

Chapter 2

Uncertainty in Economic Theory from the Perspective of New Institutional Economics

1 The Problem

Keynes accused "... classical economic theory of being itself one of these pretty, polite technique which tries to deal with the present by abstracting from the fact that we know very little about the future."¹ Keynes concedes classical economics would not rule out change; they would assume, however that risks are "capable of an exact actuarial computation." As a result, the calculus of probability would "...be capable of reducing uncertainty to the same calculable status as that of certainty itself; ..." (loc. cit. 112 f.). Arrow (1953) with his time-state-preference theory, developed a model of this type, which Debreu (1959) later integrated into his axiomatic presentation of general equilibrium theory. In the perfect futures economy of Arrow and Debreu, each can maximize the present value of its expected utility.² Assumed is perfect foresight, meaning all individuals know from now on to the Last Day all possible states of the economy and their stochastic properties. No surprises can happen. Of course, these are extreme assumptions.

We mean by uncertainty that we don't know all variables of future states (not to speak of their stochastic properties) and for that reason are even not able to form subjective probability distributions of future "states of the economy"; thus, "...there is not scientific basis on which to form any calculable probability whatever. We simply do not know." (Keynes loc. cit. 114) Macroeconomists or politicians, who are used to thinking in terms of large aggregates (national product, unemployment rate, rate of inflation etc.), have to do a giant step backwards into the realm of microeconomic life, to recognize the problem of uncertainty as understood in this paper. They have to put themselves into the position of, e.g., young people choosing their professional training (their investment in human wealth); or of entrepreneurs planning to produce new goods, i. e., of people who have little or

¹ Keynes (1937/1973, p. 115).

² More precisely: its expected Von-Neumann-Morgenstern utility.

nothing to do with thinking in aggregates. The neoclassical concept of efficiency—constrained maximization of some target function—does not help much in this case, also not its more refined forms like stochastic dynamic programming (Dixit and Pindyck 1994) or flexible planning (Dinkelbach 1989). Still, prudent individuals or firms have to solve their investment problems subject to the ability to reasonably adapt to unforeseen events. On this much wider problem of “**adaptive efficiency**,” North (1990, p. 80)³ focuses the new institutional economics. Williamson’s **transaction cost economics** aims exactly at the uncertainties of business life that is to be seen as “adaptive, sequential decision problem” (Williamson 1985, p. 79). Open-ended long-term relationships between people or firms become relevant. Opportunistic behaviour of contractual partners after contract conclusion (**ex post opportunism**) must be taken into consideration. Due to the limits of court ordering it demands agreement on contractual safeguards **ex ante**. We are led to the role of custom⁴ and law in economic analysis—generally to the problem of **social order** and its stability.

About the time Ronald Coase’s article on “The Nature of the Firm” appeared in *Economica* (1937), members of the Freiburg School in Germany, with Walter Eucken⁵ as the leader of their economic wing, turned their attention also to the pre-Ricardian *theory of social order*. However, they concentrated their attention on the effect of state made law, while a large group of new institutional economists also deal with the effects of privately made law, viz., the impact of governance structures of contracts between individuals.

2 Custom, Law and the Self-sustainment of Social Order in Classical Economic Theory

David Hume, an important figure among pre-Ricardian economists, deals with the problem of uncertainty with the help of at his time widely used fiction of a state of nature of human society. He writes⁶:

Of all animals, with which this globe is peopled, there is none towards whom nature seems, at first sight, to have exercis’d more cruelty than towards man, . . .

‘Tis by society alone he is able to supply his defects, and raise himself up to equality with his fellow-creatures, . . . By society all his infirmities are compensated; . . . ‘Tis by this additional *force, ability, and security*, that society becomes advantageous [for each individual].

³ North et al. (2009, p. 133). More general, Hayek (1945, p. 524) emphasized: The “economic problem of society is mainly one of adaptation to changes in particular circumstances of time and place.”

⁴ Schlicht (1998).

⁵ Eucken (1952), Richter (2012).

⁶ Hume ([1739/40], 536 f.).

But in order to form society, 'tis requisite not only that it be advantageous, but also that men be sensible of these advantages; and 'tis impossible, in their wild uncultivated state, that by study and reflection alone, they should ever be able to attain this knowledge.

[The fact that] each person loves himself better than any other single person, and his love to others bears the greatest affection to his relations and acquaintance, [what yet is not true for large societies, this]. . . must necessarily produce an opposition of passions, and a consequent opposition of actions; which cannot but be dangerous to the new-establish'd union. (p. 539)

The remedy to this is not derived from nature, “but from *artifice*; . . . [because men] from their early education in society, have become sensible of the infinite advantages that result from [belonging to society],. . .” (p. 540). In effect, this can only be achieved by “a **convention** enter'd into by all the members of the society to bestow stability on the possession of . . . goods, and leave every one in the peaceable enjoyment of what he may acquire by his fortune and industry.” (p. 541, emphasis added) Hume explains this by example of individual ownership:

I observe it will be for my interest to leave another in the possession of his goods, *provided* he will act in the same manner with regard to me. He is sensible of a like interest in the regulation of his conduct. When this common sense of interest is mutually express'd, and is known to both, it produces a suitable resolution and behaviour. And this may properly enough be called a convention or agreement betwixt us, tho' without the interposition of a promise; . . .⁷

This mutual agreement, Hume continues, does not have the characteristics of a promise but is simply performed on the general awareness of common interest among members of society.⁸ This is no natural or innate insight,⁹ “. . . but moral, and founded on justice.”

Taken together Hume explains the well-known **three “fundamental laws of nature”**, viz.,

. . . that of the stability of possession, of its transference by consent, and of the performance of promises (p. 578, italics in the original).

Hume deals with these laws not only from the specific point of view of the viability of a free market economy but under the general aspect of *justice*.

However, reflections on the role of social order were soon pushed into the background by the emergence of “*strong cases*” (Ricardo) in economic theory—and even more so with the emergence of marginal analysis and its emphasis on methodological individualism. As a consequence, economic theory—in its form of “pure” theory—became an easy target for critics like Gustav Schmoller (1900) who simply reduced it to a theory of selfish, their utility maximizing humans. It required, somewhat exaggerated, the evolution of game theory and game theoretic

⁷ Hume (loc. cit., 542; emphasis in the original).

⁸ “. . . that the sense of interest has become common in all our fellows, . . .” (Hume *ibid.*).

⁹ Hayek (1967, p. 111): Our moral beliefs “. . . are neither natural in the sense of innate, nor a deliberate invention of human reason, but an ‘artefact’ . . . that is, a product of cultural evolution. . .”

experiments like the ultimatum game by Werner Güth et al. (1982) to remind micro economists that evolution shaped humans differently from the bleak image of the self-seeking *homo oeconomicus*, and that, in fact, men are quite willing to cooperate with strangers.¹⁰

As for game theory, its language and concepts are of interest for new institutional economics. Still, there is a major problem in that game theory demands very detailed information about what can happen. In other words, there exists no uncertainty or uncertain future, as understood in this paper. Still, we may use its language and concepts at least in a metaphorical sense as is done in the **institutions-as-an-equilibrium-of-a-game aspect** of institutional economics. It has been initiated by Schotter (1981) and continued by Aoki (2001) and Greif (1997). One also finds some of its basic terminology and ideas in the work of Williamson (1985) or North (1990). Take Williamson's **transaction cost approach**. His transaction cost analysis provides a nice illustration for game theoretic style of analysis of contractual agreements. He explains, among others, how to overcome the problem of **incentive incompatibility** in the case of long-term contracts that demand specific investments and argues that if contract specific investments are required, the parties to the contract must negotiate not only on the **price** but also on the **contractual governance** structure of their contract to protect themselves against *ex post* opportunistic behaviour of the other side. Williamson simplifies matters by itemizing a short list of real-world governance structures (with firms and markets as the extremes); their choice is assumed to depend on the frequency of transactions and the characteristics of specific investments—assuming uncertainty to be given “in a sufficient degree to pose an adaptive, sequential decision problem” (Williamson 1985, p. 79). A vast amount of empirical studies supports the propositions of Williamson's transaction cost economics (overview: Shelanski and Klein 1995).

Of particular interest to social scientists is the game-theoretic concept of **Nash Equilibrium**. Strictly understood it describes an *n*-tuple of strategies such that each player's strategy is an optimal response to the other players' strategies (Nash 1951). To deviate from it would not be rational for anyone. The concept of Nash Equilibrium underlies in above-mentioned institutions-as-an-equilibrium-of-a-game view and defines an institution as a self-sustaining system of shared beliefs of all members of society.¹¹ As was mentioned, it is understood in this paper only in a metaphorical sense. The problem with Nash equilibria is that, as a rule, non-cooperative games have many such Equilibria not all of which are particular to be sought. Therefore, Schelling (1960) suggests assuming that players tacitly agree on choosing some salient equilibrium, like the precedence. In any case, Nash Equilibria describe durable social states that no single actor would voluntarily give

¹⁰ Henrich et al. (2010, p. 1480).

¹¹ “... as to a salient way in which the game is repeatedly played.” Aoki (2001, p. 10)—e.g., the prisoner dilemma game. The approach is especially popular among political scientists such as Calvert (1995) or economic historians like Greif (1997).

up out of concern to change to the worse. They help understanding the durability of social equilibria—be they good or bad ones.

Summarizing so far Strictly calculated long-term planning is only of limited value in the world with uncertain expectations in the sense of this paper. What matters is the ability of social systems to adapt to unforeseen events, which requires the existence or evolution of self-sustaining rules of behaviour. Customs and legal rules as part of an overarching social order may be understood in this sense. Pre-Ricardian classical economics starts from the three fundamental laws of nature. Economists like Eucken (1952, p. 280)—one of the founders of German *Ordnungspolitik*—by no means a free-marketeer—clings to the fundamental laws of nature. He thus is, for example, against any weakening of the principle of the performance of promises by legal the restriction of liability.

3 Restrictions of Liability

Legal restriction of liability is an instrument that allows a broad diversification of **uninsurable** economic investment risks. It can make highly uncertain investments attractive to individual investors.¹² However, restrictions of liability interrupt the chain of personal liabilities and thus tear a hole in the chain of the social control mechanism of the capitalist economy. Obviously this hole must be closed, e.g., by the legal establishment of boards of directors, public regulation, bankruptcy law, law of obligations, etc. “**Corporate governance**” is to be seen in this light (see Zingales 1998). Unfortunately, interventions into the control mechanism of the economy tend to create wrong incentives as did, e.g., the balance sheet oriented banking regulation that tempted banks to establish Special Purpose Vehicles, which enabled them to hide their failure rate of outstanding loans.¹³

4 Boundaries of Market Control

Not only the **costs of using the market** (transaction costs) hamper the coordination of individual economic plans by the market and can be used to explain the nature of the firm as did Coase (1937). Instead, the nature of the firm can also be traced back to the **uncertainties of the future** in the sense of this paper, that is to uncertainties that cannot even be bought off against all wealth of the world. As a consequence of

¹² In the same way works bankruptcy law: “The law in effect requires creditors to assume the risks of the debtor, it does not leave him free to negotiate a risk-free investment, and it provides for an inalienable limitation of risks to the debtor. The law then steps in and forces a risk shifting not created in the market place.” (Arrow 1970, pp. 139–140).

¹³ Cf. Richter and Furubotn (2010, p. 265).

uncertainty, there are **not many futures markets for goods**.¹⁴ Certainly both, uncertainties of what the future will bring *and* costs of using the market help explain why markets are interspersed by “non-markets” like firms. In an uncertain world, the management of firms—the “**entrepreneur**”—takes over the position of forward traders. Managers have the advantage over forward traders in that they are permitted by law to influence their sales opportunities by advertising, quality variation, reorganizing their sales chain etc. Different from gamblers, entrepreneurs are not only allowed to *corriger la fortune*¹⁵ but even expected to do that.¹⁶ The same applies to managers of financial intermediaries as banks, insurance companies, stock exchanges, etc.—organizations that exist only in a world of uncertain expectations.¹⁷ In the ideal neoclassical model of Arrow and Debreu with perfect foresight and zero transaction costs is no room at all for financial intermediaries or financial markets.¹⁸ But exactly this is the model world economists assumed for a long time as a basis, i.e., for their provisions on competition policy. In fact, financial markets and financial intermediaries attracted rather late the interest of professional economists (basically not before the second half of the last century). Still, the neoclassical style of reasoning appears again in the theory of the banking firm in the form of mathematical contract theory—again a form of constrained optimization of some target function with the assumption of perfect information having returned through the back door. Competition policy, for example, seems to be left to banking regulators (like in case of the European Libor scandal of 2013 that was fined by the EU). To a degree, the “too-big-to-fail” problem may bear the brunt—a problem that could be answered by suitable bankruptcy legislation.¹⁹

5 Hybrid Forms

Not only firms replace missing futures markets, but also mixtures of markets and firms—“hybrid forms” as Williamson calls them.²⁰ Meant are those long-term contractual relationships like franchises, collective agreements, log-term supply agreements and more besides (see Calamari and Perillo 1987, p. 13; Macaulay

¹⁴ Organized futures markets are, e.g., the London Metal Exchange, the New York Board of Trade and the New York Mercantile Exchange.

¹⁵ *Riccaut de la Marliniere* in Lessing’s play “*Minna von Barnhelm*”.

¹⁶ The *entrepreneur-coordinator* does not compete with traders on commodity future markets but with entrepreneur-coordinators of other firms (see Richter 2010, p. 460).

¹⁷ Freixas and Rochet (2008, p. 10).

¹⁸ All exchange contracts are concluded today spot and forward, i.e., for now and the time to come; thereafter all are met to the letter.

¹⁹ See Scott and Taylor (2013) in US-Edition of *The Wall Street Journal*, May 16, 2013, p. A15.

²⁰ Williamson (1996, 104 f.), for a general discussion see Ménard (2004).

1996, 110 ff.). Williamson (1985) describes such contracts also as **relational contracts** (Macneil 1974), other authors prefer the more specific term “**incomplete contracts**” (Hart 1987, p. 752). Relational contracts are long-term agreements that take into account the fact of incomplete foresight or uncertainty and establish contractual provisions to accommodate unforeseen contingencies. They are characterized by

“relatively deep and extensive communication by a variety of modes” between contracting parties (Macneil 1974, p. 752).

The parties agree to deal with problems as they arise by following an ex-ante agreed upon procedure (see Richter and Furubotn 2010, 156 ff.). Since such contracts usually require specific investments, those parties with smaller specific investments may be tempted to dare an **ex-post “hold-up”** on its counterparty by threatening to breach their contract if he/she does not give him/her a greater share of their gain than ex-ante agreed to. Williamson calls such behaviour “**ex-post opportunism**”. Farsighted parties will agree ex-ante on an appropriate **governance structure** of their contract to protect themselves against possible ex-post opportunism of their counterparty. That is basically the starting point of Williamson’s **transaction cost economics**.²¹

Our reflections lead us into the vast network of social relationships that are hard to understand from a purely economic or legal point of view. Helpful in this respect is the sociological concept of **embeddedness** by Granovetter (1992, p. 53).²²

6 Political Transactions

We may continue softening neoclassical economics by also considering political transactions. They are aimed at the change of national or international institutional frameworks with states (like firms) being seen as individual actors. Wars aside, international contracts play a major role. Since there is no superior world authority that guarantees or enforces international agreements, such contracts have to be self-enforcing (see Trachtman 2008 or Guzman 2008). Because the future is uncertain, long-term international contracts must be incomplete—which makes self-enforcement difficult. The interposition of an international organisation does help to a degree though problems remain. A brief look at the European Monetary Union might illustrate our point.

²¹ Williamson’s transaction cost economics is supported by a large number of empirical studies (overview: Shelanski and Klein 1995).

²² In the sense that “economic action takes place within the networks of social relations that make up the social structure.” DiMaggio (1990) adds “economic action is embedded not only in social structure but also in culture.”

7 European Monetary Union (EMU)

International law enables governments to adapt their nation states to unforeseen events by peaceful means, which requires that they contain contractual provisions so that unforeseen contingencies can be accommodated—otherwise contractual parties must accept ex post that contracts are occasionally broken or its principles betrayed as in case of the European Monetary Union (Maastricht Agreement)

- the betrayal of the “No-Bail-Clause” of the agreement (Art. 103 EU Agreement) by the establishment of the European Stability Mechanism (ESM) in 2012;
- the unilateral extension of the tasks of the European Central Bank (Art 105 EU Agreement) by the declaration of the President of the ECB Draghi to do “whatever it takes to save the euro” (July 2012);²³
- the continuous violations of the Maastricht Criteria on sound fiscal policy according to which government debt should be limited to 60 % of GDP and annual deficits be no greater than 3 % of GDP.²⁴

As a matter of fact, due to asymmetric “specific investments” of contractual parties the Maastricht Treaty contains the incentive to ex post opportunism of states whose specific investments are low or negative. But as pointed out by **Milton Friedman (1953)**: Absolutely fixed exchange rates between states on paper standards are only realizable if the states in question perfectly coordinate their monetary and fiscal policies, i.e., continuously realize the same inflation and budget deficit rates. However:

Why should a country do so when the failure of any one country to co-operate or to behave “properly” would destroy the whole structure and permit it to transmit its difficulties to its neighbours? (Friedman 1953, p. 199)

EMU guarantees only the consistency of monetary policy, not of budget policy. Legal provisions like the Maastricht-Criteria are well meant but provide no serious safeguards against ex-post opportunism of contractual partners. Furthermore, the question arises (and is raised by Friedman) whether it would be really desirable

...that such far-reaching powers be surrendered to any authority other than an effective federal government democratically elected and responsible to the electorate (ibid.).

However, whether and to what extent steps towards a United States of Europe would really create a self-sustaining institution is difficult to tell. There are reasons for doubt (see Richter 2013, 144 ff.; Mayer 2013). In any case, the members of EMU consist of a group of states whose original national currencies were of rather

²³ Draghi’s statement contradicts the principle of the Maastricht Treaty that each country alone is responsible for its government debts. On this point see the opinion of the German Federal Constitutional Court of 7. February 2014 regarding the Outright Monetary Transactions (OMT) program of the European Central Bank.

²⁴ According to Sinn, the 3 % deficit criterion of the Stability and Growth Pact has been unpunished broken in 88 cases (Sinn 2012, p. 144).

different qualities (in transaction cost terminology: whose “specific investments” were quite different). They find themselves locked into an international contract that offers states, whose national currencies happened to be comparatively weak, an **incentive to breach of contract ex post**, in particular since the agreed upon penalties are not credible. In other words, EMU is based on an **incentive incompatible contract**. Its contract does not generate stable expectations among agents; to last, it demands endlessly repeating internationally agreed upon government interventions.²⁵

As for the present debate on the euro crisis several peculiarities are noticeable, among others:

1. The well known **problem of incentive incompatibility** of an international agreement on absolutely fixed exchange rates remains unmentioned,
2. The repeated comparisons between the Euro-Zone and the USA or Switzerland are obviously skewed:
 - the European Monetary Union (EMU) is **no federal state** as USA and Switzerland are but
 - part of the European Union (EU) and insofar part of a **transfer union**;
 - transfer unions consist of two types of member states: **net-contributors** and **net-recipients**. To which of the two types euro users belong is not without influence on their expectations. Citizens of net-recipients will be inclined to expect transfers from net-contributors to help them adapting their productivity—similar to the continuing payments of West to East Germany after its reunification in 1990.
 - Finally, the USA and Switzerland are the result of national independence movements, not of alleged international pressure.²⁶

²⁵ See Aoki (2001, p. 42): The legislator cannot create by a stroke of the pen whatever order they wish to have. “The legislator’s law must be able to create stable expectations among the agents ...”.

²⁶ According to Mayer (2013, p. 37), Mitterand demanded from Genscher to agree to the start of serious negotiations on a common European currency, otherwise Germany would risk the formation of a Three Partite Alliance between France, Greater Britain and Russia, which would isolate Germany as before World War I.—It is hard to believe that Genscher really understood that as a credible threat. The years around 1914 are thoroughly gone. The alleged threat of Mitterand sounds more like an apology from Genscher or other German officials towards a deutschmark loving German public—whereas numerous German politicians and economists of that period of time were much in favour of an European currency union (see Richter 1999, p. 129).

8 Qualifications

Obviously, the future is no “black hole.” It is not completely unknown. In this paper, we simply limited ourselves for the purpose of clarity to the opposite of the neoclassical assumption of perfect foresight. In real life, our expectations are located between both extremes. A series of uncertainties are risks in the quantifiable sense of the term. Their probabilities of occurrence are sufficiently known to write insurance contracts such as on health, death, fire, theft, traffic accidents, etc. However, there are also uncertainties against which one may place at most a bet but cannot buy insurance. Thus, in a free market economy, entrepreneurs cannot insure themselves against losing out against (being dispossessed by) their competitors. But there are always gifted entrepreneurs who successfully see things coming and can make much money with it.²⁷ Frank Knight (1921, Ch. VIII) defended with that entrepreneurial income. He writes

... it is fundamental to the **entrepreneur system** that it tends to promote better management in addition to consolidating risks and throwing them into the hands of those most disposed to assume them (Knight 1921, p. 260).

The term “entrepreneur” reminds one of Schumpeter’s *Theory of economic development* (1912/1933) which, according to Schumpeter, is the consequence of a series of ingenious “enforcement of new factor combinations” carried out by single personalities, viz., the “entrepreneurs” (1933, p. 100). That must not necessarily be true, certainly not in case of the much referred to Silicon Valley during its initial phase. It was started by the inventive genius of eight engineers and physicists as well as by Sherman Fairchild, the first venture capitalist of our time who gave the eight inventors a loan to establish a firm, the Fairchild Semiconductor Corporation. It branched out to what was dubbed “Silicon Valley”.

What Schumpeter did not mention (or not think of) is the significance of social networks and the legal-cultural background for economic development. In case of the Silicon Valley example:

- (1) the low social risk of economic failures,²⁸
- (2) the spontaneous development of a dense **social network** of formal and informal relationships between actors—in the opinion of many sociologists the most important reason for the enormous successful undertakings in Silicon Valley.²⁹

²⁷ Biological heredity seems to play also a role in this case (see Shane 2010, 166 ff.).

²⁸ Baron and Hannan (2001, p. 37) stress the role social risk plays: “Suppose...the salient risks to entrepreneurs are primarily *social*: fear of the reputational consequences of failing in their ventures. What seems to be distinctive about Silicon Valley in this respect is the almost complete absence of any social stigma attached to failure. Indeed, it has been sometimes suggested that the next best outcome to an audacious success is an audacious failure (or, perhaps, a well-managed and dignified failure). More generally we suspect that the traditional sources of status in a community affect the perceived reputational risks associated with entrepreneurship. . . .”

²⁹ Castilla et al. (2000, p. 218) “The most crucial aspect of Silicon Valley is its networks.”

Regarding (1.) should be mentioned that bankruptcy is no shame—or as well as no shame. In fact, a bold failure is occasionally as highly regarded as a bold success (Baron and Hannan 2001, p. 37). Regarding (2.) evolved, in fact, a dense social network in Silicon Valley (see Castilla et al. 2000, p. 229). It promoted the development of trust and eased the spreading of knowledge (Powell 1990, 324 f.).³⁰ The enormous flexibility of the local labour market also helped the evolution of the Silicon Valley network.

9 Final Remarks

As shown in this paper, economic theory stops looking like hard science if uncertainty is taken into account. That does not exclude mathematical analysis but demands openness towards other analytic methods like those of law, sociology, and political science. Deidre McCloskey (1983) goes perhaps too far with her claim, the methodology economists would actually employ be very different from that of the sciences, namely rhetorically, which includes the **method of civilized conversation**:

Don't lie; pay attention; don't sneer; cooperate; don't shout; let other people talk; be open-minded; explain yourself when asked; don't resort to violence or conspiracy in aid of your ideas. (McCloskey 1988, p. 251)

More flattering for economists sounds the definition of economic theory by John Maynard Keynes:

The Theory of Economics does not furnish a body of settled conclusions immediately applicable to policy. It is a method rather than a doctrine, an apparatus of the mind, a technique of thinking, which helps its possessor to draw correct conclusions. (Keynes 1922, pp. v–vi).

Acting economically means acting with foresight. Against the uncertainties of the future do help custom, law—and compliance with the compatibility of interests of contractual partners. Because surprises happen all the time, it matters greatly that contractual parties choose a sufficiently adaptable governance structure. Which of the governance structures listed by Williamson (1985) is to be applied will be a matter of judgement of the contractual parties and must be guessed, is a matter of trial and error and can hardly be scientifically calculated. In any case, prudent

³⁰ Powell concludes that “certain kinds of institutional contexts, that is, particular combinations of legal, political, and economic factors, are especially conducive to network arrangements . . .” (Powell 1990, p. 326). They involve a distinctive combination of factors: “skilled labor, some degree of employment security, salaries rather than piece rates, some externally-provided mechanisms for job training, relative equity among the participants, a legal system with relaxed antitrust standards, and national policies that promote research and development and encourage linkages between centers of higher learning and industry—which seldom exist in sufficient measure without a political and legal infrastructure to sustain them.” (1990, 326 f.)

businessmen and politicians will aim at contractual governance structures that tend to be self-enforcing (self-sustaining) and listen to Popper who warns to "... undertake reforms of a complexity and scope which make it impossible for him to disentangle causes and effects, and to know what he is really doing." (Popper 1957, p. 67).

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Essays on New Institutional Economics

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2015, XIV, 205 p. 2 illus., Hardcover

ISBN: 978-3-319-14153-4