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**Order, Displacements and Recurring
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Order, Displacements and Recurring Financial Crises¹

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Abstract

The paper describes boom-and-bust cycles within Hayek's framework of order and aims to provide an understanding of recurring crises in recent financial history.

We argue that a boom-and-bust cycle is initiated by a displacement that lowers the degree of (ex-post) plan coherence (or order) in an economy. Such displacements can be endogenous (e.g. innovations) or exogenous (e.g. policy alteration). A cycle can be triggered if the displacement signals high short-run profit opportunities but agents lack an understanding of the long-run impact of the displacement and cannot form coherent expectations.

The application of the framework aims at making sense of recurring financial crises since the break-down of the Bretton Woods System. First, we argue that the newly emerging international financial architecture has made the financial system more elastic. Second, we show how large exogenous displacements such as capital account liberalization initiated boom-and-bust cycles in developing countries. And third, we argue that the competitive market system themselves brought about many innovations that endogenously amplified the latest US boom-and-bust cycle and increased the crisis potential.

Keywords: Hayek, order, displacement, financial crises.

JEL: E32, B5.

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1 Introduction

The frequency of severe financial crises has increased since the break-down of the Bretton Woods System (Reinhart and Rogoff 2009; Kindleberger 2000; Chancellor 2000). For instance in the 1980s many Latin American economies experienced debt crises, Japan's economy went to depression in 1990 and in 1997-8 the East Asian tigers were pulled by the tail. Contagion effects brought the crisis to rest of the emerging and developing economies. At the turn of the millennium the internet bubble burst and recently the trouble in the US subprime market triggered financial crises worldwide.

In this paper we aim to provide a general understanding of recurring boom-and-bust cycles in recent history within Hayek's framework of ever-changing order. Following Hayek a high degree of *order* allows market participants to form correct expectations and hypotheses about the future (Hayek 1994, p. 208). Then plans of individuals are largely coherent and turn out to be successful. In contrast, a displacement that reduces the market participants' ability to form correct expectations brings about mistakes and a lower degree of plan coherence in the economy, or (in other words) a low degree of order.

We argue that a boom-and-bust cycle is likely to emerge when the displacement dramatically changes the short-term profit opportunities of market participants while the long-run effects of the displacement remain uncertain. Eventually learning will help to cope with the ignorance about the long run and a tendency towards plan coherence (which hinges on correct ex-ante expectations) sets in. Our contribution to the literature is twofold:

1. We know of no other paper that discusses boom-and-bust cycles within Hayek's framework of order. Previous literature applies the idea of emerging orders to institutions or common law (Benson 1989; Sudgen 1989; Cronk 1988; Stringham 2003). McKinnon (1992) uses the framework to describe the transition problem from a socialist to a market economy in

Eastern Europe and in East Asia. Harper and Endres (2012) explain capital formation within a framework of emergence.

Although Hayek's economics always emphasized knowledge and coordination problems under different conditions (O'Driscoll 1977), Witt (1997, p. 54) points out that "*he never came back to discussing the business cycle from the point of view of his theory of spontaneous order.*" This is considered a gap in Hayek's work. Because Hayek's early work on prices, production and cycles is viewed to be very different from his later work on social order, the literature distinguishes between two or more "Hayeks" (Witt 1997).

There is, however, a clear link from Hayek's cycle theory to his theory of order. In the cycle theory, the "business cycle evidences coordination failure" (O'Driscoll and Rizzo 1996, p. 202), – or in other words a low degree of order. A divergence of the market from the natural rate of interest causes a discoordination of consumers' savings and producers' investment plans (Garrison 2006; Horwitz 2000; O'Driscoll and Rizzo 1996). Based on this theory e.g. Salerno (2011) and Hoffmann and Schnabl (2011) suggest that the current Great Recession is the outcome of too expansionary monetary policies which caused mal-investment and overconsumption booms that turned bust in 2007-8.

Whereas mal-coordination is an important factor within Hayek's cycle theory (O'Driscoll 1977), the gap Witt (1997) noticed in Hayek's work remains. Therefore, we discuss the emergence of boom-and-bust cycles within Hayek's framework of order instead of discussing the coordinative failures within Hayek's cycle theory.²

2. We intend to provide an understanding of recurring boom-and-bust cycles since the break-down of Bretton Woods within the Hayekian framework. We apply it to (1) large exogenous and (2) large endogenous displacements as found in recent history. First, we

² Our analysis does not use the natural rate – market rate terminology and analytical framework. But it does not contradict it. Within the natural - market rate terminology we also allow for displacements that may change the perception of the natural rate of interest to drive cycles as in Hayek (1976 [1929]).

describe the effects of the shift towards the current international monetary regime after the break-down of Bretton Woods. Second, we explain why capital account liberalization brought about severe boom-and-bust cycles in developing countries. And third, we discuss how the market process can endogenously amplify cycles within a Hayekian framework.

While exogenous displacements may be partly avoided when they are in the realm of a country's policy maker e.g. by implementing policies on the margin (e.g. gradual financial liberalization), from a Hayekian point of view, endogenous displacements such as discoveries or innovations are the very result of the competitive market process.

To prevent the emergence of endogenously induced cycles would necessitate superior knowledge of e.g. a policy maker who forms expectations independent from the rest of the system or to kill off the very innovative forces of the market. Therefore, we draw a cautious policy advice with respect to crisis prevention from the Hayekian framework: As policy makers are part of the system they should beware of causing themselves displacements and uncertainty.

The remainder of the paper is as follows. In section 2 we introduce Hayek's framework of order and explain the coordinative processes as we understand them. Section 3 discusses displacements and how they may drive cycles. In section 4 we apply the framework to recent historical events. Section 5 concludes.

2 Order and Market Process – A Hayekian Framework

2.1 Order

According to Hayek (1982, I, p. 36) order is “a state of affairs in which a multiplicity of elements of various kinds are so related to each other that we may learn from our acquaintance with some spatial or temporal part of the whole to form correct expectations

concerning the rest, or at least expectations which have a good chance of proving correct.”³ In other words, a high degree of order enables individuals to form adequate expectations and hypotheses about the future (Hayek 1994, p. 208). This is a precondition for plans of individuals to be largely coherent and to turn out successful (Hayek 2003 [1967], p. 40).⁴

Following Hayek (1978, 1982) the order consists of two layers. The first layer is the underlying order. The underlying order has an impact on the relationships of agents (e.g. Hayek 1978, p. 76). It includes rules such as laws, but also norms, morals, traditions, habits, customs and so on. Examples for such rules are the price mechanism or property rights.

In this respect Hayek (1978, pp. 76-80) distinguishes two kinds of rules or norms: *nomos* and *thesis*. *Nomos* is “a universal rule of just conduct applying to an unknown number of future instances and equally to all persons in the objective circumstances described by the rule, irrespective of the effects which observances of the rule will produced in a particular situation” (Hayek 1978, p. 77). Such rules are negative. They permit some action. In contrast *thesis* is a positive rule “which is applicable only to particular people or in the service of the ends of the ruler” (Hayek 1978, p. 77). The rule describes what *ought to be* done.

The underlying order is the grounding of the emerging order – the second layer. Depending on which type of rules is predominate in the underlying order; the character of an emerging order is either more spontaneous or more exogenous. If all rules are of type *nomos* (negative rules), the order emerges fully spontaneously.⁵ Thus, this order is called spontaneous order or *kosmos*. If all rules are of type *thesis* (positive rules) and every activity is commanded, the order’s character is fully exogenously determined. The order is referred to as made order or *taxis*.

³ Mulligan (2009, pp. 110-113) summarizes the literature that precedes Hayek in the use of the concept of order.

⁴ The *neoclassical equilibrium* would be a special case of order. It is the state in which “[...] individual plans are fully coordinated. Each plan can be successfully executed. Means are exactly matched to ends” (Lewin 1997, p. 246). To Hayek (1937, p. 45) this state of perfect plan coordination was not of major interest. Instead, he was interested in what constitutes order and how it comes about.

⁵ In this case, Hayek refers to the underlying order as abstract order (Hayek 2003 [1967], p. 52). For a distinction between spontaneity and emergence see Lewis (2012).

Made orders are relatively simple because a planner of a made order has to understand its structure. An example for such an order is the directed social order, e.g. a firm. Expectations of the planner are fulfilled if commands or plans are followed correctly (Hayek 1982, I, pp. 35-38).⁶ Spontaneous orders *kosmos* can - but do not have to - be more complex.⁷ Following Hayek (1982, II, p. 109) the market economy is a “special kind of spontaneous order produced by the market through people acting within the rule of law of property, tort and contract”. Many players aim at different ends and choose their own means to achieve them. Because knowledge of plans is dispersed throughout society matching the plans would be a highly complex task, which is not in the realm of a planner (Hayek 1945).⁸

In the real world governments intervene in the market economy. For instance governments stabilize the economy in times of crisis or provide a welfare system to improve the market outcome according to the normative standards of society. Interventions and regulations restrict the forces of spontaneous order. The more regulation the higher the degree of command and the fewer wants can be pursued by individuals. Therefore, a market economy as observed in the real world does not emerge spontaneously in the strict sense.⁹ But as governments do not command the majority of activities in the market, the emerging economic order is still complex. The complexity makes future outcomes often unforeseeable and effects of interventions hard to project as emerging properties continue to exist even if the order is not established spontaneously (Lewis 2012).

⁶ The made order may also be called exogenous or artificial order (Hayek 1982, I, p. 37).

⁷ The spontaneous order may also be called endogenous or self-generating order (Hayek 1982, I, p. 37).

⁸ Hayek (1982, I, pp. 38-39) explains the properties of spontaneous and made order in detail.

⁹ “[T]hrough spontaneous order and organization [made order] will always coexist, it is still not possible to mix these two principles of order in any manner we like. If this is not more generally understood it is due to the fact that for the determination both kinds of order we have to rely on rules, and that the important differences between the kinds of rules which the two different kinds of order require are generally not recognized” (Hayek 1982, p. 48).

2.2 Order and Market Coordination

The emerging economic order is not fixed over time as individuals' goals, tastes, views, or knowledge and technology – in other words their *ends* and *means* – are subject to change. Additionally the underlying order may change through legislation and therewith bring about changes in the emerging order.¹⁰

To understand how market coordination and therewith adjustment to changes can come about, let us for a moment use a mental construct without real world claim based on Machlup (1958). Suppose the initial stage is characterized by a high degree of order or close to equilibrium. A displacement in “means or ends” leads away from this *equilibrium*. The degree of plan coherence is lowered. The *disequilibrating change* sets in motion *adjusting changes* that tend to bring the economy to its – *ceteris paribus* – *final position*.¹¹ The final position is characterized again by a higher degree of order.

Let us describe this process in more detail. Initially the displacement (e.g. an innovation) lowers the degree of order. From the subjectivist point of view, equilibration sets in. Here, "equilibration refers to the systematic exploitation of profit opportunities as they exist in the understanding of market participants" (Selgin 1987, p. 38). Profit signals caused by the displacement (e.g. the innovation) affect and coordinate the behavior of other individuals. The success of profit exploitation depends on ex-ante plan coherence with other market participants. Hence, acting upon such signals is only a sufficient condition for a tendency towards a high degree of order if we assume that market participants have complete information and can coordinate plans perfectly.

In the real world, however, we cannot assume complete information of market participants. Full equilibration is unlikely as it “requires the understanding of other people’s

¹⁰ Legislation may also reflect the former. Thus, it does not have to be exogenous if e.g. institutions are built from bottom up. Harper (2012) shows the effects of property right changes on coordination.

¹¹ Machlup (1958) does not focus on dynamics but uses comparative statics.

motives and intentions” (Selgin 1987, p. 27) and the ability to form correct expectations of plans of others. But individuals can only acquire such information from past actions of others that do not necessarily reveal future actions in a world of ever-changing “means-ends” constellations. While it is possible to recognize past patterns, signals of profit and loss may be misleading. Expectations are endogenous to individuals’ environment and restricted by knowledge (Butos and Koppl 1993; O’Driscoll and Rizzo 1996).

Even the acquisition of new knowledge in the process of market adjustment to past changes may set in motion new displacements in “ends and means” as actors learn over time and changes in knowledge can foster the need for further adjustments (Lachmann 1986; O’Driscoll and Rizzo 1996, pp. 71-76). The economy is subject to “ever-reemerging inefficiencies” (Benink and Bossaerts 2001). A state of rest is the exception, and not the rule.¹² A final rest cannot be achieved as new displacements will always occur (Mises 1998, p. 245).¹³ Therefore we can - at most - speak of a tendency towards full plan coordination.

Lewin (1997, p. 251) suggests that this very tendency towards plan coordination hinges on the *knowledge type* that is necessary to form expectations about future developments (and thus individual plans of market participants).¹⁴ The success of plans can depend upon three different types of knowledge: (1) the laws of nature, (2) the knowledge on social institutions and (3) knowledge of historical events that allow tracing implications from such changes.

Following Lewin (1997) the knowledge of type (1) comprises general principles related to the world like physical law, basics of medicine and so on. Knowledge of type (2) includes rules of behavior, standard categories, habits and customs. Knowledge of type (3) is knowledge of specific unique events. Thus, when plans can be based on knowledge of type

¹² Mises (1998, p. 244) argues that only a “plain state of rest” is possible. An example for this is the stock market that closes at the end of the day.

¹³ In Mises (1998, p. 245) wording these are “disturbing factors”

¹⁴ Hayek describes a tendency towards equilibrium but has not fully elaborated the causal generic process towards equilibrium in every detail (Rizzo 1990).

(1) and (2) the tendency towards plan coherence seems realistic as the most relevant information to form correct expectations is available to the actors. When plans largely depend on the third type, they hinge on expectations that are based on knowledge of rare events. The degree of plan uncertainty is high. Plan coherence among individuals cannot be assumed (Lewin 1997).

Most displacements are - of course - small. Given small displacements, expectations can be formed based on knowledge of type (1) and (2). Learning is not problematic as most remains unchanged and in order. The adjustment towards a small change in data is hardly noticeable on an aggregate level. The order moves gradually. The long-run growth path is evidence of slowly orderly change (Lachmann 1976, p. 59).

An entrepreneur who acts upon ex-ante perceived profit opportunities lowers the degree of order when his or her actions induce multiple *adjusting changes* in the market to reestablish plan coherence. For instance, we can imagine a gradual change if we consider the effects of a product innovation by a new entrepreneur who enters the market. The degree of order is only lowered on the margin until the adjusting changes reestablish plan coherence.

Suppose, *ceteris paribus*, the entrepreneur enters the market and offers a new good of different quality as he perceives profit. The displacement induces adjusting changes by competitors and consumers. Competitors and consumers coordinate production and consumption plans with respect to the changes in the set of possibilities and choices. The feedback process aligns the plans of consumers and producers.

If the new product is perceived to have better properties by consumers, the entrepreneur will profit. Others will sell less than they planned. Once they understand the reason they will adopt the innovation to arbitrage away the profit opportunities via imitation (Schumpeter 1983; Kirzner 1997). In this case, the diffusion of the innovation has a negative effect on sales of the old product. The old good is replaced by the new good to the extent that

customers' choices adjust. Producers who fail to realize that consumers are less attracted to the old product run out of business or lose market share.

If the entrepreneur, however, erred in the sales projection and customers find the product to have worse properties, the entrepreneur's plan fails the market test. "It is one of the chief tasks of competition to show which plans are false" (Hayek 1982, II, p. 117). Nothing changes for the competitors as consumers do not change consumption plans and replace their products with the new product. The losses of the entrepreneur signal past mistakes. When the entrepreneur does not offer the product in expectation for profits anymore, plan coherence is re-established.

3 Emerging Order and Boom-and-Bust Cycles

3.1 Displacement and Plan Coherence

The larger the changes in *means and ends* the more they affect the emerging order and the longer takes the process of plan coordination. Based on Lewin (1997) a larger displacement in the emerging order requires planning to depend heavily on newly formed expectations derived from historical knowledge of e.g. extreme events (knowledge of type 3). In this situation, expectations (which are endogenous) cannot be formed properly in line with a rule or habit (knowledge of type 1 and 2) which would cause markets to be stable and expectations to be coherent (Butos and Koppl 1993).

But successful action depends on being able to guess the plans of others. Thus, if the displacement is too drastic and individuals have no understanding of whatsoever is going to happen, they have no means to form expectations and plan. There is no structure or knowledge to base expectations on. Outcomes and risks of actions become immeasurable. The degree of "Knightian" uncertainty over the short and long run is high (Knight 2005 [1921], p. 21). Lewin (1997, p. 256) argues that if institutions changed rapidly, the society "would be

devoid of any perceptible order”. Then, plan coordination is impossible until ignorance about the new circumstances has been resolved and some understanding of the new situation is developed.

If, however, agents can base plans on knowledge of type 3, they have an intuition about the “correct” course of action. But (Knightian) uncertainty about the long-term development still prevails. Uncertainty leaves room for mistake and triggers a divergence in opinions about the future (Miller 1977). Coordination is problematic, and to create a new order based on limited knowledge may be an almost impossible task in the short run. The final coordination sets in when long-term effects of the displacement are understood and “priced in” as information becomes available. Then a higher degree of order or plan coherence results.

In this regard, Epstein and Wang (1994) have shown that Knightian uncertainty can trigger asset prices to depend on “animal spirits”, bringing about increasing volatility. Nishimura and Ozaki (2007) show that the value of irreversible investment opportunities decreases (reversible investment increases) with a rise in Knightian uncertainty.

Hence, if a displacement creates Knightian uncertainty about the distribution of long-run outcomes but expectations are elastic with respect to the change, entrepreneurs and banks respond towards the short-run profit signals that arise (Lachmann 1943). Thus, when the displacement “changes horizons, expectations and profit opportunities” of market participants it can become the starting point of a boom-and-bust cycle (Kindleberger 2000, p. 38).¹⁵ To reap the short-term profits banks expand credit but tend to lend short-term or at a variable interest rate to be able to undo the investment if necessary. Market participants may not be aware of the uncertainty or mistaken expectations. The following cycle reflects the adjustment process towards a higher degree of order. Over the course of a cycle individuals deal with the planning problem caused by the displacement and the uncertainty it creates.

¹⁵ We use the wording different from Kindleberger (2000), however, who only addresses exogenous change. We include large endogenous change brought about by some market participants that are seen as displacement by other market participants.

Because expectations are more elastic with respect to big news or important information as it is impossible to process every small news, a boom can turn bust rapidly and end in financial crisis. The severity of a cycle depends on the effect of the displacement on certainty over the long-run development and the short-run profits that can be made. Cycles that lead to financial crisis presuppose signals of high short-run profits and a relatively high degree of uncertainty over the long run.

3.2 Displacements that Change Short-Run Profit Expectations

We can think of displacements in both the underlying and the emerging order to change short-run profit expectations rapidly.

First, a displacement in the underlying order may have large effects on the emerging order and rapidly change profit expectations. Kindleberger (2000, p. 38) summarizes several exogenous displacements such as revolutions or changes in the political system that may trigger boom-and-bust cycles. Further institutions may endogenously change over time or the market process could bring about displacements in the underlying order. Harper (2012) uses the example of property rights for the use of airspace. When rights of airspace belonged to the landlords, the aviation industry faced high contract costs with each landlord. Commercial aviation was not profitable. When rights were separated from the rights of land use, the aviation industry became profitable. In this sense, institutional change can be seen as a displacement that can dramatically change profit opportunities.

Second, significant real or financial innovations and policy interventions¹⁶ are displacements in the emerging order. For instance Koppl and Yeager (1996) find that “Big Players”, such as policy makers (here the Russian czars), can weaken the ability of market

¹⁶ Policy interventions based on rules in the underlying order. For instance central banks are made institutions that leave room for various policy interventions.

participants to price assets. Discretionary policy of "Big Players" is an exogenous displacement that can trigger cycles if it strongly increases uncertainty over the long-run development. If policy measures are highly unpredictable they may receive a lot of attention and make expectations volatile. Cycles are induced via speculation and herding as the "reliability of expectations" is reduced (Koppl and Yeager 1996, p. 68).

Apart from exogenous displacements, there can be endogenous displacements in the emerging order that dramatically change expectations. Endogenous displacements are a market outcome. An example is rapid technological change or financial innovations that affect entire markets. Lachmann (1943, p. 23) argues (in line with Schumpeter (1983) and Hayek (1976, p. 95)) that technological (real) innovations can be "an explanation why elastic expectations should be prevalent" that may trigger a boom-and-bust cycle as there is uncertainty about the long-term effects of the displacement but the direction of short-term profits is rather certain. From a Hayekian viewpoint such innovations are the result of the competitive market process itself in which entrepreneurs try to find and create new opportunities to profit (Hayek 1969). On the contrary, they may be a reaction towards changes in regulation or policy incentives.

4 Displacements and Recurring Financial Crises in Recent History

Following the break-down of the Bretton Woods system a new international financial system emerged and the frequency of financial crises has increased (Reinhart and Rogoff 2009). We apply Hayek's framework to understand the re-emergence of severe boom-and-bust cycles. Recurring cycles are interpreted to reflect the adjustment processes towards newly emerging orders fostered by a stream of financial and political displacements that have created short-run profit opportunities and long-run uncertainty, again and again.

4.1 A New Era of Global Finance

Following the break-down of the Bretton Woods System a new international financial architecture emerged. In industrialized economies, floating exchange rates replaced adjustable pegs. Monetary policies became independent from one another. Thus – in terms of Mundell’s Incompatible Trinity – the industrialized world went from one corner solution with pegged exchange rates and more or less free capital mobility at the price of dependence in monetary policy to a new corner solution with largely independent monetary policies and capital mobility at the expense of fluctuating exchange rates. The tie to gold was completely abandoned. Since the 1970s the monetary system is based on fiat currency proper (Eichengreen, 2008, pp. 134-136).

Based on the Hayekian framework the shift in architecture is an exogenous displacement in the underlying order of the world financial system. It went along with a rising degree of globalization, perhaps marked by the return to liberalism in the late 1970s. Distrust in big government was widespread. In 1979 Thatcher came to power in Britain. In the US Reagan was elected in 1980. Taxes were cut, regulation was relaxed and barriers to trade were removed. The degree of openness increased (Chancellor 2000, pp. 232-244, 249-251).

In the 1980s the developing economies in Latin America and East Asia liberalized markets. In 1989 the fall of communism allowed for the integration of the Eastern European countries into the world economy. Because factor mobility and trade reached the levels they had under the classical gold standard, the recent era is often characterized as Second Era of Global Finance (Bordo et al. 1999; Rajan and Zingales 2003).

The new financial architecture had implications on the emerging order. The emerging order became more spontaneous. Liberalization allowed for substantial financial development. Following Borio and Disyatat (2011) the elasticity of the international financial system increased. Computation in financial markets, internet, mobiles, handheld trading services and

all kind of hedging instruments emerged. Firms developed portfolio diversification strategies to insure against all sorts of risks. These endogenous displacements made the new era heavily depend on information as large sums can now be transferred from one corner of the world to another from a cell phone (Chancellor 2000, pp. 244-249; Baskin and Mirati 1999, pp. 213, 258-265).

The additional degree of freedom and the growing importance of financial markets are obvious as credit has become a better correlate with GDP than money (Schularick and Taylor 2012). The US financial market is the most important financial market. Due to its unrivaled size and liquidity it is used as a store of wealth by investors worldwide (Caballero et al. 2008). Because the growing financial markets have absorbed much liquidity, inflation rates remained stable since the 1990s despite a downward-trend in real and nominal interest rates (Hoffmann and Schnabl 2011).

However, the increased elasticity of the credit system and globalization via diversification finance went along with a higher frequency of financial crises (Schularick and Taylor 2012). On the one hand, developing countries experienced severe boom-and-bust cycles following capital account liberalization and integration into the world financial system (Demirgunc and Kunt 1998). On the other hand, monetary sovereignty triggered cycles in advanced economies that were amplified by innovations of highly competitive financial markets (Borio 2003).

4.2 Capital Account Opening

Following waves of liberalization in the 1980s and 1990s also the developing countries integrated into the post-Bretton Woods financial system. A central element of the liberalization strategies was to open capital accounts. Based on the McKinnon and Shaw Hypothesis capital account liberalization was thought to promote investment and growth in

developing countries that are less endowed with capital via access to foreign capital (McKinnon 1973).

But liberalization was followed by severe boom-and-bust cycles. To describe them within the Hayekian order theory, we use the East Asian experience and distinguish 5 stages. (1) is the state of order, (2) the displacement, (3) the boom, (4) the bust and (5) the emergence of the new state of order.

(1) Let us assume that there was a state of order or plan coherence in the economies prior to liberalization. The East Asian 5 (Indonesia, Korea, Malaysia, the Philippines, and Thailand) had closed capital markets and limited access to international capital until 1980. Nominal interest rates were relatively high. Little foreign capital was invested in the economies. Investment activity was sluggish.

(2) Capital markets were liberalized. In the East Asian economies the degree of openness increased from the 1980s up to the East Asia crisis of 1997. Capital account liberalization was a large exogenous displacement because it affected investment opportunities of all sectors in the economy. Lending abroad became possible. Particularly after 1990, when Japan faced a severe crisis and lowered interest rates foreign capital was readily available. This increased the relative profitability of the East Asia economies. While short-run profit signals clearly arose, because there is hardly a reference point for the expectations, uncertainty only allowed for a qualitative rather than a quantitative assessment of the long-run effects of the displacement – perhaps based on neoclassical growth theory and the expectation of convergence of capital stocks.

(3) Given low world funding interest rates heavy capital inflows into the economies indicated that foreign investors and banks reallocated resources to the *seemingly* most efficient use and diversified the international investment position. East Asian interest rates fell from 1990 to 1995. In line with the Hayekian framework, banking institutions reacted towards short-term profits. On the one hand, “managers of banking institutions often

lack the expertise to manage risk appropriately when new lending opportunities open up after financial liberalization” (Radelet and Sachs 2000, p. 154). On the other hand, pegged exchange rates to the dollar allowed for maturity mismatches using foreign currencies and implicit state guarantees in the case of a loss contributed to over-optimism of banks. Excessive bank credit expansion amplified the boom.

The dis-coordination of plans of economic actors is reflected in over-borrowing and overinvestment (McKinnon and Pill 1997). As declining interest rates were not a saving incentive, both consumption and investment surged. The lack of capital stock promoted investment in capitalistic industries and consumer goods were in high demand. Current account deficits were the consequence that were not sustainable because given overinvestment, ex-post plan coherence was not established. The degree of order was low.

(4) When profit signals turned out to be ex-post wrong, investment portfolios were reconsidered and good plans were separated from bad plans. In the East Asian crisis of 1997-98 overcapacities and mal-investment in the real estate sector were revealed. This led to a negative evaluation of the fundamentals which are an indicator for the long-run potential. Investment expectations reversed.

The losses in East Asia led to a general capital flight and financial crisis. The stock market broke down when investors withdrew capital. From 1997 – 2001 net capital flows were negative. Little was invested in the newly liberalized economy. Given little investment, returns on investment rose. Investors failed to make the profits they could have made in East Asia. Plan coherence was not established and the order was unstable because investors were ignorant of investment opportunities.

(5) Having accumulated much knowledge over the latest boom-and-bust cycle, investment decisions became more and more accurate (*ceteris paribus*). The degree of order rose due to an increase in certainty about the long run. Thus, while crises followed

liberalization in East Asia the amplitude of cycles fell with the distance to liberalization (Kaminsky and Schmukler 2008).

Similarly academics and policy makers reacted to financial crises following liberalization. For instance McKinnon (1993) and Edwards (2009) emphasize that liberalization should be done on the margin and in certain sequences. Gradual liberalization circumvents a large displacement and severe boom-and-bust cycles. The authors argue in favor of slow liberalization at the benefit of a smooth transmission. The long-run implications in terms of financial development and growth are seen as rather positive.¹⁷

Policy makers on the contrary often believe that they allowed for too much of a “good thing”. Therefore, following a crisis they often restrict markets using some sort of capital controls. The policy interventions may be new displacements if effective. However, in the case of capital controls there are doubts that they were (Reinhart and Reinhart 1999).

4.3 Monetary Policy and the Competitive Market

Significant financial or real innovations can affect the emerging order. A large technological displacement contributed to the recent dot-com bubble. In contrast, the US subprime market boom was caused by policy intervention (low interest rates and fiscal incentives to purchase housing) but amplified by the competitive financial market during the adjustment process. We will elaborate the latest US boom-and-bust cycle in the stages introduced in 4.2.

(1) We assume that the economy was in a state of order prior to the housing boom. House prices increased faster than the general consumer price index since the 1990s but did not gain momentum.

¹⁷ Traditional neoclassical theory suggests a positive effect of financial liberalization on growth. Empirical evidence supports this finding (Henry 2003; McKinnon 1993). However, Stiglitz (2000) and Rodrik (1998) provide evidence of no impact of capital account liberalization on growth.

(2) After the burst of the dot-com bubble the US Federal Reserve kept interest rates unusually low to stabilize financial markets. The exogenous displacement led to a new lending standard as the banks forwarded low interest rates to customers and provided additional credit.

(3) When credit became readily available, mal-signals were sent particularly to interest-rate sensitive financial markets and more capitalistic branches. In line with Minsky (2008, pp. 230-235) financing methods of durable consumption went from Hedge to Ponzi finance because increases in interest rates were out of sight and the short-run gains were substantial. Further there was no need to assume a change in consumer time-preferences either, which would be compatible with the shift towards financial markets expansion and housing construction at the expense of producing more consumer goods. Households took advantage of low interest rates and consumed more right away. US saving rates were particularly low between 2004 and 2008.

Durable consumption goods were in high demand during boom periods. Increasing demand for housing loans was satisfied as bankers did not know whether other banks finance more projects as well and what kind of projects. If they did not go for the short-term profit, they would have been potentially taken over by other banks that expand business activity to increase market share, and lose. Further one expansion of a bank potentially created deposits of other banks and therefore further means for credit expansion (Hayek, 1976 [1929]). Entrepreneurs faced the same knowledge problem. Lower financing costs raised expectations of planned investment returns. Therefore, the housing sector boomed.

Bank competition further fostered the frequent use of new means of financing that have developed since the break-down of Bretton Woods. (Hayek 1969). Low quality loans were bundled to minimize risk and create a liquid asset that could be sold. The income stream allowed for additional lending and satisfying increasing demand given low interest rates. More credit could be supplied at the same interest rate (Mills and Kiffs 2007). *Ceteris paribus*,

this allowed for a greater elasticity of the credit system. Financial supervision and central banks did not take into account the changes. Hence, the discovery, a further large endogenous displacement, changed expectations of banks:¹⁸ On the one hand, financiers knew there were more profits to make. On the other hand, they did not have an understanding of the long-term impact of the innovations.

Because the long-run development of interest rates was unclear and raising interest rates expected, loans with variable interest rates became the norm that depended on the value of the underlying asset (real estate). As the simultaneous credit expansion allowed for projects to be financed that would not have been possible before the creation of the bad-loan triple asset, the percentile of subprime loans rose prior to the latest crisis. The latest US boom can be characterized as one of mal-investment and overconsumption (Salerno 2011). The degree of plan coherence was low.

(4) The implications of the mistakes were realized only with a lack. Inflationary tendencies followed from incoherence of consumption and investment plans. A raise in interest rates deteriorated the profitability of many projects that were financed using low variable interest rates. They turned out ex-post too risky and not unprofitable. Ponzi schemes burst. The bust endogenously followed from the boom.

High rates of investment in previous periods led to a further drop of investment as the capital was consumed to produce more goods during the boom. Expectations undershoot. The market of derivatives broke down as the upsides of the innovation were underestimated. A slump followed. Hence, ex-post boom periods are often associated with increased risk-taking and slumps with risk-aversion.

(5) But in the long run the impact of the financial discovery should be understood as the market process reveals the past mistakes over time. Then a new order may be reached.

¹⁸ Note that unlike in a Keynesian story of animal spirits in the Hayekian story, expectations are endogenous to the market process (O'Driscoll and Rizzo 1996, p. 211; Koppl and Butos 1993).

Today, the same instruments are used that were used during hey-days of the subprime market boom. The future will tell whether this is done more accurately.

5 Conclusion

The paper has described boom-and-bust cycles within Hayek's framework of order. We have argued that a boom is initiated by a displacement that lowers the degree of plan coherence and creates Knightian uncertainty about future outcomes but signals high positive short-run profits. Displacements can be endogenous (financial or technological innovations) and exogenous (e.g. policy alteration via artificially low interest rates, liberalization, war). When economic actors lack an understanding of the long-term impact of the displacement, they cannot form coherent expectations that are necessary for correct planning. A cycle emerges out of discoordination among actors if short-term profits are foreseeable.¹⁹

While significant exogenous displacements may be partly avoided by implementing policies at the margin (e.g. McKinnon (1993) suggests gradual liberalization), endogenous displacements such as discoveries or innovations are the result of the competitive market process. Based on the Hayekian framework, to prevent the emergence of endogenously developed cycles would necessitate (1) superior knowledge of e.g. a policy maker who can form expectations independent from the rest of the system or (2) to kill off the very innovative forces of the market.

Therefore we are cautious in our policy implications. The policy advice with respect to cycle prevention is that policy makers should beware of making things worse by causing themselves displacements and uncertainty.

¹⁹ The *deus ex machina* that sets in motion the cycle in the standard Hayek business cycle theory can be seen as a special displacement.

References

- Baskin, Jonathan and Paul Miranti.** 1999. *A History of Corporate Finance*. 1st ed. Cambridge, U.K.; New York: Cambridge University Press.
- Benink, Harald and Peter Bossaerts.** 2001. "An Exploration of Neo-Austrian Theory Applied to Financial Markets." *The Journal of Finance*, 56(3): 1011–27.
- Benson, Bruce.** 1989. "The Spontaneous Evolution of Commercial Law." *Southern Economic Journal*, 55(3): 644–61.
- Bordo, Michael, Barry Eichengreen, and Douglas Irwin.** 1999. "Is Globalization Today Really Different than Globalization a Hunderd Years Ago?" NBER Working Papers 7195.
- Borio, Claudio.** 2003. "Towards a Macroprudential Framework for Financial Supervision and Regulation?" BIS Working Papers 128.
- Borio, Claudio and Piti Disyatat.** 2011. "Global Imbalances and the Financial Crisis: Link or No Link?" BIS Working Papers 346.
- Butos, William and Roger Koppl.** 1993. "Hayekian Expectations: Theory and Empirical Applications." *Constitutional Political Economy*, 4: 303–29.
- Caballero, Ricardo, Emmanuel Farhi, and Pierre-Olivier Gourinchas.** 2008. "An Equilibrium Model of "Global Imbalances" and Low Interest Rates." *The American Economic Review*, 98(1): 358–93.
- Chancellor, Edward.** 2000. *Devil Take the Hindmost: A History of Financial Speculation*. New York: Plume.
- Chinn, Menzie and Hiro Ito.** 2009. "The Chinn-Ito Index. A De Jure Measure of Financial Openness." http://web.pdx.edu/~ito/Chinn-Ito_website.htm.
- Cronk, Lee.** 1988. "Spontaneous Order Analysis and Anthropology." *Cultural Dynamics*, 1(3): 282–308.

- Demirguc-Kent, Asli and Enrica Detragiache.** 1998. “Financial Liberalization and Financial Fragility.” The World Bank. Policy Research Working Paper Series 1917.
- Edwards, Sebastian.** 2009. “Sequencing of Reforms, Financial Globalization, and Macroeconomic Vulnerability.” *Journal of the Japanese and International Economies*, 23(2): 131–48.
- Eichengreen, Barry.** 2008. *Globalizing Capital. A History of the International Monetary System*. 2nd ed. Princeton: Princeton University Press.
- Epstein, Larry G. and Tan Wang.** 1994. “Intertemporal Asset Pricing under Knightian Uncertainty.” *Econometrica*, 62(2): 283–322.
- Garrison, Roger.** 2006. *Time and Money. The Macroeconomics of Capital Structure*. London: Taylor & Francis.
- Harper, David A.** Forthcoming. “Property rights, entrepreneurship and coordination.” *Journal of Economic Behavior & Organization*.
- Harper, David and Anthony Endres.** Forthcoming. “The Anatomy of Emergence, With a Focus Upon Capital Formation.” *Journal of Economic Behavior & Organization*.
- Hayek, Friedrich.** 1937. “Economics and Knowledge.” *Economica*, 4(13): 33–54.
- Hayek, Friedrich.** 1945. “The Use of Knowledge in Society.” *The American Economic Review*, 35(4): 519–30.
- Hayek, Friedrich.** 1976. *Geldtheorie und Konjunkturtheorie*. 2nd ed. Salzburg: Neugebauer.
- Hayek, Friedrich.** 1978. “The Confusion of Language in Political Thought.” In *New Studies in Philosophy, Politics, Economics and the History of Ideas*, ed. Friedrich Hayek, 71–79. London: Routledge & Kegan Paul.
- Hayek, Friedrich.** 1982. *Law, Legislation and Liberty. A New Statement of the Liberal Principles of Justice and Political Economy*. London: Routledge.
- Hayek, Friedrich.** 1994. *Freiburger Studien. Gesammelte Aufsätze*. 2nd ed. Tübingen: Mohr.

- Hayek, Friedrich.** 2003. *Gesammelte Schriften in deutscher Sprache, Rechtsordnung und Handelsordnung. Aufsätze zur Ordnungsökonomik.* 4th ed. Tübingen: Mohr Siebeck.
- Henry, Peter.** 2003. “Capital-Account Liberalization, the Cost of Capital, and Economic Growth.” *The American Economic Review*, 93(2): 91–96.
- Hoffmann, Andreas and Gunther Schnabl.** 2011. “A Vicious Cycle of Manias, Crises and Asymmetric Policy Responses - An Overinvestment View.” *The World Economy*, 34(3): 382–403.
- Horwitz, Steven.** 2000. *Microfoundations and Macroeconomics. An Austrian Perspective.* New York: Routledge.
- Kaminsky, Graciela and Sergio Schmukler.** 2008. “Short-Run Pain, Long-Run Gain: Financial Liberalization and Stock Market Cycles.” *Review of Finance*, 12(2): 253–92.
- Kindleberger, Charles.** 2000. *Manias, Panics, and Crashes. A History of Financial Crises.* 4th ed. New York: Wiley.
- Kirzner, Israel.** 1997. “Entrepreneurial Discovery and the Competitive Market Process: An Austrian Approach.” *Journal of Economic Literature*, 35(1): 60–85.
- Knight, Frank H.** 2005. *Risk, uncertainty and profit.* New York: Cosimo Classics.
- Koppl, Roger and Leland Yeager.** 1996. “Big Players and Herding in Asset Markets: The Case of the Russian Ruble.” *Explorations in Economic History*, 33(3): 367–83.
- Lachmann, Ludwig.** 1943. “The Role of Expectations in Economics as a Social Science.” *Economica*, 10(37): 12–23.
- Lachmann, Ludwig.** 1976. “From Mises to Shackle: An Essay on Austrian Economics and the Kaleidic Society.” *Journal of Economic Literature*, 14(1): 54–62.
- Lachmann, Ludwig.** 1986. *The Market as an Economic Process.* New York: Basil Blackwell.
- Lewin, Peter.** 1997. “Hayekian Equilibrium and Change.” *Journal of Economic Methodology*, 4(2): 245–66.

- Lewis, Paul.** 2012. “Emergent properties in the work of Friedrich Hayek. Emergence in Economics.” *Journal of Economic Behavior & Organization*, 82(2–3): 368–78.
- Machlup, Fritz.** 1958. “Equilibrium and Disequilibrium: Misplaced Concreteness and Disguised Politics.” *The Economic Journal*, 68(269): 1–24.
- McKinnon, Ronald.** 1973. *Money and Capital in Economic Development*. Washington: Brookings Institution.
- McKinnon, Ronald.** 1992. “Spontaneous Order on the Road Back from Socialism: An Asian Perspective.” *The American Economic Review*, 82(2): 31–36.
- McKinnon, Ronald.** 1993. *The Order of Economic Liberalization. Financial Control in the Transition to a Market Economy*. 2nd ed. Baltimore: Johns Hopkins University Press.
- McKinnon, Ronald and Huw Pill.** 1997. “Credible Economic Liberalizations and Overborrowing.” *The American Economic Review*, 87(2): 189–93.
- Miller, Edward M.** 1977. “Risk, Uncertainty, and Divergence of Opinion.” *The Journal of Finance*, 32(4): 1151–68. <http://www.jstor.org/stable/2326520>.
- Mills, Paul and John Kiff.** 2007. “Money for Nothing and Checks for Free: Recent Developments in U.S. Subprime Mortgage Markets.” IMF Working Papers 07/188. <http://ideas.repec.org/p/imf/imfwpa/07-188.html>.
- Minsky, Hyman.** 2008. *Stabilizing an Unstable Economy*. 1st ed.: McGraw-Hill.
- Mises, Ludwig v.** 1998. *Human Action. A Treatise on Economics*. 4th ed. New York: Foundation for Economic Education.
- Mulligan, Robert F.** 2009. “The Sensory Order and the Structure of Production: Entrepreneurial Planning as a Cognitive Process.” *Studies in Emergent Order*, 2: 109–41.
- Nishimura, Kiyohiko G. and Hiroyuki Ozaki.** 2007. “Irreversible Investment and Knightian uncertainty.” *Journal of Economic Theory*, 136(1): 668–94.
- O'Driscoll, Gerald.** 1977. *Economics as a Coordination Problem. The Contributions of Friedrich A. Hayek*. 1st ed. Kansas City: Andrews & MacMeel.

- O'Driscoll, Gerald and Mario Rizzo.** 1996. *The Economics of Time and Ignorance*. 2nd ed. New York: Routledge.
- Radelet, Steven and Jeffrey Sachs.** 2000. "The Onset of the East Asian Financial Crisis." In *Currency Crises*, ed. Paul Krugman, 105–62: University of Chicago Press.
- Rajan, Raghuram and Luigi Zingales.** 2003. "The Great Reversals: The Politics of Financial Development in the Twentieth Century. Tuck Symposium on Corporate Governance." *Journal of Financial Economics*, 69(1): 5–50.
- Reinhart, Carmen and Vincent Reinhart.** 1999. "On the Use of Reserve Requirements in Dealing with Capital Flow Problems." *International Journal of Finance & Economics*, 4(1): 27–54.
- Reinhart, Carmen and Kenneth Rogoff.** 2009. *This Time Is Different. Eight Centuries of Financial Folly*. Princeton: Princeton University Press.
- Rizzo, Mario.** 1990. "Hayek's Four Tendencies Toward Equilibrium." *Cultural Dynamics*, 3(1): 12–31.
- Rodrik, Dani.** 1998. "Who Needs Capital-Account Convertibility?" In *Essays in International Finance 207*, 55–65: Princeton University.
- Salerno, Joseph.** 2011. "A Reformulation of Austrian Business Cycle Theory in Light of the Financial Crisis." Department of Finance and Economics, Pace University. Mimeo. http://econ.as.nyu.edu/docs/IO/18508/Salerno_2011April11.pdf.
- Schularick, Moritz and Alan M. Taylor.** 2012. "Credit Booms Gone Bust: Monetary Policy, Leverage Cycles, and Financial Crises, 1870–2008." *American Economic Review*, 102(2): 1029–61.
- Schumpeter, Joseph.** 1983. *The Theory of Economic Development. An Inquiry into Profits, Capital, Credit, Interest, and the Business Cycle*. New Brunswick, N.J: Transaction Books.

- Selgin, George.** 1987. "Praxeology and Understanding. An Analysis of the Controversy in Austrian Economics." *Review of Austrian Economics*, 87(2): 19–58.
- Stiglitz, Joseph.** 2000. "Capital Market Liberalization, Economic Growth, and Instability." *World Development*, 28(6): 1075–86.
- Stringham, Edward.** 2003. "The Extralegal Development of Securities Trading in Seventeenth-Century Amsterdam." *The Quarterly Review of Economics and Finance*, 43(2): 321–44.
- Sugden, Robert.** 1989. "Spontaneous Order." *The Journal of Economic Perspectives*, 3(4): 85–97.
- Witt, Ulrich.** 1997. "The Hayekian Puzzle: Spontaneous Order and the Business Cycle." *Scottish Journal of Political Economy*, 44(1): 44–58.

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