

1st Ferdinand Pecora Prize

**Of dogs, black swans and endangered species:  
a perspective on financial regulation**

**Laudatio of Andrew G. Haldane**

by Luigi Federico Signorini

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I am happy to deliver the *laudatio* for Andrew Haldane on the occasion of his nomination, by unanimous decision of the International Rome Conference on Money, Banking and Finance, as the first person to be awarded the Ferdinand Pecora Prize. It is also a pleasure to welcome in Palermo a brilliant colleague and a friend.

Ferdinand Pecora was a native of this island. He was born in Nicosia in 1882, and emigrated to the United States as a child, in 1886. There, he started his career as an assistant district attorney in New York City, where he earned an excellent reputation as a prosecutor. But his good credit eventually turned against him: his application as district attorney was rejected, due to fears that an overly fervent Pecora could bring local politicians to court. After this turn of events, Pecora left the district attorney's office for private practice until the beginning of 1933, when he was appointed Chief Counsel to the US Senate's Committee on Banking and Currency. In this assignment he was the fourth – and last – chief counsel in the inquiry launched by the Senate Committee to investigate the causes of the Wall Street crash of 1929. It was largely as a result of what came to be known as the 'Pecora Investigation' that the US Congress passed the 'Glass-Steagall' Banking Act of 1933, the Securities Act of 1933, and the Securities Exchange Act of 1934.

This set of measures produced a radical change in the architecture of financial supervision in the United States, establishing a system that was to last for about two generations. The Banking Act mandated federal deposit insurance and separated commercial and investment banking; it created a Federal Open Market Committee and restricted bank competition and 'speculation'. These simple yet powerful measures were meant to prevent the recurrence of severe financial crises.

Was this arrangement optimal? Maybe it was fit for the times; but, decades later, the intellectually unavoidable trade-off between stability-oriented supervisory constraints and efficiency-oriented market freedom resurfaced in the policy debate. Beginning in the 1970s, in a changed cultural climate and with memories of the Great Depression fading, the Glass-Steagall rules were gradually weakened. The idea of unshackling market forces had growing appeal in academia, and was adopted and powerfully advanced by a banking industry eager for deregulation.

Eventually, the pendulum swung all the way to the other extreme, not just in one country but globally. At some point, minimum capital ratios seemed to be all that was needed to safeguard financial stability; beyond that, the markets were assumed to know best.<sup>1</sup> Financial innovation in the industry, coupled with the somewhat insouciant attitude of (some) supervisors, especially about the quality, i.e. the loss-absorbing capacity, of capital instruments (*and* a neglect for liquidity regulation, *and* a vast overestimate of the modellability of trading-book risk, and much else), paved the way for a seemingly golden era of impetuous growth in finance, flourishing

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<sup>1</sup> The Bank of Italy was a rather reluctant follower. We always kept stricter requirements on the composition of Tier 1 capital than was mandated by the Basel accords, and maintained for some time our own maturity transformation rules. On the latter, I regret to say, at some point we felt unable to go against the tide and formally abolished them in 2006. However, we still kept an eye on risks linked to maturity mismatches, and Italian banks were never allowed to go for a Northern Rock-style mismatch.

innovation, mind-boggling complexity of instruments and transactions, and very fine profits for banks. We know how it ended.

The shock of the crisis called for a rethinking of a purely laissez-faire approach to finance. To some, the idea was a return to what could be termed the old, safe ‘Pecora way’: an about-turn towards Glass-Steagall and the concept of ‘narrow banking’. To most, it was rather coming back to the Pecora *method*: a cautious, thorough assessment of the evidence, and a reappraisal of the fundamental trade-offs inherent in banking and financial regulation.

Andy has contributed to this debate in many ways, often bringing a fresh perspective. Inquiring about the nature of financial regulation has been Andy’s main field of interest over the past decade. One of the most important dimensions of the debate on optimal regulation is the trade-off between simple/rough/robust rules on the one hand, and a risk-sensitive/sophisticated/granular approach on the other; Andy’s memorable metaphors, and more importantly the reasoning behind them, have loomed large in that debate.

Like Mr. Pecora’s, Andy’s investigations were prompted by a dramatic financial crisis. Unlike Mr. Pecora, Andy lacked a specific parliamentary mandate. He investigated out of his own initiative from his office in Threadneedle Street: first as the Head of the Systemic Risk Assessment Division; then as Executive Director for Financial Stability; and finally, since June 2014, as Chief Economist and member of the Monetary Policy Committee of the Bank of England. Along this path, by the way, Andy also managed to get a nomination by TIME magazine as one of the 100 most influential people in the world in 2014.

It is certainly fitting that the first edition of this Prize is going to someone who, like Ferdinand Pecora, has helped us think through the potential, the objectives and the pitfalls of financial regulation. Andy’s contributions have been many and diverse; I won’t be able to do justice to all of them.

In 2009 Andy denounced the perils of an increasingly tight and potentially asymmetric relation between banks and the State.<sup>2</sup> His thoughts had wide resonance in the banking world. We always knew that the relationship between banks and governments is tricky. However, the Lehman collapse and then the European sovereign debt crisis brought the debate on ‘too-big-to-fail’ (TBTF) and systemic externalities to a new level. Andy played a significant role in this debate.

The issue of the ‘right’ size of banks is one that Andy tackled more than once, from different angles.<sup>3,4</sup> One of his key contributions was to remind us that *diversification* and *diversity* are not the same thing. Size and scope increase the benefits of diversification, so big banks (that is, larger portfolios) ought to be highly diversified and less prone to idiosyncratic risks. But global banks that are fully *diversified* cannot logically be *diverse*: they must hold the same portfolio. And this means

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<sup>2</sup> Alessandri P, Haldane AG, *Banking on the State*, September 2009.

<sup>3</sup> Haldane, AG, *The \$100 billion question*, March 2010.

<sup>4</sup> Haldane, AG, [On being the right size](#), Beesley Lecture at the Institute of Directors, London, 25 October 2012 (then published on the Journal of Financial Perspectives, 2, 1, 2014).

that they are likely to be more prone to a systemic collapse after a very bad aggregate shock. A simple look at what happened to some large international banks in the latest financial crisis illustrates how real this problem can be.<sup>5</sup> This is also an example of how risks that may not appear significant from a microprudential perspective may actually become much more worrisome if assessed through a macroprudential approach – a viewpoint whose importance Andy was among the first to stress.

Another channel through which TBTF status can endanger financial stability relates to the balance between idiosyncratic and aggregate risk. Regardless of their portfolios, large banks are particularly exposed to sovereign risk and policy uncertainty, two sources of aggregate risk. At the same time, the spread-risk relationship, i.e. the sensitivity of banks' funding costs to bank risk, weakens when a bank is thought to have TBTF status. Put differently, in relative terms large banks take less idiosyncratic risk, but more aggregate risk. This can make the system inherently riskier, and it is one of the reasons why many regulatory initiatives have tried to tackle the TBTF problem and reduce its externalities.<sup>6</sup> The related issue of the bank-sovereign loop is also dear to Andy.<sup>7</sup>

Andy has been an advocate of the idea that economists should communicate more with, and ideally learn more from, 'proper' scientists, and that some of the tools employed by biologists and engineers could be deployed in the financial sphere, too. His work on financial networks is motivated by the intuition that financial crises spread pretty much like diseases, through contagion mechanisms that depend on the nature and structure of the linkages between banks.<sup>8,9</sup>

A key message from Andy's work is that network complexity can be good or bad for financial stability. The reason for this is that highly interconnected interbank networks exhibit a knife-edge property. In the case of small shocks, the connections across banks (such as loans and repos) typically serve as risk sharing and mutual insurance devices, making the system more resilient. Beyond a certain threshold, however, they act as amplifiers, generating broad and unpredictable default cascades – an extreme form of systemic risk. Once again, the appeal of this story is immediate when thinking about our recent history: increasingly complex financial networks seemed to deliver greater stability for a long while, until Lehman – a large shock – came along.

The most vivid example of this principle that comes to my mind, however, has nothing to do with finance. On the 28<sup>th</sup> of September 2003, Italy was hit by a massive electricity black-out when a storm caused a tree flashover that interrupted the energy supply coming from Switzerland. This interruption increased the burden on the rest of the network, causing a number of other cross-border

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<sup>5</sup> See e.g. *Tracking banks' systemic importance before and after the crisis*, Banca d'Italia, QEF no. 259, January 2015. [https://www.bancaditalia.it/pubblicazioni/qef/2015-0259/QEF\\_259.pdf](https://www.bancaditalia.it/pubblicazioni/qef/2015-0259/QEF_259.pdf).

<sup>6</sup> Regulatory initiatives range from introducing a capital surcharge to placing limits on bank size, implementing a full structural separation of investment and commercial banking, and enhancing banking competition (see Haldane, AG, 2012, *On being the right size*).

<sup>7</sup> Alessandri P, Haldane AG, *Banking on the State*, September 2009.

<sup>8</sup> Haldane AG, *Rethinking the Financial Network*, April 2009.

<sup>9</sup> Gai P, Haldane AG, Kapadia S, *Complexity, concentration and contagion*, Journal of Monetary Economics, 58 (5), 2011.

energy lines to switch off, then domestic generators to switch off as well. Within a couple of minutes the entire country had been left in the dark and it stayed there for hours-with one exception: the island of Sardinia,<sup>10</sup> a peripheral node of the network, essentially unconnected to the rest. The conclusion appeared to be that while isolation may imply lower efficiency and higher volatility in normal times, it can deliver more resilience to unusual shocks. As a matter of fact, on the 28<sup>th</sup> of September 2003 people in the ‘periphery’ were watching TV while people in Rome and Milan – the core of the network – had to cast about for candles.

Andy forcefully argued that complexity can be a problem for regulators as much as for the entities and activities they aim to regulate.<sup>11,12</sup> In his thought-provoking Jackson Hole speech of 2012, Andy famously suggested that ‘catching a Frisbee’ is in some ways like ‘catching a crisis’. One of the reasons why certain mammals (dogs especially, but even humans to some extent) tend to be successful with Frisbees is that, rather than sitting down and trying to solve dynamic control problems, we stick to simple rules that are not ‘optimal’ in any sense but work fine most of the times. More generally, in an uncertain environment simple rules-of-thumb can work better than complex decision-making systems.

Seen in this perspective, the growing complexity of financial regulation is in itself a source of concern. As Andy noted, under Basel I a bank could calculate its capital requirements with pen and paper. That is inconceivable with the current rules. Since the establishment of Basel II, which allowed banks to compute their own capital requirements through internal models, the complexity and granularity of such models has exploded. Model complexity and uncertainty, coupled with shortseries of data, make calibration difficult and robustness questionable.

An issue the framers of Basel II did not, in my opinion, get quite right concerns incentives. They thought that using the banks’ own models to compute capital requirements would align banks’ and supervisors’ incentives, and improve both the banks’ risk management practices *and* the risk sensitivity of prudential requirements. Such a mechanism does exist, but it is of the second order. The first-order incentive for bank model-builders is to save costly equity capital. It would be unfair to say that regulators at the time were blind to this fact; they just thought that supervisory validation would easily fend off abuse. Well, maybe, but not easily. The dark side of granularity and sophistication are complexity and opaqueness, which make validation a daunting task. Despite all supervisory activity, in fact, the regulatory risk density of banks’ assets came to vary wildly across banks. It was not always obvious that variation in risk density related to variation in actual risk.<sup>13</sup>

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<sup>10</sup> Plus a few minor islands.

<sup>11</sup> Haldane AG, Madouros V, *The dog and the Frisbee*, Jackson Hole Symposium, 2012.

<sup>12</sup> Haldane AG, *Multi-polar regulation*, International Journal of Central Banking 11(3), June 2015.

<sup>13</sup> Italian IRB banks have typically been in the high range of risk density. This depends partly on the fact that their business models are largely oriented to credit risk, which especially under Basel II was penalised vis-à-vis market risk in terms of risk weights; and partly on the liberal use of output floors in the Bank of Italy’s supervisory practices, already under Basel II. The use of output floors, set at adequately high levels, has been recognized as a useful tool to address the variability in the capital requirements for credit risk. See, e.g., Basel Committee on Banking Supervision, *Reducing variation in credit risk-weighted assets – constraints on the use of internal model approaches*, March 2016.

As I just mentioned, there is another element to the dark side of internal models: lack of robustness. Financial risks are not always amenable to analysis via tractable, well-behaved probability distributions. Crucially, what seems to work reasonably well 95% or even 99% of the times, can fail spectacularly in a crisis. When black swans fly, models flounder. (The question of whether dogs can catch black swans like Frisbees is still open to debate.)

The finalisation of Basel III reforms, recently signed off by the G20 Group of Central Bank Governors and Heads of Supervision, tackles the robustness vs sensitivity trade-off through the simple device of putting a floor to the amount of risk-density reduction that banks can achieve through their own models. The debate on floors has been fierce. Opponents claim that they compress risk sensitivity too much and are obviously no first best. But there is no such a thing as a first best in the difficult art of bank regulation; only reasonable compromises based on experience, often bad; the usual catchphrase to describe compromises involving elements of both complex and simple, rough-and-ready, Frisbee-catching rules is that you need ‘belts and suspenders’. (I would add, ‘... and braces’, both to account for the three-pronged system of capital requirements under Basel III – models, output floors, leverage ratios – and to do some justice to the European dialects of the tongue).

Andy is of course free to disagree, but it seems to me that the final Basel III compromise goes some way towards heeding his call for simple models and simpler regulatory rules and practices. It is by no means simple in itself, of course; but it does contain comparatively simple backstops to avoid some of the pitfalls of complexity. Andy himself might just say: ‘you do not fight complexity with complexity’.<sup>14</sup> At a minimum, you cannot delude yourself that regulatory complexity is a cure-all. As I mentioned, regulators are faced with a trade-off. Simple rules are transparent, robust to model risk and more difficult to ‘game’; but they may fail to penalise risk-taking adequately. Complex rules may be risk-sensitive, but they are more prone to manipulation and model failure. Furthermore, both are subject to the Lucas critique: unlike Frisbees, banks and markets adapt to the rules, and this makes the task of the regulatory ‘dog’ harder.

Now that Basel III has finally been completed, it is time to look ahead. The financial system keeps evolving. Some of the challenges that Andy examined in his past work remain critical; new problems have emerged; other issues will surely come up in the future.

Not all financial risks materialise in banking, and the financial ecosystem is much more complex today than it was in Ferdinand Pecora’s times. Risky activities tend to shift between the traditional and the ‘shadow’ banking sector. If it is hard to regulate banks, it is even harder to monitor the evolution of risks in the more lightly regulated segment. The lack of data does not make it any easier. This theme is now at the forefront of the FSB agenda,<sup>15</sup> and rightly so.

A recent emphasis on regulating financial activities rather than specific entities, or classes of entities, is meant to overcome the differences between traditional and shadow banking activities.

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<sup>14</sup> Haldane AG, Madouros V, *The dog and the Frisbee*, Jackson Hole Symposium, 2012.

<sup>15</sup> See FSB Chair’s letter to G20 Leaders on ‘Building a safer, simpler and fairer financial system’, July 2017.

Focusing on activities rather than institutions makes sense. However, large systemic players do deserve close monitoring. I believe this applies not only to big banks but also to other institutions such as asset managers, pension funds or CCPs, which could be equally systemic, and which we know far less about.<sup>16</sup>

Asset managers perform a number of business activities that may look different *ex ante* but often turn out to deliver highly correlated returns *ex post*. Hence, the risks from such individual activities add up; they are not diversified away at the macro level. Like asset correlations, business activity correlations can vary over the cycle, intensifying in bad times. It is also possible that asset managers' activities have become *structurally* more correlated over the years, owing to the diffusion of common investment strategies across different business activities.

Asset managers also operate with large portfolios, and often in markets where liquidity is low. This generates a material risk of abrupt price corrections caused by shifts in a few systemic agents' portfolio allocations (agents that are highly *diversified* but not *diverse*, to borrow Andy's concept). These shifts can stem from maturity mismatches: open funds can invest in long-term and (structurally or occasionally) illiquid activities, and this can give rise to fire sales in case of a redemption shock, with spillovers between asset classes and types of investors.<sup>17</sup>

The FSB has begun studying the impact of large investors' strategies on market liquidity, starting with a simulation exercise on fund redemptions. This line of inquiry is important. Differently from the case of banks, it is not the resilience of individual institutions that needs to be tested, but rather the presence of shock amplifiers in the market. This is why potential investment-strategy loops are a subject of attention for the FSB. Some of these issues were very usefully examined by the Bank of England and the Procyclicality Working Group, chaired by Andy.<sup>18</sup>

Procyclicality is a pivotal issue for financial stability. The idea that markets are inherently procyclical is hardly new; however, new forms of procyclicality are likely to emerge as a result of technological innovation (such as high-frequency and algorithmic trading, robot advice, or volatility trading) and growing market concentration. Contrarian investors may become an endangered species, and as such they should be protected.

The role of market supervisors may also have to change. Traditionally their mandates are mostly centred on disclosure and investor protection, i.e. on ensuring that investors are fully aware of risks and can take informed decisions on an individual basis. However, if one recognises that market liquidity crises and shock amplification have a systemic impact and are therefore a matter for regulatory concern, then financial stability must find a way into market supervisors' mandates. This change requires an adaptation of culture as well as laws. It is happening, but slowly.

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<sup>16</sup> *Global pipes: challenges for systemic financial infrastructure*, Speech given by Sir Jon Cunliffe, Deputy Governor Financial Stability, at the Official Monetary and Financial Institutions Forum, London, 22 February 2017.

<sup>17</sup> On the risks posed by the asset management industry, but also on the opportunities that asset management offers, see 'The age of asset management?', speech by Haldane, AG, at the London Business School, London, April 2014.

<sup>18</sup> See, for example, *Procyclicality and Structural Trends in Investment Allocation by Insurance Companies and Pension Funds*, A Discussion Paper by the Bank of England and the Procyclicality Working Group, July 2014.

The regulatory agenda is crowded and is moving fast. Andy has greatly contributed to shaping it in the past. His creativity and eclectic approach to economics, and his ability to be provocative in a clever, constructive way, have been an asset to the policy making community. I have little doubt that they will be equally valuable in the future. We need, more than ever, people who can think ‘out of the box’ and actively spur the debate. After all, concentration and correlation are as bad for ideas as they are for financial assets. The central banking community counts on Andy to mitigate that risk.

The records suggest that Ferdinand Pecora was ‘an astute prosecutor with a sharp wit and acerbic tongue’.<sup>19</sup> Andy’s tongue may not be acerbic, but his wit is sharp. Today you had the chance to discover that he is also an excellent speaker.

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<sup>19</sup> ‘A History of Notable Senate Investigations prepared by the United States Senate Historical Office’, [https://www.senate.gov/artandhistory/history/common/investigations/pdf/Pecora\\_investigation\\_citations.pdf](https://www.senate.gov/artandhistory/history/common/investigations/pdf/Pecora_investigation_citations.pdf).

