

Jostein Vik

# KNOWLEDGE, MOBILITY AND CONFIGURATIONS OF POWER

an Asset Specificity Perspective on Power  
in the Knowledge Society

Thesis for the degree doctor rerum politicarum

Trondheim, December 2006

Norwegian University of Science and Technology  
Faculty of Social Sciences and Technology Management  
Department of Sociology and Political Science

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# Chapter 1.0 Introductions

*“The question how knowledge should be defined is perhaps the most important and difficult of the three with which we shall deal. This may seem surprising: at first sight it might be thought that knowledge might be defined as belief which is in agreement with the facts. The trouble is that no one knows what a belief is, no one knows what a fact is, and no one knows what sort of agreement between them would make a belief true” (Russell, 1926).*

## 1.1 Themes, research questions, and approaches

This thesis studies three interrelated concepts: Power, Knowledge, and Mobility. One key question guides the inquiries: ***How does knowledge mobility (specificity) affect power in the knowledge economy?*** Although the question may seem straightforward, it poses both conceptual and empirical challenges. First, the societal and economic field we label the knowledge economy is filled with rhetoric, and is still in the casting ladle.<sup>1</sup> This implies that still, many associations, links and relationships are uncertain.

Second, all the concepts making up the question above have one thing in common: they are highly multifaceted concepts. With that, I mean that their meaning and significance tend to change as we move between sub-disciplines, between contexts, between analytical levels, between discourses. Neither of the concepts have a single authoritative definition. Thus, the uncertainties of the field and the complexity of the concepts may be said to correspond with each other.

Third, to complicate even further, the concepts are highly political.<sup>2</sup> This means that they are controversial, and that it is politically consequential which meaning one

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<sup>1</sup> Texts describing and discussing the eventual newness of the knowledge economy are abundant. E.g., Carr (2004); Castells (1996); Ernst, Fagerberg and Hildrum (2002); Nowotny, Scott and Gibbons (2001); and Walsham (1999) address different aspects of the theme.

<sup>2</sup> See Andrew Barry (2001) for a comment on being ‘political’. As Barry sees it, something being political means that this something is open for dispute and dissent.

ascribes to the concepts. In sum though, the landscape of this study is one of fundamental uncertainty.

As a result, the question posed above have no single clear-cut answer. Nonetheless, if I am to present a condensed short answer it may be in the form of a general tendency: knowledge mobility tends to push configurations of power in the direction of flat (pluralistic, heterarchic, democratic) organizational forms. On the other hand, asset specificity, including knowledge specificity, tends to covariate with hierarchic and rigid configurations of power.

Approaching a set of concepts and an empirical situation marked by uncertainty requires a broad exploratory design. This introductory chapter presents some backgrounds – empirical, theoretical and methodological – for such a study. In addition, it presents an overview of the argument and an outline of the chapters in the thesis.

## **1.2 Backgrounds**

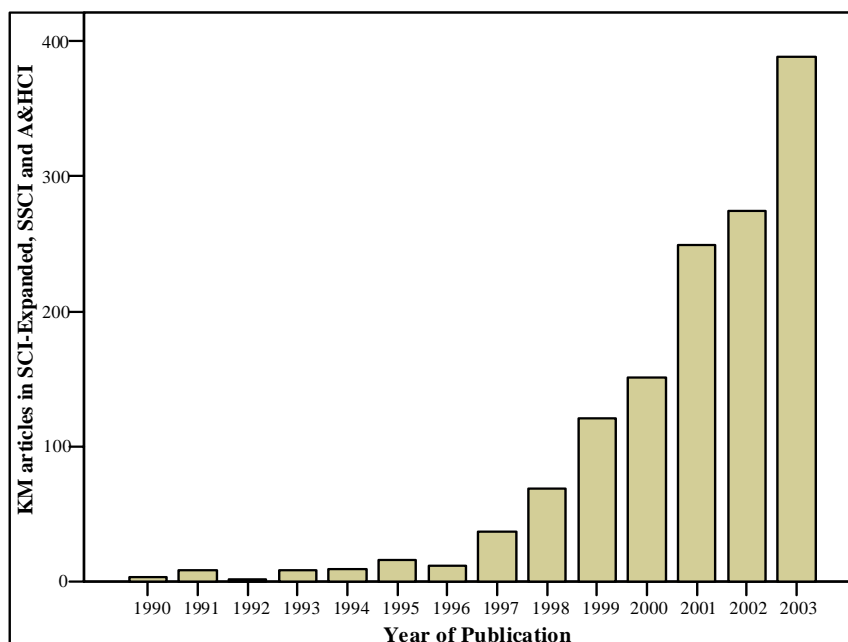
### **1.2.1 Shifting attentions**

Knowledge has become a core concept in political discourses on economic performance, competitiveness and development, all over the world. The Norwegian government states in a white paper that: “All societies have to some degree been based on knowledge. But when we today use the term knowledge society, it is because knowledge and creativity have become the most important productivity driving forces in our society” (Stortingsmelding nr. 30, 2004: 23). The leadership of the European Union takes the same understanding of reality as a starting point for their strategizing: “For 2010, the Union aims to become the most competitive and dynamic knowledge-based economy in the world” (European Commission, 2003:4). Also the views in less developed regions converge. The 2003 Arab Human Development Report, *Building a Knowledge Society*, states: “Knowledge is recognized as a cornerstone of human development, a means of expanding peoples capabilities and choices and a tool for overcoming human poverty. In the 21<sup>st</sup> century, knowledge is also increasingly a dynamic factor of production and a powerful driver of productivity and human capital” (UNDP, 2003:35).

It is not only in the political discourses that knowledge is hailed as the key to a prosperous future. In managerial discourses, a parallel emphasis on knowledge and knowledge management has developed. The OECD holds that “(...) evidence shows that [Knowledge Management] practices are being used more and more frequently and that their effect on innovation and other aspects of corporate performance is far from negligible” (OECD/Minister of Industry, Canada, 2003: 12-13).

Academic discourses on knowledge in economic practices are also increasing dramatically. Economists, computer scientists, organizational sociologists, sociologists of science and technology, anthropologists, and management academics are all going into issues of knowledge and knowledge management.

**Figure 1.1 Growing academic interests in knowledge management**



Source: ISI, Web of Science<sup>3</sup>

Figure 1.1 shows the increase in academic articles on Knowledge Management (KM), thereby illustrating the increasing academic awareness of the role of knowledge.

However, there have been a number of debates on whether there is just hype or if the knowledge economy represents real world changes, and if so, whether the changes

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<sup>3</sup> The figure shows the number of hits from searching the phrase “knowledge management” for each of the reported years within the citation indexes.

are for the better or for the worse. The position of critical writers is rarely that there is nothing new in economic life, but rather that the novelty and especially the hailing of the liberating and prosperous affects of the new economy should be questioned (e.g. Bradley et al. 2000; Brown, Green and Lauder, 2001; Prichard et al. 2000; and Sennet, 1998). Lately a debate on the novelty of Information and Communication Technology (ICT) has been reawakened by Carr (2004), who holds that information technology is structurally equivalent with the growth of the telegraph, the phone, the steam engine, etc., and that the strategic importance of investment and advantages in ICT is fading away as ICT becomes an infrastructure like the electricity grid and the road system.

Notwithstanding, the documented political, economic and academic *interest* in this field indicates that interesting developments are taking place, but unsurprisingly, the nature and sign of changes is contested.

### **1.2.2 Shifting realities**

Susan Strange stated that change in three areas, and the way they connect, have been sweeping our world: Technology, markets, and politics (Strange, 1996). These are comprehensive changes, with un-thought-of effects. The following sketch of Strange's three-fold developments, which in their own distinctive manners affect mobility and specificity of knowledge, are of particular interest: First, there is an ongoing technological or infrastructural revolution connected to the growth of ICT, whereby the technological possibilities for transferring information explodes. New technologies have made distribution, storing, and diffusion, of information substantially less time and cost consuming, and continue to do so (E.g. Ernst, Fagerberg and Hildrum, 2002:3-5; Groth, 1999; and Walsham, 2001). The technological changes may be seen as an acceleration of an ongoing process of cost and time reductions, stemming back to the development of the wheel, the railway, the airplane, the post system, the telegraph and so on (Carr 2004). Yet, since ICT and the Internet virtually repeal time and space as natural borders for information diffusion there is more to it than a continued development. It is important to note that increased information flow influences other economic activities as well; ICT makes coordination, transactions and payments world wide fundamentally different. We speak of a qualitative, not merely a quantitative, change. However, one likely effect is that the *relative* significance of other boundaries to information and

knowledge distribution increases correspondingly.

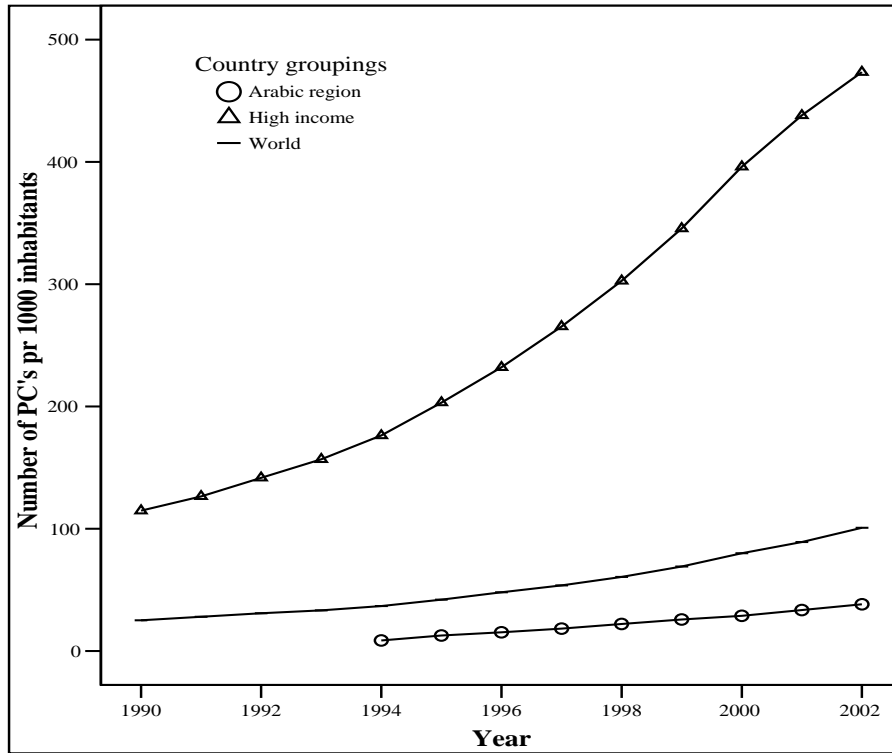
Second, there is a political – institutional and ideological – transformation that paves the ground for the creation of a knowledge market, the institutionalizing of intellectual property rights. For knowledge to be an integrated part of a liberal economic order – a market economy – it is necessary to prevent knowledge and information from being freely distributed. This requires an institutional framework. It has not always been obvious whether certain types of knowledge can or should be understood as commodities (Appadurai, 1986; and Jessop, 2000). Neither is it obvious if and how the property rights to those knowledge commodities are to be defined, maintained, and transferred internationally (May 2000). Thus, the political changes influence the markets.

Third, there is a widespread economic integration of knowledge markets, which implies the reduction of some political barriers for transfer of knowledge, represented by people and technologies. Dispersion of production factors across national borders is an essential part of economic globalization (Ernst, Fagerberg and Hildrum, 2002). Thus, both the production of, and the markets for, knowledge-intensive products are increasingly internationalized, as is the regulation of those markets. However, there is a flip side to the increasing integration. In some regions of the world the development of a knowledge economy is absent. Consequently, there is an accelerating disintegration – a knowledge gap – between the emerging knowledge economies of the world and the economies that lag behind. Figure 1.2 illustrates, with number of PCs per 1,000 people as an indicator, both the increasing knowledge intensity of the richest part of the world, and the increasing knowledge gap between groups of countries in the world.<sup>4</sup>

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<sup>4</sup> Alternative measures of knowledge intensity are developed and discussed in chapter 7. Still, number of PCs pr 1000 people is a illustrative *indicator* of differences in development of the knowledge economy.

**Figure 1.2 Growth in number of PCs**



Source: The World Bank Group (2005A)

The development is widely recognized. The authors of the Arab Human Development Report, for instance, observe that “Knowledge in Arab countries today appears to be on the retreat (...) while knowledge in the region stumbles, the developed world is racing towards knowledge intensive societies” (UNDP 2003:163).

The shifting attentions in rhetoric, research and business, and the shifting realities associated with Strange’s triangle of change, suggests strongly that we turn our attention to issues of power in the political economy of the knowledge society. “We have to rethink (...) the nature and the sources of power in society” (Strange 1996:4).

### 1.2.3 Shifting powers

One could argue that rethinking power now is a bit tardy. After all, all the Scandinavian countries have appointed their own politically-authorized power studies over the last decade (Andersen et al., 1999; Engelstad, 1999; SOU, 1990; Østerud, 1999; Østerud et

al., 1999)<sup>5</sup> and have now concluded their work (Engelstad et al. 2003; Tøgeby et al. 2003; and Østerud, Engelstad and Selle, 2003). The Norwegian power study generated between 20 and 30 books and more than 70 reports. In addition, it generated an “alternative” or parallel power study. (Neumann, 2000; and Neumann and Sending, 2003).<sup>6</sup> However, even though the term “power” occupies a central position in the social sciences, it does so without a centralized or universal content. This has not changed.

Studies relating both to power and to the growth of the knowledge economy differ radically also in normative approaches. Some hold that: “(...) it is blissfully simple. (...) your brain is your own. It is controlled, for better or worse, by the individual” (Nordstrøm and Ridderstråle, 1999). Others take a more critical stance, claiming that the ideas of those hailing the new economy “(...) actually disguises control in an emancipatory rhetoric, all the while serving to further the interests of a powerful elite” (Driver, 2000:41).

Clearly, power is a concept with many connotations: contributions from numerous scholars and insights from a variety of disciplines have, little by little, added so many meanings and facets to the concept of power – languages, structures, types of knowledge, and practices – that it has become all-embracing to the degree that it has become rather difficult to relate to the term. One can hardly anticipate how others understand the term. Thus, there are both empirical and theoretical reasons for now rethinking the concept of power.

### **1.3 The theoretical argument**

This section presents a short version of the theoretical argument. Most fundamentally, in assessing the relationship between knowledge and power, I argue that we, analytically, should see power as an effect that basically is a relation between actors, rather than as a cause of actions. I use the term configurations of power to capture this complexity of power. Configurations of power are compound regulative relations between relative

---

<sup>5</sup> Information on the Norwegian power studies can be found at: <http://www.sv.uio.no/mutr/>; The Danish power study present themselves at <http://www.ps.au.dk/magtudredningen.htm>; while the Swedish equivalent is located at <http://www.const.sns.se/makt/>.

<sup>6</sup> See also Burgess (2000) on Derrida, for a critical comment on the (power) base of authorized power studies.

autonomous social and/or technological actors. Configurations of power are regulatory in the sense that they make some actions possible, plausible and cheap and others difficult, unlikely or expensive.

Configurations of power, I argue, are fundamentally influenced by one particular feature of economic assets: asset specificity (and conversely, the opposite, asset mobility). In the emerging knowledge economy one of the most important assets is knowledge. Thus, the specificity and mobility of knowledge are becoming crucial for the forming and fixing of configurations of power.

The meaning of the term “asset specificity” is simply that the asset is tied to a certain application, and cannot be redeployed in another setting without substantial losses (e.g. Williamson, 1989). In other words, the mobility of the asset is restricted. Specificity creates inertia, ties, and dependencies. To avoid being locked into a relationship where the other part doesn’t deliver, some kind of credible assurance must be created. This is of critical importance to holders of specific assets. Therefore incentives to coordinate, collaborate and organize are higher than in situations where assets are mobile. Furthermore, since asset specificity implies that some actors are locked in a certain kind of production, the awareness of unfortunate developments, and the willingness to take up actions to counter such developments, are higher than when assets are mobile. In this way, a contractual weakness leads to organizational strength. We may say that the degree and strength of organizational ties between actors, which is a part of what I have labelled configurations of power, depends crucially on asset specificity. Thereby, it seems that asset specificity constitutes an odd parallel to the concept of economic backwardness (Gerschenkron, 1962).

All in all, asset specificity influences both preferences and organizing incentives. In the continuation of this, aspects of configurations of power, such as organizational rigidity and of political regimes may be deduced from asset specificity.

The anticipated effects of asset specificity are drawn from insights previously developed in organizational sciences, economics and political science. In this thesis these insights are taken a bit further and applied to the knowledge economy. As knowledge rises as a key factor of production, it becomes interesting to consider how the mobility and specificity of knowledge influences configurations of power. After all, knowledge is different from the classical factors of production. It differs from capital,



from land and natural resources, and from labour. However, I argue that knowledge is not as fluid as sometimes assumed. Knowledge as an intangible asset needs to become tangible to be utilized. It is through the practices and workings of knowledge representations that knowledge gains productive value. Thus, assessing specificity and mobility of knowledge requires that this is done through an assessment of knowledge representations. These, I argue, differ substantially in mobility. Some types of knowledge are easy to codify, and may be made highly transferable, but others are inextricably tied to contexts and environments. Thus, based on a classification of knowledge types, knowledge mobility and specificities are sorted out accordingly.

The theoretical argument, in sum, states that the specificities of knowledge representation influence preference structures, and form of organizations and regimes. Specificity of knowledge representations influences preferences on economic policies and strategic behaviour to support industries, businesses and sectors rather than factors or classes. The cleavages on preferences converge with limits to mobility. Specificity of knowledge representations also indicates higher levels of political and economic activism in support of the firms, organizations or sectors where knowledges are specific. Finally, the ultimate expression of configurations of power – organizational forms – are expected to covary with the specificity of knowledge representations in such a way that higher specificity indicates more hierarchical and rigid organizational forms regulating economic and political activity. On the other hand, I also argue that knowledge specificities often are the results of political and strategic decisions and non-decisions. It is man-made.

\*

The theoretical argument presented here are general and the empirical fields are undergoing sweeping changes. The concepts are multifaceted, and political, and may be operationalized in numerous ways. Given the conceptual and empirical state of knowledge of contemporary political economy of knowledge mobility, I hold that an explorative methodological twist is needed.

## 1.4 On methodology, methods and techniques

Methodology, methods and research techniques are concepts concerning how research is to be done. In part, these concepts reflect different levels. One methodology can contain several methods, which in turn can contain several techniques. For instance a “positivist”<sup>7</sup> research methodology can be open for statistical (Gujarati, 2003; Hamilton, 1992; Ringdal, 2001), historical (Moore, 1966; Skocpol, 1994), and comparative methods, etc. (King, Keohane and Verba 1994; Mill, 2002; Ragin 1987; Skocpol 1994). All of these methods cover a multitude of techniques. At the other end of the methodological spectre, constructivist<sup>8</sup> methodologies employ methods like discourse analysis (Phillips and Hardy, 2002), action research (Gummesson, 2000), ethnographic methods, etc. (Hammersley and Atkinson, 1996). These methods also cover many possible techniques. One interesting thing about these levels is that even though the methodological positions may be competing, the methods and the techniques may be complementary.

We get a better grasp on this paradox if we consider another side of methodology. Methodology doesn’t only mean “scientific tool boxes”. Methodology also mean “fundamental scientific beliefs” – ideologies if you want – guiding what we can do, what couldn’t be done, what we try to do, and what we shouldn’t try to do. It is this side of methodology that makes a constructivist ridicule statistics, and a positivist deride deconstruction. However, instead of engaging in a lengthy discussion on the philosophy of science and methodology, I will situate, methodologically and disciplinary, the present work – as I see it.

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<sup>7</sup> Positivism have several meanings. The strict meanings associated with Comte and his “positive philosophy” and the “logical positivism” of the Vienna circle is not what I intend here. Rather I use the term in a “commonsensical” manner meaning a social science that believe strongly in the importance of specified methods, preferably a hypothetical deductive kind of reasoning and experiment-like research designs. See e.g. (Hollis 1994:41-43) for a remark on the different meanings of positivism.

<sup>8</sup> The term constructivism is also contested, and, as with positivism, few authors use the term on themselves. Its meanings and usages are also rather disperse and dependent on the disciplines where it is used. In political science, and especially international relations, constructivism or *refleksivism* has largely been a reaction to the hegemony of realism or rationalism (Keohane, 1988; Ruggie, 1998; Wendt, 1999; Wæver 1998). In organizational theory discourses they prefer to speak about ideationalist theory vs positivist theory (Donaldson 2001), while researchers within sociology of knowledge and technology after the “linguistic twist” of the 1980s tend to see constructivist points obvious to the degree that they don’t address them anymore (see e.g. Asdal, Brenna and Moser, 2001, for an overview).

This work is an attempt to bridge a gap, or to define a zone, between three camps within the social sciences. As such, this thesis is written with three imaginary readers in mind: a political economist, an organizational scientist, and a sociologist of science and technology. This kind of cross-disciplinary work is methodologically challenging: Stereotypically we may characterize the political economist reader as sceptical to what he/she see as the hype of a knowledge economy. While he/she always welcomes another study of power, he/she is also sceptical that anything new and useful can be said. Similarly, a caricatured organizational scientist might think that diving into issues of power and control are counterproductive to the challenges that face the enterprises that engage the contemporary knowledge economy. Focus should be on knowledge as activity and on creative work. The stereotypical sociologist of science and technology thinks that both knowledge and power are embedded in technological devices, and that this is of vital interest, but that nothing general can be said about it. These three stylized approaches address differences in interest and focus, as well as differences in methodological positions. In methodological terms, the political economist is a positivist, believing that social science is defined by its methods (which normally are about testing hypothesis about social regularities). The political economist tends to be sceptical about designs that don't test hypotheses properly (King, Keohane and Verba 1994; Ragin 1987; Skocpol 1994). The organizational scientist is a management action researcher that finds working to solve real world problems for real world firms the most valuable and reality-grounded form of social science. The organizational scientist doesn't believe in the virtue of distance in research (e.g Gummesson 2000). Finally, the sociologist of science and technology thinks that by going deep into the strangest peculiarities of workplace practices, we will see that the social and the material are always closely intertwined in unpredictable ways (e.g. Asdal, Brenna and Moser, 2001; Law, 1991; Sismondo, 2004). However, the sociologist of science and technology try to avoid generalizations on the issue.<sup>9</sup>

Herein lies the problem. As long as we consider methodologies as ideologies, the positions seem to be mutually exclusive. Needless to say, I am not a methodological

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<sup>9</sup> See e.g. Barry (2001) for a sympathetic critique of the STS traditions disposition towards cases with limited political relevance.

ideologist. I prefer to take a more pragmatic stand and choose between methods and techniques rather than methodologies. Paradoxically, this position seems to place me closer to methodological relativism and constructivism. If so, this is by default rather than by design. Even so, I hold that all three research camps represent sound mentalities, interests and research methods, although I don't support their ideological prohibitions. Consequently, I employ methods and techniques in this study that are rather mainstream in their respective camps. Seen as techniques, rather than expressions of methodologies, the organizational case study, the multivariate assessment, and the institutional analysis are all straightforward social science.

Seen altogether though, the empirical exploration of my argument will be influenced by all three research dispositions – while ignoring the dogmatic requirements of each. In terms of methodological aspiration, the initial and overall guideline for this study is what Eckstein (1975), calls a plausibility probe. This means in short, that the study aims at investigating whether the main argument is worthy of more complete research projects at a later stage. This is, according to Eckstein, the most correct label for many research projects although (too) few present themselves as such. When we have, as argued in chapter 1.2, a poor state of knowledge within a field of study, this calls for such a modest research strategy.

It is possible, and useful, I think, to take yet another step back from the applied research techniques. In terms of design of the research that makes up the plausibility probe, it is necessary to find an overarching approach with headroom enough for the combination of both research techniques and research mentalities. The combination of methods – understood as techniques – under the same methodological umbrella is unproblematic. Some of the most celebrated contributions within contemporary political science do that (Boix 2003; and Hiscox, 2002 are two examples). However, this kind of combination is not adequate for the composition of empirical studies in this case.

Other inspiring tendencies in contemporary social science that expand the traditional boundaries of disciplines are found in anthropological studies. In the article *Ethnography in/of the World System: The Emergence of Multi-Sited Ethnography*, Marcus (1995) presents a review of studies that criss-cross the local-global distinction by doing “serial” ethnographic studies. New interdisciplinary arenas and new complex objects of study, partly due to globalization, have led to studies that trace rather

different research themes across time and space. It may be people, things (e.g. Appadurai, 1986), metaphors, plots, or conflicts (Marcus, 1995). It may also be concepts, as in Callon's (1998) study on *The Laws of the Markets*. These are examples of studies that internally are decoupled in time or space. They are not likely to be comparable as in a Mill-like comparative case study (Mill 2002). Other forms of conceptual linking are sought. Andrew Barry (2001) for instance, wants, building on Marcus (1994), to create a "montage effect"<sup>10</sup> of e.g. how technology and politics are intertwined in contemporary Europe. To do this Barry (2001) combine empirical cases dealing with the development of museums, the routine work of air monitoring, and practices of political demonstrations – each case in different locations. The choice of cases, sites and themes in producing a montage effect is based on what one wants to study, and create an image of.

Although the idea of "multi-sited ethnography" and "montage effects" stems from anthropology and makes use of compounded ethnographic studies, the very idea of a montage effect is supportive of combining studies with different research techniques. On the condition that studies that make up a montage meet scientific standards, the combination of e.g. cases studies, multivariate regressions, and institutional analysis may very well function in the creation of a useful montage effect. Furthermore, according to my understanding of the term montage effect, a small number of carefully combined studies may create a picture that is a richer representation of a reality than the presenting of a small amount of parallel cases. Thus, as I see it, this understanding of the montage-effect concept is compatible with the plausibility-probe approach. Under time and cost constraints, a montage effect may give a good indicator on the plausibility of a research hypothesis.

The choices of empirical cases serve two purposes. First, in creating the "montage effect" the empirical work should swap between providing depth, overview, structure etc., of the knowledge-power interaction in the contemporary political

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<sup>10</sup> The term has some connotations that are somewhat dubious. The origin of the concept "montage effect" is the so-called Kuleshov effect that describes montage experiments in Russian film in the early 19<sup>th</sup> century. By combining a face with other shots, the filmmaker Lev Kuleshov demonstrated that it is the combination of images in a film that is important, not the content of the individual images. Audiences interpreted the expression of a face differently dependent on what pictures that came before and after the face.

economy. Together, the pieces should provide an image capable of illuminating the relationship between knowledge mobility and configuration of power. In so doing, the image created by the montage makes up a plausibility probe.

Second, to explore the range of applications of my theoretical framework it is appropriate to search large variation in application of the concepts. This is the point in what Skocpol and Somers (1994) labelled “contrast oriented historical comparison”. An illustrating example of this method is Clifford Geertz’ (1971) seminal study, “*Islam Observed; Religious Development in Morocco and Indonesia*”. Here, comparative anthropology is employed on religion in two countries in different continents with presumably nothing in common except Islamic religious orientation (See also Geertz, 1993). Applying similar logics in very different settings will potentially reveal, or point to, the limits of the approach. The variation in range of application includes and empirical openness to causal directions. When research method and techniques allow it, reflections on different causal directions are included.

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To sum up a somewhat composite methodological position, I may say that the individual empirical studies in this thesis, in terms of research techniques, use rather straightforward social science methods. In chapter six, a cases study of an organizational development is presented; in chapter seven, a cross-national multivariate regression is presented; and in chapter eight, an institutional analysis is presented. These studies may be evaluated as both individual and combined contributions to the research theme of this study. Presentations of methods, seen as techniques will be done also in each empirical chapter. Seen together, the studies aim at three goals: 1) to provide an overall plausibility probe of the hypothesis that knowledge mobility leads to less rigid and hierarchical configurations of power; 2) to create a montage effect to illuminate the relationship between knowledge mobility and power in contemporary knowledge economy; and finally 3) to reflect upon the limits of the theoretical approach. As I see it though, the methodological rationale of this thesis is a comparative logic for unfamiliar terrain; it is designed for exploration.

The actual exploration follows the chronology presented below.

## **1.5 Outline and contributions**

### **1.5.1 Outline of the thesis**

The rest of this thesis has two parts. The first develops the theoretical approach, while the second investigates different empirical fields, guided by the theoretical approach. The divide implies that the first part of the thesis has a main responsibility for situating the work theoretically while the second part situates the research in a context, in terms of methods and empirical results. Although the divide is not absolute, the consequence is that the theoretical part is sometimes relatively empty of empirical content, while some empirical parts are undertaken with less explicit theoretical references.

The development of the theoretical approach is taken in three main steps. First, in chapter two, I discuss different understandings of power, and present an approach that focus on configurations of power as multifaceted effects that are seen to be regulatory in the sense that they make some actions possible, plausible and cheap, and others difficult, unlikely or expensive.

In chapter three, I turn to the concept of asset specificity and show that economics, organizational science, international political economy, and other fields have developed related logics based on the presence of strong ties between things and actors. The chapter on power combines with the outlined consequences of asset specificity to form a basis for a rather general theory of mobility/specificity and power. However, as the main purpose of this thesis is to unveil relations and configurations of power in the knowledge economy, it is necessary to map out the various insights on the nature of knowledge as an economic phenomenon.

Chapter four seeks to categorize knowledge in order to relate it to previous chapters on power and specificity. Several new scientific and managerial approaches to knowledge have deepened our understandings of the various layers of the concept. In this chapter, I categorize knowledge according to its collective vs. individual features and its tacit vs. explicit sides. Furthermore, although knowledge is an intangible and elusive phenomenon, it is always present through some kind of knowledge representation. In other words, one can only speak of knowledge mobility and specificity in terms of their representations' mobility and specificity. In this way, the

intangible nature of knowledge is bypassed, and we can relate materially and socially to knowledge mobility and specificity.

Chapter five develops a set of theoretically-deduced expectations based on the previous chapters. These expectations are both meant as segments in a chain explicating possible workings of a knowledge specificity logic, and as guidelines for the empirical searches and presentation.

The second part of the thesis presents empirical inquiries into the knowledge economy, informed by the theoretical framework developed in chapters' two to five.

Chapter six presents a case study of a regime change in a knowledge-intensive consultancy firm. Here the aim is to explore how changing knowledge specificity, contributed to a shift in organizational structure and management style. In addition, however, the study makes it clear that changing knowledge mobility is a result of managerial decisions. The study is based on in-depth interviews and conversations with employees and stakeholders, various written documents, newspaper articles and web sites. The firm is a special case in that it is particularly self-conscious about knowledge issues, and it delivers knowledge-management services and products. Thus, it is far from a typical case. It is a prototype example of a knowledge-intensive firm. This chapter aims to illustrate several of the proposed expectations on a local organizational level. It also shows some of the local workings of a knowledge-mobility management.

Chapter seven presents a series of cross-national multivariate statistical assessments on the relationship between specificity, knowledge, and configurations of power. Here, configurations of power – as regime type – are the dependent variable. The chapter uses data from a number of different sources. The data coverage varies but stretches between about 100 to around 200 countries. This study aims to unveil the importance of factor specificity and knowledge intensity, for explaining different forms of regime organization.

In chapter eight the task is to explore how the co-working of a set of international institutions – in an international regime – influences knowledge specificity and mobility. In particular, we look at the deepening and growth of a regime for intellectual property rights, a regime for standardization, and a trade liberalization regime. These institutions are the World Intellectual Property Organization, The International Organization for Standardization, and The World Trade Organization,



respectively. In this empirical context, knowledge mobility may be seen as the dependent variable.

In chapter nine, the studies are summarized, I try to evaluate and reflect upon the combined lessons from the studies, conclusions are drawn, and a few implications are presented.

### **1.5.2 Contributions from the study**

Although it is clearly disputable, it may be useful to be explicit on what I see as the main contributions of this thesis. First, theoretically this thesis contributes by its combination of perspectives. Substantial developments have taken place within the studies of knowledge, power and asset specificity over the last decades, and this thesis combines insights from these developments. The result is an approach to the relationship between the mobility of knowledge and configurations of power that generates many interesting and empirically relevant questions. The developed theoretical approach is thereby a fruitful one.

Second, the thesis makes, in particular, a contribution to the literature on asset and factor specificity. It is a contribution to this literature because it is focusing extensively on the mobility of *knowledge*, which have been an omission in the literature, and because it does so in a variety of analytical levels.

Third, this study also contributes to the specificity literature by identifying new forms of asset specificity, and by illuminating ways that different forms of asset specificity may interact on an international level (chapter eight).

Forth, and maybe most important, this thesis is a contribution to the specificity literature by its exploration of how knowledge specificity and mobility are results of political and strategic processes. Both chapters six and eight respond to the omission pointed out by Hiscox (2000:164) when he state that: “[v]ery little systematic research has been done on the political origins of restrictions on factor mobility and (...) mobility enhancing policies.” Thereby, this thesis contributes to asset specificity theorizing in several ways.

Fifth, the empirical chapters *suggests* that the degree of knowledge mobility may be seen as an element of other, well-known, empirical regularities. Most clearly seen on a firm level, knowledge mobility may be understood as a part of explanations of

organizational changes that is based on the passing of time (age, history, maturity), strategy (Collins, 1988:191-193), the developing of tasks, technology and size (Groth, 1999; Mintzberg, 1979). On an international level, it seems plausible that changing patterns of asset specificity and mobility is a key element of the more general creation of the knowledge economy.

Finally, I may add, that all the above contributions are made possible by a certain methodological approach. As I see it, a methodological approach where I deliberately swap between analytical levels, between alternative operationalizations, between methods and between causal interpretations is crucial for making the above contributions possible. It may be a point though, that the argument for an empirical and methodological openness made by this thesis also is a contribution to the field.

## **PART ONE: THEORETICAL CONSIDERATIONS**

# Chapter 2.0 Power

## 2.1 Introduction

This thesis aims to shed light on the relationship between knowledge mobility and power. This task is complicated by the fact that the knowledge economy is changing the world, as argued in chapter one. The task is also complicated by the fact that the concept of power is changing, or developing. Contributions from numerous camps – from the classics of Weber (1971), Dahl (1957), and Lukes (1974), to the renewed insights of Bourdieu (1984A; 1984B; 1996), Foucault (1972; 1994) and others, and more recently the surprising twists of the field of Science and Technology Studies (STS) (Law, 1991; Latour, 1986; Latour, 1988; Callon, 1986) – seem to make us think more about power than we can absorb.<sup>11</sup> As a consequence, it has become rather difficult to relate to the term. By now, the concept of power has so many potential meanings and understanding that without substantial user instructions it is hard to have a clear idea of what to expect from the term. Thus, there are both empirical and theoretical reasons for thinking through the possible understandings of power.

This chapter has two purposes. First, I want to present a review of approaches to power with the aim of distilling an understanding that serves the purpose of building a better understanding of how power and knowledge relates to each other in the knowledge economy. Second, but closely related, I aim at developing an understanding of power that has enough interpretative flexibility to be used in different empirical contexts and analytical levels.

It is important to stress that power is a concept, a term. It does, however, relate to a set of societal phenomena – taking place in the real world – that we more or less intuitively feel that corresponds to that term. It is possible to disagree with this statement, but for the discussion to come this is an important ontological assumption. The assumption has as a consequence that trying to understand and define power is not – initially – a search in the realms of reality. It is a theoretical task. It is a search for conceptual tools that hopefully – subsequently – can help us describe, explain, or

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<sup>11</sup> See, e.g., Clegg (1989) for a comprehensive presentation of the evolution of the discourses on power.

interpret reality. The societal empirical phenomena that one tries to get a grasp on through studies of power – organizational patterns, forms of rule and authority, and institutional developments are but a few examples – are normally complicated and multifaceted. Law (2004) would even have called it a messy world, and argued that attempts at making very clear-cut and general definitions and models to capture it would add to the mess, rather than clearing it. This is a somewhat radical argument, but it has its equivalent in more positivist minded circles as well. E.g. King, Keohane and Verba (1994) hold that the norm of parsimony implies an (unrealistic) assumption of the world as a simple or parsimonious object of study. I tend to agree in that. The practical consequence is a bit paradoxical. When dealing with a rather wide research topic, as the theme of this thesis, it means that the umbrella-understanding of power should be wide and general enough to cover several more context-dependent or conditional understandings of power. Thus, the general definition of power that we seek should be open and inclusive, while the context dependent specifications and the operationalizations should be more precise and limited.

Fortunately though, the field of power studies is rather composite. As Clegg (1989:88-89) observes: “It would be incorrect (...) to regard the episodic agency concept of power as equivalent to the concept of power *per se*. The mistake would consist in assuming, against the evidence, that there actually is a single authoritative concept of power. Clearly this is not the case.” Power studies is a field where many of our most prominent social scientists has contributed to a huge pool of knowledge from where it is possible to search for ideas and approaches appropriate for the tasks of this chapter.

This chapter offers one negative and one positive argument. The negative argument contains a claim that several of the ways in which the term ‘power’ is used in contemporary social sciences is inappropriate in an exploratory study of the relationship between knowledge mobility and power. In the textbook version of power, power is a capability of actors to influence others – it is a cause. On the surface, this view is appealing, but it is difficult to operationalize such capabilities in ways that makes us able to explain why and how power works and changes in a complex knowledge society. As a cause, the clear-cut agent-oriented approach seems to miss several of the societal and institutionalized features that make power work in society. In a more

comprehensive understanding of power, where power is embedded in structures, symbols and everyday practices, these problems seem to be solved. However, a new problem arises: power seems to be saturating everything to the degree that it loses its explanatory power – it becomes both cause and effect.

The positive argument of this chapter is that we can solve this second problem of power by explicitly defining power as an effect (Latour, 1986). By an explicit analytical separation between power and its causes we may find a fruitful starting point for the search for power. It must be noted that this is an analytical choice, and not an ontological position. Clearly one can choose to study power issues the other way around. After all, that is the traditional approach. This can be exemplified as studies of how capabilities and resources contribute to the distribution of political support and leverage. An illustrative example is the classic phrase in Rokkan (1987:206) “Votes matters, resources decide”. To choose to study power as a consequence is not to deny these classical findings. Rather it reflects a wish to open for other facets in the field of power studies. Understanding power as more or less stable, comprehensive consequences redirects our focus from capabilities to the different strategies, processes and relations that make up the configurations of power.

The negative and the positive argument will be presented at length in the following pages. I will organize the chapter by first presenting approaches that take power as a cause. This is the classical power approaches. Second, I turn to more compound approaches to power, where power can be analyzed as an effect. Finally, I present an approach to power that capitalizes on several of the presented approaches, but where I choose to look at power as a consequence rather than a cause, and that is compound enough to be operationalized and defined in slightly different manners according to changes in diverse empirical setting.

## **2.2 Three understandings of power**

### **2.2.1 Power as cause**

What might be called the standard definition of power sees power as a potential cause of societal outcomes. It has been defined in many related ways. Weber (1971:53) holds

that power is: “one or more people’s chance to put through their own will in social relations even though others (...) oppose”. This has become the textbook version: In an introduction to *Organizational Behaviour* by Robbins, power is defined, building on Dahl (1957) in this way: “Power refers to a capacity A has to influence the behavior of B so that B does something he or she would not otherwise do” (Robbins, 2003:150).

This agency model of power has been widely criticized for omitting important elements of the workings of power. E.g. Bachrach and Baratz (1962) pointed to the “two faces of power” and that power had the possibility to work through non-decision making. Lukes (1974) criticized the model for being one-dimensional. He added to the discourse the point that power influenced actors’ perception of their own interests, and that it was necessary to include an analysis of objective or real interests to unveil the workings of power.<sup>12</sup> Despite the harsh critiques, the standard definition of power has remained an important core, and an unavoidable starting point for most studies of power. This is probably both because the model, in its simplicity, captures very important features of power as we normally understand it, and because the model, as Engelstad (1999A) points out, is not *that* one-dimensional. The model has the rare feature that it combines versatility with an apparently rigorous form. So, why is the standard definition so persistent? And which dimensions does it contain? First and foremost, I believe that the survival of the classical model owes much to the fact that it is a formal model. The standard model of power is empty of content, and it is general enough to include whatever means of power. Thus, the model is potentially complementary with theories on power that emphasize means of power as institutions, culture and language, measures of wealth and armory, or pure violence.

Second, the definition is causal. The *power* of one actor is seen to, irrespectively of this actor’s actual or symbolic action, cause an effect, with some degree of probability. This is appealing and corresponds to an intuitive understanding of power. Often, this is what we want to know from a question involving power: What can it do? Which effect does it produce?

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<sup>12</sup> See also Clegg (1989:86-128) who discusses Lukes (1974) contribution thoroughly.

Third, the classical model implies that the actors – even the Bs – have some degree of freedom. This is essential. The capacity of A is not a capacity to eliminate B’s freedom of choice, but a capacity to increase the likelihood of B doing as A wants.<sup>13</sup> This means that there is always room for resistance. Even Hobbes stated that a person is free although motivated by fear (Høybraaten, 1999:224). Implicated by this point is also that we, as pointed out by Luhmann, need to separate conceptually between power and coercion (Gulbrandsen, 1999:133-134). By coercion one can steer the choices of others with higher degrees of certainty, but this requires a direct involvement from the “powerful” that delimits the capacity of “creating effects over distance in time and space” (Gulbrandsen, 1999:134). This openness to freedom of choice implies that the model is realistic in that it doesn’t predict anything more than a displacement in the likelihood of outcomes. The openness guarantees a certain degree of pragmatism that makes the model somewhat unassailable. This seems like strength, but at the same time it points to a problematic situation.

Fourth, the model is a relational definition of power; there are multiple, at least two, actors – or agents. It is in the asymmetric relation between these that we find room for studies of power. This means that it is never enough to evaluate the resources or the capabilities of one agent. It does imply though, that if you may map the capabilities and resources of involved agents properly, you get a pretty good clue on their relative power. This makes the model practicable and intuitively attractive. Neo-realist theories in International Relations are a prominent example of how important measures of relative capabilities may be for studies of power (e.g. Waltz, 1979; Grieco, Powell, and Snidal, 1993).

Fifth, the definition is intentional. Power is about implementing preferences, intentions, or wills. This is also a very important point that makes the model survive in its meeting with a series of approaches to the working of power. The model is open for the inclusion of will and intention wherever these come from. However, this is also a point where the standard model meets critique. It is a problematical element because the weaker part in a relation may have difficulties even with recognizing or defining its own

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<sup>13</sup> See e.g. Høybraaten (1999) on the role of communication on this point.



will. The creation of converging wills may be seen as the ultimate work of power. The standard model doesn't oppose such an approach, but on the other hand, it doesn't contribute to such analysis.

All together, what I have called the classical definition of power is actually rather multifaceted, it is intuitively attractive, and it is compatible with a large portion of approaches to power – as long as they converge on the causal dimension.

The classical view is an agency-concept of power. Obviously this is the chime for a serious limitation. As we know, power is very often *not* followed by coercion or sanctions. This may be because the underprivileged in an asymmetric relation can anticipate the possible coercion or sanction, or because the possibilities – and consequences – of coercion or sanctions are, in some way or another, communicated between actors. The asymmetry itself – or the possible consequences – may be communicated through speech acts (Searle, 1969; Searle, 1979, Bourdieu 1984), or through various forms of symbols (for instance hierarchy, status positions, language, and concepts). By such means the working of power is not only cost-effective in each circumstance, but it institutionalizes the power relation between actors: power starts to expand in time and space, and to stabilize patterns of behavior. Thereby, the significant powerful agents may be seen to leave the scene. We, the Bs, do our job, and behave, without someone telling us what to do. This may both be seen as routinized repression, and as constitutive for any organization or society. In this, we may state that a part of the institutionalizing is that power implies that actions and social patterns are regulative and regulated. Furthermore, it means that power starts to diffuse from the clear-cut position on the causal pole. It's not necessarily so that power causes actions. We may say that we, the Bs, start to reify power, or even constitute it through day to day actions and beliefs.

An understanding of power as the starting point of analysis is a Hobbesian heritage. Following Clegg and Wilson (1991:232), "Hobbes, the archetypal early modernist theorists of power (...) provided a rationalized account of the order which state power could produce." For Hobbes, centralized power was the cause of order; morally superior, and organizationally sound (Hobbes, 1968). Moral, purpose and cause converged.

### **2.2.2 Power as both cause and effect**

More contemporary approaches to power offer complicated and confusing views. For instance, Luhmann seems to see power as something that both expresses itself through all the choices we consecutively do in everyday life (Sand, 2000:54), and as the rationality of the political system (Luhmann 1990). Pierre Bourdieu, in his works on e.g. language (Bourdieu 1984A), symbolic power (Bourdieu, 1996), and cultural capital (Bourdieu 1984B) meticulously describes how power is embedded in the structures and practices in cultural and societal fields. Power causes both change and stability, and reinforces itself whether change or stability is the outcome. Thus, power starts to saturate everything, and consequently the contours of power disappear. Power is everywhere, but invisible. It becomes difficult to understand who has power and where the power lies (if not everywhere). It may even become naïve to ask the question.

Michel Foucault also emphasizes the all-embracing nature of power. There are numerous explanations of the term associated with him (E.g. Burchell, Gordon and Miller 1991; Foucault, 1972; Foucault, 1994; Foucault 1995; Neumann 2000; Neumann and Sending 2003). Foucault's different definitions and interpretations of power may seem contradictory. However, I think the definitions represent a basic idea of power as something productive, yet socially produced. For instance, one place Foucault held that "The exercise of power is (...) a way in which some act on others" (Foucault 1994:340). This is an understanding that on the surface is rather close to the standard definition by Dahl (1957) and Weber (1971). But, the point of such a definition, for Foucault, was to point out that "(...) there is no such entity as power, with or without a capital letter; global, massive or diffused; concentrated or distributed. Power exists only as exercised by some on others, only when it is put into action," (Foucault 1994:340). Another place he states that: "Power is omnipresent: Not because it has the privilege to gather everything under its insurmountable unity, but because it is created in every moment, in any point, or rather, in any relation between one point and another. Power is everywhere. This is not because it embraces everything; it is because it comes from everywhere" (Foucault 1995:104). Thus, Luhmann, Bourdieu, Foucault and others, emphasize the way that power is embedded in social structures, social fields, linguistic practices, the activities of everyday life, or the discursive origin of our common

knowledge. Consequently, power becomes both more and more comprehensive. Paradoxically though, simultaneously it becomes more and more restricted both practically and analytically. Practically, as almost every part of human life is influenced by power, even the powerful become increasingly powerless. Power as described above is not in the hands of the 'powerful'. It evades everyone.

Analytically, with notable exceptions, productivity and repression, structure and practice, cause and effect, all converge to analytically-impenetrable, all-embracing webs of power. It sometimes seems as though the thickness of power descriptions has reached a level where it shadows what it should illuminate.

Here too, a moderating comment is in order. What I have done is to point to some general problems. Obviously, I don't mean to suggest that power studies informed by either a classical Weberian, or a Foucauldian, perspective are useless, or impossible. There are several studies that address contemporary social developments with the analytical or descriptive tools described above. For instance are the main part of the Norwegian power studies (e.g. Engelstad et al. 2003) good examples of studies compatible with the Weberian approach, while most studies in the alternative "Power and globalization study" exemplify fine studies within the Foucauldian approach. Neumann and Sending (2003) presents an eminent introduction to the Foucauldian term 'governmentality' that illuminates recent developments in "practical" liberalism, in terms of power. It describes how we regulate our selves. However, neither of these examples implies that everything is said, and that alternative approaches are blocked.

### **2.2.3 Power as effect: The neo Machiavellian twist**

When the classical model says power is causing some (re)action or some result, it is congruent with an intuitive understanding of power. However, it is also intuitively understandable when we state that some societal actions or forces enhance or stabilize power in society. Thus, that we see increased power or consolidated power as an effect of strategies and political activities – be it elections, invasions, innovations, or organizational mergers – is also intuitively acceptable.

Several thinkers and social scientists, especially within the French tradition, emphasize this view. Some of Foucault's statements above highlight this side of power, and also Derrida takes the concept of power towards the "effect end" of a cause-effect

continuum. When Derrida analyzes – deconstructs – concepts like authority, law and constitutions he points to the situation when those phenomena are constructed. Any authority – power – rests on, and results from, something outside – before – itself. Derrida seeks to illuminate the “mysterious” moment from where power and authority is created (e.g. Mekjan, 1999; and Burgess, 2000). However, the more programmatic placement of power on the effect side of the cause-effect continuum is something that characterize Latour (1986) and his colleagues (Law, 1986; and Law, 1991).

In his article “The Powers of Association”, Latour claims that “[power] must be treated as a consequence rather than as a cause of action” (Latour 1986:264-265). He criticizes the standard understanding of power as a cause for resting on three assumptions that do not hold: (1) that power might be seen as a initial force with an inherited energy, like what we find in a physical understanding of force; (2) that there exists some kind of inertia that conserves this energy called power, and ensures its diffusion; and (3) that society might be seen as a medium through which the force spreads. According to Latour, it would make sense to search for the initial force – the energy called power – if the other assumptions underlying such a “diffusion model” were reasonable. If we could operationalize and measure it, we could also generate expectations on the likely effects. Deviation from expectations would be due to variance in friction and resistance. Paradoxically, though, all the explanatory power would rest on analyzing the resistance of the “powerless”.

Latour’s alternative to the standard model is what he calls the translation model of power (Callon, 1986; Latour, 1986). In this model power rests critically on the interpretation, active cooperation and intervention – translation – of those seen as powerless. This point is related to the premises in the classical model that all agents have degrees of freedom. But, the translation model goes further than the granting of some degree of freedom to the underprivileged, as the standard model does. The translation model recognizes that to hold power, the powerful are dependent upon, and recognized as powerful through, the acts of others. And it is through the acts of others they eventually fall (see also Ackerman and DuVall, 2000). Thus, in political democracies, in autocracies, in organizations and in international institutions the leading figures – the powerful – are assigned and teared down by other than those populating

the “powerful” positions,<sup>14</sup> irrespective of these positions being formal or informal, on stage or off stage. Furthermore, these acts of others, whether they are supportive or not, do not follow as a consequence of some abstract power, but as consequences of the actors’ own preferences and their own understandings and interpretations of reality. Over and over again we see that what is recognized as powerful – be it superpowers, dictators, managers, or dominate trademarks – suddenly become powerless. To explain changes in power, we cannot use power as an explanation. Power has sources other than the power itself

This understanding of power is Machiavellian rather than Hobbesian (Clegg, 1989:21-38; Foucault 1994:201-222; Latour, 1988; Machiavelli, [1532]1988). The focus is strategic. Power is not the starting point, the prime motion or force causing the outcome, but it is something actors struggle and strategize to obtain. However, the struggles are fuzzy and the outcomes uncertain. Accident, nature (*Fortuna*) and the activities of numerous other actors are of crucial importance for the outcome.<sup>15</sup>

### **2.3 Power: A multifaceted configuration**

All of the approaches above have elements that have intuitive appeal. They can teach us important things about power. Therefore, I believe that it is fruitful to try to integrate insights from these different approaches. To build such an approach also implies standing on the shoulders of generations of imaginative and diligent social scientists. Unfortunately, good approaches are sometimes incompatible. This implies that approaches to power may be excluded even though they are interesting and potentially rewarding. I want to stress that the need of compatibility have as implication that the excluded elements are excluded due to incompatibility, not individual shortcomings.

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<sup>14</sup> See e.g. Hernes (1978) for a description and critique of e.g. the “position school” of power studies.

<sup>15</sup> Again, I will emphasize that this reflects an analytical choice. As said above, one can study how power is used and influences outcomes on e.g. distributional matters. Clearly though, one can make the circular argument that struggling and strategizing over power requires means of power, and that the power resulting from this struggles are used to reify the power basis that eventually lead to increased power. However, even though this kind of (circular) line of argumentation may result in reasonable descriptions of power relations in several situations it may be more fruitful in analytical terms to separate the cause and effect – even though it might contradict an intuitive understanding of the circularity of power.

We may now summarize and suggest an approach to the study of power. First, from the standard model, we should realize that any actor has a degree of freedom. This point is also made by Foucault (Foucault 1994:326-348; Gordon 1991). However, the view should be radicalized along the lines suggested by Latour (1986) and Callon (1986). Any actor has its motives for actions. These motives do not follow from the power itself, but from that actor's translation of the situation s/he is in. The consequence is, in principle, that no actions can be explained on the basis of power itself. Second, power is a relational phenomenon. No actor, institutional or human, has power in itself. Power lies in the relation between actors. Neither physical nor social situations and conditions can be made without reference to the relations and associations between actors. This is a fundamental restriction on the conceptual terrain of power studies. It means that social and physical conditions should not be explained on the basis of isolated measures of power. Third, from the "all-embracing" models we can recognize that the social, cultural, and material are all fundamental elements of power. That means that power cannot be properly understood as purely social or purely material and technological. It is highly unlikely that relatively stable and regulative configurations of power lack either a material or a social element. Finally, we place power analytically as an effect, and not as a cause. Saying this does not mean that we see power in potentia as unimportant in every real world situation, but that we choose analytically to keep cause separated from what it's causing.

These properties means, in sum, that power should be seen as an effect or consequence that basically is a relation between actors and/or material things. Furthermore, this effect is not in the hands of a "powerful elite" and, due to the degrees of freedom of included actors, the totality of it cannot easily be managed – if at all. The notion of power described as a complex web consisting of technology and knowledge, culture and politics, actors and actions is used by a series of theorists and named respectively. Foucault speaks of an apparatus, Deleuze of an arrangement, Callon – following Goffman – of a frame, Latour of an actor-network (Barry 2001:218, footnote 38), and Clegg of circuits of power (Clegg, 1989). All the labels create different associations – they are successfully made to do so. Accordingly, they have their advantages and disadvantages. I will in the following use the term *configurations of power*. Choosing another label than the ones mentioned above frees me somewhat from

association to the mentioned writers. Besides, the term “configurations of power” creates what I see as appropriate associations to regulative and relational structures, and organizational forms.

Configurations of power are regulatory in the sense that they make some actions possible, plausible and cheap and others difficult, unlikely or expensive. It opens and closes possible channels of action, but comprehensive control of the entire universe of regulatory processes is not likely. As Andrew Barry (2001:16) points out: “The social world should not be imagined and acted on as if it were a system of networks and flows, which can be grasped and managed as a whole. This is a typically modern politically fantasy. The specificities and inconsistencies of the social demands careful attention.”

The elements of the configuration, and the relations between them, may be manipulated and used politically, but they also resist manipulation. As culture, actors, and institutions may deny bending for someone’s will, so too may technologies. No one can be sure to do what s/he wants with any resource – be it material or intangible. This is simply because material things, as well as human beings, have inbuilt specificities, characteristics, logics and tendencies that restrict their range of application. In addition, the complex and changing nature of the world makes it impossible to know with certainty the range of application. Consequently, the kinds of regulatory configurations described are neither stable constructs nor closed systems. Since it depends on the actions and interpretations of so many with so different kinds of motifs and abilities, power can rapidly change, and the borders of any configuration of power are negotiable.

We may “define” power in this way: Configurations of power are compound regulative relations between relatively autonomous social and/or technological actors. I am fully aware that some readers would prefer a more constricted, not to say precise, definition of power. However, so far in this thesis, power is a term referring to a complicated and poorly-defined reality. As Law points out: “(...) simple clear descriptions don’t work if what they are describing is not itself very coherent. The very attempt to be clear simply increases the mess” (Law, 2004:2). At the outset, the loose definition of configurations of power is sufficiently distinct. On the other hand, as the empirical realities where the concepts of power are to be used, are being limited and defined, contextualized definitions of power can be defined.

This thesis contains three empirical chapters. These address totally different fields of study. The first, chapter six, is organizational. Here, configurations of power are seen as organizational form – including the ideology, the practices and cultures embedding the formal organizational structure. This contextualizing of power opens for the possibility that power may be seen as organizational forms that can change from a hierarchy to a heterarchy; that regulation sometimes happens through the workings of technologies, sometimes through cultural norms, and sometimes through directives distributed through hierarchies; and that in any case, despite the main regulative tendencies, every actor chooses between options.

Chapter seven also addresses configurations of power as organizational forms, but this time in terms of the political regimes regulating political, social, and economic activities in countries. This is another contextualizing of configurations of power, and operationalization must differ from what can be done in an organizational context. In this chapter, configurations of power are seen as variations in what I call regime rigidity. I will return to the concrete operationalization in the chapter.

The last empirical chapter examines yet another empirical reality, and yet another organizational level. Here, the configurations of power of interest is international institutions, and regimes. Clearly, these regimes of regulation must be defined and understood in terms other than those applied in the firm level and the national levels. Thus, as I see it, the same basic understanding of the nature of configurations of power may and must be contextualized and operationalized in different ways.

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Having placed power at the effect end of a causal chain, we need other tools to understand and explain stable and lasting power, as well as decreasing power. We cannot use power to explain power. Latour suggest that social scientists pay particular, attention to how the material resources links people in ways lasting longer than particular interactions (Latour, 1986). For studies of power, this understanding implies that the presence or absence – and the creation and destruction – of links, associations, and relations between elements should be the core matters of interest.



In economic terms the solidity and durability of ties between actors and factors, commodities and assets, are sometimes referred to in terms of asset or factor specificity. Thus, as a way to investigate ways of linking people that may last longer than any given interaction, we will turn to the theories of specificity.

## **Chapter 3.0 Specificity**

### **3.1 Introduction**

In previous chapters we have shown that the economy of knowledge has increased its academic, economic, social and political significance. Some fundamental changes mark what we may call the contemporary political economy of knowledge. The core of these changes, and of the problems of existing approaches to these changes, seems to be an extensive criss-crossing of borders. Flexibility, fluidity, uncertainty, and mobility are one characteristic of this terrain, and have been highlighted in numerous writings and conferences.<sup>16</sup> On the other hand, and although we live in a time of change, even a superficial look at our surroundings reveal stability, rigidity, and long-lasting relationships. One crucial question for social scientists is therefore to ask “What makes the world hang together?”(Ruggie, 1998:855)

In this chapter I will elaborate on a concept that deals explicitly with the not so fluid, the inflexible, and the immobile: namely, the concept of “asset specificity”. This is a concept that has proven useful in several areas, but has not gained much attention outside a few rather limited branches of the social sciences (and within these, among a few researchers). Therefore, it is unfamiliar terrain. However, before charting out how the term has been deployed, let us try to define and categorize the term.

### **3.2 Categorizing the term**

Asset specificity means simply that the asset, the factor of production, or the good of which we are speaking, of some reason or another, is tied to a certain application, and cannot be redeployed in another setting without substantial losses. In other words, the mobility of the asset is restricted. Using economic parlance, asset specificity means that the quasi rent, the difference between the value of an asset in its present use and the

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<sup>16</sup> For instance, the Norwegian University of Science and Technology (NTNU) will hold a conference in 2005 with the title “Navigating Globalization: Stability, Fluidity, and Friction”; and in 2003 the annual conference of the European Group for Organizational Studies (EGOS) held a session on organizational responses to more fluid societies.

value of the asset in its best alternative use, is high. This seems like a bad situation, that any sane individual would want to avoid. That is not the case, of course. Often a specific asset is a specialized asset with higher added value and effectiveness than more generic assets (e.g. specialized technology vs. general purpose technologies, or specialized knowledge vs. general knowledge). The price of this specialization, to follow Albert Hirschman, is limited possibilities for exit (Hirschman 1970).

In his canonical article on asset specificity Olivier Williamson (1989) lists kinds of asset specificity. He makes no claim that the list is exhaustive nor that the categories are mutually exclusive. The first is site specificity: where an asset cannot be moved from a certain geographical location, as agricultural land is bound to stay where it is. The second is physical asset specificity, where the asset cannot be utilized outside a certain kind of technological or physical application, as a bread-baking machine is doomed to be used for baking. The third is human asset specificity, as for instance specialized tacit knowledge that only with great effort can be unchained from its present human representation, as an experienced chef may find it hard to transfer his knowledge to a novice. The fourth is dedicated assets, when the asset cannot be untied from an application that it is “made to” support, as PowerPoint is of little use without Windows. Finally, brand name capital is a type of asset specificity that points to an asset that has no interest but as a signifier of another asset or commodity, as the brand “Coca Cola” would be of little value if it wasn’t for the black, acidic and sugary soft drink. In his later writings on specificity Williamson adds temporal specificity to the list (e.g. Williamson 1996). This means that an asset may be of use only at a certain time. In business this is highly relevant in so-called “just-in-time” production structures. Also in product cycle theorizing we find elements of this logic, as certain technological innovations lose value with the passing of time (Carr, 2004; Vernon, 1966). However, as we will see in chapter eight, there are forms of specificity not covered by Williamson’s list.

Macro-oriented economists and political economists tend to operate with broader categories. They categorize specificity according to factors of production rather than assets. That means that we can speak of capital, land, and labor specificity. Human capital may then be a sub-category of either capital or labor. All of those categories points to the degree of specificity or mobility of a particular type of input. Asset and

factor specificity is closely related. Basically one can see the two concepts as the same phenomenon on different levels of aggregation. Consequently, my use of the terms is somewhat mixed. I change between terms dependent on level of aggregation, or traditional use in the field of which I speak.

In recent years, asset specificity has been a key concept for a few scholars in three distinct branches of the social sciences.<sup>17</sup> They have all used the term for different purposes and in distinct manners. Categorizations and limitations vary between those applications. We may therefore consider these approaches briefly before we extract a theoretical framework that can fit our present purpose.

### **3.3 Transaction cost economics and asset specificity**

The fundamental idea of transaction cost economics (TCE), which is a microeconomic approach to industrial organization, is that transaction costs are key to understanding different forms of economic organization, such as the firm and the market.

As developed by Olivier Williamson,<sup>18</sup> TCE combines asset specificity with two basic behavioral assumptions: bounded rationality and opportunism. “Transaction cost economics pairs the assumption of bounded rationality with a self-interest-seeking assumption that makes allowance for guile. (...) Calculated efforts to mislead, disguise, obfuscate, and confuse are thus admitted” (Williamson 1989:139). These two behavioral assumptions mean that all contracts are incomplete and that transactions are somewhat

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<sup>17</sup> Throughout history, economic and political thinkers have considered the effects of asset moveability. Montesquieu wrote in 1748, that either “wealth consists in land or in movable effects (...) such as silver, notes, letters of exchange, shares in companies, ships and all commodities” (Montesquieu, [1748] 1989:351-353) This was an early attempt to both explicitly categorize assets according to their moveability, and to theoretically deduce the effects of such a distinction. Several other early economic thinkers observed that regulating the mobility of assets was crucial for national well being. According to Reinert (1996), there were illuminating similarities, and a consistent line of thought, between the successful policies of Venice in the 16<sup>th</sup> century, the early period of England’s development as a leading economic power, and the suggestions of Alexander Hamilton in his “Report on Manufactures” (Hamilton [1791] 1996). “These economic policies included the establishing of a patent system (in the 16<sup>th</sup> century Venice) (...) of the prohibition of export of machinery (in force in England until the 1830’s), of prohibition of migration of skilled workers (in Venice under the penalty of death), on the export duty of raw materials” (Reinert 1996:18-19). The patent system, the export regulations, and the migration controls are all examples of policies aimed at manipulating the degree of specificity/moveability of assets and factors. These are themes we return to in chapter eight.

<sup>18</sup> Oliver Williamson is the core reference in TCE and particular those parts dealing with asset specificity. On the back cover of his 1996 book, *The mechanisms of governance*, it reads: “[Williamson] is preeminent in his field. One can almost say that he is the field.”

risky. In the ideal market, where buyer-seller transactions are done one at a time and at arms' length, no lasting relation exists, and the hazards of transactions are not too problematic. However, with asset specificity the idealized market conditions are violated because asset specificity means that asymmetric dependencies arise between actors. Eggertsson puts it this way: "(...) highly specialized capital assets can create power asymmetries, as the suppliers of specific assets have no alternative valuable use for their assets and become dependent on the buyers of their services who have the power to hold up the suppliers or, in the jargon of economics, confiscate their quasi-rents" (Eggertsson, 1996:15).<sup>19</sup>

Specificity implies that investments are irreversible, or are approaching irreversibility. This, in turn, creates the so called "holdup problem" which the TCE literature tries to deal with using contracts and organizational solutions. "To the extent that it is irreversible, entering into a relationship creates specific quasi rents that may not be divided ex post according to the parties ex ante terms of trade. Avoiding this transformation from an ex ante competitive situation to an ex post bilateral monopoly (...) requires prior protection through comprehensive and enforceable contracts" (Caballero and Hammour, 1998:725). Thereby, safeguarding business relations becomes essential. The question becomes how to build these safeguards effectively. One effective contractual safeguard is the institution of the firm. Firms prevail where markets are insufficient; they mark the boundaries of the market.<sup>20</sup> In this way, the question of the existence of a firm, the size of a firm, alliances between firms, and the

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<sup>19</sup> It may be noted here that Eggertssons' quotation points to a view on power that diverges slightly from the one I advocated in the last chapter. On the one hand he says that it is the specificities that create the "power asymmetries". This is a causal and analytical distinction in accordance with the power approach I use. On the other hand Eggertsson continues to speak of buyers who have the power to hold up suppliers. This power to hold back is, as I define it, not a power but a possibility, a potential activity. The suppliers interpret and find out what to do. The responsibility for the outcome of this process shouldn't be transferred to another party (the powerful).

<sup>20</sup> The TCE approach sees the Market and the Firm as alternative organizational forms (Williamson 1985:87 and Fourie 1993:41-65). However, the two are not seen to have an equal position. An underlying assumption is that the market is the most basic organizational form of economic exchange. "Only as market mediated contracts break down are the transactions in question removed from the markets and organized internally. The presumption that 'in the beginning there where markets' inform this perspective" (Williamson 1985:87). Fourie (1993) discuss whether it is methodologically legitimate and constructive (and successful) to attempt to explain the nature of the Firm though the prism of another and different relation. Sociologically, and historically, this is problematic (Fourie, 1993; and Callon, 1998).

boundaries of the market may be illuminated by variations in asset specificity. When there is no asset specificity, there is no transaction-cost-based reason for the existence of a firm – or other safeguarding governance structures. The exchange of assets and goods may be done through the market. On the other hand, the market is insufficient when asset specificity leads opportunistic actors with bounded rationality to try to secure vested interests in specific relations.

In a TCE approach, accepting the assumptions specified by Williamson, interesting predictions on firm development and strategizing might be developed.<sup>21</sup> By relaxing the assumptions of bounded rationality and opportunism, even more predictions are possible. We see that variations in three key variables give interesting possibilities in analyzing contracting processes, which can be seen as basic configurations of power. In Table 3.1, Williamson specifies and summarizes these fundamental kinds of contracting modes.

**Table 3.1 Asset specificity and modes of contracting**

Behavioural Assumptions			
Bounded Rationality	Opportunism	Asset Specificity	Implied Contracting Process
0	+	+	Planning
+	0	+	Promise
+	+	0	Competition
+	+	+	Governance

Source: Williamson (1985:31)

From this table we see that if bounded rationality and opportunism are present, asset specificity is the variable indicating whether competition through the market or safeguarding through some kind of governance structure will be the main organizational form surrounding an economic relationship.

In addition, we might assume that there are tools to limit opportunistic behavior. This is an issue for much literature on corporate culture, and on trust (Alvesson, 2002;

<sup>21</sup> Unsurprisingly, many are critical to many aspects of the transaction cost economic approach. A collection of discussions and critical comments is found in Pitelis (1993).

Fukuyama 1995; Kunda, 1992; Reed, 2001; and Schein, 1985). In these cases we see that organizational culture and trust may create a climate where actors anticipate convergence of interests and preferences. Thus, trustworthy “promises” may work as an alternative organizational mode in the setting of a configuration of power.

Alternatively, we can imagine that technologies or organizational structures may overcome relevant limitations to rationality. This is the outspoken ambition of several classical organizational schools, as well as newer technological tools (Fayol, 1988; Groth, 1999; Mintzberg, 1979; Taylor, 1998; Weber, 1971). In these cases, the prospects of planning as an alternative, both to competition within a market, and the governance of a firm, may grow. It must be emphasized that this is planning outside the hierarchical structure of a firm or bureaucracy. In this case we speak of planning activities and transactions between autonomous, if not independent, actors. We see this kind of structure growing in many sectors of the economy. Perhaps the networked auto industry is the best example.

In principle, transaction-cost economists and industrial-organization scholars extract consequences of asset specificity along two lines: “asset specificity not only elicit complex ex ante incentive responses but, even more important, it gives rise to complex ex post governance structure responses” (Williamson 1989:143). Preferences and interests can be derived from the logic of asset specificity. Clearly the insecurity, the dependencies, and the needs of contractual safeguards in case of asset specificity form preferences and interests. However TCE tends to jump to organizational implications. Cooperation, alliances, contracting, and vertical integration, are examples of organizational forms, besides the pure establishment of a firm, that are expected to covariate with asset specificity.

To sum up, the TCE view on asset specificity holds that the type, degree and strength of organizational ties between actors – all parts of what I have labeled configurations of power – depend crucially on asset specificity. Asset specificity creates a kind of contractually disadvantageous situation for economic actors. This motivates

them to organize and safeguard activity in ways that may turn out to be organizationally and politically advantageous.<sup>22</sup>

Very different sets of implications are drawn from a related logic of specificity in the world of macroeconomics<sup>23</sup> and trade.

### **3.4 Trade theory and asset specificity**

Working with even broader categorizations, trade theorists talk about factor specificity rather than asset specificity. Indirectly, factor specificity has been a theme for trade theorists since the days of Adam Smith ([1776]1991) and David Ricardo ([1817]1996).<sup>24</sup> Actually, in classical and neo-classical trade theory, the basic reason for trade is that factors of production are geographically (internationally) specific. Specialization and trade are ways of utilizing and moving factors between countries that are specific to domestic industries. In Ricardo's early trade theory, the factors are internationally specific, but domestically mobile. For the early trade theories, the most fundamental effect is the international distribution of wealth. Later trade theories also took the specificity, utilization of factors of production and the exchange of goods as a starting point, but acknowledged the fact that utilization, and control of these factors had domestic distributional effects as well as international distributional effects.

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<sup>22</sup> Thus, it seems that asset specificity constitutes an parallel to the concept of economics of backwardness (Gerschenkron, 1962; Acemoglu and Robinson 2002).

<sup>23</sup> Although TCE is a microeconomic approach to asset specificity it has macroeconomic consequences as well. By assuming that asset specificity is a form of bipolar monopoly, Caballero and Hammour (1998) spell out the macroeconomic problems of asset specificity (e.g. underutilization of resources, segmentation of factor markets, that production suffers from technological 'sclerosis', that job creation and destruction becomes unbalanced, that recessions becomes excessively sharp and that expansions runs into bottlenecks).

<sup>24</sup> When, in 1817, Ricardo presented the concept of "Comparative Advantage" in his book *The Principles of Political Economy and Taxation* he was arguing against the barriers to England's import of food. By using a very simple model, Ricardo demonstrated that free trade was mutually beneficial to all countries if they specialized in producing goods in which they had a comparative advantage. Ricardo demonstrated his point through a model that had two countries, two goods which was internationally mobile, and one factor of production (labor), which was internationally immobile (specific), but mobile domestically. Ricardo heavily advocated the implementation of a liberal trade policy because it would make every participating nation better off, but he was probably very much aware that this had distributional consequences domestically that were at odds with the landed aristocracy. Thus, in the debate, the political dynamite of the issue of specificity was evident, although not explicit. (See for example Krugman and Obstfeld (1997:13-34) for a presentation of the Ricardian model).



Neoclassical trade theory has developed along two different paths, each with different assumptions about factor specificity. First, the so-called Stolper-Samuelson theorem<sup>25</sup> starts from the observation that factors of production are unequally distributed both among nations and domestic actors, and that the utilization of abundant factors differs from the utilization of scarcely endowed factors when it comes to generating income. The reason for this is that abundant factors and scarce factors have different pricing, and that import/export alters the endowment of a factor. As a consequence, when it comes to trade and distribution, Ronald Rogowski (1989:3) states that: “(...) protection benefits (and liberalization of trade harms) owners of factors in which, relative to the rest of the world, that society is poorly endowed, as well as producers who use the scarce factor intensively. Conversely, protection harms (and liberalization benefits) those factors that – again, relative to the rest of the world – the given society holds abundantly, and the producers who use those locally abundant factors intensively.” This theory of trade doesn’t treat specificity explicitly, but the model assumes, like Ricardo did in his model, that factors of production are domestically mobile, and internationally immobile. From these basic assumptions on specificity the interests and preferences on issues of production and trade can be deduced and sorted out according to factor ownership (e.g. class).

A second path, associated with the so-called Ricardo-Viner theorem (or specific factor model), begins by assuming that the domestic mobility of factors varies (Alt et al. 1996; Alt et al. 1999; Ethier 1985; Frieden 1991; and Hiscox 2002). Some factors are closely tied to the industry where they are utilized – they are specific – while others may be moved between industries, they are mobile.<sup>26</sup> Consequently, the hypothesized distributional effects differ: “The specific-factor model implies owners of an immobile factor gain (lose) from trade if the factor is employed specifically in a comparative advantage (disadvantage) industry” (Yarbrough and Yarbrough 1992:8-9, footnote 25).

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<sup>25</sup> The foundation of the Stolper-Samuelson theorem was developed in an article on income distribution (Stolper and Samuelson 1941). The range of application has greatly exceeded the audience suggested by the original theme.

<sup>26</sup> The factor proportions and the factor specificity model are related, and the predictions on distribution effects and cleavages may be seen as short and long run versions of the same. Because factors in the long run are more mobile than in the short run, the models converge in a long run perspective (Mussa, 1974).

This indicates that industries that are dependent on factors specific to export sectors benefit from trade, while the import-competing sectors lose. From an economist's perspective, this becomes very simple: Export-industries support free trade while import-competing industries or sectors are protectionistic. On the domestic configurations of preferences it follows from this that the factor specificity model predicts domestic cleavages on interests and preferences between industries or sectors instead of between different factors (e.g. classes), as in the Stolper-Samuelson theorem. While incomes are equalised between owners of factors in the factor-proportion models, the factor-specificity model implies that there will be an equalisation of incomes within the same types of production, or sector (Frieden, 1991; Hiscox, 2002; and Scheve and Slaughter, 1998).

Recent work emphasizes that factor specificity is not an "all or nothing" question (Alt et al. 1999). Different industries or firms have different levels of factor specificity (mobility) and there is no need to assume a fixed level of specificity. This way of seeing specificity and mobility is advantageous; there is no need to make unrealistic assumptions about the mobility of factors. Additionally, it opens the possibility of seeing variation of specificity itself as an explanatory variable.

Within economic trade theory, expected gains and losses are used to predict, or actually to define, interests. An economically-rational actor opposes something from which he loses. Preferences to trade – protectionism and liberalisation of trade – may be deduced and patterns of trade may be predicted from this point of departure. A number of comparative political economists have taken this logic one step further.

### **3.5 International political economy and asset specificity**

Several scholars within the International Political Economy (IPE) community have pointed to the potential of an asset specificity approach (Alt et al. 1996; Grier et al. 1994). They tend to build on both the TCE insights (e.g. on the organizational coherence that follow from high asset specificity) and the trade theory applications of specificity (e.g. on the direction and intensity of preferences that follows from specificity). In addition, however, they add their own political or social logic.

Jeffrey A. Frieden (1991) studies political activism and economic policy in Latin America. In his study of the political economy of Latin America, asset specificity is one

of two key explanatory variables. Frieden holds that asset specificity of a sector increases the likelihood that the sector engages in exerting political pressure to secure favorable policies. Because owners of specific factors are more susceptible to governmental policies than owners of mobile factors, “incentives to lobby increases with the specificity of the asset” (Frieden, 1991:22). The second variable is the internal cohesion of the sector. These two variables influence the outcome: “influence on governmental policies”. Frieden’s second variable is based on the literature on collective action (Olson, 1971) rather than the asset specificity approach. However, the underlying logic is closely related, as Frieden also recognizes.

Alt, Carlsen, Heum and Johansen (1999) used factor specificity to focus on lobbying for subsidies in Norway. Their study emphasizes, and demonstrates, that the concept of factor specificity is capable of shedding light on preference formation, on political activism of industrial groups, and on policy outcomes. “(...) firms whose assets are more specific (or less mobile) are indeed more likely to lobby for subsidies, other things equal. (...) the analysis demonstrates that asset specificity can predict political behaviour as well as industrial organisation” (Alt et al. 1999:99). Their key case is the oil industry in Norway, which, as being dependent on natural resources, is a highly specific industry.

In studying trade policy formation in European fish markets, Vik (2000; 2001) builds on the logic of Jeffrey Frieden, and on trade theory, to analyze levels of trade barriers due to the comparative advantage and the factor specificity of the industries involved. These studies use a model where variation in industrial asset specificity and comparative advantage in the sub-categories of the larger fishery and fish farming sector explain preferences of groups of actors, cohesion and organization of industrial groups, activism of industrial organizations and finally, the level of trade barriers on different types of fish products both in Norway and the European Union.

Michael J. Hiscox’s (2002), *International Trade and Political Conflict; Commerce, Coalitions and Mobility*, reveals that specificity is of fundamental importance in explaining the formation of coalitions and industrial organizational structure. “Class coalitions are more likely where inter-industry factor mobility is high, whereas narrow industry-based coalitions are more likely where mobility is low”

(Hiscox, 2002:162). The difference appears in both historic comparisons and in cross-national comparisons.

The latest attempt to take a specificity approach to its full potential is made by Carles Boix (2003). *Democracy and Redistribution* aims to explain democratization, revolutionary outbreaks, and the distributional consequences of regime choice. As we see, his scope is huge. On the other hand, his coffer of analytical tools is parsimonious but effective. Three key explanatory variables are used: domestic distribution of economic assets, the mobility of these assets (mainly capital), and the distribution of political resources among individuals (Boix, 2003:1-4). For our interest, it is the understanding and working of specificity that is important. For Boix, the mobility of assets is a measure of the owner's possibility to withdraw assets (read: capital) from a country in case of problematic developments, like taxation and confiscation. Thus, it is an application of Hirschman's logic from *Exit, Voice and Loyalty* (Hirschman, 1970). Mobile capital cannot be taxed as hard as more specific assets because it will flee if tax pressure becomes too high. In Boix's logic, it is the presence or absence of *this possibility* that forms the preferences and the actions of actors in the private sphere as well as the public sphere. Thus, it is the specificity – the type and strength of ties – not the actual taxation or the actual policies that contributes to the development of regimes be they democracies or dictatorships.

We see that parts of the international political economy literature place immense emphasis on the concept of specificity. The examples show that the concept may be used as a key explanatory variable in the explanation of political outcomes as different as the European taxation of fish products (Vik, 2000), the influence of the Latin American labour movement (Frieden, 1991), lobbying for subsidies in the Norwegian oil industry (Alt et al., 1999), and the development of the Swiss democracy (Boix, 2003). Michael J. Hiscox puts it strongly: “The distributional effects of a vast range of policies thus hinge on levels of factor mobility: exchange-rate policy, controls on foreign investment (both outward and inward), all forms of industrial policy, and industry regulation (subsidies, tax incentives, labor and environmental law), a range of welfare policies (especially training and education policy), and immigration policy” (Hiscox, 2002:162).

### **3.6 Positive lessons and conditional shortcomings**

The most fundamental thing about specificity – this follows from definition rather than resulting from a particular logic – is the reduced flexibility in an asset’s range of applications. The possibility to withdraw, to exit, is limited. This creates a vulnerability to change – whether change is induced by policy or by the market, by history or by accident. It is important to emphasize that specificity is not an entirely negative characteristic. Of course, specificity constitutes a contractual problem. If this contractual vulnerability is solved, however, the solution may give specific assets a kind of protection that unspecific assets tend to lack. In this way, specificity may be the foundation of a positive “economics of contractual backwardness”. Furthermore, specific assets tend to be specialized assets, which in some cases are more productive than generic assets. Thus, it needn’t be costly or problematic to hold specific assets, or to develop assets in the direction of more specificity.

Existing theories of specificity specify the limits of mobility or specificity differently. Transaction cost economics understands assets as the possessions of firms or economic actors used as inputs in economic activity. However, assets are utilized, and gain value, as they are transferred, through a transaction, from one asset holder to another asset holder. If there is only one possible receiver, the asset is specific. In specifying specificity in this way, TCE focuses on inter-firm mobility and specificity.

Trade theorists use specificity in a different manner. They speak of the characteristics of the general factor of production rather than assets: how mobile or specific is capital and labor and resources in general? To which degree can they be moved between sectors within the economy? Thus, the focus is on domestic inter-industry mobility and specificity. In the literature, inter-national mobility is assumed absent.

International political economy applications tend to be faithful to their trade theoretical ancestors. This means that they have explored the political economy consequences of the old classical theorems without expanding their modelling scope so to speak. They stick to the inter-industry approach. There is a growing awareness though, that this is not enough. Consequently Hiscox (2002), Rogowski (1989) and Frieden (1991) all have sections in their concluding chapters pointing to the fact that

increased inter-national mobility may disturb their models. Boix (2003), on the other hand, takes another starting point: he focuses more on the international exit possibility of factors. In his approach the question is exactly to what extent the factor he considers are internationally mobile or not. Whether they can move between firms and/or industrial sectors within the nation is of no interest to him.

Thus, existing asset specificity theories are 'level-specific'. However, the logics are closely related, and it may be fruitful not to limit the approach to inter-firm, inter-industry, or inter-national mobility and corresponding specificities. In the contemporary knowledge economy, a key knowledge asset may be firm-specific, and – at the same time – fully internationally mobile. On the other hand, a knowledge asset may be applicable only within a region, or nation, while it has high degree of inter-firm mobility.

The discussion this far suggests that specificity have profound implications. Briefly, we saw that industrial organization scholars who are interested in transaction cost economics (TCE) have seen asset specificity to illuminate preferences and outcomes at the firm level, on issues like governance, organization, and contracting. In addition, trade theorists have seen factor specificity as a key variable for understanding the preferences and distributional consequences of international trade, mainly on aggregates of economic actors. Finally, international and comparative political economy scholars have used trade theory, industrial organization, and Hirschman's logic of exit and voice, to extend our understanding of the concept into new areas (e.g. preference formation, incentives for political activism and lobbyism, coalition patterns, ability to overcome collective action problems, a wide range of regulative policies, and finally, overall political regimes). Thus, *one* key characteristic of assets involved in production and transactions, namely its specificity, influences configurations of power in a variety of ways. In chapter five an integrated perspective of these influences will be developed.

Even though these approaches reveal the utility of specificity as a key explanatory variable on a range of phenomena linked to power, it is difficult to apply these approaches to the knowledge economy in a fruitful way. This is due, basically, to two conditional shortcomings (conditional because these are shortcomings only in relation to the specific application that I want to make). First, the theories presented are rather different. Specificity is understood and operationalized in a wide range of ways,

although these are related. There is a need to define what specific assets are specific to, and where the boundaries of flexibility lie.

Second, none of the above-mentioned approaches to specificity take advantage of recent developments that recognize knowledge as an important economic force. Even the transaction-cost approach, which has human assets as a part of its theoretical heritage, ignores the characteristics, variations and depths of human knowledge as an economic factor. Basically, knowledge as an input is seen as akin to capital. Before we can begin to think about any reasonable measurements of the specificity of relevant assets, we need to consider the “new economics of knowledge”. In the next chapter we will review recent developments in the literature on knowledge, to build a realistic but not simplistic understanding of the concept of knowledge.

## **Chapter 4.0 Knowledge**

### **4.1 Introduction**

Knowledge is the third key concept. This is also a highly complicated concept. Since knowledge began to attract interest in economic and managerial discourses, its meaning has developed and changed. These changes might be understood in terms of waves of fashion, where one understanding replaces another for the sake of change. As one informant said in an article by Alan McKinlay (2000:114): “Teams are last year’s thing – been there, done that, got the tee-shirt. It’s all about going beyond teams – way beyond teams – it’s all about creating communities. Communities are larger, looser, more inclusive, more transient.” Fortunately, there is more to these developments than fashion. Knowledge is a multifaceted concept and looking at it from new angles reveals new insights. Amin and Cohendet (2004) emphasize that knowledge is a heterogeneous resource, and that it is fundamental to appreciate its different manifestations. Inspired by this view, this chapter aims at two tasks. First, to briefly present different ways of “knowing knowledge.” This presentation can reveal some of the different manifestations of knowledge, of which Amin and Cohendet speak. This is also necessary for our second task, which is to build a coherent understanding of knowledge, without undermining the heterogeneity of the concepts. This understanding should be suitable for the purpose of further speculation on knowledge specificity.

The rest of this chapter consists of two main parts. In the first part, I present a typology of knowledge elements. This typology encapsulates a sufficiently large portion of the categories of the latest decades’ research on knowledge. Thereafter, I develop the typology further, to apply it on knowledge representations. This application is meant to generate an operationalization of knowledge elements that can be evaluated in terms of knowledge specificity. Finally, I summarize the chapter and points to its application in chapter five.

### **4.2 A knowledge typology**

In the introduction I stated that knowledge appears as a vague and somewhat inconsistent concept. In addition, I supported Amin and Cohendet’s (2004) statement



that knowledge is a heterogeneous concept of which it is imperative to appreciate several aspects. The first task then, is to find ways to handle a vague concept, keeping its heterogeneity in mind. One way to do this is by means of a knowledge typology. Therefore; I will organize the discussion on knowledge around such a typology. The typology below is, as citations will show, related to a series of other typologies and distinctions made on knowledge.

The typology organizes knowledge according to two dimensions. The first dimension distinguishes between tacit and explicit knowledge. The origin of the distinction is Michael Polanyi's (1962) *Personal Knowledge*, and his (1967) *The Tacit Dimension*. Polanyi emphasizes the importance of the tacit dimension in every human's knowledge: we know more than we know that we know. Tacit knowledge is knowledge based on experience and practice (e.g., the ability to drive a bicycle, or to drive in a nail, etc.). However, it is important to understand that not only basic physical skills are tacit. Also the ability to write a scientific article, and to fund research, have tacit unarticulated elements. It is also important to emphasize that Polanyi didn't see tacit and explicit knowledge as separate knowledge forms, but as different dimensions in any knowledge. There are both tacit and explicit elements of knowledge. The current interest in tacit knowledge was sparked by Nonaka and Takeuchi's (1995) *The Knowledge Creating Company*. According to them too, tacit and codified explicit knowledge are complements rather than substitutes, and creativity is fostered by their interplay.

The second dimension of the typology distinguishes between individual and collective knowledge. The traditional and rather persistent view is that knowledge is a characteristic of individuals. For example, a recent OECD study defines human capital as being, by definition, embodied in individuals. The OECD seems to hold a somewhat extreme understanding, as it states that that "strictly speaking, its ownership cannot be transferred or sold except in conditions of human slavery" (OECD 2001:37, note 2). This OECD study includes in its definition an intuitively appealing typology developed by Lundvall and Johnson (1994). This typology separates between *know-what* (referring to factual knowledge); *know-why* (referring to causal knowledge); *know-how* (referring to skills); and *know-who* (referring to a kind of social knowledge). This conceptualization is fruitful in that it spells out different facets of knowledge, but it is

problematic in that it fails to grasp the collective nature of knowledge since, by definition, all the “knowing” is individual.<sup>27</sup>

For many, the idea of collective or organizational knowledge is a bit contra-intuitive. In *Organizational Learning II*, Argyris and Schön (1996) write about the reaction on their 1978 book on the same subject: “(...) Organizational learning seemed to smell of some quasi-mystical Hegelian personification of the collectivity. Surely, they felt that it was *individuals* who may be said to learn, just as to think, reason, or hold opinions. To them, it seemed paradoxical, if not perverse, to attribute learning to organizations” (Argyris and Schön, 1996:4, my italics). Yet, even a brief reflection reveals that there are large amounts of collective knowledge both in the broader society (e.g. language, culture, common references etc.) and in particular organizations (knowledge of “how things are done here”, routines, patterns of action etc.). It is important to emphasize that collective knowledge is qualitatively different from individual knowledge. It is not just something that many individuals know. Norms, cultural features, languages, scientific principles and practices are all examples of things of which there exists and evolves collective knowledge. All of these phenomena are closely tied to collectives, cultures or organizations. Studies of collective or organizational knowledge and learning in an organizational setting have focused on routines as the most important carriers of collective knowledge (Amin and Cohendet, 2004; March and Simon, 1958; and Nelson and Winter, 1982).

Organizing knowledge along these two dimensions produces four ideal types of knowledge, as seen in Table 4.1. A similar categorization is also applied by Alice Lam (1998) in her study on organizational learning and innovation. Partially overlapping tables are also presented by Spender (1997), Blackler (2002), and Amin and Cohendet (2004).

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<sup>27</sup> It is for this reason that the OECD ‘translation’ of Lundvall and Johnson’s definitions becomes a bit problematic. Knowledge is, as power also sometimes is, treated as a capital equivalent: knowledge is a individualized capability ready for capitalization.

**Table 4.1 Basic knowledge forms**

<b>Knowledge is</b>	<b>Individual</b>	<b>Collective</b>
<b>Explicit</b>	Embrained	Encoded
<b>Tacit</b>	Embodied	Embedded

Before we discuss the table categories, a few reservations are in order. It should be emphasized that the categories are neither final, exhaustive nor mutually exclusive. There are important knowledge dimensions that are not explicitly captured in this matrix. Perhaps most important of these is the distinction between the view of knowledge as resource or possession and the view of knowledge as activity (Wenger, 1998; Blackler, 2002; and Amin and Cohendet, 2004). Implicitly, however, it is possible to conceptualize knowledge as activity from this table. Primarily, an activity-based view is stressing the two tacit forms.

Another reservation should be made because a scheme like this creates an illusion of order (an order that can only exist at a theoretical level). Normally, knowledge is not in one box or another. Actually, a great deal of fruitful theorizing on knowledge has been born out of open-mindedness towards different knowledge dimensions. One of Argyris and Schön's (1996) points is that progress results from an intermingling between individual and collective learning.

Nonaka and Takeuchi's (1995) main point argues that creativity is born from an exchange between tacit and explicit knowledge. Amin and Cohendet (2004) argue that progress arises by way of an exchange between the view of knowledge as a possession and the view that knowledge is an activity.

In addition, it must be pointed out that to choose *one* knowledge position as important or interesting (within or outside the presented matrix) is consequential for two reasons. First, analyses of the degree of specificity and mobility of knowledge are clearly affected by how we define and operationalize knowledge. If we only see knowledge as something that can be codified in descriptions and patented (Embrained), specificity and mobility relies heavily on the possibility to transfer those descriptions from one place to another. In this case, an analysis of knowledge mobility will finish before it is started. If we see knowledge as something that is locked into the skills of the

individual and sold in a sub-category of the labor market, specificity will rely critically on the mobility of the highly skilled (see e.g. OECD 2002). This too would limit the possibility of revealing new insights. Alternatively, if we see knowledge only as practices embedded in organizational routines, knowledge become almost impossible to transfer, and is per definition firm-specific. In short, the definition and the operationalization of knowledge affects the possible results of a study. Finally, the way that knowledge is understood in firms and organizations affects the way that they manage knowledge. In this way, their understanding of knowledge influences the actual mobility of that knowledge.

With these reservations, we may proceed to a brief explication of the four ideal types.

#### **4.2.1 Embrained knowledge**

Archetypical embrained knowledge is formal explicit knowledge and captures the cognitive skills of individuals. Education, and diligent research, is the normal way of acquiring a high level of embrained knowledge. This captures the traditional view of knowledge as something that belongs in the heads of the individual worker. This ‘something’ is “belief which is in agreement with the facts” to use the words of Bertrand Russell (1926), cited at the very beginning of chapter one. In European history, this approach has its roots in the period of enlightenment, with theorists like Bacon, Locke, Hume and others. Despite the differences between them, they shared a belief in the project of knowledge accumulation through diligent registration, classification and scientific methods. Contemporary positivist-minded scientists differ from their ancestors in methodological sophistication and style, as well as epistemological interests, but their ontological mode is closely related. Reality is seen as independent of the social and theoretical world, at least in every practical matter. The intermingling between the world of facts and the world of the scientists is controllable.

Contemporary economics represent a stronghold of this position. When economists rediscovered that physical factors of production were unable to explain a

large proportion of economic growth, either at the firm level or the national level,<sup>28</sup> there arose a new interest in technological change and intangible assets like knowledge and human capital.

Several studies use patents as a well-suited indicator of the state of the art when it comes to knowledge and technology. Thus, using patent measures on the one hand and economic performance indicators on the other seems to be a fruitful path for further research. Patents may be seen as knowledge indicators, and patent citations may be seen as indicators of knowledge spillovers (e.g. Maurseth and Verspagen 2002). By mapping other knowledge indicators like for instance education level and the mobility of the highly skilled (OECD, 2002), the economic role of embodied knowledge may be properly studied and understood. It is important to keep in mind though, that this is just a part of the picture.

#### **4.2.2 Embodied knowledge**

Tacit and individual, or personal, knowledge is closely associated the work of the chemist and philosopher Michael Polanyi (1962; 1967).<sup>29</sup> Embodied knowledge is similar to what Lundvall and Johnson (1994) call know-how. This is knowledge that cannot be, or hasn't been, explicitly articulated. Examples of this kind of knowledge are often gathered from sports, like the knowledge of a tennis player on how to make a good serve. Demonstration, training and repetition are the ways to acquire and maintain embodied knowledge. At the individual level, embodied knowledge is the "knowledge that allows the individual to understand and develop explicit knowledge" (Amin and Cohendet, 2004:35). In an industrial context, and as objects of study, experts in work are the typical exponents of embodied knowledge.

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<sup>28</sup> I write rediscovered, because early economic theorists like Ricardo and Smith were very much aware of the role of skills and knowledge. As early as 1613 Antonia Serra described the leading economic role of Venice with reference to their conscious policies of encouraging and protecting human skills (Reinert 1996).

<sup>29</sup> Michael Polanyi is the brother of the political economist Karl Polanyi. It is an amusing conjuncture that the philosopher Michael Polanyi developed the idea of embodied knowledge while the political economy pioneer Karl Polanyi developed the idea of embedded capitalism.

### **4.2.3 Encoded knowledge**

Encoded knowledge is explicit and codified, but is, at the same time, of a collective nature. Examples of this form of knowledge are mathematics, physical laws, and knowledge on mechanical and predetermined connections within chemistry, electronics, computing etc. This knowledge is the core domain of science – as it presents itself. However, science – as it is practiced – involves a rather large portion of both embodied and embedded knowledge, even though the output is largely encoded, and education is aimed at embraining (Latour 1988B). Encoded knowledge is the backbone knowledge in many high-tech industries in the knowledge economy. Despite this, it is somewhat neglected as an object of study.

### **4.2.4 Embedded knowledge**

Embedded knowledge, which is both tacit and collective, may be routines, norms, cultural codes, and guiding definitions. The recent scientific and managerial interest in communities of practices focuses mainly on embedded knowledge (e.g. Wenger, 1998), as does some of the work focusing on corporate culture (e.g. Alvesson, 2002; and Kunda, 1992). The difficulty of a meaningful separation between knowledge and practice, and between knowledge and its context, are two of the main points among those advocating a view of knowledge that is anchored in this corner.

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At this point it is important to emphasize that knowledge cannot be acted upon, studied, and analyzed while it is hanging in thin air. Maybe knowledge is intangible, but it is always captured in some kind of knowledge representation. This doesn't mean that all relevant knowledge is embedded knowledge. I hold that all four types of knowledge exist, and are important, and that they work through different types of knowledge representations. Furthermore, and what is of relevance to the task of investigating knowledge specificities and mobility, these representations matter – and differ – in terms of specificity.

## **4.3 Knowledge representations and specificity**

Analytically, building upon the above knowledge typology, we can divide knowledge

representations into two types: material knowledge representations and human knowledge representations. Codified or explicit knowledge, that is knowledge that is made explicit through some kind of symbolic language, is, or can be, represented in material (or electronic) form. The process of codification is a process where knowledge is released from the custody of humans. On the other hand, tacit knowledge forms, be it individual or collective, are dependent on human representations. This is knowledge that cannot exist without human individuals or communities. The categorization is represented in Table 4.2. We will briefly consider the four types of knowledge representations.

**Table 4.2 Knowledge forms and representations**

<b>Knowledge is</b>	<b>Individual</b>	<b>Collective</b>
<b>Representations are</b>	<b>Narrow</b>	<b>Wide</b>
<b>Explicit –</b>	Embrained	Encoded
<b>Material</b>	Texts	Technologies
<b>Tacit –</b>	Embodied	Embedded
<b>Human</b>	Experts	Communities

### 4.3.1 Texts – embrained knowledge representations

Embrained knowledge (individual and codified knowledge) is or can be articulated in some kind of code or symbolic language (e.g. a codebook, a recipe, a drawing, a manual, a report, a book, or an equation). Ironically, this kind of embrained knowledge is represented outside the human brain. Actually, it is only through its materialized representations that it may be evaluated, justified, transmitted, and utilized in economic terms. Individual and codified knowledge representations may be labeled “text” because it can always, in principle, be represented materially or electronically with the use of a symbolic language. When the knowledge is individual, the representation can be said to be narrow. The representation is narrow in the sense that it doesn’t require a wide range of actors and processes for it to be created and upheld.

This is the kind of knowledge that Bruno Latour calls “immutable mobile” (Latour, 1988B; Law and Hetherington, 2000). His main example of this is a map. The map is fixed and immutable in that it is the same whatever happens to the terrain, whoever possesses it, and wherever it goes. But the map is mobile in that it may be transferred and moved both physically and electronically through time and space. However, Latour’s concept is probably also meant to capture our next category: Technologies.

#### **4.3.2 Technologies – encoded knowledge representations**

Representations of encoded knowledge are wider, or more complex, products of science and industry. I choose to label this representation “technology.” Through a process of codification this knowledge is removed both from the individual and from the environment that codified it. It is not anymore represented solely by communities or by individuals: it has a material representation. However, technology is more, and ‘wider’, than a representation of the individual knowledge. It is not ‘only’ a description; indeed, it is not reducible to a recipe without changing its character. It is important to note that these technologies don’t need to be represented in the shape of a machine; they may also be explicit procedures and methods.

As we move from the representations of explicit knowledge with individual and particular characteristics, to representations of collective explicit knowledges, the codified physical, electronic or chemical laws and regularities are manifested and combined in the form of a defined or delimited technology. Technologies can be seen to be more collective than texts as its production – partly a codification process, and partly a process of collectivization – typically involves the joint and diverse efforts of different actors and because its application is more complex. I am aware that the border between the two may be difficult to maintain. The rationale behind the distinction is in the logic of representation more than in the difference in attributes. By necessity, collective representations involve joint efforts and achievements. Its source is to be found in many types of knowledge instead of in the codification of a particular knowledge.

#### **4.3.3 Experts – embodied knowledge representations**

Tacit knowledge, as an asset, cannot be isolated from human holders of knowledge.



Since this type of knowledge is not articulated and codified it can only be utilized by the holders of that knowledge. Human actors may use it to produce, procure, and develop material things outside themselves, but only so through the actual activities the knowledge holders themselves carry out. This is the role of the expert. The recent managerial and academic insisting on knowledge as activity is in accordance with this knowledge understanding and representation (Amin and Cohendet, 2004:62-86). To some degree the same can be said about communities as knowledge representations.

#### **4.3.4 Communities – embedded knowledge representations**

Representations of collective tacit knowledge are typically epistemic communities, or communities of practice. This is a knowledge representation of unarticulated tacit and collective knowledges that is embedded in cultural, interpersonal, and organizational practices. It is human, but a community is more than a collection of humans. Clearly, embedded knowledge is both complex and intangible. Normally it is also inseparable from its organizational context. Thus, it is the communities or organizations housing the knowledges that represent them.

#### **4.4 Concluding on the specificity of knowledge representations**

Clearly, texts, experts, technologies, and communities of practice have different degrees of specificity, flexibility and mobility. However, as we will return to in the next chapter, institutional, political, economic, strategic and normative contexts can be designed to fence and steer the mobility or flexibility of such assets. Even so, as a point of departure, it may be useful to explicate possible specificities of the presented knowledge representations: First, “texts” are, by default, the most transferable and the least geographically specific of the knowledge representations. It is this kind of knowledge that, in terms of mobility, takes full advantage of the development of information and communication technologies (ICT).

Second, complex physical knowledge representations – technologies – are less mobile than texts. In order for these to be geographically mobile, another infrastructure is required. However, as transportation technologies have developed over the years, this mobility has grown considerably. Some technologies may travel through ICT networks, others need planes, railroad, roads or shipping facilities. However, generally speaking, it

is more costly and takes more effort to move complex things than simple things, but things are mobile.

Third, to be moved, human individual knowledge representations are dependent on much of the same infrastructure as technologies are. Yet, the cultural, political, and social boundaries between humans and their places of living exceed the human's role as a knowledge representation. Therefore, we can assume that, in general, humans are more geographically specific than technology.

Fourth, and consequently, a community is more specific than individual human beings. In most cases, the combination of moving humans, and substantial parts of their contexts, is more costly than moving individual humans. Thereby we see communities of practice as highly specific assets.

Once again, specificity of knowledge is not altogether a natural phenomenon. It depends on e.g. technology, politics and economy, which are all changing, as discussed in chapter 1.2 (Strange, 1996). However, as a starting point, we may imagine some general variations. Table 4.3 explicates the fundamental, or pre-political, specificities of knowledge representations. I use the term pre-political specificities here to emphasize that the specificity of knowledge representations may be altered by technological as well as strategic and political developments. Strategic decisions that affect the mobility of knowledge will be addressed in chapter six, while institutional developments that alter asset specificity will be considered in more detail in chapter eight.

**Table 4.3 (Pre-political) Specificity of knowledge representations**

<b>Knowledge is</b>	<b>Individual</b>	<b>Collective</b>
<b>Representations are</b>	<b>Narrow</b>	<b>Wide</b>
<b>Explicit –</b> <b>Material</b>	Low	Medium to low
<b>Tacit –</b> <b>Human</b>	Medium to high	High

In this chapter we have sorted out four different forms of knowledge, along two dimensions: the tacit-explicit dimension and the individual-collective dimension.

Furthermore, we attached representational forms to each type of knowledge. These four representations, we concluded, have different degrees of, or potentials for, asset specificity.

I have argued that the specificity of knowledge is consequential. Furthermore, the specificity of knowledge representations is susceptible to manipulation. The consequences and the workings of knowledge specificity for configurations of power are the themes addressed in the next chapter.

## **Chapter 5.0 Theoretical Expectations and Connections**

### **5.1 Introduction to theory**

In the previous chapters I have surveyed literatures on three rather elusive concepts: power, specificity and knowledge. I have argued for the need to apply these concepts in a way that will allow us to build a framework suitable for analyzing configurations of power in the knowledge economy. My argument, in its simplest form, is that variations in the specificity of knowledge influence configurations of power in the emerging knowledge-intensive society. The time has come to clarify how this is expected to work.

This chapter describes how and why knowledge specificity is expected to correlate with configurations of power. The aim of this chapter thus, is to build a theoretical approach for understanding the relationship between knowledge specificity and configurations of power. The last three chapters have been presentations and adjustments of the building blocks necessary for building the theoretical framework. Before we proceed, it may be appropriate to consider some requirements for theory building.

Theory is speculation. King, Keohane and Verba (1994:19) put it this way: “A social science theory is a reasoned and precise speculation about the answer to a research question, including a statement about why the proposed answer is correct.” Even though a theory is a set of speculations we can, and must, require several qualities from such speculation (Chalmers, 1982; King Keohane and Verba, 1994; Moravcsik, 1997; and Waltz, 1979). Although there are different approaches to theory building, some elements are rather common. First, a theory should be consistent with evidence already known. It should be reasonable. This may partly be secured through the anchoring of speculations in prior research and evidence. This means that in theory building, one should put emphasis on standing on the shoulders of others. Second, a theory should be fruitful; it should have as many observable implications as possible. This is a sound requirement both because it implies that there will be many possibilities for falsification, and because it is good research economics. It is effective. Finally, the ultimate claim we make of a theory is that it leads us towards an increased understanding of real events or situations. A theory should be illuminating.

Some also hold that a theory should be as parsimonious as possible (e.g. Waltz 1979). King Keohane and Verba (1994) disagree, when they define parsimonious theories as theories that “have higher probabilities”, and state, from that, that the norm of parsimony implies logically an assumption of the world as a simple or parsimonious object of study. That is not, as I see it, a reasonable critique: the room for parsimony and simplicity depends very much on the level of abstraction and generalization, because the likelihood of high probabilities increases with the level of abstraction. However, the present state of knowledge on the issues under investigation in this study doesn’t allow for a high and predefined level of abstraction. Consequently, under these conditions, the norm of parsimony shouldn’t be highlighted.

Thus, I will highlight three requirements to the development of theoretical approaches: empirical reasonability, fruitfulness, and potential for illumination. The first is secured by anchoring theoretical speculations in previous research; the second is secured through an explicit elaboration of expectations and consequences of theoretical speculation; the third is more of a subjective criterion for evaluation, and a guiding vision, than a identifiable bearing on how to develop theories.

Based on these three criteria, the rest of the chapter is devoted to the development of a theoretical framework suitable for investigating the relationships between knowledge specificities and configurations of power. The development proceeds in four steps. I begin by elaborating on the elements of theory, then, on the particular links between the elements, and thereafter on how these frameworks for analysis may be utilized in empirical investigations. Finally, I will briefly discuss the design and measurement of the empirical chapters.

## **5.2 Elements of theory**

### **5.2.1 Variables and values**

In this section I will summarize the understandings of the key “variables” of this thesis: power and knowledge. Power and knowledge are variables because they are concepts that may take different values, and because I have argued and hypothesised that the values of one influences the values of the other.

As stated in chapter two, I see power as the outcome of complex societal processes. I see power as something actors are struggling and strategizing over, not something they have that explains what they gain. Power is so to say the key dependent variable. As emphasized in chapter two, this is an analytical distinction, and an analytical choice. This also means that there are sides of the term power, and sides of the discourses on power that not will be demonstrated through this study. Furthermore, I argued that power must be seen as a multifaceted concept. This means that it is a composite variable that hardly can be grasped as a whole, but needs to be contextualized and operationalized according to its setting. I introduced the concept of “configurations of power”. This concept is meant to cover that power may be seen as a kind of regulatory frame, a relatively stable configuration that is distributive in that it make some actions possible, plausible and cheap and others difficult, unlikely or expensive. This implies that configurations of power also have regulatory effects. This opens for circularity. Whether this becomes analytically problematic depends on the contextualized operationalizations. It is therefore an important task in the empirical chapters to handle the danger of circularity.

Configurations of power may vary along several dimensions. Due to the composite nature of the term operationalization must be adapted to the actual contexts. However, I emphasize variation along a dimension we may call flat or heterarchic configurations on the one hand, and rigid or hierarchic configurations on the other hand.

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In chapters three and four I surveyed the literatures on asset specificity and on knowledge as an economic asset. In these literatures assets or factors, and their specificity, are key explanatory variables. In this thesis knowledge is the key asset. This key variable is also a composite one. Knowledge has different sides and it takes different forms. Furthermore a realistic investigation of economic or social utilizations of knowledge must address this variety through representations of knowledge. As discussed in chapter four, knowledge representations may be human or material, individual or collective. Knowledge as a concept in itself is so elusive that it is hard to grasp.

Knowledge representations though take different values along a continuum between the mobile and the specific. In our case, this means that the specificity of knowledge must be analyzed and “measured” through the specificity of the knowledge representations.

### **5.2.2 Actors and things**

Configurations of power are highly noticeable patterns, made up by the activities, strategies, and workings, of human actors, technologies and material devices. Knowledges are represented by humans, communities, tangible and visible devices and codes, and specificities are actual hard-to-cross boundaries, or experienced societal ties. In short, elusive concepts, and the economy of intangibles, do not need to indicate the absence of actors, agents, and physical things.

The basic actors in this study are individuals and aggregations thereof within an economic and organizational context. I will speak of individuals, firms, organizations, nations, and international regimes and institutions. However, the core of all organizations is actual individuals and devices, and for the time being it is not appropriate to limit the study to a single level of analysis – considering that the logic of asset specificity generates expectations at a number of different levels. Expanding the study to several analytical levels will reveal more variation. This, in turn, will contribute to the possibility to reflect on range of application. Furthermore, the knowledge economy is a widespread international phenomenon, but still localized, and it is likely that analysis on only one analytical level will ignore important findings that will be useful in the building of an illustrating montage effect.

Neither is it smart to limit ourselves to aggregates of humans as the only potential actor. Within actor-network-theory (ANT) communities, a point has been made of speaking of an actant – symbolizing both the human actors and the non human actors – as the potential actor. Even though the argument was controversial when new (Latour, 1988B), the basis for the claim is, as I see it, both commonsensical and sound: We can not tell a priori, whether the most important signifier in a process will be a human being or a material artefact. Sometimes the working of a material device decides an outcome to a larger degree than a human being. This should be an empirical rather

than a theoretical or programmatic issue. By pointing it out here, I am simply noting the importance of not ignoring the material or the social.

### **5.3 From specific knowledges to configurations of power**

The expected mechanisms, or the logic, connecting knowledge specificity with configurations of power may be seen to go through several steps. Some of these are presented in chapter three, but they are elaborated more explicitly in this section. Thus, what I will do here is to specify how (in terms of process) knowledge specificity is expected to influence the degree of hierarchy or rigidity. This development can be sorted in three steps (or three groups of predictions). The first step involves preferential or intentional phenomena. Asset specificity is expected to influence on the preferences, interests, or intentions of actors, both in terms of direction and intensity. Thus, the intensity of preferences and the groupings and alliance-building between actors with similar or congruent preferences is the theme in this category of predictions.

The second step concerns the activities that follow from certain preferences and certain clusters of preferences. Preferences do not necessarily lead to activity. Specificity is sometimes seen to involve an increased likelihood of joint action and the overcoming of collective action problems.

Finally, the third step involves the influence from specificity on organizational forms, or what I have chosen to highlight as configurations of power. Here we explicate the predictions on the relationship between knowledge specificity and organizational forms. Organizational forms, be it in firms, bureaucracies, states or institutions, are the ultimate expressions of a configuration of power.

#### **5.3.1 On preferences, alliances and cleavages**

The specificity literatures are clear and united about the effect of specificity on preferences, and thereby also on issues regarding alliances and cleavages (Alt et al., 1999; Boix, 2003; Hiscox, 2002; Williamson, 1996). Because of the loss connected to alternative uses, or the unease of transferring an asset to another application, users of specific assets tend to have stronger preferences connected to the well-doing of “their” assets. In our case, this indicates that we may expect that (1) *when knowledge*



*representations, (texts, technologies, experts, or communities) are specific (inflexible or immobile), preferences among users of those knowledge representations are stronger than when the representations are mobile.* This effect works on the preference formation of individual asset holders as well as groups of asset holders. It follows from the same expectation that “indifference” increases with the mobility of a knowledge representation. It is nothing more mysterious about this effect than the claim that someone whose potential loss/gain is large tends to care more than someone whose potential loss/gain is insignificant.<sup>30</sup>

In addition, high asset specificity tends to imply *cohesive* preferences among those depending on that particular asset (Frieden, 1991; Vik 2000). (2) *Activities within a firm or an organization based on knowledge representations with high specificity tend to be more cohesive than in cases where the representations are flexible or mobile.* Transaction cost economics suggest, based on this logic, that specificity leads to vertical integration and increased degree of alliances between involved actors (Perry, 1989). Thus, (3) *due to cohesive preference formation a high degree of specificity covaries with a high degree of alliance building, vertical integration and mergers among actors utilizing the specific assets.* It follows from this that societal cleavages follow industrial, not class lines, if there is high asset specificity (e.g. Frieden, 1991; Hiscox, 2002).

In a theory where we want to say something about what leads to changes in configurations of power, it is clear that the intensity and cohesion of preferences and the structure of alliances and cleavages characterizing a field of study is of core interest in understanding outcomes on configurations of power. Previous research on asset- and factor specificity are clear on how the associations between specificity and preference formation works. However, there is a need to proceed through the eventual activism that follows from preferences.

### **5.3.2 On activism**

The intensity of preferences toward certain kinds of solutions and activities may in itself influence the likelihood of observing those solutions and activities. However, individual

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<sup>30</sup> As even noted by Jon Elster (2000) there are paradoxical limits to such rationality assumptions. Rationality is not always a good guide to behavior. However as a general expectation it is not unreasonable to assume that people, in economic matters, tend to support what they gain from.

incentives to act are not enough to explain that individual actors do act, that they come together and coordinate their activities. Both political and economic activism involves costs, and there is a need to overcome collective action problems. However, the logic of knowledge specificity suggests a number of potential solutions to these problems.

First, as already mentioned, if more factors are specific to a sector, it will be marked by higher cohesion in preferences, and the more cohesion among actors, the more likely is it that they will “surmount the obstacles to collective action” (Rogowski, 1989:5). Frieden (1991) points to two complementary ways to deal with the prediction of how socio-economic actors combine in the political arena. The first is similar to Rogowski’s point, that equal preferences in itself increase the likelihood of coordination. The second is the lessons from the collective action literature (Olson, 1971). Here, variables like concentration, (small) size, and excludability predict joint action. Frieden (1991) argues that asset (including factor-) specificity, in fact covers several of the variables predicting the overcoming of collective action problems. Also empirically there is strong support within the political economy literature for claiming that (4) *high asset specificity increases the likelihood of (political and strategic) activism* (Alt et al., 1999; Grier, Munger and Roberts, 1994; Hiscox, 2002:163 note 2). If the assets are knowledge, we should expect the same outcome. However, there is no need, and no reason, to expect that this activism is limited to political activism. The trade-off between political and economic action depends partly on the capacities of the collective (firm, organization, alliance, etc.), and the nature of the issue at stake. The case where a group of asset holders launches political activism (Alt et al., 1999) is more visible than the strategies taken in closed boardrooms, but its no reason to conclude on which one is more frequent. Besides, the distinction between the political and the economic is very blurred in matters of strategy.

First, preferences and alliances, and second, political and strategic activism are phenomena that clearly influence on the constructions and reconstructions of configurations of power, as defined above.

### **5.3.3 On organization, rigidity and regimes**

Transaction cost economics emphasise strongly that basic organizational forms are dependent on, among a few other variables, asset specificity. According to Williamson

(1985), high specificity points to a need for safeguarding contractual relations, while high mobility indicates that competition in the market place is sufficient. The degree of rationality and trust are the decisive factors for explaining whether the safeguarding arrangements will be based on governance, planning or promise. Based on information on asset specificity alone, we may expect that a high degree of specificity covaries with some kind of strict organizational control, due to the need of safeguarding transactions. (5) *Asset specificity will covary with hierarchical or bureaucratic forms of control, while asset mobility covaries with more flat organizational forms.* This can be expected to be moderated though, by trust and/or potential for rational decisions.

These expectations are in accordance with a set of statements developed by Menard (1997:38). Table 5.1 illustrates expectations drawn from the variation in frequency of transactions, indicating level of routinification, and asset specificity. We see that high human asset specificity implies hierarchy, while low human asset specificity implies market-like or autonomous-group kinds of organization.

**Table 5.1 Specificity and organizational forms**

		Human asset specificity	
		Low	High
Frequency of transactions - routinification	Low	Quasi market	Simple Hierarchy
	High	Autonomous Groups	Complex Hierarchy

Source: Menard (1997:38)

As stated, owners and users of specific recourses tend to organize in order to safeguard their activities. Furthermore, they tend to be better than others in their organizational efforts. In cases where specific assets generate and distribute large surplus to the owners, both incentives to do so, and capacity to do so increase. Where specific assets create a larger share of the income to an institution, the organized interests of the asset holders is likely to be strongest. The main task for the asset holders will be to conserve a distributional frame that secures the asset holders a preferable share. At the nation state level, this approach leads to a specificity-based explanation for authoritarian regimes in

petroleum states,<sup>31</sup> and the resistance to democratization by the landed aristocracy (Moore, 1966). These cases are examples based on the specific nature of natural resources, but the logic is not restricted to these. Boix's (2003) main argument is that when financial capital becomes increasingly internationally mobile, and consequently can escape taxation and expropriation (that means that capital has increased exit possibilities) pressures to, and conflict over, confiscation and redistribution decline and democracy emerges. "Naturally, as the ease with which capitalists can escape taxation goes up, their support for an authoritarian solution declines" (Boix 2003:13).<sup>32</sup> This statement places him on the liberal side when it comes to the interplay between globalization and democracy. It is an empirical question whether the same logic would apply to cases where we may observe a strong dependence on e.g. specific versus mobile knowledge resources. For the moment though, we may hypothesise that (6) *when a larger part of a national economy is based on specific (mobile) assets the likelihood of an authoritarian, or rigid regime increases (decreases)*. The opposite possibility – that mobility lead to less rigid and more pluralistic regimes follow from the same.<sup>33</sup>

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In this section we have gone through a number of explicit predictions and expectation that follow a relatively clear causal direction: Specificity influences interests and preferences, organizational cohesion, alliance building and integration, political and strategic activism, and finally organizational forms – configurations of power. These expectations may, and will be, put under inquiry. However, the world is a somewhat messy place, and there is reason to believe that causality take other directions as well. Knowledge – and knowledge's mobility – may be managed.

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<sup>31</sup> I will return to this discussion in chapter seven.

<sup>32</sup> This is an argument that basically states that increased globalization promotes democracy. This is the liberal argument (see also de Soysa, 2003). The critical stance is that globalization, in the form of mobile capital, decreases the possibilities for democratic influence on political processes (e.g. Østerud, 1999: 160). We got a "race to the bottom"

<sup>33</sup> Expectation (6) also seems to imply a liberal stance. However, I will emphasize that my argument here is on the relationship between specificity of assets and regime types only, and doesn't involve a programmatic stand on the relationship between globalization and the limits to democracy.

## 5.4 On knowledge mobility management

In the previous sections I speculated on how preferences, activism, and organizational forms were influenced by varying degrees of specificity. We must also consider how changes of specificity may not necessarily come from exogenous “mega trends” and “natural” developments. In his concluding chapter, Hiscox (2000:164) writes: “(...) since factor mobility clearly can be affected by regulations, we must question the degree to which it is endogenous to politics. Very little systematic research has been done on the political origins of restrictions on factor mobility and (...) mobility enhancing policies.” We may add that this lack of systematic research also applies for policies and strategies in what we see as the business domain.

Because of the regulatory and distributional quality of configurations of power, actors can be expected to have an interest in its formulation and reformulation. Furthermore, because asset specificity is so consequential for configurations of power, manipulating specificities affects those interests and those outcomes. Therefore attempts to change knowledge specificities are likely to take place frequently. More than identifying explicit expectations about when such attempts take place, it is interesting to identify fields where we can expect to observe such changes.

These attempts manifest themselves through what we may understand as different discourses. The term discourse indicates a certain field of study and practice, including both common beliefs and controversies within the field (Phillips and Hardy, 2002). As such, it signifies possible analytical focal points rather than levels that relate to each other in a defined way (as e.g. micro, meso and macro levels can do). We may identify several discourses to investigate. First, at the local level, knowledge specificity is managed upon, through the *Knowledge Management* discourse. Because knowledge is anticipated to be of core strategic and economic significance, it is no surprise that knowledge is a concern for business management. Knowledge management may be defined as techniques or ways of planning for controlled creation and distribution of knowledge in organizations. The means, or relevant tools, for knowledge management may be technological (Groth, 1999; Walsham, 2001), cultural (Alvesson 2002; Kunda 1992) or political (McKinlay, 2000; Prichard et al., 2000).

The knowledge management discourse has grown from three managerial challenges. The first challenge is to distribute knowledge that exists in the organization to where it is needed, when it is needed. On the one hand, this is a question of sharing knowledge; on the other hand it is a question of avoiding the leakage of strategic knowledge. Securing the first while avoiding the second is the paradoxical challenge. The other, and more fundamental, challenge is to ensure the creation and acquirement of knowledge that is needed to succeed in a competitive business environment. Finally, the challenge to store relevant knowledge, and bring it back when needed, is of utmost importance. Due to the size and complexity of many knowledge intensive industries, there is a real danger of wasting energy on reinvention. Recalling the multifaceted nature of knowledge, it is clear that the challenges are substantial: Invention and innovation, sharing, and policing, storing and reusing, are all issues that most basically may be seen as matters of administrating knowledge specificity.

On a national or regional level, a related discourse is what we may call the innovation and knowledge development discourse. This is a discourse that more clearly takes place in political and governmental spheres. Since common political wisdom holds that knowledge is a core resource in the development and the well being of nations, it is no surprise that knowledge has entered political rhetoric at all levels, and in all regions (e.g. European Commission, 2003; Drucker, 1993; OECD, 2002; UNDP, 2003). Thus, policy towards industries at municipal, national, and regional levels is increasingly focused on attracting, developing, utilizing, sharing and policing core knowledges. See chapter 1.2.1 for a description of this growing awareness. As a result of this political attention, the degree of knowledge mobility is not seen as an exogenous variable, it is, and is recognized as, a political entity.

Internationally, knowledge specificity is managed and changed through a comprehensive set of discourse on international regimes. The discourses on the international regime for intellectual property rights involves both the systems for protecting property rights – the World Intellectual Property Organization (WIPO) – and the regimes to trade intellectual property – the World Trade Organization (WTO). Furthermore, although less obvious, is the discourses on standardization – centred around the International Organization of Standardization (ISO) – fundamentally altering the international mobility of knowledge representations. Thus, we may say that

international mobility of knowledge is managed through an institutional cluster. This cluster of international regimes, impinges on the specificity of knowledge representations in a multitude of ways, and is part of a wide range of other discourses. Trade, IPRs, and standardization constitute their own discourses and fields of study.<sup>34</sup> With a few noticeable exceptions (e.g. May 2000) few studies evaluate explicitly how discourses meet.<sup>35</sup> Even so, to some extent, the mobility of knowledge representations is regulated by these configurations of power. I do not see it as appropriate to develop hypotheses on *how* the managing of asset specificity is done in different empirical context, at this stage. The state of knowledge is too uncertain. However, opening for these influences may illuminate the relationship between knowledge mobility and configurations of power. Therefore, we may add one final theoretical expectation: I think we will see that (7) *the degree of knowledge mobility may be changed through strategic and/or political decisions*. This last assumption is complicating the analytical landscape of this thesis considerably. It is an assumption that is unusual in the literatures addressing asset and factor specificity, and it opens for another causal direction between specificity and power.

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In this chapter I have developed and presented expectations that may be deduced from the literatures presented in previous chapters. They are summarized in table 5.2, below. The expectations can be evaluated empirically one by one. However, logically the first six expectations make up a causal chain. The last one is, as discussed above, in a different category. Still, they all are parts of a common theoretical framework.

As pointed out in chapter 5.1, a theory is, or contains, reasoned speculations on regularities, and on why certain regularities occur. The presentation of a summarized

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<sup>34</sup> The discourse on trade is represented by e.g. Conybeare, 1987; Grossman and Helpman, 1994; Hillman, 1989; Milner 1988; Reinert, 1996; Rodrik 1995; Rogowski 1989; Ruggie, 1982; and Vik, 2000. The discourse on IPRs are represented by e.g. Drahos and Mayne, 2002; Macdonald, 2002; May, 2000; Perelman, 2002; while standardization is represented by e.g. Crosby, 1997; Bowker and Star, 1999; Brunsson and Jacobsson 2000; and Nowothny, Scott and Gibbons, 2001

<sup>35</sup> As far as I know, no studies has seen standardization, the IPR regime, and the trade liberalization regime in totality as a distinct discourse or field of study.

logic of asset specificity is both an explication of the regularities we may expect to see and a demonstration of why these may be expected to occur.

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**Table 5.2 Theoretical expectations**

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**Theoretical expectations**

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- 1 *When knowledge representations, (texts, technologies, experts, or communities) are specific (inflexible or immobile), preferences among users of those knowledge representations are stronger than when the representations are mobile.*
  - 2 *Activities within a firm or an organization based on knowledge representations with high specificity tend to be more cohesive than in cases where the representations are flexible or mobile.*
  - 3 *A high degree of specificity covaries with a high degree of alliance building, vertical integration and mergers among actors utilizing the specific assets*
  - 4 *High asset specificity increases the likelihood of (political and strategic) activism*
  - 5 *Asset specificity will covary with hierarchical or bureaucratic forms of control, while asset mobility covaries with more flat organizational forms.*
  - 6 *When a larger part of a national economy is based on specific (mobile) assets the likelihood of an authoritarian, or rigid regime increases (decreases)*
  - 7 *The degree of knowledge mobility may be changed through strategic and/or political decisions.*
- 

In sum the expectation in table 5.2 state that we may expect to see a covariance between the specificity of assets, including knowledge, and configurations of power, understood as variation between heterarchic (pluralistic, flat) organizational forms, and hierarchical (rigid, peaked) organizational forms. I have also demonstrated, I believe, that these expectations are based on previous sound research, and that the expectations are reasonable. I will now describe how to address these issues empirically.

## **5.5 Designing the empirical study**

Empirically, this study aims at exploring the interaction between knowledge specificity and configurations of power in the emerging knowledge economy. First and foremost, this involves explaining configurations of power on the basis of variation in knowledge specificity. In addition, we are interested in how knowledges become more or less specific/mobile. That means that we consider the management (in a wide understanding of the term) of knowledge mobility.



The empirical part of the thesis contains three chapters. These chapters address different phenomena at different levels, places, and with different methods. The choice of these cases is not random; they are picked to serve two purposes. First, I want to create an “image” or “montage effect” of how asset specificity matters in the knowledge economy. Second, I want to explore the plausibility, and the range of applications, of a certain theoretical framework. In other words, this study is both a kind of a “plausibility probe” (Eckstein, 1975), and a design for exploring the range of application of the framework. This is a design that in principle and logic has similarities with Skocpol and Somers’ “contrast oriented historical comparison” (Skocpol and Somers, 1994). Skocpol and Somers point to the advantages and risks of this approach. The risk is that “(...) the contrast-oriented approach can also be theoretically very misleading. For virtually any themes can be brought to bear upon the case materials without being put to any explicit test and without being openly identified as proto-theory” (Skocpol and Somers, 1994:88). I hope to counter these potential problems by openly admitting to the proto theoretical features of this study, and by addressing the theoretically deduced expectations within the different case presentations. This chapter is a presentation of such expectations.

Aside from the overall methodological choice, my pragmatic view on the choice of methods has led me to apply techniques that range from interviews, analyses of documents and discourses, and statistical comparisons. This variation in methods, and the variation in cases and levels of analysis, contributes to the creation of a wide montage. Table 5.3 explicates some differences between the empirical chapters in terms of understanding the core concepts and the type of analysis.

Chapter six presents a case study of a reorganizing process in a knowledge-intensive firm. Here I study a change from a heterarchic to a hierarchic organizational form. This change is partially ascribed to a development of changing knowledge specificity features in, and around, the firm. The firm is a prototype example of a knowledge intensive firm. This chapter aims at illustrating several of the presented expectations at a local organizational level. It also addresses practical sides of the discourse of local knowledge specificity management. In this chapter, asset specificity means organizational limitations to knowledge sharing and mobility, while

configurations of power are operationalized in terms of organizational form – including the practices and cultures embedding the formal organizational structure.

**Table 5.3 Core concepts and type of analysis in the empirical chapters**

	<b>Asset or factor specificity</b>	<b>Knowledge</b>	<b>Main causal direction</b>	<b>Configurations of power</b>	<b>Analysis</b>
<b>Ch. 6</b>	Is a characteristic of core knowledges in a firm	Is a core asset	(←)→	Organizational forms	Case study of an organizational restructuring
<b>Ch. 7</b>	Are main characteristics of economic structure	Is a type of asset and an indicator of economic structure,	→	Regime type	Multivariate regression of regime rigidity
<b>Ch. 8</b>	Are subject to institutional regulation	Is represented by commodities and humans	←	International institutions and regimes	Analysis of a set of international institutions that regulate knowledge mobility

Chapter seven provides a multivariate statistical assessment of the relation between specificity, knowledge, and configurations of power. As chapter six is empirically narrow (in that *one* relatively clear-cut empirical unit is investigated) this chapter cover a large empirical range. Chapter seven assesses asset specificity both as classical factor specificity (operationalized as dependency on agricultural factors, ores and minerals, and fuel) and as knowledge – seen as a more mobile factor. Configurations of power are operationalized as rigidity, in terms of system of government. In this chapter the causal direction are expected to go from specificity to configurations of power. I do address these issues in the chapter, but the overall design don't consider the theoretical expectations that asset specificities may be managed and altered.

In chapter eight we twist the causal chain from the previous chapters. The task of this chapter is to explore how a set of international institutions alter knowledge specificity and mobility. We 'endogenize' knowledge specificity in an attempt to better understand the significance of specificity to configurations of power. This doesn't mean that we are leaving behind the programmatic statement from chapter two, that

configurations of power are an effect. What we do is that we consider the possibility that the specificity of knowledge representations is itself a political result. This chapter addresses international standardization, appropriation and liberalization discourses through which knowledge specificity is managed and changed. This is a discussion that change perspective on asset specificity, and thereby have the potential to open for new insights on the nature and categories of specificity. Furthermore, this chapter addresses the relationship between knowledge specificity and configurations of power on yet another analytical level. Thereby, I hope to contribute in both widening and deepening the montage – and the understanding – of the relationship between knowledge specificity and configurations of power.

All together, the idea is that these three empirical chapters should allow us to anchor, empirically, our understanding of knowledge specificity and power. Together with the theoretical contributions, my hope is that the variety of empirical work will contribute in creating a useful and illuminating montage effect.

## **PART TWO: EMPIRICAL INQUIRIES**

# Chapter 6.0 The Firm – a Case Study

## 6.1 Introduction

### 6.1.1 The case

This chapter is devoted to a study of organizational change in a medium sized consultancy/software-development firm in Scandinavia. I name it “The Firm.”<sup>36</sup> The Firm is a mixed product and consultancy deliverer, specializing in technological tools for quality control, knowledge management and case handling systems.

The centre of the development of which I will make a story, is an organizational change from what we may call a heterarchy to a hierarchy. Heterarchy is a label used for organizational forms where employees enjoy considerable autonomy and inclusion in processes of decision-making and problem-solving. The organizational structure of a heterarchy is one where coordination, direction finding, and sense making are supported by cultural means, rather than directives. Reihlen (1996) calls this an ad-hoc system of horizontal coordination. The Firm, after the change, was organized as a classical divisionalized hierarchy. Thus, in terms of power, the change indicates a shift from a flat relatively egalitarian configuration of power to a rigid hierarchic configuration of power.

The argument of this chapter is that the key explanation of this change is the changing specificities of the core knowledges of the Firm. This is in accordance with the theoretical expectations presented in chapters three to five, which state that more specific assets are likely to lead to less pluralistic, more formalized, more rigid, and hierarchical organizational forms. This chapter presents a description of the development in the Firm that aims at deepening the understanding of how changing specificity may contribute to the change of configurations of power as described above. However, a number of alternative explanations on organizational change, known from different types of organizational theory, can account for such a change. This chapter

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<sup>36</sup> To protect confidential information, all names in the following presentation are aliases. More on anonymization in chapter 6.1.3.

presents but one case, and other explanations cannot be ruled out by this single case study. Instead, I will present and discuss several of the alternative explanations, and reflect upon whether the explanations are complementary or conflicting. Yet, the aim of this study is to explore the utility of a specificity approach. Therefore, this chapter doesn't present a symmetric comparison of approaches to organizational change, although it holds up alternatives in order to illuminate limitations and strengths.

Before moving on to the change in organizational form, I will present a very brief preliminary sketch of the Firm, and its historical development.

### **6.1.2 The development, in brief**

This brief history of the Firm ranges from when it was established in the mid 1980s to the start of 2003.<sup>37</sup> The shift, which is the core of this story, took place in the second part of 2002. A sketch of the development from 2003 to the beginning of 2006 will be presented in the epilogue to chapter six.

#### **Markets and owners**

The Firm started up as an outsourced Information and Communication Technology (ICT) product development unit with a small handful of people. The mother firm, which I will call "Quality Inc." from now on, is a world wide firm, with a Scandinavian base, specializing in systems for certification and quality control. Quality Inc. was the most important customer in the beginning, and continued to be important for the Firm both in terms of volume and in terms of experiences throughout the years to come. It also kept a small portion of shares in the Firm (about 10 %), until recently.

During the first 10 years of its history, the Firm used to deliver mostly one-of-a-kind consultancy services and "on the spot" developed software solutions for quality control, knowledge management and work process support. The most important customer in the beginning was, as mentioned, Quality Inc., and a publicly owned ICT business, which I label "Publicom". Together with Quality Inc., Publicom also became a major owner until the late 1990's. During the 1990's, large public sector bureaucracies moved up on the portfolio list. The Firm became a major supplier of knowledge

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<sup>37</sup> The main sources of this brief history are annual reports and news articles. Due to anonymization, the references are not presented here.

management, work process support, and case handling solutions for the public sector. The Firm was at the right place, at the right time, to take full advantage of the ongoing reshaping of the public sector. “New public management” implied a need for new tools for public management.<sup>38</sup>

From around the year 2000 the Firm focused increasingly on productification of technological frameworks and solutions, on standardization of products, and on the reuse of knowledge elements. Some basic software technologies were developed and acquired, and became obligatory parts of the product portfolio. Related to this strategy, the Firm bought, and developed further, a new technology during the years 2000 – 2001. This technology, “The Product®”, paved the way for new markets of large private and public enterprises abroad. Consequently, the Firm established an office in the US. The market for The Product® was large complex organizations and conglomerates that needed a better overview of their business activities. In the same period, the Firm established a series of strategic alliances and licensing agreements with other commercial actors.

The Firm started up with Quality Inc. as the only owner. This changed. Already in 1984 the employees acquired 25 % of the shares. They have maintained this portion since (until 2005). In the mid 1990’s Publicom bought about 60 % of the shares from Quality Inc. In 1998 Publicom sold its shares to a large Scaninavian ICT and consultancy provider. I label this group the ItGroup, which was the major owner until 2003. The development in owner structure is presented in table 6.1.

**Table 6.1 Ownership groups in the Firm**

<b>Owner groups</b>	<b>1985 – 1994</b>	<b>1995 – 1998</b>	<b>1998 – 2003</b>
Employees	25+/-	25+/-	25+/-
Quality Inc.	75+/-	15+/-	15+/-
Publicom		60+/-	
ITGroup			60+/-

<sup>38</sup> The literature, and the debate, on new public management is extensive. See e.g. Christensen and Lægheid (2001) for an overview.

## **Growth and employees**

The Firm has grown from 5 people at the start-up, to about 160 people in the beginning of 2002. The growth was not a steady one. The period from 1986 to 1990 was difficult, and the Firm struggled to survive. Basically this was due to a difficult period for ICT in general, and in particular for Artificial Intelligence (AI), which was the big thing for the Firm at the time. The Firms's annual incomes and results reflect this growth. Some numbers that represent the development are presented in table 6.2.

**Table 6.2 Development of the Firm – key numbers**

<b>Key numbers</b>	<b>1985</b>	<b>1990</b>	<b>1995</b>	<b>1998</b>	<b>2000</b>
Employees (end of year)	5	15	56	135	162
Income (million kr.)			35	89	143
Result (before taxes)			3	2.5	12

All the time the Firm has employed a highly educated workforce. Over 90 % of the workforce had a higher university degree, most often a technological one. They also emphasized recruitment among those with the very best grades. To achieve this, the salaries had to be competitive, but the most important objectives of the recruitment strategy was to trigger the technological ambitions of the new employees. It was emphasised that new employees were included in a collective of engaged technological advanced individuals. Another part of the incentive structure was share-options that depended on the result of the Firm as a whole. During my interviews with informants in and around the Firm, no one ever mentioned salaries.

## **Change in organizational structure**

The Firm used to have a rather flat organizational structure, a somewhat fluid process/project organization. The Firm, as it used to be, was very close to what we may call a heterarchy – an organizational form similar to what Mintzberg (1979) labels an Operating Adhocracy (Mintzberg, 1979; Groth, 1999:395-400). Activity was organized in projects directed towards customers, and a number of internal processes criss-crossing the project lines. During some hectic days in 2002, the organizational structure and the administrative leadership associated with it were replaced. A standard



hierarchical line-organization was established, consisting of three divisions directed to segments of the consultancy market, one product division, and an administrative staff. This organizational form was said to imply less risk, clearer lines of responsibility, more centralized decision processes and financial responsibility within the different divisions.

### **6.1.3 Remarks on access, data and method**

#### **Access**

Interview and field work access in the fields of white-collar work are widely acknowledged to be difficult (Gummeson, 2000; Undheim, 2002). The Management tends to be sceptical of the social scientists' intentions and the value of them sniffing around in their corridors.

At a general level, the problem of access was solved by my participation in a research project partly funded by the companies themselves. In addition, there was a joint interest in the field of knowledge management. As a result, I had a principal opening to the companies involved. Still, concrete access (in terms of when, where, how and who) is always a matter of negotiation. In this, my experiences with obtaining access were a bit mixed.

My first meetings with the Firm were initiated and negotiated through my contact in the research institute that administrated the umbrella research project. This contact arranged a meeting where I could present my field of interest, and they could present the Firm. The meeting was held with one of the leading figures in the Firm, which was widely seen as a kind of Guru and a bit mind-boggling. His ideas and thoughts jumped from here to there, partly confusing me and partly inspiring me. Unfortunately, he was not in a position at the time to connect me concretely to a project in the firm. At that moment I was a bit confused about what I wanted and I continued my work outside the Firm for some time.

In the early autumn of 2002 the controversy in the Firm occurred, and I saw that this was an interesting process, from my point of view. The situation was a bit tense, and I was unsure about how to proceed. I contacted one of my informants in the mentioned research institute who also was an insider to the Firm. In the crisis-like situation that followed the first organizational upheaval, we discussed the situation, issues of access, and potential contacts. He suggested that he could talk to some of his

contacts before I proceeded. He returned to tell me that the timing was awkward because people were upset: they were insecure about the future, and they were a bit afraid to talk. However, we conducted one phone interview together, which revealed a good deal of relevant information and provided a strong testimony to this informant's view of the situation. A bit disappointed by my contact's self appointed role as gatekeeper, I thereafter took contact directly with people in and around the Firm, without clearing this with the management or the project administration in the research institute. The process of selection was simply to pick informants that were referred to in previous talks. With one exception (due to illness) all the informants I asked were willing to talk. However, all of them requested and were granted anonymity.

### **Data and methods**

On its own, this chapter describes a single case study (Yin, 2003), in which there are several types of data used. The main data come from a series of in-depth interviews (Hammersley and Atkinson, 1996; Kvale, 1997) with a handful of upper and medium ranking employees in the Firm.<sup>39</sup> The interviews lasted between 50 and 90 minutes. I formally interviewed six persons that worked for, and in, the Firm. Two of them have been there since the birth of the Firm. They had higher technological educations and long and varied experiences in programming, business and administration. Two others were veterans but with less than 10 years in the Firm. Also these had higher technological educations in computer engineering. However, in addition to the technological focus, all these persons had an interest, and substantial knowledge, in both practical and theoretical aspects of knowledge and project management. The two last persons I interviewed were researchers/consultants that had worked as action researchers in the Firm, with particular projects, over a long period of time. These were social scientists. Additional interviews and conversations were made with colleagues who cooperated with the Firm in other research projects. In addition, I used media, annual reports, press releases and company websites from the Firm and associated companies. Finally, I relied on other written material, of various kinds, given to me by

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<sup>39</sup> The interview guide is attached as Appendix I.1. Before the interviews I sent out a background note, describing my fields of interests, etc. This is attached as Appendix I.2.

some of my informants. These included papers and presentations written by company stakeholders and employees, and private e-mail correspondences.<sup>40</sup>

The organizational change under consideration took place in the autumn of 2002, while the gathering of data took place between the summer of 2001 and the first part of 2004. Some background interviews were made before the change, and some additional follow ups were made in 2004. The main part of the interviews however, was done during the autumn of 2002, in the month after the changes took place.

The changes that took place were controversial, and people felt that their jobs were in the line. For the Firm, reputation, trust and future positions in the market were seen to be at stake. Therefore, several steps have been taken to anonymize both the Firm and my informants. This also includes some changes in factual information such as numbers, positions, names, etc.

The status of the Firm, in terms of methodology and design, is a bit awkward. For a long time the Firm had been cooperating with the project umbrella that funded this thesis. However, the cooperation was initially based on knowledge management issues, not reorganization issues. The change, which is at the core of this case, is therefore accidental and unintended. From the beginning, I hoped that the Firm, as a pilot case study (Yin, 2003), could educate me on issues of knowledge and knowledge management, due to the considerable expertise and experience on these matters within the Firm. However, before I had figured out how to organize my learning period with the Firm, the described organizational change took place. This, and my subsequent interest in issues of power and organizational control, changed the course of the study as well. Thus, the firm was not accidentally chosen, but an unexpected development offered an opportunity unforeseen at the start of the larger project. Because of the Firm's special role when it comes to knowledge and knowledge management, and because of the process used to select the Firm, it should be clear that this case study can neither falsify hypotheses nor verify theoretical explanations with certainty – on its own.

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<sup>40</sup> I am deliberately vague on some of this. I promised confidentiality to my informants and precise descriptions to some of the data could expose the informants.

What the case can do – its own value – outside the scope of the case, is to contribute to the plausibility of the main theoretical expectation (Eckstein, 1975). I include a long quote from Eckstein's seminal article on case studies both because it gives an interesting argument for choosing a case study, and because it draws on an example that also is of particular interest for the theme in this thesis. Under the heading of "Plausibility Probes" Eckstein (1975:109) writes: "At a minimum, a plausibility probe into theory may simply attempt to establish that a theoretical construct is worth considering at all, i.e., that an apparent empirical instance of it can be found. I take that (together with heuristic objectives) to be the purpose of Dahl's influential study of power in New Haven (1961). Dahl, as I read him (contrary to some other interpreters of his work) wants to establish that power in democracy may be 'pluralistic,' or may not be 'monolithic,' not that it must be the former and cannot be the latter. The study certainly succeeds in that regard, although it would have succeeded even more if New Haven had been selected for study because it is typical or a specific class of cases."

What this *case* does then, is three things. First, it provides a description of how, on a firm level, increasing knowledge specificity participates in the altering of configurations of power from a heterarchy to a hierarchy. It can neither demonstrate conclusively nor reject conclusively that specificity is the only or even the main reason that such a change takes place. Second, because it is a relevant or exemplifying case, it can participate in the building of a plausibility probe. Alan Bryman (2004:51) emphasizes that much case studies are done on exemplifying cases because "they will provide a suitable context for certain research questions to be answered. As such, they allow the researcher to examine key social processes." Third, this case has been important for the development of the theoretical framework. It has been held that case studies have an advantage in providing background for refining theories. Undoubtedly, the conversations with employees in the Firm, and researchers working in the environment around the Firm, have been important for the development of the theoretical framework used. The theoretical steps taken in adapting an asset specificity logic to a knowledge specificity framework would not have been productive without the Firm.

In this case study I will illuminate three of the explicit expectations from section 5.3: I will illuminate the mobilizing effect of increased specificity, and thereby touch

upon the first expectation, which was: (1) *when knowledge representations, (texts, technologies, experts, or communities) are specific (inflexible or immobile), preferences among users of those knowledge representations are stronger than when the representations are mobile.* This mobilizing effect was expected to be intimately interrelated to the expectation that (5) *Asset specificity will covary with hierarchical or bureaucratic forms of control, while asset mobility covaries with more flat organizational forms.* Furthermore, the study will be open for the statement of the seventh theoretical expectation, that: (7) *the degree of knowledge mobility may be changed through strategic and/or political decisions.* This means that the chapter will elaborate alternative casual directions within the mobility-power framework. As I see it, this is a kind of open-endedness that is possible in an explorative case study approach.

## **6.2 Managing through culture**

### **6.2.1 Organization - heterarchy**

Before the incident that some employees characterized as a coup d'état, the Firm had a remarkably flat and inclusive decision structure. Most of the leading positions circulated among employees, suggestions and decisions were discussed in open meetings, and almost all of the employees used the same titles. This does not mean that the firm was without leadership, direction and/or formal decision structures. It means that employees were highly autonomous, that they participated to a large degree in a wide range of decisions, and that there was a feeling of ownership in the Firm. Organizational science offers a number of categories to describe such organizations. Mintzberg use the term “operating adhocracy” (Mintzberg, 1989, Groth, 1999). This is a term that describes an organizational form with little standardization of work and knowledge, and where the administrative and technical expertises intermingle intensively. Knowledge is, to a large degree, mobile within the organization. Decisions are normally taken jointly. Workers in an operating adhocracy are highly autonomous.

Another label that has been used is the J-form organization. This is a slightly more rigid organizational form than adhocracy. Alice Lam says: “An organisation which derives its capability from knowledge that is 'embedded' in its operating routines,

team relationships and shared culture can be described as a 'J-form' organisation. The term 'J-form' is used because its ideal-typical features are best illustrated by the Japanese type of organization” (Lam, 1998:17-18). In this type of organization both formal horizontal coordination mechanisms and organizational culture are deliberately created and used to steer and integrate the organization. Nonaka and Takeuchi (1995) label a similar type of organization a “hypertext organization”. While Mintzberg was highly skeptical about the future of adhocracies (Groth, 1999), both “hypertext” and “J-form” organizations as labels are often used in the management literature as positive signs for successful firms.

A more normatively neutral descriptive term of such a flat and flexible organizational form is heterarchy. “Heterarchies combine autonomy with cultural integration to create a flexible organizational configuration. It allows for the merging of decentralized intelligence within an ad-hoc system of horizontal coordination” (Reihlen, 1996:10). This is done in a continuously negotiated organizational system with extensive inclusion in decision-making and problem solving, extensive knowledge sharing, ad hoc coordination and mutual adjustment, and management that is open for potentially new leading figures. However, this is also a system that seeks to balance autonomy with integration through subordination to cultural norms and restrictions.

All the above descriptions fit the Firm, as it was presented to me by my informants. The formal organization of work was a bit complicated and difficult to follow: Work was sorted in two categories. Work with customers and clients were organized in projects, while internal tasks was “*sorted in nice heaps, and we called each heap a process, each of which had a process owner.*”<sup>41</sup> Some of the processes were tasks associated with the value chain – sales process, delivery process, and consultancy process – but also tasks connected to finance, administration, human resources and knowledge management had their own processes. Activity was organized in as many as 20 different processes and in a varying number of different customer or development projects.

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<sup>41</sup> Informant c1. In the following, informant quotations will be shown in italics to make them more easy to separate from the surrounding text. Informants have been given a code to separate them from each other. References to informants are given in the footnotes.

*“Some will probably criticize the old organization due to difficulties of finding out who was really responsible in some situations. Especially when processes were running alongside. One had to coordinate with so many (...) The idea was that we (later) should develop superior coordinating processes that connected them up to (CEO).”<sup>42</sup>*

In addition to the complexity of the flat structure, people changed between working in projects and processes. Job rotation, both on the ground and in leading positions, was a basic principle. *“It was like this: I could work for Anne on Monday, and she worked for me on Tuesday. In one job I was the person in charge, and in the other she was.”<sup>43</sup>* Furthermore, the idea was that a process owner should stay in this position only between 18 to 36 months.

*“He (the CEO) saw it very much as a training arena. People could show what their capacity was, without being given a fixed position and role in a hierarchy. (...) This was advantageous because we could test out many different people in different leading roles, and it was not (felt as) a loss to leave a leading position, because they had them for a limited time. It was intended that people should circulate between administrative tasks and more operative work. The process organization contributed in making this natural.”<sup>44</sup>*

In addition to the recruitment aspect, the idea beyond the process organization was to support knowledge sharing and learning and to strengthen identification with the firm. Knowledge sharing is intra-personal knowledge mobility. An ideology of knowledge sharing is a measure that supports knowledge mobility. *“The idea, then, was that it should stimulate a better float crosswise. (...) This about job rotation, leads to continuous learning, and that more people have information and knowledge about different things, and that more people have experience with leading positions in the firm. These things do something with the feeling of identity and with the loyalty to the firm.”<sup>45</sup>*

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<sup>42</sup> Informant c3.

<sup>43</sup> Informant c1.

<sup>44</sup> Informant c3.

<sup>45</sup> Informant c1.

The circulation, the complexity, and the fluidity, compared to a more fixed organizational form implied that *“(You had) the possibility to choose your own boss, or superior that you could relate to. A world where you may end up having multiple bosses at the same time. That is gone now. Now, if you get an asshole as boss, you sit there, eheheh so to speak.”*<sup>46</sup>

Thus, it is also clear that authority in everyday work was highly decentralized. Furthermore, the decision processes were characterized as “argumentatively driven”. Points of view had to be presented, discussed, and “sold”. Influence over decisions then, was partly a result of position, of argumentative abilities, of the ability to build alliances among colleagues, and of will.

*“Distributed decision authority was a fact. It was the process owners that had the decision authority. It was more a problem of decision refusal. The authority was there and some used it diligently, while others were more reluctant. That is not rhetoric. That’s facts.”*<sup>47</sup> However, decisions were to be guided by an ability to recognize the common good. *“One had rather large freedom to take decisions within one’s own tasks, but it was your own responsibility to do what was best for the Firm. But one should not necessarily ask for advice. One should know.”*<sup>48</sup>

Even though the structure was flat in the sense that decision authority was distributed, there were vertical mechanisms as well. These worked in both informal and formal manners. The CEO was the leader, and he was recognized as such among the employees. One informant gave me an example of how this could work, also when it was not supposed to: *“One example is that when I was a process owner I needed to buy a project planning system. It was, in a way, my suggestion which one we should go for. My recommendation was a system that he (the CEO) absolutely didn’t want – because he had been in conflict with the one who had made it. And he didn’t manage to hide it, and what he meant about the thing ehheh, and I experienced him as so clear that I didn’t want to oppose that – since he was the boss. And I didn’t choose it...”*<sup>49</sup> Everyone knew that the CEO was the boss and, as often with charismatic leaders, employees

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<sup>46</sup> Informant c4.

<sup>47</sup> Informant c4.

<sup>48</sup> Informant c1.

<sup>49</sup> Informant c1.



anticipated, and adapted to his presumed preferences. Formally, the process was like this: *“The decisions were taken in the processes and laid out to further handling in the leader forum. (...) A process that has decided upon something could be voted down in the leader forum, and above the leader forum, you have the CEO. So you could say that the CEO could vote down everything, but he rarely did, he almost never did.”*<sup>50</sup> Thus, decisions in a flat structure as well as in a hierarchy may reflect the interests of some leading figures. The “flat” image was further distorted because the CEO had an informal team around him, referred to as the leader group. Indeed, above the CEO and his men, there was, as become clear during the coup, the board of shareholders.

The flat and decentralized organizational structure, or practice, coexisted with a organizational culture that was informed and reinforced by the ideology supporting the organizational mode.

### **6.2.2 Ideology and mobility**

One informant said this about management in the firm before and after the change: *“It is very clear that now it is control that is used as a mechanism to run the company. More than anything else. Before it was culture, in a way, which was important to use as a steering mechanism.”*<sup>51</sup>

Culture as a managerial tool or steering mechanism in organizations has been a core theme in organizational studies for more than 20 years (Alvesson, 2002; Kunda, 1992; and Schein, 1985). Alvesson (2003:3) writes: “Culture is, however, a tricky concept as it is easily used to cover everything and consequently nothing.” We may clarify to some degree by saying that elements of any culture may be sorted in one expressive side – language, rituals, identities and symbols – and one epistemological side – ideologies, knowledges, understandings and beliefs. All these elements of culture may make up a regulatory structure, a system of normative control. This system is productive because (when) it defines values and norms, and because (when) it gives direction to the visions, aspirations and hopes, but also to the practical work of the employees. Since a heterarchy relies less on direct control than a hierarchy, it depends more on productive organizational culture.

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<sup>50</sup> Informant c4.

<sup>51</sup> Informant c4.

Some elements must be present before we can say that a firm employs a cultural regime of coordination. There must be, as we have seen, a certain degree of autonomy for the employees, to let the culture work. There must be an ideology or a set of shared values about what is true, what works, and what is good. There must be an ongoing process of identity-work to keep up the identification of employees with the corporate ideology. There must be a certain degree of homogeneity among the workforce to minimize the level of conflict in the organization, and to minimize the need for explicit corrections of attitudes and activities. Finally, there must be some degree of consistency between these elements. These elements make up intangible bonds, ties, links, or associations in what we may call a cultural configuration of power – or a heterarchy.

The employees of knowledge-intensive firms are often considered as individualists in the literature. Their images vary quite a lot. Some appear as nerds, some as sports' enthusiasts, some as more philosophical types. One of my informants made this reflection. *“They are (...) multi-talents; people write poetry and lyrics, and all kinds of things. That is actually quite usual among people working with ICT.”*<sup>52</sup>

The workforce of The Firm may seem like a rather heterogeneous group, and at the same time they have and require a rather high degree of autonomy in their daily work. On the face of it, this may seem as a risky combination. However, “The idea of being an ‘individual’ and showing ones individuality is often surface-phenomena and barely hides the background of shared norms and rules”(Alvesson, 2002:127).

In fact, there is a strong, and far from accidental, homogeneity of shared values and cultural background within the Firm: *“We searched for people who showed a genuine interest in their special fields (...) We recruited almost only very highly educated people; our growth was organic, so we didn't have any problems with different cultures and communities. We also had in the back of our head that it was no aim to employ the most individualistic persons. (...) But we kept to the upper 5 – 20 per cent in a group. (...) In addition, most of them were from our own country, and were technically educated within Information Technology.”*<sup>53</sup>

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<sup>52</sup> Informant s2.

<sup>53</sup> Informant c3.

Clearly, a workforce where most have the same national background, all are technically and highly educated, all are among the best in their classes, all share an interest in Information Technology and a will “*to make things of significance to the world,*”<sup>54</sup> constitutes a rather homogenous group, when it comes to job-related features or characteristics, regardless of individualistic self-presentation. This homogeneity was further strengthened by the fact that all employees were given the same title, referring to their technological expertise on “knowledge”. This kind of symbol both emphasizes the uniqueness of the employees of the Firm, and underlines the homogeneity of its employees.

The process of recruitment fits well with the description that Collins, partly based on Etzioni (1975), gives of how internalized, or normative, control may be strengthened in recruitment: Voluntary self-motivated compliance is assured through socialization and pre-selection, which are means by which “organizations acquire members who have already committed themselves to their goals, or by which they acquire that commitment before they become full-fledged members”(1988:453).

Speaking with employees make it clear that they have a kind of “tribal” language. Examples are that abbreviations, local slang, and translations of Firm products and services, technological solutions and approaches are used casually and frequently. An outsider, like me, needs to extend some effort to make clear what they speak about. This is one of the functions of language in these contexts; it makes it clear who is inside and who is outside. Moreover, it increases the efficiency of communication because special terms and terms of local interest may be used without a lot of explanation and risk of misinterpretation.

Keeping up identity, loyalty and ideology requires enduring efforts on many fronts. In addition to the organizational and human resource management philosophies already mentioned, the CEO himself was a very important figure in this work. He was “a visionary, almost evangelic”, leader. His enthusiasm, continuous emphasis on knowledge and knowledge sharing/mobility, and the advantages of the way the Firm was organized were widely held as decisive for the success of the Firm. “(...) *the*

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<sup>54</sup> Informant c3.

*organization we created (...) was for a large part kept up by his vision.*<sup>55</sup> Substantial participation in external R&D projects also contributed to the feeling that the Firm represented the state of the art in the knowledge management business.

A new trend in knowledge intensive firms is to use narratives as tools for knowledge sharing and identity support. The Firm followed up. Created narratives were used in *“educational sessions for new employees, where we used narratives to create a discussion of the culture of the Firm (...), it has worked well, for knowledge sharing and identity building.”*<sup>56</sup> The CEO was, in the words of one of the project leaders, an *“enthusiastic pioneer in supporting knowledge-related projects in general, and this project in particular.”*<sup>57</sup>

Ideology and identity, broadly speaking, contributed to create a distinct “we-feeling”. This is, of course, a kind of bond between employees, but it also created a feeling of ownership in the Firm. This was especially clear among those who had been there for a long time. Irrespective of legal ownership, they speak of “our” struggles for the Firms, the undertaken strategies as “ours, and as those who take decisions as “we”. It is reasonable to speak of an ownership based on cultural and historic legitimacy, which differs from the legal ownership. As one informant said, when I discussed this observation with him: *“The core of this, in the Firm, has been that we have never, until last year, had owners that understood or engaged in what we were doing.”*<sup>58</sup>

We may recall that in heterarchy, cultural measure more or less substitute for directives. The cultural measures of coordination in the Firm were expressed most clearly in what we may see as the ideology of knowledge mobility. Ideology here may be understood an “authoritative system of meaning” (Kunda, 1992:52). As such, it is also a shared belief, mapping out what is true, what works, and what is good. In the Firm, the ideology was closely connected to the idea that knowledge should float easily crosswise. It should be mobile – for many reasons. First, because it was a widely held belief that through active sharing of knowledge each one of the employees was given the ability to develop: *“(...) people working with knowledge are dependent on sharing*

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<sup>55</sup> Informant c3.

<sup>56</sup> Informant c1.

<sup>57</sup> Informant s2.

<sup>58</sup> Informant c3.

*knowledge to move on – to learn. If you cannot share, and learn, you crumble away. Knowledge workers that want to keep up their value on the labor market and as knowledge carriers need to share.*”<sup>59</sup> Second, not only the individual, but also the company as a whole, was believed to be given the ability to develop, to be able to make useful technologies, and to be able to compete in both national and international markets through knowledge sharing. This belief was generalized into a belief that sharing knowledge and contributing to its mobility, was the key to competitiveness in the economy in general. *“Leading organizations throughout the world are now changing their focus (...) to how **knowledge** is managed and applied.”*<sup>60</sup> Finally, the Firm distinguished itself from related companies by its belief that the depths of organizational knowledge on knowledge was something living, something deeply embedded in practice. *“This is what the Firm is all about. (...) we deliver working solutions that bring the knowledge to life (...) The Firm’s mission is to help people and organizations make better use of their knowledge.”*<sup>61</sup>

This “ideology of knowledge mobility” was, of course, not unique to this company. To be trustworthy and legitimate, business ideology must have backing from some kind of scientific community, and a large portion of the contemporary management literature shares and supports this ideology (e.g. Klüge, Stein and Licht, 2001; Sahlin-Andersson and Engwall, 2002).

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The organizational structure and the organizational practice in the Firm, as well as the cultural elements – mainly ideology and identity – made up a configuration of power: a heterarchy. Clearly, this configuration had its characteristics in terms of the distribution of authority, of social value and status. Equally clear was the fact that this was a configuration of power that participated in directing the course of the Firm. The configuration seemed to be a strong and coherent frame, both seen from the outside and as seen from most of the employees. Yet, the configuration of power started to erode.

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<sup>59</sup> Informant s2.

<sup>60</sup> Quoted from the Web page of the Firm.

<sup>61</sup> Quoted from the Web page of the Firm.

### **6.3 Diminishing knowledge mobility**

The Firm used to be tuned into knowledge-sharing and the maximizing of organizational knowledge mobility in a number of ways. The culture of the Firm, and the ideology of knowledge-sharing gave a rationale for sharing and for making knowledge transferable. Furthermore, it contributed to making the tasks of the Firm ideal ones, as they were understood as helping businesses share their own organizational knowledges. The somewhat evangelic style of the former CEO made it clear, or at least made everyone aware that sharing knowledge was a good thing to do: Knowledge could and should be mobile within the Firm. The high-profile work with internal processes on knowledge management and sharing and the development of internal technological platforms for knowledge-sharing and storing, kept the heat on. Knowledge-sharing was good, necessary and rewarding. It's important to note that the debates in the Firm on these issues were not held at a naive level. The Firm was in contact with the research fronts on issues of knowledge management, both in technological and managerial terms. Through cooperation with several other environments they participated in both national and international research projects, and several of the employees presented papers at international conferences. Thus, knowledge mobility was more than an adage; it was a practiced ideology.

However, as the years went by and the Firm succeeded, mobility changed. We may illustrate this in relation to physical things (such as the technologies used), the localities of work, and the deliveries made.

#### **6.3.1 Technology and knowledge mobility**

Technology played a conflicting role as knowledge-mobility enhancing remedies. Rather early, the Firm developed sophisticated technological platforms for knowledge storing and sharing. In the beginning, this was what has been referred to as 1<sup>st</sup> generation intranet solutions (Coll and Mæhle, 2002). These solutions included sites where one could store and find information based on some kind of ordering principles. The types of knowledge and information that can be stored and transferred through such tools are normally explicit and individual. Examples of such tools are handbooks, manuals, and schemes on web, where an editor decides that this or that is useful and

should be made transferable throughout the organization. Another technology has been referred to as “knowledge wells”, where users themselves may write notes and send in advice, information, experiences etc. connected by search words. These kinds of tools have become common in all kinds of intranets. Undoubtedly, they contribute to the task of making knowledge mobile within the organization. However, many firms have experienced that these tools are often used less than the management would like, and that the information put there was already available before, on paper. The situation was slightly different in the Firm because they made the tools themselves, discussed them and improved on them collectively. Therefore, the problem of underutilization was not the same as in many other companies that implemented similar knowledge management technologies. The tools were indeed knowledge-mobility enhancing, but they had limitations when it came to the forms of knowledge that they could handle.

It is difficult to use technology to transfer, develop and maintain more complex organizational knowledges. Notwithstanding, the Firm was in the forefront of these developments as well, and they went in two different directions: storytelling and case handling. A new trend in knowledge intensive firms is to use narratives as tools for knowledge sharing and identity support. The Firm followed up, by developing a technological platform for mobilizing complex context-based knowledge through narratives. The Firm made something they called the Storytelling Forum.<sup>62</sup> This is a platform where stories in different types of formats may be presented. It may be stories on video, soundtrack, or text, and the stories may be on how to do particular jobs, or learning stories on how things work in the Firm. The launch of the Storytelling forum became a point of reference to the employees in the Firm. All employees participated in a weekend gathering in the countryside, where they worked together to learn how to make stories, and to make stories for the Forum. The CEO was, in the words of one of the project leaders, an “*enthusiastic pioneer in supporting knowledge-related projects in general, and this project in particular.*”<sup>63</sup> Later, the use of the forum has been less

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<sup>62</sup> Storytelling or Narratives, has recently moved into the research front of management studies. The background is that organizational knowledges barely can be transferred and taken care of through traditional means. Stories are, among other things, ways of connecting knowledges and contexts in ways that makes them easy to receive and remember (see e.g. Hatling, 2001).

<sup>63</sup> Informant s2.

significant in the Firm. One of the key figures in the work of the Forum reveals a bit uncertainty when he is asked about the use and the role of the Forum. *“Well we haven’t used it that much, so if you ask other employees if it (storytelling) have been important they would say no, but I mean that in the situations where we have used it, it has worked well – in knowledge sharing and identity building ...but we could have done more of it... that the little we have seen, in a way, has been good, and ... it could have been used more. We have done an educational session for new employees, where we used narratives to create a discussion of the culture of the Firm (...), it has worked well, for knowledge-sharing and identity building...And then it’s like I feel that it’s a bit cool, a bit funny then.”*<sup>64</sup> The Storytelling Forum became, as I see it, an identity marker more than an important tool for knowledge-sharing. One of the initiators of the project tell us why: *“...time is a scarce good among engineers and its clear that when you must do invoicing all the time, the time you use must be within the task you are doing...It is not obvious that people want to do this if they see it as ‘chitchat’.”*<sup>65</sup>

Technology for knowledge managing in a case-handling context became a key delivery item for the Firm. Several large governmental organizations bought technological applications for knowledge management and work-process support. These were systems for knowledge management more than systems for knowledge-sharing. *“...these systems lead the users through a pattern of actions. In a way the system is an active part in that it pushes knowledge and information to the users when they need it. That’s why we call it a knowledge support system. This system is, as it is today, somewhat controlling, where you are lead through a predefined process.”*<sup>66</sup> These kinds of systems have a large potential for coordinating and unifying the efforts of multiple employees separated by time and space. They are knowledge-mobility enhancing in one way. Standardized artifacts always move easier than unstandardized ones. However, as one employee, told me: *“This kind of system will not be appropriate for us. We are more used to, aahh... more flexible tools. We have some of these, and not least, there are some organizational structures around knowledge management, culture and of*

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<sup>64</sup> Informant c1.

<sup>65</sup> Informant s2.

<sup>66</sup> Informant c1.



*making meeting places, and to connect humans with tasks.”*<sup>67</sup> The case-handling systems release pieces of explicit knowledge to individual employees at predefined states of their work-process. Thereby, the systems themselves represent complex organizational knowledge, and reinforce organizational routines. *“Our approach gives unprecedented support to the end-user, and ensures uniform application of all procedures.”*<sup>68</sup> In short, they don’t function as tools for increasing knowledge mobility; they function as tools for knowledge harnessing and knowledge policing. These, as my informants told me, were not appropriate tools for the Firm. Actually, appropriate tools for knowledge mobility were not successfully developed in the Firm. The Firm, it seems, had a strong ideology: they did diligent identity work, the workforce was rather homogenous, and the organizational structure and decision-making processes supported and was congruent with the ideology of knowledge-sharing. Even though the Firm had a large number of ICT-applications available, it relied heavily on the organizational and cultural modes of coordinating work. As the Firm grew, this became a problem. *“We should manage to develop internal ICT systems which could support our growth. We have one system, which does that to some degree, which works quite well in that way, but the last three years we haven’t invested a lot of time on that. Those technologies we sell out to our customers: we never had the time to implement them sufficiently here. To do things internal when we live from selling external ... aah ... I see that this is difficult.”*<sup>69</sup>

Technology in general has played a role in making some knowledges more mobile. Even so, the Firm lacked a technology that, in an adequate way, could make their own core knowledge internally mobile. Since the organizational knowledge of the Firm was of a kind that was not easily captured in routines, and, due to the competitive environment, the Firm was in need of constant knowledge renewal. For this reason, the lack of appropriate knowledge-mobility-supporting technologies became probably as important as the actual technologies used.

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<sup>67</sup> Informant c1.

<sup>68</sup> Company website.

<sup>69</sup> Informant c3.

### 6.3.2 Specific localities

This brings us to the next theme that influenced knowledge mobility in the Firm. This is also material,<sup>70</sup> and it is also an aspect that indicates that knowledge mobility was decreasing: places of work. The offices of the Firm are, as they often are in contemporary knowledge-intensive firms, modern looking, open and light, colours are harmoniously matched, the cafeteria is very good, and so on. All this contributes to a nice atmosphere.

However the interesting thing about the offices of the Firm is not the atmosphere they create, but the fact that an increasing part of the employees' work occurs at other places. A large share of the employees is allocated to the office facilities of their customers for rather long periods. As a result, they are locked out of the atmosphere, the daily gossip, the small talk: they are less informed on what is going on. This was an actual and experienced increase in the relative knowledge specificity of the firm – the knowledge mobility decreased. Because the Firm failed to develop appropriate technological tools to tie employees together over distance, there developed a consciousness of differences being at Headquarters and being with the customers. This was a natural thing among those that were out with the customers. They were cut off from some streams of information: *"I have been out on projects a lot, used little time in my process, so for me (...) I heard about it rather late."*<sup>71</sup> The externally allocated employees also cared about other things. Speaking about the possibility of downsizing as a part of the organizational restructuring and the unrest surrounding it, an informant allocated to a large public sector customer said: *"those sitting in HQ are more marked by it. We who are allocated to customers don't see too much of it."*<sup>72</sup>

The Firm's diligent identity work, the ideology of knowledge-sharing, and the organizational structures that were developed to ensure knowledge mobility and sharing were countered by the relative increase in employees allocated outside HQs and the

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<sup>70</sup> That materiality matters in organizations and in society is an anthropological lesson often undercommunicated by social scientists. See e.g. Latour (1993) and Neumann (2001).

<sup>71</sup> Informant c4.

<sup>72</sup> Informant c1.

growth of the Firm.<sup>73</sup> This growing divergence was reinforced further by the lack of appropriate knowledge-mobility-supporting technologies.<sup>74</sup>

### 6.3.3 Capturing deliveries

The tasks of the Firm change as they become successful. Conversely, an increasingly important tension in terms of knowledge mobility, developed in the Firm as they moved from a firm that was strongly engaged in first-time development of technological solutions and implementations to a company that focused on the resale of existing applications.

*“The first five years were mainly filled with research activities. Externally-financed research activities. It took five years before we made anything that could be delivered to customers. (...) Now, we are about to become an organization that delivers packaged knowledge, packaged technology (...) Then, mainly products, not hours of work will be the deliveries. Today that is The Product®<sup>75</sup>, and the Parts™.<sup>76</sup> The Product® is fully packaged, and generates 3:1 in license income and training/consulting, while The Parts™ is 1:10 the other way around – one part license and 10 parts training/consulting.”<sup>77</sup>* This is a development in its early stages, but the difference between these two ways of doing business has become evident. As already pointed out by Mintzberg, the way to work, and the way to compete, is rather different in these two kinds of tasks. When focusing on the development of one-of-a-kind

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<sup>73</sup> It is interesting to note that we speak of relatively small distances. The allocated workers remain in the same city, not in another time zone. The point is simply that they are in different offices most of the time.

<sup>74</sup> This is a counterfactual argument that is made reasonable because the employees themselves mention it, and because the firm is a specialist in knowledge-management tools. On counterfactual arguments and analysis, see e.g. Fearon (1991), Lebow, (2000), and Sørensen (2004).

<sup>75</sup> The Product® is a name I use about a technology – a computer program – that the Firm bought through an acquisition some years ago, and thereafter used substantial amounts of resources to improve. The Product® has been a door-opener to several very important markets abroad. The Product® is a computer program that represents an organization and its tasks and processes in a way that gives a very good overview of the present situation and the consequences of activities and strategic choices at all levels in the organization. In short, it is a useful tool for management.

<sup>76</sup> “The Parts™” is a program package used as a basis for the applications that the Firm implements for their clients. This is a program package that may be seen as the fruits of the Firm’s activities over the years, to develop work-process support systems. It is a packaged representation of the accumulated technological knowledges of the Firm.

<sup>77</sup> Informant c3.

services and products, the work was based on creativity, learning from experience and intensive cooperation between highly-skilled individuals. This is a kind of work that requires and rewards knowledge mobility. The congruence between this kind of tasks and the organization developed around it contributed to the growth and success of the Firm. For those in the Firm working with system development, it is natural and necessary to keep on sharing, and to keep up the ideology of knowledge mobility. However, for those oriented more towards markets, and the financial tasks of the Firm, the needs and challenges are more connected to efficiency, to the reuse of knowledge, and to pricing by licenses rather than hours. Using time, energy, and money on talk, and informing everywhere about things people don't need to know, is not seen as very productive. What developed was a growing discrepancy between the ideology of knowledge-sharing and the relative decline in the need for this kind of knowledge-sharing: In an almost Marxist like manner, we may say that as the processes of production in the Firm changed, the rationale for knowledge mobility decreased, and a discrepancy developed between the ideology supporting the old needs and the new economic basis. The foundation of a configuration of power eroded.

A somewhat different, but related in consequence, paradox developed in the antagonism between, on the one hand, the services and products the Firm sold to its clients and, on the other, the ideology it hailed. The most important customers happened to be public and governmental organizations where the work process and the tasks are heavily rule-based case handling. In practice, this means that many of the Firm's employees have been allocated in the offices of governmental administrations for months and years; it means that they have been buried in the problems and actualities of rule-based case handling and hierarchical public organizational designs. These are very different from an organization where knowledge-sharing and autonomy of employees lies at the core. It is the very task of these employees to influence the organizations of the customer through their technological and organizational expertise – that's what they are paid for. However, it is naïve to think that there is not influence going in the other direction as well. After all, as one informant stated: The present state of knowledge and the present technological portfolio of the Firm *“have been created in a fruitful meeting*

*with the national government administration.*”<sup>78</sup> Thus, the knowledge management systems developed by the Firm are technological applications for steering knowledge utilization, securing uniform application of rules and procedures in quality-controlled case handling routines. As one informant said about navigation with “the Product®”: “(...) *all cannot be captain, to put it that way. The model tool requires a captain – there is something very democratic about it in that it makes things easy to talk around and about – but, in the model, the work structure is quite radial and hierarchic. So that may be a dilemma, I’m not sure...*”<sup>79</sup> In such cases the creativity, the new solutions, the effective shortcuts that are expected to result from knowledge-sharing (and which are necessary in a competitive development-business environment) are not a part of the desired work process. On the contrary, public-sector case handling is based on stability over time, and uniformity among cases. Knowledge-sharing in such cases is about increasing the efficiencies of the employees’ information searches, and securing the collection and sharing of required information and knowledge.

To put it sharply, an inconsistency grew between knowledge mobility, which was what they preached, and knowledge policing or harnessing, which was what they did.

#### **6.3.4 Decreasing mobility – increasing specificity**

Altogether, the development of the Firm, its activities, its technological portfolio and its composition of customers, indicate a relative decrease in the mobility of core knowledges (or a relative increase in core knowledge specificity). Irrespective of the reasons for this change, we should expect it to increase the likelihood of a more rigid and controlling organizational form (given our theoretical priors). With 20/20 hindsight, we now know that this happened. But it would be premature to jump to a conclusion that the changing organizational form was a result of the described change in knowledge specificity. We need, I believe, both to substantiate better the actual connection mechanism between increasing specificity and the creation of a hierarchy, and we need to assess alternative explanations. We can do the first by describing the change, and the new organization, and we can do the latter by evaluating reasons and rationalizations on

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<sup>78</sup> Informant s2.

<sup>79</sup> Informant s2.

the changes. These are the tasks of chapter 6.4.

## 6.4 The coup d'etat

In a seemingly hasty summoned general meeting the old CEO informed the employees that he had resigned immediately due to differences with the Board on strategic issues. The Chairman of the Board, which represent the largest group of owners – the ItGroup – temporarily constituted the financial director as CEO. According to the Chairman of the board, the liquidity of the Firm and the security for sufficient returns on the owners' investments would be emphasized in the months ahead. Furthermore, they would implement a less complex organizational form, with clearer lines of responsibility. The new CEO continued by stating that the strategy of the Firm is as it was, and that business should proceed as usual, was there any questions from the audience?<sup>80</sup>

### 6.4.1 Organization - hierarchy

The actual changes were significant and comprehensive. First, there were changes to the organizational structure. A short time after the general meeting, a new organizational map, consisting of four divisions and an administrative staff, was presented. Three divisions were directed against segments of the consultancy market, and one division was a product division, specialized in taking care of the Product® and the Parts™. This organizational form implies clearer lines of responsibility, centralized decision processes, financial responsibility placed within the different divisions, and fixed relation between roles and functions within the Firm.

Second, there were several changes of core personnel. Division leaders were appointed. The old CEO was replaced by the former financial director. The new CEO used to cooperate well with the former CEO, but they were seen as diametrically different people. While employees saw the former CEO as too optimistic, “*the financial director was too pessimistic.*”<sup>81</sup> Actually, several of those given leading positions in the “new” Firm were, to some degree, outsiders in the old organization. One informant said,

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<sup>80</sup> I am thankful to informant s1 and c4 for describing the general meeting for me.

<sup>81</sup> Informant c1.

in what was meant as an understatement: *“There are persons in the leading positions now that had attitudes that weren’t mainstream before.”*<sup>82</sup> These people were outsiders in terms of both points of view, as well as in terms of style and capacity some of them stayed outside the core: *“Some of those who are in leading positions now didn’t participate very actively in the decision processes before, which were more of an argumentative character.”*<sup>83</sup> In short, changes in the leader group contained a change of individuals as well as a change in mood and style. The new leaders didn’t represent the old culture; they were different.

Third, the new regime removed the organized processes and the support for working across projects, while no new measures, neither in rhetoric nor in practice, were taken to reinstall an emphasis on knowledge-sharing and organizational culture. The ideological elements of the old regime were substantially tuned down. *“They did several things that counter the philosophy of the old organization. (...) A part of the old identity is gone. (...) This with distributed decision authority, a world where you actually could choose your own boss, and have several at the same time; this that you had the possibility to create your own future in the Firm; finally, the knowledge-sharing effect we achieved by not making organizational walls – that’s what they’ve done now: making walls.”*<sup>84</sup>

#### **6.4.2 Timing of the coup**

Besides the actual changes made in the organization, the way it was done was remarkable. It was a substantial change, it was surprising, and it was decisive.

Most employees were taken by surprise and actually did not have a clue about what was going to happen. *“I became very surprised over what happened. I started to hear things and rumours less than a week in advance actually. So that means things happened fast...and then I realized things had gone on for a long time.”*<sup>85</sup> In addition to being surprised, the employees were shocked, and they were sad for the fate of their CEO, to whom many of them felt attached. They were also angry about the way the change took place. This is illustrated by some of the statements made by my informants:

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<sup>82</sup> Informant c3.

<sup>83</sup> Informant s2.

<sup>84</sup> Informant c4.

<sup>85</sup> Informant c4.

*“The way they did it ... it seems almost like a coup d’etat, you see? And with all the consequences it will have... They take over all the relations to customers, threatened to kick out mercantile contacts and project leaders and so on ... it made a lot of fuss (...) Well, what I mean is that the process has been driven from behind the back of all the employees. It has been very nasty.”*<sup>86</sup> A voice more careful in its choice of words said that: *“In principle the Firm could function perfectly with this kind of divisionalized structure with business units as we’ve got now. I think that it is the way it happened; the things that happened around this in the company that is not particularly positive for the company (...) The type of organization can cover our needs pretty well. I see this as a preliminary transition solution.”*<sup>87</sup>

Few of the employees that opposed the change raised their voice in public, and few left. In this way, the coup was successful. It was sudden, fast and surprising. Most of all, it was perfectly timed. The timing was important because the Firm itself was in a kind of liquidity crisis. In addition, the entire industry had fallen into a deep recession after the 11<sup>th</sup> of September 2001, and the Enron scandal. The first issue made the Firm vulnerable, and the second issue made exit from the Firm costly, and voice risky, to use the terms of Albert Hirschman (1970). My most angry informant used these words: *“It’s clear; they’ve grabbed everyone by the balls now, to put it frankly. It’s clear that there are not many who dare to do anything now, because the market is like it is. (...) The whole market now is like – if you leave your job now, you’ll have a hard time finding a new job, you see. The market is completely dead, so it’s extremely good timing for a coup now, when the market is so very much on their side.”*<sup>88</sup> This means that in addition to the relatively shrinking level of knowledge mobility in the Firm, the combination of liquidity crisis and external forces contributed to limit inter-firm labor mobility for the groups involved with the Firm. For the talented programmers and consultants of the Firm, the option of jumping to a competitor and/or the option of starting up their own company used to be highly relevant. These employees were potentially very mobile. Now they were stuck. And the change took place...

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<sup>86</sup> Informant c4.

<sup>87</sup> Informant c3.

<sup>88</sup> Informant c4.



The Firm has become more traditional after the change. It has a more fixed and faired organizational structure and a more straightforward, less evangelic, self-presentation. Now, the company web page present the firm in this way: “*The Firm is both a product and a consultancy company, combining the Product® and the Parts™ with competent knowledge workers delivering solutions based on these products.*”<sup>89</sup>

Besides the actual changes, and the way the changes were done, we are interested in the question of how the change was, and can be, understood and explained. This is the theme in the next section.

### **6.4.3 Reasons and rationalizations – complementary explanations**

Having considered “how” and “when”, there remains the question of “why”. Why did the Firm change from a heterarchy to a hierarchy? There are many possible ways to answer this question. And it is far from straightforward which one to choose.

Actually, many see it as odd, and contrary to insights from the new literature on “knowledge creating firms”, to change a firm in this direction now. Many also hold that it is an empirical tendency that businesses change in the direction of more “boundaryless organizations” (e.g. Cross, Yan and Louis, 2000). Wasn’t this actually a Firm organized in a modern way, emphasizing the right things, and after a long journey, heading toward success (Driver, 2002; Nonaka, and Takeuchi, 1995; and von Krog, Ichijo and Nonaka, 2000)?

Classical organizational theory, on the other hand, as represented by e.g. a Mintzbergian approach, (Mintzberg 1979; 1989; Groth, 1999. See also) would lead us to see the coup as a matter of choosing the optimal organizational form in a new situation. Organizational forms may be seen as a function of time (age, history, maturity), developing strategies and tasks, or exposure to risks (see e.g. Collins, 1988:191-193, and 278-279). The new Management, and the Board that helped them into their positions, tell a story of risk minimizing and of securing returns for investors. In a functionalist manner, one can expect firms to end up with the “natural” organizational solution, adapted to the productive and competitive environment. Thus, according to

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<sup>89</sup> Company website.

several traditional organizational science approaches, organizational forms tend to develop exactly the way they did.

Straightforward greed is also a potential explanation. Some opponents among the employees expressed views suggesting that the actual majority of the Board should be understood as an unholy alliance between owners that wanted to extract as much money as possible from the Firm, and disloyal (to the old regime) employees that wanted to feather their own nest.

My alternative argument is that the change may be accounted for by the presented logic of asset specificity. However, some of these explanations correspond, some complement, and some contest one another. Let's consider how.

### **An organizational science approach**

From a Mintzbergian point of view (Mintzberg 1979; 1989; Groth, 1999), the change was as expected in three ways. First, the fact that the organization transformed in this way is predictable because the required degree of communication necessary to run a heterarchy (or adhocracy, which is the Mintzbergian term) increases substantially as the organization grows.

Second, the sort of services provided tended to develop in the direction of standardized services and/or products. Such routinized work is not the strong side of a heterarchy, because, as he put it, "people talk a lot in these structures; that is how they combine their knowledge to develop new ideas. But that takes time, a great deal" (Mintzberg, 1979:463). This, in turn, makes them less competitive compared to more streamlined organizations focused on performing well in the fields of routinized work. Thus, using a functionalist line of argument, we can see the Firm being forced to transform or to succumb in a harsh business environment. Both growth and standardization took place in the Firm.

In addition, the transformation was far from welcomed by a number of employees. This is the third way that the change was in accordance to Mintzbergian expectations. Many employees had strong negative emotional reactions. Groth writes, building on Mintzberg, about the transformation of Adhocracies: "Such transformations are, by the way, seldom made without conflict and defection of a number of experts. Those who prefer innovative work and adhocratic organization will fight fiercely

against the changes, (...) [experts insist] on organizing work in projects and participating in decision making on all levels” (Groth, 1999: 397-398). On the other hand, what is remarkable here is that, although they voiced heavy criticism and strongly opposed the change, they didn’t “fight fiercely”. We will return to this “obedience”.

Thus, the transformation can be conceptualized and accounted for with the help of Mintzberg’s 25-year-old theories. Still, there are problems with the Mintzbergian approach. First and foremost, the functionalist view that there exists an optimal organizational solution for an organization with a given configuration of tasks and size, that it will develop towards, blurs the actual processes of change in firms. Functionalism tends to force a normative bias upon the researcher: some solutions will, a priori, seem appropriate and in line with the future, while others will seem awkward and based on narrow self-interests or lack of understanding.

However, if we evaluate the Mintzbergian approach to this kind of change, without the functionalist bias, we end up with two models. The first would emphasize two related driving forces for the change: communication and growth. Since the heterarchy depends critically on communication and information sharing – we may say knowledge mobility – for the coordination of its activities, heterarchy is put under growing pressure as the organization grows. Without prefixed channels in which the information could flow, the amount of talking necessary to coordinate becomes unbearable to actors seeking other goals (than the exchange of information and knowledge itself). This, in turn, may create a climate that foster actual pressures for change. The second model connects communication and routine work in a similar way. Again, a heterarchy depends critically on knowledge and information mobility for the coordination of its activities. Since competition over products and services based on routinization and repetition tend to be a competition on price – unless a temporary monopoly in the form of e.g. a patent is granted – those who can minimize coordination costs have an advantage. Talking is costly if it is just a method for coordination, and the organization faces a choice between a very difficult financial situation and an organizational shift.

Basically, both these models emphasize historic development and maturing firms. When stripped of their functionalist-driven explanation, these models are compatible with a logic based on knowledge specificity. They can explain the change of

an organization, from heterarchy to hierarchy, in terms of changes in relative knowledge mobility. Growth and increased costs of communication reduce the relative knowledge mobility, and tend, for that reason, to support a change from flat to hierarchic organization – or configuration of power. Clearly though, the organizational theory approaches that focus on growth or costs of communication do not represent competing types of explanation, but complementary or supportive ones. There is no contradiction between a knowledge-specificity approach and a Mintzbergian approach if we avoid the inbuilt dangers of functionalism.

### **Approaches of strategy and risk**

The Chairman of the Board claimed that the restructuring was taken with reference to the return for investors. Undoubtedly, the job of any responsible board is to take care of the interests of the investors from whom they have their mandate. However, it is not clear-cut how this responsibility is to be understood and managed. Besides, the board is a group of actors. It is possible that each one of them, as persons and as representatives, has their own agenda. Nevertheless, it would be naïve to assume that a decision in the board is taken with all members having only the return of investors' capital, or the best interest of the Firm, as their only, or first, guiding principle.<sup>90</sup>

Addressing the audience of the general meeting, the Chairman said that the former CEO had left because he disagreed with the Board on matters of strategy. Further statements from him and his allies indicated that these disagreements were different opinions with respect to risk profile. Several of the employees I spoke with understood this point of view, although they disagreed. One of the most critical voices held that *“So my opinion about what happened is this: It has been a conflict situation in the Board. The Board has seen it as problematic, this, which has been going on (...)*

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<sup>90</sup> Actually some of the frustration with the process was based on the fact that some members of the Board got personal advantage from the change, and accusations were made that these possibilities were guiding some people's positions. I had no access to the Board, and I certainly had no access to the inner thoughts of its members when doing this research. Therefore any interpretation of the Board's decision is highly speculative. This is so whether the statements are taken from the mouth of the Chairman of the Board, or from other actors and stakeholders.

*That it has been too risky to drive like it has been done – with (name of CEO) at the wheel.”<sup>91</sup>*

The references to risk are probably linked to the development of what I have called The Product®. A few years ago, the Firm found the basis for a product of their hearts: A product with the potential to support, describe and manage complex knowledge work. They bought it and started the developing task. The Product®, which is a computer program for visualization of complex organizational structures and tasks, turned out to be very good. It is technologically advanced, it has a large market potential for a wide range of customers (domestically and internationally), and it is compatible and complementary with other products supplied by the Firm. The last years have shown that large customers have started to use it. The Product® is turning out to be successful.

However, the path to a successful Product® was not obvious at the time when this decision had to be taken. It is only through belated wisdom or strong dedication that the choices were simple. The development process became costly. One estimate is that between 30,000 and 40,000 hours were used for developing the Product® after they bought it. The problem was not the cost in itself, which may turn out to be rather moderate, seen in relation to later gains. The problem was that the development costs were taken without the explicit support of the Board, and without the costs being shown in the accounts. The development was financed from daily operations or projects. This contributed to a liquidity crisis. Such a crisis can be expected from such a strategy. However, it was seen as very important for the fiery souls of the Firm to develop this product. The core group of the Firm saw the possibilities, the market, and the timing. In addition they saw that this product could become something they had wanted for a long time. They accepted the costs, did the job, and hoped for the best.

A formerly centrally placed employee, says this: *“We have finished the product development of the Product®, we see that we will win through in the USA, even though it still takes time in the market (...) accidental circumstances were responsible for us coming this far in time, so that when the upheaval came this summer – partly pushed ahead by persons who ment that we should never have bought the Product® - it had*

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<sup>91</sup> Informant c4.

*gone so far that both the Chairman of the Board and others said that now we had to keep going. If the upheaval had come two to three months earlier, we could have risked not understanding that it went well – we wouldn't have had any contracts. So we had to keep it (secret) ... to balance this cost – risking the company – with some other considerations. Now we are in a kind of phase in between. Personally I feel that it was worth it. We just have to get through this phase without too much turbulence.”<sup>92</sup>*

The Chairman of the Board and some of the employees saw this as a risky strategy and maybe a somewhat illegitimate strategy. *“I can see why they kicked him (the CEO) out. He took the Product® process without clearing it with the Board – 30,000- 40,000 hours – the reporting has been too bad – too optimistic all the time, until the numbers started to become realistic – half a year ago. Before that, negative comments were brushed aside.”<sup>93</sup>*

For some time it seems, opinions on the way to work differed, without anything happening. However, the strategy on the process of developing the Product® created a difficult short-term financial situation. At the same time an international recession developed within the ICT and consultancy businesses. Even though the results of the Firm were much better than a lot of its competitors, and certainly better than the results of other ItGroup firms, the difficulties became more serious. Not only because of the situation in the Firm itself. *“Seen from the ItGroup's side – They lost a billion last year! We are told to make money and we don't make money, even though we almost don't lose anything in a situation where most of the others lose very much money, and we have invested a lot and are ready to start harvesting... If we had an owner with a bit more money – a bit more patience... That was not the situation. I understand that.”<sup>94</sup>*

Some employees didn't accept this explanation that easily, and felt that the focus on a financial crisis in the Firm was a straw man. Taking the fact that the entire industry was in the midst of a recession, the firm was doing comparatively well: *“Actually our expected deficit was small. It was less than 10 million (NKR), and in this world here,*

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<sup>92</sup> Informant c3.

<sup>93</sup> An indirect quote referred to me by informant s1.

<sup>94</sup> Informant c3.

*that is – at least we feel that it's not a lot. There are those running with like 50 – 100 millions in deficit, companies just a bit larger than ours.*"<sup>95</sup>

There was a feeling among some that the owners did what they did to harvest the fruits of the work the Firm had been doing for years. *"The owners (...) are sliding towards the edge. And that, to put it this way, makes what they do, not completely rational, because what they do now, is to pick up the pieces. (...) That they do it for the Firm? I don't think so."*<sup>96</sup> Actually the statement made by the Chairman of the Board does not conflict the harsh conclusion above. He said that they did what they did for the sake of the investors and their returns, which is legitimate. They cared for the owners – not for the Firm.

A related dimension of the risk approach is seen if we consider a series of events around the "coup", seen from the angle of the ItGroup. In a news article early in the summer of 2002 the problems of the ItGroup was presented. The first quarter of 2002 they lost 15 million Kroner. In the same period in the year before they earned 30 million. One of the things the ItGroup wanted to do with the problems was to reorganize their activities in two groups – consulting/software and infrastructure. However, in the summer of 2002, market analysts recommended to stay away from shares in this company for the moment. Three months later, after the summer vacation, the event I have labeled a coup d'état took place. Less than a month later the ItGroup finalized a new emission of shares. This gave the company between 60 and 70 million Kroner in fresh money. Clearly though, the ItGroup were in a vulnerable situation during most of 2002. Therefore, the surprising news that the Firm had used between 30,000 and 40,000 hours in developing the Product®, and thereby approaching a liquidity crisis, was bad news for the architects behind the emission in the ItGroup. In a worst case scenario the problems of the Firm could hamper the emission in the ItGroup.. Thus, the reason for the take-over may lay in the combined situation of the Firm and its largest owner group.

### **Approaches on control and informal groups**

According to Collins (1988:451), the first major finding of organizational research was

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<sup>95</sup> Informant c1.

<sup>96</sup> Informant c4.

the existence of informal groups. Organizational theorists like March and Simon (1958), Etzioni (1975), and Lysgård (1981) demonstrated that formal organizational structure does not necessarily explain the channels of organizational control.

The presence of informal groups, or the utilization of cultural or informal control can hardly explain the change of the Firm, but it can, and probably does, account for a substantial part of the reactions to the change. As mentioned, the Firm had another group of “owners” in addition to the formal owner group. In the Firm, there was a distinct feeling of ownership among many employees. Speaking of the change of the Firm, all my informants used terms like “we” and “them”. It is reasonable to speak of an ownership based on cultural and historic legitimacy. To some extent then, culture, in terms of ideology and identity, participated in a configuration of power that even involved ownership – an ownership that differed from the legal ownership. This we-feeling, this historic and cultural ownership, made it particularly difficult for many to accept the alliance that resulted between employees’ representatives on the board and the owners’ group. One informant used the terms “the betrayer” about one of the employee’s representatives on the Board. It was very clear that to take the side of the owners on the Board (and thereby to ignore the historic and cultural belonging to the we-group) was a serious violation of cultural norms.

However, the violation of norms took place just as the culturally based configuration of power lost its capacity to launch sufficient sanctions, due to a general recession in the consultancy and in the software industry. On the other hand, the cultural norms and the feeling of belonging did not vanish in this situation. Actually, it seemed like the cultural norms were mobilized in the process, due to the pressure; they were conserved rather than activated. We may evaluate this briefly by considering why there was no active resistance.

### **The translations of the obeying**

As was made clear, the changes were not welcomed in the Firm. There were many harsh words in the process, but no actions were taken against the new people in charge. It seems like the changes were accepted, if not liked. There were strong opinions voiced internally, but no active resistance.



In my approach to power, the reluctant acceptance of the coup cannot be explained by the positions, or the “power”, of the CEOs or the majority of the Board. Neither the motives nor the “power” of the “powerful” can be used as explanations for other peoples’ actions (or lack of actions). As Latour said: “The faithful transmission of, for instance an order by a large number of people is a rarity in such a model and if it happens it requires explanation” (Latour, 1986:267). So, when the employees and the ideologues of the old regime obeyed the “new popes”, we need to interpret the interpretations, interests and motives of those that are obeying. As developments within the firm have been presented, these interpretations are likely to differ among actors.

The old ideologues, the core of the old regime, were remarkably, although not totally, quiet. In the first general meeting, a dramatic request was made by one strong opponent to the shift: “(...) *do not abandon the ship, but hold out through the winter. We will have a temporary technocratic administration, but we will get back in charge. We cannot afford to loose all that we have built, everything we believe in. Stay and fight.*”<sup>97</sup> This person saw the new regime as a temporary situation. The right people will get back in charge. The important thing now is to stay in there, save as much as possible, and wait for the right moment to take back what was rightfully theirs. This was not a far-fetched or isolated point of view. Another informant told me: “*It shouldn’t be made an internal conflict now. That would be wrong timing. So I think that we, who are strong supporters of the old regime, should stay calm, till the dust falls. That is so that we still will have something to build upon. And I think we must take with us all the good people that were here.*”<sup>98</sup> In this line of argument, we see that the “old culture”, the old measure of coordination and control – the ideology and the identity – is still alive and working. But in this situation, it translates into a transitory enrollment in the new regime, because they “*see this as a preliminary transition solution.*”<sup>99</sup>

Another “strategic” reason for staying in the firm, and for minimizing the level of resistance, is also related to difficult times. Because of the general recession in the sector, it is not easy to start up new companies, and it is not easy to get another job, not

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<sup>97</sup> Referred by Informant s1 and c4. Quotations from this meeting are second hand, and might differ slightly from the exact wordings used.

<sup>98</sup> Informant c4.

<sup>99</sup> Informant c3.

even for talented programmers and experienced business consultants. For those really disliking the developments in the Firm, exit was a costly alternative in bad times. Note that this kind of external specificity, or exit limiting situation, hardly can be seen as a cause of the change. However, it may be a contributing cause for the low level of active resistance, and thus, it may also be seen as a “permitting” cause for the change.

It is well-known that for an organization, group solidarity may be a two-edged sword. Rarely the objectives of the we-groups coincides the formal objectives of the organization – unless the organization is fairly egalitarian (Collins 1988: 454). In this case it seemed like both the informal we-groups of the Firm – the supporters of the old regime – and the legal owners – the new rulers – shared a (temporal) interest in keeping quite.

Apart from these strategic reasons for accepting the change, employees recognized that there were problems as it was. They saw possible lines of development within the Firm in spite of the momentary frustration that they might have felt. First, many engineers recognized that the old regime was a bit too evangelic, and that the organization was sometimes chaotic. Many hoped that things would become a bit more orderly now. Besides, there are some who didn't care: it's no big deal, business and programming as usual. Second, the most product-oriented employees might find a desirable place in the product division, while the consultancy-oriented ones may find hopes in the divisions for that. *“It is the product division that correlates with my vision. We have all the time focused on products, but then, we had to live on something, selling hours, and it has become more and more of that...”*<sup>100</sup>

Thus, even though there were voices of resistance, the different elements of the Firm enrolled rather smoothly under a new regime. Each of the employees of the Firm, whether they used to be leading figures or not, had their own reasons and motives for staying, for keeping quiet, and for keeping up the good work. The situation was translated in a number of ways. Several of these are compatible with a knowledge specificity approach.

In general, what is supportive of the asset specificity position is that the market situation that contributed to making exit costly, and voice risky – which is asset

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<sup>100</sup> Informant c3.

specificity in Hirschman's terms – contributed strongly to the pacification of employees. Activities that countered the interest of the Firm were not taken – not in the form of exit, and not in the form of active resistance and raising voices, except in closed rooms and meetings.

## **6.5 Conclusions on the Firm**

### **6.5.1 Summary**

This chapter has presented an explorative case study of a process of organizational change in a knowledge-intensive firm, which I have called the Firm. The empirical material, on which I have built the case, is in-depth interviews, conversations, web pages, annual reports, press releases and some additional written materials.

In the autumn of 2002, the Firm was reorganized from a complex flat organizational form to a standard divisionalized organizational form. In this change from heterarchy to hierarchy, the administrative leadership was also replaced. The change of organizational mode included the removal of several organized processes and activities for knowledge-sharing and transferring. Together, it seems like the transformation of the Firm, in terms of organization, management, and knowledge mobility was fundamental.

The story of developments in the Firm is an exploration of a logic where changing specificities and mobility of knowledge representations is expected to influence preferences and modes of organization. Within this approach, what happened was this: the Firm grew, started to focus on selling packaged and reused knowledge and technology. As a result, the Firm focused on knowledge of how to police, rather than share, knowledge. The growth implied an increasing need, and increased costs, for involvement in the coordination of firm activities. Practices of knowledge mobility, and a heterarchic organization, became difficult to maintain. The Firm failed to implement technological solutions to counter these growing problems. The move towards emphasizing packaged knowledge and technology implied that the relative need for, and benefits from, talk, communication and sharing of knowledge – knowledge mobility – decreased. The production and selling of tools for policing, rather than sharing,

knowledge implied that an inconsistency gap grew between the ideology of knowledge mobility and sharing that the Firm preached, and the products of knowledge steering and harnessing they produced.

In short, the culture and the practices of knowledge mobility were undermined and knowledge became increasingly immobile and specific within the Firm. As the recession developed, also the labor mobility between firms in the entire consultancy and software industry was reduced to a minimum. In the autumn of 2002, a group of stakeholders, with a majority group in the Board, took control and reshaped the Firm. One configuration of power, working as a cultural regime of control was weakened, and another configuration of power took its place. A hierarchy replaced a heterarchy.

Many of the employees of the Firm raised their voices against the changes, but this was mostly in company internal forums and in settings where they were granted confidentiality. Nothing damaging reached the market. As it seems, consideration to the well-being and survival of Firm, the employees own vulnerability in a troubled Firm, and the risks of being exposed to the labor market during a world-wide recession converged to silence the opposition. Exit becomes costly and voice risky. At the same time, some employees saw the possibilities and advantages with the new more streamlined organization.

### **6.5.2 Concluding remarks**

Reorganization and CEO-replacements are not rare events in business life. In this, the events of the Firm are ordinary. However, the Firm is not ordinary. It is a spear-point in the development of knowledge-management tools. Many of the employees have a profound interest in, and understanding of, theoretical as well as technological knowledge on knowledge as an economic and organizational entity. Thus, developments in the organization of knowledge work in the Firm are potentially illuminating for understanding how characteristics of knowledge and configurations of power are related. On the other hand, the specificities of the Firm indicate that observations in such a case are not useful for making formal and valid generalizations. In spite of this, such a case may illuminate a theoretical argument.

The theory part of this dissertation concluded by stating some expectations on how asset specificity influenced configurations of power. The ultimate expression was

that (5) *Asset specificity will covary with hierarchical or bureaucratic forms of control, while asset mobility covaries with more flat organizational forms.* I have argued that this covariance has been observed. The study of the Firm, I believe, has shed light on how this may work. It has been an aim to *explore* empirically whether, how, and why changing characteristics of knowledge representations – in terms of specificity and mobility – can be seen to influence configurations of power. The study doesn't exclude competing understandings. Actually I have argued that the expectation based on the changed mobility of knowledge assets is compatible with a series of expectations deduced from organizational studies. First, it is compatible with explanations due to growth of the firm and the resulting relative increase in communication costs (Groth 1999); second, it is compatible with explanations based on the changed needs of communication due to a shift towards productification and routinized work. Collins (1988:463) holds that “tasks with a high degree of initiative and uncertainty are carried out most effectively by internalized control and information control.”

Less clear is the fulfillment of the expectation with respect to preferences. I stated in chapter five, that (1) *when knowledge representations, (texts, technologies, experts, or communities) are specific (inflexible or immobile), preferences among users of those knowledge representations are stronger than when the representations are mobile.* Preferences were strongly voiced, but I have no viable point of comparison. What is clear is that the voicing was loud only when confidentiality was granted. Outside the circle of stakeholders, me included, nothing was known. Thus, the level of external quietness was not as expected – increasing specificity is expected to increase voice – but, on the other hand, the internal loyalty was strong, as specificity is expected to create cohesion.

Another point, which is of importance to the assets specificity theorizing, is that most of the changes in knowledge mobility that are described in this chapter are results of strategic decisions or non-decisions. This relates to the expectation (7) that: *the degree of knowledge mobility may be changed through strategic and/or political decisions.* It is a result of strategic non-decisions when the Firm didn't use time and energy to develop adequate technological tools to uphold the need for knowledge sharing as the size, tasks and customer portfolio changed: it is also a result of managerial decisions when the Firm developed in the direction of utilizing packaged, or

commodified, knowledge. Thus, there is no signs that the decisions that contributed in a change in what I have defined as (relative) knowledge mobility was taken to influence on what I have defined as a configuration of power, but it is relatively clear that the changed knowledge specificity were not natural, or exogenous to politics or strategy. Thus, a closer integration between studies of knowledge management and asset specificity research is likely to be fruitful.

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A main goal of this case study has been to investigate, describe, and interpret the process of organizational change in the Firm, in order to illuminate a particular theoretical perspective. However, as I have argued above, the interpretation of the change is compatible with other theoretical explanations of organizational change as well. The voices of the few employees I have interviewed have suggested – partly implicit and partly explicit – a wide array of potential explanations, ranging from greed, strategy, risk minimizing, strategic positioning, improving efficiency, and financial difficulties. Organizational theory does offer models accounting for most of these explanations (See e.g. Collins 1998:467-478; and Van de Ven and Poole, 1995, for overviews). In studies of organizational change in Norway, Hammer et al. (1994) found, in a survey-based study, that organizational change most often was undertaken with the aim of increasing efficiency, and as a response to financial difficulties. It all seems reasonable. However, the kind of case study undertaken here is, by default, heavily underspecified, and could probably have been used to illustrate a large portion of available contemporary organizational theories. Thus, it is not in comparing and evaluating alternative models that the present case study has its force. It is useful to the degree that it may contribute in the underlying theoretical and illustrative task. It is useful if it contributes to the wanted montage effect.

One spot is now painted in my empirical montage. In the next chapter we will continue to explore the relations between knowledge specificities and organizational modes, but we will do this on a higher level of aggregation, with many cases.

## 6.6 Epilogue

Before leaving the Firm, some pieces of information on what happened after may be interesting.<sup>101</sup> The time after the upheaval in 2002 has also been eventful for the Firm. Between 20 and 30 people had to leave their jobs due to the difficult economic situation during 2002. The ItGroup continued to have economic problems. However, the Product® turned out to be as good as the Firm initially believed. They got several large and very important contracts in American markets. The technology got international attention. The Firm also got new contracts at home based on “The Parts™”, and on their consulting activity. Things looked brighter.

However, late in 2003 the ItGroup sold their shares in the Firm to a holding company. Half a year later, in 2004, a part of the Firm – the product division (including the Product®) – was separated from the rest and sold to an American company. This was a possibility few saw as realistic, or wanted, when I worked with the Firm. Due to this sale, the Firm was back where they started before acquiring the Product®.

In 2005 the holding company sold most of their shares to the employees. The new owner structure has two owning groups: The employees own around 70 % while a holding company has the remaining 30 %. The end of the history then, is that the cultural, moral owners, had, at last, become the legal owners. The organizational structure as presented early in 2006 is based on the nature of internal tasks rather than market segments. In terms of communication and knowledge sharing the latest organizational form seems to be designed to minimize communication costs and, once again, to ease knowledge mobility in the production and development processes.

It is tempting to end the story with the words of one of the old guys in a meeting during the turbulent upheaval: *“do not abandon the ship, but hold out through the winter. We will have a temporary technocratic administration, but we will get back in charge. We cannot afford to lose all that we have built, everything we believe in. Stay and fight.”*<sup>102</sup>

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<sup>101</sup> This is in the form of an epilog because the events presented here took place after my work with the Firm was finished. Information in the epilogue is based on news accounts.

<sup>102</sup> Referred by Informant s1 and c4.

# Chapter 7.0 Regime Rigidity – a Multivariate Assessment

## 7.1 Introduction

The previous chapter investigated the relationship between changing knowledge specificity and changing configurations of power, understood as organizational forms, inside one knowledge intensive firm. This chapter leaves the localized practices and communities of knowledge behind to see what can be found by exploring the relationship between the specificity of assets – where knowledge is one of several types – and configurations of power, understood as regime type, among countries of the world. Thus, we go from a case study approach to statistical comparative social science. The key theoretical concepts like asset specificity, and in particular knowledge specificity, and configurations of power, are the same, but their operationalization are very different due to analytical contexts that are poles apart. What remains constant, though, is the focus on how knowledge specificity, among the specificity of other types of assets, affects configurations of power.

When we work with larger-N cross-national inquiries to unveil the workings of concepts like knowledge, specificity, and configurations of power, we deal with what Charles C. Ragin (1987) calls metatheoretical categories and macrosocial units. Replacing the case study approach with a large-N-comparative approach does not mean that we have become more or less attached to empirical realities. Still, the analytical connections between theoretical concepts and empirical realities are different though. Following Ragin, we hold that: “It is not as data category that macrosocial units are important to comparativists, but as a metatheoretical category. What distinguishes comparative social science is its use of attributes of macrosocial units in explanatory statements. The special usage is intimately linked to the twin goals of comparative social science – both to explain and to interpret macrosocial variation. (...) For the noncomparativists, however, macrosocial units tend to remain abstractions. Noncomparativists can assure themselves that the patterns and processes they study exist in a society; the concept need not be operationalized explicitly. For the comparativists, however, macrosocial units impinge on their work in a fundamental



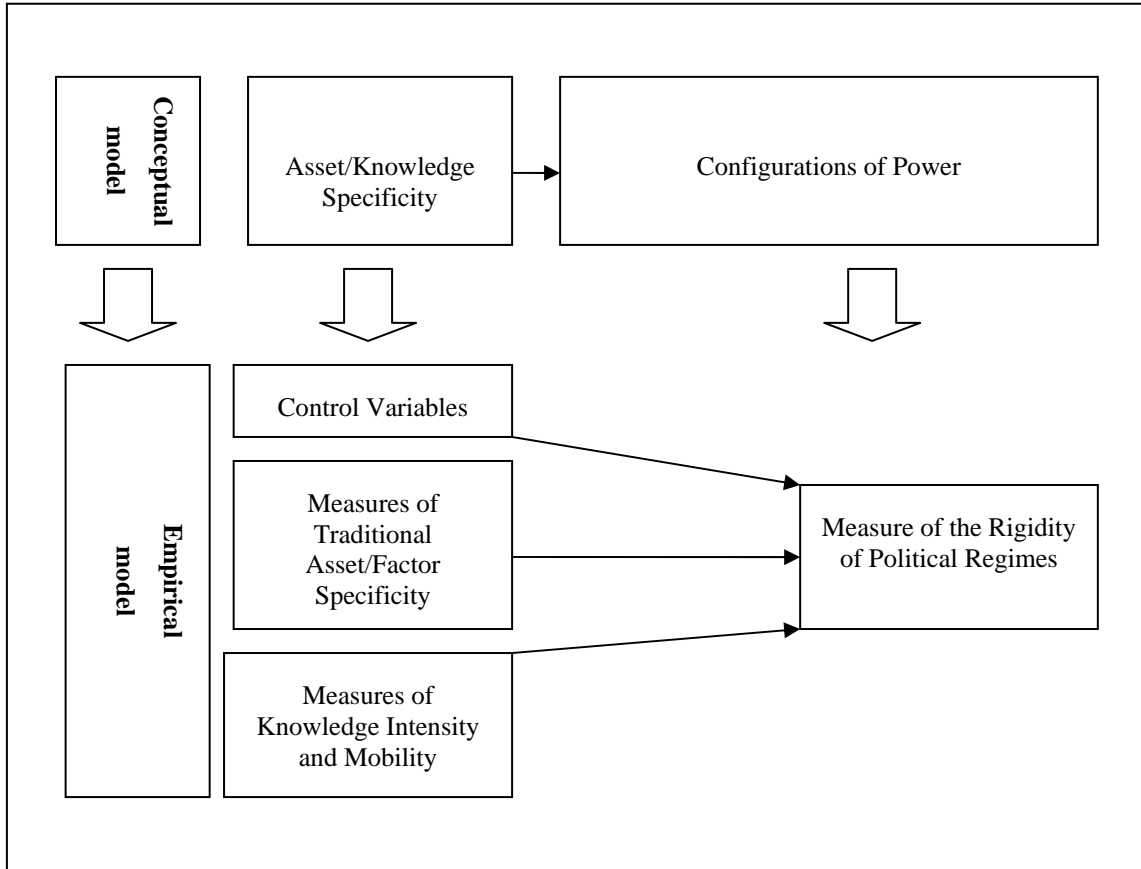
manner” (Ragin, 1987:5-6). Thus, it must be emphasized that data used are but representations of the main theoretical categories. Power, knowledge, specificity, regime types – none of these theoretical categories can be measured and evaluated directly. This also means that the availability of data that can be interpreted as representations of metatheoretical categories is crucial for the design of our empirical inquiries.

### **7.1.1 Method and models**

This chapter employs a statistical approach. As a result, we need to operationalize our theoretical or conceptual variables into measures on which relevant numeric data can be found and utilized. This may seem obvious, but as stated above, this is not a prosaic task. Since I argued that configurations of power are multifaceted phenomena, measurable variables can at the most capture parts of this whole. Furthermore, theoretical concepts can very rarely be captured and measured directly. Thus, our operationalized variables can never be more than proxies of what we, at the outset, want to analyse. Figure 7.1 illustrates the transformation that needs to take place, from conceptual to empirical models.

The conceptual model in the upper part of Figure 7.1 represents the theoretical expectation that asset specificity (e.g. knowledge specificity) influences configurations of power. This is discussed at length in part one of this thesis. The bottom part of Figure 7.1, labelled empirical models, illustrates the elements of the empirical study that will be undertaken in this chapter. This chapter will develop, find and utilize measures of asset specificity, of knowledge intensity and implicitly asset mobility, of political rigidity, and of a group of relevant control variables, with the aim of assessing the conceptual model in statistical terms – on a cross-national level.

**Figure 7.1 From conceptual to empirical model**



Chapter five developed a set of expectations for how asset specificity, in general, and knowledge specificity, in particular, is expected to influence different aspects of configurations of power. This chapter focuses mainly on the final end of the logic embedded in those expectations. That means that we will explicitly address the expectations that: (5) *Asset specificity will covary with hierarchical or bureaucratic forms of control, while asset mobility covaries with more flat organizational forms*, and that (6) *when a larger part of a national economy is based on specific assets the likelihood of an authoritarian, or rigid regime increases*. Expectations 5 and 6 are essentially the same, formulated and applied to different organizational levels. Thus, elaborating these expectations make up an assessments closely related to a test of the strong hypothesis from Boix's (2003) and Hiscox's (2001) studies, that national dependency on specific assets increases the likelihood that a regime will be autocratic. It is also related to the study of Rogowski (1998), where he studies the relationship between asset mobility and democracy. My hypothesis is that dependency of specific

assets covaries with political regime rigidity. Furthermore, and closely related – as I will argue – I hypothesize that increasing knowledge intensity will decrease the likelihood of regime rigidity.

The analysis will be developed as we proceed. After a brief presentation of the data sources, I will discuss how the main variables will be operationalized. Thereafter bivariate correlations will be presented, before we perform a multivariate assessment of the relation between asset specificity and configurations of power – in terms of regime types. The chapter thereafter concludes with some additional reflections on the relationship between specificity, knowledge and configuration of power – understood as political regimes.

### **7.1.2 Data**

To illustrate, represent, and picture the expectations in the models above I have gathered secondary data from a number of sources. The basis is “The Logic of Political Survival Data Source”<sup>103</sup> (de Mesquita, et al., 2003). In addition I have experimented with, and utilized variables from The ACLP dataset (Przeworski et al. 2000); World Bank Development Indicators (The World Bank Group, 2005A); The Polity IV dataset (Marshall and Jaggers, 2000); Correlates of War data (Singer and Small 1972; Small and Singer 1982; Sarkees, 2000); The Database of Political Institutions (Beck, et al. 1999; Keefer, 2002); The Penn World Tables (Heston, Summers, and Aten, 2002), and a dataset on international organizations developed in Wiik (2002).

The organizations and projects that gathered the data in the first place are highly esteemed. I have no reason to question the technical reliability and validity in terms of data collecting processes and processing. The interesting questions in terms of reliability and validity are connected to the meeting of factual data and theoretical concepts. Although I build on the diligent works of numerous others, this places the entire responsibility of the quality of data on me alone.

Several of the datasets cover large time spans. Despite this, I have not employed time series analysis. This is because not all the necessary and relevant data cover the

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<sup>103</sup> This is a dataset that is built on a number of other social science datasets. The dataset, and information about the set can be found at <http://www.nyu.edu/gsas/dept/politics/data/bdm2s2/Logic.htm>.

relevant time spans. Most of the data I use are from 1999/2000. The reason for choosing these years is pragmatic: I have chosen this year because it is reasonably close in time, and at the same time it is a year with good data coverage.<sup>104</sup> Some data however, are of a more recent date. Where data from different time periods are utilized, this is discussed explicitly. The operationalizations of variables are discussed as they become relevant in the analysis.

The data in this dataset has countries as cases. At the outset, the purpose was to create a dataset of all countries. That means that it is the population of countries, not a representative sample, that was the goal. As it is, there remains 174 countries in the dataset. This is relatively close to the total. However, not all data are available for all countries. As an effect of that most analysis are done with an N between 100 and 120.<sup>105</sup>

## **7.2 Operationalizations and measurements**

### **7.2.1 Configurations of power – regime rigidity**

“Configurations of power” is the theoretical label I introduced to describe power as a multifaceted effect. In the empirical context of business organizations I reinterpreted configurations of power in terms of organizational forms, as heterarchy and hierarchy, and including cultural and normative elements of the organizational structure. This is not a viable solution in a cross-national investigation of configurations of power as governmental systems. All nation states are based on hierarchical organizational forms (Weber, 1971). Thus, there are other characteristics of the national organization that

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<sup>104</sup> We live in turbulent times, and international events, like the fall of the Berlin Wall, and the 9/11 attacks, may change the course of history. Thus, the choice of some years instead of others may be influential. Some countries have another situation now than in 1999/2000. If this is accidental variation, the deviations are not analytically problematic. If they are parts of a trend – e.g. a wave of democratization – an analysis of the causes of trend could have been included. However, this particular analysis doesn’t include such considerations.

<sup>105</sup> Obviously, the countries in the dataset are very different. They range from the poorest to the richest, from the most to the least resource dependent; from the most autocratic to the most democratic, and so on. Culture, economy, technological level, and political systems cover the whole range of current variation within the population of countries. This may have effects on the quality, and the commensurability of available data. One may question whether data on e.g. educational expenditure from Angola and from Australia may be compared. However, for most of the cases I will in the continuation assume that the organizations and communities that have gathered the data have secured both the validity and the commensurability of data.

separates between national governmental regimes.

To the degree that the IPE literature on factor specificity has addressed the question of regime choice, it has focused on the democracy-autocracy dichotomy (e.g. Boix, 2003; Rogowski, 1998). The theoretical development of the dependent variable in this thesis – configurations of power – does indeed open for investigating the relation between specificity and measures of democracy. However, democracy is a concept that covers much more than I want to include in the present study. Variations in democracy indicate variations in organizational forms, values, political cultures and practices, and institutionalized processes; at this stage, I want to focus on organizational form.<sup>106</sup> This is due to the expected explanatory power of asset specificity. I expect that the specificity logic is unfit to explain the entire range of variation (or lack thereof) in the concept of democracy. What the logic points directly to is the degree and stiffness of a hierarchy – we may say the rigidity of the regime. Thus, I want to do an inquiry into the causes of regime rigidity – as an operationalization of configurations of power.

To capture the elements of regimes that interest me and to exclude the unwanted, I composed a simple index variable for regime rigidity. The idea is that the combined elements of this index capture the essence of a rigid and speared hierarchical regime, without confusing the picture with measures of the eventual arbitrary and exceeded use of governmental capacities. The point with this demarcation is not that rigid and strongly-peaked hierarchies don't misuse their capacities (they normally do), but rather that the thing about regimes I want to measure here is the degree to which the configurations of power are peaked and rigid. I might say that here I am interested in the form, not the content of power.<sup>107</sup> This operationalization of configurations of power might be called organizational rigidity at the national level, or regime rigidity.

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<sup>106</sup> Aside from the conceptual debates on the essence of democracy, a growing literature has focused on the measurement of democracy. Three traditions of democracy measurement can be identified. First, those focusing liberal political rights and civil liberties, as do the Freedom House indexes (Freedom House, 2003). Second, those which focus on participation, following Robert Dahl's definitions of polyarchy (Dahl, 1971) and the Vanhanen dataset (Vanhanen, 2000). Finally, the institutional approach focuses on the institutional structures of countries, as does the Polity projects (Marshall and Jaggers, 2000), and the Database on Political Institutions (Beck, et al. 1999; Keefer, 2002).

<sup>107</sup> The phrase, and the distinction, is inspired by Ruggie (1982) when he makes a distinction between theories of international regimes that focus on form vs content of international authority. Analyzing the content of authority requires that social purpose is added to power.

The first element of the index is a measure that originally comes from the “institutionalized autocracy” measure in the Polity IV dataset. It is a measure of constraints on the executive authority in a given country. The measure (*exconst*) is a 7-point scale ranging from 1 – unlimited authority – to 7 – executive parity or subordination (Marshall and Jaggers, 2000). Thus, a low value on the original variable (1) indicates a peaked and strongly hierarchical regime where the executive authority is without institutional constraints. Examples of such regimes, from different parts of the world are Saudi Arabia, Congo, Pakistan, Cuba, and Korea.<sup>108</sup>

The traditional division of power in a political regime, according to theories of democracy, is the divide between the executive, the legislative and the judicial authorities (Montesquieu, 1989). In terms of rigidity the relationship between the executive and the legislative is of particular interest. I introduce a variable into the rigidity measure that (together with the former) captures the existence of parallel sources of authority in the state apparatus. The measure (*legsele1*) is taken from “The Logic of Political Survival Data Source” (de Mesquita, et al., 2003), but is originally from the Banks’ dataset.<sup>109</sup> This is a three-point categorization of regimes according to the selection process of the legislative body. The absence of such a process/body is indicated by 0, if the legislative is appointed a country scores 1, and if the legislature is elected, a country scores 2. I interpreted this as a scale for regime rigidity with respect to the legislative branch. That means that a higher value in the original variable indicates a lower level of regime rigidity. In the dataset, countries like Somalia, Sudan, Chad, Bahrain, Algeria, Kuwait, and Nigeria are among the most rigid in this way, while all liberal democracies are located at the least rigid end of the scale.

These two measures are then standardized and merged in a formative index (Ringdal, 2001:368). This is done in the following steps. First, the executive variable is filtered with respect to Polity IV’s categorization of regimes in transition and in dissolution (Marshall and Jaggers, 2000). The Polity project codes some countries as -

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<sup>108</sup> A complete list of the countries and their scores in the composite measure and its elements can be found in Appendix II. Appendix III compares regressions applying three different autocracy measures.

<sup>109</sup> The origin of the variable is the Cross-National Time-Series Data Archive (CNTS), also labeled the Banks dataset. Further information can be seen at (<http://www.databanks.sitehosting.net/Default.htm>) and in de Mesquita, et al., (2003).

66, -77, and -88 if it is difficult or without meaning to give them scores in the normal index. Since those are countries that are difficult to code in a coherent way also in the scale I use, I filter them out.<sup>110</sup> Second, the variable is recoded so that increasing values signify increasing authoritarianism. This is done to ease the interpretation. Third, the variable is standardized to minimize the problems of merging two variables with different ranges (Ringdal 2001:361). Fourth, to match the direction of the transformed executive constraints' variable, the legislative variable is recoded so that 1 = elective selection of the legislative, 2 = nonelective selection, and 3 = no selection or no separate legislative authority. Fifth, the legislative selection variable is also standardized (Ringdal 2001:361). Finally, the two standardized variables are added and recoded into one formative index (*zzrigidity*) so that the scale starts at 0 for the least rigid nations and goes up to 6.82 for the most rigid.<sup>111</sup> This index is meant to measure degree of political rigidity and hierarchy – which is an operationalization of the degree of focused, or peaked political configurations of power.<sup>112</sup> Thus, it is an autocracy measure, but without assessments of the practices of political rights and civil liberties.<sup>113</sup>

## 7.2.2 Traditional asset and factor specificity

The specificity of economic assets are key variables in the analysis. In this section traditional specificity measures will be evaluated. Asset specificity and factor specificity theorizing, as we saw in chapter three, cover rather different approaches. At this point I think a few additional words on the relation between factor and asset specificity might

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<sup>110</sup> The Polity Project recommends recoding rather than the filtering, but that is because their data material is prepared for time series analysis. In my analysis, which is at one point of time, these countries don't "recover". Thus, recoding and filtering has the same effect.

<sup>111</sup> Even though the variables are standardized, the procedure described ensures that the value of the legislative selection variable is, so to say, overruling the executive constraints' variable. All nations that do not elect legislative body take the top position on a rigidity ranking of the countries in the world. This is reasonable. To have an elected legislative body, or at a minimum a separate legislative body, fundamentally limits the hierarchical nature of the state apparatus.

<sup>112</sup> The recoding of the variable in order to get a measure that goes from zero and up, is done out of convenience. It is easier to interpret such a scale than one that goes from about -3.8 to + 3.8.

<sup>113</sup> It might be noted, that the measure is strongly correlated both with Freedom House's political rights' index (with Pearson's  $r = 0.771$ ) and the civil liberties' index (Pearson's  $r = 0.720$ ). Both correlations are significant at the 0.01 level.

be appropriate.

Factors of production are inputs in production processes that normally, in macroeconomic reasoning, are categorized in land (or resources), labor and capital. Sometimes the list includes human capital as well. The term factor is used in analyses of nations and economies at large. Assets, on the other hand, are also inputs in economic activities and transactions but the term is normally used in more limited contexts, when firms and organizations are analyzed. In transaction cost economics, micro economics and organizational science, assets are the term, while macroeconomics and political economy tend to use the term factor. Thus, even though there are several specificity theories, as presented in chapter three, the difference between the *terms* assets and factors lies largely on levels of aggregation. The main difference in terms is therefore one of analytical level, not of logic. In this chapter though, where cross-national differences are investigated, the study will take on a factor approach. This kind of generalizing and aggregating from assets to factors is followed by redirecting the attention from actors, firms and organizations to economies.

Measuring different types of specificity is far from straightforward (Alt et al. 1996; Alt et al. 1999; Boix, 2003; Frieden, 1991; Hiscox 2002; Rogowski 1998; and Vik 2000). Consequently, many approaches have been explored. For the purpose of characterizing national economies in terms of specificity, one can build on the old assumption that natural resources and land are relatively specific factors; national economies that depend on such factors are economies marked by factor specificity. With this as a starting point, what we need is to measure dependency on these economic factors. Thus, export of goods from a specific factor (relative to other exports) captures the specificity feature of the national economies.

I operationalize traditional resource specificity into four basic variables: (1) "Agricultural raw materials export" as a percentage of merchandise exports from the country;<sup>114</sup> (2) "Food exports", as a percentage of merchandise exports.<sup>115</sup> These two

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<sup>114</sup> Source: The World Bank Group, (2005A). The variable includes SITC section 2 (crude materials except fuels), excluding divisions 22, 27 (crude fertilizers and minerals excluding coal, petroleum, and precious stones), and 28 (metalliferous ores and scrap).



variables are rather precise indicators on national dependency on agricultural production. As a result, when values are high, it signifies that an economy is marked by factor specificity, in the factor of agricultural land. In addition, I use “Fuel exports” (3) in a similar way, to signify dependency on oil and gas production.<sup>116</sup> Finally, I use “Ore and mineral export”<sup>117</sup> (4) as a percentage of total merchandise exports, as a signifier of dependency in the mining sector.

### **7.2.3 Knowledge intensity and knowledge mobility**

As we saw in the introductory chapter, a growing knowledge gap is opening between nations of the world. Societies of the world differ in terms of their dependency on specific factors, but they also differ in terms of how far they have gone in the transition towards a knowledge-based society. In a cross-national inquiry of the relationship between asset specificities and configurations of power – measured as regime rigidity – differences in the transformation towards a knowledge society is a key element. We need a measure of economic and societal knowledge intensity.

Knowledge as an economic phenomenon is arguably different from natural resources. The measures presented above, on the importance of natural resources and land, were both measures of the importance of the respective resources and, implicitly, the degree of factor specificity in the economy. The same may be done when it comes to the importance of knowledge. Properly done, an indicator or index of knowledge’s importance in the economy will also be a signifier of the importance of mobile knowledge assets in the economy.

There are several options when it comes to measuring knowledge intensity in an economy. Here I mention two main options. First, one can choose a single indicator or signifier of a knowledge-based economy. R&D expenditure, expenditure on education, internet-user density, international telecom traffic, and level of high tech exports are

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<sup>115</sup> Source: The World Bank Group, (2005A) Food comprises the commodities in SITC sections 0 (food and live animals), 1 (beverages and tobacco), and 4 (animal and vegetable oils and fats) and SITC division 22 (oil seeds, oil nuts, and oil kernels).

<sup>116</sup> Source: The World Bank Group, (2005A). Fuels comprise SITC section 3 (mineral fuels).

<sup>117</sup> Source: The World Bank Group, (2005A). Ores and metals comprise the commodities in SITC sections 27 (crude fertilizer, minerals); 28 (metalliferous ores, scrap); and 68 (non-ferrous metals).

alternative measures of a knowledge society. Rogowski (1998) uses an indicator-approach when he sees human capital per capita (measured as average year of education) as a proxy of both knowledgification of society and, by assumption, degree of aggregated asset mobility (that is the inverse of asset specificity). Given the complexity of knowledge as an asset and as a societal phenomenon, one could argue that it is too simplistic to choose a single indicator of knowledgification. Consequently, the second main option is to compose an index of knowledge intensity. This is the option I will choose. The guidelines for composing such an index must be partly pragmatic and partly substantial. Substantially the index should capture different sides of the societal manifestations of knowledge. That is, economic implementation of knowledge can be measured in e.g. high tech exports or R&D expenditure. The social or general level of knowledge in the economy can be measured as the average level of education in the population, as Rogowski (1998) did, or as education expenditure. The spread, and general implementation, of technological capacity throughout the population can also be measured as the amount of international telecom traffic, number of PC users, Internet users per 1000 people, and so on. Another element in the substantial reasoning for choosing components in an index should be that we, in this study, want to capture the mobility (inverse of specificity) aspect of knowledge. Pragmatically speaking, the availability of good data is a limitation. In composing an index this becomes especially problematic since the measure with the lowest N determines how many cases will include valid data. Thus, a pragmatic guideline is to choose measures that together give high or representative data coverage.

In table 7.1 I present correlations between potential indicators of knowledge intensity, and the data coverage of the variables. The data I got on R&D expenditure covers only 55 countries. The other potential variables, high-tech exports, international telecom traffic, internet-user density, and education expenditure have an data coverage between 128 and 172 countries.

**Table 7.1 Correlations between alternative knowledge intensity measures**

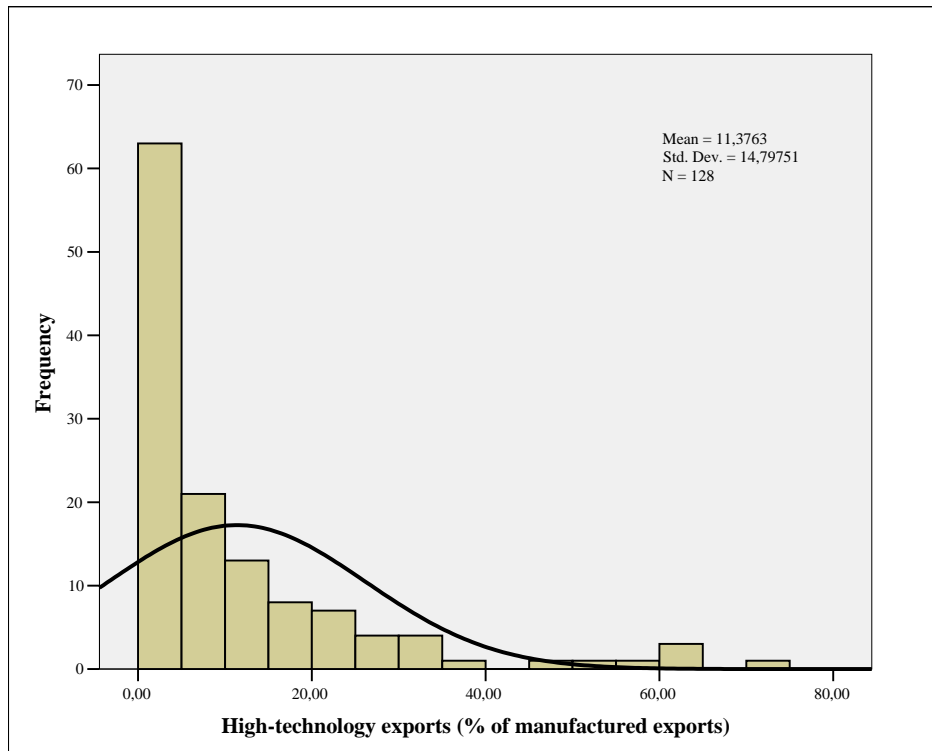
		High-tech exports	Internat. telecom traffic	Internet users	Education expenditure	R&D expendit.
<b>High-tech. exports (% of manufact. exports)</b>	Pearson					
	Corr	1				
	N	128				
<b>International telecom. outgoing traffic (min. per subscriber)</b>	Pearson					
	Corr	.056	1			
	N	127	167			
<b>Internet users (per 1,000 people)</b>	Pearson					
	Corr	.339(**)	.146	1		
	N	128	167	172		
<b>Adjusted savings: education expenditure (% of GNI)</b>	Pearson					
	Corr	.090	.062	.296(**)	1	
	N	122	152	155	155	
<b>Research and development expenditure (% of GDP)</b>	Pearson					
	Corr	.436(**)	.333(*)	.738(**)	.390(**)	1
	N	55	55	55	53	55

\*\* Correlation is significant at the 0.01 level (2-tailed).

\* Correlation is significant at the 0.05 level (2-tailed).

In the following I will use an index of knowledge intensity that is composed of three of the above presented elements. The first is high-tech exports (% of manufactured exports). This measure indicates the degree of the economic implementation of knowledge in economic activity. I deliberately write that the measure *indicates* knowledge role in economic activity because there are certainly economic activities with high knowledge input that don't contribute to export. However, as an indicator among others it is reasonably accurate. Other things being equal, there is reason to believe that a country with a high share of high tech export has a larger economic sector based on knowledge than a country with low high-tech exports. The frequency distribution of high-tech exports is presented in figure 7.2.

**Figure 7.2 Frequency distribution of high-technology exports**

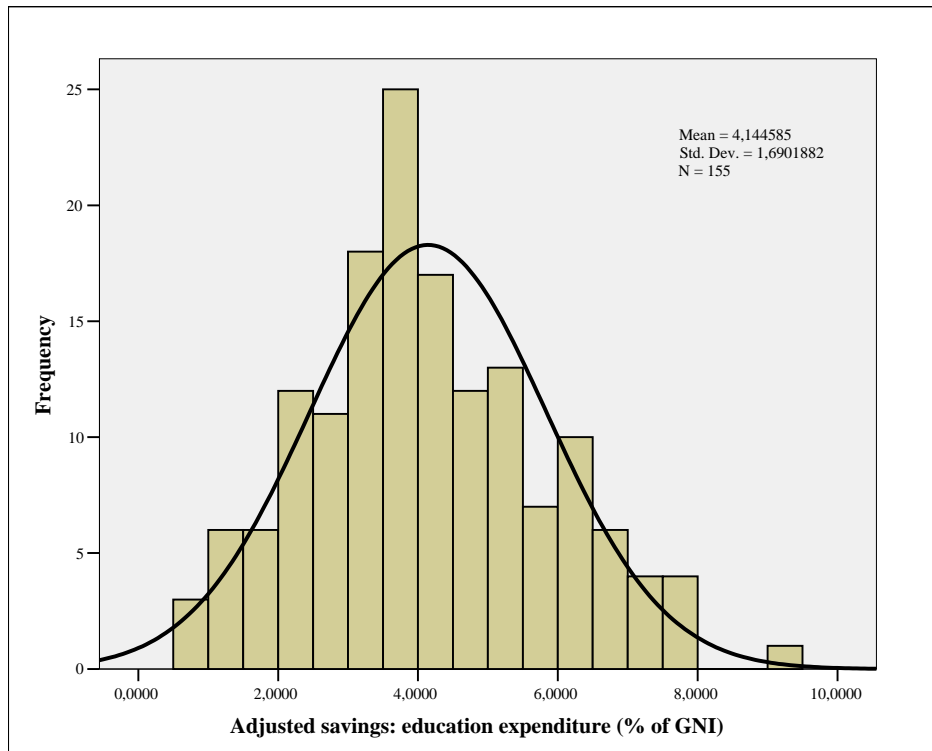


The second component of the knowledge intensity indicator, as an indicator of the general level of education in a society: I use “adjusted savings: education expenditure (% of GNI)” from the World Bank.<sup>118</sup> As we see in figure 7.3 this is a measure that is far more evenly distributed. Since this is a measure of educational expenditure that is seen as a share of GNI, and since it excludes capital investments, it is (so to say) controlled for wealth. Thus, it says more of the relative effort, or input, on education than a country’s financial muscle to invest in education.

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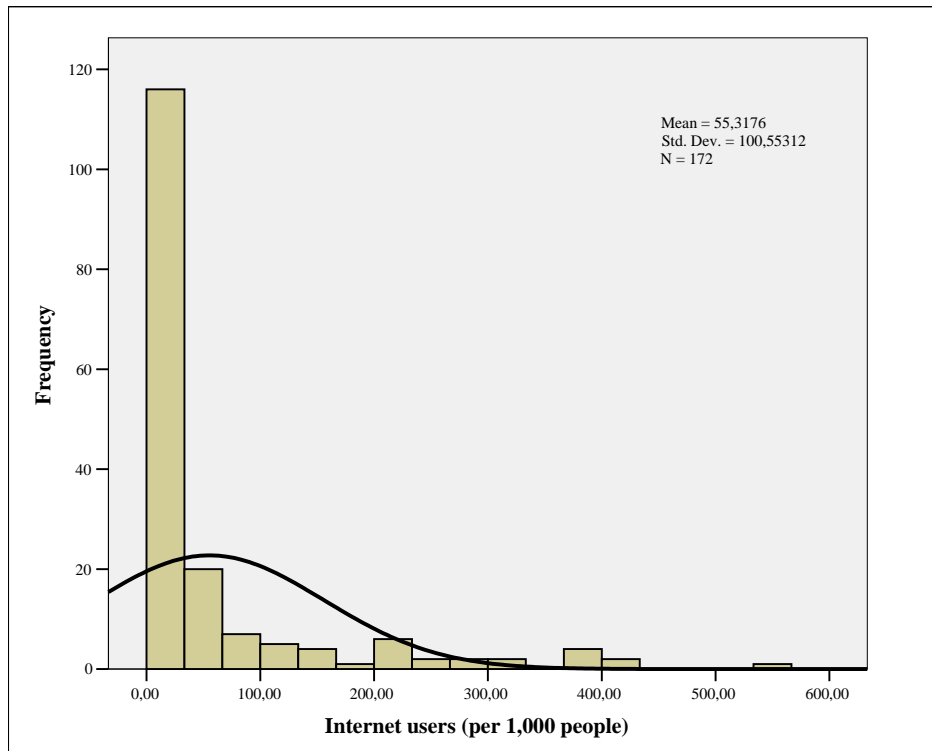
<sup>118</sup> Here education expenditure (% of GNI) refers to the current operating expenditures in education, including wages and salaries and excluding capital investments in buildings and equipment. The numbers are World Bank estimates using data from the United Nations Statistics Division's Statistical Yearbook, and the UNESCO Institute for Statistics online database.

**Figure 7.3 Frequency distribution of adjusted savings: education expenditure**



Finally, as an indicator of the implementation and spread of knowledge in social life, I use Internet users per 1000 people. This is a measure that says something of the saturation of society by technology and knowledge. This is not a measure that relates to the economic sector in particular. Neither does it relate to the average educational situation. Rather, this component captures the degree to which a society follows the technological knowledge front. Figure 7.4 illustrates that the distribution of this indicator is close to an all or nothing situation. Close to 120 of the countries have less than 25 Internet users per 1000 people, while the countries on the top of the list have between 400 and 600 Internet users per 1000 people.

**Figure 7.4 Frequency distribution of Internet user per 1000 people**

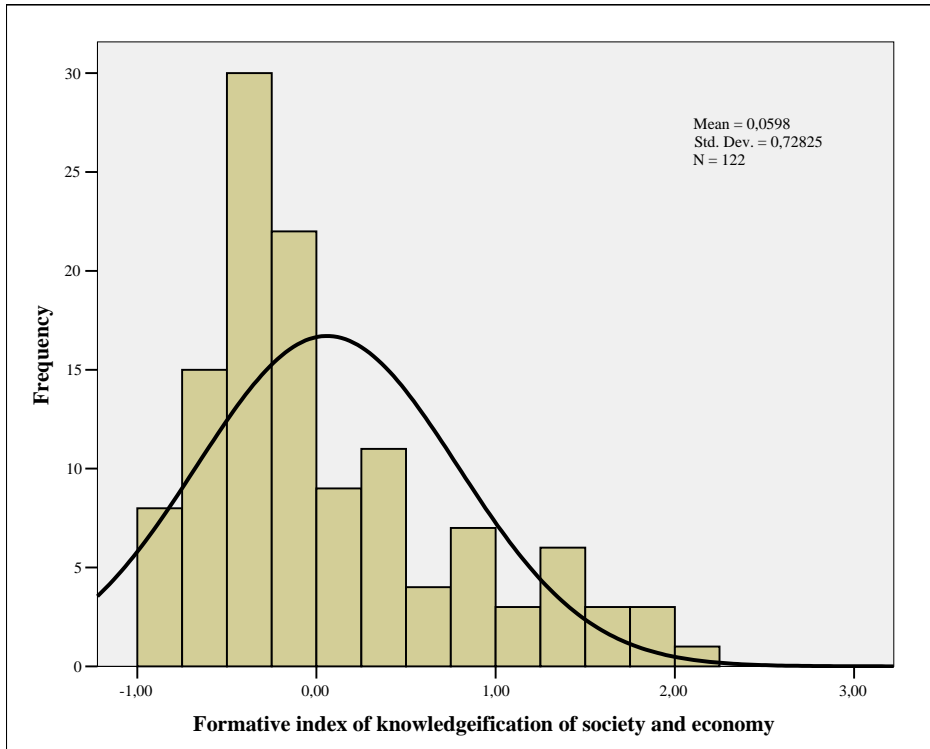


Together these three indicators say something about the general knowledgeification, or knowledge intensity, of a society and economy.<sup>119</sup> It is not a perfect measure, but it is a fairly reasonable approximation to the measurement of the knowledge intensity of an economy. Figure 7.5 display the frequency distribution of the index of knowledge intensity.

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<sup>119</sup> The measure is composed as the mean of standardized variables. This is done to reduce the effect of different values in the variables. See Ringdal (2001:369).

**Figure 7.5 Frequency distribution of knowledge intensity**



As mentioned, the above measure also captures the phenomenon of asset mobility. Following Rogowski (1989), human capital – measured as level of education – is a measure of the overall asset mobility in the society. This hinges on the assumption that, relative to physical assets, knowledge is more mobile. As argued in chapter four, this is not always the case. Some knowledge is hard to move. This is especially so when we speak of collective and tacit knowledge.<sup>120</sup> However, other things being equal, knowledge is more mobile than resources like land, minerals and oil, which has an absolute geographical specificity. In many cases it is also reasonable to expect knowledge assets to be more mobile than physical capital assets.<sup>121</sup> Recalling that the

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<sup>120</sup> There may be cases though, where complicated machinery is easier to move than is the transfer of competence to use it.

<sup>121</sup> It must be noted here that capital as a factor of production is bound in physical entities. See e.g. Leamer (1984:41-44) for a definition of capital. See also Rogowski (1989:6, note 13). This means that the fact that money easily can be transferred from one corner of the world to another doesn't mean that capital mobility – capital as a factor of production – is correspondingly high. Cash float, or exchange rate transactions, are not useful measures of capital mobility. A better measure of such mobility is foreign direct investment. However, this is a measure that is disturbed by the investment climate. High levels of FDI probably reflect likely returns to investments more than capital mobility.

process of codification increased the geographical mobility of assets it is plausible that both increasing high-tech exports – as a measure of fruitful codification of advanced skills – and increasing educational expenditure – indicating efforts to spread codified knowledge in the population – capture an increasing dependency on mobile knowledge. So too with high density of Internet users in the population. Internet use is all about utilizing mobile knowledge. Therefore, the measures presented above are more than measures of knowledge intensity. They are measures of the national importance of knowledge as a relatively mobile asset. Thus, high scores on the index of knowledge intensity indicate an economy of mobile factors as well as an economy of knowledge intensity.

Obviously, there are problems with the presented index of knowledge intensity – and with the interpretation of it. First, the knowledge intensity index is strongly correlated with measures of wealth, or general interpretations of modernization. In explaining regime rigidity one can therefore question whether it is wealth, modernization, or knowledge that matters most. I will return to the correlation with wealth – e.g. measured as GDP per capita – in the multivariate analysis. When it comes to whether the index is just another measure of modernization, the answer is probably yes: The transformation of societies to knowledge intensive ones is maybe the best signifier of a modernized society. Therefore it is hard to separate the two interpretations. In this thesis however, the theme is not modernization as such, but the relationship between knowledge structures and configurations of power.

Second, it is well known in the literature that e.g. education is important for explaining regime type. This has often been argued and demonstrated outside an asset-specificity frame (e.g. Barro, 1998; de Soysa, 2003; Vanhanen, 1997), and it is “obligatory” to include measures of education in statistical inquiries of regime type. In some studies an increased level of education has also been interpreted as a measure of decreased factor specificity (see e.g. Rogowski 1998). As I see it, education in general, and an index of knowledge intensity as presented above in particular, may be understood as a phenomenon that reflects a transformation towards an economy marked by less asset or factor specificity. This is not contradictory to interpretations that emphasize educational measures as signifiers of some kind of a modernization process.



### 7.3 Bivariate correlations

In this section my aim is to present and analyze the bivariate correlations between the main variables involved. This is done because it provides good indicators for the relationship between certain types of economies and regime rigidity. In addition, the form of the relationship between the independent and the dependent variables may give some clues about whether it is necessary to adjust the model and the independent variables. The direct effects of the variables, and eventual interactions between them, will be analysed in the next section with the help of multiple regression analysis.

In table 7.2, I present the pair-wise Pearson's correlations coefficients between the main variables. As we can see, both the strength of correlation and the statistical significance of the correlations vary quite a lot. The strength of correlation has not been decisive in choosing the variables. This will continue to be the case. Theoretical considerations, paired with methodological pragmatism, are used to choose. However, some empirical reflections on the pair-wise relationship between variables may provide useful insight into the data material.

**Table 7.2 Correlations: asset specificity, knowledge intensity and regime rigidity**

		Agri-cultural raw material exports	Food exports	Fuel exports	Ores and metals exports	Index of knowl. intensity	Regime rigidity
<b>Agricultural raw materials exports</b>	Pearson Corr	1					
	N	126					
<b>Food exports</b>	Pearson Corr	.041	1				
	N	126	132				
<b>Fuel exports</b>	Pearson Corr	-.111	-.239(**)	1			
	N	113	117	117			
<b>Ores and metals exports</b>	Pearson Corr	.072	-.090	-.150	1		
	N	125	131	117	131		
<b>Index of knowledge intensity</b>	Pearson Corr	-.189(*)	-.270(**)	-.137	-.135	1	
	N	118	122	113	121	122	
<b>Regime rigidity</b>	Pearson Corr	.014	.163	.494(**)	-.007	-.349(**)	1
	N	108	113	110	113	110	139

\* Correlation is significant at the 0.05 level (2-tailed).

\*\* Correlation is significant at the 0.01 level (2-tailed).

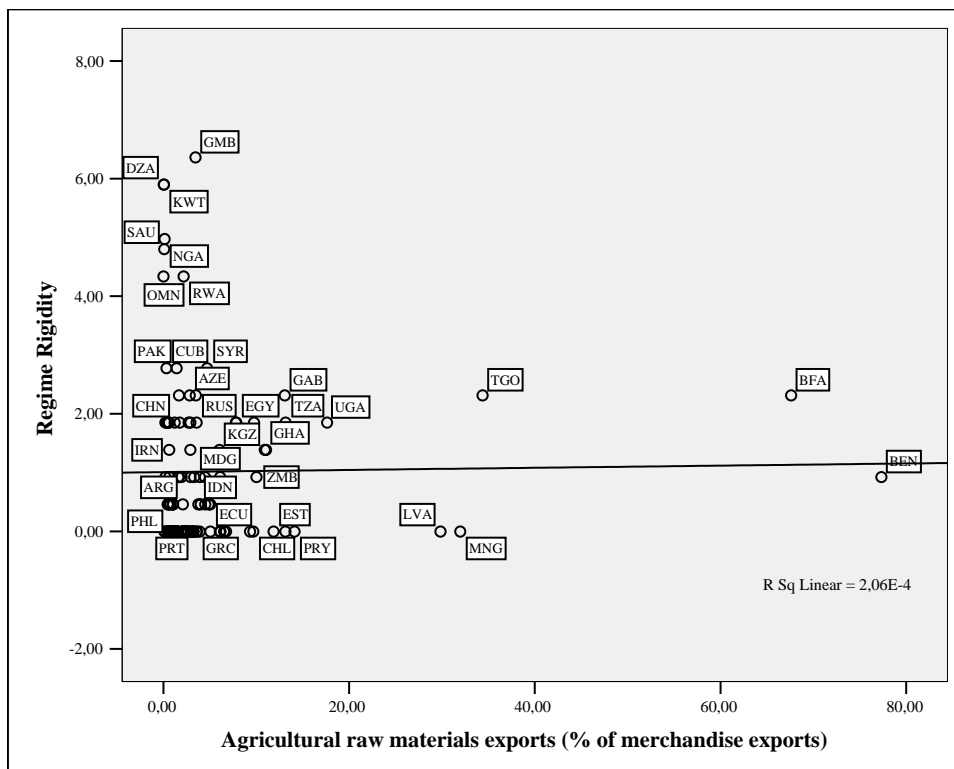
We will return to each of the relevant relationships, but we may point out already at this first glance, that regime rigidity (our measure of configurations of power as hierarchical

organizational forms) is positive and significantly correlated with the amount of fuel exports. This is in accordance with a number of studies on the “resource curse”, or the negative influence from oil economies on democracy (e.g. Ross, 2001). We also see that knowledge intensity has a negative and significant correlation with regime rigidity. That is, increasing knowledgeification – and importance of mobile knowledge assets – implies less rigid regimes. We also see, as could be expected, that a high share of agricultural exports, and food exports, is positively correlated with knowledge intensity. This might be an expression of the transformation of the economic system from a traditional to a knowledge based economy.

### 7.3.1 Land specificity and regime rigidity

The relationship between an economy’s dependency on the archetypical specific factor – land – and regime rigidity may be seen by two bivariate correlations. First, the relationship between agricultural raw materials’ exports (as a percentage of total merchandize exports) and regime rigidity is shown in figure 7.6, below.

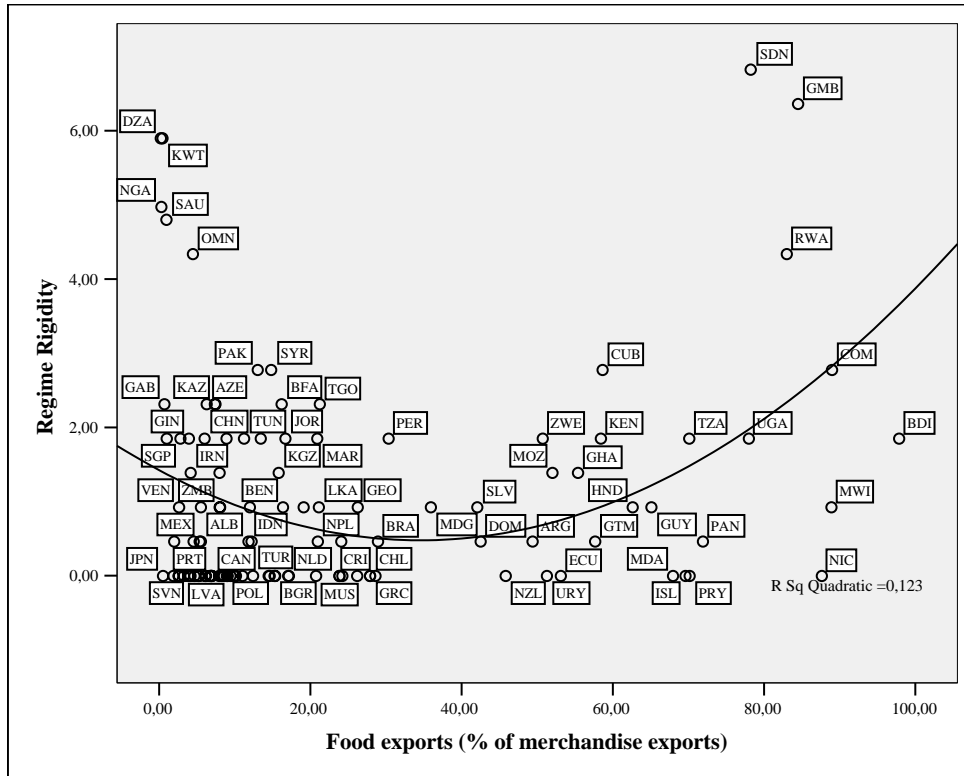
**Figure 7.6 Agricultural raw materials exports and regime rigidity**



There is not a strong correlation between these variables. The Pearson correlation coefficient is only 0.012, and it is not statistically significant. The figure also shows that very few countries are solely dependent on agricultural raw materials exports. Only five countries, Latvia, Mongolia, Togo, Burkina Faso, and Benin, have more than 30 per cent of their exports in this category. Most countries tend to group around 0 to 15 per cent of export shares to agricultural raw materials.

Second, land specificity is also measured by food exports as a share of total merchandise exports. Figure 7.7, illustrates the bivariate relationship between food export and regime rigidity. The linear relationship is insignificant. However, the figure suggests that there is a curvilinear relation between food exports and regime rigidity that bottoms when exports of food are between 20 per cent and 40 per cent of total merchandise exports. Theoretically, this suggests that some agricultural exports may support the development of a less rigid regime, while both very high and very low dependency on food exports support to rigid regimes. One could suggest, along with parts of the specificity logic (Boix, 2003), that an economic monoculture tends to be congruent with rigid regimes. One-sided economies contribute in creating unfair or skewed economic distributions because all the productive resources tend to be in the hands of a single class. This in turn, is not popular among the masses and cannot be maintained in a democratic or open society.

**Figure 7.7 Food exports and regime rigidity**



We see that when the exports from the food sector exceed about 40 per cent, the tendency to regime rigidity increases. There are two reasons for this. First, the dependency in a particular distributional frame is more fundamental for the survival of a landowning class when there are fewer alternatives. Second, the more the economy is marked by the food sector, the more likely it is that the landowning classes have the economic and organizational resources needed to maintain control over the political apparatus.<sup>122</sup>

Technically, curvilinearity is a violation of the conditions for OLS regression.<sup>123</sup> When there is reason to believe that this is a problem it is common to add a squared

<sup>122</sup> This thesis does not address the issue of the social organization of the different sectors, and their relationship to ruling elites of the different countries. However, these circumstances are probably highly relevant and should be included in a more comprehensive cross-national study of the relation between specificity and the ruling elites. It requires another type of data than the ones available for this study. See e.g. Brigham, (2003) for an analysis that includes issues of the social and economic organizing of the agricultural sector and regimes.

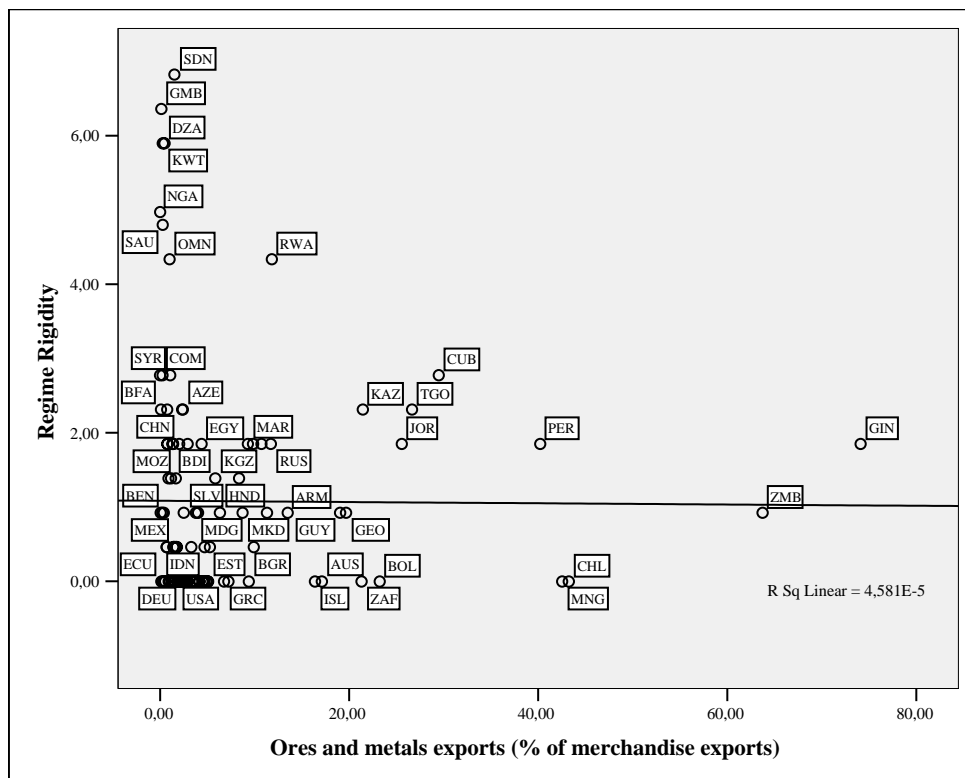
<sup>123</sup> See Appendix IV on the technical assumption and considerations of OLS regression.

variable in the analysis to reduce the deviation from model specifications. Consequently, a quadrated food exports variable was computed.

### 7.3.2 Natural resource specificity and regime rigidity

Besides agricultural land, natural resources under the ground are specific factors of production by default. Having excessive access to such resources may be lucrative for some, but being economically dependent on ores, minerals, oil, and gas seems to create a series of economic and social problems. This is known from several studies and literatures (e.g. Auty, 2001; Barro, 1998; de Soysa, 2002; de Soysa, 2003; Ross 2001; Ross 2004; Vanhanen 1997). We will shortly present the correlations between the natural resource variables and regime rigidity. We start with ore and minerals exports.

**Figure 7.8 Ores and metals dependency and regime rigidity**



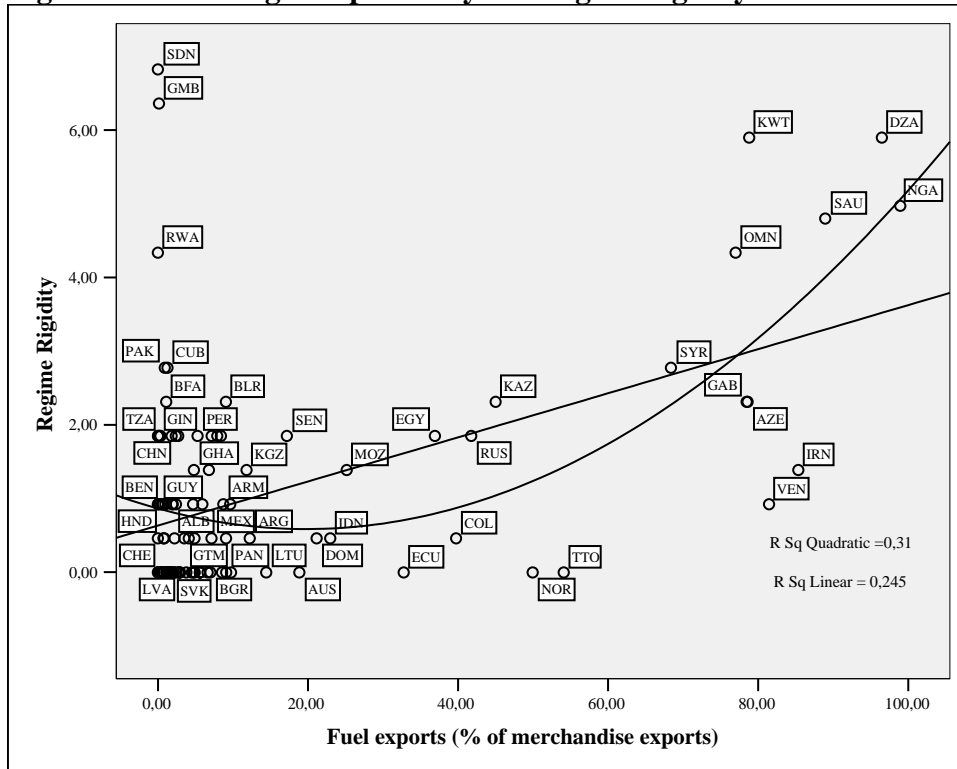
Dependency on ore and minerals seems to be relatively weak and negatively correlated (Pearson's  $r = -0.025$ ) with regime rigidity. The correlation is not statistically significant. This variable also shows a weak curvilinear relationship to regime rigidity, but transforming the variable doesn't increase its significance. However, the countries that have more than 40 per cent of exports from the mining industries are Guinea,

Zimbabwe, Peru, Chile and Mongolia. These are very different countries. Guinea is a small African country north of Sierra Leone and Liberia, and is the second-largest bauxite producer in the world. The country probably possesses about 30 per cent of the world's reserves of this mineral (CIA, 2004). In 1999, the mining sector alone accounted for about 75 per cent of exports. This constitutes a very narrow economic basis. Zimbabwe possesses a number of minerals and metals besides its large agricultural resources. The country produces coal, chromium ore, gold, nickel, copper, iron ore, vanadium, lithium, tin, and platinum group metals. Peru (CIA, 2004) enjoys ore and mineral resources such as copper, silver, gold, iron ore, coal, and phosphate. Chile has copper, timber, iron ore, nitrates, and precious metals. Both of the South American countries have economies based on much more than the ore and mineral sectors (CIA, 2004). Mongolia has coal, copper, gold, silver, iron, phosphates and a number of other minerals, besides substantial oil and gas exports (CIA, 2004). Recalling the figure presenting agricultural raw materials' exports, we saw that Mongolia was high on that list as well. Thus, Mongolia has a mixed but raw-material-oriented export.

In terms of regime rigidity, Mongolia and Chile have transformed to less rigid regimes by 1999. Guinea, Peru and Zimbabwe were a bit more rigid. However, we must be aware that at least Zimbabwe, Guinea, and Mongolia are countries with a large degree of uncertainty attached to their economic and political situations. Either way, as figure 7.8 shows, the findings on ores and minerals are uncertain.

In figure 7.9 below, we see that dependency on oil and gas production has a much clearer effect on regime rigidity. The correlation between the two variables is 0.53 and is significant at a 0.001 level. Figure 7.9 shows that this too is a curvilinear relation. The more dependent a country is on oil and gas exports, the more likely is it that the regime is rigid. The bottom of the curve is close to zero in oil and gas exports. In this case, an increase in dependency increases exponentially the likelihood of rigidity. The exceptionally strong correlation between oil producing countries and autocratic tendencies are well established in the literature.

**Figure 7.9 Oil and gas dependency and regime rigidity**



11 countries have more than 60 per cent of the exports from this industry: Kuwait, Algeria, Nigeria, Qatar, Saudi Arabia, Oman, Turkmenistan, Azerbaijan, Gabon, Iran, and Venezuela. The regimes in these countries are all rather rigid. They have more than normally peaked and rigid configurations of power. Generally, the countries are (with a bit ambivalent exceptions for Iran and Venezuela) marked by regimes where elites minimize organizational openings for competition and participation in governance by controlling access to the wealth of their nations.

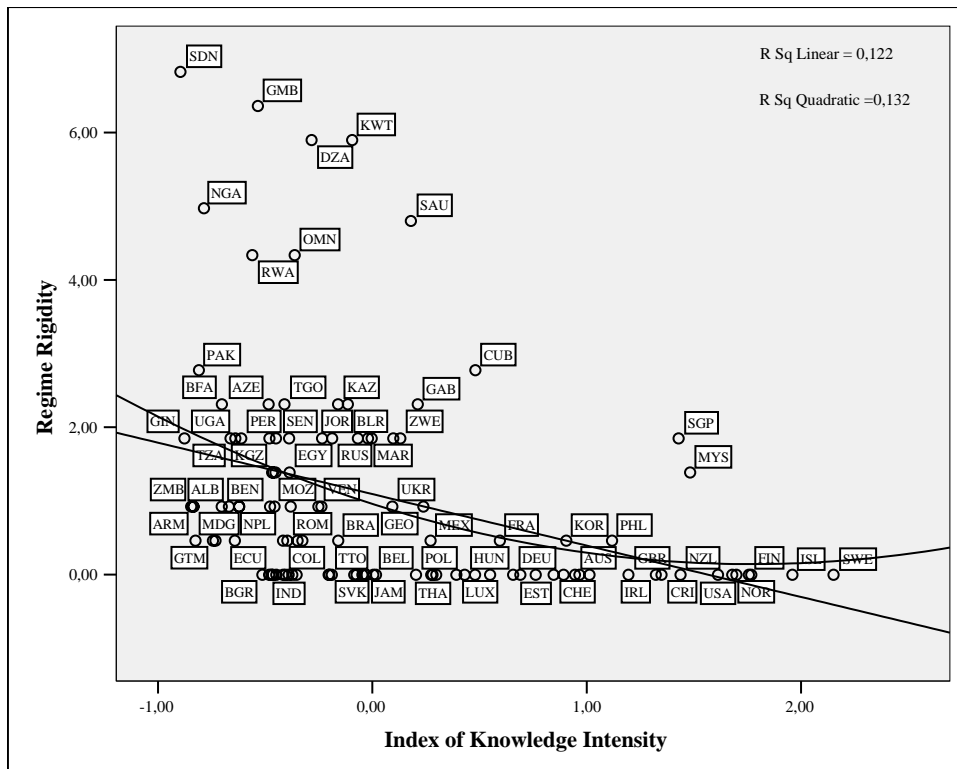
In the literature, three causal mechanisms are seen to lie behind the oil dependent economies unhappy correlations with regime types. It is nicely summed up by Ross: “The rentier effect focus on the government’s use of fiscal measures to keep the public politically demobilized; the repression effect stresses the government’s use of force to keep the public demobilized; and the modernization effect looks at social forces that may keep the public demobilized. All three explanations, or any combination of them, may be simultaneously valid” (Ross, 2001:337). A factor specificity explanation on this debate would builds on the fact that the resource holders have no alternative uses of their resource than in that particular industry and in that particular country. That is the

essence of factor specificity. Boix (2003:10) points out that “(...) each political regime has different redistributive consequences”. Therefore the potential loss of changing regime is huge. Especially so when the profits are large. Thus, the wealth generated from the factor is used to secure the interests of that industry. The line of argument is complementary to all three causal mechanisms described by Ross (2001), since the choice of means to uphold the configuration of power lies outside the model.

### 7.3.3 Knowledge intensity and regime rigidity

Economies are more or less oriented towards knowledge-based production. As we saw in figure 7.5, this variation is an uneven distribution. The correlation with regime rigidity is negative. That means that high knowledge intensity, which implies an economy dependent on mobile knowledge, reduces the probability of a rigid regime. Figure 7.10 shows the bivariate relationship between regime rigidity and knowledge intensity.

**Figure 7.10 Regime rigidity and knowledge intensity**



We see that countries with a high score on the index of knowledge intensity tend to be



less rigid than countries with low knowledge score. Singapore and Malaysia are countries that fall a bit outside the pattern. They have a high score on the index of knowledge intensity, but they still have “rigid tendencies”. Cuba also stands out. It has a relatively high score, although clearly behind countries like Singapore, on the knowledge indicator, and it has, as we know, a political regime with rigid tendencies. In the case of Cuba it is the very high relative educational efforts that make up their high knowledge intensity score. The countries with the highest score on the knowledge index – the Nordic countries, Canada and USA – are also low on the regime rigidity score.

We see that the relationship between regime rigidity and knowledge intensity is slightly curvilinear. The data suggest that there is a monotone curvilinear correlation. Technically, the curvilinearity means that a squared variable should be involved in the analysis, but in this case the curvilinearity is so weak that the effect on the regression is negligible.

#### **7.3.4 Assessing control variables**

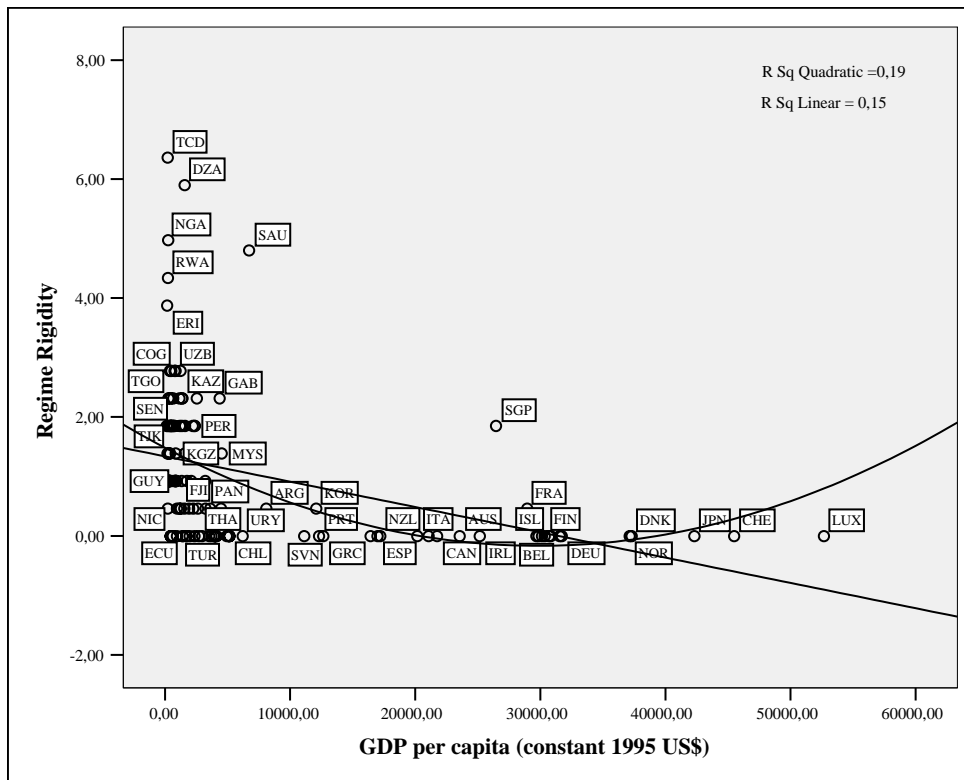
It is common to include control variables in regression models. Control variables are variables, based on alternative theoretical considerations, which may be seen to affect the dependent variable or to reduce the explanatory power of independent variables. Theoretically, it is not very interesting to introduce all kinds of control variables to test hypotheses outside the scope of the study. Technically, however, it is a premise for the correct use of OLS regression that all relevant variables are included (Gujarati, 2003; Hamilton, 1992; Ringdal, 2001). It is also necessary – to minimize the danger over overestimating “preferred” variables – to choose a strategy of analysis that gives alternative explanations possibilities to influence. To give alternative explanations the possibility to influence the analysis, the control variables and the preferred variables must be treated and included in the analysis in a symmetrical manner. At the same time, the scope here is not to account for all the variation in regime rigidity, but to assess how much of regime rigidity can be accounted for by the logic of asset specificity, and considerations of the concepts associated with a knowledge economy. Thus, we must balance between the need to make a complete model and the need to build a reasonably parsimonious model. First, however, it is appropriate to discuss possible alternative explanations offered by the literature.

Sørensen mentions four groups of preconditions for democracy (Sørensen, 1993:26-31). Our measure of regime rigidity is related to other measures of autocracy, which is a negation of democracy. Therefore, Sørensen’s discussion of preconditions for democracy may serve as an organizing frame for the discussion of which kind of control variables might be considered. Thus, we may group the presentation in issues as wealth and growth; political culture; social and economic structure; and international factors.

### Wealth and growth

Modernization and wealth, or level of economic development are sometimes seen as a determinant of regime type. Back in 1959, Lipset stated that “the more well-to-do a nation, the greater the chances it will sustain democracy” (Lipset, 1959:75).

**Figure 7.11 Regime rigidity and GDP per capita**



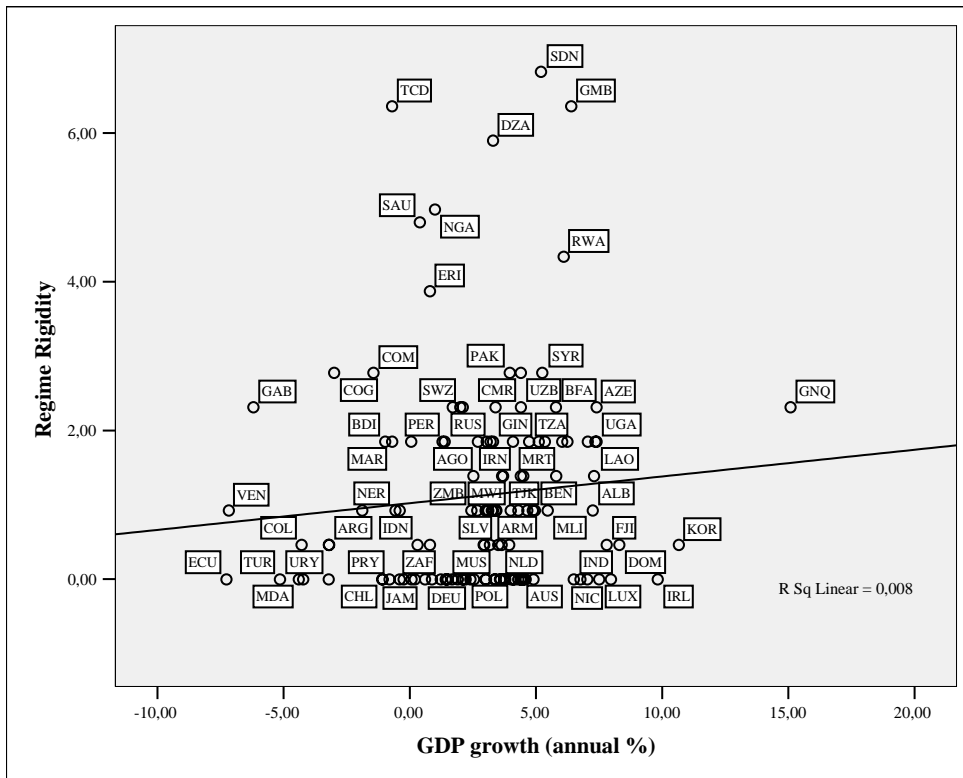
Why this is so is not very clear. Lipset himself emphasized the role of education and the enlarged middle-class. Many have repeated the Lipset hypothesis, and whatever the causes are, it is pretty clear that economic level is strongly correlated with levels of

democracy. Barro (1998:52) states that: “Despite the lack of a compelling underlying theory, the cross-country evidence examined in this study confirms that the Lipset hypothesis is a strong empirical regularity.” Figure 7.11 display that this is the case also in this dataset. Due to the uncertainty about why wealth influences regime type, it is possible that the influence of wealth on regime types and the influence of increased knowledgeification on regime type is partly the same effect. This is supported by the fact that the two measures are strongly correlated (Pearson correlation is 0.697, significant at the 0.001 level). The strong correlation means that it makes no sense to use the index of knowledge intensity and GDP per capita in the same model. In the multivariate regressions I will use the two measures in alternative models, and then discuss the further implications. In regressions, the normal procedure is to compose a logged wealth measure to centre the variation and reduce problems of eschewed distributions in level of GDP per capita. Therefore it is the logged GDP variable that will be introduced in the regression models.

\*

A related topic is the relationship between economic development, or growth, and regime types. In this case the findings are more ambiguous, and the debate on the nature of the relationship more lively (see e.g. de Soysa, 2003). Barro (1998) finds that the relationship between democracy and growth is a curvilinear one, and this may be interpreted as if a moderate increase in democracy support a development toward democracy, while “too much” democracy hamper growth – presumably because it tends to imply claims for unproductive redistributive policies. On the other hand de Soysa (2003) finds that the competitive element of democracy is compatible with economic growth, while the mass participation element is not. Figure 7.12 reveals that, in this data set, the correlation between regime rigidity and growth is positive – although not very strong.

**Figure 7.12 Regime rigidity and annual GDP growth**



Another question related to the debate on wealth and regime types is that it matters how wealth is created. Here is the fact that nations with high income derived from oil or natural resources tend not to benefit, in terms of regime, as do the countries that have generated income in other ways. Thus, in quantitative studies of democratization some kind of variable to control for oil export or oil dependency is included. This variable is already discussed above. As mentioned though, in my argument oil matters as far as it creates a situation of factor specificity.

### **Political culture**

Sørensen (1993) briefly discuss political culture as a precondition for democracy. Arguments based on political culture are old. As time pass though, they address different cultures. This line of thought used to be applied to the lack of democratic development in mainly Catholic Latin America. After the fall of the Soviet Union, serious concerns were raised about the political cultures of previously communist states. Nowadays, after Huntington's thesis on the clash of civilizations, and the 9/11 attacks, the political culture concept is normally translated to capture the correlation between

authoritarian rule and Islamic population (de Soysa 2003; Ellingsen, 2004; Hadenius, 1992; Huntington, 1996). To measure the recent twist on political cultures, I introduced a dummy variable to capture whether the countries are Arabic or not. This is different from a dummy that would capture belonging to an Islamic civilization. However, I question the utility of assuming some sort of cultural unity between, for instance, Indonesia and Morocco – the outskirts of the present Islamic civilization (Geertz, 1971). Except for the Islamic idea of a united Islamic people (the Umma), there is more reason to believe that common cultural features relevant for the existence of democracy and authoritarianism may be found in the Arabic speaking parts of the world (Hammoudi, 1997). The bivariate correlation between the Arabic variable and regime rigidity is 0.506 and significant. This reflects the well known fact that most Arabic countries have autocratic tendencies.

Still, there is no way, in the data material that I use, to be certain whether this is a result of culture, colonial history, the regional dependency of oil, or poor development in terms of knowledge development. Clearly, any serious treatment of the situation would be open for a mixture of causes. However, the *Arab Human Development Report* (UNDP, 2003) actually goes rather far in stating that the one key solutions to the problem lies in the development of a knowledge society.

### **Social and economic structure**

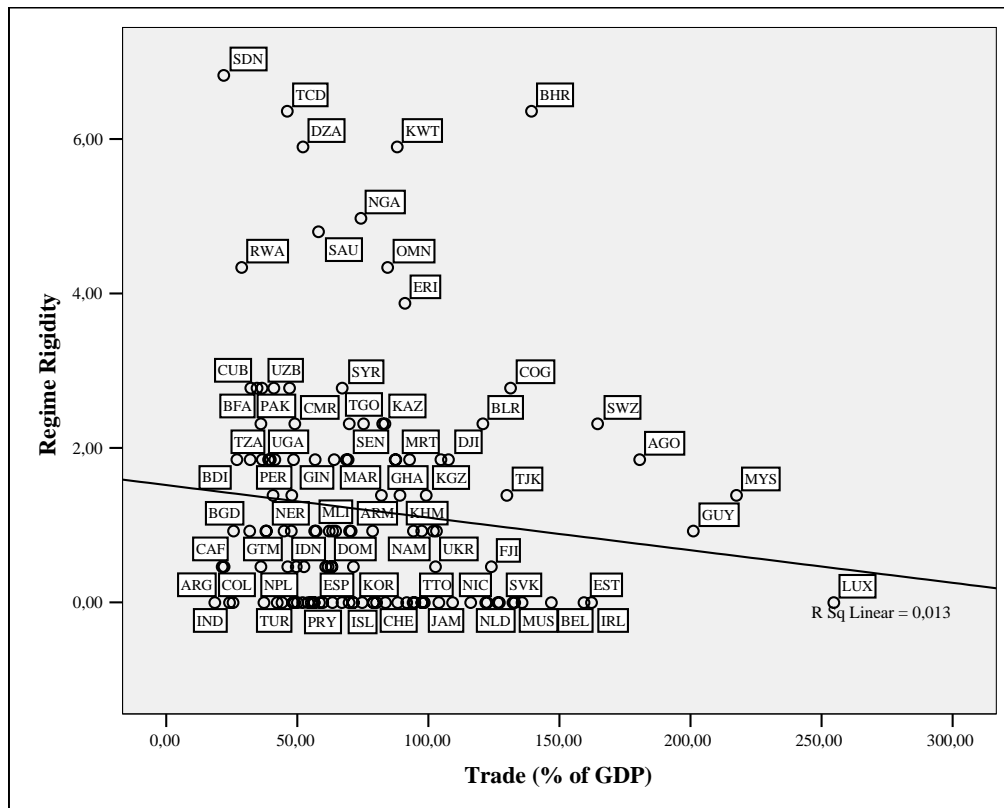
The third group of Sørensen's (1993) explanations of democratization is the social structure or composite within countries. This include the overall class structure, the types of ownership to land, etc. (Moore, 1966; Skocpol, 1994). I have not included extra control variables to capture this possibility. This is partly because some of the arguments are covered by the variables already included in the main model. Basically, the factor specificity argument can be presented as belonging to a tradition of explanations building on social and economic structure. Indirectly, the dependency of e.g. agricultural exports indicates the presence of a landowning class and a large agricultural population. Furthermore, low factor specificity (high factor mobility) implies class coalitions while sectoral divisions are likely when there is high factor specificity (Rogowski 1989; Frieden, 1991). Thus, this line of argument is implicit in the factor specificity model.

### International factors or globalization

Finally, Sørensen (1993) includes external or international factors as being potentially decisive for the development of democracy (and thereby also the absence of it). Most important of the general variables are those that try to capture the development of, and participation in, an international community. In an “economic state” understanding, participation in an economic community makes it costly to diverge. A more sociological understanding suggests that participation in international communities creates common norms and democratic values. This is basically an optimistic globalization argument.

de Soysa (2003) present a thorough analysis of the relationship between globalization – in a liberal interpretation – and democracy. His main operationalization of globalization is FDI (investment and stock) and trade. He finds that FDI is significantly and positively correlated with democracy. In my data set, I lack good enough data on FDI to run reasonable tests on this. Trade relative to GDP is a well known measure of economic openness, and will be included.

**Figure 7.13 Trade and regime rigidity**



Conceptually, according to macroeconomics, trade is a way of moving factors of production, and thus an inverse measure of total factor specificity. However, both products made from specific factors and products made from mobile factors are traded. Intra-industrial trade flourishes. Goods are bought even though the countries produce them themselves. Countries like Kuwait, Norway, and Bulgaria, all trades about 100 per cent of GDP, yet the composition in terms of specific assets are far from similar. Figure 7.13 pictures the bivariate correlation between trade and regime rigidity.

The next two variables used to capture the globalizing international community is participation in the international community via international organizations (Wiik, 2002). That is: the presence in a country of international governmental organizations (IGOs) and non governmental organizations (NGOs). Table 7.3 shows the pattern of correlations.

**Table 7.3 International organizations and regime rigidity**

		NGOs	IGOs	Regime Rigidity
<b>NGOs</b>	Pearson Corr		1	
	N		167	
<b>IGOs</b>	Pearson Corr	.773(**)		1
	N	167		167
<b>Regime Rigidity</b>	Pearson Corr	-.472(**)	-.193(*)	
	N	138	138	138

\*\* Correlation is significant at the 0.01 level (2-tailed).

\* Correlation is significant at the 0.05 level (2-tailed).

The number of NGOs correlates negatively to regime rigidity (Pearson R is -0.472, significance level: 0.01). In short: if there are more NGOs in a country, it is more likely to not have a rigid regime. Weaker, but with the same direction is the correlation between IGOs and regime rigidity.

### 7.3.5 Bivariate correlations – summary

The intention of section 7.3 has been to explore the correlations between measures of factor specificity, knowledge intensity and knowledge mobility on the one hand, and our measure of regime rigidity on the other. In addition similar analyses of the correlations between relevant control variables and regime rigidity have been assessed.

The overall conclusion is that natural resource dependencies tend to covary positively with regime rigidity. High dependency on oil, gas, and/or food exports in an economy makes it more likely that the regime is a rigid one. Ore, metal and agricultural raw material exports do not have clear correlations with regime rigidity.

Indicators of knowledge intensity covary negatively with regime rigidity. The more knowledge intensive is the economic activity of a country, the less rigid is its regime. This also indicates that the larger role mobile knowledge assets play in the economy and in the social life, the less rigid is the political regime.

When it comes to control variables we have seen a negative correlation between regime rigidity and GDP per capita. This measure is also strongly correlated with the index of knowledge intensity. The result is also in accordance with other studies in the field.

The bivariate correlation between growth and regime rigidity is positive. So is the correlation between Arabic countries and regime rigidity. Variables associated with globalization – trade relative to GDP, and participation in the international community through the presence in a country of international governmental organizations (IGOs) and non governmental organizations (NGOs) – revealed negative correlations to regime rigidity.

## **7.4 Multivariate analysis**

### **7.4.1 The models**

Thus far, we have presented and discussed the operationalized variables and the correlations between them. We have seen significant relationships between some of the independent variables and regime rigidity. However, to evaluate how variables work together we need to employ a multivariate analysis.

The purpose is to evaluate the degree to which the logic of specificity and knowledge intensity and mobility (applied at the national economy level) can contribute to explain the configurations of power that I have labelled regime rigidity. To evaluate this, I will perform “Ordinary Least Square” (OLS) regressions.<sup>124</sup> This means that we

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<sup>124</sup> OLS is a regression method that builds on several fixed assumptions. I have presented and discussed these in Appendix IV. The requirements to an OLS regression method are fulfilled to a reasonable degree. In the main text of this chapter though, many technicalities are omitted.



seek a function for regime rigidity that explains as much of the observed variance between regimes as possible, and stipulates the contribution, or direct effect, of each independent variable, within the model. It is also necessary to compare different models. I have computed five different models. First, it is what I have called the simple specificity model. This is a model that only consists of the index of knowledge intensity and the four variables measuring different types of dependency of specific factors. The second model I have called a control variable model. This model consists of key variables from the literature on regime types (e.g. logged GDP per capita, GDP growth, Fuel exports, a dummy for Arabic countries, trade share of GDP, and the presence of IGOs and NGOs). The third model is a combined, or merged, model where I excluded trade, IGOs and NGOs since these were insignificant. In this model I excluded logged GDP since the strong correlation with the index of knowledge intensity makes it difficult to use them both at the same time. The fourth model is identical to the third, except that in this model logged GDP replaces the index of knowledge intensity. Model five is the same as model three, improved by adding squared food exports and fuel exports variables, to allow for curvilinearity.

In all these models Gambia is filtered out. That is because the Gambian case was an outlier – a deviant case – that caused problems to the model. Deviant cases are facts of life; still, an outlier may affect the model estimates negatively. There are three strategies for dealing with this. First, we can ignore it. Second we can exclude the case from the analysis. Finally, we can eliminate the effect by introducing a dummy variable for Gambia (Bollen, 1988). There is no standard answer to what is the correct solution. I have tried all three solutions. The R square was highest without the case and lowest when the problem was ignored. However, the main reason I choose to filter out the case is that I was uncertain whether the data were actually correct: Gambia used to be a highly authoritarian regime. During the African democratisation wave in the mid 1990s, Gambia started to move in a democratic direction. However, in the 1999 measurement that makes up the regime rigidity in my database, they are still counted as a highly rigid regime, even though Gambia had undergone a significant democratization process (CIA 2004). Altogether though, I found it better to filter out Gambia than to let it, as an uncertain data point, disturb the estimates of the models.

In addition, a series of interaction variables and transformations are tried. The final presentation is an attempt to balance the desire for parsimony with the aim of correct specifications.

The final models are presented in Table 7.4. The table presents standardized beta coefficients, significance levels, and collinearity measures for the included variables.

**Table 7.4 Regression models: explaining regime rigidity**

	<b>Model I: The simple specificity model</b>	<b>Model II The control variable model</b>	<b>Model III The merged model with Index of Knowledge Intensity</b>	<b>Model IV The merged model with Log GDP/cap</b>	<b>Model V Complete specificity model</b>
Index of knowledge intensity	-0.185 * (0.822)		-0.238 * (0.810)		-0.241 ** (0.799)
Agricultural raw materials exports	0.036 (0.941)		0.060 (0.937)	0.003 (0.884)	0.060 (0.932)
Food exports	0.101 * (0.821)		0.122 (0.825)	0.039 (0.747)	-0.188 (0.060)
Fuel exports	0.630 ** (0.811)	0.446** (0.773)	0.534 ** (0.757)	0.482 ** (0.710)	-0.163 (0.070)
Ores and metals exports	0.099 (0.940)		0.092 (0.928)	0.052 (0.894)	0.101 (0.927)
Log GDP per capita		-0.427** (0.301)		-0.359 ** (0.696)	
Annual GDP growth		0.147* (0.931)	0.246 ** (0.924)	0.178 ** (0.922)	0.218 ** (0.886)
NGO		-0.029 (0.143)			
IGO		0.084 (0.251)			
Trade		-0.040 (0.808)			
Arabic		0.288 ** (0.674)	0.319 ** (0.901)	0.299 ** (0.860)	0.300 ** (0.882)
Food2					0.318 (0.064)
Fuelex2					0.704 ** (0.068)
Constant (B)	0.283	2.600	-0.004	2.335**	0.311
R Square	0.448	0.628	0.565	0.613	0.616
Adjusted R square	0.420	0.601	0.532	0.584	0.578
N	102	103	99	101	99

\*\* Correlation is significant at the 0.01 level (2-tailed).  
Numbers in parentheses are tolerance (collinearity statistic) <sup>125</sup>

<sup>125</sup> I may add a few points on the collinearity statistics. The numbers in parenthesis denote tolerance. This measure indicates how much the independent variables are related to one another (multicollinearity). Tolerance is the share of variance not covered by other independent variables in the model. If the tolerance is very small, this is problematic both because the variable has a small independent contribution, and because it indicates a violation to assumptions of the OLS regression. In the model we see that the tolerance is high. This may seem surprising since several of the variables are shares of total exports. The reason that this is not problematic is that the total exports consist of many more categories, and that the value on e.g. agricultural raw materials indicate very little of what else the country exports. When

Column one is an expression of the basic specificity model without any control variables and without any variable transformations. This model as a whole has an adjusted R square of 0.42. This reflects a reasonably high explained variance. We see that the index of knowledge intensity has a significant negative effect on regime rigidity, while fuel exports and food exports has significantly positive effects on regime rigidity. How to specify a regression model is a debated issue. Following King (1991), using a model that only includes the variables of theoretical interest is defensible, or even desirable, when the task is to estimate specific causal effects of that particular set of variables. King (1991:1050) holds that “[t]he usefulness of a particular model specification depends entirely on what causal or forecasting goals one pursues”<sup>126</sup>. For the goal of estimating the effect of the five included specificity variables the model is a good starting point. However, the model is underspecified in technical terms since it omits transformed variables. Furthermore, if we are interested in seeing if and how specificity variables compare to other variables in explaining regime rigidity, the model is underspecified also in terms of control variables. Thus, this first model serves mostly as a comparative starting point.

Column two presents a model specified on the grounds of the literature on democracy studies, rather than the theoretical approach of this thesis. It uses the same fuel export variable, since it is well known that there is an empirical regularity between being an oil economy and being an autocratic regime. I included a variable for logged GDP per capita to capture the empirical relationship between level of wealth and regime types. I also included an economic growth variable (annual GDP growth). To capture the effect of internationalization or globalization I included trade (% of GDP) and the presence of IGOs and NGOs. Finally, I included a dummy variable to stipulate the effect from Arabic countries on the regime rigidity variable. This model has an adjusted R square of 0.601, which is a high level of explained variance when one take into account the relative parsimony of the model. In this model it is fuel exports, wealth,

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transformed variables are included in model 5, the tolerance becomes very small. This is because both the original and the transformed variable is included. Obviously, these have little independent variance.

<sup>126</sup> It’s important to note that this is not due to a goal of parsimony.

economic growth, and the Arabic variable that provide significant contributions. Oil economies are clearly more rigid than other countries, and wealthy countries are clearly less rigid than other countries. Arabic nations are also more rigid than non-Arabic countries. More surprising, although in line with several previous studies (See Barro, 1998; and de Soysa, 2003 for more on this discussion), countries with high levels of growth are more rigid than countries with lower levels of growth. Neither this model is fully specified, since transformations (except for the logged GDP variable) are not done. This model serves as a glance into a model derived from the previous literature.

The next step is to merge the two models. However, as mentioned before, there is a very high correlation between GDP per capita and the indicator of knowledge intensity (Pearson's correlation between logged GDP per capita and the index of knowledge intensity is 0.725 with significant level 0.001). This means that the two variables probably measure much of the same underlying phenomenon. They are not independent. Therefore it would be a violation of the assumptions of OLS regression to include them both in the same model. On the other hand, it is problematic to exclude either of them. GDP is a well-known and effective explanatory variable in models explaining regime types. Excluding it uncritically would therefore be problematic. The index of knowledge intensity is a key explanatory variable derived from the theoretical framework of this thesis. As we saw, it is also an effective explanatory variable.

Before proceeding to a final model I will therefore present two merged models that are identical except for that model three will use the index of knowledge intensity, and model four will use the logged GDP variable. Model 3 then, includes the Index of knowledge intensity, Agricultural raw materials exports, Food exports, Fuel exports, Ores and metals exports, Annual GDP growth, and the Arabic variable. Trade, IGOs and NGOs are taken out due to the lack of significant contributions to the model. This model explains 53 % of the variance in regime rigidity. The standardized Beta coefficient for the index of knowledge intensity is -0.238. Replacing the index with logged GDP per capita – in the same model with respect to other variables – gives an model that explain 58 % of the variance (adjusted R square. 0.58). The Beta coefficient for the logged GDP variable is -0.359. The estimates of the model don't change much from switching between the knowledge indicator and the wealth indicator. The only variable that changes its effect substantially is food exports. The Beta coefficient for

food exports in the model with the knowledge indicator included is 0.12, while it is 0.03 when logged GDP replaces the knowledge indicator.

This is not surprising, but it is interesting. I will make a few comments on this even though the variables are not statistically significant. What it means is that being a food exporter seems to have a strong effect on regime rigidity, when we control for knowledge, but not wealth. Thus, it may seem like the effect of food exports has to do with the low ability of food production to generate wealth in society. When we control for wealth, but ignore the knowledge intensity variable it may seem that being a food exporter doesn't affect the likelihood of a rigid regime.<sup>127</sup> Another possible interpretation of the differences between the two models is that wealth explains more than knowledge intensity. This, in turn, is reasonable since knowledge intensity is a part of, but not all there is, to wealth. We might say that wealth is a broader macro-social category than is knowledge intensity. Either way, it is not possible from the above to be conclusive about which variable to proceed with. GDP gives a somewhat better prediction on regime rigidity. We can expect that a portion of the variance in the GDP variable has to do with improved knowledge situation. On the other hand, it is likely that a part of the variation in the knowledge intensity variable is caused by variance in wealth.

I will proceed with the index of knowledge intensity, keeping the “wealth-correlation” in mind. This choice is due to the theoretical aim of this study, and due to the argument that the knowledge indicator is deduced from a theoretical basis, while GDP is an observed empirical regularity with a somewhat unspecified theoretical foundation. This choice is likely to reduce the empirical accuracy of the model, but it will make a more targeted theoretical model.

The next step then is to improve the model according to the requirements of the OLS regressions. To allow for the observed curvilinearity in the relationship between

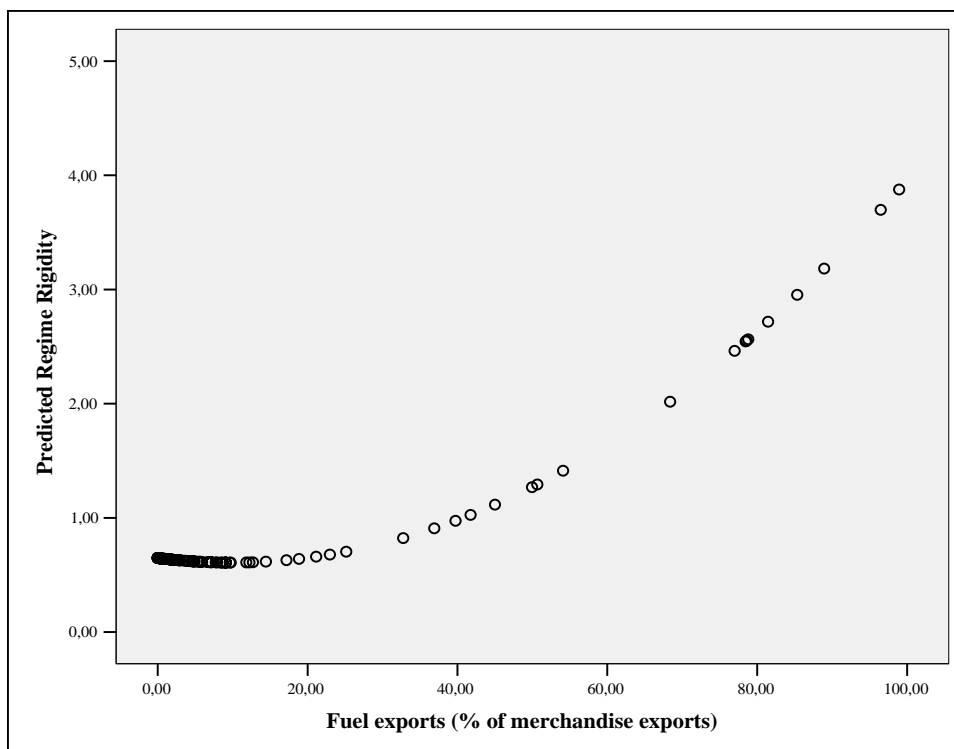
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<sup>127</sup> It may be to stretch the argument too far, but it is a possible interpretation that the low wealth generating effect of food production has to do with the relative knowledge extensity of food production. This point is totally in accordance with the argument posed by so-called knowledge-based economics (see e.g. Reinert, 1996, and the home page: [www.othercanon.org](http://www.othercanon.org)). It makes sense though: food production and export generates less wealth than e.g. knowledge-based production and exports.

food exports and fuel exports, squared variables of these variables are included.<sup>128</sup> The final model (V), explain 57.8 % of the variance in regime rigidity, and includes 99 countries and 7 basic variables (pluss 2 squared variables to allow for curvilinearity). The basic formula for the model has the form:  $\hat{Y}_i = b_0 + b_1X_{i1} + b_2X_{i2} + b_3X_{i3} + b_{k-1}X_{i,k-1} + \varepsilon_i$ . To discuss the effect of the individual variables I will use predicted effect plots. That means that the predicted effect of one variable on regime rigidity, when the others are kept constant on e.g. the mean value, is displayed in a scatter plot.

If we start with the fuel variable we see from the model in table 7.4 that there are two measures of this as we introduced the squared variable. Thus we need to evaluate the scatter plot to assess the nature of the relationship between oil export and regime rigidity. Figure 7.14 points out the situation.

**Figure 7.14 Effect of fuel export dependency**



<sup>128</sup> I have also tried interactions between growth and food exports, between knowledge intensity and growth, and between food exports and agricultural exports due to possible theoretical considerations. Neither of these interactions made contributions to the model and are therefore not included in the presented model.

We see that as the dependency on oil exports increases the predicted score on regime rigidity also increase. It is a curvilinear relationship. Keeping other variables constant, countries with 0 to about 40 % of merchandise exports as oil exports has a predicted regime rigidity score below 1. When the oil exports exceed 30 - 40 %, we see that the likelihood of having a rigid regime accelerates. This relationship is significant, and a well known empirical regularity. This regularity doesn't say anything about the causal direction. My data don't allow for causal analysis. What can be done is to discuss the relationship. Are the oil dependent regimes rigid because of the oil or despite of the oil? Clearly, most of the oil exporting countries were autocratic before they become oil exporting countries as well. Thus it seems that it is a mechanism that works as a hindrance of development towards more democratic regimes. The rentier effect, the modernization effect, and the repression effect (Ross, 2001) are all in accordance with this. So is the assumption that the immobility of the resource is an underlying cause of the "resource curse". When the starting point is a rigid regime, the combination of highly profitable resources that has no alternative uses or places, is very cementing. Thus, this finding is compatible with the theoretical explanation, but so it is with a series of other analytical frames.

Ores and metals exports, which in the theoretical frame of a factor-specificity logic, have pretty much the same position as oil and gas dependency have, as we see from table 7.4 no direct effect, controlled for the effect of other variables. In substantial terms the effect are also very limited.

A measure with a connection to the oil dependency variable is the dummy variable for Arabic countries. The correlation between the oil dependency variable and the Arabic variable is 0.370 and significant. We see from table 7.4 that when controlled for others variables, the statistical relationship between Arabic countries and regime rigidity is very high. As we have touched upon above, this can have cultural reasons (see e.g. Hammoudi, 1997). It may have to do with the oil correlation, it may have historical and colonial reasons, or it can have to do with the awkward knowledge development in the region, as suggested by the *Arab Human Development Report* (UNDP, 2003). This study doesn't add anything to these discussions.

Food exports also reveal a curvilinear relationship with regime rigidity. In table 7.4, both column three and five reveal that the effect of food exports on regime rigidity was weak and insignificant. I included it anyway, due to the theoretical relevance. It is presented in figure 7.15.

**Figure 7.15 Effect of food exports on predicted regime rigidity**

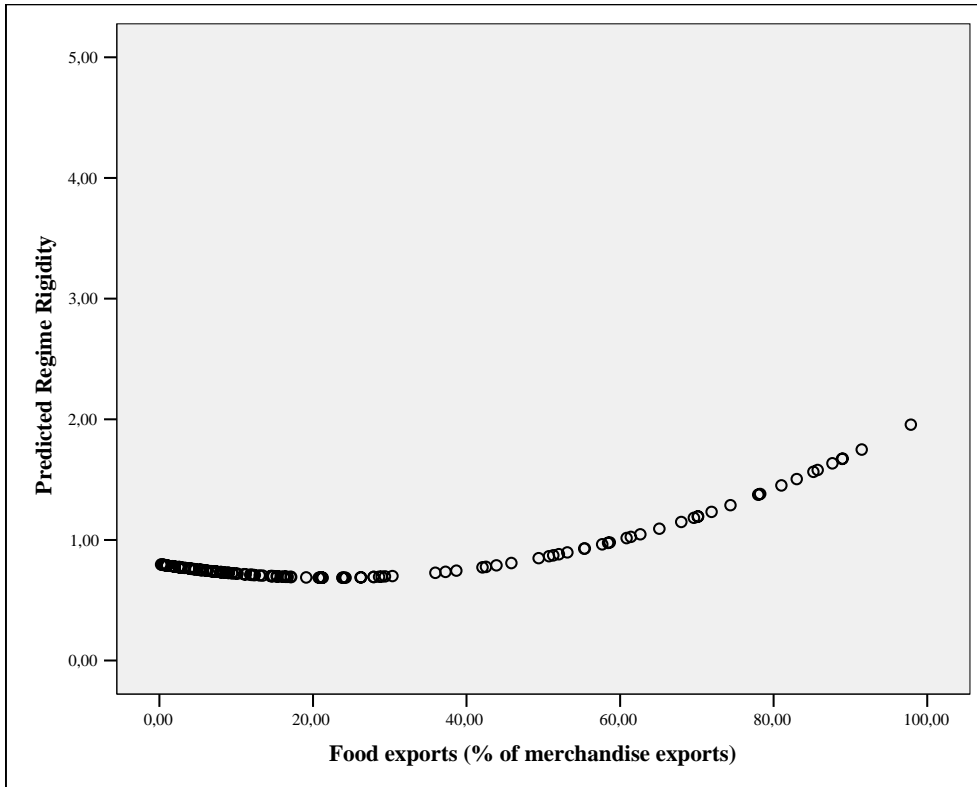
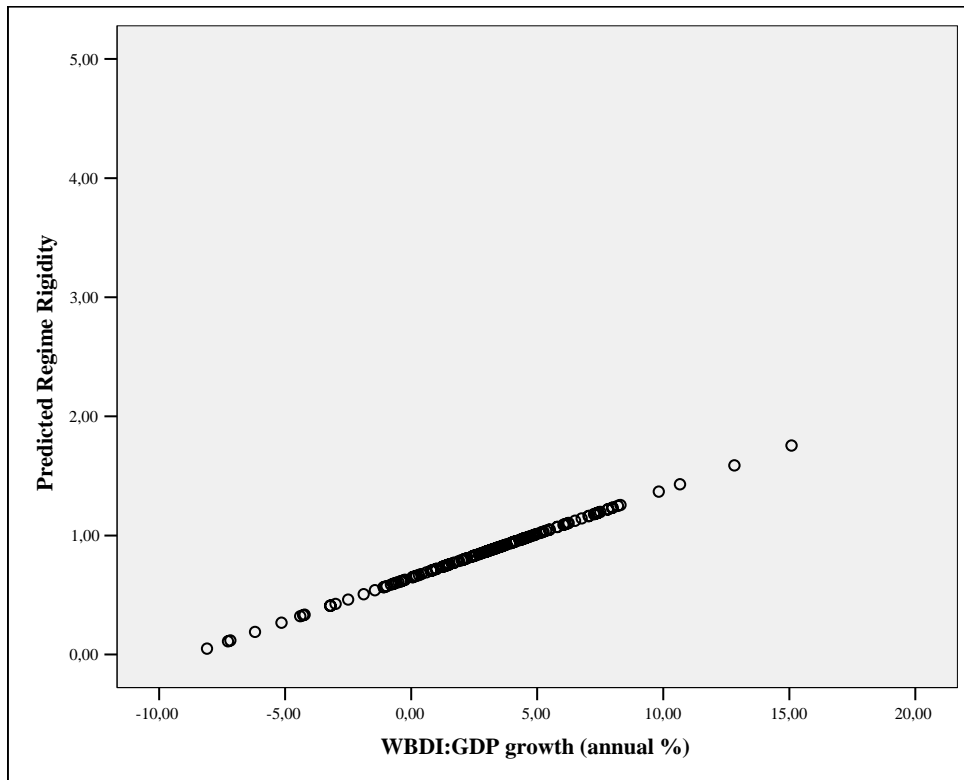


Table 7.4 revealed that in the final model, agricultural raw material exports had an insignificant, both in statistical and substantial terms, effect on regime rigidity. Thus, I don't do anything more with this variable.

Turning to the growth variable we saw from table 7.4, column five, that the beta coefficient was 0.218 and significant at the 0.001 level: Increased growth tends to covary with increased regime rigidity. Figure 7.16 illustrates the relationship. We see that, keeping other variables constant at their mean, increased growth from e.g. 0 to 5 (which is a large jump in terms of economic growth) increases the predicted regime rigidity from about 0.8 to 1. That means the effect, in substantial terms, are rather limited.



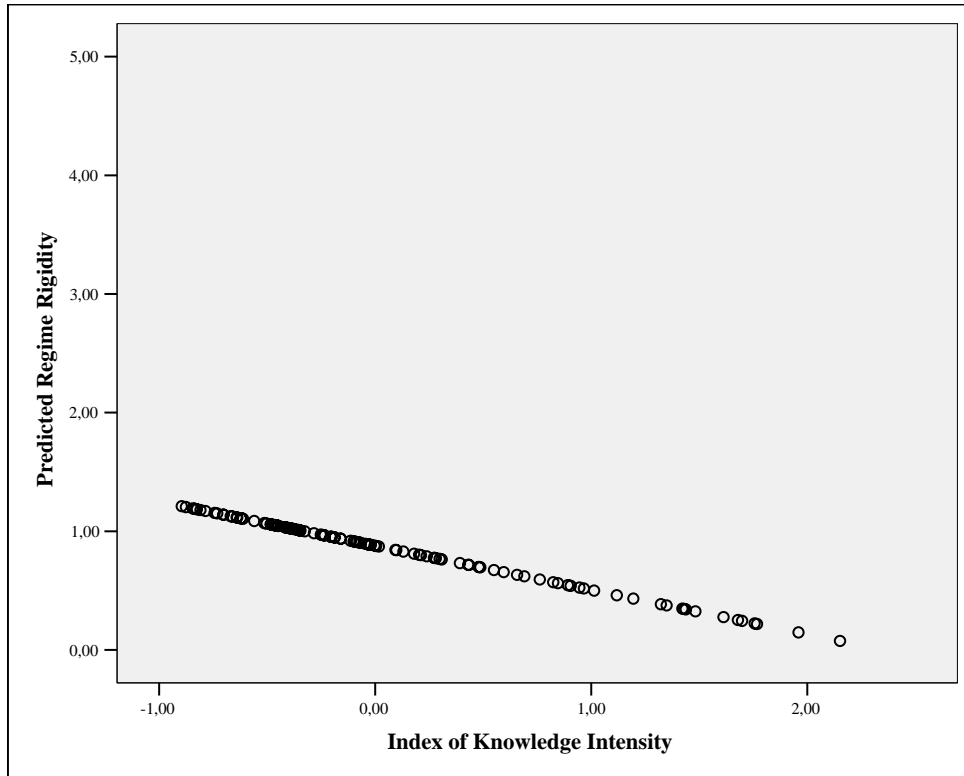
**Figure 7.16 Effect of growth on predicted regime rigidity**



I may add that in the case of growth too, the causal direction is undetermined by this study. In the relevant literature on economic growth, the classical question is whether democracy supports growth (Barro, 1998). One can also ask, however, whether growth is good for democracy (see e.g. de Soysa 2003:73-77 for a discussion on these perspectives). Clearly, both are highly relevant political issues; but for the issues at stake in this thesis, it is of marginal interest.

Finally, we evaluate the effect of the index of knowledge intensity on regime rigidity. Table 7.4 displayed that the standardized beta coefficient was -0.241. To better to grasp this effect figure 7.17 illustrates the degree of influence. Moving from the top to the bottom of the index of knowledge intensity, the predicted regime rigidity change from 0 to 1.2 on a scale from 0 to (close to) 7.

**Figure 7.17 Direct effect of knowledge intensity on regime rigidity**



Interpreting these findings in light of our theoretical starting point we might say that, keeping other things equal, it seems reasonable to hold that countries are less likely to be rigid regimes as they transform to a more knowledge intensive societies. Flat configurations of power – organizational forms – covary with a knowledge society. If we interpret a knowledge society as an economy that depends more on mobile assets (than less knowledge-intensive economies) we may also say that an increasing degree of mobile knowledge assets implies a decreasing likelihood that political regimes are rigid. However, the causal direction is not determined by the study. Does knowledge lead to less rigid regimes, or do less rigid regimes promote the transition toward a knowledge society? The theoretically-specified causal direction is clear: we expect increased asset mobility (read: knowledge intensity) to promote less rigidity in configurations of power. However, we can deduce from theoretical literatures from Mill (2002) to Barro (1998) that there is reason to believe liberal regimes are also good for the development of knowledge. This study has not made any tests of causality. Pragmatically speaking, there is reason to believe that causality goes both directions. Knowledge is good for pluralism and democracy, and democracy and pluralism are good for knowledge.

## 7.5 Concluding remarks on the specificity-rigidity relationship

While chapter six was empirically narrow in the sense that one relatively clear-cut empirical unit was analysed, the present empirical chapter has made a wide sweep covering a huge empirical range (the world). Where chapter six explored a possible link between knowledge specificity and configurations of power in the organization of knowledge work in individual firms, the present chapter explores links between characteristics of national economies (in terms of knowledge intensity, knowledge specificity, and natural resource dependency) and configurations of power understood as the organization of the political regimes of nations. In this chapter, the basic concepts of specificity, knowledge and power are operationalized and measured entirely different than in an organizational analysis. However, the overall, or basic, theoretical concepts are the same. We still explore the relationship between knowledge mobility and configurations of power.

The analysis started with a presentation of data and operationalizations of the involved variables. Thereafter, I presented bivariate correlations and connections between the involved variables. The subsequent multivariate analysis included explanatory variables from other relevant research on regime types, and it included the key variables stemming from the theoretical work based on asset specificity in general, and on knowledge in particular. The variables were tried out in different combinations. What we have found in this chapter can be summarized briefly:

- The main model explain close to 58 % (adjusted  $R^2 = 0.58$ ) of the variation in regime rigidity. The explanatory variables are 1) national dependency on specific factors (measured as agricultural raw materials exports, food exports, fuel exports, and ores and metals exports as share of total exports); 2) a knowledge indicator that is meant to cover both the knowledge intensity in economy and social life, and the degree of factor mobility in the economy, since knowledge is a relatively mobile factor of production; 3) Furthermore, the model consists of economic growth, and a variable covering Arabic countries. 58 % explained variance is rather high for this kind of multivariate analysis, and may be interpreted as supportive for the model as such, although we must keep in mind that more than 40 % of the variation in regime rigidity is *not* explained by

this model. The individual variables that have a significant effect on regime rigidity are:

- The index of knowledge intensity has a negative effect on regime rigidity. That means that a knowledge society is significantly less likely to be (come) a rigid regime.
- Economic growth is positively correlated with regime rigidity. That means that when there is strong economic growth, there is also a higher likelihood that we find more rigid regimes.
- Arabic countries are significantly more rigid than others.
- The higher the economic dependencies on exports from specific factors as oil, gas and food, the higher is the likelihood that the regime is a rigid one.

The study in this chapter thus provides conditional support for the knowledge-based asset-specificity approach advocated in this thesis so far. In chapter five, expectation (6) stated that: *when a larger part of a national economy is based on specific (mobile) assets the likelihood of an authoritarian, or rigid regime increases (decreases)*. Since knowledge – at large – is a mobile type of asset it is possible to say that the expectation is met. However, there are limits to this support. There are three main problems. First, our key knowledge indicator, the index of knowledge intensity is very closely correlated with a general measure of economic development or economic well-being, namely GDP per capita. It is hard to separate the two. Thus, what we can say is that GDP and knowledgeification of the economy are closely related, and that these interwoven variables affect the regime types in a positive direction.

Second, it seems clear that dependency of specific factors like oil and food correlate with regime rigidity. This is supportive of a general asset specificity approach, but only implies that there is an expected correlation between dependency on more knowledge intensive assets that are mobile and less rigid regimes.

Third – and this is maybe the most critical problem – all of these findings hinge on one crucial point: the operationalization of variables. Knowledge intensity, specificity of assets and factors, and configurations of power, are metatheoretical categories. The plausibility of the findings of this chapter depend on whether one recognizes that these categories are properly represented by the variables used.

Taking the presented problems into account, the analysis in this chapter does illuminate how knowledge and specificity may influence configurations and power at a cross-national level. At large, we may say that knowledgeification of society counter rigid regimes, while dependency on specific assets seems to support rigid regimes.

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In the next chapter I will explore the concepts in yet another context: the international institutional frame of knowledge mobility in an internationalized economy.

# Chapter 8.0 International Knowledge Mobility – an Institutional Analysis

## 8.1 Introductions

### 8.1.1 Themes and approaches

In the previous chapters we have explored different aspects of the relationship between knowledge specificity and configurations of power, theoretically and empirically. Empirically we concentrated on how variations in knowledge specificity influenced configurations of power in organizations, and in nations. We have been relatively faithful to the assumption that specificity is an exogenous characteristic, placed first in the causal chain, and that it influences political and economic processes. Yet, the empirical relationships between asset specificity and configurations of power are bound to be complex. Obviously, the causal chain may work the other direction as well. For instance may the mobility and specificity of knowledge representations be affected by international political institutions and regimes, which are configurations of power on the international level. This chapter explores and describes how what may be called an international regime for knowledge mobility, including as cluster of institutional structures, regulate the international mobility of knowledge representations. Clearly though, the theoretical expectation that *the degree of knowledge mobility may be changed through strategic and/or political decisions* will be a focal point in this chapter.

In the literatures on asset and factor specificity, the starting point is normally that specificities are relatively stable characteristics of assets – or factors – that in different combinations influences on political attitudes, purposes, and regimes.<sup>129</sup> In this chapter I abandon this assumption. There are three reasons for this. First, a classical debate in the international political economy (IPE) literature has demonstrated clearly that a

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<sup>129</sup> I say relatively stable because historical studies, as e.g. Boix (2003), often observe that e.g. capital mobility change over time. Even so, factor specificity is beyond the scope of most political strategies.

unidirectional causality between national and international issues and influences is highly unlikely (Gourevitch 1978; Gourevitch 1998). The debate echoed a related “image debate”, or the “great divide” in International Relations (See e.g. Clark, 1998; Waltz, 1959; Waltz, 1979; Knutsen, 1997; and Moravcsik, 1997). The point though is that directions of influence – analytically and empirically – to a large extent is a matter of viewpoint. Therefore, a rich image of the theme – configurations of power and knowledge mobility – requires a shift of perspective.

Second, even though it normally seems to be the case that the specificity of assets are fairly stable there are some great moments of change in history – both technological and political – that change mobility far beyond intention. The technological revolutions of steam machines, railroads, telegraph, and modern ICT, are well-known examples that changed the entire way of doing business, by the change of conditions for asset mobility. See e.g. Carr (2004) for a presentation and argument. This chapter focuses on a cluster of contemporary institutional inventions that *politically* have altered asset specificity in fundamental manners.

Third, building on the two points above, it seems clear that understanding the significance and depths of the relationship between knowledge mobility and configurations of power requires a description of how knowledge mobility has been altered and managed in an international context.

The described analytical twist, where we no longer sees configurations of power as the ultimate outcome of political processes, doesn't necessarily mean the opposite, that configurations of power is seen as the ultimate cause of action. In a by now classical article on international regimes, John Gerard Ruggie (1982:382) states that “(...) power may predict the *form* of the international order, but not its *content*.” Studies on the content of international orders and the regimes serving them require, according to Ruggie, that one “look at how power and legitimate social purpose become fused”. This study of international regimes managing and supporting the international mobility of knowledge representations is exactly that: A look at the fusion of social purpose and institutionalised configurations of power. Thus, this chapter is not providing an argument of what have made the international regime, but a closer look at some of its elements, its development and workings.

It is necessary to find the boundaries of the regime, or to find the cases or political institutions to study knowledge mobility in relation to. In this task the steering question is simple: which institutional changes deal explicitly with, or have influence on, the structure of specificity and mobility of knowledge representations? The answer to this question points to an institutional cluster consisting of the institutionalizing of intellectual property rights with the World Intellectual Property Organization (WIPO) as a core, standardization with the International Organization of Standardization (ISO) as an institutional center, and trade liberalization with the World Trade Organization (WTO) as its leading force. All this international organizations, and the regimes they may be seen to represent – a liberal trade regime, an intellectual property rights regime, and an evolving regime of standardization – has been, as we will see below, subject to a number of studies.

The contribution of this chapter is not what it adds to the empirical literatures on trade, on intellectual property rights or on standardization. The contribution of this chapter goes in two other directions. First it contributes by fusing standardization, intellectual property rights, and trade regulation in a framework that address the relationship between knowledge mobility and power. This has, as far as I know, not been done in other studies. Second, it contributes *to this thesis* by expanding and deepening the understanding of the relationship between the mobility of knowledge and configurations of power – operationalized as international regimes. In this field, the contribution of this chapter is that it provides a *description* and an *interpretation* of an international regime and its working on knowledge mobility.

Before proceeding, a few comments on the methods – or methodology – and the data used may be appropriate.

### **8.1.2 Concept clarifications, data and methods**

In this chapter, I trace the same concepts as used in the previous chapters. I study knowledge specificities and configurations of power – and how these concepts interact. Although the operationalizing and interpretation of concepts differs, as the usage in chapter six and in chapter seven differs, we speak of the same theoretical concepts: the mobility of knowledge, and configurations of power. Also in this chapter it is important to emphasize the need to operationalize power and knowledge mobility in different



ways in different contexts. Another field of study, and another level of analysis, requires new operationalizations of both power and knowledge. In addition, it requires additional theoretical reflections.

Reflecting on the international mobility of knowledge calls for a specification of knowledge. In this respect, this chapter uses the categorization of knowledge representations presented in chapter four. There, knowledge representations were seen as material (explicit) or human (tacit), and they were narrow (individual) or wide (collective). This gave us the four typical representations: texts, technologies, experts and communities (of practice). To simplify we may speak of material forms (covering both texts and technologies) and human forms (covering both experts work and communities of practice). I ask though: Are the mobility of such “things” altered politically, and if so, by which measures?

In this chapter I see the configurations of power partly as international regimes and institutions, but in close intermingling with what Ruggie (1982) calls legitimate social purpose.<sup>130</sup> We may define this as the interface between an international organization with some kind of regulative mandate, and a legitimate social purpose. International configurations of power – international regimes – are highly dependent on legitimate purpose, and on consensus among participants. The understanding of the regulative aspects of configurations of power are as described in chapter two, where I stated that power is regulatory in the sense that it makes some actions possible, plausible and cheap, and others difficult, impossible or expensive.

The data used to make the description and interpretation that constitutes this chapter can be divided into two groups. First, there is information on the international organizations that are parts of the analysis. The history, the strategies, and the visions of these are partly gathered from documents stemming from the organizations themselves, and partly from secondary sources. Second, there is the information used to illustrate the workings of the regimes. These are statistical data from OECD (2003) and information

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<sup>130</sup> There is a large literature debating the definition of an international regime. Haggard and Simmons (1987) separates between structuralist theories (especially hegemonic stability theory, see e.g. Keohane [1980] 1996; Gowa 1993; and Snidal 1985), game theoretical approaches, functional theories, and cognitive theories (represented by e.g. Ruggie 1982, and Haas 1990). The minimum definition which they may be seen to have in common is that an international regime is an international structure that in some way create regularity among a group of actors in a policy field.

from a series of other studies that has addressed parts of what I see as the international regime for knowledge mobility.

Documents and secondary sources are therefore the most important data in this chapter. In analysis of documents, J. Scott (1990) has distinguished between personal and official documents. Here, only official documents are used. Official documents in turn, may be divided into private and state documents. I think it is reasonable to add IGO (international governmental organization) documents. Documentation from IGOs is increasingly an important source of information. The World Bank, the OECD, the WTO, are but examples of such data sources. The criteria Scott present for assessing the quality of such documents is authenticity (genuine and known origin), credibility (correct and free from errors), representativeness (typical or with known untypicalities), and meaning (clear and comprehensible) (see also Bryman, 2004). The document data used in this chapter are all official, although they are both private (as e.g. the ISO is a private organization), state documents, and IGO documents (e.g. from the WTO). The documents can be seen and controlled by anyone. There is no reason to question either the authenticity or the credibility of the data, as such. The representativeness of the data may vary considerable. There may very well be relevant and important data that is one of a kind. Therefore, the representativeness criteria should be fulfilled by careful reporting on the type and source of data. More problematic is the fourth criteria. In the kind of analysis conducted in this chapter, the meanings of data are not only based on the objective features of the document. A document is a part of a larger discourse and, as such, it has a meaning that must be unveiled through the analysis.

The fact that much of the official documents used in the institutional analysis are gathered from the internet is not important to the analysis. In the case of such documents the internet is but a distributional channel. Most, if not all, documents may also be found in paper.

The methodological approach of this chapter differs from the previous empirical chapters: Where chapter six was based on interviews, and chapter seven on statistical databases, this chapter is based on interpretative document analysis. Where chapter six presented a single case study, and chapter seven a large-N cross-national inquiry, this chapter presents a case study of an international regime involving three institutions.

A case study is a category that covers a very large range of research strategies. Consequently, stating that this chapter presents a case study implies very little, if anything, on the actual analytic strategy. Yin (2003) suggests that there are three alternative analytical strategies (which are not to be confused with issues of qualitative vs quantitative research or comparative vs single case studies). These are (1) relying on theoretical propositions, (2) thinking about rival explanations (a combination of these was employed in chapter six), and (3) developing a case description (Yin 2003:109-116). The following case study is mainly the latter. However, it is a description of how international institutions work together and make up a regime that regulates knowledge mobility. Clearly though, this is a description that implies explanation building (Yin 2003: 120-122) and interpretations. These interpretations are, in turn, relying on theoretical expectations. In terms of analytical strategy, this chapter is a plausibility probe (Eckstein 1975), as I argued that the whole thesis is. The chapter doesn't provide a thick description. It doesn't explore rival explanations at length. The chapter is an empirical and analytical exploration of what may be seen as a regulative logic underlying the international regime for knowledge mobility. In exploring this logic systematic reasoning are used. In a brief evaluation of some empirical regularities used to illuminate the developments, I build on some explicit counterfactual reasoning (e.g. Fearon, 1991; King and Zeng, 2006; Lebow, 2000; Sørensen, 2004).

The remaining parts of chapter eight is organised thematically. One by one I present three international institutional tendencies or processes that together make up what I see as a regime for knowledge mobility. These are first, a process of institutionalizing intellectual property rights – we may call this a process of appropriation. Second, there is a process of standardization, and third, there is a process of trade liberalization. Each of the three sections consists of a description of the theme, a reflection upon the legitimate social purpose, and a description of the institutional cores (WIPO, ISO, and WTO respectively). Each part is concluded with a short reflection upon the effects of the processes. Finally, the complete chapter is concluding with a discussion on what this international regime does with the knowledge mobility.

## **8.2 On appropriation - fencing in material knowledge representations**

### **8.2.1 Purpose - enclosure and the safeguarding of the knowledge economy**

What we may call a process of appropriation, seem to be of significance to the knowledge economy. In our context, appropriation signifies the transformation of knowledge from a “public” good<sup>131</sup> to commodities. Today, “[I]nformation and knowledge are becoming important market commodities, priced accordingly” (May 2000). This process of transformation signifies the naturalizing of intellectual property rights (IPRs) to knowledge representations. Patents, trademarks, copyrights are examples of measures of such property rights. The knowledge representations that are captured through IPRs are knowledges that are codified or codifiable. That means we are talking about material knowledge representations as technologies, texts and descriptions. Knowledges that escape codification can hardly be fenced in by proprietary means. Basically, what this transformation does to the mobility of knowledge is that it ensures that the normal way of transferring knowledge representations is as economic transactions. Thus, free sharing of knowledge is reserved to knowledges that are not safeguarded as intellectual property, or within the boundaries of an owning group – e.g. a firm. Thus, this is a process of enclosure.

This description clearly indicates that the process of enclosure connected to the development of IPRs actually is a process of increasing specificity. IPRs define, and regulate in legal terms, the range of application of knowledge representations. Thus, we may speak of a kind of “legal asset specificity”. This is not covered by the classification developed by Williamson (1989). The logic of this kind of specificity is closely related to what he called dedicated assets. Legally specific assets however, are dedicated to its holder, not to other assets. The reason this isn’t covered by Williamson (1989) is probably that the legal specificity of IPR-covered knowledge representations are created as the knowledge change from a knowledge to a commodity. One can say though, that the legal specificity of assets is taken for granted by earlier classifications.

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<sup>131</sup> I do not use the term public good in a formal way here. Relating the term to Mancur Olsons (1965) classification means that a public good is non-exclusive and joint in supply. I don’t think that it is useful to insist that knowledge needs to be either, even without fixed proprietary fences.

Notwithstanding, by this process of enclosure, asset mobility between users are legally restricted.

As a point of departure, it is important to keep in mind that it is not obvious and natural that certain types of knowledge, or their representations, can or should be understood as commodities. Jessop (2000:77) put it this way: “the globalising knowledge driven economy can not be adequately understood by regarding knowledge as a natural(ised) factor of production. Instead it is based on the contradictions between knowledge as a collective resource and as intellectual property – contradictions which is rooted in its fictitious commodification.”<sup>132</sup> Neither is it obvious if, and how, the property rights to those knowledge representations are to be defined (May, 2000).

Although it is not obvious that there are property rights to knowledge, it is quite clear why it is regarded as social and economically beneficial to have such a system. And this is where Ruggie’s term “legitimate social purpose” comes into work: knowledge as an economic factor of production is vital to modern economic systems. For a liberal knowledge capitalism to emerge, which may be seen as a common good, it is of vital interest that property rights to knowledge can be defined and upheld.<sup>133</sup> Only though the establishment of property rights to knowledges – such as codes, patents, descriptions, and technologies – can economic exchange emerge within the frame of a market structure. The development of an IPR regime is supported by economic theory, and in particular the theory of public goods. Because of an assumed public good character of knowledge, it tends to suffer a problem with free riding. Positive externalities, due to the non-excludability of public goods, cause an under-investment in innovation and development of knowledge. Thus, the temporarily granting of privileges of monopoly (a patent) provides extra incentives for research and development (e.g. Drahos and Mayne, 2002; May, 2000). The economic argument for IPRs is that without them, society will experience an under-investment in research and development: “the

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<sup>132</sup> Jessop’s discussion (2000) continues earlier discussions on the commodification of labor. See e.g. Polanyi (1944).

<sup>133</sup> The “knowledge economy” is a field where the process of setting the rules – defining the market – is still visible. See e.g. Callon (1998) for an interesting collection of sociological works on the rather under-communicated social, political and physical conditions for the workings of markets in general. See e.g. Appadurai (1986) for some anthropological contributions to the understanding of how things become commodities.

patent system neatly offers the inventor the opportunity to reap some reward from his or her invention, and provides the society with an invention it would not otherwise have had. Everyone benefits, or so it is said” (Macdonald, 2002:14).<sup>134</sup> Even though this is an economic – and political – argument, not an objective description, it is an argument – a social purpose – that seems to have a very strong position,<sup>135</sup> and it is closely intermingled with the institutional developments of the World Intellectual Property Organization (WIPO).

### **8.2.2 The institutionalizing of IPRs – WIPO**

For centuries, the concept of property rights has been of interest to the legal profession, political theorists, anthropologists and philosophers. Consequently, there exists a huge scholarly literature on property rights (e.g. Brewer and Staves, 1996; Hann, 1998; and Paul, Miller, and Paul; 1994). Alongside the growth of the knowledge economy a related interest in intellectual property rights (IPR) has emerged (e.g. Drahos and Mayne, 2002; May 2000; Perelman, 2002 )

Over the years, we have witnessed an increasing institutionalizing of IPRs. Macdonald (2002:15) holds that “the patent has a long and dishonourable history, used as much to reward political loyalty as invention”. Neither the history nor its disgracefulness is the theme here, but a recent twist makes it relevant to recapture the main phases of its development. Arguably there have been three phases in the development of regimes for the protection of IPRs.<sup>136</sup> The first phase covers the period from 1474 to the 1880s. This coincided, partly, with the mercantilist period (e.g. Heckscher, 1931; Heilbroner 1964; Reinert 1996; Smith [1776] 1991). The protection of patents through legislation is known to have existed as far back as the Venetian law of 1474, where individuals were given exclusive rights to inventions at the expense of the

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<sup>134</sup> Obviously some industries and firms have a greater interest in the IPR system than others. Industries that combine large development costs and easily codifiable knowledge have the potential for large gains. The pharmaceutical and the chemical industries are well-known examples. In a much cited study, Mansfield (1986) estimated that 60 % of the pharmaceutical and 38 % of the chemical inventions would not have been developed without patent protection.

<sup>135</sup> There are some that question the new position of IPRs. E.g. Perelman (2002) states that, through the IPR system, “costs are socialized while benefits are privatized”.

<sup>136</sup> Data on the main milestones in the development of the IPR regime are gathered via the website of the WIPO itself (see <http://www.wipo.int/portal/index.html.en>). Additional secondary sources are also used.

public, within the realm of the national economies. From the second half of the 18<sup>th</sup> century France (1791), The US (1788) and others established national patent systems (Kamil, 2004). These were not effective between countries, and additional barriers to trade and the mobility of skilled personnel flourished in the period. For instance, in the 16<sup>th</sup> century Venice employed the death penalty on skilled workers that tried to emigrate (Reinert 1996).

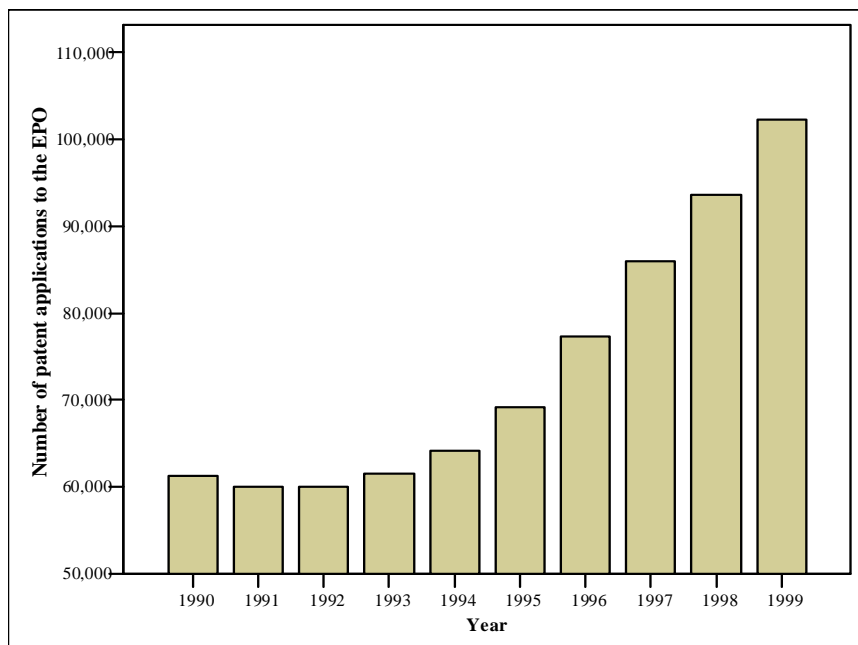
The second period stretches from 1883 to 1996. This was a period marked by the internationalizing of patent regulations. It started with a set of international agreements on the mutual acceptance of IPRs by citizens in participating countries. The first major international treaty regulating patent legislations came in 1883, with the “Paris Convention for the Protection for Industrial Property,” (Kamil, 2004; WIPO 2004A). Copyrights were internationalised through the “Berne Convention for the Protection of Literary and Artistic Works” in 1886 (WIPO, 2004B), and the “Madrid Agreement Concerning the International Registration of Marks”, from 1891, established a corresponding international agreement on trademarks (WIPO, 2004C). After a period of relative institutional stability, several measures were taken in the 1960s and 1970s to unify the administration of agreements. In 1974, The World Intellectual Property Organization (WIPO) was established as part of the UN system to administer international IPR regulations.

The third phase began in 1994, with the development of a renewed international trade regime, in particular the TRIPs agreement (Trade-related aspects of intellectual property rights). This was part of the Uruguay Round of the General Agreement on Tariffs and Trade (GATT). The Uruguay Round marked the start of the World Trade Organization (WTO), and the new organization was given a mandate to enforce IPRs, a task WIPO never had the capacity to undertake (May 2000). Bringing international IPR issues under the WTO dispute settlement system strengthened the IPR regime fundamentally, and contributed to a regime that could guarantee and defend private ownership to knowledge. This phase of the international institutionalising of IPRs has two main features. It marked a real internationalization of the IPR regime, and it integrated IPRs in the international trade regime.

### 8.2.3 Some facts and counterfactuals on the increase in intellectual property right claims

In the last decade, which coincides with the latest historical phase of the institutionalizing of the IPR regime, we find a significant growth in attempts to protect knowledge by proprietary means. Figure 8.1 illustrates the growth in terms of the number of patent applications to the European Patent Organization (EPO). Other major patent organizations have experienced similar trends (OECD, 2003; WIPO 2005). All over the world, the number of patent applications and the number of granted patents are increasing exponentially.

**Figure 8.1 Number of patent applications to the EPO**

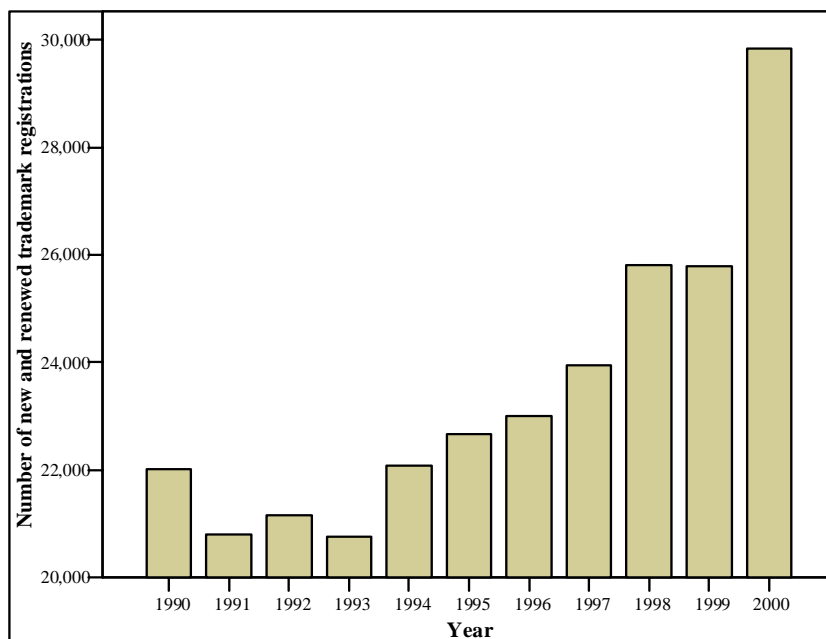


Source: OECD (2003).

Figure 8.2 show the increase in the number of new and renewed trademarks applications. Registered trademarks are a way of protecting a brand name or a symbolic representation of intellectual property.



**Figure 8.2 Number of new and renewed trademark registrations**



Source: OECD (2003).

The pattern of increase is largely similar to the increase in patents, although somewhat less steady.

The simple fact that we internationally may observe an exponential increase in registered trademarks and patents doesn't prove anything about the causal mechanisms behind this increase. It may be due to an improved regime and better-working institutions, or it may not. Notwithstanding, based on counterfactual reasoning, it is very likely that without a well-functioning regime for the enforcement of IPRs, few economic actors would take the costs, which are quite considerable, of safe-guarding intellectual property rights internationally. Furthermore, it is evident that the existence of an international IPR regime in the form of e.g. effective international enforcement procedures, and supported by a legitimate social purpose of making the knowledge economy function well, is a permitting cause for contemporary growth in patent and trademark registrations. It is this regime that makes international patenting and registration possible and meaningful. I hold though, that not only is the existence of an international regime for IPRs and the increase in e.g. patents and trademarks cotenable,

but the alternative (that only one of these phenomena occurs) is not cotenable.<sup>137</sup> However, this is not a statement that rules out either globalization or other more general explanations; it only shows that a part of the more general developments probably is the co-development of a IPR regime and a growth of taken property right measures.

It seems though, that the history of institutionalizing IPR can be told as a history of the spread of a particular sub-category of knowledge mobility restrictions – a process of enclosures that actually is a form of legal asset specificity. Later on we will consider how this process of enclosure is a precondition for another process, an opening and mobility enhancing process. First, however, we will consider another form of enclosure.

### **8.3 On standardization - fencing in human knowledge representations**

#### **8.3.1 Purpose Enclosure through standardization - simplification**

In this section I will address standards and an international regime for standardization of human knowledge representations, and the international organization of standardization (ISO). Standardization is a tendency – a process of enclosure – that also seems to be of importance to the mobility of knowledge.

A standard is a restricting and uniforming description or expectation that can be formal or informal. Creating, utilizing and spreading standards are very important for the mobility of knowledge representations. On the other hand, standards and specificity are related in several ways. One understanding of the term standardization is in itself fulfilling the economic definition of specificity. The process of standardization is a process of increasing the quasi-rents of the standardized product since assets involved in a standardized production or service have a lower value outside this standard than inside. The enclosure-process of standardization, may be seen as an asset-specificity enhancing process. Thus we may speak of standard-specific assets as another category of specificity not covered by Williamson (1989).

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<sup>137</sup> Fearon (1991:194-195) concludes on the use of counterfactuals that “(...) particularly when the hypothesis is evaluated against other hypothesis, analysts should make clear what arguments support it and how they do so. The analysts need to ask whether the casual inference does indeed follow from the theories and historical facts used to sketch the comparison case and then, whether the counterfactual proposition is cotenable with the counterfactual scenario.”

Anyway, standardization is a ‘restricting’ process, and, arguably, it is exactly these restrictions that enhance the mobility of standardized human knowledge representations. A timely example is from the educational sector where the ongoing Bologna process standardizes educational systems to ease the compatibility and the mobility of students between European countries. In the self-presentations of the International Organization of Standardization (ISO), the relation between standards and increased mobility are made very clear: “Without the standardized dimensions of freight containers, international trade would be slower and more expensive. Without the standardization of telephone and banking cards, life would be more complicated. (...) Standardized protocols allow computers from different vendors to ‘talk’ to each other. Standardized documents speed up the transit of goods, or identify sensitive or dangerous cargoes that may be handled by people speaking different languages. Standardization of connections and interfaces of all types ensures the compatibility of equipment of diverse origins and the interoperability of different technologies. (...) Standardization means that businesses using International Standards are increasingly free to compete on many more markets around the world” (ISO, 2004).

The “standard” definition of a standard, according to the ISO is “a document, established by consensus and approved by a recognized body, that provides, for common and repeated use, rules, guidelines or characteristics for activities or their results, aimed at the achievement of the optimum degree of order in a given context” (WSSN, 2004). This is a rather formal definition of standards though. However, standardization is more than mere technical agreements. It is a tendency, or a process that has been fundamental for the modernization process since the early 13<sup>th</sup> century (Crosby, 1997). It is a process of relevance to the understanding of societal fields from the arts to the sciences (e.g. Bowker and Star, 1999; and Nowothny, Scott and Gibbons, 2001) and industries (Brunsson and Jacobsson 2000). Standardization is a historical process or trend, but it is also a regulatory (Brunsson and Jacobsson 2000) and coordinating mechanism (Barry, 2001:62-85; Groth, 1999).

We may identify different types of standardization according to the subject of standardization (work, processes, skills, products). In each case, standardization signifies a process that leads towards conformity, uniformity, regularity, consistency, homogeneity and similarity of the standardized commodities, skills and practices. This

may be explicit and formal, as defined above, or it may be informal, incremental and more or less accidental, and it may be international or local – in the shape of routines.<sup>138</sup> Explicit standardization means that uniform but voluntary<sup>139</sup> requirements or rules are attached to processes, skills, products or materials.

In our context it is not analytically fruitful to maintain a rigid border between formal and informal standardization processes, and between standardization and routinization. What is solved by formal standardization efforts in one context (or level) may be addressed through routinization in another. Routines may be seen as information-processing and attention-focusing schemes, as an organizational memory, or as regulatory schemes. When emphasizing the regulatory potential of routines it becomes clear that routinization correspond to standardization. Thus, routinization can be understood as localized standardization. Both describe an increase in regulatory practices that are more informal than directives and rules. At the same time, routines (and standards) are more regulative than the atomistic choices in an ideal market. Another connection between routines and standards has been growing stronger in recent years: the management system standardization (MSS) and standardization of work routines. Both are done through e.g. the implementation of information-technology architectures that control the sequential order of tasks done by employees. Sometimes this is labelled work process support or business process management (BPM); sometimes it is called total quality management (TQM).<sup>140</sup> Both routinization and standardization secure stability and predictability in an economic reality marked by transformation and increasingly rapid changes.

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<sup>138</sup> Knowledge that is both collective and tacit is embedded in the activities of communities. Routines is a key concept in reasoning on embedded knowledge. On routines, see e.g. March and Olsen (1976); Nelson and Winter (1992); and Amin and Cohendet (2004).

<sup>139</sup> Here, we speak about degrees of freedom: If the requirements are not voluntary, we speak of directives. These are not standards (Brunsson and Jacobsson 2000). On the other hand, expectations from the market, or from customers, may be such that producers are given no real choice. Actually, the more successful a standard, the less choice remains. The importance of this is stressed by Ghiladi when he states that “While it is claimed that the implementation of these MSS (Management System Standards) are voluntary, in actual fact the requirement of the market means that the businesses have no option but go through these certification procedures. In other words, the wrong kind of standards activity can result in financial disaster for companies” (Ghiladi, 2003:55).

<sup>140</sup> As we may recall, the development and implementation of work process support systems was one of the key competencies of the Firm presented in chapter six.

The legitimate social purpose of standardization is found somewhere in-between order and simplicity: The ordering element is a key to standardization. Brunsson and Jacobsson (2000:1) hold that “(...) standards generate a strong element of global order in the modern world, such as would be impossible without them. People and organizations all over the world follow the same standards. Standards facilitate co-ordination and co-operation on a global scale. They create similarity and homogeneity even among people and organizations far apart from one another.”

The modern world is unthinkable without standardization, and therefore the reasonability and usefulness of standardizing things and processes is obvious. It makes measuring, traveling, moving, computing, co-operation and co-ordination across distance and in unfamiliar places possible. Thus, the joint legitimate social purpose of standardization can be presented as sound reasonability. As ISO says, mobilizing artefacts from children’s bicycles to aircrafts: “Standardization of screw threads helps to keep chairs, children's bicycles and aircraft together and solves the repair and maintenance problems caused by a lack of standardization that were once a major headache for manufacturers and product users (...).” (ISO, 2004).

Clearly however, there are dark sides of standardization and routinization as well. Freedom of choice and variation is being limited, and improvement and change are hampered (Shurmer, 1996). A standardization means that it becomes difficult to get a product or a service that differs from the standardized product (Star, 1991). This is amusingly exemplified in Stars (1991) story of the difficulties of getting a Hamburger without onion in one of the larger hamburger chains. Both standardization and routinization indicate processes that, by definition, restrict the range of application of human knowledge representations. In this particular meaning, knowledge mobility is limited by standardization and routinization. Some applications of knowledges are made easy and profitable, while others are made difficult, expensive and undesirable. Thus, knowledges are regulated as in a configuration of power. However, it is exactly through the limitations in the range of application of knowledge assets that the increase in mobility of the same knowledge assets is made possible. A certain degree of physical or conceptual standardization is necessary to achieve mobility.

### 8.3.2 Institutionalized standardization – ISO

The institutionalizing of standards takes a quite different form than did the institutionalizing of IPRs. There is no single international organization that has the responsibility of standards. Partly the choice of standards is a struggle between product and service providers, as was the case with the different video formats and CD formats. Partly standardization includes a strong element of path dependency, as illustrated by the term “economics of QWERTY” that reflect the fact that a keyboard of a computer has the same patterns as did the old typewriters even though it is a sub-optimal positioning of letters (see e.g. Krugman, 1997). However, increasingly, standards are administered by international organizations with standardization as the explicit purpose. Many organizations provide standards of different kinds. Internationally, organizations such as Comité Européen de Normalisation (CEN), European Telecommunication Standards Institute (ETSI), and the International Organization for Standardization (ISO) provide standards in a wide range of fields.

The most important standardization organization, at least when it comes to the standardization of expert work and practices is probably ISO.<sup>141</sup> Since they were established in 1947, they have published close to 14,000 international standards, on everything from the shape of screw threads to the quality management of governmental departments (ISO, 2004).

It is difficult to rank the importance of particular standards. However, irrespective of size, the intended consequences can be immense. In our case, it is not the workings of each particular standard that is of interest, but the general working in terms of specificity and mobility of knowledge representations. Yet, one particular group of standards is of particular interest. Over the last decade, the so-called ISO 9000 standards have been developed by ISO (2004) “The ISO 9000 (...) are among ISO's most widely known and successful standards ever. (...) More than half a million organizations in more than 60 countries are implementing ISO 9000 standards.” There are two things with these kinds of standards that are interesting. First, they expand standardization to work processes in close to all kind of industries, and second, they erode the borders

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<sup>141</sup> Most of the data on the description and development of ISO comes from ISO itself on the web (ISO, 2004)

between standards and products. These products are described by ISO as ‘generic management system standards’ (MMS), which means that the same standards can be applied to any organization, public or private, whatever they produce. ISO not only provide solutions for standards, they compete in an international market for standardized management systems.

Today many standardized management systems, as for instance total quality management (TQM), spreads throughout the world as standardized commodities. Røvik present a clear hypothesis on the relationship between specificity and the mobility of such ideational technologies. “(...) the capacity to flow increases if the organizational recipe is universalized, that is, if it is defined as a panacea with a universal range of application” (Røvik, 2002:142). The inter-industrial mobility increases. However, this universality requires that all organizations are interpreted as “similar systems with similar needs” (Røvik, 2002:142). This, in turn, leads to a peeling off of organizational features and a silencing of organizational needs (Bowker and Star, 1999). In return, the potential for human knowledge representation mobility increases along two dimensions. First, management systems, standards, and standard standardization (!) competencies become moveable commodities in themselves (see e.g. Sahlin-Andersson and Engwall, 2002). Second, but not less important, is that the perceived risks associated with investment in companies from distant places and cultures, decline as similarity and conformity increases. Risk understood as perceived risk guides actions in the market, and the level of perceived risks are of crucial interest for the development of e.g foreign direct investments (FDI) (See e.g. Brewer, 1985; and Hellström and Merle, 2001 on risk and risk assessments).

In sum though, institutionalized standardization is a complex set of processes that differs quite radically from the expansion of IPRs. Institutionalizing of standardization is to a large degree taking place with private standardization organizations in the front seat, and in concert with various business interests. We see that the institutional core of standardization is weaker than in the case of IPRs. On the other hand, the social purpose is less contended, and thereby maybe more legitimate. All together though, standardization seem as a highly consequential phenomenon.

### 8.3.3 Effects of standardization

ISO goes rather far in the assessment of the scope and the societal penetration by international standards when they make the counterfactual argument that: “Without the international agreement contained in ISO standards on quantities and units, shopping and trade would be haphazard, science would be - *unscientific* - ” (ISO, 2004, My italics). As far as the need for unified measures goes, they are probably right. It is impossible to imagine modern times, be it in shopping or science, without standards. However, science takes many forms and is maybe *the* social sphere where the need for variation, unhindered knowledge development, and free transfer of human knowledge representations is most important.

The effects of standards and routines, in terms of specificity and mobility of knowledge, are somewhat ambiguous. Standardization and routinization create specificity in the sense that they increase uniformity and limit variation. On the other hand, the same processes clearly increase both the international, and the inter-industry mobility of knowledge representations. It is this combination of restrictions and openings that create new channels of action. Because complexity is being reduced along some possible routes of movement, those routes offer a higher degree of transparency and predictability. In this way, standardization contributes to increase international knowledge mobility.

Legitimate social purpose and international institutions are inter-related at many levels. As we will see, the institutionalization of standardization is closely connected to international trade liberalization. The ISO and WTO (World Trade Organization) are directly and institutionally connected in strategic partnership “with the common goal of promoting a free and fair global trading system” (ISO, 2004). The ISO and WTO also cooperate through the Technical Barriers to Trade (TBT) agreement, which includes a “Code of Good Practice for the Preparation, Adoption and Application of Standards” (ISO, 2004). According to the ISO, this code “recognizes the important contribution that International Standards and conformity assessment systems can make to improving efficiency of production and facilitating international trade.” Trade though, is the theme in the next section.



## 8.4 On Liberalization - institutional openings

Like the processes of appropriation and standardization, a process of trade liberalization has accelerated. This includes a harmonization of trade agreements and a continuous reduction of tariffs and other trade barriers.

A tariff is a trade barrier in the form of tax on imports of goods from another country. The main reasons for using tariffs are their protective effects on national industries. Other techniques to obtain the same ends are Non-Tariff Barriers (NTBs) to trade. These may be in the form of voluntary export restraints, non-automatic import licensing, quotas, prohibitions, price control measures as well as antidumping and countervailing measures. All these methods reduce the mobility – increase the international specificity – of the affected goods.<sup>142</sup> When tariffs and NTBs are set on knowledge representations, knowledge mobility is hampered. Therefore, trade liberalization is about making minimizing international asset specificity.

A long series of multilateral negotiations in order to harmonize and reduce the general level of trade barriers has been carried out under the umbrella of the former “General Agreement on Tariffs and Trade” (GATT), now the World Trade Organization (WTO). This is the core of the international trade regime, and has been the starting point for several controversies over the years. Theoretical debates have addressed whether this development is due to the present of an international hegemon,<sup>143</sup> whether it is due to the spread of liberalist ideas (e.g. Fukuyama, 1997; Hall, 1989; Goldstein 1988; Goldstein and Keohane, 1993; Yee, 1996),<sup>144</sup> or whether it is due to a mixture of

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<sup>142</sup> Thus, when the protected assets are classical inputs in production, as e.g. raw materials, or this kind of protection is obtained directly by increasing the inter-national factor-specificity.

<sup>143</sup> Hegemonic stability theory (HST) take this position. This theory focuses upon the distribution of power in the international system to understand when international cooperation (e.g. free trade regime) in a stable and lasting manner occurs (e.g. Keohane [1980] 1996; Gowa 1993; Snidal 1985; and Yarbrough and Yarbrough 1992). The main idea is that the presence of a stable and open economic regime is a public good (Olson 1971). The problems of collective action connected to this public good are solved in the international community only when there exists one single power: a hegemon. See e.g. Gowa (1993) for a thoroughfare of problems with HST, and Conybeare (1987) for a single but, for HST theory, challenging argument. He argues that the relative strength of a hegemon will decrease as a result of free trade. A hegemon does not want that effect over time, and will thereby not be the guarantor for free trade, but rather a risk factor for trade wars. Furthermore, it is problematic that the enormous variations in trade limitations, both between nations and between different commodities remains unexplained.

<sup>144</sup> Partly, Ruggie’s argument of a legitimate social purpose closes up to this position.

domestic causes (e.g. Grossman and Helpman, 1994; Hillman, 1989; Keohane and Nye, [1989] 1996; Milner 1988; Moravcsik, 1997; Rodrik 1995; Rogowski 1989). Politically, debates have addressed whether, and for whom, liberal trade policies are a good thing. These are debates that have been on the political agenda since free trade became an imaginable concept (see e.g. Hamilton [1791] 1996; Krugman and Obstfeld, 1997; Reinert, 1996; Ricardo, [1817] 1996; Smith, [1776] 1991).<sup>145</sup> Thus, even though there are fierce debates over the causes and the fairness of the social purpose (Ruggie, 1982) of the international trade regime, it's not controversial to state its content. The purpose of the WTO is to work for harmonized world trade through the removal of discriminating trade regulations, and for an increase in trade through general reductions in the levels of tariffs and NTBs. Here, the aim is not to shed light on the mentioned controversies directly, but to describe how the trade regime enhances increased mobility of knowledge representations.

As an international organization, the WTO is one of the youngest. It was established in 1995, as a result of the Uruguay Round of the GATT negotiations. Notwithstanding its young age, the WTO has become a driving force of international economic liberalism. For the knowledge economy the WTO's importance can be seen in all three main domains of the WTO agreements: The TRIP's agreement, regulating trade on intellectual property; the continuation of the GATT agreement, regulating trade in goods; and the GATS agreement, regulating trade in services (WTO, 2003).

#### **8.4.1 Trade related aspects of intellectual property rights (TRIPs)**

The first and most direct influence, in terms of knowledge, can be seen in the TRIPs agreements (Trade Related Aspects of Intellectual Property Rights). The TRIPs agreement is that part of the WTO agreements that explicitly deals with intellectual property (WTO, 2004). This agreement has had a profound effect on the international governance of intellectual property. It has both deepened and widened the impact of IPRs, and it has increased the efficiency of the international regime for intellectual property.

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<sup>145</sup> See e.g. Vik 2000 for a presentation and discussion of debates and positions in trade policy debates.

TRIPs *deepened* the IPR governance structure, relative to the one provided by the WIPO. This is due, in part, to the application of the so-called Most Favoured Nation (MFN) principle in the agreement.<sup>146</sup> This meant that the tariff granted to the Most Favoured Nation works for all other nations as well. Thus, European bilateral treaties became multilateral in their effects. In terms of liberalization, the effectiveness of the clause was widely recognised and included in later trade agreements. This has actually become a standardized part of later trade agreements. The effect of this particular standard is that advantages, or privileges granted to the citizens in one participating country must be given to citizens of other signing parties as well.<sup>147</sup>

The TRIP's agreements also *widened* the area covered by IPR legislation considerably. The agreements previously managed by the WIPO had between 20 and 108 signatories, while the WTO had more than 150 signatories by the end of 1996. By signing the WTO agreements, states also agree to all the IPR agreements included in the TRIP's agreements (May, 2000:69). Thus, the IPR regime became a more all-inclusive set of agreements. This is not an accidental development. May holds that, "The main aim of the agreement is to bring all the member states' legislation into harmony and thus to bring the same level of protection to intellectual property that was previously only available in developed states to all states in the global trading system" (May 2000: 68). In other words, the global divide in knowledge intensity between developing and developed countries no longer hinders global actors to trade with the knowledge-poor countries due to fears of jeopardizing intellectual property rights.

Finally, perhaps most important is that the new IPR regime provides rules for national enforcement and a mechanism for international dispute settlement. The possibilities for effective enforcement of the agreement enhance its effectiveness considerably, relative to previous agreements. May holds that "[o]ne of the major shifts

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<sup>146</sup> The history of the MFN clause can be traced to the Cobden-Chevalier Treaty between Great Britain and France in 1860. In a clause to a side convention to article 5 of that treaty, it is said that: "Each of the contracting powers engages to extend to the other any favour, any privilege or diminution of tariff which either of them may grant to a third power in regard to the importation of goods whether mentioned or not mentioned in the treaty of 23<sup>rd</sup> of January 1860" (Nordvik, 1995:31).

<sup>147</sup> There are signs that the MFN clause has passed the top. The contemporary race for individual and bilateral free trade agreements (FTA) has made Melchior (2003) to question whether the MFN clause has changed to the Least Favoured Nation Clause.

that the TRIP's agreement represent is a move to a more effective and stringent dispute resolution mechanism for intellectual property within the organizational structure of the WTO" (May 2000:70). The dispute settlement mechanism that came out of the WTO negotiations, and which was made a part of the regime on IPRs, was the tool that made the agreement more than just another international agreement on IPR. With this, Intellectual Property Rights became subject to international law. All in all, the TRIP's agreement lifted the international regime for IPRs to an efficient international regime. The agreement fulfilled the process of IPR enclosure presented above. However, the TRIP's agreement also laid down the rules for a tariff-free commercial exchange of intellectual property. This opened for increased international mobility of commodities and assets covered by IPRs.

Notwithstanding this, the TRIP's agreement is only part of the picture. As we saw in chapter four, understanding knowledge only as intellectual property provides a poor understanding of knowledge. Most knowledge work, and most knowledge representations, would slip away if we were to only consider knowledges as explicit intellectual property as manifested in IPRs. Thus, to get a better understanding of the WTO's functions towards the knowledge economy, we must go beyond the TRIP's agreement.

#### **8.4.2 General Agreement on Trade in Services (GATS)**

The WTO includes arrangements for the liberalization in services through the General Agreement on Trade in Services (GATS). This part of the WTO system is still highly and openly controversial. For knowledge mobility, the GATS agreements are important because they are a step towards greater liberalization of the trade of human knowledge representations. But how important is this? The potential importance of liberalizing services is hard to measure in economic terms. The WTO secretariat states that "conventionally measured trade in services is generally agreed to be equivalent in value to about one-quarter of international trade in goods. A further unmeasured, but undoubtedly very large, proportion of international trade in services that does not cross national frontiers, because the service supplier (such as a branch of a foreign bank) or the service consumer (such as a foreign tourist) does so instead" (WTO Secretariat, 1999). All together though, it is clear that the potential commercial value of increased

trade in services is considerable.

The WTO distinguishes between four modes of trade in services. “Mode 1’ is the cross-border supply of services: only the service itself crosses national frontiers. Then, we speak of transfer of a service product or a service technology that conceptually, in the frame presented in chapter 4, is hard to separate from the transfer of texts and descriptions. ‘Mode 2’ is consumption abroad, as for instance tourism. The first two modes are relatively unproblematic in terms of trade negotiations. These kinds of knowledge representations are, to a large degree, liberalized – and have thereby transformed to a more mobile and less geographically specific modus.

‘Mode 3’ is the supply of a service in an outside territory. This may be when a service provider establishes an office abroad. Thus, openness to foreign direct investments is a part of this field. This involves the mobility of collective human knowledge representations, as for instance organizational knowledge. Liberalizing – allowing increased mobility – of Mode 3 means allowing foreign companies to enter and compete with domestic firms. While this is generally allowed in most of the developed world, the formal allowance is not always enough to increase significantly the actual mobility of organizational knowledge. Language, culture and norms may counter the formal removal of restrictions. For Mode 3 issues, standardization has become a key feature for increasing knowledge mobility. The combination of reducing restrictions to trade and standardization is what has the potential to change actual patterns of activity.

‘Mode 4’ is also important from a knowledge mobility point of view, and addresses “the admission of foreign nationals to another country to provide services there” (WTO Secretariat, 1999). This is a controversial point because it is tangential to the issues of immigration and brain drain. Thus, for the time being, the GATS draw a clear political line of demarcation between trade in services and issues of immigration. The “Annex on Movement of Natural Persons Supplying Services under the Agreement” is clear on pointing out that a general liberalization of migration is not part of the agenda. The words used are: “[t]he Agreement shall not apply to measures affecting natural persons seeking access to the employment market of a Member, nor shall it apply to measures regarding citizenship, residence or employment on a permanent basis “ (WTO, 2005).

The GATS agreements and its successors represent several contemporary and future debates within the WTO. Now (the year 2006) we are in the end (?) of the so-called DOHA Development Agenda. Many signals indicate that this round will be difficult to conclude.

So far then, two things remain relatively clear. First, the GATS agreement went unusually far in stating the obligation to future liberalizing efforts in services. In article XIX, WTO members obliged themselves to enter “successive rounds of negotiations with a view to achieving a progressively higher level of liberalization” (WTO Secretariat, 1999). Second, individualized human knowledge representations are kept out of the international liberalizing project. Contemporary difficulties in concluding agreements don’t suggest that new difficult issues will be launched. Thus, it remains that the mobility of knowledge representation in terms of humans and communities of practice, is strictly limited to commodified human knowledge representations, and *shall not apply to* a general liberalizing of migration policies.

#### **8.4.3 General Agreement on Tariffs and Trade (GATT)**

In the WTO, the trade of goods, as opposed to IPRs and services, is regulated through a framework that is a continuation of GATT. All goods are to some degree representations of knowledge. Thus, this field also affects the mobility of knowledge. Liberalizing agreements for trade in goods means that some knowledge representations become more mobile.

The Uruguay Round of the GATT negotiations was especially successful in terms of liberalizing effects. There have been steady decreases in trade barriers over the last decades. For the developed countries of the world, the tariff cuts resulting from the Uruguay Round reduced the average tariff on industrial products from 6.3 per cent to 3.8 per cent. The share (in value) of industrial products that are being traded duty-free rose from 20 per cent to more than 40 per cent. The reductions in tariffs on trade with developing countries are not at the same level, but they are still substantial (WTO, 2003).

In terms of knowledge, it is reasonable to see more complex and advanced products as ‘containing’ larger portions of knowledge than e.g. raw materials or products that are produced through labour intensive or uncomplicated production

procedures.<sup>148</sup> For high-technology products such as Information Technology the ITA agreement is important. The so-called ‘Ministerial Declaration on Trade in Information Technology Products’ (ITA) was a part of the Uruguay Round that was continued in the Singapore Ministerial Conference in 1996 and implemented in 1997. ITA is a treaty to remove tariffs on Information Technology products. The agreement includes an MFN clause; therefore the benefits achieved by one participant work for all other WTO members as well. As a result of the ITA, IT products are largely seen as non-tariff goods.<sup>149</sup>

ITA is important for enhanced knowledge mobility because of the increased mobility of IT products that is seen as knowledge representations. It is also important because of the expected subsequent effects on knowledge mobility due to an increased availability of IT technologies, seen as channels for knowledge mobility.

#### **8.4.4 Trade openings**

We have seen that the international institutionalized trade regime has somewhat ambiguous effects on knowledge representations. First, the institutional development has strengthened the IPR regime presented in chapter 8.2, because it provides rules for national enforcement and a mechanism for international dispute settlement.

Second, when it comes to the mobility of human knowledge representations, the cross-border supply of services (not the humans providing it) (mode 1), and consumption abroad, as for instance tourism (mode 2), this form for knowledge transfer is relatively unproblematic under the WTO. Such knowledges are transformed to less geographically specific assets. Supply of a service in an outside territory (mode 3) is generally allowed in most of the knowledge intensive economies of the “developed” world. However, this is not the case all over the world, and in addition, the formal allowance is not necessarily enough to ensure the mobility of e.g. organizational

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<sup>148</sup> Natural resource use, and in particular agriculture, is the field where the WTO is still far from achieving a liberalized world trade. It seems that high factor specificity is correlated with high tariffs. See e.g. Vik (2000 and 2001)

<sup>149</sup> It must be noted that there are several products classified as Information technology that are not a part of ITA. WTO members have not succeeded in extending the agreement after its initial formulation. Notwithstanding, generally speaking, IT is non-tariff products.

knowledge. On the mobility of natural persons as human knowledge representations the GATS draws a clear political line by issues of immigration. Thus, to allow natural persons to provide services in their territories (Mode 4) doesn't mean that a general mobility of humans is accepted.

Third, knowledge is, as we have argued, also contained in goods. For most industrial goods there have been steady decreases in trade barriers over the last decades. The share (in value) of industrial products that are being traded duty-free rose from 20 per cent to more than 40 per cent. In terms of knowledge, it is reasonable to see more complex and advanced products as 'containing' larger portions of knowledge. For high-technology products such as Information Technology, the ITA agreement largely transformed IT products to non-tariff goods.

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The WTO links, directs, and reinforces several related processes in the institutionalizing of a new regime for knowledge mobility. The workings of the trade regime, in terms of knowledge mobility should be seen as a part of an overall knowledge mobility regime. Let us briefly consider some integrated interpretations on the working of this regime for knowledge mobility.

## **8.5 An integrated international regime for knowledge mobility**

### **8.5.1 The conceptual fusion of appropriation, standardization and liberalization**

Conceptually and empirically, the presented processes connected to the international institutionalizing of intellectual property rights, of standardization, and of trade liberalization are inter-related. The connected processes and institutions contain a legitimate social purpose, and together they constitute an international regime for knowledge mobility. Thereby, they also add up to an international configuration of power. Here, I don't search to explore how mobility affect the regime, but how an international regime steer and create preconditions for the mobility of knowledge representations.



Arguably, the presented processes and institutions complement and strengthen each other and thereby enhance the mobility of knowledge. The processes of closure connected to the institutionalizing of IPRs and international standards, and the opening processes connected to the WTO are hard to imagine without the mutual effects and benefits provided by the other processes. Here, I will present an interpretation of these processes, the institutions, the regime and their co-working. Table 8.1 presents a sketch of the elements of the empirical and theoretical interpretation.

**Table 8.1 The triple movements of the knowledge mobility regime**

	<b>Knowledge representations</b>	<b>Material: Texts &amp; Technologies</b>	<b>Human: Experts &amp; Communities of practice</b>
<b>Processes</b>	Purpose	Appropriation and commodification	Standardization and routinization
<b>Closures</b>	Institution	IPRs & WIPO	International Standards & ISO
<b>Openings</b>	Purpose	Liberalization of Trade	
	Institution	WTO	

Material knowledge – represented by material codifications like texts, descriptions and technologies – are subject to major processes of enclosure by the establishment of an intellectual property right regime. This is a process of enclosure because it is restricting and locking-in the property rights to knowledges, and thereby the rights to utilize and capitalize on the knowledges. This is a process that transforms knowledges to commodities. It is also a process that makes things legally specific. The institutional core of this process, which I have labelled a process of appropriation, is the World Intellectual Property Organization (WIPO). IPRs are considered a good thing because it ensures that inventors, innovators and investors in R&D, technology development and a variety of other creative activities are given the possibility to reap the fruits of their efforts under the safeguarding of a temporal monopoly situation (e.g. a patent, a copyright, or a trademark). Thereby, society ensures that there exist incitements for

research, development, and codification of knowledges. Thereby one also ensures that the transferring of knowledge representations takes place within the frame of an economic structure. Therefore, the social purpose of the process called appropriation also covers codification, commodification, and capitalization. Even though this is a processes that limits and restricts the use of knowledge, it is also a processes that ensure a smooth transfer of knowledge – within the range of a knowledge economy. Therefore, it enhances the mobility of knowledge. It mobilizes knowledge. Increased *legal specificity* reduces the *geographical specificity*.

Human knowledge representations are subject to a somewhat different process of enclosure. The regulative practices concerning tacit knowledge – represented by experts and communities of practice – can be captured through concepts like standardization and routinization. The most important contemporary expression of this standardization tendency is the International Organization for Standardization (ISO). Standardization – the production and spread of standards – is taking place for both human and material knowledge representations. However, even the standardization of ‘purely’ technical devices is fundamentally regulating the use of knowledge embodied in experts and embedded in communities of practice. Even when the standardizers aim at the conformity of a product, a fundamental effect is convergence of practices. Standardization is a process of enclosure because it limits and restricts the variation of practices and knowledge representations. This is also a process that makes assets specific in a particular meaning. Standardization creates standard specific assets. When established, a standard excludes an infinite number of alternative solutions and practices. Thus, it makes the world simpler. It makes it possible to co-operate, co-ordinate, compare and correspond. Obviously, this form of enclosure makes the transfer of knowledge easier and the mobility of experts and communities of practice manageable. Routines do the same thing. They reduce the number of choices; they simplify decision processes, and they makes living and working together practicable. Increased *standard specificity* reduces the *geographical specificity* of knowledge assets.

Corresponding to these two processes of enclosure we find a process of international openings. The international efforts to harmonize trade regulation, to remove trade discriminating practices, to reduce the level of trade barriers, and all together, to increase international trade, can be described as a mobility enhancing

processes – an opening process. This is straightforward. International trade is an activity of transferring commodities – and increasingly services. Such activities are a direct measure of the mobility of the traded goods. Lack of trade may be seen as a direct measure of the inverse – asset specificity. As far as the traded commodities contain a large portion of knowledge – that means that the commodities represent certain kinds of knowledges – measures of trade are measures of knowledge mobility. Because the main purpose is a more transparent and open trade with e.g. knowledge-representing commodities and services, the liberalizing of world trade represents a major process of opening for the mobility of knowledge. Therefore, one could argue that the international trade regime in itself is a regime for the mobility of knowledge. However, this regime is substantially strengthened by the co-working with the institutionalizing of IPRs and standardization. We therefore witness the somewhat paradoxical situation, that knowledge mobility increases through knowledge-specificity enhancing processes.

As we saw in the previous section, the international institutions regulating trade and the institutions managing IPRs (WIPO) are institutionally intertwined. Through the TRIPs (Trade-related aspects of intellectual property rights) agreement, the WTO was given the mandate both to enforce IPRs internationally and to bring eventual disputes on IPR matters in under the WTO dispute settlement system. Trade liberalizing and IPR's are connected also in that liberalizing trade of material representations of knowledge – that is codified knowledge in the form of texts, descriptions, technologies, and commodities of various kind, requires that these items are seen as commodities. Exchange of goods between distant places is an economic transaction and requires that the goods are seen and recognized as commodities. Thus, for knowledge representations to be traded, and for the knowledge economy to be an international well-functioning economy, the commodification of knowledge is a precondition, and mutually recognized and safeguarded property rights to knowledge commodities are a necessity.

On the other hand, establishing intellectual property rights are, to some degree, a process where costs are socialized while benefits are privatized, as Perelman (2002) put it. Without pinpointing to that degree, there is no doubt that intellectual property rights represent a redistribution of wealth among the population. The new owners of intellectual property benefits from that redistribution. Such a redistribution needs a legitimization. This legitimization is that the regime serves the common good because

innovation, production and trade are fueled by the IPR system. Thereby there are more goods to distribute. The WTO is a core partner in this legitimizing effort. To reap the fruits gained through e.g. international patents, economics of scale and export markets are crucial. The international trade regime supports this end.

An analogous set of co-workings are seen between the trade regime and the international process of standardization. There are also explicit institutional connections between the WTO and the ISO: ISO provides standards used by the member states in the reporting and measuring of trade, and it cooperate with the WTO on the development of standards and on the tools for enhancing transparency. Standardization enhances both the trade regime and international trade itself. Thus, there is more to this intermingling than the factual institutional cooperation. Furthermore, the mobility of experts and communities of practice is limited by social and cultural barriers as well as formal restriction addressed in the GATS agreements. In effect, cultural differences (language, norms etc.) may counter or undermine the formal removal of restrictions. These informal restrictions are at least potentially limited by the making of some common grounds for understanding and practices – standards.

The actual level of standardizations at work has reached a level that makes it difficult to imagine what standards do to international trade. All trade that includes parts and elements of systems and assembled products are unthinkable without standards, and all service that involves such products and most accounting services would be extremely complicated without standards. Therefore, there is little doubt on the mobility-enhancing effects of standardization, but at the same time, the quantification is impossible.

On the other hand, the need for further standardization is accelerated by increased international trade. Trade with new products, new services and with new partners pinpoints new problems that can be solved through simplification and standardization.

Also the processes of standardization and the increase in IPRs are connected. On the one hand, patents, trademarks and copyrights – IPR measures – are to a large extent standardized knowledge representations. The process of codification that is a precondition for the establishment of e.g. a patent build partly on former standardizations, and is partly itself a process of standardization. Thus, codification and

the whole concept of IPRs is technically imaginable without comprehensive standardization. On the one hand some standards are registered trademarks. The ISO 9000 standards are but one set of examples. Thus, the strengthened IPR regime is used by standardizers to establish and safeguard standards as commodities. The standards have themselves become standardized knowledge representations, protected by IPRs. Caricaturing the interconnections is not the point here, but to point out that standards and intellectual property rights are socially constructed devices that regulate and enforce each other, and which are conceptually inseparable.

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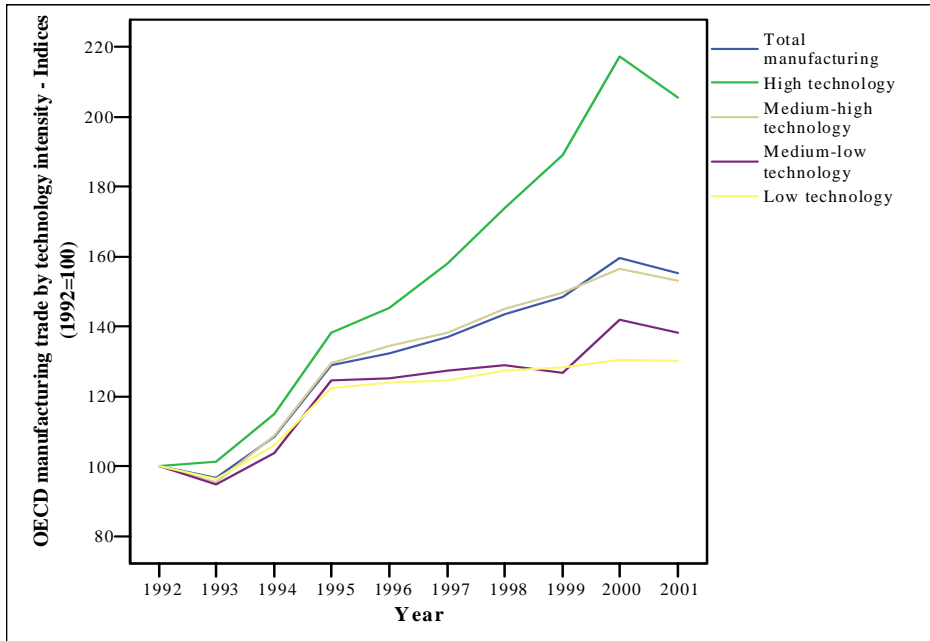
Having illustrated the conceptual relationship that may exist between standardization, appropriation, and liberalization, we may turn to the empirical relationship and its effects.

### **8.5.1 Some empirical consequences and counterfactual reflections**

Any regime produces social and economic consequences, ranging from those affecting the personal character (e.g. Sennet, 1998) to world politics. In the following I present a few illustrating examples from the macroeconomic level. However, these results are but one kind of possible results.

Unsurprisingly, from the presentation above, trade is increasing as knowledge is being fenced in by proprietary measures; as products, skills, managing procedures, and technical barriers to trade are being standardized; and as tariffs are decreased. Since tariff reductions are especially substantial for goods with a high “knowledge share”, it is as expected – from a theoretical point of departure – that the increase in trade of high technology goods are most substantial. Figure 8.3 demonstrates both the general increase in trade and the larger increase in trade of more knowledge-intensive goods within the OECD area. The more technology intensive and consequently more knowledge intensive the product, the more its trade is increasing.

**Figure 8.3 Growth in trade by technology intensity**



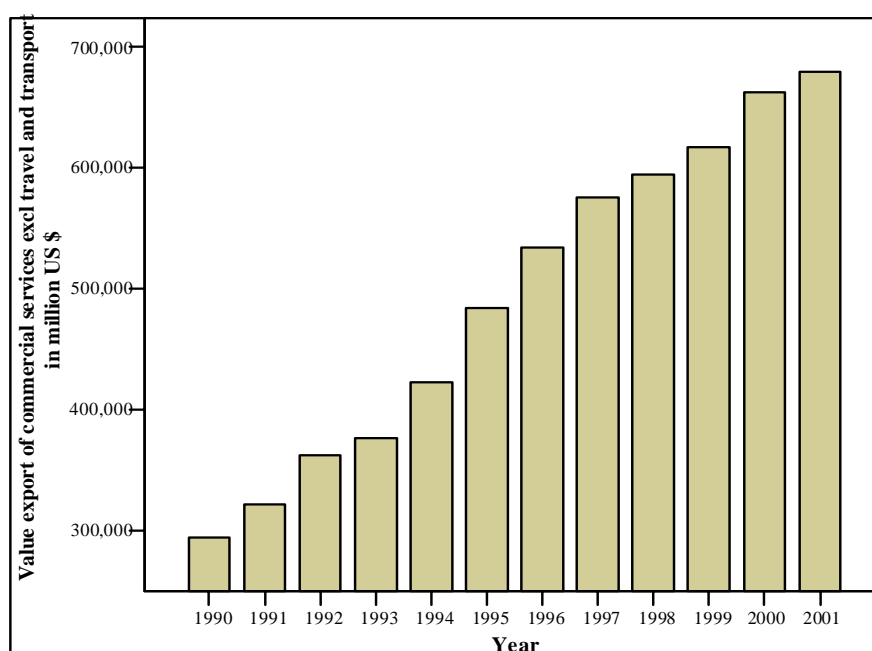
Source: OECD (2003).

This is a strong indication – actually a measure of – an increased knowledge mobility of material knowledge representations. However, analytically this presentation of the empirical development in trade by technology intensity does not include a causal explanation. Here we just observe that the mobility of knowledge representations, measured as trade, has increased as appropriation, standardization, and trade liberalization increases.

Without an international regime for the protection of the intellectual property embedded in high-tech products it is hard to imagine that the trade in these goods should witness such a growth. Based on transaction cost logic, it is reasonable to state that without such a protection, economic transactions, such as trade, would involve huge risk of giving away knowledge that could be used by competitors. Actually this possibility would be so likely that a large share of high tech products that are being traded would never have been developed. This argument is part of the legitimate social purpose of the regime. Thus, it is a reasonable counterfactual argument (Fearon, 1991:195) that an effective IPR regime is part of the explanation for the increased trade, especially in high tech products – reflecting increased knowledge mobility.

As trade with high-tech products give a strong indication of the mobility of material knowledge representations, trade in services may be seen as an indicator of the mobility of human knowledge representations. As standardization increases, reducing both perceived risks and transaction costs, and as formal barriers and costs associated with trade in services are being reduced, one can expect to see corresponding increases in trade in services. Figure 8.4 show the development in the somewhat direct measure of human knowledge representation: trade (export) of services. In the period between 1990 and 2001 the value of exports in trade in services has more than doubled.

**Figure 8.4 Trade in services from 1990 – 2001**



Source: OECD (2003).

All in all we see that the economic measures coincide with our expectations. Yet, since the international regime is designed and devoted to making international economic co-operation more effective, this shouldn't be surprising. Furthermore, the developments presented above – in graphs and numbers – are very much in accordance with well-known and general trends of globalization and internationalization.

It is an additional point, however, that the self-evident, the obvious, and the indisputable character of the workings of the regime can be seen as a normal feature of a successful configuration of power. As a configuration of power becomes settled, its

workings become “black boxed” (to return to one of Latour’s concepts). As a result things become obvious. Thus, to explore the limits of the regime, or a somewhat more counterintuitive feature of the regime, we must turn to one of its omissions.

### **8.5.2 A regime for the mobility of knowledge commodities – not humans**

In chapter two, I wrote that configurations of power are regulatory in the sense that they make some actions possible, plausible or cheap, and others difficult, unlikely or expensive – they both open and close possible channels of action. This is also what the described regime does. So far we have seen that the regime is mobility-enhancing as far as knowledge representations are being appropriated, commodified, or standardized. On the other hand, the possibility to share tacit knowledge between individuals – ‘duty free’ – is reduced for non-commodified knowledge – the knowledge without an owner. There exists zones where sharing (instead of trading) are being insisted upon, but these are what Ashley and Walker (1990) calls “voices from the margin”. The open source movement, and the file-sharing initiatives on the Internet, are but a few well-known examples. However, for the sake of the smoothness of the market, these are zones under constant pressure.<sup>150</sup>

Recalling Table 8.1, where the main elements of the triple movement were presented, we can focus on one omission of the model. The model identifies three institutional developments: Two closing and one opening movement. The closing movements were called “Appropriation” and “Standardization”, and they represent material and human knowledge representations respectively. These are mechanisms that shrink the range of application of material knowledge representations through IPRs, and human knowledge representations through standards. The only opening movement is labeled liberalization, and is represented by the WTO. This opening movement covers both material and human knowledge representations. The limit for this is clearly defined. The border of human knowledge mobility converges the border between what we may call commodified and personal human knowledge representations. There is no

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<sup>150</sup> Examples of such initiatives are the key for decoding DVD films published by Jon Lech Johansen (see Johansen, 2005), and Napster, a program system for sharing and downloading of music (Wikipedia, 2005). Both Johansen and Napster were brought to court by the industries they challenged. Johansen won, while Napster lost – most recently in the Norwegian high court in January 2005 (IT avisen, 2005).



institutional equivalent to the WTO – an organization pressing, preparing, and promoting liberalization – when it comes to the mobility of personal human knowledge representations, unless the personal are interpreted as commodities. While knowledge representations are detached, or alienated, from the human itself, they are institutionally represented by comprehensive mobility-enhancing international institutions. A corresponding institutional focus on the mobility of individuals is hard to find (e.g. Moses, 2005). The Schengen Agreement of the European Economic Area (EEA), the passport union between the Nordic countries, and other regional agreements that allow humans to travel freely have always existed, but there is no Most Favoured Nation clause in these agreements; there is no institutional support; and there is a strong North-South divide. Besides, the narrow openings in the North-South divide are closely managed and controlled (OECD, 2002).

Thus, the increasing institutional focus on the international mobility of knowledge, “shall not apply to measures affecting natural persons seeking access to the employment market (...)” (WTO, 2005).

## **8.6 Concluding remarks**

This chapter has given a sketch of an international regime for knowledge mobility, consisting of a set of social purposes and institutional cores: One centered on the institutionalizing of intellectual property rights, one organized around standardization, and finally, one focused on the development of the international trade regime. The basic argument is that this regime has influenced, politically, the mobility of knowledge representations fundamentally. This is a regime that has increased the mobility of knowledge – and decreased the geographical specificity of knowledge. Thus, in the last decade(s), we have witnessed a substantial increase in knowledge mobility which is due to international institutional changes.

This has happened through a somewhat paradoxical development. I argued that two processes of enclosure – which may be seen as fundamental specificity increasing processes – have made the overall knowledge mobility increase possible. First, the development of IPRs is a process of increasing specificity because it defines, and regulates in legal terms, the range of application of certain knowledge representations. Assets regulated by IPR have, by the regulation, a restricted range of application. This

“legal specificity” is not covered by Williamson’s (1989) classification, but is closely related to what he called dedicated assets. Second, the enclosure-process of standardization, may be seen as an asset-specificity enhancing process, because it increases the relative costs of staying unstandardized. We may speak of standard specific assets. The paradox then, is that as knowledge representations are increasingly legal-specific and standard-specific their mobility in terms of tradability increases.

Where chapters six and seven explored instances where the mobility of knowledge influenced configurations of power, this chapter has showed that international configurations of power may influence the mobility of knowledge. If we recall the final expectation from chapter five, this stated that (7) *The degree of knowledge mobility may be changed through strategic and/or political decisions*. This chapter has not addressed the political processes beyond the making of the presented regimes. What the chapter *has* demonstrated is that these political, and politically made, regimes do regulate and change the mobility and specificity of knowledge assets and representations.

This chapter has not dealt with new data from primary sources; it has not provided new knowledge on the particular institutions involved. The contribution of this chapter, as I see it, is partly to the asset specificity literature and partly to the aims of this thesis. When it comes to contributions to the literature, the chapter has pointed to situations where different types of specificity influence each other. It has also shown that there are types of asset specificity – working on knowledge assets – not covered by earlier categorizations, and it has supported the suggestion that (knowledge) assets to a large degree are endogenous to politics. When it comes to contributions to this thesis, the chapter has deepened our understanding of the relationship between configurations of power and the mobility of knowledge by systematically demonstrating that the specificity and mobility of knowledge representations are managed and regulated by international political institutions. In the doing, it has contributed to the making of the montage effect this thesis aims at. Furthermore, I believe that understanding the political economy of the interconnectedness between social processes of standardization, liberalization, commodification and appropriation can still be developed further. This chapter may be seen as a first step in that direction.

## **Chapter 9.0 Some Concluding Remarks**

### **9.1 Summarizing**

This last chapter of this thesis is devoted to three tasks. First, I will summarize and repeat some of the particular arguments and findings from the previous chapters. This thesis is multifarious, and has included a number of approaches and empirical fields. Thus the second task of this conclusion will be to integrate some reflections on what can be seen as the totality of the present work. Third, at the end, I will briefly evaluate the argument, and point to some omissions, problems, and ways ahead.

#### **9.1.1 On the theme and the overall approach**

I started this thesis by stating that knowledge has moved into the core of contemporary political economy. This is reflected in writings and statements within the fields of academics, business and politics (Barry, 2001). For the so-called new economy, knowledge is seen as the fuel of economic development at the international level, at the national level, and for firms (Drucker, 1993; OECD, 2001; OECD, 2002; and UNDP, 2001). In a recent OECD report, *The Well-Being of Nations: The Role of Human and Social Capital*, we can read that “Changing economic and social conditions have given knowledge and skills – human capital – an increasingly central role in the economic success of nations and individuals” (OECD, 2001:17). This ‘role’ ascribed to knowledge is two-fold: it is as a factor of production and as a commodity. Thus, the new central role of knowledge unfolds in the economic sphere.

The entrance of knowledge as an economic entity coincides with an increased interest in globalization, and the development of a new Information and Communication Technology (ICT). Globalization and technological developments participate in the creation of increasingly international markets. These are often seen as markets where physical assets, information and knowledge float more freely than ever before. In this context, “freely” certainly does not mean that the changes won’t have a price. Neither the production nor the benefits of ‘changing economic and social conditions,’ are likely to be distributed without political controversy. As some sceptical writers have noted,

such a “win-win scenario exaggerates the social benefits of knowledge-driven capitalism” (Brown, Green and Lauder, 2001:239).

Arguably, a number of research questions arise from the recognition of these changes. However, sweeping change also has consequences for the ways we should approach these situations. Susan Strange put it rather harshly when she stated that: “The social scientists, in politics and economics especially, cling to obsolete concepts and inappropriate theories. These theories belong to a more stable and orderly world than the one we live in. (...) But it has been swept away by a pace of change more rapid than human society had ever before experienced” (Strange, 1996:3-4). Thus, we are in a situation where it is timely to explore, unprejudiced, whether new concepts and theories may be useful tools in the search for improved understanding of the world.

This thesis aims to illuminate one key question: *How does knowledge mobility (or specificity) affect power in the emerging knowledge economy?* Although the question may seem straightforward, it is not easy to answer. There are at least three challenges to approaching the question. First, as mentioned, the societal and economic field known as the knowledge economy is new. Second, the concepts making up the question – knowledge, mobility/specificity, and power, are all composite, and lack unified interpretations in social science. This means for one thing, that their meanings change as we move between contexts. Third, the concepts are highly political. The latter means that meanings ascribed to terms are contested and controversial. Clearly, concepts like power, knowledge, and mobility (as we speak of mobility of economic assets) are political, if we understand political as themes of interest to authorities, economic actors, and open discussions. It is even more problematic that the terms are political in the very meaning of being contested, also in scientific and disciplinary discourses. These controversies have been visible from the very beginning of this project. Depending on the research community, “knowledge” may change from a somewhat mysterious something that “unfolds in the meeting between people” to “beliefs in agreement with facts”. The “politics” then, unveils e.g. in the mutual skepticism between the holders of these, and other, understandings of the term. The scientifically-based controversies I have experienced in relation to the concept of power have both unveiled around the practicality and usefulness of addressing power in case studies of operating companies (The Firm), and around issues of how to understand and

operationalize “power”. When we have this combination of compositeness, politics and novelty, it is challenging both to conduct and present research.

In this thesis, I combine a number of theoretical and empirical inquiries. First, three major bodies of relevant theorizing have been used to capture the meanings and the workings of the three core concepts: power, specificity and knowledge. These theoretical assessments were done in chapters two to four, and summarized and fused in chapter five. I might add here, that in doing this I have also tried to open a field of study in-between different schools of thought. The approach to power is adapted from the field of Science and Technology Studies (STS), I have capitalized on Organizational Studies when it comes to the understandings of knowledge, while most of the reasoning on asset and factor specificity stems from International Political Economy (IPE) (and Transaction Cost Economics).

Second, I sought to investigate the relationships between power and knowledge in different empirical settings, which takes place in different analytical levels, and with different causal perspectives. The first setting, presented in chapter six, investigates a process of organizational change from heterarchy to hierarchy in a knowledge-intensive consultancy and software-producing firm. This case study sees the relationship between knowledge mobility and configurations of power mainly as, causally, going from specificity to power. However, it recognizes that strategic decision taken, or avoided, in board rooms and among leading figures affects the overall mobility of knowledge in the Firm. Thus, the firm level study is open-ended in terms of causal direction. Chapter seven studies the relationship between factor specificity, knowledge intensity, and regime rigidity by means of a cross-national multivariate statistical inquiry. This study is more straightforward in terms of causal direction. This is due to the choice of research method. The third empirical setting – chapter eight – explore and interpret a cluster of international institutional tendencies and their co-working in one international regime for knowledge mobility. In this empirical chapter the main approach is to study how an international regime – a configuration of power – regulates the mobility and specificity of knowledge.

The ambition of the thesis, in theoretical terms, has been to develop an integrated approach on the relationship between knowledge mobility and configurations of power. This means that the theoretical fields, the empirical settings and levels, and

the causal interpretations are different in the different chapters of the thesis. In terms of methodology, the ambition was partly to create a sort of “montage effect” of how knowledge and power relates to one another, partly to develop an understanding of the range of application of the theoretical perspectives, and partly to perform a plausibility probe on this integrated approach.

### **9.1.2 On theories**

Chapter two dealt with the concept of power. Power is obviously a core concept within political science. In spite of this, it has no centralized meaning. Numerous works, historic and contemporary, argue over the normative and substantive content of the term, without reaching any degree of agreement.

The meaning ascribed to power in this study is partly a programmatic choice and partly a pragmatic one. I chose a programmatic position on power when stating that configurations of power are effects or consequences that basically constitute a relation between actors, and not the capabilities of actors. This effect, the configurations of power, is in turn regulatory in the sense that it makes some actions possible, plausible and cheap and others difficult, unlikely or expensive. It opens and closes possible channels of action. When using such an approach to power it is self-evident that the empirical applications – the operationalizing – become important. I have chosen a pragmatic attitude towards the empirical applications of configurations of power. I hold that this is necessary because it is unreasonable to expect, a priori, that one single measure of power is of major and equal interest along and across businesses, organizations, nations, and international institutions. In chapter six, a case study of organizational change in a knowledge-intensive firm, I operationalized configurations of power in terms of organizational form – including the ideology, the practices and cultures embedding the formal organizational structure. In chapter seven I saw configurations of power as the rigidity of political regimes, while chapter eight analyzed institutional developments viewing configurations of power as the intermingling of a set of international institutions and tendencies.

Our second key concept, asset specificity, has long been important for some specialized branches of social science research. I address the literatures on asset specificity in chapter three. Specificity – and mobility, which is its analytical

counterpart – is important in transaction cost economics, for macroeconomic reasoning on trade, and in a number of international political economy works on preferences, coalitions, and governance. Outside these branches of the social sciences, reasoning on mobility and flexibility uses logics related to asset specificity theorizing more or less implicitly. However, the content and use of the terms specificity and mobility vary considerably. As with power, the ambiguous character of the concept implies that we should keep an open-minded attitude towards the kinds of logics that we can expect from the uses of the term. Different empirical scopes may actualize different meanings of specificity and mobility. This shouldn't be delimited a priori. In the empirical work of this thesis, the operationalization of asset specificity is allowed to vary with context, as the operationalizing of power was allowed to vary. Chapter six views asset specificity mainly in terms of (limitations to) knowledge sharing and mobility. Chapter seven assesses asset specificity as factor specificity, operationalized as national dependency on factors such as agricultural land, minerals, and fuel. Furthermore, the chapter assessed the national importance of knowledge as a mobile factor of production in relation to regime rigidity. Chapter eight employed a different approach, and analyzed the international regime, and the international institutions, that influence the mobility of knowledge representations. The latter was a perspective that opened for reflections on how different forms of specificity influenced on each other. The chapter suggests that increased specificity in terms of legal and standard specificity contributed in making the specificity in terms of tradability decreasing

The third key concept, knowledge, is not less elusive. Scientific and managerial approaches to knowledge have developed considerably over the years, but the new approaches have deepened our understanding of the various layers of the concept rather than replaced the older ones. I categorized knowledge according to its collective versus individual, and its tacit versus explicit, features. Furthermore, I argued that even though knowledge is an intangible and elusive phenomenon, it is always present through some kind of knowledge representation. One can only speak of knowledge mobility and specificity in terms of its representations' mobility and specificity. In this way, the intangible nature of knowledge is bypassed, and we can relate materially and socially to knowledge mobility and specificity.

In chapter five I summed up the theoretical contributions in the form of a set of expectations. These were partly taken from other theoretical contributions and translated into the relevant context, and partly developed by combining the conceptual theorizing presented in previous chapters. In developing theoretical expectations in this way, a methodological ambivalence materializes between, on the one hand, the argument that traditional research designs are inappropriate due to e.g. the sweeping changes of the contemporary economy, and on the other hand, the development of theoretical expectations (hypotheses) as in a classical hypothetical deductive design. However, I hold that the dualism only appears as a contradiction. There are two rationalizations for this. First, the theoretical expectations are both a development of a theoretically deduced integrated explanatory logic, where the expectations make up a casual chain, and a specification of theoretical expectations, which may be studied in terms of testing. Second, my methodological position is that it is through the combination of research methods that one has the potential for renewed understandings of the contemporary social world. This means that methods utilizing expectations as hypotheses, and as focal points, may benefit from each other. Thus, there is no necessary contradiction. In chapter seven, a traditional hypothesis-testing study was performed. This may be evaluated as such. In chapter six a more explorative case study is performed, and may be evaluated as such. Finally, in chapter eight, an institutional study, that may be evaluated as such was performed. In each of the empirical chapters I relate to some of the expectations developed in chapter five, but in different manners. The totality of the thesis thus, may not be evaluated as a hypothesis testing design, but as a plausibility probe.

### **9.1.3 The empirical findings**

#### **In the Firm**

Chapter six presented a case study of a knowledge-intensive company (“the Firm”) that experienced a major organizational change. I argued that the change, by and large, could be ascribed to a development of changing knowledge specificity features in, and around, the Firm. In terms of methods and research style, chapter six was a ‘semi-thick’ description and interpretation of incidents in an organization during a turbulent period.



The case presented a firm that reorganized from a complex flat organizational form to a standard divisionalized organizational form. Furthermore, the administrative leadership was replaced and several organized processes and activities for knowledge sharing and transferring were removed. Altogether, it seems like the transformation of the Firm, in terms of organization, management, and knowledge mobility was fundamental. A heterarchic organization – a cultural regime of control – was replaced by a more traditional heterarchy – a divisionalized line organization.

My interpretations of this change were three. First, as the Firm grew, so too did the relative costs of upholding the practices of knowledge sharing, and the heterarchic organization. Second, the Firm changed its focus from sharing and transferring knowledge to policing and controlling of knowledge in the services and products that they presented and delivered to customers. Third, as a recession developed, labor mobility between firms in the entire consultancy and software industry was reduced to a minimum. In short, internal and external knowledge mobility was undermined and knowledge became increasingly specific. This provoked and opened for changes in the organization, and contributed in paralyzing the internal opposition. For employees, exit became costly and risky. In the Firm, shrinking relative knowledge mobility contributed to the making of a more rigid organizational structure. It seemed like a conflict structure was emerging between the new administration and the employees. We might expect this as the Firm changed to an environment of high asset specificity, but the emerging crisis of the entire industry contributed to silencing the opposition. My interpretation of changes in the Firm based on increased knowledge specificity, I argued, is partly compatible with a number of other, possible explanations of such an organizational change. The specificity approach may be a more fundamental cause than e.g. explanations based on growth (size), historic development (time), task development (routinization) and increased relative costs of communication.

### **In the World**

In chapter seven I set out to assess the associations between specificity, knowledge, and configurations of power through multivariate cross-national statistical analyses. Where chapter six showed a possible link between knowledge specificity and the organization of knowledge work in firms, chapter seven established links between characteristics of

national economies in terms of knowledge intensity, natural resource dependency, and knowledge specificity on the one hand, and regime organization on the other. The basic concepts – specificity, knowledge and power – were operationalized and measured in very different ways.

The most clear findings can be summarized as follows: First, an OLS regression model, involving an index of knowledge intensity and several measures of the dependency of specific factors of production (natural resources), economic growth, and a dummy variable for Arabic regimes can explain about 60 per cent of the world variation in regime rigidity (measured through a combination of constraints on the executive body, and methods of legislative selection). Second, the OLS regression shows that the index of knowledge intensity has a negative effect on the rigidity of political regimes. The index of knowledge intensity, however, is closely correlated to economic development, measured as GDP per capita. This is problematic in terms of measuring since it is difficult to assess whether it is knowledge that matters or “just” economic development. However, the correlation between the two measures reflects real world coherences. Knowledge-intensive economies are highly developed and have high levels of GDP per capita. This isn't a coincidence. If we take the knowledge from a developed economy it will certainly not stay developed. In the same way, if take the wealth from a knowledge economy it will probably regenerate. Although it has not always been a part of the economic mainstream to see it that way, there is a growing consensus that knowledge matters for economic performance. Thus, it is reasonable to hold to the assertion that the degree of a transition towards a knowledge economy is fundamental to GDP per capita, and thus, is influential in avoiding rigid regimes.

Third, the analysis shows that dependency on specific factors of productions such as oil, gas, and food has a positive effect on regime rigidity.

Thus, traditional factor specificity (although not for all factors) is correlated with political regime rigidity, and knowledgeification of society is negatively correlated with political regime rigidity when we examine the relationship at the national level. Here to, we can find alternative explanations, some of which are complementary. Most clear is the well-known empirical relationship between oil states and authoritarian regimes. Since oil is a highly specific factor, explanations based on oil don't conflict with a specificity approach. In a similar vein, since there is well documented that there

is a highly disturbing knowledge situation in many Arabic countries, there is no contradiction between the knowledge mobility argument and the fact that Arabic countries are known to be overrepresented among the more autocratic countries. Thus, also the multivariate analysis opens for the possibility that specificity features may be seen as underlying explanatory variables.

On the other hand, the multivariate study suffered considerably by the fact that several of the nuances of knowledge representations are hard to measure and evaluate on a cross national level. Thus, a cross national approach tends to end up in a too overarching factor approach unfitted for the task of grasping the specificities of the knowledge economy.

### **In the Institutions**

Chapter eight explored the development and co-working of a set of institutional structures regulating knowledge mobility and specificity. The institutional cluster contains issues of appropriation, of standardization and of liberalisation, administrated by the World Intellectual Property Organization, the International Organization of Standardization, and the World Trade Organization, respectively. The international regimes, I argued, were a configuration of power made up by partly the international institutions involved, and partly a legitimate social purpose.

The chapter argued that appropriation and standardization are mechanisms that shrink the range of applications of material knowledge representations through IPRs, and human knowledge representations through standards. Thus, two processes that conceptually are developments that make assets more specific (to legal owners and to standardized uses) contribute to a third process that enhances mobility. Liberalization is a movement that opens for the mobility of both material and human knowledge representations. However, the limits for this are clearly defined. The limits for human knowledge mobility converges the border between what we may call commodified and individual human knowledge representations. While knowledge representations alienated from the humans themselves are institutionally represented by mobility enhancing international institutions, a corresponding institutional promotion of the mobility of individuals is absent, or restricted to regional agreements.

This chapter has taken another causal direction than the chapters above. This has one theoretical, and one empirical/methodological rationalization. Theoretically, there were two reasons for turning the causal direction. First, I wanted to reflect the overall approach of the knowledge management discourses. Ignoring that important discourses actually address how knowledge's mobility is being managed would reduce the empirical relevance of the study fundamentally. Second, not to consider alternative casual directions would be a continuation of a a recognized omission of asset specificity reasoning (e.g. Hiscox 2002:164). Empirically, I wanted to twist the causal chain to widen the range of empirical application further. This, I believe, contributes to the methodological goal of the thesis: to develop a plausibility probe and to explore the range of application.

## **9.2 Synthesizing**

Unsurprisingly, when combining theories, methods and empirical fields “belonging” to separate sub-disciplines, the danger of overstretch is impending. As always, problems with inclusion are related to the task of integration. Thus, in this section I make a few additional reflections on how the parts and elements of this thesis are to be integrated.

Initially, I want to suggest that the reason for the integrating effort of this thesis has been pragmatic, not programmatic. The aim has always been to illuminate a key problem in a wide range of fields, with appealing theoretical approaches, irrespectively of their disciplinary sources. Thus, a core, and glue-like element for me, has been the key logic, based on specificity, which I hoped could be applied to a wide range of situations.

The problem with this sort of pragmatism is that an argument which can fruitfully span so many different analytical levels must – at the same time insist that these levels are not fundamentally different. As I see it though, there is no fundamental difference between analyses at the organizational, national, or inter-national level. In any case, it is actors that act or are hampered in doing so. Organizations, be they local or international, are populated by actors, and are performing in numerous localities. I hold that the specificity approach is all about actors, and groupings thereof, that act and make transactions with each other.

Theoretically thus, the integration efforts are relatively unproblematic. The different approaches have brought with them separate elements. The STS field has brought with it an approach to power and a thematic inclination for links and associations. This last point is shared with the TCE tradition. Organizational science has contributed substantially to the theorizing on knowledge. I think that it would be in vain to make a study involving the concept of knowledge without looking to organizational studies. The Political Economy element in this provides the view to how knowledge and power may be related.

Harder to grasp is the interrelatedness of so different empirical worlds. Is it really useful to utilize the same concepts on so different empirical material? I suggest there is a positive answer to this question. Clearly one could study power and organizational changes both locally, nationally, and internationally without trying to integrate the levels. Nothing would be lost by that. One could also study the role of knowledge in these different levels. However, a guiding idea for me has been that by introducing the term specificity (mobility) as the key concept a common logic could be found. By the introduction of specificity we may find a concept able to illustrate how knowledge and power are related in similar ways in different contexts. If so, a more comprehensive understanding of the workings of the knowledge economy would come within reach.

Although not proved, or verified, I believe the study has presented an illustrative sketch – a montage – of how a similar logic may contribute in binding our key concepts together. As I see it, two patterns stand out clear enough to suggest some generalization. First, specificity and mobility of assets, both knowledge assets and others, matter for the shaping and reshaping of configurations of power. Second, they do so in particular directions: knowledge specificity covaries with organizational rigidity and hierarchy. Conversely, and thirdly, knowledge mobility covaries with pluralistic organizational tendencies, or heterarchy. This I believe is substantiated, although not verified. This is a finding supported by this overall plausibility probe.

## **9.2 The way there – and ways ahead: On omissions and further research**

The overall approach to this thesis is multifarious. Several theoretical contributions, research techniques, and empirical zones have been combined to create a montage effect of the world in where answers to our research question might be sought. This is a way to design a research project that opens for critique along several lines. The particular elements, theoretical and empirical, can be discussed and criticized. Theoretically, it may be viewed as either too vague or too deterministic. Empirically, some elements of the montage may be seen as too thick; some as too wide; and some as too thin.

Notwithstanding, I think the most reasonable critique concerns whether the composition of the montage, at large, fulfills one's (reasonable) expectations. There are three omissions I will address, each of which points towards further and more elaborate research. First, the design could have incorporated a case study where the actual mobility of experts and communities of practice was investigated. As it is, empirically-substantiated reasoning on limitations and openings to the mobility of knowledge represented within organizations is something like a black spot in the montage.<sup>151</sup> Second, more thorough statistical inquiries of sectoral economic regulations could have been performed. Appropriate statistical databases have been presented lately, and are undergoing continued development. As it is, the statistical analysis may be criticized for being slightly off mark. Third, the institutional analysis could have provided a more historical description, and a tracing of the actual actors and interest groups that participate in the shaping of a regime for knowledge specificity and mobility.

One particular weakness of the design is that it has not been able to highlight clearly the limits to, or the range of application of, the theoretical approach developed here. This task was one of the reasons for the very wide empirical scope. As I see it, this shortcoming may be due to the loose and explorative initial approach. More rigid

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<sup>151</sup> In the earlier phases of the project, three initiatives were taken to find and include such cases. The first initiative was to contact a Norwegian embassy abroad; the second was with a major telecom company, and the third to a certification organization. Although they were all polite and kind, none of these initiatives ended up in concrete commitments.

definitions and more narrow expectations would probably have provided clearer answers to this issue.

Theory building is an iterative process and I think that we still may look forward to the final expression of the overall theoretical approach: a refined asset specificity approach. If nothing more, the findings suggest that the case is still open. Still, even though knowledge specificity is an unfinished concept, we may learn things about the knowledge society through applications of this concept.

This thesis has relied on contributions from science and technology studies, transaction cost economies, trade theory, and theories from international political economy. Hopefully, elements of this study may contribute with ideas and suggestions on further developments within each of these different disciplines.

# Appendix I.1 Intervjuguide

## Intervjuguide for høsten 2002,

**Målsetning:** Få fram synspunkter og holdninger på nøkkelbegreper som

1. kunnskap og kunnskapsformer,
2. kunnskapsoverføring og kunnskapsmobilitet,
3. Styring, sikring og kontroll av kunnskap, kunnskapsbærere og kunnskapsrepresentasjoner,
4. kunnskapsbedriftenes rammevilkår – kunder, marked, reguleringer

Et bakgrunnsnotat som beskriver studiens tematikk er lagt fram for intervjuobjektene på forhånd.

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### Del 1 Introduksjon, personlige opplysninger

1. Kan du fortelle meg litt om din bakgrunn
2. Kan du fortelle meg litt om ditt arbeide
3. Hva er din kjernekompetanse
  - a. Hvordan forholder denne seg til bedriftens kjernekompetanse?

### Del 2 Kunnskapsbegrepet

1. Kan du si litt om hvordan du forstår skillet mellom kunnskap og informasjon
2. Er dette kunnskapssynet en del av bedriftskulturen
3. Kan kunnskap lagres og overføres – utdyp og eksemplifiser.

### Del 3 Kunnskapsstyring og kontroll

1. Hva vil det si å styre / koordinere / kontrollere kunnskap
  - a. Er det mulig/ønskelig/nødvendig
2. Er taushetsplikt/konfidensialitet viktig i din jobb, i bedriften
  - a. Utdyp og eksemplifiser
3. Bedriftsidentitet/kultur
  - a. Hvilke normer vil du si er sentrale i bedriften
  - b. Hvordan jobbes det med kultur/identitet
  - c. Hva er formålet/effekten av den
4. Organisasjonsstruktur
  - a. Dere har endret organisasjonsstrukturen nylig. Kan du si litt om hva du opplever som fordeler og ulemper med den gamle og den nye strukturen?



#### **Del 4 Kunnskapsmobilitet, læring, overføring**

1. Tilføring – Anskaffelse (ansettelse?) vs kunnskaping
  - a. utfordringer
  - b. eksempler
2. Overføring internt – læring
  - a. utfordringer
  - b. eksempler
3. Overføring til kunder – salg
  - a. utfordringer
  - b. eksempler
4. Overføring mellom avdelinger – deling
  - a. globalt el lokalt hva er utfordringene

#### **Del 5 Kontekster**

1. Konsulent og IT næringen er inne i en vanskelig periode.
  - a. Hva tror du er de viktigste årsakene.
  - b. Hvordan virker disse vanskelighetene på dere
2. Hvordan oppleves de politiske rammevilkårene: reguleringer, lovgivning etc. for en bedrift som dette

#### **Del 6 Egne utdypinger**

1. Hva ser du som de viktigste utfordringene for en god kunnskaps management?
    - a. Utdyp selv
-

## Appendix I.2 Bakgrunnsnotat - Intervjuguide

### Notat: Bakgrunn og intensjon, intervjurunde høsten 2002

Den generelle interessen som ligger til grunn for mitt doktorgradsarbeid kan kort sies å være at kombinasjonen av kunnskapens uåndgripelighet og dens uomtvistelige økonomiske betydning gjør det påkrevet med videre refleksjon omkring det en kan kalle kunnskapens politiske økonomi. Sentralt i enhver politisk økonomitilnærming er spørsmål knyttet til distribusjon av goder, noe som igjen kan deles opp i spørsmål omkring kontroll og mobilitet av de aktuelle godene, i denne sammenhengen kunnskap i sine ulike former.

At kunnskap gir sosial status, innflytelse og økonomisk uttelling for aktører på mange nivå innebærer at institusjoner, arbeidstakere, bedrifter, eller andre aktørnettverk, har interesser knyttet til ulike former for beherskelse av kunnskap. Sett fra en enkelt bedrifts side er problematikken på mange måter opplagt. Den ønsker å utvikle, foredle og selge bedriftens kunnskap – igjen og igjen. Derigjennom sikres vekst og inntjening. Imidlertid har problemkomplekset en videre betydning enn taktiske spørsmål om skaping, pakking og gjensalg av kunnskap.

Teknologiske, organisatoriske, markedsmessige og politiske endringsprosesser både innvirker på, og er et resultat av handlinger utført av aktører med dels sammenfallende og dels motstridene preferanser til grenser for kunnskapsoverføring og kontroll.

Verken preferansene eller praksisene er imidlertid teoretisk deduserbare. De må søkes i bl.a. kunnskapsbedriftenes egne aktiviteter.

I denne forbindelse ønsker jeg å ta opp følgende tema med aktører i de berørte organisasjonene:

1. *Kunnskapsformer* og deres relevans. Kunnskapens ulike former og representasjoner har vært og er et tema for flere innenfor Kunne tidligere. Jeg

vil likevel mene at en innledende diskusjon om dette vil være fruktbart fordi de påfølgende begrepenes betydning både vil kunne avhenge av kunnskapsformer og kunnskapssyn.

*Stikkord: Eksplisitt vs taus, ekstern vs intern, informasjon vs kunnskap i handling, lokal vs generell, osv. osv. osv.*

2. *Kontroll* av kunnskap. Med dette mener jeg da det å evne å gripe, styre, administrere, koordinere, kodifisere, og definere det uåtgripelige i kunnskapen – i praksis. Dette er både en forutsetning for å kunne nyttegjøre seg kunnskap i en økonomisk kontekst, og en mulig kilde til konflikt mellom ulike aktører i kunnskapssamfunnet. Kontroll kan selvfølgelig manifesteres og/eller søkes iverksatt på ulike måter, men må vel antas å i første rekke gjøre seg gjeldene i forhold til kunnskapsrepresentasjoner. Sammen med kontroll hører også forsøk på å unndra seg kontroll.

*Stikkord: Koordinering, administrasjon, organisasjon, styring, eierskap, identitet, bedriftskultur, kodifisering, representasjon, copyright, kontrakter, patenter.*

3. *Mobilitet* av kunnskap. Mobilitet kan også uttrykkes som overførbarhet eller flyktighet. Ulike former for kunnskap, og ulike kunnskapsrepresentasjoner innebærer stor variasjon i overførbarhet, fra den mest lokale og spesifikke som rimeligvis er vanskelig overførbar, til den generelle eller kodifiserte som i gitte sammenhenger distribueres via ulike medier i tilnærmet sanntid.

*Stikkord: Læring, overføring, lekkasje, kopiering, deling, avstand.*

4. *Sammenhengen* mellom mobilitet og kontroll: Kunnskapens flyktighet tilsier i en viss forstand at uten visse typer kontroll vil mobiliteten av en del typer kunnskap være høy men uforutsigbar. En kan da tenke seg at kunnskapen, så snart den er ervervet blir allemannseie. Følgelig faller det økonomiske potensialet bort. Andre typer kunnskap vil imidlertid oppstå og bli overførbar nettopp gjennom kodifisering og kontroll. Atter andre, mer tause og/eller lokale kunnskaper er svært vanskelig overførbare, og unndrar seg både kontroll og

overføring... Dermed kan en si at kunnskapen dels yter motstand mot kontroll og grenser, og dels yter motstand mot overføring.

5. Kunnskapsbedriftenes *kontekst*: Rammevilkårene Markedene, Reguleringene, Kundene, Konkurrentene, Teknologien

Dette er de ”store” bakenforliggende spørsmålene jeg er opptatt av. Dette kan, og bør, studeres i praksis i konkrete prosjekter. Min hensikt med intervjuene i denne omgang er imidlertid å høre synspunkter og erfaringer fra aktører i kunnskapsbedrifter som både har høy bevissthet om kunnskapsarbeid, og praktisk erfaring fra ulike posisjoner i kunnskapsøkonomien.

På bakgrunn av at mine informanter i de aktuelle bedriftene er erfarne kunnskapsarbeidere som i tillegg har en spesiell interesse for kunnskapsbegrepet som sådan, velger jeg å helt åpent legge fram de bakenforliggende interessene og problemstillingene. De vil da fungere som et bakteppe, inspirasjon, provokasjon og/eller disposisjon for samtalene.

Vi tar det derfra, som åpne, delvis strukturerte samtaler/intervjuer.

Jostein Vik  
Stipendiat

## Appendix II Descriptive Statistics of Involved Autocracy Measures

This appendix present frequencies, descriptive statistics, ranmks and scores for the two component variables and the final regime type variable used in chapter seven.

**Table A.2.1 Frequencies of Regime Rigidity (zzrigidity in my own dataset)**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	.00	49	28.2	35.3	35.3
	.46	14	8.0	10.1	45.3
	.92	19	10.9	13.7	59.0
	1.39	7	4.0	5.0	64.0
	1.85	19	10.9	13.7	77.7
	2.31	9	5.2	6.5	84.2
	2.77	8	4.6	5.8	89.9
	3.87	1	.6	.7	90.6
	4.34	3	1.7	2.2	92.8
	4.80	2	1.1	1.4	94.2
	4.97	1	.6	.7	95.0
	5.90	3	1.7	2.2	97.1
	6.36	3	1.7	2.2	99.3
	6.82	1	.6	.7	100.0
	Total	139	79.9	100.0	
Missing	System	35	20.1		
Total		174	100.0		

**Table A.2.2 Frequencies of Legislative Selection (legsele1 in the Banks dataset)**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0 none	10	5.7	6.1	6.1
	1 non-elective	6	3.4	3.6	9.7
	2 elective	149	85.6	90.3	100.0
	Total	165	94.8	100.0	
Missing	System	9	5.2		
Total		174	100.0		

**Table A.2.3 Frequencies executive constraints (exconst in Polity IV)**

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid -88	5	2.9	3.4	3.4
-77	2	1.1	1.3	4.7
-66	2	1.1	1.3	6.0
unlimited authority	11	6.3	7.4	13.4
intermediate category 1/3	15	8.6	10.1	23.5
slight to moderate limitations	23	13.2	15.4	38.9
intermediate category 3/5	7	4.0	4.7	43.6
substantial limitations	20	11.5	13.4	57.0
intermediate category 5/7	14	8.0	9.4	66.4
executive parity or subordination	50	28.7	33.6	100.0
Total	149	85.6	100.0	
Missing System	25	14.4		
Total	174	100.0		

**Table A.2.4 Descriptive statistics for the rigidity measures \***

	N	Min	Max	Mean	Std. Dev.
zzrigidity	139	.00	6.82	1.3431	1.63958
executive constraints	140	1	7	4.80	2.109
Legislative Selection. 0	139	0	2	1.84	.500
Valid N (listwise)	139				

\* (-88, -77, -66 is filtered out)

**Table A.2.5 Ranks and scores for the political regime rigidity measures (year 1999)**

Country	zzrigidity Regime rigidity	legsele1 Legislative selection	xconstr Executive constrains
Sudan	6.82	0	1
Chad	6.36	0	2
Gambia. The	6.36	0	2
Bahrain	6.36	0	2
Algeria	5.90	0	3
Kuwait	5.90	0	3
Myanmar	5.90	0	3
Nigeria	4.97	0	5
Afghanistan	4.80	1	1
Qatar	4.80	1	1
Saudi Arabia	4.80	1	1
Liberia	4.34	1	2
Rwanda	4.34	1	2
Oman	4.34	1	2

Eritrea	3.87	1	3
Comoros	2.77	2	1
Congo. Rep.	2.77	2	1
Pakistan	2.77	2	1
Cuba	2.77	2	1
Libya	2.77	2	1
Iraq	2.77	2	1
Korea. Dem. Rep.	2.77	2	1
Syrian Arab Repub	2.77	2	1
Turkmenistan	2.77	2	1
Uzbekistan	2.77	2	1
Togo	2.31	2	2
Burkina Faso	2.31	2	2
Gabon	2.31	2	2
Cameroon	2.31	2	2
Equatorial Guinea	2.31	2	2
Kazakhstan	2.31	2	2
Azerbaijan	2.31	2	2
Belarus	2.31	2	2
Bhutan	2.31	2	2
Swaziland	2.31	2	2
Djibouti	1.85	2	3
Russian Federatio	1.85	2	3
Burundi	1.85	2	3
Guinea	1.85	2	3
Peru	1.85	2	3
Senegal	1.85	2	3
Tanzania	1.85	2	3
Angola	1.85	2	3
Jordan	1.85	2	3
Kenya	1.85	2	3
Singapore	1.85	2	3
Tunisia	1.85	2	3
Uganda	1.85	2	3
Egypt. Arab Rep.	1.85	2	3
Morocco	1.85	2	3
Mauritania	1.85	2	3
Zimbabwe	1.85	2	3
China	1.85	2	3
Lao PDR	1.85	2	3
Mozambique	1.39	2	4
Ghana	1.39	2	4
Iran. Islamic Rep	1.39	2	4
Cambodia	1.39	2	4
Malaysia	1.39	2	4
Tajikistan	1.39	2	4
Kyrgyz Republic	1.39	2	4

Benin	.92	2	5
Bangladesh	.92	2	5
Central African R	.92	2	5
Guyana	.92	2	5
Honduras	.92	2	5
Madagascar	.92	2	5
Macedonia. FYR	.92	2	5
Mali	.92	2	5
Malawi	.92	2	5
Namibia	.92	2	5
Niger	.92	2	5
El Salvador	.92	2	5
Ukraine	.92	2	5
Venezuela. RB	.92	2	5
Albania	.92	2	5
Armenia	.92	2	5
Georgia	.92	2	5
Sri Lanka	.92	2	5
Zambia	.92	2	5
Argentina	.46	2	6
Brazil	.46	2	6
Colombia	.46	2	6
Dominican Republi	.46	2	6
France	.46	2	6
Guatemala	.46	2	6
Korea. Rep.	.46	2	6
Mexico	.46	2	6
Panama	.46	2	6
Philippines	.46	2	6
Romania	.46	2	6
Fiji	.46	2	6
Indonesia	.46	2	6
Nepal	.46	2	6
Australia	.00	2	7
Austria	.00	2	7
Belgium	.00	2	7
Bulgaria	.00	2	7
Bolivia	.00	2	7
Botswana	.00	2	7
Canada	.00	2	7
Switzerland	.00	2	7
Chile	.00	2	7
Costa Rica	.00	2	7
Czech Republic	.00	2	7
Germany	.00	2	7
Denmark	.00	2	7
Ecuador	.00	2	7



Spain	.00	2	7
Finland	.00	2	7
United Kingdom	.00	2	7
Greece	.00	2	7
Hungary	.00	2	7
India	.00	2	7
Ireland	.00	2	7
Iceland	.00	2	7
Israel	.00	2	7
Italy	.00	2	7
Jamaica	.00	2	7
Japan	.00	2	7
Lithuania	.00	2	7
Luxembourg	.00	2	7
Latvia	.00	2	7
Moldova	.00	2	7
Mongolia	.00	2	7
Mauritius	.00	2	7
Nicaragua	.00	2	7
Netherlands	.00	2	7
Norway	.00	2	7
New Zealand	.00	2	7
Papua New Guinea	.00	2	7
Poland	.00	2	7
Portugal	.00	2	7
Paraguay	.00	2	7
Slovak Republic	.00	2	7
Slovenia	.00	2	7
Sweden	.00	2	7
Thailand	.00	2	7
Trinidad and Toba	.00	2	7
Uruguay	.00	2	7
United States	.00	2	7
South Africa	.00	2	7
Estonia	.00	2	7
Turkey	.00	2	7

## Appendix III Comparing Autocracy Regressions

In this appendix, three regression models are presented that apply three different dependent variables in models that are identical in other respects. The rigidity variable I developed in chapter seven is meant to capture regime rigidity and degree of hierarchy in the organization of the regime; Freedom House’s “civil liberty” index measures “the freedom to develop opinions, institutions, and personal autonomy without interference from the state;” (Freedom House, 2003). Finally, the political rights index captures the rights “to participate freely in the political process. This includes the right to vote and compete for public office and to elect representatives who have a decisive vote on public policies.” Freedom House, 2003). Both of Freedom House’s indexes are based on subjective ‘on the ground’ observations.

Even though the measures are meant to capture different theoretical and political realities, they are strongly correlated. Table A.3.1 shows the degree of correlation. Tables A.3.2, show how the model performs in explaining the three different measures.

**Table A.3.1 Correlations of autocracy**

		zzrigidity	Freedom House: Political Rights Index	Freedom House: Civil Liberties Index
zzrigidity	Pearson Correlation	1	.769(**)	.715(**)
	Sig. (2-tailed)		.000	.000
	N	139	136	136
Freedom House: Political Rights Index	Pearson Correlation	.769(**)	1	.923(**)
	Sig. (2-tailed)	.000		.000
	N	136	137	137
Freedom House: Civil Liberties Index	Pearson Correlation	.715(**)	.923(**)	1
	Sig. (2-tailed)	.000	.000	
	N	136	137	137

\*\* Correlation is significant at the 0.01 level (2-tailed).

Model V a) is the final model presented in chapter 7. Models V b), and V c) are the same models except for that the dependent variable regime rigidity are replaced with Freedom House: Political Rights Index, and Freedom House: Civil Liberties Index.

**Table A.3.2 Comparing autocracy regressions**

	<b>Model V a</b> <b>Dependent</b> <b>variable:</b> <b>Regime rigidity</b>	<b>Model V b</b> <b>Dependent</b> <b>variable:</b> <b>Freedom</b> <b>House: Political</b> <b>Rights Index</b>	<b>Model V c</b> <b>Dependent</b> <b>variable:</b> <b>Freedom</b> <b>House: Civil</b> <b>Liberties Index</b>
Index of knowledge intensity	-0.241 **	-0.418 **	-0.552 **
Agricultural raw materials exports	0.060	-0.014	-0.031
Food exports	-0.188	-0.499	-0.431
Fuel exports	-0.163	0.518	0.524
Ores and metals exports	0.101	0.150	0.054
Annual GDP growth	0.218 **	0.140	0.094
Arabic	0.300 **	0.274 **	0.242 **
Food2	0.318	0.596	0.464
Fuelex2	0.704 **	-0.264	-0.378
Constant (B)	0.311	2.440**	3.061**
R Square	0.616	0.458	0.462
Adjusted R square	0.578	0.403	0.407
N	99	99	99

\*\* Correlation is significant at the 0.01 level (2-tailed).

## Appendix IV OLS Regression: Assumptions and Tests

This appendix presents and discusses assumptions underlying Ordinary Least Square (OLS) regressions and assess the fulfilment of these in the model developed in chapter seven. The purpose of the appendix is to deal explicitly with technical considerations on the regression analysis that may be seen as inappropriate in the main text.

(OLS) regression is a multivariate analysis technique that estimates the direct effect of a set of explanatory variables on a dependent variable. The model can be expressed as  $\hat{Y}_i = b_0 + b_1 X_{i1} + b_2 X_{i2} + b_3 X_{i3} + b_{k-1} X_{i,k-1} + \varepsilon_i$ . OLS regression estimates the effect of each of the included variables, and it estimates the explained variance of the complete model. The regression outcome is a function – a regression line – that has the feature that the total sum of distances between observations and predictions is smaller than with any other line. That means that if the relation between a set of independent variables and a dependent variable can be expressed as a straight line, no other estimates is better (read: have smaller squared residuals) than the OLS regression.

However, this characteristic is based on a few assumptions to the model, or requirements to the OLS regression. This appendix discusses these briefly.<sup>152</sup>

1. For OLS regression to be an appropriate tool, the model must be correctly specified. This means that the expected value of the dependent variable is a linear additive function of the involved independent variables. This, in turn, means that no relevant variables must be omitted and no irrelevant variables must be included. We cannot test whether all relevant variables are included. This is a fundamental theoretical question, and will not be discussed any further here. Inclusion of irrelevant variables is both a matter of theoretical reasoning and of statistical inquiries. If an included variable doesn't make any substantial contribution to the model (coefficients relatively close to zero), and/or the contribution is statistically insignificant (sig > 0.05) the variable may be irrelevant. However, this must be considered theoretically. In the model developed in chapter seven, we see that the export share of agricultural raw materials, and the export share of ores and metals have significance levels larger

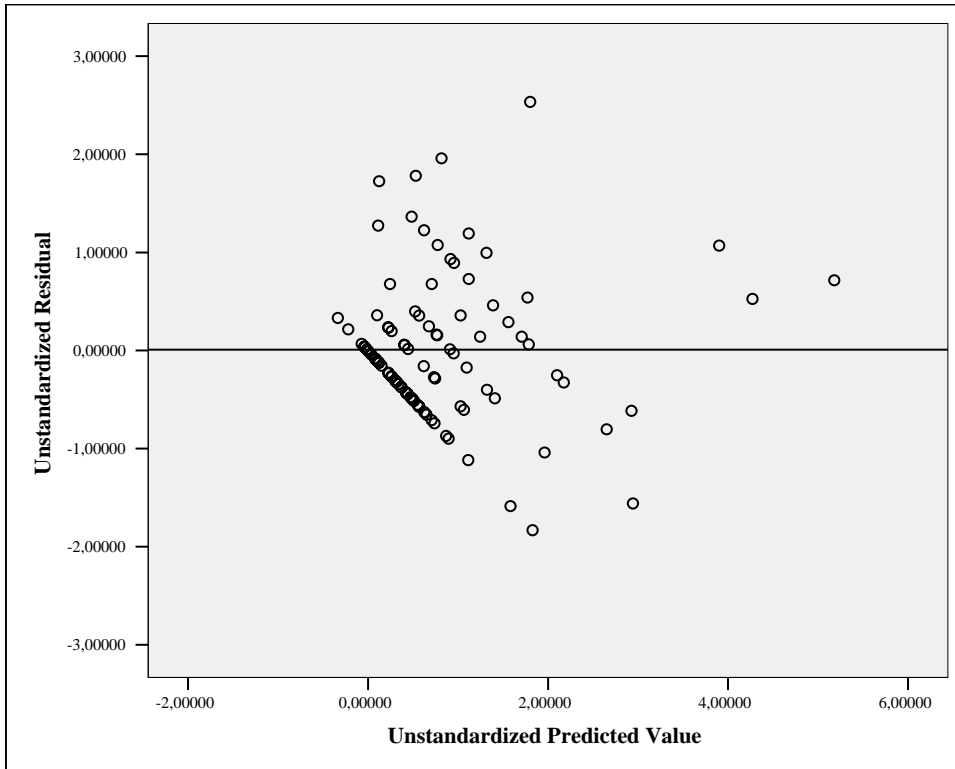
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<sup>152</sup> This discussion is based on Gujerati, (2003); Hamilton, (1992); and Ringdal, (2001).

than 0.05, and that they – alone – contribute weakly to the model. However, this model is a test of a theoretical logic and a theoretical reasoning that is incomplete without these variables. Thus, they are relevant regardless of their statistical level of significance. All in all, I hold that the model is correctly specified.

2. Xs are fixed, and without measurement errors. There are two sources of measurements errors. The first is the data gathering process. In the analysis performed in chapter seven, all the data used are secondary. What I have done to increase the chance for good data is to use well-esteemed sources.
3. The relationship between the X variables and the dependent variable are linear. To find out whether the relationships are linear or curvilinear, we can visually check scatter plots of the variables in question. This is done for the involved variables in the models of chapter seven. When a relationship between variables is not linear, the normal countermeasures to take is to include squared X variables in the model. Thereby, the curvilinearity is incorporated in the model, and the estimates are still satisfactory. The bivariate correlation between regime rigidity and food exports as a share of total merchandise exports revealed that the relationship between the two was curvilinear (see figure 7.7). Therefore, the squared variable “*food2*” was included. Figure 7.9 revealed the same problem with fuel exports and regime rigidity. As a solution a squared variable for fuel export was included (*fuelex2*)
4. The residuals have mean at zero in the population. This means that we (the model) can be expected to make wrong predictions equally often in both directions. We can get an impression of this through a residual analysis. See below.
5. The residuals have constant variance (homoscedasticity). That means that we are not making systematically more mistakes for one group of cases than for others. The causes of such problems are normally measurement errors or wrongly-specified models. The problems caused by heteroscedasticity are connected to the possibility of correct generalization. The plot of unstandardized residuals vs. unstandardized predicted values may be a useful diagnosis tool for heteroscedasticity. See figure A.4.3

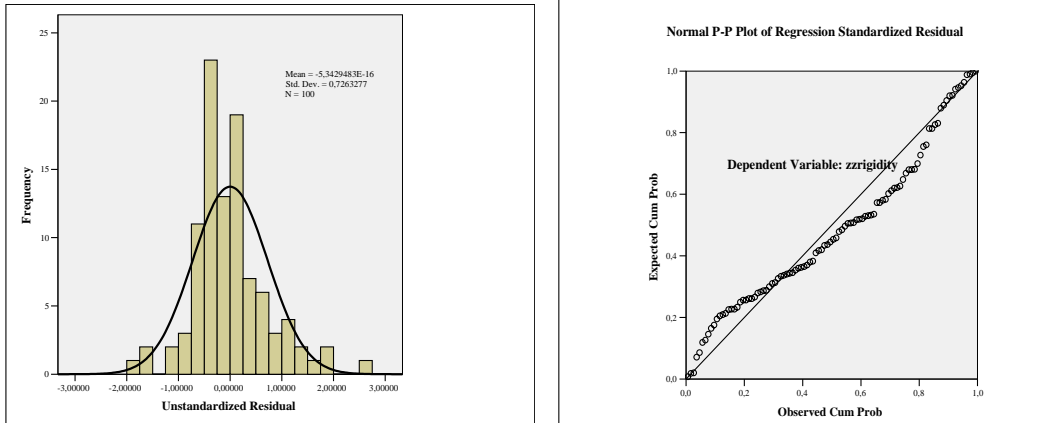
**Figure A.4.3 Unstandardized residual to unstandardized predicted value**



If the variation at one level of predicted values differs from the variation at another, we may have heteroscedasticity. In the case of our final model this does not seem to be the case. The distribution of residuals seems to be reasonably “balanced”. It may be noted though that these are easier to see if the table is presented with absolute values. However, heteroscedasticity may occur when we have outliers – deviant cases – that influence the predictions substantially. See below.

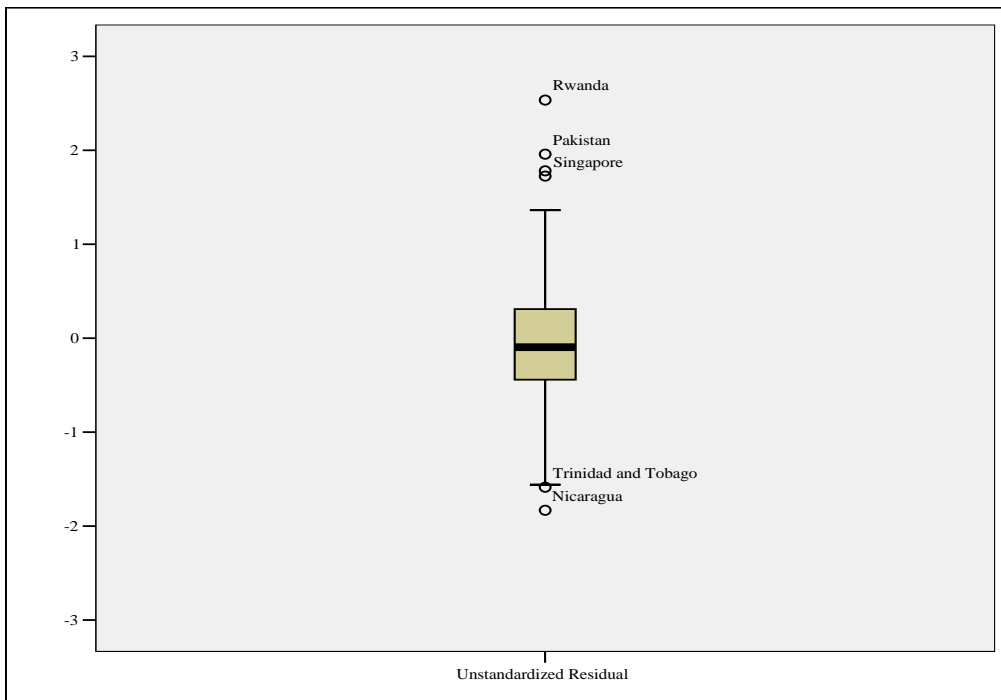
6. The residuals are uncorrelated with each others (no autocorrelation). In our case there is no reason to expect autocorrelation, which occur when the value of one variable for one case is dependent on the value of the same variable of another case.
7. The residuals have a normal distribution. This has to do with valid generalization. However, it is also a general tool for assessing the model. Very skewed distributions may indicate that something else is wrong with the model or the included variables.

**Figure A.4.4 Normality of distributions**



In most cases, the question is not whether a distribution is normally distributed but whether it is close enough to a normal distribution. As I see it, the distribution revealed in figure A.4.4 is “normal enough”. Figure A.4.5 gives and additional impression.

**Figure A.4.5 box plot of unstandardized residual**



8. The X variables must not be perfectly correlated (no multicollinearity). SPSS tests of collinearity reveal tolerance as a measure of multicollinearity. Tolerance is a statistic used to determine how linearly related variables are, and measures the proportion of a variable's variance not accounted for by other independent variables

in the model. The closer to one the tolerance comes, the less multicollinearity. When we introduce squared variables and interaction effects in the model, we also introduce multicollinearity. The problems with multicollinearity may be that the model becomes unstable. Deviant cases, and violations discussed above may be given extra leverage.

This appendix has presented and discussed the assumptions and requirements to OLS regression, and some of the considerations made during the development of the model used in chapter seven.



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