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Financial regulations for minimizing economic and social crises: an evolutionary-developmental analysis reckoning with unequally rational individuals

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Abstract: This chapter has two objectives: to produce new arguments for an actual policy issue and thus demonstrate the fruitfulness of a new theory. The theory is a recently proposed generalization of Darwinism termed "evolutionary-developmental economics," which recognizes individuals to be rational only boundedly and unequally. The issue is old, but actualized by the recent financial crises: By what government regulations, if any, could such crises be prevented, or at least mitigated, and what regulations would, or actually did, make the crises even worse?

The theory relates financial regulations to the institutional rules produced by economic evolution that shape and guide economic development. The recognition of rationality inequalities brings to the center the institutional rules that shape selection processes. Regulations needed for successful development are found to be certain general institutional rules, including a sharp antitrust law and a small financial transaction tax, whereas specific government controls, including government ownership of investment banks, are found most likely harmful. The regulations are found to clash with many vested interests, but also to be essential for avoiding new institutionally disruptive crises, and thus allowing capitalist institutional frameworks, the only adaptively efficient ones, to be evolutionarily sustainable.

1 Introduction

This paper has two objectives: to produce new arguments for an actual policy issue, and thus demonstrate the fruitfulness of a new theory. The theory is the generalization of Darwinism termed "evolutionary-developmental economics" ("evo-devo economics") presented in Pelikan (2011, 2012), which differs on several important points from the previously proposed generalization by Hodgson and Knudsen (2006, 2010). Why a generalization of Darwinism needs to demonstrate its usefulness is that many economists, even some evolutionary ones, have for a long time been claiming that none of its forms might have fruitful economic applications, and could support this claim by pointing to the lack of such applications for the Hodgson-Knudsen form (see, e.g., Cordes, 2006; Witt, 2006; Schubert, 2013). Demonstrating that a different form of generalized Darwinism *can* be fruitful is therefore important: this may stop economists from throwing all of Darwinism into a wastebasket, and thus miss many of its principles which, when suitably generalized, may throw valuable new light on several important economic issues.

Some hints that the evo-devo economics may be more fruitful than the purely abstract top-down generalization of Darwinism by Hodgson and Knudsen may be seen in its building bottom-up on principles that already helped understand certain concrete issues – for example, how to compare capitalism with socialism for the abilities to generate, and adapt to, innovations (Pelikan, 1988), or how to transform a failed socialist economy into a more successful one (Pelikan, 1992). But all those issues are now rather dated, which makes it necessary, to demonstrate its usefulness, to address another, more actual one.

It is for this purpose that the issue of government financial regulations appears particularly suitable. While it allows the demonstration to be relatively easy, the recent financial crises with their disastrous impact on entire economies and societies have also made it highly actual. It may be stated as follows: By what government regulations, if any, could financial crises be prevented, or at least mitigated, and what regulations would, or actually did, make the crises even worse?

But the present dealing with this issue will be limited in two ways. First, it will not produce any new financial regulations, and that for a good reason: all of their possible and imaginable forms appear to have already been extensively debated, which makes it

virtually impossible to invent any brand-new ones. It is only that many of the known ones still make even the most respected economists disagree. What can be produced are thus only some additional arguments that strengthen the already existing support of some and/or the opposition to other known regulations, and in this way help settle such disagreements.

Second, the dealing is limited in space. On the few pages that a chapter in a collective book is allowed to take, it is not possible to elaborate the arguments in all relevant details. But I hope that the main ideas will be presented clearly enough to allow interested readers to elaborate the details themselves.

The rest of the chapter is organized as follows. Section 2 will present the main idea of the evo-devo economics, with particular attention to its reckoning with rationality inequalities. Section 3 will summarize its perspective on the financial sector, centered on the role of this sector in rationality-allocation. Section 4 will recall and summarize the main finding of rationality-allocation analysis in Pelikan (2010): *markets have the potential for selecting far better entrepreneurs and investors than government, but need certain government regulations to realize it*. Using examples from the recent financial crises, Section 5 will show why in the case of financial markets this potential may indeed remain far from realized, and how these markets, when left alone, may develop in the wrong way and lead to deep economic and social crises. Considering some of the often debated financial regulations, Section 6 will indicate which of them evo-devo analysis finds helpful, or even urgently needed, and which of them it finds ineffective or harmful. Section 7 will conclude by briefly considering the possible obstacles to the implementation of the needed regulations, due in part to government and in part to private investors, and by pointing out the evolutionary sanctions bound to hit the economies where these obstacles will not be overcome.

2 Evo-devo economics: main principles

As indicated by its name, evo-devo economics decomposes economic change into two interconnected, but to a large extent separately analyzable layers: (i) developmental processes that take place under given institutional rules and (ii) evolutionary processes

that change these rules.[1]

It thus combines parts of the neo-Schumpeterian economics following Nelson and Winter (1982) with the new institutional economics following North (1990), but with two terminological adjustments. The first is that neo-Schumpeterian economists like to call their field "evolutionary," while the evo-devo economics terms it, in agreement with the their grand-father's classical work, "developmental" (cf. Schumpeter, 1912/1934).

The second adjustment is that what North defines as "institutions" is called more explicitly "institutional rules." The reason is that despite North's efforts to provide the term "institutions" with a clear operational meaning – namely the one of "the rules of the game," such as formal laws and informal socio-cultural norms – this term still remains highly ambiguous. It is still widely used in many other and not always well-defined meanings – including routines, language, money, large firms, banks, universities, and government agencies. This ambiguity is particularly disturbing in applications to financial economics, where the term "institutions" usually denotes large banks and investment firms, which, according to North's definition, are "organizations." It appears therefore safest to avoid this term altogether, and use the more explicit term "institutional rules" for referring to "institutions" in the sense of North, while following him by referring to banks, other firms, and government agencies as "organizations."

The terminology of new institutional economics is moreover complemented in two ways. First, the term "institutional framework" is defined to denote the set of all the formal and information institutional rules that belong to a given organization, or a given economy. Second, institutional rules and frameworks are admitted to be of several interrelated organizational levels – such as the one of the entire economy and the one of its firms and other organizations. An important example is the corporate law that constrains the permissible variety of forms of corporate governance of for a large category of firms by prescribing some of the governance rules and/or prohibiting others.

This terminology makes is possible to relate in a well-defined way "institutional

[1] The readers who understand biology may like to compare the two layers of economic change to the two layers of biological change: (i) the development of organisms shaped by their genome (ontogeny); and (ii) the evolution of genomes (phylogeny). The proposed evo-devo economics may then also be compared to the relatively new field of evo-devo biology. But these comparisons have important factual limits that must be carefully taken into account (Pelikan, 2011). While they may inspire economists with a good understanding of biology, they may confuse the others, who should therefore disregard them.

rules" to "regulations," and clearly distinguish the different meanings in which this term has been used. This may be useful, as proponents and opponents of financial regulations sometimes appear to disagree simply because they differ, without realizing it, in their understanding of this term. Two distinctions are of particular importance.

One is between *general regulations* that are themselves institutional rules, designed and implemented by the legislative branch of government, and *specific controls* that intervene into the course of selected transactions and/or the management of selected firms, possibly including their ownership, which is conducted by the executive branch of government. The key relationship is that the latter can be conducted only to the extent allowed by the former. Note that this solves the apparent paradox that weakening the state may require strengthening it, which confused many ideological controversies between proponents and opponents of government activities. The solution simply is that the state may have to be strengthened as legislator, to be able to limit, against the usually powerful opposition of its employees, the extent of its executive decisionmaking.[2]

The second important distinction is between general regulations concerning *inter-firm relationships* and those concerning *intra-firm governance*. This distinction is particularly important when searching for remedies against inefficiently behaving firms – such as too risk-loving banks. It usefully structures this search by dividing the great number of possible regulations between those accepting the firms as they are and trying to stop their inefficient behaviors by disincentives and interdictions from outside, and those trying to make the firms themselves behave more efficiently by changing them from inside – for instance, by enforcing rules that better align the incentives of their managers with their long-term performance. Note that such regulations, if successful, would make most of the outside disincentives and interdictions – known never to be precise and often do more harm then good – largely superfluous.

All this was necessary to make clear to avoid the terminological fuzziness and misunderstandings by which the debate about financial regulations has often been scourged. For making a meaningful contribution to this debate, however, it is necessary to bring into it another feature of evo-devo economics, on which it most markedly depart

[2] This distinction closely corresponds to the one made by Hayek (1973) between "general rules" and "particular measures."

from existing economic theories, namely is its recognition that human rationality – in the empirical sense of cognitive abilities (skills, competence, intelligence, talents) – is not only bounded, but moreover unequally so across individuals. This recognition ranges rationality among the scarce resources that pose the problem of their efficient allocation in society, and makes it play a central role in both the development of economies and the evolution of their institutional rules.

In its entirety, the problem of rationality-allocation is difficult to solve. As explained in Pelikan (2010), it involves what Hofstadter (1979) terms "tangled hierarchies," which puts it outside the reach of straightforward analysis. For present purposes, however, it suffices to view it as a trial-and-error experimental process of job-designing and job-assigning, of which we only need to consider two relatively simple aspects: (1) the relevant rationality of the individuals selected for top entrepreneurial, managerial and investment jobs; and (2) the losses from what Heiner (1983) calls "competence-difficulty gaps" ("c-d gaps"), caused by individuals that are, or have become, insufficiently rational (competent) for their jobs, and/or by jobs that are, or have become, too difficult for their individuals.

What leads to the present issue of financial regulations is that the outcomes of rationality-allocation, including the two indicators, strongly depend on the prevailing institutional rules, related to financial regulations in the above-clarified ways.

3 The perspective of evo-devo economics on the financial sector

As usual, the financial sector is seen composed of financial markets and financial agents, which may be individuals or organizations, including private firms and specialized government agencies. All organizations are seen to consist of interrelated decisionmaking individuals – such as capital owners, managers, other employees, politicians and government bureaucrats. The sector's forming, operating, and reforming (restructuring) are constrained and shaped by specialized institutional rules, a subset of the economy's institutional framework.

The main task of the financial sector is seen to be transforming concrete savings into concrete investments. As opposed to the Keynesians who assume this automatically done by the equation I=S, this transformation is recognized to require a complex network

of incompletely informed, and therefore full of trials and errors, organizational and allocational processes, shaped by the prevailing institutional framework, and far from guaranteed to work well.

In this context, the key step of evo-devo economics is to enlarge attention from the usually studied allocation of investments to *the selection of the investors*. While investment decisions are always risky and cannot avoid errors, some investors are more relevantly rational, able better to observe, perceive and process available information, and thus also *likely* to commit fewer and less serious errors, than others. As is well known, some investors have indeed proved better able to distinguish, among actual and potential entrepreneurs, future winners from future losers. An institutional framework that leads the selection to promote relevantly highly rational investors, and demote the poorly rational ones, makes the economy more efficient than an alternative framework that prevents potentially excellent investors from entering and/or protects little-competent incumbent investors from exiting.

This does not mean to neglect the sector's other tasks, in particular the usually studied provision of *stability*, *liquidity* and *risk-spreading*. Although perfect stability, because of both exogenous and endogenous disturbances, can never be achieved, the institutional framework, to be evolutionarily sustainable, must be able to keep the unavoidable fluctuations from falling into too deep, institutionally disruptive crises. Liquidity remains important, but only as an extra incentive for short-term savers, to increase the amount of the savings available for investment above the one offered by the long-term savers – although this increase may often be decisive. Risk-spreading also remains important, but is not the only risk-related task that the sector is seen to perform.

How evo-devo analysis modifies the usual views of these tasks can be summarized in three points. One is a slight lowering of the status of liquidity from "most important" to "important." The top importance is here accorded to the efficiency of allocation of investments to entrepreneurs, and therefore to the selection of investors. This makes room for tradeoffs in which some liquidity may prove worth sacrificing as a means of improving the efficiency of the allocation and/or the selection.

Second, the selection of investors, to be efficient, must favor highly rational *fundamentalists*, to the detriment of highly rational trend-traders (noise-traders). For the

efficiency of the financial sector, as explained below, trend-traders are not very helpful, and may even be highly harmful as sources of important disturbances and market failures. But how to direct the selection to make it promote fundamentalists, and not trend-traders, is a difficult problem for which no known institutional framework appears to have a fully satisfactory solution. Financial regulations that could help solve this problem would thus be of a particularly high social value.

Third, the financial sector is seen to have an extra task in dealing with investment risks. Instead of assuming them exogenously given and limiting attention to their spreading, as is usual to do, their sum is seen to a large extend endogenous, significantly depending on the relevant rationality of the investors: the higher this is, the lower the sum will be. This enlarges the risk-related tasks of the financial sector from risk-spreading to risk-minimizing, and thus further enhances the importance of the selection of investors.

4 Markets have the potential to select far better entrepreneurs and investors than government, but may fail to realize it

This is, in essence, the main finding of the comparative rationality-allocation analysis presented in Pelikan (2010). This means that, in whatever ways the financial sector might fail, government selection of entrepreneurs and investors cannot be the right remedy. The only hopeful strategy is therefore to search for ways in which the failures could be alleviated, and the markets could thus realize their greatly superior potential. This finding implies a few lessons which may help start this search.

Lesson 1: Market competition has a higher social value than usually recognized. In addition to being important for the efficiency of prices and quantities of the transactions among given market participants, it is even more important for the efficiency of the *selection* of these participants – especially of efficient producers, and of such producers finding investors. This is indeed a key point of the entire finding: for top *economic* jobs, the *politico-administrative* selection run by governments – democratic or not – cannot, *in average*, do much better than select individuals of only slightly above-the-average *relevant* rationality (talents, competence), but is unlikely to find and keep any of the exceptional entrepreneurial champions, without whom no economic development can be very successful.

Lesson 2: The limits of socially efficient sizes of firms are lower than usually recognized. The drop is particularly great compared to transaction-costs economics, by which the old classical limits, due to concerns with inefficient pricing and monopoly rents, were substantially lifted (Williamson, 1985). In contrast, evo-devo economics lowers them again, and that for three reasons.

First, the high importance of market competition for firm-selection and rationality-allocation increases the importance of keeping it going. No current winner must therefore be allowed to grow as big as to become a serious obstacle to its continuation, and especially not "too big to fail."

Second, the recognition of the possibility that individuals in any firm, however large and previously successful, may commit errors which cause the firm to decline or even collapse, leads to the problem of the safety of the entire economy. It is this safety that requires the sizes of the economy's firms to be kept relatively low, to prevent the collapse of any of them from seriously damaging the rest.

Third, as noted, rationality-allocation involves the problem of competence-difficulty gaps, which implies yet another constraint on the sizes of firms. To avoid such gaps, no firm can be larger and/or more diversified than what the individuals selected for its management, given their relevant rationality (competencies, talents), can handle. If market selection worked well, of course, such gaps would be rather easily discovered and corrected: the individuals causing them would be demoted, or their firms would be forced to shrink, or both. But there is rich empirical evidence showing that market selection is often far from working so well. Many firms appear to have grown, or even purposefully made, so big that they can hinder the selection, and thus allow wasteful gaps between the difficulties of managing them and the relevant rationality of their managers to last for quite a long time.

Lesson 3: Evo-devo analysis makes it possible to assess and compare institutional frameworks of economies in a value-free way, independent of the ideologies or political preferences of the analysts. Instead of letting these choose some social welfare function according to their subjective values – depending, for instance, on their preferred efficiency-equity tradeoff – evo-devo assesses institutional frameworks according to their evolutionary *sustainability* (maintenance, "survival"). This depends on their success in

two selection tests: (A) for *economic efficiency*, and (B) for *political acceptability*.

Test (A) depends on the harshness and the variability of the natural and economic environments, which imply a certain minimum of efficiency, both allocative and adaptive, to which a successful institutional framework must lead. Test (B) depends on the values and preferences of the population, which imply certain criteria of perceived justice, both procedural and substantive, that a successful institutional framework must meet. Note that many institutional frameworks that succeed in (A) may fail in (B), and vice versa. Note also that values do play a role, but they are those of the population considered, and not the ones of the analyst.

What matters most here is that this evolutionary value-free way of assessing institutional frameworks implies a value-free definition of the notion of "failure": this refers to any of the ways in which they may fail in any of the two tests.

5 Why may financial markets fail to realize their potential?

In general, the failures of any part of an economy can always be ascribed to some "misbehaving" individuals, who – because of their wrong incentives and/or insufficient or misleading information and/or insufficient competence (bounded rationality) for using the information available – don't do what they should and/or do what they shouldn't.

In the case of the financial sector, the misbehaving individuals may be private investors, or government agents, or both. The recent financial crises can indeed be shown due to both. The failures of governments were enormous indeed, but are rather obvious. In part, as pointed out by public choice and rent-seeking theories, all governments tend to grow and overspend, which in many cases, both in Europe and in the US, resulted in enormous public debts. In part, but this was mainly the case of the US government, it was the wrong regulations that limited the possibilities of private investors to behave efficiently – such as the anti-discrimination laws that importantly contributed to the growth of subprime mortgages. Moreover, the US government may also be blamed for underestimating the possibilities of market failures, and consequently allowing private investors to behave inefficiently by mistaken deregulations – such as the one that abolished the Dodd-Frank Act, and thus allowed fusions of low-risk commercial banking with high-risk investment banking. But this blame in fact leads to market failures:

without them, all deregulations would be efficient.

The failures of financial market due to the (mis-)behavior of private investors may be divided into six types. All of them can be shown theoretically possible and – according to the wisdom of engineers that if something *may* go wrong, sooner or later it *will* – must therefore be considered practically inevitable, if nothing is done to prevent them. In fact, all can be found to have played a non-negligible role in causing the recent financial crises.

Failure 1: Financial firms that irrationally misuse market freedoms (to the great surprise of the market-efficiency-expecting deregulators) for taking excessive risks and consequently suffering excessive losses. Note that this does not necessarily concern the rationality of the individuals within the firms. Although many of them may have also been far from perfectly rational, faulty corporate governance – such as the one that fails to make managers responsible for the losses caused – would suffice to make even perfectly rational individuals form an irrationally (inefficiently) behaving firm.

Failure 2: Overgrown financial firms that become "too big to fall" – or in other words, attain the blackmailer status. They become able to blackmail the taxpayers, demanding these to pay for their losses, under the threat that their fall would be even more socially costly. This failure puts the valuable market selection out of work, allowing underperforming financial firms together with their from competence-difficulty gaps likely suffering management to eschew it and stay put.

Failure 3: Developing increasingly complex, for buyers insufficiently described financial instruments, which amplify information asymmetries and make financial firms increasingly interdependent. Errors committed by one can thus seriously damage in not fully understood ways many others. The growing complexity is also an important source of costly c-d gaps. It increasingly challenges even the best investors – as many of them sincerely admitted that they no longer knew very well what they were trading with.[3]

Failure 4: Excessive market volatility, exaggerating the amplitude of market fluctuations, and thus the depth of the recurrent crises, far beyond what appears to be, given the complexity of an advanced capitalist market economy and the chaotic character of the fluctuations, inevitable. The prime suspects are trend-trading investors,

[3] This failure is nicely described with many concrete examples in Harford (2011).

traditionally known for their flock behavior causing excessive market volatility, and speculative bubbles followed by deep crises. More recently, advances of mathematical modeling and developments of information technologies have increased their opportunities for making private gains by destabilizing the markets – for instance, by various tricks in high-frequency trading. This is one of the ways in which they are harmful.

Failure 5: Trend-traders cause an even more serious market failure, which appears to need evo-devo analysis to be clearly seen. When their number exceeds some relatively low threshold – which now appears to be always the case – they distort the very selection criteria of financial markets. This in turn distorts the incentives for all investors, who will find it most rewarding to become trend-traders themselves, and will therefore spend most of their efforts on guessing how other investors will act, rather than on the socially more useful learning about the real abilities and future possibilities of producers.[4] This market failure may thus be seen as a new variant of the old public-goods market failure: in both cases the markets fail to provide the right individual incentives for socially efficient behavior, including socially efficient learning.

Failure 6: An important overgrowth of the entire financial sector, observable in the growing volume of transactions on financial markets. This was growing much faster than the useful output of the sector in terms of the capital supplied to producers and consumers – estimated to have grown since 1998 up to six times as large (cf. Blundell-Wignall, 2011, figure 1). Intuitively, such a financial sector might be compared to a highly inefficient motor that uses more and more energy just for running itself, or to a cancerous growth that threatens to kill the entire organism.

All of these failures are both economically wasteful and – because of the many growing and to a large extent perceived as undeserved wealth and income inequalities – also politically explosive. This is a serious double threat to the evolutionary sustainability of capitalist institutional frameworks, so much more serious that for large society needing innovations, capitalism has no good substitute (cf., e.g., Pelikan, 1988).

[4] This distortion was pointed out by many investors, including J.M. Keynes and G. Soros. With some imagination, the situation may be compared to an absurd search for the best chess players in which only winners in poker tournaments could participate.

6 What financial regulations might help?

In general, referring to the above classification of government regulations, evo-devo analysis strengthens the advocacy of certain institutional rules and the objections to virtually all specific controls. The objections directly follow from Lesson 1 of Section 3. As governments are unlikely to select the best relevant rationality for complex economic decisionmaking, they cannot be relied upon to choose the right indicators, calculate for them the right values, and effectively coerce the individuals within financial firms, most likely far more competent than themselves, into the desired behaviors. Their situation may be compared to the one of Soviet planners facing the managers of socialist firms: these always found ways of formally fulfilling the plan without really doing what the planners wanted them to do – to which all the Basel capital and liquidity requirements appear increasingly to resemble.

The advocacy of regulations by institutional rules needs more elaboration. First of all, it must be admitted that government is unlikely to have the best relevant rationality even for this task. But it must then also be recognized that this task is significantly less demanding than most of specific controls. Intuition may be helped by comparing this task to the organizing of chess tournaments, for which there are good explicit theories and which even average-talented people can do reasonably well; and specific controls to actually to playing top chess, for which talents are much scarcer and cannot be properly discovered otherwise than just by competition in well-organized tournaments (cf. Pelikan, 2010).

The regulations by institutional rules that evo-devo analysis helps to advocate are of four main types. They may be surveyed and their expected effects on the above-listed market failures briefly mentioned as follows.

1) The rules of corporate law constraining the design of corporate governance within financial firms which help minimize the rent-seeking opportunities of the firms' managers and better align the incentives of all employees with the firms' long-term performance. This type of regulation is needed for alleviating Failure 1, and may also help alleviate Failure 2, to the extent that the excessive growth of financial firms is also due to distorted incentives of their managers.

2) Antitrust legislation that cuts down growing financial firms into smaller parts in

good time, before they could reach the "too-big-to-fall" level, and stops all the mergers and acquisitions that could lead to it. The cuts may be into smaller firms competing on the same market, or specializing in different markets (e.g., as required by the Dodd-Frank Act, separating investment banking from retail banking).

It is of course hardly possible to determine with precision what this critical level should be. Only some imperfect guesses and rules of thumb may be used, possibly combined with some experimental learning process. Evo-devo analysis, by pointing to the high social value of keeping market competition and selection working, adds an argument for cutting more than what standard analysis may indicate. This type of regulation is mainly needed for preventing Failure 2, but may also alleviate Failure 6, to the extent that the inefficient overgrowth of the entire financial sector is also due to the excessive growth of some its firms.

3) Rules constraining the complexity of financial instruments, demanding full buyers' information on their contents, and excluding those that interconnect financial firms too tightly. This type of regulation is directly required by Failure 3. It is of course again impossible precisely to determine the limits of admissible complexity and admissible interconnectedness. Some imperfect guesses and rules of thumb are therefore again necessary. But, given the large losses that Failure 3 demonstrated to be capable of causing, setting the limits a little too low appears again safer than setting them too high.

4) A small tax on financial transactions ("Tobin tax"). Evo-devo analysis plays down its often quoted redistributive effects are secondary, and objects to labeling it "Robin Hood," as this can make people mistakenly believe that it is only a kind of enforced charity. In contrast, evo-devo analysis finds it efficiency-improving, alleviating Failures 4 and 5. In other words, this analysis finds its main task not in helping the poor, but in calming down the rich, and inducing them to compete for excellence in the socially valuable art of fundamental investing, rather than in the much less valuable and possibly even harmful one of over-smarting each other thousands times per second. If the tax is so small that it discourages only high frequency trading, but not the investing by fundamentalists, it may indeed alleviate both these failures. Intuitively, its effects on Failure 4 may be compared to those of an oscillation-dampening resistance inserted into the feedback loop of a too jumpily overreacting servomechanism. Its effects on Failure 5

may be compared to those of a pesticide limiting the spread of noxious organisms. If so small, the inevitable loss of liquidity may be quite negligible, largely compensated for by lower volatility and more relevant criteria for the market selection of investors.

7 Political obstacles and evolutionary consequences

It is essential to avoid wishful illusions about both markets and government. While markets, especially the financial ones, may seriously fail, government may be far from doing any better. Instead of designing and implementing the right regulation, it may implement the wrong ones that make the markets fail even more, and/or fail to implement the right ones, and thus let the market failures fully develop into a deep crisis.[5]

The reasons why government may, and often indeed does, fail are of two types, nicely summarized long time ago by Mill (1861/1972): "The positive evils and dangers of the representative, as of every other form of government, may be reduced to two heads: first, general ignorance and incapacity, or, to speak more moderately, insufficient mental qualifications, in the controlling body; secondly, the danger of its being under the influence of interests not identical with the general welfare of the community."[6]

Since then, however, most of economic analysis has been built on the assumption that everyone is perfectly rational, able to find optimal solutions to all economic problems, which made it blind to the possibilities of "insufficient mental qualifications" and narrowed its attention to the second head. This has perhaps most thoroughly been examined in the original version of public choice economics.[7] Important obstacles to efficient economic policies, and therefore also to efficient financial regulations, were there discovered in the vested interests of government policymakers, or the private

[5] An example of government simultaneously failing in both ways can be found in the recent history of Czech economy. After the sophisticated and arguably successful coupon privatization in the beginning of the 1990's, intended to start the working of financial markets, the government failed to provide the standard regulations for protecting minority owners, which allowed widespread and greatly harmful asset-stripping – the so-called "tunneling" – and instead protected old socialist managers by forbidding investment funds to acquire more than 30% shares in one enterprise. The harm was triple: (i) economic, as for several following years many international investors avoided Prague; (ii) political, as a large part of the Czech electorate lost the initial enthusiasm for the market economy and started to vote for economically irresponsible leftist parties, including the old communists; and (iii) long-term social, as these two failures seriously distorted the criteria for the selection of top entrepreneurs and investors, causing a large part of the Czech economic elite to be selected from ethical bottom.

[6] I am grateful for this reference to Niclas Berggren.

[7] For a clear concise presentation of the main ideas of this version of public choice economis, see Buchanan (2003).

investors on which these may depend, or both.

Most policymakers must indeed be expected opposed to limiting their powers, as this would threaten their jobs, and to shrinking the size of the financial sector, as this would decrease, in the short term to which their horizon is often limited, the economy's GNP and their tax revenues. To oppose such shrinking is also in the interest of private investors and their employees, who are moreover likely to oppose all sharpening of market competition and selection, for few of them can be sure of remaining the winners. In addition, managers of financial firms must be expected to oppose all reforms of corporate governance that would limit their opportunities for rent-seeking at the owners' expenses.

In this context, the advantage of evo-devo economics is that it can clearly see and fruitfully analyze what Mill listed as the first head. Thanks to its recognition of rationality inequalities, it can estimate the expected rationality bounds of politicians and civil servants, and compare them to those of private entrepreneurs and investors, by exploring the selection processes by which the former and the latter, respectively, are being chosen for their jobs (cf. Pelikan, 2010).

In fact, most of the above arguments about financial regulations may be seen as partial results of this exploration. But one point may need an additional clarification. This is the distinction between (i) the relevant rationality needed for top business entrepreneurship and investment, and (ii) the one needed for designing efficient institutional rules, including financial regulations. While government is likely to suffer from some "insufficient mental qualifications" for both, the two cases substantially differ in their policy implications.

In case (i), the rationality needed is scarcer, more difficult to recognize, and more sophisticated in tacit, non-communicable ways, which limits the possibilities for obtaining it from explicit theories. Of this kind of rationality, as noted above, government is unlikely to possess enough to make its firms and investment banks lastly efficient. But this is not a very serious problem, as there is an alternative way of finding and keeping enough of it: market competition and selection. The policy implication is that government should not try to own, organize and manage firms – and especially not the financial ones – but leave all this to the private sector.

Case (ii) differs in two ways. First, the needed rationality is less exceptional and less tacit, and may therefore also be more extensively helped by theories – such as new institutional economics, constitutional economics, and law and economics. Intuitively, as noted, this difference can be compared to the one between the highly exceptional abilities for playing top chess and the less exceptional ones for organizing chess tournaments. But, and this is the second difference, there is no alternative way to putting this kind of rationality to work than by means of political selection, democratic or not, of the legislators. The policy implication is that for the markets that are prone to develop serious failures unless shaped by suitable institutional rules (regulations) *and* unable to evolve such rules spontaneously themselves, there is no other solution than to ask the imperfect legislators to do their best and try to design and implement such rules, and ask the imperfect theoretical economists to do their best and try to build *and communicate* theories that could be helpful, and not misleading, for this task.

Thus, although the theories may be insufficient or even wrong – as the past crises have so many times revealed – and the legislators can make costly mistakes by missing the right regulations and/or implementing the wrong ones, there is simply no alternative. The favorite argument of the opponents to government regulations that government should do nothing because it cannot know what the optimal regulations are does not hold: many markets, and especially the financial ones, if unregulated by any formal institutional rules, would be far from optimal, too.

In evo-devo economics, however, the notion of "optimality" is not even very important. As explained in Lesson 3 above, the main success criterion is there the evolutionary sustainability of institutional frameworks of economies, to which financial regulations directly belong and/or by which they are indirectly constrained. The inquiry into these regulations, including non-regulation, is thus lead to their evolutionary consequences. Particularly important ones are the crises that different regulations and non-regulation may sooner or later cause, or fail to prevent. These may be economical, due to a too low economic performance with a too high unemployment, and/or political, due to too high income inequalities, especially if a large part of the highest incomes is perceived, according to prevailing values, as undeserved, acquired in too unethical ways.

Of course, such an evolutionary inquiry is far from easy. It needs tools from

several new fields of economic research and must take into account the variability of many parameters. For instance, cultural evolution may change the prevailing values in different directions, and thus make large income inequalities politically more explosive, or less explosive.

But the inquiry is definitely worth conducting, for its findings promise to be of a great social value. The knowledge that certain financial regulations have a chance to be evolutionarily sustainable, whereas others are bound to lead to a painful, institutionally disruptive crisis, would doubly facilitate policymaking: it would help to make generally beneficial choices; and it would lower the political obstacles to such choices by enlightening the different opposing self-interests. That the knowledge is expected only to lower the obstacles, and not to efface them entirely, deserves emphasis, to avoid the suspicion of a naïve wishful thinking. Even so, however, its social value is great enough to put the search for it high on the economists' agenda, much higher than it is now.

Both objectives of this chapter may now be considered met. Evo-devo analysis did produce some new arguments for an important policy issue, and thus did demonstrate its fruitfulness.

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