union bargaining collectively can exert some monopoly power, it has the bargaining strength

$$\beta_K = \beta_0 + \overline{\beta}\left(1 + \Omega/\sigma\right) m,$$

where $\Omega > 0$ is the comparative advantage of the collective organisation and $\sigma \in \mathbb{N}_{++}$ represents the number of industries where the union has members. Since a sector-specific union is active in one industry only,

$$\beta_{K,S} = \beta_0 + \overline{\beta}\left(1 + \Omega\right) m.$$

We limit union effectiveness to be in the range $\overline{\beta}(1+\Omega) \in (0, \beta_0)$. That is to say that unions can never double the bargaining power of labour, even if all resources are devoted to it.[7] Of course, we also have $\beta_0 + \overline{\beta}(1+\Omega) \in (0,1)$.

Production and wage determination are equal for all firms that have the same types of labour and technology. Employers in the same industry act in a coordinated manner in order to limit intra-industrial wage competition.[8] Thus labour will not necessarily be paid its marginal productivity. The wage of a group member equals the average production of that group times the bargaining power of that group's union, $\beta_{N,O,G}$, if the member's union chooses to bargain collectively.[9] If the member's union chooses individual bargaining, the wage is the individual production times the union bargaining power. (In equilibrium the individual wage will equal the average, since all group members behave equally.) Human capital is thus general in the sense that the employee could extract at least some of its value.

Summarising, we have

(1)
$$U_\emptyset^i(e,m) = \left(\mu_G + e^i \cdot h\right) \cdot \beta_0 - \delta_G \cdot e^i,$$

(2) $\quad U_{I,P,G}^i(e,m) = \left(\mu_G + e^i\left(h + \omega\left(1-m\right)\right)\right) \cdot \left(\beta_0 + \overline{\beta}m\right) - \delta_G \cdot e^i - (1+M_0),$

(3) $\quad U_{I,S,G}^i(e,m) = \left(\mu_G + e^i\left(h + \left(1-m\right)\right)\right) \cdot \left(\beta_0 + \overline{\beta}m\right) - \delta_G \cdot e^i - (1+M_0),$

(4)
$$U_{K,P,G}^i(e,m) = \left(\mu_G + \overline{e^i}\left(h + \omega\left(1-m\right)\right)\right) \cdot \left(\beta_0 + \overline{\beta}\left(1+\Omega/\sigma\right)m\right) - \delta_G \cdot e^i - (1+M_0),$$

(5)
$$U_{K,S,G}^i(e,m) = \left(\mu_G + \overline{e^i}\left(h + \left(1-m\right)\right)\right) \cdot \left(\beta_0 + \overline{\beta}\left(1+\Omega\right)m\right) - \delta_G \cdot e^i - (1+M_0),$$

where $\overline{e^i}$ denotes the group average effort level.

At the heart of the analysis are the human capital and production functions. The positive cross-derivative between e and m in the human capital function reflects the complementarity assumption, i.e. that resources spent on human capital enhancement are more productive if the recipients are themselves active. The human capital investments made by unions could be courses, network meetings or information directed to

---

[7] This is not a very strong assumption. Studying the union wage premium in several US industries between 1971 and 1999, Bratsberg & Ragan (2002) find only one occasion when the premium exceeds 40 percent (in the mid-70s construction industry).

[8] The sectoral level is the most important bargaining level in at least 8 out of 15 pre-2004 EU Countries, whereas the intersectoral/national is most important in 3 countries, according to EIRO (2004).

[9] The term 'bargaining power' is used in a narrow sense, reflecting the ability of a group to extract wages that does not stem directly from the group's human capital input.

the members. They could also be spread in a collective fashion, for instance by advising employers on modern managerial practices or by demanding work-related training for employees rather than direct wage hikes. Another interpretation is that human capital partly consists of work morale that is enhanced by belonging to the social community of a union. Since profession-specific unions facilitate dissemination of relevant skills, e.g. via seminars, member journals or by establishing professional standards, it has a comparative advantage showing up here. In the production function, on the other hand, human capital and contractible productivity are substitutes, so the latter generates output independently of the human capital level. We discuss the interpretation of the production function in the end of this section.

To save on notation, we shall omit indices on the parameters μ and δ where it does not cause confusion.

Sequence. The timing is as follows:

Step 1: Workers choose whether to unionise or remain non-unionised.

Step 2: Workers choose whether to join a sector- or profession-specific union. (If they do, they will join with other unions of the same sector or profession, respectively, as shown towards the end of the equilibrium analysis.)

Step 3: The union chooses to bargain individually or collectively.

Step 4: The union chooses how to allocate its budget.

Step 5: The individual union members exert effort to enhance their general human capital so as to maximise utility.

Equilibrium. We will solve for the equilibrium by backward induction, beginning with the last step, where workers optimise individually over human capital investments after all collective decisions have been made.

The utility functions described by (1)–(5) immediately give a first result, since $U_{I,P,G} > U_{I,S,G}$ for all (e, m).

LEMMA 1. *The I, S form is dominated by the I, P type of union for any choice of e and m.*

Any values of e and m that maximise $U_{I,S,G}$ will give an even larger $U_{I,P,G}$, because the professional union enhances the effect of union resources spent on human capital formation. This observation is in line with the stylised facts presented in the introduction. While we may see professional unions pursuing either collective or individual bargaining, we will rarely observe sector-specific organisations and individual bargaining. Hence, in the analysis we will not consider the case of an industry-specific union pursuing individual bargaining. From here on, the term 'traditional union' will be used synonymously with sector-specific union bargaining collectively (a K, S-type union),

whereas a profession-specific union pursuing individual bargaining (an I, P-type union) will be denoted a 'professional union'. We refer to a profession-specific union bargaining collectively (a K, P-type union) as a 'craft union'. Furthermore, we shall use *trad*, *prof* and *craft* to index variables for the respective organisational form. The cases are illustrated in Figure 1.

FIGURE 1. Union denominations after organisational form and bargaining regime

	Sectoral organisation	Professional organisation
Collective bargaining	**Traditional union** (index *trad*)	**Craft union** (index *craft*)
Individual bargaining		**Professional union** (index *prof*)

Step 5: Choice of individual effort. Once m and $1-m$ are set, the utility-maximising problem for a worker i in group G is to set $e^i \in \{e_L, e_H\}$ to maximise

$$(6) \qquad \max_{e^i} U^i_\varnothing (e) = \left(\mu_G + e^i \cdot h\right) \cdot \beta_0 - \delta_G \cdot e^i,$$

if she is non-unionised,

$$(7) \qquad \max_{e^i} U^i_{prof} (e) = \left(\mu_G + e^i \left(h + \omega \left(1 - m\right)\right)\right) \cdot \left(\beta_0 + \overline{\beta} m\right) - \delta_G \cdot e^i,$$

if she belongs to a professional union,

$$(8) \qquad \max_{e^i} U^i_{craft}(e) = \left(\mu_G + \overline{e^i} \left(h + \omega \left(1 - m\right)\right)\right) \cdot \left(\beta_0 + \overline{\beta} \left(1 + \Omega/\sigma\right) m\right) - \delta_G \cdot e^i,$$

if her union is of the craft type, and

$$(9) \qquad \max_{e^i} U^i_{trad} (e) = \left(\mu_G + \overline{e^i} \left(h + \left(1 - m\right)\right)\right) \cdot \left(\beta_0 + \overline{\beta} \left(1 + \Omega\right) m\right) - \delta_G \cdot e^i,$$

if she belongs to a traditional union. In (8) and (9), $\overline{e^i}$ is seen as exogenous to the individual's decision.

LEMMA 2. *Non-unionised labour of group G will set $e = e_H$ if $h \cdot \beta_0 \geq \delta_G$. Professional union members of group G will set $e = e_H$ if $\left(h + \omega \left(1 - m\right)\right) \cdot \left(\beta_0 + \overline{\beta} m\right) \geq \delta_G$. Craft and traditional union members will always set $e = e_L$.*

We conclude that e is weakly larger for individual bargaining than for collective. This is of course due to the stronger personal incentives under individual bargaining. We also see that due to the comparative advantage in ω, the incentive constraint is tighter for non-unionised labour than for members of profession-specific unions pursuing individual bargaining. Thus union membership (or, where professional unions are not available, membership in other professional associations) may be a way for qualified labour to commit to exerting high effort. In the rest of the analysis, however, we shall assume that the incentive constraint holds also for non-unionised labour, i.e. that $h \cdot \beta_0 > \delta_G$ for all G.[10] Obviously the facilitated knowledge dissemination in a profession-specific union increases the profitability of individual human capital investment. It also fosters union resources allocated to competence enhancement, as will be seen in the next step.

Step 4: Choice of union budget allocation. Assuming that the budget is set so as to maximise the welfare of union member groups, the optimal budget for group G will be the solution to the respective UMP of unions.

(10) $$m_{prof} = \arg\max_{m} \ (\mu_G + e_H \left(h + \omega \left(1 - m \right) \right)) \cdot \left(\beta_0 + \bar{\beta} m \right),$$

(11) $$m_{craft} = \arg\max_{m} \ (\mu_G + e_L \left(h + \omega \left(1 - m \right) \right)) \cdot \left(\beta_0 + \bar{\beta} \left(1 + \Omega/\sigma \right) m \right),$$

(12) $$m_{trad} = \arg\max_{m} \ (\mu_G + e_L \left(h + \left(1 - m \right) \right)) \cdot \left(\beta_0 + \bar{\beta} \left(1 + \Omega \right) m \right),$$

such that $m \in [0, 1]$.

The solutions are

(13) $$m_{prof} = \begin{cases} 0 & \text{if } \left(\frac{\mu_G}{e_H \omega} + \frac{h}{\omega} - \frac{\beta_0}{\bar{\beta}} \right) \leq -1 \\ \frac{1}{2} \left(1 + \frac{\mu_G}{e_H \omega} + \frac{h}{\omega} - \frac{\beta_0}{\bar{\beta}} \right) & \text{if } \left(\frac{\mu_G}{e_H \omega} + \frac{h}{\omega} - \frac{\beta_0}{\bar{\beta}} \right) \in (-1, 1) \ , \\ 1 & \text{if } \left(\frac{\mu_G}{e_H \omega} + \frac{h}{\omega} - \frac{\beta_0}{\bar{\beta}} \right) \geq 1 \end{cases}$$

(14) $$m_{craft} = \begin{cases} 0 & \text{if } \left(\frac{\mu_G}{e_L \omega} + \frac{h}{\omega} - \frac{\beta_0}{\bar{\beta}(1+\Omega/\sigma)} \right) \leq -1 \\ \frac{1}{2} \left(1 + \frac{\mu_G}{e_L \omega} + \frac{h}{\omega} - \frac{\beta_0}{\bar{\beta}(1+\Omega/\sigma)} \right) & \text{if } \left(\frac{\mu_G}{e_L \omega} + \frac{h}{\omega} - \frac{\beta_0}{\bar{\beta}(1+\Omega/\sigma)} \right) \in (-1, 1) \ , \\ 1 & \text{if } \left(\frac{\mu_G}{e_L \omega} + \frac{h}{\omega} - \frac{\beta_0}{\bar{\beta}(1+\Omega/\sigma)} \right) \geq 1 \end{cases}$$

---

[10] In an alternative specification with e^i as a continuous variable with a quadratic cost function and a lower bound e_L, e^i would be larger for professional union member than for non-unionised. The assumption of a discrete two-step e simplifies the analysis considerably. Differences in the results of Propositions 3, 4 and 5 are minor and easily identifiable.

$$(15) \qquad m_{trad} = \begin{cases} 0 & \text{if } \left(\frac{\mu_G}{e_L} + h - \frac{\beta_0}{\overline{\beta}(1+\Omega)} \right) \le -1 \\ \frac{1}{2}\left(1 + \frac{\mu_G}{e_L} + h - \frac{\beta_0}{\overline{\beta}(1+\Omega)} \right) & \text{if } \left(\frac{\mu_G}{e_L} + h - \frac{\beta_0}{\overline{\beta}(1+\Omega)} \right) \in (-1,1) \\ 1 & \text{if } \left(\frac{\mu_G}{e_L} + h - \frac{\beta_0}{\overline{\beta}(1+\Omega)} \right) \ge 1 \end{cases} .$$

The interior solutions have an intuitive interpretation. From a fifty-fifty split (the first term), the solutions depend on the relative importance of exogenous output (the second term), the 'futility', or inverse relative benefit, of allocating resources to human capital enhancement (the third term) and the futility of allocating resources to bargaining power (the fourth term). For interior solutions in all cases, i.e. $m \in (0,1)$, we need μ to be in the range

$$(16) \qquad \mu \in \left(e_H \left(\omega \frac{\beta_0}{\overline{\beta}} - \omega - h \right), e_L \left(1 + \frac{\beta_0}{\overline{\beta}(1+\Omega)} - h \right) \right) .$$

This is not an assumption needed for the rest of the results, but it has some implications. If high and low effort are much dispersed, or if union bargaining power is diminutive, the interval does not exist and at least one of the union types will choose a corner allocation. This describes a situation where professional unions in effect become professional associations without any role in direct wage bargaining, or where traditional and craft unions become conventionally described unions without any role in human capital promotion. On the other hand, if the range does exist, there is a 'guild interval' where unions can fill both roles.

PROPOSITION 1. *For any given* μ_G, $m_{trad} \ge m_{craft} \ge m_{prof} \ge m_\varnothing = 0$. *Furthermore*, m *is increasing in* μ.

PROOF. First differentiation shows that interior values of m is increasing in μ and Ω/σ, while it is decreasing in e and ω. Since $\omega > 1$ and $\Omega/\sigma \le \Omega$, we know that $m_{trad} \ge m_{craft}$. Furthermore, since $e_H > e_L$ and $\Omega/\sigma > 0$, we know that if $m_{prof} = 1$, then $m_{craft} = m_{trad} = 1$ and that if $m_{trad} = 0$, then $m_{craft} = m_{prof} = 0$. $\square$

A higher e in individually bargaining groups is consistent with them choosing a lower m than collectively bargaining peers. Although this is so far only for a given μ, the results are supportive of our stylised empirical facts, which stated that unions organised according to sectors and bargaining collectively do put more resources into strengthening the overall bargaining power, and less on general human capital enhancement of their members, than do unions organised after professions with individual wage bargaining. The result relies on that individual and union resources spent on strengthening human capital are more complementary than exogenous productivity and human capital. Thus collectively bargaining unions exploit their bargaining advantage, while individually bargaining unions will choose to focus on fostering human capital.

Step 3: Choice of bargaining regime. The choice of wage bargaining regime will, under union freedom, depend on which system gives the highest payoff for members, given the organisation. We assume that the choice is made so as to maximise the total welfare of union members. Taking the choice of other groups as given, a profession-specific union will opt for collective bargaining if, for the average member, $U_{craft}(m, e) > U_{prof}(m, e)$ or

$$(\mu_G + e_L(h + \omega(1 - m_{craft}))) \cdot (\beta_0 + \overline{\beta}(1 + \Omega/\sigma) \cdot m_{craft}) - \delta_G \cdot e_L >$$

$$(17) \qquad > (\mu_G + e_H(h + \omega(1 - m_{prof}))) \cdot (\beta_0 + \overline{\beta} \cdot m_{prof}) - \delta_G \cdot e_H.$$

As stated in Lemma 1, a sector-specific union will always prefer to bargain collectively. We then have the following proposition.

PROPOSITION 2. *The advantage of collective bargaining for a professional union is increasing in δ and in μ.*

PROOF. The effect of δ follows directly from $e_L < e_H$. By the envelope theorem, at the optimal m, $\partial U/\partial m = 0$ and $dU/d\mu = \partial U/\partial \mu$. Then the left-hand side in inequality (17) increases faster in μ than the right-hand side if

$$\beta_0 + \overline{\beta}(1 + \Omega/\sigma) \cdot m_{craft} > \beta_0 + \overline{\beta} \cdot m_{prof}.$$

Since we know from Proposition 1 that $m_{craft} \geq m_{prof}$, this inequality always holds. □

Not surprisingly, collective bargaining is more attractive if the group faces high effort costs in building out-of-relation skills. For technologies that substitute human capital, a higher exogenous productivity increases the advantage of collective bargaining. The intuition is that these types of technology enhance production of labour with small and large human capital alike, and thus enhance the relative advantage of collective bargaining. We shall later argue that blue-collar labour are more likely to work with monitoring technologies (e.g. assembly lines, cash registers, authoritarian management) than white collars. This framework thus forms a rationale for why white-collar and blue-collar unions have developed on different tracks.

The fact that inequality (17) may or may not hold, together with Lemma 1, completes the following corollary.

COROLLARY 1. *While sector-specific unions always opt for collective bargaining, profession-specific unions may pursue individual bargaining.*

For a range of parameter values, we will see industry-specific unions bargaining collectively and profession-specific unions pursue a decentralised style of wage negotiation. This corollary is the first of the three main findings of this paper. The result

stems from the assumption that the monopoly power of collective bargaining is largest when the union is sector-specific, which is reinforced by the complementarity of union comparative advantages (Ω and ω) with union resource spending (m and $1 - m$).

The exceptions from this will be professions that are active in one industry, or perhaps only a few.[11] Those may prefer the craft union over the traditional type, forming a profession-specific organisation to reap the human capital benefits and pursuing collective bargaining to take advantage of the monopoly power of unionisation. Where the profession is found in only few industries, collective bargaining and craft organisation may also dominate professional unions. As stated in Proposition 2, this is more likely the higher are effort costs of building human capital. These results fit our stylised empirical facts. What groups will prefer the collectivist sector-specific unions to the individualist profession-specific organisations, or vice versa, will be studied in the next step of the analysis.

Step 2: Choice of organisational form. In the choice of organisational form, workers decide which type of organisation they should form, if any, taking the type of their profession and their industry characteristics, as well as all sequential decisions, into account. Since we know from Corollary 1 that collective bargaining will always be the choice of a sector-specific organisation, while profession-specific union may choose either bargaining regime, we have to compare the traditional union with craft and professional unions, respectively.

A worker in group G will prefer a sector-specific union to a profession-specific, given that the union will opt for collective bargaining later, if $U_{trad}(m, e) > U_{craft}(m, e)$, or

$$(18) \quad (\mu_G + e_L\,(h + (1 - m_{trad}))) \cdot (\beta_0 + \overline{\beta}\,(1 + \Omega) \cdot m_{trad}) - \delta_G \cdot e_L$$
$$> (\mu_G + e_L\,(h + \omega\,(1 - m_{craft}))) \cdot (\beta_0 + \overline{\beta}\,(1 + \Omega/\sigma) \cdot m_{craft}) - \delta_G \cdot e_L.$$

Similarly, a worker in group G will prefer a traditional union to a professional if

$$(19) \quad (\mu_G + e_L\,(h + (1 - m_{trad}))) \cdot (\beta_0 + \overline{\beta}\,(1 + \Omega) \cdot m_{trad}) - \delta_G \cdot e_L$$
$$> (\mu_G + e_H\,(h + \omega\,(1 - m_{prof}))) \cdot (\beta_0 + \overline{\beta} \cdot m_{prof}) - \delta_G \cdot e_H.$$

PROPOSITION 3. *The advantages of sector-specific vis-à-vis profession-specific organisation for group G are increasing in δ if the profession-specific union will choose individual bargaining, and in μ.*

PROOF. The effect of δ if the profession-specific union will choose individual bargaining follows directly from $e_L < e_H$. By the envelope theorem, $dU/d\mu = \partial U/\partial\mu$.

---

[11] Examples may include electricians and painters, teachers and officers, nurses and policemen.

Then the left-hand sides in inequalities (18) and (19) increase faster in μ than the right-hand side if

$$\beta_0 + \overline{\beta}\left(1 + \Omega\right) \cdot m_{trad} > \beta_0 + \overline{\beta}\left(1 + \Omega/\sigma\right) \cdot m_{craft}$$

and

$$\beta_0 + \overline{\beta}\left(1 + \Omega\right) \cdot m_{trad} > \beta_0 + \overline{\beta} \cdot m_{prof}.$$

Again, Proposition 1 tells us that $m_{trad} \geq m_{craft} \geq m_{prof}$, which implies that both inequalities always hold. $\qquad\qquad\qquad\qquad\qquad\qquad\qquad\qquad\qquad\qquad\qquad\qquad\square$

Proposition 3 is the second main result of the paper. Groups with a higher cost of building general skills at work and whose productivity by and large can be contracted on will tend to organise themselves according to industry and pursue collective wage bargaining, whereas those who can easily enhance general human capital with their employer and have less contractible work tasks will organise with their professional peers and focus more resources on further strengthening their individual labour market value.

At the foundation of this is the complementarity of comparative advantages of union types and union resources. These are also complementary to the work condition parameters μ and δ. Groups with a relatively high exogenous productivity and high effort costs (large μ and δ) will find it less attractive to exploit the human-capital enhancing opportunity of unionisation, because it requires more effort at the optimum (which is costly when δ is high) and yields less of the externally given output (which is important when μ is high). Proposition 3 shows that the parameters that make a group prefer a particular type of union form or non-unionisation go in the same direction as indicated by the assumptions on the ranking of m. Of course, the inherent strengths in the organisational forms play a role as well. A strong union monopoly power will make collective bargaining and sector-specific unions more attractive, while a distinct human capital advantage of profession-specific organisation will make it more beneficial. We shall now see when these benefits outweigh the costs of being a union member.

Step 1: Choice of unionisation or non-unionisation. In the first and final step, workers decide whether they should join a union at all, considering their type and sequential decisions. Workers with characteristics G will form a professional union if the utility of doing so exceeds that of refraining from unionisation, or if

$$U_{prof}\left(m, e\right) = \Pi_{prof} \cdot \left(\beta_0 + \overline{\beta} \cdot m_{prof}\right) - \delta_G \cdot e_H - (1 + M_0) >$$
$$> \Pi_{\varnothing} \cdot \beta_0 - \delta_G \cdot e_H = U_{\varnothing}\left(e\right).$$

To illustrate different effects, we rewrite this as

$$(\Pi_{prof} - \Pi_{\varnothing}) \cdot \beta_0 +$$

(20)
$$+\Pi_{prof} \cdot \overline{\beta} \cdot m_{prof} -$$

$$- (1 + M_0) > 0.$$

Equivalently, they will form a traditional union if

$$(\Pi_{trad} - \Pi_{\varnothing}) \cdot \beta_0 +$$

(21)
$$+\Pi_{trad} \cdot \overline{\beta} (1 + \Omega) \cdot m_{trad} -$$

$$-\delta_G \cdot e_L + \delta_G \cdot e_H - (1 + M_0) > 0,$$

and a craft union if

$$(\Pi_{craft} - \Pi_{\varnothing}) \cdot \beta_0 +$$

(22)
$$+\Pi_{craft} \cdot \overline{\beta} (1 + \Omega/\sigma) \cdot m_{craft} -$$

$$-\delta_G \cdot e_L + \delta_G \cdot e_H - (1 + M_0) > 0.$$

Forming a union has three effects, each illustrated on a separate row in the inequalities (20), (21) and (22). First, it affects the human capital that will eventually determine production and wage, via union resources and the impact on the bargaining form. This corresponds to the first row and is positive if the union is professional, but ambiguous if it is traditional or of the craft type. Second, it affects bargaining power, as shown on the second row. This is of course positive for all union types. Third, it affects the cost side, as shown in the last row, both via the direct membership fees and the difference in equilibrium effort, where the effort part implies a lower cost for those forming a traditional or craft union. To see the impact of the parameters, we state the following proposition.

PROPOSITION 4. *For workers of group G considering a professional union, the unionisation option is more attractive the larger are ω, μ, β_0 and $\overline{\beta}$, and the smaller is M_0, whereas δ is irrelevant. If the option is to join a traditional or craft union, the unionisation option is more attractive the larger are Ω/σ, μ, $\overline{\beta}$ and δ, and the smaller is M_0, whereas the effect of β_0 is ambiguous.*

PROOF. See Appendix.   □

While some of these effects are more or less trivial, others are worth discussing closer. It seems natural that the competitive advantages of unions, ω and Ω, as well as the extra bargaining power, $\overline{\beta}$, make unions more attractive, while bureaucracy costs make people less prone to unionise.

A strong basic bargaining power for all labour actually increases the utility of joining a skill-enhancing union, whereas it may decrease the incentives to join a collectively bargaining union if resources allocated to human capital enhancement are not sufficient to offset the weaker personal incentives. Good possibilities to contract on productivity or use monitoring technologies – a high μ – increases total output, which makes it more attractive to increase bargaining power by forming a union. A high cost of building general skills at work, δ, increases the advantage for the traditional type but does not affect the decision to join a professional union, as long as high effort will be exerted anyway.

Proposition 4 shows that there will be cutoff values for effort costs and contractible productivity determining the optimality of non-unionisation, traditional, craft or professional unions, respectively. We can pin cutoff values μ^* down as a function of parameters, including itself (via its impact on m) and δ_G. The calculations are found in the proof of Proposition 5. For simplicity, we omit here the dimension of σ, i.e. the number of industries in which the union will have members, and thereby limit the analysis to the options of non-unionisation and forming a traditional or professional union, respectively. For professions represented in few industries the pattern would be similar if we included σ, but with craft unions replacing traditional unions in the market pattern. Craft unions would also dominate professional unions in the area closest to the threshold. With this limitation, a traditional union dominates a professional if μ is larger than

$$
\mu^*_{trad=prof} \equiv \left[(e_H (h + \omega (1 - m_{prof}))) \cdot (\beta_0 + \overline{\beta} \cdot m_{prof}) - \right.
$$
$$
(23) \qquad - (e_L (h + (1 - m_{trad}))) \cdot (\beta_0 + \overline{\beta} (1 + \Omega) \cdot m_{trad}) + \delta \cdot (e_L - e_H) \left] \right/
$$
$$
\left/ \left[\overline{\beta} (1 + \Omega) \cdot m_{trad} - \overline{\beta} \cdot m_{prof} \right] , \right.
$$

which is decreasing in δ, unless $m_{trad} = 1$ and $m_{prof} \in (0, 1)$.

A traditional union dominates non-unionisation if μ exceeds

$$
\mu^*_{trad=\varnothing} \equiv \left[e_H h \cdot \beta_0 - (e_L (h + (1 - m_{trad}))) \cdot (\beta_0 + \overline{\beta} (1 + \Omega) \cdot m_{trad}) \right.
$$
$$
(24) \qquad \delta \cdot (e_L - e_H) + 1 + M_0 \left] \right/
$$
$$
\left/ \left[\overline{\beta} (1 + \Omega) \cdot m_{trad} \right] , \right.
$$

which is decreasing in δ. Under the condition that $m_{prof} > 0$, the curve described by inequality (24) is steeper than that of inequality (23), as illustrated in the proof of Proposition 5.

A professional union dominates non-unionisation if

$$(25) \quad \mu \geq \mu^*_{prof=\varnothing} \equiv \frac{e_H h \cdot \beta_0 - (e_H \left(h + \omega \left(1 - m_{prof}\right)\right)) \cdot \left(\beta_0 + \overline{\beta} \cdot m_{prof}\right) + 1 + M_0}{\overline{\beta} \cdot m_{prof}},$$

which is independent of δ.[12]

Solving for μ^* explicitly gives expressions of the form

$$\mu^* \geq -C + \sqrt{D - E \cdot \delta},$$

where $C, D, E > 0$ for expression (23), $D, E > 0$ for expression (24) and $E = 0$ for expression (25). Hence, inequalities (23) and (24) are decreasing and concave in δ, with inequality (23) steeper than inequality (24). In addition, transitive preferences over unionisation forms imply that curves described by the inequalities must intersect at most once, where all curves meet. Therefore, the possible combinations of these three inequalities on a market with more than one unionisation form are summarised in our final proposition, and in Figure 2. In each diagram of the figure, the threshold μ values are depicted as thin curves, while the areas where a particular unionisation form dominates have thick borders.

FIGURE 2. Possible union market cases without craft unions
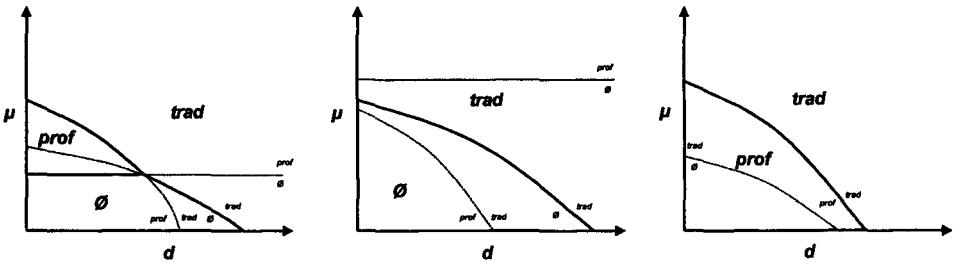
PROPOSITION 5. *Under the assumptions of no craft unions and interior solutions of m, there are three possible cases on a market with more than one unionisation form: In the first case, workers with low δ and intermediate μ will form professional unions, workers with low to intermediate δ and low μ will not be unionised, whereas workers with intermediate to high values on δ and μ will form traditional unions. In the second case, workers with low to intermediate values on δ and μ will not be unionised, whereas those with intermediate to high values form traditional unions. In the third*

----

[12] If e were a continuous variable with a convex cost function, $\mu^*_{prof=\varnothing}$ would be slightly increasing in δ.

case, workers with low to intermediate values on δ and μ form professional unions, whereas those with intermediate to high values form traditional unions.

PROOF. See Appendix.   □

To sum up this third main result of the paper, a union market consisting of all three options has the following properties. A workplace where it is easy to achieve output by exogenous means, for instance by monitoring the work of employees, or install equipment that substitutes human capital, will tend to have a unionised workforce, because the relatively large exogenous output will make bargaining power more attractive. If the employees on this workplace can easily build general skills, they will form a professional union to reap human capital benefits. If instead there are small opportunities to build general skills, they will form a traditional union to strengthen monopoly power in bargaining over the surplus. On the other hand, when external productivity is low, non-unionisation is attractive. At the same time, strong advantages in human capital enhancement or bargaining and low bureaucratic union costs all increase the relative attractiveness of forming some type of union, as argued above. It may also be that only one of the non-unionisation and professional options dominates the other, in which case it will be more attractive than the traditional union option for relatively low values of effort costs and contractible productivity, in line with Propositions 1, 3 and 4.

In the next section we shall confront the results with some stylised facts.

Ex post incentives. Our analysis so far has been a one-stage game, when workers decide if and how to organise a trade union. However, in most European countries unions have the right to negotiate for all workers, not only those unionised.[13] If the wage agreement negotiated by the union applies to all workers, an individual worker faces different incentives to join the union and build human capital.

To this end, we assume that a non-union member cannot underbid the wage per human capital unit, i.e. the bargaining power, established by the union in her group. However, she is not entitled to the investments in human capital made by the union. She is also small in the sense that she does not interact strategically with the union of her group.

First, a non-union member will exert the same level of effort as her unionised peers. Thus, the effort choice of non-union members will be e_L if their group is represented by a traditional union or craft union, and e_H if it is represented by a professional

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[13] In at least 12 out of 15 pre-2004 EU countries, union-employer negotiated agreements cover all employees working for a signing employer, either explicitly or implicitly. The share of employees covered by union-employer bargaining is above two thirds in almost all of these countries, and is often above 90 percent, according to EIRO (2004).

union. Since effort will not be complemented by the investments of a union, non-union members will have a smaller human capital than their unionised peers.

Hence, if her union is of the professional type, she will join it if

$$(26) \qquad (\Pi_{prof} - \Pi_{\varnothing}) \cdot (\beta_0 + \overline{\beta} \cdot m_{prof}) - (1 + M_0) > 0.$$

If the option is to join a traditional union, benefits dominate costs if

$$(27) \qquad (\Pi_{trad} - \Pi_{\varnothing}) \cdot (\beta_0 + \overline{\beta}(1 + \Omega) \cdot m_{trad}) - (1 + M_0) > 0.$$

Finally, if the alternative is a craft union, the net benefit is positive if

$$(28) \qquad (\Pi_{craft} - \Pi_{\varnothing}) \cdot (\beta_0 + \overline{\beta}(1 + \Omega/\sigma) \cdot m_{craft}) - (1 + M_0) > 0.$$

Relative to inequalities (20), (21) and (22), the human capital effect (the first term) is unambiguously positive also for the traditional and craft unions, while the bargaining effect vanishes and effort costs increase in relative terms (since non-union members will exert low effort if unions bargain collectively). It is thus quite possible that the homogenous workers of group G would want to form a union if all could commit to belonging to it, but that every individual member would want to leave it as soon as the union has built its bargaining power and has got the right to bargain for all employees. This freeriding problem is more serious for traditional unions, a result which may help explain path dependence in union formation, as will be seen in the next section.

Scale effects. In a short digression we shall discuss the effects of larger or smaller unions, which may give rise to multiple equilibria and path dependency.

It seems plausible that both bargaining monopoly power, Ω, and union advantage in knowledge dissemination, ω, are increasing in the number of members of a particular union. If all employees of an industry are members of the same union, it will have the maximum collective bargaining power, whereas if there is just one single union member, it is hard to see why she should have any stronger bargaining power than her peers bargaining individually. Similarly, a union encompassing all employees of one profession across sectors should have the maximum advantage in disseminating professional skills, while a professional union of one member would hardly yield any benefits.

Then it follows that if same-profession groups in different industries prefer a profession-specific union, they should form a union encompassing them all, unless they are very different. Similarly, if groups of the same industry choose to bargain collectively, they should join into one sector-specific union. Forming a profession-specific union to reap

human capital benefits will then be more attractive the more people of the same profession in other industries are unionised. Forming a sector-specific union to gain bargaining power will be more attractive the more people of other professions in the same industry are unionised.

In other words, there are strong incentives to go with the flow. It also follows that joining a union of the preferred type will be more attractive for an individual employee the more other people of her profession or in her industry are unionised, giving rise to a number of possible equilibria. This multiplicity of equilibria also applies to the group's decision of which type of union to join.

Interpretation of the production function. The output function is a corner case of a CES function $\Pi = (\theta(\mu)^\gamma + (1 - \theta)(H)^\gamma)^{1/\gamma}$, where $\theta \in (0, 1)$, with $\gamma = 1$.[14] Since μ and H have no natural units of measure, the omission of θ is without loss of generality. A CES production function with $\gamma = 1$ implies that exogenous productivity and human capital are perfect substitutes, whereas for $\gamma = -\infty$ they would be perfect complements.

Hence, for our production function, μ_G is an inverted measure of the importance of human capital, or how well a workplace could function independently of human capital. This exogenous productivity could be interpreted in several ways. The first interpretation is the use of 'monitoring technologies', i.e. technologies that are largely independent of human capital and intrinsic motivation. While assembly lines in the spirit of Taylor and Ford are the most obvious examples, other features may include time clocks and authoritarian leadership. If γ were less than zero, we would interpret μ as the use of 'empowering technologies'. Empowering technologies complement human capital, like for instance most communication technologies and decentralised leadership. Equipment could belong to either of these. A cash register, for instance, makes it possible for all people with rudimentary numerical skills to work more effectively and thus constitutes a 'monitoring technology', whereas a typewriter is less valuable unless the text content is provided by a skilled writer and would therefore be considered 'empowering' in this setting.

Another possibility is that μ_G is the degree to which the output of an worker in group G is enhanced by the work of another group g, regardless of the human capital of group G. This differs between industries. While the output of both high- and low-skilled manufacturing workers is likely to be enhanced by good engineers, or while good nurses partly can make up for relatively low-skilled doctors (or vice

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[14] As we want to focus on the relation between parameters, we omit the general productivity factor A. If productivity in building human capital and bargaining power does not increase over time, but costs increase proportionally with A, changes in A do not effect the results.

versa), it is unlikely that an academic institution would be renowned only for its great administrative assistants or that a restaurant serving poor-quality food would find it profitable to hire excellent waiters. Another way of saying this is that it may be efficient to combine poor nurses and good doctors, but probably not to pay a huge salary to the secretary of a bad professor.

Yet another interpretation is to make μ_G represent the market power of firms where group G is employed. This reading conforms with the link between market power and wage inequality, discussed for instance by Guadalupe (2007). A high market power and thus a large μ make human capital differences relatively less important and equalise wages between labour with high and low costs of building human capital, in line with the results of Guadalupe.[15]

These interpretations are all related to each other, and possibly also to firm size. For instance, Schmalensee (1989) finds empirical regularities linking capital requirements and scale effects to each other and to profitability. We would expect that good possibilities of monitoring the work of employees, a high capital intensity and a high degree of substitutability between different types of labour – all examples of a high μ in this model – would favour unionisation among employees, and in particular a sector-specific unionisation pursuing collective bargaining.

That extra bargaining power from unionisation is more attractive if another group is important for the production result is obtained also in a two-agent setting by Horn & Wolinsky and with multiple agents by Westermark. Horn & Wolinsky focus on the direct effect from complementarity on bargaining power and find that a sector-encompassing union is more attractive than a profession-specific under substitutability between types of labour. Westermark finds the opposite result when recognising that too strong a bargaining power could lead to the employer refraining from employing a marginal worker and leave complementarities unexploited. As noticed in the introduction, the mechanism here goes via human capital and bargaining power investments. However, with an interpretation of μ as the substitutability of labour groups, the results in this paper are thus in line with those of Horn & Wolinsky.

3. Empirical Discussion

In Section 1 we saw that unions spend non-negligible resources on enhancing the human capital of members. Whereas a part of this training is aimed at simply strengthening bargaining power by educating members about union work, workplace legislation et cetera, at least some of the training in occupation-relevant skills should benefit

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[15] Related studies with a different angle on the centralisation of wage bargaining are Freeman & Gibbons (1993) and Lindgren (2006).

employers as well as employees. While this seems to be the case also for industry-labelled unions involved in collective wage formation, the pattern is more pronounced in profession-specific unions where employees bargain individually over salaries.

Using the framework of this paper, we could explain stylised facts on the European labour market. The predictions are consistent with differences between blue-collar and white-collar labour on the other hand, and differences between the main two union categories – industry and professional – on the other. We shall also study more complex patterns of the union market segmentation and the path divergence between countries with and without professional white-collar unions in light of the model.

Patterns of wages and unemployment. The most straightforward results of the model fit typical patterns of wage profiles and unemployment among blue-collar workers and white-collar professionals. First, the steeper wage profile of white-collar employees, illustrated by Table 1, is easily explained if we allow for a first period where human capital has not fully been built, but employees are rewarded mainly according to the exogenous productivity and the bargaining power of the union. In this case there would certainly be a larger difference between the first- and second-round remunerations of professional union members than those of members of traditional unions. An alternative way of modelling this would be to introduce several periods and let human capital be a cumulative function of per-period efforts. Second, although the present model does not address unemployment, the lower average level of employment among blue-collar employees is explained by traditional union members being more expensive per unit of output.[16] Because of the relatively larger bargaining power of traditional unions, employers will make a smaller profit from employing a member of a traditional union than a member of a professional union. Under standard assumptions of decreasing marginal returns to labour, this will lead to an higher unemployment in the first category.

Market segmentation. The model could also help predict more complicated patterns on the labour market. As a first example, since the two main categories of unions are closely related to workforce categories, there will be a segmentation on the union market. We take a closer look at the parameters determining what type of job a certain group has, and use this application to map predictions from Proposition 5 against the unionisation pattern of the Swedish market. The parameter μ indicates the possibility

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[16] Statistics from the Swedish Unemployment Insurance Board show that 6 percent of members in the unemployment fund for graduates claimed benefits at some point during 2006. The figures for the three largest funds in non-graduate white-collar TCO were 11, 16 and 7, while in blue-collar LO they were 17, 14 and 22.

TABLE 1. Wage profiles for some professional and blue-collar groups in Sweden, average monthly wages in SEK, year 2005

Occupation	Union type	Wage, 25-34	Wage, 45-54	Difference, percent
Small business and unit managers	prof*	24,900	31,400	26.1
Engineering and architecture graduates etcetera	prof	29,900	38,900	30.1
Management, marketing and HR graduates	prof*	32,100	39,200	22.1
Office assistants etcetera	trad*	21,200	23,000	8.5
Hairdressers and other personal services personnel	trad	20,000	20,200	1.0
Construction workers	trad	23,500	24,200	3.0
Electricians etcetera	craft	22,200	23,300	5.0
Cleaners etcetera	trad*	16,900	17,500	3.6

* The trades with an asterisk do not have a single designated union.
Source: Statistics Sweden

to achieve production by monitoring the activities of employees or by providing equipment or other input that substitute human capital. We would imagine that μ is larger in manufacturing industries than in service sectors, that it is larger the more advanced managerial technologies are employed, and – everything else equal – that it is larger at the bottom of hierarchies than at higher levels. The cost of building general skills, δ, is strongly related to the degree of workplace freedom. Flexibility to schedule workdays increases the likelihood of building skills useful outside the workplace and thereby decreases this cost, as would a responsibility to manage one's own work and that of coworkers. It seems likely that δ is smaller in service industries than in manufacturing, smaller for skilled positions than unskilled and, again, that it is larger for lower strata of hierarchies.[17]

Mapping these categories against the pattern on the Swedish union market yields results in line with stylised facts, roughly reported in the introduction, as well as in Tables 1–3, 5 and 6. Groups with relatively standardised and monitorable jobs are found in unions organised after industry and bargaining collectively. A relatively flat wage structure in those groups indicates that most of these find it difficult to acquire skills useful outside their industry. Typical examples are manufacturing workers in large corporations and standardised white-collar jobs. If these are found in only one or two industries, they may prefer to form a craft union to reap some of the benefits of profession-specific organisation.

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[17] In the LO report by Nelander & Goding (2003), 39–51 percent of LO members working in the public sector reported that they had a 'strictly governed work situation', whereas 4 percent of male SACO members reported the same conditions. Whereas 1.9 percent of work hours were allocated to training for LO members, SACO members had 5.3 percent.

TABLE 2. Union membership rates for blue- and white-collar employees in different private sectors in Sweden

Industry	Blue-collar unionisation, percent	White-collar unionisation, percent
Manufacturing	89.9	80.7
Construction	87.6	79.3
Trade and retail	67.4	62.4
In Stockholm area	46.9	n/a
Other private sector services	74.0	67.9
In Stockholm area	63.3	n/a
Source: Nelander & Goding (2003)		

TABLE 3. Union membership rates for blue-collar employees in Sweden, after workplace size and sector

Industry	Number of employees					
	1–5	6–10	11–49	50–99	100–499	500–
Manufacturing	70.6	69.0	85.0	92.9	95.1	94.8
Construction	74.4	81.8	92.5	94.1	94.2	n/a
Trade and retail	59.2	63.6	67.9	77.8	82.1	n/a
Other private sector services	63.6	66.2	74.1	79.6	84.1	82.7
Source: Nelander & Goding (2003)						

White-collar groups with higher education and whose work can be relatively easily monitored or enhanced with technology organise after educational or professional background, and pursue individual bargaining, anticipating that the competition will lead to higher investments in human capital and thereby benefit the group as a whole. Engineers working in construction or manufacturing could represent these categories. Again, some professions found in only a few industries may prefer craft unions so as to enhance bargaining power rather than encouraging human capital competition.

People working in routine service jobs would embody the typical non-unionised workforce, but also many small-firm employees, including self-employed, could be representative. Low degrees of contractible output, capital intensity and dependence on the production of others, and often also low degrees of skills formation, decrease incentives to enhance bargaining power or human capital by unionisation. This category is most frequent in trade, retail and other service sectors, not least in metropolitan areas.[18] Employees with short-term contracts are overrepresented in this group.[19]

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[18] In 2005, the Swedish Union of Hotel and Restaurant Employees reported falling membership figures while employment in the industry had risen by 20,000.

[19] In Swedish labour statistics of 2005, 45.2 percent of those with short-term employment contracts were non-unionised, compared to only 19.6 of those with permanent positions. However, the

The last, south-west corner in the workplace condition parameter matrix would consist of professional white-collar groups, whose work is hard to monitor for the employers and who possess good opportunities of building skills useful outside the current employment. Some will prefer non-unionisation, whereas others will consider a professional union and individual bargaining. We would expect to find groups like researchers and medical doctors in this corner. Since the work of doctors is probably easier to contract on than it is for researchers, and is more substitutable with that of the closest assisting group, as argued above, the model would predict a higher unionisation rate among medical doctors than among researchers.[20]

International divergence. Another application of the model could help explaining the unionisation pattern in the Nordic countries vis-à-vis Continental Europe.[21] The two main union categories are affected differently by unions' right to bargain also for non-members, and by changes in parameters, which together give rise to path dependency in the evolution of unions between countries.

Following a law codifying achievements of blue-collar unions in early 20th century Sweden, associations for white-collars and professionals rapidly evolved into regular unions during the 1940s, in order to strengthen their bargaining power versus employers' associations and other groups of employees. In the three decades between 1945 and 1975, the number of unionised blue-collars grew by 70 percent, while white-collar union members increased fivefold, due to the more rapid evolution of the service sector and an increasing unionisation among white-collars. Between 1947 and 1975, the number of professionals organised in SACO rose from 16 000 to 165 000. Yet 30 years later, SACO has 581 000 members, of which 420 000 are employed.[22]

Largely due to the high union density among white-collars and professionals, Sweden and the other Nordic countries show high unionisation rates relative to the rest of Europe. Between 1980 and 2001, the number of unionised workers in France decreased by 50 percent, in the UK, Germany and the Netherlands by a third. In Norway, the

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professional union confederation, SACO, had almost as large a membership share among short-term employees, 9.3 percent, as among permanently employed, 11.9 percent.

[20] The website of the Swedish Medical Association indicates that over 90 percent of medical doctors in Sweden belong to the organisation. Dividing the about 18,000 employed members of the Swedish Association of University Teachers (SACO, 2006) with the about 34,500 researchers, teachers and doctoral students at Swedish universities (Statistics Sweden, 2005) yields a membership ratio of about 52 percent.

[21] The development of unionisation rates in Europe during the 1970s and 1980s, when most of the divergence took place, is thoroughly studied by D'Agostino (1992).

[22] The information in this paragraph is from Lundh (2002) and SACO (2006).

unionisation rate decreased by 10 percent, whereas it was constant in Sweden and Denmark. In Finland it rose from 67 to 78 percent in the same years.[23]

Can the model explain a process where unions for professionals keep growing when blue-collar unions decline, but do not emerge in countries where they do not exist? The technological, commercial and political development in recent decades, in combination with the scale effects mentioned and the difference between ex ante and ex post incentives, may provide an explanation.

There is a widespread perception that the technological evolution since the 1960s has favoured skilled labour.[24] In terms of the model, a development where equipment becomes more complementary to human skills corresponds to a drop in the contractible productivity, μ.

When major corporations expand operations abroad and to developing countries, it is likely that the largely national bargaining system loses some of its importance. More specifically, buying negotiation bargaining power will be more expensive, and the impact of monopoly power on a national level decreases. Hence, both Ω and $\bar{\beta}$ are likely to have fallen since the 1970s. This effects all kinds of unionisation negatively, but the impact is stronger on traditional unions (which spend more resources on m and are affected by Ω) than on professional types, both ex ante and ex post. Scale effects in monopoly power will further reduce Ω if these effects cause union membership to drop.[25]

The bargaining power of labour that does not stem from unionisation, β_0, is a measure of wage per unit of output. We say that β_0 has risen over time, reflecting relatively better opportunities for high-skilled labour on the market. This has an ambiguous effect on the ex ante incentives for forming a traditional union, but it unambiguously strengthens the cause for joining unions if agreements are binding for all employees and for joining a professional union.

The assumptions and their effects are summarised in Table 4, where ex ante stands for the case where workers are considering forming a union, and ex post the case where union-employer agreements are binding also for non-unionised workers.

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[23] The numbers are from Lismoen & Stokke (2004). Similar numbers are presented by Magnusson (2000).

[24] This is argued by Katz & Murphy (1992), Acemoglu (1998), Autor, Katz & Krueger (1998), Krusell, Ohanian, Rios-Rull & Violante (2000) and many others. The common view that technological change has been the dominant factor behind increasing wage inequality is challenged by Card & DiNardo (2002). Acemoglu, Aghion & Violante (2001) directly relate the retreat of traditional unions to the evolution of technology. They argue that skill-biased technological change makes membership in egalitarian-minded unions less attractive for skilled workers.

[25] This is in line with Schnabel (2003), who concludes that temporary shocks to unions can have long-term effects.

TABLE 4. Effects of parameter changes on union attractiveness

Union type	Professional		Traditional	
Case	Ex ante	Ex post	Ex ante	Ex post
Contractible productivity μ falling				
due to skill-biased technological change	−	0	−	0
Union bargaining power Ω and $\bar{\beta}$ falling				
due to globalisation of corporations	−	−	− −	− −
Individual bargaining power β_0 rising				
due to larger importance of human capital	+	+	+/−	+

Summarising the columns of the table, we see that the relative attractiveness of traditional unions has fallen more than that of professional unions, and that the incentives for forming unions have decreased more than the motive for joining a union whose agreements are binding anyway. In combination with scale effects, this rationalises a pattern where professional unions once established can hold on to a stable position, while traditional unions decline and few new professional unions are founded.

So why were professional unions established in Northern Europe in the mid-20th century but not in most other countries? An obvious explanation is that the legislation was favourable towards white-collars and professionals getting union bargaining rights.[26] However, this legislation is likely to be largely endogenous to public sentiments or efficiency considerations. In terms of our parameters, it is possible that the small sizes of the Nordic economies make unions more effective in their organised bargaining, giving a higher $\bar{\beta}$. Perhaps a relatively well-educated working class and possibly a 'lutheranian work ethic' yield higher μ, especially if the output of workers to some extent can substitute that of white-collars. Both of these also promote professional unionisation rather than remaining non-unionised. Finally, the impact of these variables is augmented by scale effects. Hence, there are circumstances caught by the parameters of the model that could help explain why professional unions were founded in the Nordic countries and have survived in times of union decline in other European states.

4. Conclusions

By linking the organisational form of unions to comparative advantages in human capital and bargaining power investments, the model generates predictions that resemble stylised evidence. Individual wage setting, freedom from monitoring and good possibilities of building human capital at the workplace do indeed go hand in hand

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[26] One example of a favourable legislation, emphasised by Lismoen & Stokke (2003) as decisive in enhancing union membership rates among white-collars and professionals, is the decision to let unions manage unemployment insurance funds.

with profession-specific unionisation and union resources being allocated to increasing general human capital. On the other hand, closer monitoring or use of technologies substituting human capital, and poor opportunities of building skills useful outside the employer-employee relation give rise to industry-specific unions and a focus on collective wage setting. The exceptions are observed where a professional organisation can be combined with strong bargaining power since the profession is active mainly in only one industry. Furthermore, there is path dependency in the sense that if there is a high degree of profession-specific unionisation among peers in other sectors, forming – and joining – a profession-specific union becomes more likely, whereas if there is a high sector-specific unionisation in an industry, it becomes more attractive to be a part of that collective. Conversely, low unionisation rates make employees less eager to form a union. This seems to fit the international pattern, where some countries have low overall unionisation rates, others high unionisation among blue-collars but low among white-collars, and yet another group – especially the Nordic countries – where unionisation is common in all groups.

The primary extension candidate is a more thorough empirical study of the model's predictions by using membership and accounting information from unions in the Nordic countries and elsewhere in Europe. On the theoretical side, extensions of the model would elaborate on production functions, endogenise the resources available to the unions and possibly introduce a political economy element to the policy pursued by the organisation. Other endogenisations could include a micro-founded decision on what type of worker to become, or the production and wage formation process within the employer-employee relation.

Appendix

Proof of Proposition 4. Analogously to Propositions 2 and 3, we use the envelope theorem and study only the direct effect of parameter changes on utility.

The derivative of the left-hand side of inequality (22) with respect to μ is then

$$\left(\left[\frac{\partial \Pi}{\partial \mu} \right]_{craft} - \left[\frac{\partial \Pi}{\partial \mu} \right]_{\varnothing} \right) \cdot \beta_0 + \left[\frac{\partial \Pi}{\partial \mu} \right]_{craft} \cdot \overline{\beta} \left(1 + \Omega/\sigma \right) \cdot m_{craft}$$

or

$$\left[\frac{\partial \Pi}{\partial \mu} \right]_{craft} \cdot \left(\beta_0 + \overline{\beta} \left(1 + \Omega/\sigma \right) \cdot m_{craft} \right) - \left[\frac{\partial \Pi}{\partial \mu} \right]_{\varnothing} \cdot \beta_0.$$

Since $\partial \Pi/\partial \mu = 1$ and $\overline{\beta} \left(1 + \Omega/\sigma \right) \cdot m_{craft} > 0$, the difference between the two terms is positive. The same reasoning goes for other two union types.

The analogous expression for ω is

$$\left[\frac{\partial \Pi}{\partial \omega} \right]_{craft} \cdot \left(\beta_0 + \overline{\beta} \left(1 + \Omega/\sigma \right) \cdot m_{craft} \right) - \left[\frac{\partial \Pi}{\partial \omega} \right]_{\varnothing} \cdot \beta_0,$$

which is positive because $[\partial \Pi/\partial \omega]_{craft} > 0$ and the other term is zero. Of course, this applies for the professional union as well.

In the same fashion, the derivative with respect to Ω/σ can be simplified to

$$\Pi_{craft} \cdot \overline{\beta} \cdot m_{craft},$$

which is positive. This holds also for the traditional union.

The effect of $\overline{\beta}$ is the same as that of Ω/σ and hold for all three union types.

Analogously, we can write the derivative with respect to β_0 as

$$\Pi_{craft} - \Pi_{\varnothing}.$$

The sign of the derivate thus depends on which term is largest. Without further specifications, we do not know if $\Pi_{\varnothing}$ is larger or smaller than Π_{craft} or Π_{trad} for group G. However, we do know that for any given μ_G, $\Pi_{prof} > \Pi_{\varnothing}$.

Hence, we have shown that Proposition 4 holds, Q.E.D.

Proof of Proposition 5. Totally differentiating $\mu^*_{trad=prof}$ gives

$$\left[\left(\overline{\beta}\left(1+\Omega\right)\frac{dm_{trad}}{d\mu}-\overline{\beta}\frac{dm_{prof}}{d\mu}\right)\mu+\left(\overline{\beta}\left(1+\Omega\right)\cdot m_{trad}-\overline{\beta}\cdot m_{prof}\right)\right]d\mu^*_{trad=prof}+$$

$$+\left[e_L-e_H\right]d\delta=$$

$$=\begin{bmatrix}-\left(e_H\omega\left(\frac{dm_{prof}}{d\mu}\right)\right)\cdot\left(\beta_0+\overline{\beta}\cdot m_{prof}\right)+\\+\left(e_H\left(h+\omega\left(1-m_{prof}\right)\right)\right)\cdot\left(\overline{\beta}\frac{dm_{prof}}{d\mu}\right)+\\+\left(e_L\left(\frac{dm_{trad}}{d\mu}\right)\right)\cdot\left(\beta_0+\overline{\beta}\left(1+\Omega\right)\cdot m_{trad}\right)-\\-\left(e_L\left(h+\left(1-m_{trad}\right)\right)\right)\cdot\left(\overline{\beta}\left(1+\Omega\right)\frac{dm_{trad}}{d\mu}\right)\end{bmatrix}d\mu^*_{trad=prof}+$$

$$+\left[e_L-e_H\right]d\delta.$$

Rearranging and plugging in interior values for m yields

$$\frac{d\mu^*_{trad=prof}}{d\delta}=\frac{2\left(e_L-e_H\right)}{\overline{\beta}\left(\left(\frac{(1+\Omega)}{e_L}-\frac{1}{e_H\omega}\right)\mu+\frac{((1+\Omega)\omega-1)}{\omega}h+\Omega\right)},$$

which is smaller than zero, since $e_L<e_H$ and all terms in the denominator are positive. If both m_{prof} and m_{trad} are corner values, $dm_{prof}/d\mu=dm_{trad}/d\mu=0$, and the expression is trivially negative. If $m_{prof}=0$ and $m_{trad}>0$, the denominator becomes $\left(\mu_G\right)^2\overline{\beta}\left(1+\Omega\right)/e_L>0$, which implies that $d\mu^*/d\delta<0$. However, if $m_{trad}=1$ and $m_{prof}\in(0,1)$, the expression is positive.

Performing the same exercise for inequality (24) gives

$$\left[\overline{\beta}\left(1+\Omega\right)\frac{dm_{trad}}{d\mu}\cdot\mu+\overline{\beta}\left(1+\Omega\right)m_{trad}\right]d\mu+\left[e_L-e_H\right]d\delta=$$

$$=\begin{bmatrix}\left(e_L\cdot\frac{dm_{trad}}{\delta\mu}\right)\cdot\left(\beta_0+\overline{\beta}\left(1+\Omega\right)m_{trad}\right)-\\-\left(e_L\left(h+\left(1-m_{trad}\right)\right)\right)\cdot\overline{\beta}\left(1+\Omega\right)\frac{dm_{trad}}{\delta\mu}\end{bmatrix}d\mu+\left(e_L-e_H\right)d\delta$$

and

$$\frac{d\mu^*_{trad=\varnothing}}{d\delta}=\frac{2\left(e_L-e_H\right)}{\left[\overline{\beta}\left(1+\Omega\right)\left(1+\frac{\mu}{e_L}+h\right)-\beta_0\right]}.$$

This is negative if the denominator is positive, or if

$$\mu>e_L\left(\frac{\beta_0}{\overline{\beta}\left(1+\Omega\right)}-1-h\right).$$

Since this is less strict than restriction (15) as long as $\overline{\beta}\left(1+\Omega\right)<\beta_0$, we know that it holds for interior values of m. For corner values of m_{trad}, the only effect is that from $\left(e_L-e_H\right)$, which is always negative.

Furthermore, the line described by inequality (24) is less steep than that of inequality (23), i.e.

$$-\frac{d\mu^*_{trad=prof}}{d\delta} > -\frac{d\mu^*_{trad=\varnothing}}{d\delta}$$

for

$$\overline{\beta}(1+\Omega)\left(1+\frac{\mu}{e_L}+h\right)-\beta_0 > \overline{\beta}\left(\left(\frac{(1+\Omega)}{e_L}-\frac{1}{e_H\omega}\right)\mu+\frac{((1+\Omega)\omega-1)}{\omega}h+\Omega\right)$$

or

$$\mu > e_H\left(\left(\frac{\beta_0}{\overline{\beta}}-1\right)\omega-h\right),$$

which is identical with the restriction for an interior solution of m_{prof}. If, on the other hand, $m_{prof} = 0$, inequality (24) becomes identical with (23) (with the exception of $1 + M_0$) and the two are equally sloped.

Hence, we have shown that for interior values of m_{prof} and m_{trad}, the curves described by inequalities (23) and (24) are decreasing in δ, and (23) more so than (24), Q.E.D.

Unions in Sweden. The tables list the unions within the three large confederations. Apart from these, there is an independent union for mid-level managers, *Ledarna*, as well as a relatively small syndicalist federation, SAC. The membership figures and English names are taken from the websites of the unions or their confederation, where available. Own translations are indicated by an asterisk. Membership figures are approximate and include members that are students or retired.

TABLE 5. Unions in LO and in TCO

LO unions	Members
Swedish Municipal Workers' Union	570,000
Swedish Industrial Union*	440,000
Commercial Employees' Union	173,000
Union for Service and Communications Employees	153,000
Building Workers' Union	130,000
Transport Workers' Union	73,000
Hotel and Restaurant Workers' Union	58,000
Forest and Wood Workers' Union	55,000
Food Workers' Union	48,000
Building Maintenance Workers' Union	40,000
Swedish Electricians' Union	30,000
Graphic Workers' Union	28,000
Swedish Paper Workers' Union	25,000
Painters' Union	17,500
Musicians' Union	3,500

TCO unions	Members
Swedish Union of Clerical and Technical Employees in Industry	355,000
Swedish Teachers' Union	228,000
Swedish Union of Local Government Officers	180,000
Salaried Employees' Union	160,000
Swedish Association of Health Officers	112,000
Union of Civil Servants	100,000
Union of Financial Sector Employees	40,000
Union of Swedish Policemen	18,500
Swedish Union of Journalists	18,000
Union of Insurance Employees	15,000
Swedish Union of Theatrical Employees	9,000
Union of Civilian Employees in the Defence Forces	6,000
Union of Chemist's Employees	7,000
Swedish Union of Customs' and Coastguards Officers	3,500
Swedish Union of People's High School Teachers	2,000
Swedish Federation of Professional Musicians	2,000
Association of Forestal and Agricultural Employees	1,000

TABLE 6. Unions in SACO

SACO unions	Members
Swedish Association of Graduate Engineers*	105,000
National Union of Teachers in Sweden	87,000
JUSEK**	75,000
Union of Graduates in Social and Behavioural Sciences*	50,000
Swedish Medical Association	39,000
Association of Management Graduates*	33,000
Association for Graduates in Documentation, Information & Culture	21,000
Swedish Association of Scientists	21,000
Swedish Association of University Teachers	20,000
Officers' Union*	17,000
Association of Engineers*	14,500
SRAT***	12,000
Swedish Association of Registered Physiotherapists	12,000
Swedish Association of Architects	9,500
Swedish Association of Occupational Therapists	9,500
Swedish Dental Association	9,000
Swedish Association of Psychologists*	8,500
Union of Professionals in Agriculture*	8,000
Swedish Pharmaceutical Association	7,500
Swedish Association of School Principals and Directors of Education	7,500
Association for Graduates in the Church	5,500
Association for Traffic and Railway within SACO	4,500
Swedish Reserve Officers' Union	4,000
Swedish Ship Officers' Association	3,500
Swedish Veterinary Association	2,500

** JUSEK is the Swedish Association of Graduates in Law, Business Administration and
    Economics, Computer and Systems Science, Personnel Management and Social Science.
*** SRAT is an association for various small groups of professionals and civil servants.

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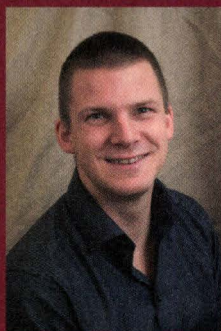
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