

# “Explaining Organisational Boundaries with Complexity and Dynamics. Extending the Hypercompetition Concept with Institutional Economics”

## AUTHORS

Christian Richter  
Hagen Lindstädt

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# Explaining Organisational Boundaries with Complexity and Dynamics

## Extending the Hypercompetition Concept with Institutional Economics

Christian Richter<sup>1</sup>, Hagen Lindstädt<sup>2</sup>

### Abstract

This paper extends D'Aveni's hypercompetition concept based on the core competencies' approach by means of the addition of an institutional economic explanation. In this process it is demonstrated that the hypercompetitive conduct of economic protagonists in addition to the core competence approach can be explained by means of the differing levels of markedness of the contingency factors of dynamics and complexity. The transmission of the markedness of environmental variables to the two prevailing alternative forms of conduct in the area of hypercompetition – indirect, cooperative, market-based and direct, hierarchical confrontational coordination – occurs whilst reverting to institutional economics (property rights approach, transaction costs theory and their dynamic extension by Langlois & Robertson). The aforementioned three approaches shall be inspected as to whether they provide an authoritative basis for assessing conduct under the premise based on D'Aveni's concept of hypercompetition that dynamics and complexity are (increasingly) marked in a horizontal direction and (increasingly) less marked in a vertical direction. The analyses demonstrate that the contrary markedness or development of dynamics and complexity lead to equally contrary statements per indirect, cooperative market-based or direct, hierarchical confrontational behaviour in a horizontal and vertical direction: companies shall tend to expand in a horizontal direction and concentrate vertically.

**Key words:** Hypercompetition, Organizational Boundaries, Vertical and Horizontal Integration, Institutional Economics, Transaction Costs, Property Rights.

### 1. Introduction

This paper is based on the concept of hypercompetition as set out by D'Aveni and its substantiation that is primarily based on core competencies. An extension of the perspective beyond a single explanation approach appears to be meaningful as hypercompetitive behaviour is wide spread in corporate practice. In the following section this concept of hypercompetition shall be briefly described and extended by means of an institutional economic explanation. Following this it will be made clear in combination with practical observations that horizontal and vertically differently structured dynamics and complexity as contingency factors in combination with an (extended) institutional economic transmission mechanism provide a valid, extended explanation function for D'Aveni's concept.

The starting point of the reflections is D'Aveni's concept of hypercompetition, which forecasts a great increase in (aggressive) competition dynamics in a horizontal direction, whilst a predominantly cooperative structure is forecast in the vertical direction<sup>3</sup>. D'Aveni primarily bases his line of argument upon the core competency approach. There is an interest in more far reaching explanations for such patterns of behaviour, as hypercompetitive behaviour is still a current phenomenon in a lot of sectors ten years following D'Aveni's initial reflections.

One starting point for subsequent attempts to explain hypercompetition is the differing organisation of the competitive framework conditions in a horizontal and vertical direction, i.e. with respect to the product and service offer as well as the value added stages. Wittke, also, for instance, like D'Aveni, takes the view that the contingency factors of stability and long-termism, which in his opinion decisively influ-

<sup>1</sup> Ph.D., Consultant with Booz Allen Hamilton, Germany.

<sup>2</sup> Ph.D., Professor of Strategic Management and Organization at HHL – Leipzig Graduate School of management, Jahnallee 59, D-04109 Leipzig, Germany.

<sup>3</sup> Compare D'Aveni (1994). Hypercompetition takes place between direct competitors according to D'Aveni, Yamaha and Honda, Komatsu and Caterpillar, UPS and Federal Express have been named as examples. The necessity of a vertical co-operation strategy is explained based on the example of the component suppliers of General Motors.

ence the competitive behaviour of companies, are marked to differing degrees in a horizontal and vertical direction: instability and uncertainty are very much on the increase in a horizontal direction, whilst stability and long-termism constitute the dominating framework conditions in a vertical direction<sup>1</sup>.

Hypercompetitive behaviour can be clearly recognised in practice. There is a marked trend towards (hyper) competitive behaviour in a horizontal direction whereby the companies strive to dominate the market, and indeed by means of clearly opportunistic behaviour and by competing for direct control over skills and assets, which are decisive in securing a competitive edge – companies are expanding in a horizontal direction. On the other hand the value added depth is being decreased in a vertical direction and cooperative behaviour and market coordination is dominating instead of opportunistic behaviour – the companies are thus concentrating in a vertical direction<sup>2</sup>.

It can be made clear that the differing markedness of the contingency factors of dynamics and complexity due to the confrontation of the institutional economic reflections with practical observations is a cause for hypercompetitive behaviour. The line of argument follows in three steps. Firstly, dynamics and complexity are identified and defined as relevant contingency factors. Secondly, an institutional economic transmission mechanism is described in order to portray the connection between the markedness of these contingency factors on the one hand and the behaviour of the economic subjects on the other. In the third step the hypothesis that certain levels of markedness of complexity and dynamics via the identified transmission mechanisms actually contribute towards the transition of the described corporate boundaries is substantiated by means of the merger of the first two working steps.

## 2. Theoretical Foundations

### 2.1. Dynamics and Complexity as Aggregated, Contingency Theory Constructs

In the case of the following analysis it is necessary to view the contingency factors under consideration with a sufficient level of precision. The reflection of Wittke that the two contingency factors of stability and long-termism are of differing markedness in a horizontal and vertical direction serves as the starting point in this case.<sup>3</sup> It is important that these contingency factors are sensibly extended, differentiated or summarised.

According to Meffert the increasing significance of environmental factors for the management of companies can be put down to the increasing dynamics and complexity of the relevant environmental parameters.<sup>4</sup> Meffert's understanding of "dynamics" is in line with Wittke's reflections. Stability (Meffert: discontinuity) and long-termism (Meffert: frequency) are therefore subsumed under the construct of *dynamics* – also due to the fact that stability represents the spatial-factual aspect of dynamics and long-termism represents the time aspect of dynamics.<sup>5</sup> Dynamics is the first contingency factor that is supplemented by the aspect of the strength of the dynamic changes (amplitude), which is used to explain the diverging trends in terms of the direction they take.

The second contingency factor is the *complexity* of the variables, i.e. the number of variables, their heterogeneousness, as well as the type and degree of their links or interactions.<sup>6</sup> According to him, the fact that complexity represents a supplementary perspective to dynamics is made clear by the reflections of Berg. Berg extends the Cob-Web model of the "Pigs' Cycle" known from the field of economics by means of the addition of the factor of short-termism and long-termism and also the additional variables and links between these variables<sup>7</sup>. Table 1 summarises these two contingency theory constructs of dynamics and complexity.

<sup>1</sup> Compare Wittke (1995), page 13.

<sup>2</sup> Compare D'Aveni (1994) in detail with respect to the characteristics of hypercompetitive behaviour.

<sup>3</sup> Compare Wittke (1995), page 10.

<sup>4</sup> Compare Meffert (2000), page 28.

<sup>5</sup> Compare Wittke (1995), page 10, who refers to stability and long-termism versus instability and short term considerations.

<sup>6</sup> Compare for instance Lindstädt (2003) with respect to the links of complexity and dependencies between variables.

<sup>7</sup> Compare Berg (1999), page 5 and following and also Fehl/Oberender (1994), page 29 and following pages with respect to the Cob-Web model.

Table 1

## Dynamics and complexity as aggregated contingency theory constructs

Dynamics	Complexity
<ul style="list-style-type: none"> <li>• Stability (Discontinuity)</li> <li>• Long-termism (Frequency)</li> <li>• Strength of changes (Amplitude)</li> </ul>	<ul style="list-style-type: none"> <li>• Number of variables</li> <li>• Heterogeneity of the variables</li> <li>• Type and degree of the link / Interaction</li> </ul>

## 2.2. (Extended) Institutional Economic Basis of Explanation

The transmission of the markedness of the environmental variables to competitive behaviour patterns occurs whilst reverting to the new institutional economics and its dynamic extension by Langlois & Robertson (1995). These approaches thus go a long way towards explaining this as they establish direct links between dynamics and complexity on the one hand and the following antagonistic forms of behaviour on the other<sup>1</sup>.

- **Indirect, cooperative market-based coordination:** In the case of this form of behaviour the actions of the individual economic subjects are coordinated by market-based control mechanisms. If conflicts arise they will be settled by means of negotiations or if necessary by recourse to the courts. However, opportunist behaviour is avoided as far as is possible in this process so the trust relationship between the two business partners is not impaired. An increase of this form of coordination corresponds to the concentration of company boundaries to the benefit of the market.
- **Direct, hierarchically confrontational coordination:** In the case of this form of behaviour the hierarchy and the linked direct arrangement is the mechanism for the control of the economic subjects. Potential conflicts are settled by means of administrative control and monitoring. If hierarchical control – e.g. in the form of a takeover or merger – is not possible, no negotiations will take place, but instead direct, aggressive and if necessary opportunist “attacks” against the competitors. Increased recourse to this form of coordination corresponds to an extension of the company boundaries.

Both these forms of behaviour bear a marked resemblance to the behaviour of economic subjects in hypercompetition described by D’Aveni. The relations between the protagonists are either regulated in an indirect manner in a spirit of partnership or in a direct, hierarchical or confrontational manner. Both the antagonistic forms of behaviour consciously represent ideal typical extremes for didactic reasons. In reality numerous hybrids of these coordination alternatives can be found, which cannot, however, be represented here.

The new institutional economics explains the selection of the form of coordination (cooperative market-based or hierarchical) in particular due to the transaction costs and the property rights approach. The construct of the “dynamic transaction costs” from Langlois & Robertson (1995) ultimately forms a dynamic synthesis from the new institutional economics and core competency approach and thus supplements the other two approaches in a reasonable way. Their basic ideas and relevance for the selection of the form of coordination will now be explained.

### 2.2.1. Transaction Costs as the Basis of the Explanation

The transaction costs’ approach, according to Coase and Williamson, is based on the finding that transaction costs arise in the event of transactions between economic subjects. These are the costs of the initiation, agreement, processing, control and adjustment of transactions. The amount of the transaction costs is predominantly influenced by three factors: firstly, the selected form of coordination (market, hierarchy or hybrid); secondly, of the factor specificity, and thirdly the uncertainty with respect to the conduct of the transaction partners<sup>2</sup>.

<sup>1</sup> Compare also the ideal models of “Market” and “Hierarchy” of Williamson (1991), page 281 with respect to this.

<sup>2</sup> Compare with this paragraph Coase (1960), page 15; Williamson (1985), page 20; Picot et al. (2001), page 50 and following page. Compare Chung (1998), page 138 and following page with respect to the distinction in terms of the behavioral uncertainty and other forms of uncertainty.

However, the problem of (behavioural) uncertainty is only of relevance if the cognitive powers of the economic subjects are overtaxed by their bounded rationality. In this case not all the information with respect to the transaction partner can be acquired or processed, uncertainty is the consequence<sup>1</sup>.

The hierarchy as a coordination instrument is then optimal referring to transaction costs if both the uncertainty with respect to the opportunistic behaviour of the transaction partner is high and at the same time highly specific factors are the object of the transaction. Opportunistic behaviour in the form of a “hold-up” can be prevented if both transaction partners are members of the same hierarchy. The lower the levels of factor specificity and also uncertainty are, the more advantageous cooperative market-based cooperation becomes from a transaction costs perspective. The expensive hierarchy (from the coordination side) loses its advantages on a low level of certainty with respect to the behaviour or a low factor specificity and thus a low level of incentive for opportunist behaviour exists. Hierarchical control can only be justified in the event that highly specific factors and a high level of behavioural uncertainty coincide<sup>2</sup>.

### ***2.2.2. Property Rights as the Basis of the Explanation***

The property rights approach as set out by Coase and Alchian/Demsetz is concerned with the organisational assignment of rights of action and disposal and their partial rights, which can be subdivided into three categories: use, income and transfer rights<sup>3</sup>. If the individual partial property rights are distributed between several decision makers, i.e. they are not assigned completely or an individual partial right is distributed between several organisational units (“diluted”), then there is the risk of negative external effects. It is important that these external effects are avoided and that positive external effects are internalised.<sup>4</sup>

In accordance with this theory the greater the extent to which property rights are incompletely assigned or diluted beyond company boundaries is, the more reasonable it is to establish a central, direct form of control over these rights. Negative, external effects can be prevented better by concentrating all these rights of action and disposal within the same hierarchy than by means of cooperative market-based coordination of organisationally independent owners of property rights.

### ***2.2.3. Dynamic Transaction Costs and Types of Innovation as the Basis of the Explanation***

The dynamic transaction costs approach as set out by Langlois and Langlois/Robertson extends the transaction costs approach by means of the addition of a dynamic perspective and links it with the core competency approach,<sup>5</sup> and therefore establishes an interesting link in terms of the theme with D’Aveni’s line of argument that is based on core competencies. The dynamic transaction costs’ approach essentially differs between two forms of innovation and the effectiveness and efficiency of cooperative market-based and hierarchical coordination during their control.

Innovations are classified into autonomous and systemic innovations by Langlois and Robertson (based on Williamson). Autonomous innovations take place within one value chain stage or within a horizontal segment. Systemic innovations extend across several stages of the value chain or across horizontal segments<sup>6</sup>.

<sup>1</sup> Compare Picot et al. (2001), page 52 and following page.

<sup>2</sup> This link is clearly explained by Chung (1998), page 137, but is also implicitly found in works such as Picot (2001), page 52, by means of the formation of a ceteris-paribus acceptance of opportunist behaviour during the analysis of factor specificity of differing intensities.

<sup>3</sup> Compare Foss/Foss (1998), page 20. Compare Coase (1960); Alchian/Demsetz (1972); page 749; Picot et al. (2001), page 47, for a more detailed analysis, which goes as far as to distinguish between four partial rights: Firstly, the right to use a good (usus), secondly, the right to change the form and substance of the good (abusus), thirdly the right to appropriate profits and the duty to bear the resulting losses (usus fructus) and fourthly, the right to sell the good to third parties (right of capitalisation or charging a fee).

<sup>4</sup> Compare Picot et al. (2001), page 47 and following page.

<sup>5</sup> Compare Langlois (1992); Langlois/Robertson (1995).

<sup>6</sup> Compare Langlois (1992), page 116 and Williamson (1991), page 278 and following page who refers to the adaptability of model A (“autonomous”) and model C (“cooperation”).

Cooperative market-based coordination is both the most effective and also the most efficient form of coordination for autonomous forms of innovation. It is effective because a market-based search and discovery method as defined by Hayek<sup>1</sup> in the case of autonomous innovations promotes innovation behaviour most effectively. Cooperative market-based coordination is efficient because a market-based search and discovery procedure can only run efficiently within one hierarchy with a lot of organisational effort. For instance an “internal market” with a complex system of transfer prices would have to be installed.

On the other hand, a hierarchy is both the most effective and also the most efficient form of coordination for systemic forms of innovation. Their effectiveness is due to the hierarchy’s ability to “concert” innovation processes across several organisational units. This performance cannot be rendered ideally by means of cooperative market-based cooperation alone. The efficiency of the hierarchy is due to the fact that concerting within a hierarchy based on instructions can, in comparison with the market, be implemented without a great deal of additional effort, e.g. in the form of complex contracts<sup>2</sup>:

If autonomous innovations predominate then a cooperative market-based form of coordination is a better organisational alternative. On the other hand, in the case of systemic innovation hierarchical control is the organisation solution to which preference should be given<sup>3</sup>.

Table 2 summarises the basic notions of the transaction cost’s approach, the property rights’ approach and the dynamic transaction costs’ approach as well as the resulting rules for the selection of the form of coordination.

Table 2

Basic notions and determinants for the selection of the form of coordination and company boundaries

	Transaction Costs			Property Rights	Dynamic Transaction Costs
<b>Basic Notion</b>	- No transaction without transaction costs - 3 primary cost drivers: - Form of coordination - Factor specificity - Behavioural uncertainty			- Property Rights can be incompletely assigned and/or “diluted” - Risk of negative external effects in the event of dilution / incomplete assignment	- 2 forms of innovation: autonomous and systemic - Effectiveness and efficiency of the form of coordination depending on the form of innovation
<b>Advantage of Market-based Coordination</b>	Factor Specificity / Behav. uncertainty	low	high	- No negative effects if property rights are not spread/diluted beyond company boundaries	- Market-based coordination for autonomous innovations most effective and efficient - Market-based search and discovery method
		low	Market-based		
<b>Advantage of Hierarchical Coordination</b>	high	Market-based	Hierarchical	- Concentration / centralisation of widely spread / diluted property rights prevents negative external effects	- Hierarchical coordination for systemic innovations most effective and efficient - Concerting of the innovators
	- Only in the event of a high level of factor specificity and behavioural uncertainty				

### 3. An Institutional Economics Extended Explanation of Hypercompetitive Behaviour

Whilst continuing to pursue the reflections of D’Aveni and Wittke a high or increasing level of dynamics and complexity shall be assumed in a horizontal direction below. In a vertical

<sup>1</sup> Compare Hayek (1937).

<sup>2</sup> Compare Langlois (1992), page 120 and following with respect to this line of argument; Langlois/Robertson (1995), page 36 and following pages.

<sup>3</sup> Also compare the line of argument of Foss/Foss (1998) with respect to this that comes to a similar conclusion, which refers to Langlois/Robertson and supplements the transaction costs’ perspective by means of the addition of a property rights perspective.

direction the discussion shall be carried out under the aspect of a low or decreasing level of dynamics and complexity. It shall now be examined which of the two alternative forms of behaviour, cooperative market-based or hierarchical coordination, of the three approaches should be recommended depending on the differing degrees of dynamics and complexity.

### **3.1. Influence of the Transaction Costs**

An (increasingly) high level of *dynamics* can lead to short-term transaction relations and frequently changing transaction partners. Such framework conditions form the ideal basis for the opportunist forms of behaviour of the transaction partners. The behavioural uncertainty is therefore high in a very dynamic environment. This problem is exacerbated by an (increasingly) high level of *complexity*, as numerous, heterogeneous and diversely linked variables impair the ability of the economic subjects to make decisions. The problem of “bounded rationality” is therefore exacerbated, which for its part increases the risk of opportunist behaviour.

Under the *ceteris-paribus* assumption of a high level of factor specificity a hierarchy is therefore always the more beneficial form of coordination in the event of an increasingly high level of dynamics and complexity.

On the other hand an (increasingly) low level of *dynamics* results in long-term transaction relations with stable, reliable transaction partners. The behavioural uncertainty is therefore low in an environment with a low level of dynamics. Running in line with this an (increasingly) low level of *complexity* leads to a situation whereby the economic subjects are hardly restricted in terms of their ability to make decisions in a “simple” environment. The problem of “bounded rationality” is therefore less grave. In the case of a market-based relationship the transaction partners are thus well capable of recognising opportunism at an early stage and avoiding it. Also in the event of the (*ceteris-paribus*) assumption of a high level of factor specificity the cooperative market-based form of coordination tends to be beneficial in an environment with a low level of dynamics and complexity. The advantages are due to the fact that high, coordinating fixed costs of a hierarchy are not justified due to the low risk of opportunist behaviour. For instance the hold-up risk can be reduced well by means of contracts that have been formulated accordingly.

### **3.2. Influence of Property Rights**

A (hypercompetitive) increase of *dynamics* in a horizontal direction can lead to a situation whereby the assignment of the property rights is unstable and is subject to short-term changes. The consequences are rights of action or disposal that are not completely assigned or are diluted; negative external effects are a possible consequence. An (increasingly) high level of *complexity* has the same effect: property rights or their partial rights are distributed between numerous economic subjects who pursue differing interests and are often additionally networked with one another in a manner, which is difficult to recognise. Also there is a great risk of negative external effects here.

It is therefore necessary in the event of an (increasingly) high level of dynamics and complexity that the widely dispersed rights of action and disposal are concentrated within a hierarchy or at least subject to uniform and direct control by means of a virtual hierarchy, e.g. in the form of complex contracts.

Analogous to the above line of argument a reduction in the level of *dynamics* leads to a situation whereby the assignment of the property right is stable in factual spatial terms and in terms of the time; the risk of negative external effects is thus low. Likewise a low level of *complexity* has the effect that rights of action and disposal are distributed between a low number of economic subjects. This fact combined with the marked homogeneousness of the economic subjects and the simple links between them has helped to ensure that negative external effects are recognised at an early stage by all parties and avoided.

An (increasingly) low level of dynamics and complexity therefore makes the concentration (possibly linked with high concentration costs) of property rights within a hierarchy superfluous<sup>1</sup>. Cooperative market-based control in this case is the low-risk form of coordination that is linked with potential transaction cost advantages and therefore advantageous.

<sup>1</sup> Compare Picot et al. (2001), page 48 and following page with respect to the transaction costs that arise when merging the property rights.

### 3.3. Influence of Dynamic Transaction Costs and Innovation Types

The line of argument cannot at first glance be so clearly used with respect to the dynamic transaction costs as it is in the case of the “classic” transaction costs approach and the property rights approach. An (increasingly) high level of dynamics brings about two consequences: firstly, the dynamic transaction costs of the cooperative market-based control with an increasing level of instability increase. However, this only applies in the event of systemic innovations in which high levels of instability and short-termism lead to the need to concentrate, which overtaxes the market-based coordination mechanisms<sup>1</sup>. But secondly, a high level of dynamics tends to be corollary of the prevalence of autonomous forms of innovation. Langlois makes this clear by referring to the product lifecycle in the highly volatile phase of which market-based coordination and autonomous innovation prevail<sup>2</sup>. The resulting effect of just high levels of *dynamics* remains open.

However, the situation clears when the acceptance of an (increasingly) high level of *complexity* in a horizontal direction is added. Whilst unilateral adjustments can be carried out comparatively easily in the event of a market-based form of coordination, bilateral and multilateral adjustments that occur increasingly frequently in the event of high levels of complexity are regulated beneficially by means of hierarchical coordination. Additional complexity means an increase in the number of links between the organisational units and thus an increase of the systemic forms of innovation.

Consequently the systemic type of innovation prevails in the event of the coincidence of (increasingly) high levels of dynamics *and* complexity. Hierarchy is therefore backed as the more effective and efficient coordination instrument.

On the other hand this means that an (increasingly) low level of *dynamics* in the case of systemic innovations causes the effectiveness and efficiency benefits of the hierarchy to disappear *vis-à-vis* market coordination. Cooperative market-based coordination mechanisms are now rather more capable – in contrast to a highly dynamic environment – of also controlling systemic innovations. In addition, systemic innovations in the event of (increasingly) *low levels of complexity* occur less frequently, autonomous innovations e.g. in the form of modularised production units with standardised interfaces, prevail in a less complex environment<sup>3</sup>.

The combination of (increasingly) low levels of dynamics and complexity thus firstly results in the fact that the autonomous type of innovation dominates and therefore market coordination fundamentally ensures comparatively higher effectiveness and efficiency. Secondly, systemic innovations are also easier to control by means of cooperative market-based coordination than they would be in a highly dynamic environment.

### 3.4. Preliminary Conclusion

When the results are summarised a clear picture emerges both in the case of the (increasingly) high and also low levels of dynamics and complexity: three approaches used here lead to the direct, hierarchically confrontational forms of coordination emerging as superior in the event of an (increasingly) high level of dynamics and complexity (Table 3).

Analogously, the cooperative market based form of coordination i.e. the concentration of the company boundaries is favoured in the event of (increasingly) slight or decreasing dynamics and complexity (Table 4).

However, the following aspects must be observed in the case of this line of argument: Firstly, the causality between the contingency factors and forms of behaviour of the economic subjects is not always clear in corporate practice. Thus aggressive, hypercompetitive behaviour on the part of a party that is new in the market can, for instance, shatter market structures that were previously cooperative and then cause hypercompetition with respect to the margins and sales that are suddenly eroding. Secondly, the institutional economic approaches used here are also criticised despite the fact they are so widespread. Thirdly, this paper can only cover a portion of the numerous explanation factors for different forms of behaviour of market protagonists.

<sup>1</sup> Compare Langlois (1992), page 115 and following page and Langlois' recourse to the line of argument of Teece (1976), page 13.

<sup>2</sup> Compare Langlois (1992), page 121 and Meffert (2000), page 344 and following pages with respect to the concept of the product lifecycle.

<sup>3</sup> Compare Langlois (1992), page 121 for this example.



Table 3

Summary of results of (increasingly) high dynamics and complexity (horizontal)

Contingency factor	Dynamics ↑	Complexity ↑
Dis-/Integration approach	<ul style="list-style-type: none"> <li>Stability (frequency)</li> <li>Stability (amplitude)</li> <li>Long termism (continuity)</li> </ul>	<ul style="list-style-type: none"> <li>Number of variables</li> <li>Heterogeneous of variables</li> <li>Links / interactions</li> </ul>
Transactions Costs	<ul style="list-style-type: none"> <li>Instability and short termism of transaction relations promote opportunism</li> </ul>	<ul style="list-style-type: none"> <li>Problem of "bounded rationality" is exacerbated</li> </ul>
Property Rights	<ul style="list-style-type: none"> <li>Assignment of the property rights is instable – hierarchy as stabiliser</li> </ul>	<ul style="list-style-type: none"> <li>Dilution and dispersion of property rights – hierarchy as the concentration tool</li> </ul>
Dynamic Transactions Costs and Type of Innovation	<ul style="list-style-type: none"> <li>Dynamic transaction costs (DTC) of the market-based coordination of systemic innovations increase</li> <li>Hierarchy is increasingly ideal for DTC for systemic innovations (bilateral and multilateral adjustments)</li> </ul>	<ul style="list-style-type: none"> <li>Increasing links and number of innovation partners lead to more systemic innovation types</li> <li>Hierarchy is more efficient and effective coordination mechanism for systemic innovations</li> </ul>
Trend	Direct, hierarchically confrontational coordination	

Table 4

Summary of the results of (increasingly) low dynamics and complexity (vertical)

Contingency factor	Dynamics ↓	Complexity ↓
Dis-/Integration approach	<ul style="list-style-type: none"> <li>Stability (frequency)</li> <li>Stability (amplitude)</li> <li>Long term nature (continuity)</li> </ul>	<ul style="list-style-type: none"> <li>Number of variables</li> <li>Heterogeneous of the variables</li> <li>Links / interactions</li> </ul>
Transaction costs	<ul style="list-style-type: none"> <li>Stability and long term nature of transaction relations reduce risk of opportunism</li> </ul>	<ul style="list-style-type: none"> <li>Low "bounded rationality" results in low behavioural uncertainty</li> </ul>
Property Rights	<ul style="list-style-type: none"> <li>No or low dispersion of property rights in the event of market-based control</li> </ul>	<ul style="list-style-type: none"> <li>No or low dilution or dispersion of the property rights – hierarchical concentration is not necessary</li> </ul>
Dynamic Transactions Costs and Type of Innovation	<ul style="list-style-type: none"> <li>DTC of the market-based coordination of systemic innovations decrease – systemic innovations in stable markets can also (within limits) be controlled in terms of the prices DTC advantage of the hierarchy for systemic innovations is decreasing</li> </ul>	<ul style="list-style-type: none"> <li>Lower links and numbers of innovation partners lead to more autonomous types of innovation</li> <li>Market efficient and effective coordination mechanism for autonomous innovations</li> </ul>
Trend	Indirect, cooperative market-based coordination	

#### 4. Summary

The core competency based explanation of hypercompetitive behaviour of D’Aveni has been confirmed and extended by means of the addition of institutional economics approaches: transaction costs approach, property rights approach and the dynamic transaction costs approach lead to statements that are consistent with D’Aveni depending on the markedness of the contingency factors of complexity and dynamics. The more complex and dynamic the environment is,

the greater the extent to which the conduct of economic protagonists is characterised by direct, hierarchical control structures – there is a trend towards the extension of the company boundaries along the horizontal dimension of the product and service offer of the company. The economic subjects coordinate themselves all the more so by means of indirect, cooperative market-based control the simpler and less dynamic the environment is for its part, i.e. there is a trend towards a vertical concentration of the company boundaries along the value added chain.

Opportunities for a far-reaching investigation result from the aforementioned reflections. Firstly, a more far-reaching investigation in terms of the depth and breadth of the cause-effect relationship between contingency factors of patterns of behaviour of economic protagonists appears to be promising. Secondly, a more detailed treatment of the approaches would be advantageous in order to address the aforementioned points of criticism about the approaches. Thirdly, additional approaches, which extend beyond the three approaches listed here (transaction costs, property rights, dynamic transaction costs), can ultimately serve to provide an explanation; in this case we could, for example, take account of scale, scope and market power effects.

The field of research is consequently wide ranging and still provides – even if it “only” combines already existing approaches at first glance – numerous challenges due to the emerging variety as a result of the combination of the approaches.

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