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Expectation Formation in Pre-modern Times



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Expectation Formation in Pre-modern Times*

Angela Huang / Mark Spoerer⁺

Abstract: The pre-modern economy had some particularities compared to today. For one, its most important sector, agriculture, was much more vulnerable to weather shocks. Secondly, the flow of goods and information was much more cumbersome and slower, and the uncertainties associated with the mobility of people, goods and money were manifold. This led to comparatively high risks and generally higher transaction costs compared to the intrinsic value of the goods. Recent research has shown that the economic behavior of many actors in the pre-modern era was not characterized by the “alterity” postulated by older research. Using examples from agriculture, (long-distance) trade and the financial system, we show that many economic actors used their experiences to form sensible expectations about the future and acted according to a sensible purpose-means ratio, just as they do today. In commerce in particular, mechanisms to reduce uncertainty took a similar form over large parts of Europe, supporting the mobility of people, goods and money. However, we are reluctant to postulate that their economic behavior may have been informed by rational expectations in the sense of modern economic theory because this concept requires that (incalculable) uncertainty might be transformed into (calculable) risks. Such an understanding of “rationality” as the absence of uncertainty does not appreciate the degree to which pre-modern economic activity remained incalculable due not only to changing market situations but also weather shocks, cattle diseases, plagues, shipwreck, wars, uprisings and other contingencies.

Keywords: Economic expectations, experience, risk, uncertainty, pre-modern agriculture, pre-modern trade, pre-modern finance

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Expectation Formation in Pre-modern times

1. Introduction

The study of economic expectation formation is a modern endeavour. Dealing with economic systems through economic theory became established in the late 18th and 19th centuries, whereas Muth's rational expectation theory dates to 1961. If we look back to pre-modern times, the question arises to what extent we can apply such theories to past societies. Specifically in regard to rational expectations theory: If "rational expectations" are defined as model-consistent expectations, the question arises whether pre-modern economic actors 1) at least implicitly formed economic models for their individual action and 2) acted in a model-consistent manner given the availability of similar information. Are there, then, typical 'rational' patterns of action for certain scenarios that we can expect from pre-modern economic actors? Can we observe rational expectation formation in pre-modern societies?

Before we turn to an analysis of expectation formation in pre-modern times, it is important to point out some particularities of the (study of the) pre-modern economy compared to today. Probably the most important limitation to our understanding of pre-modern expectation formation is that our insights into pre-modern action preferences are always contingent and incomplete. Thus, studying expectation formation of pre-modern economic actors is a methodological challenge (Bruch, Kypta and Skambraks 2019). Because of the lack of (systematic) records, the functioning of the economy in the pre-modern period and especially in the Middle Ages can only be reconstructed to a limited extent (Huning and Wahl 2020). Especially the almost complete lack of private records means that we can hardly gain comprehensive insights into the motives, calculations, and 'rationality(ies)' of pre-modern economic actors. This implies that statements about the expectation formation of economic actors are indirectly derived and generalized from the source material and are thus mere approximations.

Nevertheless, we think that research of the past decades provides us with sufficient examples to hypothesize that many pre-modern economic agents performed in a way that we can term as "rational" in the sense of model-consistent behavior, within their substantially different technological and institutional framework. The broad geographical framework of our essay will be Europe, the temporal one the period from the late Middle Ages, when urbanization created the basis for the emergence of a European market economy, to the end

of the early modern period when technological change fundamentally altered transportation and communication and thus the economic sphere (ca. 1300–1800). Of course, this essay cannot discuss expectation formation in space and time comprehensively, not least because of uneven state of research. Our focus is on economic everyday practices of peasants, traders, and urban policy makers and on the institutional framework that they created and in which they acted. We are interested in longer-term developments of the expectation model(s) within which economic agents performed. Spectacular financial crises of the pre-modern era such as the Tulip Mania (1637) or the South Sea and Mississippi Bubbles (both 1720) challenge “rational behavior” due to their epistemic instability (Deringer 2015). Such special cases of rational expectation formation are therefore analyzed in another chapter of this handbook.

In the following, we will first explore experience and expectation formation in agriculture as the largest sector in the pre-modern economy. A second section addresses mechanisms for reducing risks in the commercial sector and especially in long-distance trade. Thirdly, we briefly address provision strategies especially of commercialized urban societies that had access to the means to develop such strategies.

The predominance of agriculture is a hallmark of the pre-modern economy. The agricultural economy of the pre-modern era was shaped to a much greater extent than is the case today by natural and climatic conditions, not least the (non-)availability of mineral resources. These production conditions, which could not be influenced by man, led to different comparative advantages and disadvantages in the production of agricultural goods, manufactured goods, and services. The initial conditions for 1) production beyond one's own needs and 2) trade were at least structurally in place since at least the Neolithic Revolution, i.e., when people began farming and raising livestock, settling down and building up stockpiles more than 10,000 years ago.

Whereas the importance of agriculture for past societies goes far beyond medieval times, a stark difference lies in demographic and urban development. The period examined here begins and ends with a (relatively) rapid increase in population (Persson 2010, 67). The medieval demographic growth brought with it a dynamic urban and market development (Clark 2009; Boone 2013; Blockmans 2012; Blondé et al. 2013; Bosker, Buringh and Van Zanden 2008, 33–34). This wave of urbanization from the 10th to the 13th century led to economic specialization (labor division) and in consequence to local production in excess of one's own needs and to an expansion of trade. Although the plague waves from the mid-14th

century onward can be considered a major crisis in Europe, they did contribute to a commercialization of society. The declining and until the late 15th century stagnating population led to the desolation of entire landscapes and a severe disruption of trade; the other side of the coin, however, was a longer-term rise in real wages especially of the urban middle class (Allen 2001, 413, 427–430, 434–435; Pindl 2019, 247, graph 7.1; Persson 2010, 68). Because of overall growing population and specialization together with a growing wealth of urban centers, both peasants and artisans could expect to being able to profitably exchange surplus and crafts production through trade for goods that could not have been produced in one's own region or could only have been produced at much higher costs.

In consequence, the socioeconomic fabric of Europe changed permanently, promoting a broader participation in the market economy (Bolton 1996). Economic institutions in this period supporting an expanding market economy were mainly shaped by merchant organizations and urban governments (with considerable overlaps between both). This 'age of towns', however, ended in the 17th century, being not least a political-economic consequence of the Reformation and the Thirty Years' War (1618–1648) that exerted another shock to the economic development of at least Central Europe (Federico, Schulze and Volckart 2021). At the end of the far-reaching conflict, many towns were over-indebted due to high defense expenditures and thus inhibited in their market and infrastructure development. Economic crisis and sovereign claims in many places put an end to urban independence and ushered in a period of statehood. By the late 17th century, thus, the shaping of the economic framework was largely in the hands of the state.

It is important to note the fundamental difference between the pre-modern and the 'modern' economy, the former characterized by much higher relative transaction costs compared to the intrinsic value of goods. Time was a much more crucial factor before the introduction of steamships, railroads, telegraphs and telephones. Transportation was very costly and slow due to the simple means of transport (ships or carts pulled by farm animals). Especially the limitations in the access to information (slowness, availability, reliability) increased risk and hindered the formation of reliable expectations. For one, in the premodern world information was to a large part stored and transmitted orally. Peasants had almost no means of collecting and systematically exchanging information; merchants mainly relied on their limited private information systems. For most of the period, inter-urban information systems were the most efficient yet still expensive way to transmit information reliably. In any

case, information travelled slowly. If a long-distance trader heard from his partners or his network in February that there was a threat of food shortages in a particular region, by the time the ship he sent out in response arrived in April, the shortages might have long since been remedied by supplies from competitors. Local changes in market regulations that had been enacted in the meantime could also seriously upset his profit calculations. Other than changes in prices, supply and demand, further factors that increased risks were effects of weather conditions on trade, security of trade routes due to robbery or political conflicts, and not least frequent change in rulers affecting the legal foundation of exchange. In extreme cases, pre-modern long-distance trade meant a large share of non-calculable uncertainties. In the quest for East Asian spices like pepper, cinnamon and cloves, Vasco da Gama (1497–1499) lost two vessels out of four, and Magellan (1519–1522) four of five (and his life). Those who returned did so with spices and their sale made the survivors rich, including the ordinary sailors – seemingly justifying high existential risks.

In other words, pre-modern economic actors faced much more (fundamental) uncertainty in the sense of Knight (1921, 197–232), both economically and existentially speaking. In the iconography of the 15th century, the image of the goddess Fortuna, balancing on a ball, stands for instability and the power of chance: Contemporaries were acutely aware that it was to some degree up to luck whether business was crowned with success. The word risk (*risico, risco*) in 12th century sources on maritime trade means “to dare something” or “to take a chance” (Asmussen 2016, 30–31; Scheller 2016, 189–190). As rational expectation formation hinges on the best use of information in assessing future outcomes, this meant that risks were hard to assess, and expectation formation had a large margin of uncertainty. Economic agents accepted such high risks and a share of incalculable uncertainties – however, in anticipation of extreme profit margins. The spice trade example might illustrate that there are limitations in the pre-modern application of modern expectation concepts which necessarily assume that agents seek to transform (non-calculable) uncertainty into (calculable) risk. We think that this extreme amount of uncertainty in pre-modern times means that modern rationality concepts are hard to apply, especially given the aforementioned limitations in the availability and quality of data.

Another important precondition to dealing with expectation formation in the premodern period concerns our assumptions about the rationality of past societies. Was past behavior fundamentally different from ours? A number of scholars have made such a case for

describing medieval or early modern actors by concepts of supposed “alterity” (Tocqueville 1856, 153–171; for the Middle Ages Rösener 1992, 122–123; Le Goff 2010). Alterity essentially means a fundamental difference between the medieval world and our own. For example, medieval actors might have responded to hazards by accepting their suffering according to God’s will instead of developing strategies to protect themselves better (Scheller 2016, 186; Collet 2020, 80). This means that our current concepts of economic behavior in general, and rational behavior in particular, cannot be transferred to the pre-modern era or at least the Middle Ages. Following this view does not mean that pre-modern actors did not act rationally, meaning model-consistent within their own worldview. However, in order for us to be able to assess their behavior as reasonable or even rational in contemporary terms, we must first learn to understand their prevailing model.

With these caveats in mind, our following discussion explores examples that we have good reasons to assume that many pre-modern actors coped with the risks and factored in a higher risk premium and thus higher expected profits. As will be demonstrated, we can observe various central mechanisms of risk hedging that give us insights into which economic agents sought to reduce risks individually or collectively. Looking back thus far is not only an exercise in the application of expectation formation theory; an examination of the Middle Ages and the early modern period is suited to shed light on the beginnings and foundations of modern mechanisms of economic expectation formation. Pre-modern economic agents – from peasant to merchant – were able and willing to create and improve risk management strategies and frameworks over centuries of dynamic economic development in Europe – even if these do not always conform to our theoretical expectations. Their economic behavior followed a sensible purpose-means ratio which one might name “rational” in an everyday sense of the word.

2. Experience and Expectation Formation in Agriculture

By far the largest share of pre-modern value-added was provided by arable farming and livestock breeding (Malanima 2009, 95–96). In arable farming in particular, the production cycle lasted several months, often a year, from ploughing to sowing to harvest. Whether the harvest would be good depended not only on careful own work but also on the weather and thus a completely exogenous factor. Farmers' rules reflected the experience of generations, and

following them may have reduced the risk, but a storm with heavy hail could still destroy the grain until just before the harvest.

Market-orientation of pre-modern peasants was limited as were their incentives to focus on an increasing surplus production, not least due to property rights on agricultural land. In a seminal paper, McCloskey (1976) pointed out that the historically evolved fragmentation of agricultural plots, which appears inefficient at first glance, served to spread risk, especially against hail, and that it therefore made sense not to readjust the plots. Relying on McCloskey's data, Kimball (1988) used basic game-theoretic reasoning to show that in the absence of insurance, simple informal institutions could also have provided viable and profitable risk-sharing, which Richardson (2005) has confirmed empirically. He showed that late medieval and early modern peasants in England did create informal institutions in the form of fraternities and poor laws that allowed them to support members in need through no fault of their own. Since peasants were risk-averse – they simply did not want to starve – these institutions created positive incentives to contribute to their functioning. In other words, because everyone ran some risk of being dependent on the support of others at some point themselves, they had an incentive to participate and pool risks.

In a similar way, De Keyser (2018) has shown for the late medieval and early modern Campine (today part of northern Belgium) that the “tragedy of the commons” – the overexploitation of commons because of the lack of exclusive property rights – could be (and indeed was) avoided by sensible common pool institutions set up by the villagers that worked successfully for centuries. The long-term sustainability of the eco-system was maintained, the benefits from the commons were distributed equitably, and privatization attempts as well as enclosures were fended off. In this context, Volckart (2004) has emphasized that the village community functioned like a cartel, generating monopoly rents that benefited farmers by restricting competition among themselves and creating incentives for members to conform through appropriately designed positive and negative sanctions. The long-term disadvantage, however, was that these institutions, which were structurally conservative and hindered competition, were hostile to innovation.

Within their socio-economic setting, peasants did deal with common risks with – mostly informal – instruments they could implement themselves. Only the introduction of hail insurance – in Germany at the end of the 18th century, and shortly thereafter in France and the UK (Baker 2012, 36; Oberholzner 2015, 175–176; Randalls and Kneale 2021, 744–745) –

created formal institutional security and enabled farmers to pool risks even more and to be prepared for land readjustments.

However, regardless of the question of the distribution of benefits and risks, the specific risk of a failed harvest remained. According to Persson (1999, 67–68), there are two alternative ways to insure oneself against bad harvests, trade (inter-spatial arbitrage) and storage (inter-temporal arbitrage). The former strategy presupposes continuous access to markets, which was not the case for many peasants, especially in remote areas. And even if peasants did have access to markets, they had to withhold grain for, first, their own consumption over the next twelve months and, second, for sowing (intra-year storage). Third, given the uncertainty regarding the next harvest, they had to think about building up reserves (inter-year storage or carry-over). Thus, storage was a vital issue for pre-modern peasants (Fenoaltea, 1976).

What enabled or prevented farmers from building up and expanding their stocks, on the one hand to reduce their existential risk and on the other hand to increase their prosperity through market participation? The sizing of storage quantities required experience and was itself not free of risks, including an estimate of expected losses from moisture or hungry rodents. McCloskey and Nash (1984) have furthermore estimated indirectly, based on price observations for 13th and 14th century England, that storage must have been extremely expensive in the Middle Ages and rarely extended for more than a year. This approach implicitly presupposes not only that credit markets were efficient, but also that they were accessible to peasants in the first place. This was certainly not the case at the time (Komlos and Landes 1991; Bauernfeind, Reutter and Woitek 2001). Thus, McCloskey and Nash may have overestimated the storage costs. However, interest rates declined during the early modern period and thus storage became cheaper. This encouraged peasants to increase their reserves, and this held all the more so for large agricultural production units (manors, monasteries) that did not have to bother about sheer subsistence.

Among the large landowners were monasteries and hospitals, whose property was often expanded through donations. Although their agricultural production served primarily to cover their own consumption needs, there were usually surpluses that could be sold on the market. The ownership of the Saint Catherine's hospital in Regensburg was divided equally between the city and the church. Especially after Regensburg became Protestant, these two shareholders did not always get along well. The hospital's administration therefore felt

compelled to document its administrative actions in comparative detail, which is a stroke of luck from a historiographical perspective. Pindl (2018) has examined these protocols for the period around the famine crises of the early 1770s. She concludes that, regardless of the market price, self-sufficiency was always the top priority for the hospital management. Moreover, the hospital had the problem to decide whether to dispose of its surpluses early in the market or to store them first in the granary (with the risk of spoilage). The correspondence between the acting agents and their principals shows that the former behaved in a modern sense economically-pragmatically, i.e., “rationally”, and the latter, which included church superiors, apparently expected precisely this kind of decision-making. The perception of the concrete market situation coagulated into a long-term experience that guided the assessment of the expected gains and risks of alternative courses of action. All parties involved behaved consistently in a long-term effective model that is rational in a modern sense.

Similar results for intra- and inter-year storage are reported by Scholten (2019), who analyzed two noble manorial estates in the Rhineland (northwestern Germany) between the mid-17th and the mid-19th centuries. She finds that rye usually was carried over, but that selling it used to be quite unsystematic. It only became a rule around the mid-18th century. Quite surprisingly, the most important customer group came from the manor’s surroundings, only then followed by urban merchants. Brunt and Cannon (2022) also analyze direct archival evidence on inter-year storage of large British farms from the mid-18th to the mid-19th century. These farms’ carry-over was quite small and thus are consistent with the conjectures McCloskey and Nash derived from their approach for the 13th and 14th centuries. In other words, the opportunity costs of storage were comparably high.

The quintessence of the research on the topic of storage is that for the economic actors of the pre-modern era, the postulate of alleged “alterity” should not be generalized. Given the threat of bad harvests, misery, and even famine, many economic actors behaved in a sensible way. This was not necessarily “rational” in the sense of rational expectation models that are bound to exclude uncertainty. Bauernfeind, Reutter and Woitek (2001) analyzed the observed carry-over policy of Nuremberg’s granary from 1490 to 1855 and found that it was not compatible to any of today’s models of rational investment behavior. One may accuse the granary managers *ex post* of having acted suboptimally, but one might also argue that they faced not only risks, but also many uncertainties, so that the application of models valid today becomes pointless.

To summarize this section, even supposedly backward and conservative peasants with irregular market access transformed their economic experiences into expectations that, in turn, led to observable economic actions that we can interpret as an expression of sensible purpose-means ratios. This holds for (many) peasants, and it holds all the more so for traders and merchants as we argue in the following section.

3. Dealing with Uncertainty in Pre-modern Commerce

The design of certain institutional arrangements in the domains of agricultural risk diversification, risk distribution in long-distance trade and the inclusion of risk premia in financial products suggests that by the High Middle Ages, people were already able and willing to recognize risks, to counter them and to price them in. The institutional developments shaping the pre-modern period, which are presented below, were initiated in the period of a so-called Commercial Revolution (10th–13th century) (Lopez 1976; Spufford 2009), characterized by urbanization, specialization, and growing trade, above all in long-distance trade activities. With the Commercial Revolution, the sedentary merchant emerged, who no longer travelled with his goods himself. Information, goods and money moved in a network of trading partnerships, and from the 16th century also under the umbrella of large trading companies – north of the Alps, the Nuremberg and Augsburg companies of the Fugger and Welser families and the Danzig Loitz are well-known examples. Thus, now time and space separated the merchant from his goods while the volume of exchange continuously increased over the centuries under discussion here. The risks and uncertainties in economic exchange within this period were addressed by various institutional arrangements that reduced them both in general and specific to certain areas of trade.

Trust is considered a fundamental principle of expectation formation in the pre-modern commercial exchange. In a (from today's perspective) less formalized and decentralized social order – a pre-state era – with close-knit social networks trust served as an effective means to decisively reduce enforcement costs and solve the agency problem, in short a high incentive to cheat on one's business partner (Ewert and Selzer 2016, 40–45; Ewert and Selzer 2016, 51; Skambraks 2019; Wubs-Mrozewicz 2020, 94–97). Wubs-Mrozewicz has stressed that trust was considered useful by premodern merchants as they lived in a world “in which there was more uncertainty than certainty” and trust was “a strategy for reducing complexity and risk” (2020, 92).

However, this trust system is not based on (unconditional) interpersonal trust in other actors, but in a reputation system (Greif 1989, 866–882) in a world of dense social networks. The reputation system makes economic actors trustworthy (or their behavior expectable/predictable), since in a system of social control they have little incentive to fail to honor contracts. This reduces the risks in the search for business partners and regarding contract compliance. Trust and reputation are at the heart of a model of pre-modern expectation formation amongst merchants – the communication and information system provided by social networks leads to the rational expectation that (despite the absence or limited availability of coercive means) agreements will be honored; because reputation networks make it unlikely that opportunistic behavior will go unpunished (Greif 2006, 58–90; Ewert and Selzer 2016, 49–50). Through social control, economic agents could reduce their uncertainty in trade over longer distances without the protection of coercive state power. At a time when there were few if any broadly effective public institutions to secure economic activity, the informal hedging system created by merchants offered a cost-effective way to minimize risks.

Beyond safeguarding against breaches of contract, informal institutions also operated in other areas of trade practice. Reciprocal trade in particular underlines the effectiveness of such an economic system based on informal norms. Namely within the late-medieval Hanse network trade, merchants sent goods to each other beyond (or parallel to) their contractual obligation and sold these goods under their own name for the benefit of the trading partner (Cordes 1998; Selzer and Ewert 2001, 141–144; Ewert and Selzer 2016, 31–57). This network system not only of trade but also of social capital provided access to information on the trustworthiness of economic actors. Economic agents used the market knowledge of other economic actors at low cost. The social context is thus a central factor for the functioning of pre-modern economic exchange and trust in others a rational way to turn uncertainty in risk – also given that there were few alternatives, especially in the beginnings of the Commercial Revolution.

However, very few case studies have analyzed the specific effects of trust on the system of exchange. Recently, studies have highlighted that at least from the later Middle Ages on next to interpersonal trust, institutional trust supported pre-modern exchange. Public institutions, namely urban authorities as service providers of letters of attorney and conflict management institutions, allow economic agents to deal with risk of default of contract

(Wubs-Mrozewicz 2015; Kypta 2020; Weber 2021). Mercantile conflict management was therefore not only based on interpersonal trust, but (in northern Europe) since the 14th century increasingly built on institutional trust in urban administration and courts.

Institutional trust in the legal system, however, emerged only as a consequence of a medieval rationalization of legal culture in favour of the mobility of people, goods and money. In principle, law in the medieval view was not newly created, but found; the largely oral legal culture built on local, perhaps regional, legal customs that required experiential knowledge. This meant serious uncertainties for merchants and limited their legal mobility. In reaction to this issue, urbanization in northern and central Europe was accompanied by the spread of Lübeck and Magdeburg city law, two families of law that allowed for a change in legal traditions in step with the changes brought about by the Commercial Revolution. From the 12th and 13th centuries onward, a gradual urban “rationalization of law” (Nehlsen-von Stryk 2000) was driven by larger cities, shaped by trade and commerce. Most importantly, the law of evidence changed: judicial duel and judgment by God disappeared from the court process, as did local wording of oaths, in favor of a more formalized court process. Urban codices, such as the Bardewik Codex of Lübeck Law, provided the “economic-civil legal foundation” for most of the new towns of the 13th and 14th centuries located on the Baltic coast (Cordes 2022). In this text – as in other legal manuscripts of the time – new legal principles were included that today are assigned to the special law of obligations, such as warranty in the law of sales, especially in the purchase of land and in textile trade, repayment of wages in the case of premature acknowledgement of an employment contract, and official control of the wine and bread trade. Trading companies and maritime law were also dealt with. In the following centuries, so-called *Willküren* (‘arbitrary acts’, newly created law in contrast to legal tradition) extended or replaced the applicable customary law, especially in commercial matters.

Furthermore, writing increasingly penetrated into everyday administrative and legal life. It became widespread in public and private use from the 14th century, as shown, for example, by the Lübeck *Societates* registers, in which company contracts were notarized (Cordes, Friedland and Sprandel 2003; Aerts 2023). Entries in city and merchants’ books from now on served as evidence in court cases and limited the role of sworn witnesses.

Both procedurally and substantively, the rationalization of jurisprudence and inter-town communication in legal matters in the Middle Ages thus changed the basis of action for economic actors, especially merchants. Merchants – as the urban elite – turned the initially

unpredictable legal sphere into a calculable risk; plurality in commercial law, a consequence of the fragmented political sphere (Höhn 2021), was factored in and even exploited in 'legal shopping'.

Commercial associations, especially guilds, but also brotherhoods, were another central form of organization in pre-modern economic exchange. On the one hand, they served to protect their members, to exchange information, and as a building block in the aforementioned reputation system; on the other hand, they were externally oriented and served to protect property rights vis-à-vis rulers (Greif 2006, 91–123; Ogilvie 2011, 2019). Only collectively could merchants credibly assert and achieve bargaining power against rulers. Most importantly, umbrella merchant interest groups secured trading privileges (with or without the support of their rulers) that guaranteed their legal status in foreign lands in the long term. The history of the German Hanse is a prominent example of the collective acquisition of such trading rights, which ranged from *Strandrecht* (law of shipwreck, *ius naufragii*), safe conduct and general assurances of protection, to questions of the judiciary and their own jurisdiction (Cordes 2013), to the fixing and exemption of customs duties and special rights when trading in foreign markets (e.g., loading and unloading ships on holidays, etc.; Dollinger 1998, 245–251). The common privileges of Low German merchants or citizens of cities between today's Netherlands and Russia in the 13th century were to remain valid until the 17th century and partly beyond (on the beginnings Hammel-Kiesow 2015; Huang 2022). This is an extreme example of trade privileges as the central institutions negotiated between merchant associations and rulers to minimize risks.

Guilds in particular were not only merchant organizations, but also corporations for all groups of tradespeople. Their role in European economic development is the subject of an ongoing research debate (Epstein 2008; Ogilvie 2019; Prak et al. 2018): Did guilds promote or inhibit progress over the centuries? In our context, one might ask: Was the adherence to guilds as a form of economic-social organization rational? Is the expectation of economic advantage justified or rather tradition-bound or justified by rent-seeking of the elites or alternative motivations such as the preservation of power? Until today, this question has not been answered conclusively – and probably never will be. Guilds had a variety of functions, from quality control over a social security system to a sort of union negotiating wages and not least storing and transferring knowledge between generations. The usefulness of guilds can hardly be assessed in a meaningful way due to their variety and broad effectiveness. From a macro-

economic viewpoint, Ogilvie has stressed guilds as inefficient and harmful to the economic development as they adversely affected quality, skills and innovation (Ogilvie 2004, 2019). The guild discussion poses an example of our own expectations on expectation formation: Although guilds might have supported individual or lobby interests at the expense of society at large, especially long-term, short-term the beneficiaries of the prevailing conditions sensibly regarded guilds as beneficial to securing their social and economic welfare.

There were distinct limitations to information-based expectation formation especially in long distance trade. Concrete and up-to-date market knowledge was required in order to form reasonable expectations and thus trade with comparatively low risk. In addition to information about potential trading partners, information about prices, the availability of goods, the development of demand, the security of trade routes and other external factors was needed to form expectations regarding concrete transactions. The private information system of the Middle Ages was predominant up until the 16th century. All trade partners brought knowledge of a few markets to their trade network via individually sent merchant letters. Guilds and brotherhoods were local information hubs amongst traders with similar interest such as the Lübeck *Bergenfahrer*. Individual private information systems were furthermore often linked to the urban information and messenger system (Jenks 2005, 32–35; Neitzert 2019, 25; Kirchner Vives 2021). Pre-modern “rationality” was clearly limited by the availability of information to all actors involved. The pre-modern expectation formation model thus necessarily retained a higher degree of uncertainty.

When speaking about uncertainties and risks in pre-modern trade, it is important to remember that there was little to build on when long-distance trade increased during the so-called Commercial Revolution. The ongoing development of reliable market institutions must therefore be appreciated as an important part of reducing risk in pre-modern trade as they provided security and predictability.

The institutional framework for a European-wide system of exchange was provided primarily by two specific types of markets: Fairs and staples reduced risks remarkably through their concentration of commercial institutions beneficial especially to large-scale trade (Holterman and Huang 2023). Especially fairs are celebrated as central institutions to economic development because of their openness (also called ‘free markets’) to outsiders in an economic landscape otherwise shaped by protectionist measures for the own citizenry and restrictions on the economic activity of foreign merchants. As recurring periodic events, fairs

brought the advantage of reduced coordination costs and costs for matching supply and demand. They provided a special legal regime protecting property rights and facilitating contract enforcement, specifically quick administration of justice via special fair courts. Furthermore, security was provided both at the fair and through seigneurial letters of safe conduct for all travelling to and from the fairs. Other services could entail a well-established commercial infrastructure (fortifications, roads, canals) and being a money market and 'clearing house' for international payment and exchange services (Rothmann 1998, 44, 197–479; Edwards and Ogilvie 2012, 4–13, 27–30; Dijkman 2015, 37–42). Although no comprehensive studies exist to date, in the Holy Roman Empire alone at least 5,000 periodic markets in about 1,500 places existed before 1500 (Pauly 2007; Rothmann 1998, 29–32).

Staple markets, some in existence until the 18th century, are often seen as the opposite of fairs or 'free markets'. Staple rights were mostly based on seignorial privileges that forced traders to bring certain goods to the market in question, either for transshipment or for sale. Beyond that, there were numerous other regulations connected to staples (e.g. compulsion to use certain roads and urban warehouses). Staple markets, like fairs, are omnipresent in pre-modern exchange. Their total number goes far beyond the few prominent examples like Bruges, Dordrecht, or Cologne (Dijkman 2015, 159–160; Gönnerwein 1939). As restrictive and forced markets, staples are mostly judged as harmful for economic development, especially as traders could not opt out if visiting the staple was disadvantageous for them, and they facilitated surplus extraction by local interest groups (Rothmann 1998, 44; Dijkman 2015, 173–179). However, 'staple' in a broader contemporary meaning just meant 'an important marketplace' (Nedkvitne 2013, 96). Furthermore, even if being coercive, staples included a range of services, some being quite similar to those of fairs. As fixed meeting points, they not only reduced the costs of matching supply and demand, but also made it easier to control trade and thus reduced problems in contract enforcement. Staples also promoted investment in infrastructure, guaranteed safeguard for visiting merchants and provided services needed for regular, larger-scale exchange of commodities and money (Dijkman 2015, 162, 171–179). Staple markets also often specialized in trade in certain goods, such as Bergen in the main Norwegian export product stockfish, Bruges in Flemish woollen cloth and the infamous Calais in English wool, to name a few examples. This also meant a stronger development of institutions related to such goods, such as product-specific quality control.

Not least, staple privileges were often accompanied by privileges granted to foreign merchants (Dijkman 2015, 164).

In the expectation formation of contemporary economic actors – here above all long-distance traders – fairs and staple markets served important functions in the organization and control of commodity trade. They guided and concentrated traffic in a predictable way and provided a common framework for individual merchants to form rational expectations. Knowledge of this market system gave merchants a general ability to act rationally.

A specialized form of risk management was maritime insurance that existed already since the Middle Ages, though for a long time only in southern Europe. Preliminary forms date back to the 12th century in Italy. From the 14th century onward, contracts were referred to as insurance, although in the late Middle Ages they also referred to contracts promising payment of a sum of money if an unforeseen event occurred, even without loss protection being the main focus. In Genoa, for example, insurance was standardized by the authorities as early as the second half of the 14th century, particularly in order to secure the obligation to pay in the event of damage. Through Italian merchants, it initially spread to France, Spain, England, and the Netherlands, and in the 16th century it also reached Germany. In addition to maritime insurance, insurance of land and river transport also emerged, as well as in slave transport and life insurance, especially for merchant travelling activities (Nehlsen-von Stryk 1986; Scheller 2016, 196–201; Scheller 2017, 56–59). For risk assessment, it was essential to have as comprehensive information management as possible: a ship's voyage was tracked as closely as possible through the mercantile network and messenger connections, and in addition, shipwrecks and risk factors such as wars and sea robbery were communicated in order to set premiums (Scheller 2016, 201–202; Scheller 2017, 62–64, 66). However, the risk expertise of those involved was based not only on current information, but also on experience gained from past events. Brokers who were regularly involved in insurance transactions aggregated longer-term information on insured amounts, premiums, and claims in their records to provide to insurers and insureds. Commercial accounting also collected and processed information that benefited future expectation formation. In addition, general strategies were also formed, as in Benedetto Cotrugli's manual of 1458, which recommended that merchants take out broad and basic insurance coverage (Scheller 2017, 67–72).

The 16th century brought about a fundamental change, especially in the field of information. Commodity price currents and (often somewhat later) exchange rate currents

became established in leading trading centers, especially from the end of the 16th century and in the 17th century (McCusker and Gravesteyn 1991). These early newspapers created broad access to market information and disseminated it at greater speed. Next to an improvement of urban messenger systems, territorial postal systems emerged which both improved information transfer and hindered communication through political fragmentation (North 2005, 119–122). Still, the developments of the 16th century created new bases for the formation of expectations of individual actors.

4. Future Expectations and Provision Strategies of Urban Societies

For the increasingly specialized and non-self-sufficient urban population, short- and medium-term security of food supply and old-age provision were key challenges. Until well into the 19th century, private households spent more than half their income on food. In pre-modern towns, harvest failures quickly led to shortages, which were worsened by the sale of foodstuffs, especially grain. Individual risk was dealt with collectively: Municipal laws and measures safeguarded the individual.

The trade in grain as a particularly important commodity for daily supply was therefore always regulated by urban law and under the control of the authorities. Securing the food supply was seen as a central element of public order. Consequently, urban authorities and territorial rulers used a variety of instruments to this end (Jörg 2008, 182–318). Local pre-emption (*Vorkaufsrecht*) was commonplace in towns in Europe to secure urban food supply. Pre-emption law limited merchants trying to exploit inter-spatial arbitrage in times of shortage by prohibiting the purchase of grain outside the municipal market and the purchase before the harvest (Hitz 2017; Camenisch 2017; Jörg 2008, 223–234). In times of crisis, export bans were another instrument for securing supply (Jörg 2008, 182–197). In territories where grain was exported on a larger scale, sovereigns such as the Teutonic Order also reacted to shortage with region-wide temporary export bans (Link 2014, 56–58).

Urban authorities were also concerned with inflation, against which individual precautions could only be taken to a very limited extent. Inflation itself was seen as unavoidable; however, contemporaries were well aware of the additional problem of speculation (Hitz 2017, 18–19). The town's discussions of the problem of inflation echoed medieval debates about the 'good price' and usury. The council often set maximum prices for grain and other foodstuffs (Hitz 2017, 22; Camenisch 2017, 42–43). In guaranteeing basic

supplies, the council relied primarily on the publicity of the market and control by municipal officials.

City councils also bought grain on their own account in the 15th century in times of shortage to ensure a sufficient supply. In 1439, after a period of price increases (*Teuerungskrise*), the city built its own granary, which was expanded over the century. Private individuals could also use the granary, which thus presumably also represented an offer of private provision. Urban authorities also issued regulations on private provision, namely the obligation to store supplies for one or two years (Hitz 2017, 21–23; Jörg 2008, 206–208, 212–222, 286–315).

In addition to food supply, instruments to ensure solvency and private old-age provision were central to the risk hedging of pre-modern urban dwellers. By the 15th century, at the latest, all areas of urban life were dominated by the use of money (Steinbach 2019). The fluctuating availability of cash was countered by a comprehensive and multifaceted debt system (borrowing, money lending, annuities, rent debts, etc.), in which most if not all of the urban population participated (Baum 1985; Sturm 2009; Zuijderduijn and de Moor 2013; Weber 2021). Recent research has highlighted the importance of small loans to keep citizens of all social groups solvent (Weber 2021, 162–171). Debt relationships were deliberately open and negotiable; according to the requirements of the time, much room was left for unforeseen events and necessary, comparatively costly exchanges of information (Weber 2021, 138). Thus, individual economic activity was secured against the likely risk of short-term bottlenecks.

A widespread instrument in Europe for short- and long-term financial security was annuity purchase. Life annuities or perpetuities were purchased as annual pay-outs against the payment of a corresponding capital sum. For long-term provisioning, annuity purchases by corporations, especially cities, may have been of particular importance. Life annuities became less important in the 14th and 15th centuries, presumably because they were often not redeemable and did not take into account the age of the beneficiaries in the interest rate and could therefore quickly become a money loser for the borrower. In the late Middle Ages, so-called perpetuities were soon redeemable or convertible, often at half the interest rate, and thus entailed less risk. Urban annuity sales in particular are said to have explicitly served to provide for the population in addition to financing urban projects (Zuijderduijn 2009; Zuijderduijn 2018; Huang and Sapoznik 2019). In addition, wills and retirement contracts were

used as legal instruments of provision beyond protection through family networks (Zuijderduijn and Overlaet 2021). These instruments allowed people to guarantee their everyday consumption and their monetary needs to a certain extent and to strategically provide for their future.

5. Concluding Remarks: Expectation Formation in a Commercializing Society

Studying the pre-modern period often leaves us with more questions than answers as archival records only very rarely allow us to trace concrete cases of individual or collective expectation formation in detail. Nevertheless, we can reconstruct the overall systems and strategies that created predictability in an uncertain world. Many institutions that emerged in the Middle Ages – rural and urban associations (agrarian fraternities, cooperatives, guilds), trust-based social networks, trade privileges and a range of urban public institutions, especially tied to fairs and staple markets – fundamentally organized the production of and trade in goods over centuries and allowed individuals to protect themselves to a certain degree against common risks. It is remarkable that, in this respect, both in agrarian and urban settings similar institutions and behavioral patterns evolved throughout Europe. The instruments presented in this paper reduced transaction costs and created relative security in an economy characterized by manifold risks and uncertainties.

The formation of expectations, as far as can be indirectly inferred from the observed behavior of individuals, did not primarily occur mechanically from experiences, as postulated by the theory of adaptive expectations. The research on the economic areas discussed here – agriculture, (long-distance) trade and urban private and public provisioning – rather suggests that economic actors of these different spheres indeed shared a common understanding of the prevailing economic system and acted in accordance with it. However, a larger share of uncertainty than in modern economies had to be included in the formation of expectations.

Existing case studies furthermore show that since at least the late Middle Ages, the economic behavior of many actors was guided by economic-pragmatic thinking, just as it is in modern times. However, there are clear limitations to “rational” behavior in the sense of the theory of rational expectations. This concept necessarily presumes that (incalculable) uncertainty may be transformed into (calculable) risks. Pre-modern people could establish “rational” expectations based on general system knowledge – trading via large fairs was profitable; to advance in an area of trade, membership in the relevant guild or brotherhood

was indispensable. However, considering the multitude of challenges pre-modern actors faced and the limited access to relevant information on the current economic situation, for individual transactions the predictability of economic outcomes that modern models demand had its clear limitations to a point where the line between risk and uncertainty became blurry. We therefore submit that – in difference to modern theory that leaves no room for uncertainty – many pre-modern economic actors formed “sensible” expectations, because they did act sensibly.

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