The Bagehot Problem at Fifty*

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Abstract

In 1977 Fred Hirsch argued that lender-of-last-resort support creates a problem deeper than moral hazard. Public crisis insurance weakens private discipline, yet its substitutes distort competition: informal control restricts entry, while reliance on failure favours banks authorities are least willing to let fail. That was Hirsch's Bagehot Problem. Fifty years later, formal supervision and resolution have changed the choice. Resolution seeks to restore credible loss-bearing by separating the fate of the firm from the continuity of its critical functions. But some functions depend on information, relationships and operational capabilities embedded in the organisation itself, so that separation cannot be assumed. The modern Bagehot Problem is whether critical functions can be protected without again protecting the institutions that produce them. Ring-fencing matters as it creates some of that separability before failure.

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1 Introduction

In 1873 Walter Bagehot gave the lender of last resort its canonical form. In a panic, the central bank should be prepared to lend when private lenders will not. A century later Fred Hirsch argued that this apparently simple prescription concealed a deeper problem. The difficulty was not merely whether the central bank should provide liquidity in a crisis. It was how a public backstop could coexist with the discipline required for a competitive banking system to function well.

Hirsch's argument in *The Bagehot Problem* began with imperfect information. Banking relationships depended on information and trust that arm's-length markets did not necessarily produce. In crisis, uncertainty rose, private lenders withdrew from risks they could not confidently price, and individual lenders had little reason to internalise the wider cost of collective withdrawal. A public backstop could correct that deficiency, but at the cost of weakening private discipline.

Hirsch's most striking conclusion concerned the structural implications of that discipline. The traditional British solution had combined comprehensive support with informal control inside a relatively closed banking community. That arrangement could contain moral hazard, but only by restricting entry and favouring known institutions. The alternative was to leave banks exposed to market discipline. However, failure is least credible for institutions whose collapse would be most disruptive. Creditors would therefore favour banks thought least likely to be allowed to fail. In Hirsch's pithy assessment, informal controls tended towards cartelisation whilst market controls towards oligopoly (Hirsch, 1977).

Since Hirsch's paper the institutional landscape has changed almost beyond recognition. Britain moved from the moral suasion of 'Governor's eyebrows' to statutory authorisation and information-intensive prudential supervision. After the global financial crisis of 2008/9, modern resolution regimes added

a further possibility that Hirsch could not have envisaged—the authorities would try to let the institution fail in an economically meaningful sense while preserving the functions whose interruption would threaten financial stability: Shareholders could be wiped out, eligible creditors could absorb losses and control could change, while deposits, payments and other critical services continued.

That innovation recasts the Bagehot Problem. Hirsch asked whether the state could protect the system while leaving banks and their risk-bearers exposed to loss and failure. Not cleanly, he thought: the mechanisms available for preserving discipline themselves protected incumbents or favoured institutions whose failure could not credibly be tolerated. Modern resolution tries to break that link. Its answer is to separate the fate of the firm from the continuity of its functions—to protect *functions* rather than *firms*.

That answer, however, depends on a distinction that may be easy to state but difficult to implement. Banking functions are produced inside organisations. They depend on legal entities, funding, staff, contracts, data, systems, shared services and relationships accumulated before (and even during) failure. A resolution authority can possess extensive legal powers but might still find that the function it wishes to preserve is not cleanly separable from the institution that produced it. Information therefore remains central, but not in exactly the same way as in Hirsch. That is, resolution requires the authority to know how the institution can be reconfigured, while some of the information and capabilities it seeks to preserve may themselves be products of that institution.

This is where ring-fencing and other forms of structural separation enter the argument. In the UK, ring-fencing is often posed as an alternative to stronger resolution since, if authorities can preserve critical functions after failure, why impose permanent organisational restrictions beforehand? But that may frame the choice too broadly. The issue is better characterised as which benefits of structure can be reproduced reliably at failure, and

which arise precisely because the bank was organised differently beforehand. Ring-fencing can create some separability ex ante; resolution seeks to preserve or exploit it ex post. The central question is therefore not 'structure or resolution?', but which forms of separability—including the information and organisational capabilities on which they depend—must be created before failure and which can be preserved or reconstructed at resolution. The new Bagehot Problem is whether the functions that make a bank too important to fail can be protected without once again protecting the institution that produces them.

The paper develops new Bagehot Problem in six steps. Section 2 reconstructs Hirsch's informational logic and the institutional choice to which it led. Section 3 shows how Britain rejected the club as a regulatory technology while retaining Hirsch's premise that a public backstop required discipline. Section 4 interprets modern resolution as an attempt to separate functions from firms. Section 5 asks when ex ante structure can be replaced by ex post resolution and when organisation matters before failure. Section 6 draws out the resulting fifty-year comparison. Section 7 looks briefly at how far that separation works in practice, using Banco Popular, Silicon Valley Bank and Credit Suisse as illustrations. Section 8 concludes. This is not merely a question of institutional description. Central to the paper is the idea that resolution can restore credible private loss-bearing only if it lowers the protection expected by creditors, and its ability to do so depends on how costly critical functions are to separate from the organisation that produces them. Appendix A provides a simple formalisation of that mechanism.

2 From Information to the Bagehot Problem

Hirsch's invocation of Bagehot needs to be read against the British situation of 1977. The classical liquidity function was by then embedded in the London money market, with Bank of England support traditionally reaching the

system through the discount houses. But crisis support had also moved well beyond Bagehot rediscounting. From the rescue of Barings in 1890 onwards, the Bank increasingly coordinated guarantees, rescues and reorganisations when institutional failure threatened wider stability. Hirsch was also writing immediately after the 1973–74 secondary-banking crisis, when the Bank and the clearing banks mounted the Lifeboat operation to contain contagion and protect depositors. His question was therefore not primarily what rate the Bank should charge against what collateral.[1] It was what followed once the authorities stood behind the system—how could that protection coexist with private discipline, and how would the mechanism used to impose discipline affect competition and market structure?

Hirsch's argument includes the familiar proposition that lender-of-last-resort support creates moral hazard, but moral hazard is neither his starting point nor conclusion. The logic runs from limits to arm's-length finance, through the inadequacy of private crisis insurance, to public support and the need for a *disciplinary* counterpart. Hirsch's key insight is that the mechanisms available to supply that discipline themselves reshape competition and generate what he calls the *Bagehot Problem.* (Hirsch, 1977)

2.1 Information, trust and the limits of arm's-length banking

Hirsch begins by qualifying the then increasingly standard treatment of banking as an ordinary competitive industry. In the Friedman–Johnson[2] view as he presents it, competition should be maximised and official intervention

[1]Recent work continues to examine the classical Bagehot rules governing emergency lending; see Carré and Le Maux (2026). For the development of the London discount market and the Bank's relationship with the discount houses, see King (1936). Turner (2014, ch. 6) distinguishes this classical lender-of-last-resort function from the broader British history of bank rescues beginning with Barings in 1890 and extending through the secondary-banking Lifeboat of 1973–74; see his discussion, "Beyond Bagehot: Bailouts and Reorganisations".

[2]He is referring to Milton Friedman and Harry Johnson two notable proponents of competition in banking.

kept to a minimum, with general rules preferred to case-by-case judgment. Hirsch's objection is that this formulation neglects a pervasive feature of financial exchange, namely that information is imperfect, asymmetrically distributed and often costly to acquire.

The argument is not that competition in banking is impossible. It is that its welfare effects are ambiguous. Lending relationships require information about borrowers that cannot always be purchased or verified impersonally. More broadly, markets depend on truth-telling, promise-keeping, reputation and trust. Hirsch calls these "collective intermediate goods": inputs into successful exchange that individual maximisation need not produce in socially optimal quantities. Repeated relationships can help produce them, but free entry and anonymous competition can make that production harder. For Hirsch, competition retains its familiar benefits, but it can weaken some of the institutional inputs on which those benefits depend.

This is why Hirsch perhaps treats the old British banking structure with more ambivalence than a simple monopoly critique might suggest. Its social cohesion and restricted entry protected incumbents, but the same arrangements also supported reputation, information exchange, mutual monitoring and collective concern for the stability of the system. And whilst this informational point does not lead inevitably to cartelisation, it does explains why replacing relationships by arm's-length competition may remove something economically useful as well as something restrictive.

2.2 Why Bagehot creates a second problem

The problem becomes sharper at the level of the bankers' bank. In a crisis, private lenders have every reason to become more selective precisely when liquidity support is socially most valuable. Uncertainty is high, some risks cannot be priced with confidence and an individual lender has little reason to take account of the damage that can follow when many lenders withdraw

together. Individually rational withdrawal can therefore generate collectively damaging contraction. Of course, that is why Bagehot directed the 'central bank' to reverse the ordinary banker's instinct—when private credit contracts, the lender of last resort must be willing to expand.

Hirsch interprets that function as insurance. Private markets supply too little crisis insurance because lenders retreat under uncertainty and do not bear the wider costs of collective withdrawal. Public provision can therefore be valuable, but it weakens private discipline—protection that is desirable ex post reduces the private cost of fragility ex ante. That is the familiar moral-hazard problem. Hirsch's deeper insight now follows. A public backstop cannot simply be added to an otherwise unchanged competitive banking system, because the discipline needed to make that backstop tolerable must come from somewhere. In his phrase, *the extra-market facility requires an extra-market control mechanism.* And the available substitutes for market discipline are not neutral. Informal control works through a closed group and restricts entry; reliance on failure is least credible for institutions whose collapse would threaten the system, favouring concentration and banks perceived as too important to fail. The Bagehot Problem is therefore not merely that public insurance weakens prudence, but that the mechanisms used to restore discipline themselves reshape competition and banking structure.

2.3 The Bagehot Problem

The traditional British route combined comprehensive support with informal control. Reputation, convention, access to the Bank of England and a relatively small banking community allowed the central bank to exert leverage over institutions that valued continued membership of the protected circle. But a system that disciplines through trust must know whom it can trust. Entry was therefore controlled, entry to banking was restricted and the result

was a banking cartel.[3]

The alternative is to preserve market discipline by leaving shareholders, managers and at least some creditors exposed to failure. That avoids dependence on a closed club, but creates a different asymmetry. Failure is not equally credible across banks when the disruption caused by failure rises with size or systemic importance. Creditors therefore have reason to migrate towards institutions believed least likely to be allowed to fail. The attempt to preserve discipline can itself encourage concentration. And so the conclusion: informal controls lead to cartelisation and market controls to oligopoly. Hirsch's deep insight is probably not so much that competitive banking is impossible, but that financial stability and banking competition cannot be designed independently.

The original Bagehot Problem is, then, simply this: how can the state protect the system while leaving banks and those meant to bear their risks exposed to meaningful loss and failure?

3 From the Club to Formal Supervision

The 1970s was a pivotal time in British banking history. The old system of informal bank supervision was already being dismantled, while the statutory machinery that would replace it was only beginning to take shape. What followed did not overturn Hirsch's claim that a public backstop required a disciplinary counterpart. It rejected the particular way in which that discipline had traditionally been supplied.

[3]The highly concentrated and cooperative structure of British banking was not simply a retrospective characterisation. Contemporary work explicitly analysed the clearing banks as a cartel and traced the development of restrictive practices within the British monetary system; see Griffiths (1972, 1973).

3.1 Opening the system

The Bank of England's *Competition and Credit Control* in 1971 was explicitly designed to give greater scope for competition and innovation in banking and the operation of monetary policy. Until then the London and Scottish clearing banks still operated collective agreements on deposit and lending rates while quantitative lending controls were also frequently imposed by policymakers. The new arrangements were intended to remove those increasingly strained and ineffective structures—in particular, to end the collective interest-rate agreements (Bank of England, 1971).

The secondary-banking crisis of 1973–74 then exposed the other side of the change. New entrants had expanded rapidly into wholesale funding and property-related lending. When asset values fell and funding withdrew, the Bank organised the "lifeboat" support operation that Hirsch treated as a return to the older logic of collective protection and informal control. Competition could be widened in normal times, but the public backstop still had to decide whom it would support and on what terms (Hirsch, 1977; Bank of England, 1978).

A domestic desire for liberalisation was only one pressure on the old system. The number of overseas banks operating in London rose sharply during the 1970s and wholesale markets increased the interdependence of institutions.[4] At the same time, EEC membership was beginning to place banking authorisation inside a common legal framework. The First Banking Co-ordination Directive of 1977 required prior authorisation and specified minimum conditions for capital and management. Just as importantly, it sought to separate prudential authorisation from protection of incumbents: except under transitional arrangements, entry could not be refused simply because the market was judged to have no economic need for another bank

[4]The increasing competitive pressure from overseas banks and other less regulated intermediaries was already a major bugbear of the British banks by the start of the 1970s

(Council of the European Communities, 1977).

The Banking Act 1979 brought these developments together. The Bank's own later account describes the Act as a response both to changes in the structure of banking and to the need to implement the First Banking Directive. It introduced statutory authorisation, legal powers and sanctions, a deposit-protection scheme and continuing supervision of authorised deposit-takers. Yet the inherited system did not disappear overnight. The Act retained distinctions based partly on track record and standing, and the Bank continued to use non-statutory supervision alongside its new legal powers (Bank of England, 1979; Robb, 1997). The significance of 1979 is therefore that access and supervision were becoming matters of law rather than membership of a socially bounded circle.

3.2 Competition and the production of supervisory information

The 1980s made the underlying trend even clearer. Greater competition did not reduce the need for supervision. Rather, it increased the need to produce information about banks in more formal ways. Big Bang in 1986 widened entry and intensified competition in securities markets. Parliament enacted the Financial Services Act in the same year, and the Banking Act 1987 replaced the two-tier banking regime with a single list of authorised institutions and established the Board of Banking Supervision (Bank of England, 1987, n.d.). Contemporary statements from the Bank treated liberalisation and regulation as complements—a more competitive financial centre was to remain an "open but well-regulated" one (Bank of England, 1986a,c).

Prudential supervision was also becoming more informationally demanding at the same time. In 1986 the Bank set out a more systematic policy of consolidated supervision for banking groups, reflecting European and Basel developments and the increasing complexity of financial organisations. The supervisor needed information not merely about the regulated bank but about

the group as a whole, its structure, its capital and related entities capable of affecting it (Bank of England, 1986b).

European integration pushed the same logic further. The Second Banking Co-ordination Directive of 1989 established the basis for a single banking licence and home-state prudential supervision across the Community. Market access widened through mutual recognition, but mutual recognition itself depended on confidence in formal authorisation and prudential supervision in the home state (Council of the European Communities, 1989). A more open banking market was therefore built alongside a more elaborate public apparatus for producing and sharing supervisory information. If European developments did not remove Hirsch's problem, it made the old, socially bounded solution progressively less available. Access to an integrated banking market could not depend on membership of a domestic circle of known and trusted firms.

As banking became more open, international and complex, supervisors had to know more about banks, not less. The old City network had produced some information through proximity, reputation and repeated interaction. The emerging regime attempted to produce it institutionally through authorisation, reporting, consolidated supervision, inspection and explicit supervisory judgment. The club was rejected, but not the need to know the banks. Formal supervision did not refute Hirsch's informational argument but rather in a sense institutionalised it. Nor did statute eliminate discretion. The Bank continued to emphasise flexibility, consultation and institution-specific judgment alongside its legal powers (Blunden, 1987).

By the end of the century the institutional separation was more complete. In 1997 the Government announced the transfer of banking supervision from the Bank of England to the new Financial Services Authority, and the transfer took effect in June 1998. The final Banking Act Report noted that the FSA would assume direct supervision of banks while the Bank retained responsibility for the stability of the financial system as a whole (Bank of

England, 1998). Prudential discipline had become a statutory regulatory function distinct from the old relationship between the central bank and its banking circle.

3.3 What formal supervision solved – and what it did not

Formal supervision showed that bank-specific knowledge and discipline need not depend on membership of a closed banking club. Legal powers, reporting requirements and systematically produced information allowed supervisors to scrutinise individual institutions without making social proximity a condition of entry. Judgment did not disappear; what changed was how that judgment was produced, authorised and applied.

However, supervision might reduce the probability of failure without making the failure of a large and complex bank safe. If disorderly failure threatened deposits, payments, lending relationships or wider financial stability, the authorities could supervise a systemic bank intensively and still be unable credibly to let it fail. The global financial crisis exposed that missing institutional technology. The Bank of England now describes the absence of a credible resolution regime during 2007–09 as a central reason why the UK Government injected £137 billion of public money to stabilise the financial sector. Parliament responded with the Banking Act 2009, which created a permanent special resolution regime and gave the Bank statutory resolution powers (Bank of England, 2026a).

Formal supervision had broken the old connection between effective oversight and membership of the banking club. What it had not solved was how a systemically important bank could fail without destabilising the system itself. Modern resolution is designed to answer that question.

4 Resolution and the Separation of Functions from Firms

Modern resolution changes the terms of the Bagehot Problem. The question is no longer 'simply' how to protect the system without insulating banks and their risk-bearers from loss and failure. Resolution seeks to make those objectives compatible by separating the fate of the firm from the continuity of its critical functions. Losses can then fall on the institution and those who funded it, while activities whose interruption would impose wider social costs are preserved. The Financial Stability Board's Key Attributes state the principle directly: an effective regime should permit a financial institution to be resolved without severe systemic disruption or public solvency support while maintaining the continuity of vital economic functions. UK law likewise places continuity of banking services and critical functions among the special resolution objectives (UK Parliament, 2009; Financial Stability Board, 2024b).

This is the possibility that was missing from Hirsch's institutional menu. His market-discipline route relied on the threat of failure, yet that threat became least credible precisely where failure would be most disruptive. Resolution tries to restore credibility to private loss-bearing by changing what failure entails. Under bail-in, shareholders and eligible creditors can absorb losses while the operating institution is recapitalised; under a transfer strategy, all or part of the business can move to a purchaser or bridge bank. The mechanics differ, but the principle is the same: systemic protection should attach to critical functions, not to the pre-failure claims of the institution that provided them (Bank of England, 2026b,c). Resolution is therefore not itself a source of discipline. It is an institutional means of making private loss-bearing credible at institutions whose disorderly failure would otherwise make it difficult to sustain. Appendix A formalises that mechanism. Systemic importance raises expected creditor protection even when owners and managers remain fully exposed; greater resolution preparedness lowers

it by reducing the disruption caused when creditor losses are imposed. The commitment becomes credible not because the authority promises to be tougher in advance, but because resolution changes what it is optimal for the authority to do after failure.

"Protect functions, not firms" does not require the legal entity to disappear. A bail-in may preserve it because doing so is the least disruptive way to maintain critical activities. What is meant to be severed is the connection between continuity of those activities and protection of the bank's pre-failure owners and creditors. The institution can fail in the economically relevant sense that investors bear losses and control may change, while the services whose interruption would damage the wider economy continue.

4.1 What has to survive failure?

Resolution is necessarily selective. Some activities can stop, assets can be sold or wound down and legal entities can enter ordinary insolvency. The public interest lies in preserving functions whose sudden interruption would materially damage households, firms, financial markets or the operation of the financial system. The difficulty is that such functions are not supplied by balance-sheet entries in isolation. Payments, deposits and flows of credit depend on funding, staff, data, contracts, information technology, access to settlement systems and services supplied elsewhere in the group or by third parties. The FSB therefore pairs critical functions with "critical shared services" whose disruption would prevent the functions themselves from continuing (Financial Stability Board, 2013, 2024a).

Resolvability consequently has an informational dimension. Authorities must know where critical activities sit, how they depend on other parts of the group and whether the firm can produce sufficiently detailed and timely information to support the chosen strategy. FSB standards require management information at both group and legal-entity level, including for

scenarios in which entities have to be separated (Financial Stability Board, 2024b). Under the UK Resolvability Assessment Framework, firms must maintain financial and operational contracts, preserve access to financial-market infrastructure and be capable of restructuring into a viable business after stabilisation. The Bank's 2024 assessment records extensive work mapping critical service providers to critical economic functions and making essential-service contracts resolution-resilient (Bank of England, 2024).

Resolution is therefore not purely ex post even though its statutory powers are exercised at failure. Loss-absorbing capacity, valuations, operational mapping, information systems, contracts and transfer or restructuring capabilities have to be prepared while the bank is still operating. What can be achieved in a weekend depends on what has already been made executable beforehand.

4.2 Separability has to be produced

Another way to say this is that aim of a resolution framework is not simply to identify critical functions but to make their continuity compatible with a change in the bank's financial and legal condition. Some functions are comparatively easy to isolate. Others are intertwined with shared systems, personnel, contracts and internal financing arrangements. A legal power to transfer an asset or write down a liability does not by itself ensure that the associated economic activity can continue under a new owner or in a restructured institution.

Modern resolvability policy is therefore partly an attempt to produce separability in advance. Operational-continuity rules keep critical services available in resolution; mapping links functions to legal entities and shared systems; transfer planning tests whether a business can move; bail-in planning tests whether the operating institution can remain open while losses are imposed. The FSB's guidance treats legal arrangements, contracts,

governance, resourcing, management information and financial resources as possible obstacles to continuity (Financial Stability Board, 2024a). In other words, separability has to be produced not simply uncovered.

That observation also marks the limit of resolution as a substitute for structure. Appendix A shows how the formal model includes costly preparedness. Activities that depend more heavily on information, staff, systems and routines tied to the existing organisation are more expensive to keep operating while creditor losses are imposed. A bank with more such activities therefore has a lower optimal degree of preparedness and, other things equal, greater expected creditor protection. The friction is not ignorance: even a perfectly informed authority can know what matters and still find it costly to detach the activity from the organisation that makes it usable.

Resolution therefore moves rather than removes the Bagehot Problem. Its credibility depends on whether critical functions can survive while private claims are written down or control changes. Where they cannot, systemic importance still weakens the threat of loss. The problem then shifts from how to impose loss at failure to how much separability must be created before failure occurs.

5 Ring-Fencing and Ex Ante Separability

Ring-fencing enters naturally once separability is understood as something that may have to be created before failure. Resolution tries to secure separability at failure; ring-fencing tries to build some of it into the bank beforehand. The Independent Commission on Banking linked structural separation directly to continuity of vital services and to resolvability. Retail and small-business services were to sit inside a legally, operationally and economically distinct bank, insulated from risks elsewhere in the group and easier to preserve or transfer if the group nevertheless failed (Independent Commission on Banking,

2011; HM Treasury, 2011).

This distinguishes ring-fencing from ordinary prudential requirements. Capital and liquidity regulation change the resources available to absorb shocks. Ring-fencing changes the organisation on which those requirements, and any subsequent resolution, operate. It locates core activities, constrains exposures across the boundary and requires a degree of legal, financial and operational independence. The objective is not to make the two sides unrelated in normal times, but to reduce the extent to which continuity of core services depends on the condition of the rest of the group (Prudential Regulation Authority, 2016).

5.1 When can resolution substitute for structure?

The maturation of the resolution regime, however, immediately raises the question of whether some ex ante separation remains necessary. If contracts can be made resolution-resilient, critical services mapped and maintained, loss-absorbing resources pre-positioned and viable businesses transferred or recapitalised at failure, then part of the work once done by a permanent organisational boundary may be reproducible through resolution preparation. Structure and resolution would then be substitutes along that margin.

That question is now explicit a live policy issue. The 2022 review of ring fencing in the UK asked whether developments in the wider prudential and resolution framework altered the case for parts of the ring-fence (Independent Panel on Ring-fencing and Proprietary Trading, 2022). The Government's 2026 review retained ring-fencing as a financial-stability safeguard but proposed greater flexibility in light of changes elsewhere in the framework (HM Treasury, 2026). The clearest example is the PRA's 2026 proposal to remove ring-fence-specific shared-services rules because Operational Continuity in Resolution now pursues a closely related objective through more flexible requirements on contracts, mapping and transitional arrangements (Prudential

Regulation Authority, 2026).

The significance of that example is its narrowness. It does not show that resolution can reproduce the ring-fence as a whole. It shows that a particular structural protection may become redundant when another prepared mechanism can deliver the same continuity more flexibly. The relevant question is functional: What does the structural restriction achieve, and can the same outcome be delivered reliably when failure occurs without imposing the restriction continuously in normal times?

Some features of structure may pass that test while others may not. Resolution acts on the bank that arrives at failure. If structure has already changed where activities are located, how they are funded, what risks are taken or how information is produced, those consequences cannot simply be switched off ex post. Some evidence from the UK reform confirms that the going-concern bank did change. Chavaz and Elliott (2026) find that deposit-funded lending was redirected towards mortgages and away from syndicated lending and credit lines, with consequences for credit supply, competition and risk-taking outside the activities directly targeted by the reform.

5.2 Information *about* the bank and information *inside* it

The distinction between information *about* the bank from information *inside* it turns out to be critically important. Supervision and resolution planning are designed to improve the first. Authorities map legal entities, critical functions, contracts, shared services, valuations and operational dependencies so that they can understand how a failing institution might be stabilised or reconfigured. Better information of this kind can make resolution more feasible. But it does not follow that all economically valuable information inside the bank becomes transferable simply because the authority knows where it resides.

Banking gives reason to take that second problem seriously. Stein (2002)

shows how organisational authority changes incentives to produce and use soft information, while Liberti and Mian (2009) find that greater hierarchical distance reduces the use of subjective information in lending decisions. These results are not about ring-fencing, but they establish the underlying point: some information is a product of the organisation itself. Knowledge of borrowers, routines for monitoring them and the interaction of staff across a lending relationship need not survive organisational change in the same usable form. Observability is not the same as transferability.

That distinction matters in two ways. Structure may affect what the bank learns and which assets it holds before failure; resolution cannot recreate information that was never produced or undo allocations already made. And where information has been produced but remains embedded in relationships, staff, systems and routines, a legal transfer can move claims without necessarily moving the organisational capability through which they were originated, monitored and worked out. It does not follow that structural separation always improves information, still less that the UK ring-fence has been shown to do so. Whether this particular boundary improved, weakened or relocated relevant information remains an empirical question.

Appendix A isolates this mechanism. If ring-fencing makes critical activities more self-contained, it lowers the cost of preserving them through resolution; optimal preparedness rises and expected creditor protection falls. The result extends the Bagehot logic into a setting with modern resolution since public protection creates the need for credible private discipline, while the credibility of that discipline now depends on how easily critical functions can be separated from the institution that produces them. Organisation before failure can therefore shape the effectiveness of resolution after failure.

The policy criterion is therefore straightforward in principle. A structural rule becomes redundant to the extent that its stability benefits can be reproduced reliably, in time and at lower or equal continuing cost by other prepared mechanisms. Where the benefit arises from pre-failure information,

incentives, allocation or operational dependence that resolution inherits rather than creates, substitution is incomplete. Duncan and Nolan (2026) formalise the broader distinction: better resolution and structure are substitutes where structure reduces the frequency of costly resolution and resolution lowers losses conditional on failure, but that substitution can weaken when organisation changes the kinds of failures that reach resolution.

Ring-fencing therefore sharpens the modern Bagehot Problem rather than resolving it. The issue is not which instrument is intrinsically superior. It is how much separability can be created at failure and how much must be built into the bank beforehand.

6 The Bagehot Problem at Fifty

Fifty years of institutional development have changed the terms of the Bagehot Problem. Hirsch's (1977) alternatives were not exhaustive. Formal supervision made possible a route he recognised but did not pursue very far—bank-specific information and discipline could be produced through public institutions without making membership of a closed banking club the condition of entry. Resolution then purported to address the remaining weakness in the market-discipline route by making private loss-bearing credible even where disorderly failure would be systemically costly. These developments altered the institutional choices through which the Bagehot Problem had to be managed. Resolution's central innovation is the attempt to separate systemic protection from protection of the institution itself. If a large bank can be recapitalised, transferred or restructured while its critical services continue, losses can fall on shareholders and on those creditors intended to bear them without the state accepting the wider costs of disorderly failure. In that sense, resolution tries to break the connection between systemic importance and implicit protection that lay at the heart of Hirsch's concentration argument.

Information remains central, but its role in the Bagehot Problem changes.

Hirsch was concerned primarily with the information, trust and enforceability needed to sustain exchange, insurance and discipline. Formal supervision shifted much of that burden towards the state by producing systematic knowledge about individual banks. Resolution adds the further requirement that the authority must know how a complex institution can be stabilised or reconfigured while preserving its critical functions. Yet better information *about* the bank does not make all of the information and capabilities *inside* it transferable. Appendix A gives that distinction a precise role in that the authority may know what matters and still face a high cost of keeping it usable while private losses are imposed. The modern constraint is therefore not simply whether the authorities know enough, but whether the functions that make failure systemic can survive organisational change.

This is why the modern Bagehot Problem is almost the mirror image of Hirsch's. Hirsch asked how the state could protect the system while leaving banks and their investors exposed to loss and failure. Modern resolution asks how those consequences—loss, restructuring and, where necessary, failure—can be imposed without endangering the system. Its answer is to protect functions rather than firms. Its limit lies where the functions worth protecting cannot be cleanly separated from the institutions that produce them. That formulation also sharpens the comparison between structure and resolution.

Resolution claims to make the distinction between functions and firms operational. Its success should therefore be judged by what happens when authorities confront an actual failing institution. Recent cases provide useful, if necessarily incomplete, tests.

7 Resolution in Practice

Recent cases provide three distinct tests of whether resolution can separate private loss from functional continuity.

7.1 Banco Popular: transfer without interruption

The 2017 resolution of Banco Popular may provide a good example of the modern logic working broadly as intended. After the European Central Bank determined that the bank was failing or likely to fail, the Single Resolution Board transferred it to Santander using the sale-of-business tool. Equity and Additional Tier 1 instruments were written down, Tier 2 instruments were converted into new shares, and those shares were transferred for one euro. The stated objectives included continuity of deposits, lending to small and medium-sized firms, and payment and cash services; no public funds were used in the transaction (Single Resolution Board, 2017).

For the present argument, the important question is whether economically valuable relationships survived the transfer. Using borrower-level data, Banerjee et al. (2026) find that Santander preserved inherited lending relationships and supported borrowers especially exposed to credit retrenchment elsewhere. The outcome depended on the acquirer's capital capacity and incentive to preserve the franchise. Functional continuity was therefore achieved through rapid transfer to a viable operating institution, not by disassembling the bank into abstract functions.

7.2 Silicon Valley Bank: failure with an expanded safety net

Silicon Valley Bank provides a different test. In March 2023 the FDIC established a bridge bank, transferred all deposits and substantially all assets to it, reopened the institution for normal business and later sold the franchise to First Citizens. Shareholders lost their investment, senior management was removed and unsecured creditors remained exposed. Important banking functions continued while the original institution failed (FDIC, 2023a).

The authorities nevertheless invoked the systemic-risk exception and protected all depositors, including those above the ordinary insurance limit.

The additional cost to the Deposit Insurance Fund was later recovered through a special assessment on the banking industry (US Treasury et al., 2023; FDIC, 2023b). The bridge-bank mechanism therefore preserved continuity, but only alongside an extension of protection to creditors who would ordinarily have borne more risk. The case shows that the existence of a resolution tool does not by itself settle the boundary between discipline and insurance as authorities may still widen that boundary when they judge contagion risks to be high.

7.3 Credit Suisse: a prepared resolution not used

Credit Suisse provides a different and more difficult test. Before the crisis FINMA regarded the Swiss emergency plan as ready to implement and reported substantial progress in resolvability, including operational continuity and the placement of systemically important Swiss functions in domestic subsidiaries (FINMA, 2023b). During the weekend of 18–19 March 2023, FINMA prepared the documentation required for resolution. The authorities nevertheless chose a takeover by UBS, judging the merger the faster and less risky stabilisation route (FINMA, 2023a).

That choice does not show that the prepared resolution was infeasible. It does suggest the difference between possessing a resolution strategy and being willing to rely on it when systemic consequences appear existential. The subsequent Swiss review concluded that the too-big-to-fail framework needed strengthening in resolution planning, liquidity provision and the crisis toolkit (Swiss Federal Council, 2024). The merger left Swiss global banking more concentrated. Concentration was not the objective of policy, but the episode has a recognisably Hirschian quality. That is, when authorities preferred not to test the separation of a systemic firm from its functions, stability was obtained by placing those functions inside an even larger institution.

Taken together, the cases do not deliver anything like a final verdict

on resolution. They show different ways in which the distinction between institution and function can succeed or remain incomplete. Banco Popular demonstrates rapid transfer with continuity; Silicon Valley Bank demonstrates continuity accompanied by expanded creditor protection; Credit Suisse demonstrates that extensive preparation does not eliminate the authority's ex post choice over how much of the organisation to preserve. The common question is how much of the institution can be allowed to fail without losing the functions that made intervention necessary in the first place.

8 Conclusion

Hirsch's Bagehot Problem was not simply that lender-of-last-resort support creates moral hazard. His deeper claim was that public protection requires discipline, and the mechanism supplying that discipline feeds back into competition and market structure. The traditional British club did so by restricting membership. Market discipline, on the other hand, favoured institutions whose failure the authorities were least willing to tolerate. Subsequent history developed much further a route Hirsch recognised in outline—formal supervision—and modern resolution then tried to make private loss-bearing credible at systemic institutions while preserving critical functions.

That innovation is substantial, but its success depends on separability. Banking functions are produced inside organisations and may depend on information, relationships, systems and operational arrangements created before failure. Resolution can impose losses and change control but it cannot recreate information that was never produced or preserve capabilities that cannot be transferred in time. Ring-fencing can therefore matter where it makes selected functions more self-contained before distress; its value falls where resolution or other prepared mechanisms can reproduce the same protection more flexibly. This distinction is increasingly important as policy

places greater weight on resolution and seeks to make structural separation more flexible. Yet the evidence on how far resolution can in practice reproduce the benefits created by ex ante structure remains limited. The danger is not that resolution has gone too far, but that structure is relaxed before it is known which forms of separability resolution can reliably reproduce. Where the functions worth protecting cannot be detached from the organisations that produce them, the Bagehot Problem remains.

A Systemic Importance, Resolution and Organisational Dependence

A.1 Purpose and setup

The main text argues that the Bagehot Problem did not disappear with modern bank supervision. It changed form. Public support weakens private discipline because losses are hardest to impose where failure would be most disruptive. Modern resolution seeks to break that link by allowing private claims to absorb losses while critical banking functions continue. This Appendix gives that mechanism a simple formal structure.[5]

There is one bank. Let $\pi \in (0,1)$ be its probability of failure. We hold π fixed in order to isolate the creditor-protection mechanism. Owners and managers are assumed to bear the full private consequences of failure, so the familiar managerial bailout-moral-hazard channel is absent.

Let $s > 0$ measure the systemic importance of the bank's critical functions. It is not balance-sheet size as such. Rather, it scales the social cost of interrupting payments, deposit access, credit relationships or other services that the authorities care about preserving.

Before failure, the authority can prepare the bank for resolution. Let $z \in [0,1]$ denote the fraction of its critical activity that can continue while the creditors intended to bear losses actually do so. The key object is therefore the part of the bank's systemic activity that remains exposed when private losses are imposed. Define

$$\sigma(s,z) \equiv (1-z)s. \tag{A.1}$$

We call σ *residual systemic exposure*. Without effective resolution preparedness, $z = 0$ and $\sigma = s$. If all critical activity can continue while creditor losses are imposed, $z = 1$ and $\sigma = 0$.

Conditional on bank failure, a crisis-severity state $\xi \geq 0$ is realised from distribution F, with density f on the relevant support and finite mean. The variable ξ captures how costly interruption is in the realised state of the world.

A.2 The authority's ex-post choice and creditor protection

If the authority resolves the bank and imposes the intended creditor losses, the social cost of disruption is

$$L^R = \sigma(s,z)\xi = (1-z)s\xi. \tag{A.2}$$

Alternatively, the authority can protect the relevant creditors. Let the net social cost of doing so be

$$L^S = K(s) > 0. \tag{A.3}$$

[5] A fuller appendix, available from the author on request, endogenises prudential effort and insider moral hazard, provides a richer foundation for organisational dependence, examines non-convexities and numerical checks, and considers further extensions. The shorter treatment here isolates the mechanism in a very simple way that underpins the discussion in the text.

Since transfers are not themselves resource losses, $K(s)$ represents the net social cost of overriding the loss allocation that would otherwise apply—administrative and distortionary costs, public balance-sheet risk, subsidy costs and related effects. We require only that this cost rise less than proportionately with systemic importance:

$$0 \leq sK'(s) < K(s). \tag{A.4}$$

The authority protects creditors when

$$K(s) < \sigma(s,z)\xi. \tag{A.5}$$

For $\sigma > 0$, the switching state is therefore

$$\bar{\xi}(s,z) = \frac{K(s)}{\sigma(s,z)} = \frac{K(s)}{(1-z)s}, \tag{A.6}$$

and the probability of creditor protection conditional on failure is

$$p(s,z) = 1 - F\left(\frac{K(s)}{\sigma(s,z)}\right). \tag{A.7}$$

If $\sigma = 0$, resolution preserves the critical function completely in this stripped-down model and we set $p(s,1) = 0$.

Equation (A.7) contains the basic mechanism. Holding preparedness fixed, greater systemic importance raises residual systemic exposure and, under (A.4), makes creditor protection more likely. Greater preparedness lowers residual systemic exposure and makes creditor losses easier to impose. Thus

$$p_s(s,z) \geq 0, \qquad p_z(s,z) \leq 0, \tag{A.8}$$

with strict inequalities when the switching state lies in a region with positive density.

Now let a competitive, risk-neutral creditor advance one unit. Let R be the promised gross repayment and R_f the risk-free gross return. The creditor receives R if the bank survives or if the bank fails and the authority protects it, and zero if resolution imposes the loss. Competitive pricing therefore requires

$$R_f = R\left[1 - \pi(1 - p(s,z))\right], \tag{A.9}$$

so that

$$R(s,z) = \frac{R_f}{1 - \pi[1 - p(s,z)]}. \tag{A.10}$$

Proposition A.1 (Systemic importance and creditor protection)**.** *For fixed preparedness z, greater systemic importance weakly raises the probability that creditors are protected and weakly lowers the bank's competitive funding rate. Greater preparedness weakly lowers expected creditor protection and weakly raises the funding rate. The inequalities are strict in the mixed intervention region where both support and resolution occur with positive probability.*

The proposition captures the creditor-side mechanism at the heart of the Bagehot Problem. Shareholders need not be rescued and managers need not remain in office. The advantage arises because creditors accept a lower promised return from institutions whose losses they expect the authorities to find difficult to impose. Systemic importance can therefore weaken market discipline even when insiders remain fully exposed (Hirsch, 1977).

A.3 Organisational dependence and resolution preparedness

Preparedness is not costless. Some banking activities can be kept operating through resolution relatively easily. Others depend on staff knowledge, customer relationships, shared systems and operating arrangements tied to the existing organisation. The authority may know perfectly well what matters and still find it difficult to preserve when ownership or financial claims change. Observability is not transferability.

Index the bank's critical activities by $u \in [0,1]$, ordered from least to most costly to prepare for continuity through resolution. Let

$$\kappa(u) > 0, \qquad \kappa'(u) \geq 0, \tag{A.11}$$

be the cost of arranging in advance for activity u to remain usable while private losses are imposed. The schedule $\kappa(\cdot)$ summarises the activity's dependence on information, people, systems and relationships tied to the existing organisation.

The minimum cost of making fraction z of critical activity able to continue through resolution is therefore

$$C(z) = \int_0^z \kappa(u)\, du, \qquad C'(z) = \kappa(z). \tag{A.12}$$

Conditional on bank failure, the authority chooses whichever is cheaper: protecting creditors or resolving the bank and accepting the residual disruption. Expected crisis loss is

$$M(s,z) = \mathbb{E}_\xi[\min\{K(s), \sigma(s,z)\xi\}]\,. \tag{A.13}$$

Since failure occurs with probability π, the authority chooses

$$\min_{z\in[0,1]} \{C(z) + \pi M(s,z)\}\,. \tag{A.14}$$

For an interior optimum z^*,

$$\kappa(z^*) = \pi s \mathbb{E}\big[\xi\, \mathbf{1}\{\xi \leq \bar{\xi}(s,z^*)\}\big]\,. \tag{A.15}$$

The left-hand side is the marginal cost of making one more unit of critical activity able to survive resolution. The right-hand side is the expected reduction in crisis loss. Preparedness therefore stops where the cost of creating additional separability equals its expected value in failure.

Now consider two otherwise identical banks, A and B. Suppose that the critical activities of B are more dependent on the existing organisation, in the sense that

$$\kappa_B(u) \geq \kappa_A(u) \qquad \text{for all } u \in [0,1]. \tag{A.16}$$

Proposition A.2 (Organisation and resolvability)**.** *Suppose the two planner problems have unique finite global optima. If* (A.16) *holds, then*

$$z_B^* \leq z_A^*, \qquad p(s, z_B^*) \geq p(s, z_A^*). \tag{A.17}$$

Thus greater organisational dependence lowers optimal resolution preparedness and makes creditor protection more likely.

Proof. Since (A.16) implies that $C_B(z) - C_A(z)$ is weakly increasing in z, suppose, contrary to the result, that $z_B^* > z_A^*$. Uniqueness of the two optima then gives

$$C_A(z_A^*) + \pi M(s, z_A^*) < C_A(z_B^*) + \pi M(s, z_B^*)$$

and

$$C_B(z_B^*) + \pi M(s, z_B^*) < C_B(z_A^*) + \pi M(s, z_A^*).$$

Adding the inequalities yields

$$C_B(z_B^*) - C_A(z_B^*) < C_B(z_A^*) - C_A(z_A^*),$$

contradicting the monotonicity of $C_B - C_A$. Hence $z_B^* \leq z_A^*$. Since $p_z \leq 0$, the protection ordering follows. □

The authority's difficulty is therefore not simply that the bank is systemically important. It is that the functions making it important may be costly to keep operating while private creditors bear losses. Organisational dependence raises the cost of creating the separability on which resolution relies.

A.4 Ring-fencing and the transformed Bagehot Problem

This gives ring-fencing a precise but delimited role. Let $\kappa_I(u)$ describe preservation costs in an integrated bank and $\kappa_R(u)$ those in a ring-fenced bank. If structural separation makes the relevant activities more self-contained, then

$$\kappa_R(u) \leq \kappa_I(u) \qquad \text{for all } u. \tag{A.18}$$

Proposition A.2 then implies weakly greater optimal preparedness and weakly lower expected creditor protection under the ring-fenced structure, holding all other features fixed. This is only the resolvability channel. Ring-fencing may also sacrifice economies of scope, duplicate systems, alter information production or have other ordinary-time costs and benefits. Those effects are outside the comparison here and are developed further in the full appendix.

The transformed Bagehot Problem can now be stated directly. At the optimally prepared bank, define

$$\sigma^* \equiv (1 - z^*)s. \tag{A.19}$$

Expected creditor protection is then

$$p^* = 1 - F\left(\frac{K(s)}{\sigma^*}\right), \qquad \sigma^* > 0, \tag{A.20}$$

with $p^* = 0$ when $\sigma^* = 0$.

Equation (A.20) makes clear what modern resolution changes. Systemic importance has not disappeared. Resolution instead reduces the amount of systemically important activity that must be disrupted when private losses are imposed. The relevant constraint is therefore no longer simply s, but residual systemic exposure σ^*.

Organisation matters because it determines how costly it is to reduce σ^*. Ring-fencing can matter, on the channel isolated here, because it may lower that cost before failure occurs. Resolution and structure are therefore not generically substitutes: their relationship depends on which forms of separability can be created beforehand and which can be reproduced reliably at failure.

That is the sense in which the Bagehot Problem is transformed rather than eliminated. The question is no longer simply whether an institution is too important to fail, but how much of what makes it important must fail with it.

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