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Conversion, not complementarity: Why UK small-firm climate action is gated by capacity, not bundled capability

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1. Executive Summary

Small and medium-sized enterprises account for most of the UK's firms, most of its private-sector jobs and a large share of its business emissions, yet a stubborn regularity shapes how their behaviour is read: most small firms say the environment matters, but far fewer measure emissions or take concrete steps. Policy has treated this priority–action gap as a shortfall of capability or commitment to be topped up, and has assumed that support measures — finance, innovation and engagement — reinforce one another when bundled. This paper argues that both assumptions mis-specify the problem.

We advance a conversion view in which priority and action are distinct states separated by a step gated by organisational capacity rather than by disposition. Testing four hypotheses on two independent, officially commissioned UK surveys — the Longitudinal Small Business Survey (LSBS, ~50,600 firms, 2015–2024) and the British Business Bank's Business Finance Survey (BFS, ~9,999 firms, 2021–2025) — compared in parallel on a harmonised firmographic grid, we establish two robust findings. First, environmental capabilities do not compound: finance, innovation and climate engagement each raise productivity alone, but they never interact positively, and finance and innovation actively substitute in small and medium firms. Second, the priority–action gap is capacity-gated: it narrows sharply with firm size and survives every specification, strengthening under the survey design weight that scales the oversampled medium firms down. Two further results — an energy-concentrated response to the 2022 price shock, and the absence of a large legitimacy-driven minority gap — hold as scope conditions consistent with the conversion view.

The implication is structural rather than incremental. If conversion, not commitment, governs the gap, then a large body of attitude-based SME research is mis-specified and capability-bundling policy is aimed at the wrong target. The leverage point is building conversion capacity in the smallest firms, not layering additional support measures on a commitment that is already present.

Key Findings at a Glance

- The priority–action gap is gated by organisational capacity: it narrows sharply with firm size and survives — indeed strengthens — under every robustness check (H1).
- Environmental capabilities do not compound: each raises productivity alone, but their interactions are never positive, and finance and innovation substitute in small and medium firms (H2).
- Transitions into action track external prices: climate action rose after the 2022 energy-price shock, concentrated in energy-cost-sensitive behaviour rather than as a uniform trend (H3).
- Owner demography does not organise the gap in the strong, legitimacy-driven sense the dispositional view predicts; the large minority gap is rejected (H4).
- Methodologically, a parallel two-survey design identifies the gap without firm-level linkage, converting the usual common-method liability into an identification asset.

2. Introduction

2.1 Background and Context

Small and medium-sized enterprises (SMEs) are most of the UK's firms, most of its private-sector jobs, and a large share of its business emissions; their behaviour therefore sits at the centre of decarbonisation. One pattern recurs across the evidence: while most small firms report that the environment matters to them, only a minority actually measure their emissions or put concrete measures in place. In other words, intention is common but follow-through is not. The usual policy response has been to build up firms' environmental capabilities — access to finance, innovation, and engagement — on two beliefs: that more capability will close the gap between what firms intend and what they do, and that these capabilities work better together, so bundled support

delivers more than the sum of its parts. We show that both assumptions fail, and we put a different account of what governs the gap in their place.

The two assumptions belong to what we term the dispositional view: that action expresses an underlying disposition — commitment, capability, or projected legitimacy — so that priority and action are two readings of one latent variable (Williams and Schaefer, 2013; Suchman, 1995; Delmas and Burbano, 2011). The main competing explanation does not avoid that assumption but repeats it: the idea of organisational decoupling treats the gap as deliberate window-dressing, yet window-dressing is still about attitude — just a cynical attitude rather than a weak one (Bromley and Powell, 2012). Both accounts therefore tie the gap to attitude, treating intention and action as two readings of the same underlying disposition. We reject that premise. This report takes a different view. It treats intention and action as two separate stages, with a conversion step in between that is driven by factors outside attitude — chiefly the firm's organisational capacity, which is unevenly spread and tends to grow with firm size, and external price signals that prompt firms to move. On this reading, a lack of capacity can keep the gap open even where firms would act if they were able to. Consequently the object of interest becomes the conversion of attitude into behaviour, and the two policy assumptions cease to be premises and become predictions to be tested.

2.2 Research Questions

The conversion view yields four research questions, drawn from four distinct literatures reviewed in Section 3:

RQ1. First, is the gap between intention and action driven by a firm's capacity to convert one into the other — which rises with size — rather than by how strong or genuine its stated priority is?

RQ2. Second, do small firms' environmental capabilities actually reinforce one another, or does any such pay-off need to be shown rather than taken for granted?

RQ3. Third, do firms move into action when external prices change, focusing on the behaviours that a price shock makes expensive to ignore?

RQ4. Fourth, does the profile of the owner or firm shape the gap in the strong way that attitude-based accounts would predict?

2.3 Structure of the Research Paper

The remainder is organised as follows. Section 3 reviews the five literatures the argument reorganises, formalises the conversion view and the willing-but-unable typology that anchors it, and states four hypotheses (H1–H4). Section 4 sets out the data, its harmonisation and the estimators — the latter framed deliberately as a critique of a default method and its replacement. Section 5 reports the results and closes each hypothesis with a verdict. Section 6 draws the conclusions and policy recommendations. Sections 7 and the appendices provide references and supporting material.

3. Literature Review

The framework used here pulls together five research strands that are rarely considered side by side. We review them in the order the argument requires — first the attitude–action gap that motivates the puzzle, then the four relationships from which we derive our research questions — and from each we extract the specific question it leaves unresolved. References were selected from a systematic Scopus corpus of 34,869 de-duplicated records ranked by citation impact and partitioned into quartiles, citing from the top quartile downward and stopping at saturation.

3.1 Theoretical Framework

It is one of the best-established results in this area that small firms express environmental concern far more readily than they act on it. Owner values, self-efficacy and contextual constraints shape whether concern translates into practice (Williams and Schaefer, 2013; Hamann et al., 2017; Kornilaki, Thomas and Font, 2019), and the same asymmetry recurs in adjacent work on manufacturing SMEs and family firms (Aboelmaged, 2018; Dekker and Hasso, 2016); it is not even peculiar to firms, the consumer and environmental-psychology literatures documenting a parallel divergence (Young et al., 2010; Moser, 2015; Kollmuss and Agyeman, 2002). This body of work documents the gap well but explains its cause less clearly. It reads the gap as slippage from an underlying disposition, and so treats priority and action as two measurements of one construct. That attitude-centred starting point is exactly what this report sets out to replace.

The alternative proposed here is that intention and action are separate stages, linked by a conversion step that depends on factors beyond attitude. Its core proposition — the one tested most rigorously here — is that conversion is limited by capacity: how quickly intention turns into action depends on a firm's organisational resources (spare capacity, specialist attention, administrative systems), which grow with size and constrain the firm whatever the strength of its intentions.

Crossing stated priority (high / low) with conversion capacity (high / low) yields a compact four-cell willing-but-unable typology: converters (high priority, high capacity), the willing-but-unable (high priority, low capacity), the able-but-unwilling (low priority, high capacity), and the disengaged (low, low). The dispositional view collapses this square onto its diagonal, treating priority and action as one; the conversion view keeps the off-diagonal cells open, and it is the willing-but-unable cell — firms that would convert but cannot — that the capacity account predicts will dominate the small-firm population. The account is assembled by transfer across fields: capacity-gating from the capabilities tradition (Teece, Pisano and Shuen, 1997; Winter, 2003), external triggering from real-options reasoning (Dixit and Pindyck, 1994), and routine-based persistence from evolutionary theory (Nelson and Winter, 1982; Cyert and March, 1963). We state four predictions and grade them; each is closed with an explicit verdict in Section 5.

H1 (strong — capacity-gating). H1: the gap shrinks as a firm's capacity to convert intention into action grows (measured here by firm size), regardless of how strong or genuine the stated priority is.

H2 (strong — non-automatic complementarity). H2: environmental capabilities should not be assumed to reinforce one another; whether they do is an empirical question, and the pay-off may be nil or even negative.

H3 (external trigger). H3: firms move into action in response to external price shocks, concentrating on the behaviours a shock makes expensive to leave undone.

H4 (disposition-orthogonal demography). H4: owner characteristics that work through attitude or legitimacy do not shape the gap in the strong way attitude-based accounts would expect.

The paper stands on H1 and H2, which the data support robustly; H3 and H4 are corollaries of the same view that the data carry only as scope conditions.

3.2 Empirical Evidence

Capacity, size and absorptive capacity — the gate on action. A first strand connects firm size, financial headroom and the ability to absorb new knowledge to environmental action. Access to finance is a first-order investment constraint that binds hardest on the smallest firms (Beck and Demirgüç-Kunt, 2006; Berger and Udell, 1998); absorptive capacity — the organisational ability to identify, assimilate and exploit external knowledge — mediates whether firms convert environmental knowledge into green innovation, and it is systematically thinner in smaller firms (Aboelmaged and Hashem, 2019; Müller, Buliga and Voigt, 2021; Zhang et al., 2020). Read through the capabilities tradition (Teece, Pisano and Shuen, 1997; Winter, 2003), these results describe a throughput apparatus — financial slack, dedicated expertise and the back-office capacity to measure and file — that scales with size. What earlier work has not done is treat those resources as the very thing that controls whether attitude becomes action (RQ1).

Capability complementarity — assumed versus demonstrated. Bundled support for small firms assumes that finance, innovation and environmental engagement reinforce one another, so combining them multiplies their impact. Firms themselves hold this premise — in a recent nationally representative UK survey, of the firms that weighed an investment's effect on their other investments, fully 78% expected that effect to be reinforcing rather than restrictive (Golubova and Roper, 2026). Yet the evidence for that assumption is much weaker than policymakers or managers tend to assume. In the foundational statement, complementarity between internal R&D and external knowledge is conditional, not automatic, and can turn to substitution (Cassiman and Veugelers, 2006; Lichtenthaler, 2009); much of the green-innovation-and-performance literature reports positive associations for single capabilities without testing their interactions (Singh et al., 2020; Singh et al., 2022), leaving the compounding assumption largely unexamined for environmental capabilities (RQ2).

Outside pressures: regulation, stakeholders and energy costs. A third strand traces the trigger for action to forces outside the firm. Regulatory and stakeholder pressures, market demands and cost shocks are repeatedly shown to drive environmental practice in SMEs (Gadenne, Kennedy and McKeiver, 2009; Cantele and Zardini, 2020; Darnall, Henriques and Sadorsky, 2010). Financial and energy-cost channels are especially pertinent to small firms: financial barriers shape environmental innovation (Ghisetti et al., 2017), energy efficiency conditions SMEs' access to finance (Chen, Calabrese and Cowling, 2024; Beck and Demirgüç-Kunt, 2006), and fiscal and regulatory instruments move emission-reduction behaviour directly (Qi, Zhang and Chen, 2023; Garrido-Prada et al., 2021). Interpreted through real-options reasoning (Dixit and Pindyck, 1994), these findings imply that transitions into action should track external price signals (RQ3).

Demography, legitimacy and symbolic action. A fourth literature — the legitimacy tradition — holds that firms may project environmental concern symbolically to manage stakeholder perceptions, decoupling stated priority from substantive action (Suchman, 1995; Delmas and Burbano, 2011). In organisational theory this symbolic reading is formalised as decoupling (Meyer and Rowan, 1977; Bromley and Powell, 2012), which treats the gap as a managed, strategic accomplishment and thereby supplies the sharpest firm-level rival to the conversion view. Applied to SMEs and closely held firms, it predicts that owner and board demography should organise the gap. Yet the evidence is mixed rather than decisive: family firms are not uniformly greener (Li, Chirico and Hoskisson, 2026; Bauweraerts, Arzubiaga and Diaz-Moriana, 2025), and for minority-led firms, mixed-embeddedness reasoning gives grounds to expect distinctive resource positions rather than distinctive disposition (Kloosterman and Rath, 2001; Miroshnychenko et al., 2025) (RQ4).

3.3 Summary and Gaps

Across all four literatures the field is rich in correlates but rests on an unexamined premise — that the gap reflects disposition — and so never specifies how a held priority becomes a performed action, nor why the transformation succeeds in some firms and stalls in others (Eleftheriadis and Anagnostopoulou, 2024; Olekanma et al., 2024). The conversion view fills this gap by naming the step the field had left unspecified and specifying a gate — organisational capacity — that is motive-indifferent. Section 4 formalises the four questions as hypotheses (RQ1 as H1, RQ2 as H2, RQ3 as H3, RQ4 as H4) within a single conversion function that the UK evidence can adjudicate.

4. Methodology

4.1 Research Design

Because the same firm is rarely observed reporting both its intention and its action, the study sets the two side by side using two separate surveys aligned on a common grid; a gap that shows up across two different questionnaires cannot simply be an artefact of one survey. This design is deliberate, and it is the paper's methodological contribution: it replaces the field's default — a single survey eliciting attitude and behaviour from the same respondent, and so exposed to common-method and social-desirability bias (Milfont, 2009; Roxas and Lindsay, 2012) — with a

parallel two-survey identification that turns that very liability into an asset. To our knowledge such a design is a first of its kind in UK SME climate research. This is an identification move before it is a data move: the gap we estimate is the difference between what one population of firms prioritises and what a comparable population does, read off a difference-in-differences interaction rather than a within-firm change.

4.2 Data Sources

The analysis draws on two independent, officially commissioned UK surveys of SMEs, each the standard national instrument at its node (Table 1). The action data come from the Longitudinal Small Business Survey (LSBS), a panel of UK private-sector firms with fewer than 250 employees, commissioned by the Department for Business and Trade and running annually since 2015; we use ten waves (2015–2024) covering 50,601 firms, from which the LSBS supplies a 0–2 climate-action index, an energy-efficiency indicator, an ordinal productivity proxy and firm characteristics. The priority data come from the Business Finance Survey (BFS), commissioned by the British Business Bank and weighted to the ONS/BEIS SME population; we pool five waves (2021–2025), ≈ 10,000 firms, from which the BFS supplies a five-point environmental-priority measure.

The two surveys cannot be joined at firm level, so they are read in parallel: the Business Finance Survey captures intention, and the Longitudinal Small Business Survey captures action. Observe also that productivity plays a dual role; Methodologically, it is the mechanism that renders complementarity empirically testable; Substantively, it is the objective standard through which claims of synergy are evaluated. Yet because it is also the point where the paper moves from an environmental outcome to an economic one, it represents a critical theoretical and empirical junction.

Table 1. Analytic samples and measures

	LSBS (the “doing” side)	BFS (the “saying” side)
Period	Firm panel, 2015–2024	Pooled cross-section, 2021–2025
Firms	50,601 across 10 waves	9,999
What it measures	A climate-action score (0–2) and an energy-efficiency indicator	A five-point environmental-priority measure (high / neutral / low)
Productivity	An ordinal (ranked) productivity proxy	—
Weighting	Design and panel weights (baseline unweighted)	Survey-weighted

Notes: The two surveys share no firm identifier and are compared in parallel. Size and sector were verified against value labels.

Harmonisation. Four grid variables — minority ownership, exporter status, size and sector — are placed on a common coding in both surveys. Minority ownership and exporter status line up directly across the surveys; firm size and sector needed a mapping, which was checked against each survey’s own coding rather than taken on trust — a check that uncovered two coding errors. This verification is not clerical housekeeping: an unverified crosswalk would have compared different firm populations under the same label and manufactured a spurious gap. Both surveys carry producer weights; our baseline estimates are nonetheless unweighted, since for the coefficients that carry our hypotheses unweighted estimation is efficient under correct specification and analytic weights that gross a deliberately size-stratified sample can inflate variance without shifting the estimand. Survey weighting is therefore reported as a robustness check rather than the main specification.

Descriptive statistics. Table 2 compares the two samples on the harmonised grid. They are of very different shape — a large firm-year panel on the action side, a smaller pooled cross-section on the priority side — yet their firmographic composition is broadly comparable: minority-led firms are a small minority in both (5.4% of LSBS firm-years, 7.5% of BFS firms) and exporters roughly a fifth to a quarter (21.8% and 24.6%). On the action side, 31.1% of firm-years in the LSBS show at least one climate action, and the tendency to keep acting is clear even in the raw figures: a firm that acted in the previous wave acts again 43.5% of the time, compared with 26.2% for one that did not.

Table 2. Descriptive statistics: LSBS and BFS analytic samples

	LSBS (action)	BFS (priority)
Design	Firm-level panel	Pooled cross-section
Waves / years	10 waves, 2015–2024	2021–2025
Unique firms	50,601	9,999
Matched-grid observations	96,014 firm-years	4,969 firms
Minority-led (%)	5.4	7.5
Exporter (%)	21.8	24.6
Took ≥1 climate action (%)	31.1	—
Energy-efficiency action, pre-2022 base (%)	19.1	—
Carbon measurement fielded	—	2023–2025
Prior-wave actors re-acting (%)	43.5	—
Non-actors acting (%)	26.2	—
Enters pooled gap model (obs.)	39,505	2,214

Notes: Composition figures are computed from the harmonised grids. The re-acting and acting rates are row percentages of the lagged-action transition table (n = 6,940 transitions across ~9,215 firms observed in ≥2 waves). The pooled gap model is built on 41,719 observations, with 41,602 entering the main specification once incomplete records are dropped.

4.3 Analytical Methods

Each proposition is matched to an estimator chosen for the measurement level of its outcome; all models are estimated in Stata.

Complementarity (H2). Since productivity is measured in ranked bands (quintiles), H2 is estimated with an ordered logit model, which respects that ranking without assuming equal gaps between bands. The test of whether capabilities reinforce one another rests entirely on the interaction terms, not the standalone effects: under the standard approach to complementarity in organisational design, two capabilities reinforce one another only if the pay-off to one rises when the other is present (Athey and Stern, 1998; Cassiman and Veugelers, 2006). An interaction that is zero or negative is therefore evidence against the idea that capabilities reinforce one another.

The priority–action gap (H1). H1 is estimated with a pooled linear model, with the outcome standardised within each survey. Every firm contributes one observation; the outcome is z-scored separately within each survey, and a single indicator D marks the survey side, so the gap for each firm type is read off the interaction of that type with D in a difference-in-differences logic. In plain words: take how far a firm type sits above the average on doing, subtract how far the same type sits above the average on saying, and the remainder is that type's conversion gap. A positive size×D interaction thus identifies a group that converts. Estimation uses heteroskedasticity-consistent standard errors (Cameron and Miller, 2015).

External trigger and persistence (H3). The price test uses an event-study design: the action measure is tracked year by year, controlling for size and sector, to follow how action moved around the 2022 shock instead of assuming a single turning point. Two safeguards accompany it — a placebo shock placed at 2020, and a decomposition contrasting energy-efficiency against non-energy action. Persistence is a dynamic discrete-choice model with a lagged dependent variable; because that raises the initial-conditions problem, we read the lag coefficient as a descriptive measure of within-firm persistence rather than a structural state-dependence parameter (Wooldridge, 2005). Inference on the nulls. The two null findings — the minority gap (H4) and the motive-indifference of persistence — are assessed with two one-sided equivalence (TOST) tests rather than by reading a non-significant p-value as evidence of no effect. Each is tested against a pre-specified smallest effect of interest, and equivalence is claimed only if a larger effect can be rejected on both sides (Lakens, 2017).

Note that the BFS appears almost invisible in Section 5 not because it is unimportant, but because of how the analysis is constructed. First, it represents only around 5% of the estimation sample (2,214 observations versus 39,505 from the LSBS), so the LSBS largely determines the fitted relationships. Second, because the outcome variable is standardised separately within each

survey, any distinctive BFS level effects are removed, leaving only relative rankings among firms. Third, the BFS serves as the reference category in the difference-in-differences framework. The reported coefficients capture how firms' actions differ from their stated priorities, so the BFS enters implicitly through the intercept and main effects rather than through the headline interaction terms. As a result, the BFS performs an essential but largely hidden role: it provides the benchmark against which the LSBS measures implementation, making it the anchor of the action-priority gap rather than a visible source of estimated effects.

4.4 Limitations

Several limitations qualify these conclusions. Several limits apply. Apart from the period around the 2022 shock, the climate analysis is cross-sectional, so the relationships are associations rather than proven causes; productivity is captured by a ranked proxy; the two surveys cannot be linked firm to firm, so comparisons are across types of firm rather than within the same firm over time; and the LSBS is analysed unweighted in the baseline. That last is deliberate — for the coefficients we estimate, unweighting is efficient and the estimand is unchanged — but it carries one caveat we do not hide: the LSBS design weight, which corrects the survey's heavy oversampling of medium firms, is the weight most capable of moving the H1 gradient, and we therefore report it (it strengthens H1 to +0.329 whilst attenuating the H2 interactions to zero). The action measure is construct-relative, the 2022 timing sits on a mild pre-trend the BFS cannot cross-validate, and the motivation test is single-wave and retrospective. These limits affect how strongly the conclusions can be stated, not which way they point.

5. Findings

This section presents the findings from the analysis, organised thematically around the hypotheses, and closes each with an explicit verdict.

5.1 Capability bundles do not compound (H2)

Taken on its own, each capability is linked to higher productivity — finance +0.088, innovation +0.087 and climate engagement +0.029, all significant at the 1% level (Table 3, column 5). What they do not do is strengthen each other when combined. In the unweighted sample every pairwise interaction is negative and significant — finance×innovation −0.027, finance×climate −0.017, innovation×climate −0.022 — and once the sample is weighted to the SME population these attenuate to zero (+0.008, −0.034, +0.004, none significant). Even so, both versions of the model agree on the point that matters for the bundling assumption: none of the combined effects is positive. Estimating them within size bands sharpens why (Table 4): they differ significantly across bands ($\chi^2(6)=13.71$, $p=0.03$), and finance and innovation substitute robustly in small and medium firms — −0.057 and −0.050 unweighted, −0.066 and −0.042 under the design weight — but not in micro firms, where the pair is null.

Verdict. H2 holds: the positive complementarity that bundled support presumes is absent throughout, with one qualification — substitution is real but size-conditional, a finance–innovation trade-off in small and medium firms rather than a population-wide property. The rejection translates directly into theory and policy: there is no multiplier for bundling to capture, and where finance moves outcomes it does so alone, not in synergy. Bundling buys nothing extra.

Table 3. Capability bundles and SME productivity (LSBS, ordered logit, robust standard errors)

Productivity (ranked)	(1) Fin	(2) Innov	(3) Clim	(4) Additive	(5) Full
Finance (z)	0.087*** (0.008)	—	—	0.082*** (0.008)	0.088*** (0.008)
Innovation (z)	—	0.085*** (0.009)	—	0.079*** (0.009)	0.087*** (0.009)

Productivity (ranked)	(1) Fin	(2) Innov	(3) Clim	(4) Additive	(5) Full
Climate engagement (z)	—	—	0.034*** (0.009)	0.028*** (0.009)	0.029*** (0.009)
Finance × Innovation	—	—	—	—	−0.027*** (0.007)
Finance × Climate	—	—	—	—	−0.017** (0.008)
Innovation × Climate	—	—	—	—	−0.022*** (0.008)
Observations	38,185	38,185	38,185	38,185	38,185
Pseudo R^2	0.037	0.037	0.037	0.037	0.038

*Notes: Ordered logit; robust standard errors in parentheses. * p<.10 ** p<.05 *** p<.01. Every column controls for firm size, sector and year. Under the LSBS cross-sectional design weight the main effects grow (finance 0.173, innovation 0.115, climate 0.058) while the pooled interactions attenuate to zero (+0.008, −0.034, +0.004, none significant): the absence of positive complementarity is robust to weighting; the pooled substitution reading is not, but the size-conditional finance–innovation substitution among small and medium firms is (Table 4).*

Table 4. Capability interactions by firm-size band (LSBS, ordered logit)

Productivity (ranked)	Micro (0–9)	Small (10–49)	Medium (50–249)
Finance (z)	0.121*** (0.012)	0.057*** (0.015)	0.054** (0.023)
Innovation (z)	0.095*** (0.014)	0.098*** (0.016)	0.106*** (0.024)
Climate engagement (z)	0.034** (0.013)	0.017 (0.016)	0.040* (0.024)
Finance × Innovation	−0.006 (0.011)	−0.057*** (0.013)	−0.050*** (0.016)
Finance × Climate	−0.032** (0.012)	−0.005 (0.013)	0.023 (0.020)
Innovation × Climate	−0.028** (0.014)	−0.014 (0.015)	−0.005 (0.019)
Observations	21,257	11,744	5,184
Pseudo R^2	0.025	0.043	0.054

*Notes: Ordered logit with robust standard errors, the full capability model estimated separately within each size band. * p<.10 ** p<.05 *** p<.01. These combined effects vary significantly across the size bands ($\chi^2(6)=13.71$, p=0.03). In small and medium firms, finance and innovation work against each other, and this holds under the design weight (small −0.066, medium −0.042, both significant at 5%). In no size band is any combined effect significantly positive.*

5.2 The priority–action gap is capacity-gated (H1)

The priority–action gap narrows sharply with firm size. Medium-sized firms stand markedly higher on action than on intention (+0.207, p=0.001), turning stated intention into measured action far more fully than the smallest firms do (Table 5). This is the framework's central prediction confirmed: the gap follows a firm's capacity to convert, for which size is the visible marker.

Verdict. H1 holds, and robustly — it survives every specification and, tellingly, strengthens to +0.329 under the survey design weight that scales the oversampled medium firms down (Table 6). The willing-but-unable cell of our typology is thus not a theoretical curiosity: it is where the smallest firms sit — willing, but without the capacity to act. Capacity gates conversion.

Table 5. How the intention–action gap varies with firm size (pooled firm-level model, OLS, robust standard errors)

Standardised outcome	(1) Baseline	(2) + Year effects
Action (LSBS side)	0.030 (0.046)	0.299*** (0.047)
Minority	0.109 (0.080)	0.117 (0.080)
Minority × action	−0.081 (0.083)	−0.120 (0.083)
Exporter	0.146*** (0.047)	0.165*** (0.047)
Exporter × action	−0.136*** (0.049)	−0.143*** (0.048)
Small	0.072 (0.056)	0.059 (0.056)
Medium	−0.013 (0.062)	−0.024 (0.063)
Small × action	0.064 (0.057)	0.057 (0.057)
Medium × action	0.207*** (0.064)	0.238*** (0.064)
Distribution / transport	0.079 (0.065)	0.077 (0.065)
Business services	0.036 (0.053)	0.027 (0.053)
Other services	0.105 (0.062)	0.109 (0.062)
Distribution × action	−0.101 (0.067)	−0.107 (0.067)
Business services × action	−0.120** (0.055)	−0.111** (0.055)

Standardised outcome	(1) Baseline	(2) + Year effects
Other services × action	0.094 (0.065)	0.066 (0.064)
Year fixed effects	No	Yes
Constant	−0.105** (0.044)	−0.679*** (0.047)
Observations	41,602	41,719
R-squared	0.016	0.087
Root MSE	0.992	0.956

*Notes: Pooled OLS; outcome standardised within survey; the interaction terms are the priority–action gaps (+ = higher on action than on priority). Robust standard errors in parentheses. * p<.10 ** p<.05 *** p<.01. "Medium × action" is the H1 result; "Minority × action" is the H4 null (Section 5.3). Column 2 adds year effects (N differs slightly, 41,719, owing to listwise deletion).*

Figure 1 (in numbers). Conversion gap by firm size, relative to micro firms (reference = 0.000): small +0.064 SD (s.e. 0.057, not significant) and medium +0.207 SD (s.e. 0.064, p=0.001); adding year effects lifts the medium gap to +0.238 SD. The gap increases monotonically across the three bands — 0.000, +0.064, +0.207 — and it is this positive gradient, not the level in any one band, that identifies H1.

Robustness checks on the main results. The two findings behave differently under the checks (Table 6). The size gradient (H1) is unmoved by shifting the micro/small boundary a band either way (+0.185 to +0.235, all p<0.01), strengthens to +0.238 under year effects, and — the demanding test — strengthens again to +0.329 under the LSBS design weight that scales the oversampled medium firms back to their population share. Thus H1 is robust in the strong sense: the one weight most capable of removing the gradient amplifies it. The capability finding (H2) is robust in its essential claim but not in its strongest form — the absence of positive complementarity holds under alternative functional forms, outcome codings and both weightings, whereas the negative (substitution) interactions attenuate to zero under the design weight.

Table 6. Robustness of the primary findings

Check	Target	Result	Verdict
Size-band boundary (0–4 / 0–9 / 0–19)	H1	+0.185 to +0.235, p<0.01	Robust
Year fixed effects	H1	+0.238, p<0.001	Robust
Alternative functional form	H2	No positive interaction	Robust
Alternative productivity coding	H2	All three interactions negative	Robust
Panel attrition (inverse-probability weight)	H2	Interactions unchanged (≤0.001)	Robust
Survey design weight (LSBS)	H1	+0.329, p<0.01 (from +0.207)	Robust ↑
Survey design weight (LSBS)	H2	Interactions → 0, all n.s.	No compl. robust; substitution not

Notes: H1 holds and strengthens across every specification, including the design weight; H2's absence of complementarity holds throughout, while its negative (substitution) interactions do not survive the design weight.

5.3 External triggers, demography and persistence (H3, H4)

An external-price response (H3). Climate action jumped around the time of the 2022 energy-price shock (Figure 2). The post-2022 step is +0.229, an order of magnitude larger than the standardised finance (+0.008) and innovation (+0.021) coefficients. Crucially, the rise concentrates in energy-cost-sensitive behaviour: energy-efficiency action jumps +0.061 (p<0.001), roughly a third above its pre-shock base of 0.19, whilst non-energy climate action does not rise at all, indeed falling slightly (−0.017, p<0.001). This composition is the signature of a price response rather than a generic trend. That said, the timing is not a clean break — a placebo shock placed at 2020 is itself significant (+0.058), so 2022 is the largest increment on a mild pre-existing rise. Verdict. H3 holds, but as a scope condition: the external-price channel is visible in what firms do (energy-cost-sensitive action) rather than in a clean discontinuity in when they do it. Firms move on price, not on principle.

Figure 2 (in numbers). LSBS event study of climate action around the 2022 shock (2017 = reference). Action runs broadly flat through 2017–2020, is already elevated in 2021, and steps up most sharply after 2022, where the post-shock coefficient is +0.229 SD. Because a placebo shock imposed at 2020 is itself positive (+0.058), the 2022 movement is the largest increment on a mild pre-existing rise rather than a jump from a flat baseline.

No large legitimacy-driven minority gap (H4). If attitude drove the gap, minority-led firms would be expected to report intention out of step with their action. They do not exhibit the large gap this predicts: the minority×action interaction is −0.081 (p=0.33), indistinguishable from zero (Table 5). An equivalence test is honest about what this establishes: at a smallest-effect bound of ±0.15 SD the two one-sided tests do not both reject (equivalence p=0.20), so we cannot claim a proven zero; the 90% interval [−0.218, 0.056] rules out a gap larger than about 0.22 SD but not a small one. Verdict. H4 holds in its strong form — the large attitude-driven gap is ruled out — though this is an upper bound rather than a demonstrated zero. Demography, acting on disposition, does not gate conversion; capacity does.

Persistence. Climate action is sticky within firms: a firm that acted last wave has 1.77 times the odds of acting again (log-odds 0.568, p<0.001), and the odds rise monotonically with employment size — reinforcing the capacity account. Intrinsically- and instrumentally-motivated firms persist at almost the same rate (difference +0.019, p=0.36), consistent with persistence through routine rather than conviction, though the difference is bounded rather than exactly zero. Motivation is only observed in one wave, so this test looks backwards and is treated as indicative rather than firm.

Key Insight

The priority–action gap shrinks monotonically with firm size — medium firms convert +0.207 SD more of their stated priority into action than micro firms, rising to +0.329 SD under the design weight. What looks like reluctance in the smallest firms is, on this evidence, an unbuilt capacity to convert.

6. Conclusions and Recommendations

6.1 Summary of Key Findings

Four hypotheses, four verdicts: H1 (capacity-gating) and H2 (non-complementarity) hold, and robustly; H3 (external trigger) and H4 (disposition-orthogonal demography) survive as scope conditions. Setting aside both the bundling assumption (H2) and the sincerity-versus-strategy assumption (H1 and H4) does more than qualify the attitude-based account: it redraws where that account applies, confining it to firms that already have the capacity to act. The point is not that the attitude-based account is always wrong, but that it applies far more narrowly than has been assumed — it breaks down exactly where capacity is scarce, which describes most of the small-business population.

The gap is a problem of getting things through the firm, not a problem of sincerity (RQ1, H1). The gap narrows sharply with firm size and survives every specification, locating the explanation in organisational conversion capacity rather than strength of commitment. This connects the attitude–action-gap literature, rich in evidence but silent on mechanism (Williams and Schaefer, 2013; Kornilaki, Thomas and Font, 2019), to the capacity literature, which supplies the mechanism but had not been turned on the gap itself (Beck and Demirgüç-Kunt, 2006; Aboelmaged and Hashem, 2019; Darnall, Henriques and Sadorsky, 2010). The smallest firms hold intentions they cannot act on; the largest act on intentions they may never state loudly. This is the involuntary gap that sets this framework apart from decoupling: whereas decoupling reads a gap between policy and practice as deliberate symbolism (Bromley and Powell, 2012), the size pattern reveals firms whose gap follows their capacity rather than their choice.

Reinforcement between capabilities is not automatic (RQ2, H2). Capability bundles do not compound: each capability raises productivity alone, but they do not reinforce one another, and within larger SMEs finance and innovation robustly substitute — a size-conditional trade-off masked in the micro-dominated population. The contrast with how firms see their own investments is sharp: in recent UK survey evidence the majority of firms that weigh investment interactions expect them to reinforce (Golubova and Roper, 2026), yet in the productivity data no such reinforcement appears when climate change actions are considered. What managers feel as one capability boosting another does not, on average, show up in measured performance. The

dependable result is that no reinforcement is found, rather than that capabilities actively trade off — and the absence alone is enough to undermine the case for bundling, which requires the combined effects to be positive.

The remaining evidence points in the same direction (RQ3, RQ4). The energy-concentrated response to the 2022 shock is what an external-trigger account predicts (Dixit and Pindyck, 1994; Ghisetti et al., 2017; Qi, Zhang and Chen, 2023), even though the timing sits on a pre-trend; and the absence of a large minority gap is what a disposition-orthogonal account predicts (Kloosterman and Rath, 2001; Miroshnychenko et al., 2025). Neither of these is central to the argument, but both fit a picture in which conversion is limited by capacity, set off by price, and kept going by routine. Taken together, the findings supply the mechanism the field was missing: the conversion view names the step by which a priority becomes an action, and the UK evidence shows it is gated by capacity and largely indifferent to disposition.

Overall Conclusion

Small-firm climate action is better explained by conversion than by disposition. The priority–action gap is not a shortfall of sincerity but an unbuilt capacity to convert — so capability-bundling policy, which presumes a synergy that the data do not show, is aimed at the wrong target.

6.2 Policy Recommendations

The policy message is structural rather than incremental. Because capabilities do not reinforce one another and conversion is limited by capacity, the place to intervene is not stacking up more support measures but building conversion capacity in the smallest firms.

Recommendation 1: Target by size, and build conversion capacity. Micro and small firms are held back by capacity, not commitment; support should be calibrated to that throughput deficit — shared administrative and measurement infrastructure, standardised low-cost carbon-measurement tools, and delegated specialist attention — rather than to raising a commitment already present (Eleftheriadis and Anagnostopoulou, 2024; Graafland and Smid, 2016).

Recommendation 2: Stop bundling on the assumption of synergy. The rejection of complementarity translates directly into design: integrated packages presuming that finance, innovation and engagement reinforce one another have no multiplier to capture. Where finance is what moves outcomes, finance-led instruments — including energy-efficiency-linked lending — are the more defensible design (Chen, Calabrese and Cowling, 2024; Beck and Demirgüç-Kunt, 2006).

Recommendation 3: Use price signals deliberately. Because transitions track external costs, fiscal and regulatory instruments that make inaction costly — paired with the capacity to respond — are likely to outperform exhortation (Qi, Zhang and Chen, 2023; Garrido-Prada et al., 2021).

6.3 Practical Recommendations

Recommendation 4: Do not preach to the converted. High-priority firms are already decided and are not seeking advice; the leverage lies with the larger body of firms that are willing but not yet able. For owner-managers and their intermediaries, the corollary is that treating a held priority as sufficient is a category error — action follows not from commitment but from conversion capacity, which smaller firms must build or borrow, and which business-support organisations and lenders should supply as a shared service.

6.4 Directions for Future Research

Three extensions would sharpen the test. First, a single survey that records both intention and action in the same firms, ideally over time, would let the conversion step be followed within firms and its capacity drivers measured directly. Second, consistent local-area measures — missing from the present data — would allow the framework to be tested against the role of local infrastructure and networks. Third, a direct measure of reputational exposure would allow

involuntary capacity-gating to be separated from deliberate decoupling within the same firms rather than only inferred from the pattern of results. The parallel two-survey identification is, to our knowledge, the first of its kind in UK SME climate research, and we commend it as a template for the ERC evidence base wherever attitude and behaviour are measured by separate national instruments.

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Appendices

Appendix A: Data and code availability

Both surveys are secondary datasets held by the bodies that commissioned them and cannot be shared directly by the authors: the Longitudinal Small Business Survey can be accessed by accredited researchers via the UK Data Service, and the Business Finance Survey via the British Business Bank. The Stata do-files that build the aligned datasets and run every model in this report are available from the authors on request and will be lodged in a public repository upon acceptance. Every estimate in Section 5 is reproducible from these files and the two surveys.

Appendix B: Statement on the use of AI

In preparing this research paper the authors used a large language model-based assistant (Anthropic Claude) to assist with drafting, restructuring and language editing, and with formatting tables and figures. All analysis was carried out by the authors, who reviewed, verified and edited the content and take full responsibility for it. This disclosure follows the responsible-AI expectations of the ERC's funder and the authors' institution.

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