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Economies of Scale in Health Insurance - 2024 Results

Summary and Conclusion

Economies of scale of administrative expenses were sometimes significant, based on analyses of the health plan cost information supplied in the *Sherlock Benchmarks*. For such expenses, both Blue Cross Blue Shield Plans (Blue) and Independent / Provider – Sponsored (IPS) plans demonstrated that with greater size comes lower costs.

- Enterprise total expenses (excluding miscellaneous business taxes) were significantly subject to economies of scale only for Blue Cross Blue Shield Plans. They were not significant for universes of Independent / Provider – Sponsored Plans or the combination of Blue and IPS plans.

- For Blue Plans, 16 functions or subfunctions demonstrated economies of scale, using a p-value of 0.10 as the threshold for significance. They were equal to 36.7% of Plan administrative costs. The slopes of the curves of the costs subject to scale meant that a doubling of the enterprise's membership caused such expenses to decline to 82.8% of its pre-doubling value. Three functions or subfunctions increased with size. Please see Figure 1.

- IPS plans were less likely to display economies of scale. Only two subfunctions displayed significant economies of scale, while seven showed diseconomies of scale. The functions subject to economies of scale comprised only 1.9% of administrative cost. The slopes of the curves were such that a doubling of membership led to costs subject to scale yielded costs that were 58.0% of their costs prior to doubling.

- We also combined the universes to estimate their economies of scale. Seven functions or subfunctions, with 25.2% of expenses, had economies of scale meeting our threshold for significance. The slopes implied that, if membership doubled, costs in these activities would fall to 89.7% of their reported value. Expenses for five of the functions or subfunctions increased with greater size.

- Using the combined universe slopes to an administrative cost assumption of $69 PMPM, we calculate savings to be $1.79 from doubling plan size, or by 2.6%. However, because health insurance has low margins, the effect on combined earnings is much greater, 18.2%.

Figure 1. Economies of Scale
Administrative Expenses Subject to Economies of Scale and BCG Slopes
BCBS, IPS, and Combined

	Blue Cross Blue Shield Plans	Independent / Provider - Sponsored Plans	Combined Plans
Percent of Administrative Expenses Subject to Scale	36.7%	1.9%	25.2%
BCG Scale Slope of Functions Subject to Scale	82.8%	58.0%	89.7%

Background on Economies of Scale and Cost Identification

While the largest costs for health plans are health benefits, not every benefit plan sponsor pays health plans to assume health benefit variance risk. For Blue Cross Blue Shield Plans, only about 44% of comprehensive members are fully-insured and, among Independent / Provider Sponsored plans, only about 70% are. By contrast, *every* member and each of their sponsors pay health plans to assume responsibility for administrative activities supporting their health benefit programs.

"Administrative," means all health plan costs other than payments to health care providers for care rendered to health plan members. Health insurance administrative costs include salary, benefits, depreciation and amortization, leases of office space, advertising costs, externally provided disease management, consulting services and similar expenses.

These natural accounting categories poorly describe the activities health plans perform especially since there may be differences between *how* organizations execute those activities, for instance, electing to use internal staff versus outsourcing. So, to capture those activities, health plans report the costs to the *Sherlock Benchmarks* as functional costs, including their respective natural accounting categories. Functional activities include Provider Services, Claims Adjudication, Corporate Services and Medical Management.

This report addresses only two sorts of economies of scale, technical and administrative. A *technical* economy of scale arises from an investment in a capital-intensive process. The commitment to automate claims adjudication activities is an example. A successful investment in auto-adjudication systems and electronic claims submission systems can yield a return in a decline in the end-to-end cost of processing and paying claims, and those savings may increase with volume. Spreading the capitalized cost of original investment gives rise to the reduced marginal costs resulting from technical economies of scale.

An example of *administrative* economies of scale is covering relatively fixed Finance and Accounting costs with greater volumes of members. If the cost of preparing and issuing financial statements is largely independent of the size of the organization, then the more members there are, the lower the per member cost of preparing those financial statements. Unlike technical economies of scale, it is not necessary to automate the process to achieve the lower costs.

This analysis does not address other forms of economies of scale. For instance we do not evaluate purchasing economies of scale in which high market share may increase the bargaining power of insurers versus providers.

Understanding economies of scale, and optimizing functional costs at a particular scale, is important because, while scale effects are ultimately modest, they do have an impact on activities integral to health plan operations. And while small relative to premiums, scale can impact the ability of the health plan to internally fund investments. Finally, when health care costs are cyclical, optimized administrative costs can amplify the effect of favorable health care trends on operating profits and can mute operating losses.

The limited effects of economies of scale means that many health plans of relatively modest size can achieve near administrative expense parity with their larger peers through effective execution, especially when combined with another attribute such as differentiation.

Method

This analysis relies on the results of the 2024 *Sherlock Benchmarks* for universes of Blue Cross Blue Shield Plans and Independent/Provider-Sponsored health plans.

All data is for the 2023 calendar year and has undergone extensive validation procedures both by us and by the participating plans. Collectively, the 26 plans served 51.2 million Americans. The range of membership was from about 443,000 to more than five million among Blue Plans, and about 311,000 to 1.4 million among IPS plans.

Economies of scale occurs when per unit costs decline as volume of output increases. Because the "output" of a health plan is health coverage services to its members, volume is defined as member months, which are reported by the plans. The costs that are the subject of this analysis are administrative, classified by function as described in the previous section. Each plan in the study reported its costs segmented into approximately seventy functions and sub-functions, allowing each of them to be analyzed individually. The unit costs this analysis are administrative costs expressed Per Member Per Month (PMPM).

Any analysis of health plan economies of scale is complicated by the extraneous factor of differences in the product mixes between the health plans. It costs much more to administer a comprehensive product sold to seniors than to people of working age since administrative activities are often related to the underlying health needs of the beneficiary; the older one is, the more health care one requires and the more claims processing costs are incurred by the insurer.

However, each organization participating in the *Sherlock Benchmarks* reported each function's costs segmented by product, such as Medicare Advantage and Commercial Insured. So, for the purposes of these analyses, we expressed PMPM costs so as to eliminate the effects of product mix differences. To do this, for each function for each plan, we expressed PMPM expenses as *differences* from the mean universe values, *after reweighting the universe values* by that plan's own product mix. Health plans with high cost values are expressed as greater than 100% while low values are less than 100%.

We measured whether economies of scale exist by regressing costs in each function (expressed as described above) against member months. A regression analysis fits a line through a scatter of each of the membership/cost points for each plan that minimizes the distance between those points and the line. Since technical or administrative economies of scale imply the existence of fixed and variable costs, where economies of scale exist, they plot as a curve. For ease and intuitive appeal, we converted the relationship to a straight line by calculating the regressions of the natural logs of the percent differences from mean values against the natural logs of the member months. (The use of natural logs requires positive values, so cost differences were expressed as percents, as mentioned in the previous paragraph.)

We considered the relationship between membership and costs to be significant if it displayed p-values of less than 0.1. A p-value is widely used to gauge the reliability of modeled relationships. Suppose a regression yields a 0.1 p-value: it can be interpreted as, "Assuming that there weren't economies of scale, you'd obtain the observed relationship in 10% of such studies due to random sampling error." So the lower the p-value, the more reliable the results.

Regression lines can have positive or negative slopes but, since economies of scale mean lower costs per member as membership increases, the discussion of the results is focused on negative slopes. The BCG (Boston Consulting Group) Slope is an intuitive way of expressing the slope of scale and it means the percent of the pre-doubling costs that the function will exhibit if the plan doubles in size. It is calculated as 2 to the power of the slope of the regression line.

Note that, where economies of scale exist, they are apparently not the only factor in cost differences. The R^2 describes the degree to which all the data points are found on the slope, and it is expressed as a percent. In other words, the predictive value of scale is that it explains R^2 percent of the differences between the points. Few of the regression analyses in this analysis have an R^2 that exceeds 50%. So, while scale plays an important role in those instances that we identify as significant, there are always other cost factors other than scale that also help explain the cost differences between the plans' function costs. For instance, strategic considerations may weigh against the lowest possible costs at a given scale.

Figures 2-4 show the results of the regressions for each function in Blue Cross Blue Shield Plans, Independent / Provider – Sponsored Plans and the combination of both sets.

Blue Cross Blue Shield Results

Figure 2 shows the results of regression analyses of costs in each function and members for Blue Cross Blue Shield Plans. The 14 Plans included here range from 443,000 to more than five million members.

Of Blue Cross Blue Shield administrative expenses, 36.7% are subject to economies of scale. From the regression lines, we estimate that a doubling of the size of these plans are associated with costs that subject to scale that are 82.8% of their pre-doubling value. The Subtotal Expenses (all expenses less Miscellaneous Business Taxes) also displayed economies of scale with a BCG slope of 96.2%.

Of the 74 functions and sub-functions, 16 exhibited economies of scale at a p-value of 0.1 or less. These included Provider Configuration, Information Systems, and Corporate Services function, and others.

There were three Blue Cross Blue Shield functions with p-values of less than 0.1 that exhibited diseconomies of scale. In other words, their slopes displayed an increase in costs with an increase in scale. These functions were External Broker Commissions, Case Management, and BlueCard Home and Custom Par Fees.

Figure 2. Economies of Scale
Scalar Effect on PMPM Costs, Mix-Adjusted
Blue Cross and Blue Shield Plans

	R-Squared	BCG Slope	P-Value	Number of Plans
1. Rating and Underwriting	0.4%	102.3%	0.82	14
(a) Employer Group Reporting	12.7%	67.4%	0.26	12
(b) Risk Adjustment	18.8%	143.0%	0.14	13
(c) Other Rating and Underwriting	0.9%	95.5%	0.75	14
2. Marketing	13.5%	84.7%	0.20	14
(a) Product Development and Market Research	7.3%	84.4%	0.35	14
(b) Member and Group Communication	5.4%	120.4%	0.42	14
(c) Other Marketing	9.2%	84.1%	0.29	14
3. Sales	6.9%	95.2%	0.37	14
(a) Account Services	0.7%	96.4%	0.78	14
(b) Internal Sales Commissions	2.7%	95.6%	0.61	12
(c) Other Sales	2.5%	95.4%	0.59	14
4. External Broker Commissions	23.7%	120.5%	0.08	14
5. Advertising and Promotion	2.9%	95.3%	0.56	14
(a) Media and Advertising	0.1%	99.1%	0.91	14
(b) Charitable Contributions	0.4%	93.9%	0.83	14
6. Provider Network Management and Services	0.8%	98.4%	0.76	14
(a) Provider Relations Services	0.4%	104.9%	0.82	14
(b) Provider Contracting	14.2%	84.2%	0.18	14
(1) Provider Configuration	34.0%	57.5%	0.06	11
(2) Other Provider Contracting	0.1%	101.4%	0.94	13
(c) Other Provider Network Management and Services	0.0%	99.2%	0.97	13
7. Medical Management / Quality Assurance / Wellness	6.3%	105.4%	0.39	14
(a) Precertification	15.0%	84.2%	0.17	14
(b) Case Management	43.5%	150.4%	0.01	14
(c) Disease Management	24.2%	66.0%	0.07	14
(d) Nurse Information Line	10.8%	120.6%	0.32	11
(e) Health and Wellness	0.2%	102.4%	0.89	13
(f) Quality Components	18.6%	134.9%	0.12	14
(g) Medical Informatics	11.6%	87.8%	0.25	13
(h) Utilization Review	2.3%	108.9%	0.60	14
(i) Other Medical Management	10.1%	89.8%	0.27	14
8. Enrollment / Membership / Billing	18.9%	90.2%	0.12	14
9. Customer Services	0.8%	98.1%	0.76	14
(a) Member Services	0.0%	100.3%	0.97	14
(c) Grievances and Appeals	12.2%	81.7%	0.27	12
10. Claim and Encounter Capture and Adjudication	11.1%	105.2%	0.24	14
(a) Coordination of Benefits (COB) and Subrogation	1.5%	95.4%	0.69	13
(b) BlueCard Home and Custom Par Fees	23.5%	133.2%	0.08	14
(c) Medicare Crossover Fees	0.6%	96.8%	0.80	13
(d) Payment Integrity	1.3%	92.1%	0.70	14
(e) Other Claim and Encounter Capture and Adjudication	1.4%	96.6%	0.69	14
11. Information Systems Expenses	74.5%	81.0%	0.00	14
(a) Operations and Support Services	0.4%	102.3%	0.82	14
(b) Applications Maintenance	74.0%	52.2%	0.00	14
(1) Benefit Configuration	50.4%	49.1%	0.01	13
(2) Other Applications Maintenance	32.0%	68.9%	0.04	13
(c) Applications Acquisition and Development	31.2%	73.2%	0.04	14
(1) Applications Amortization and Licensing Expenses	11.9%	83.2%	0.25	13
(2) Pre-Planning Project Costs	39.3%	50.6%	0.02	13
(d) Security Administration and Enforcement	37.2%	80.2%	0.02	14
12. Finance and Accounting	0.0%	99.9%	0.99	14
(a) Credit Card Fees	1.2%	107.1%	0.75	11
(b) Other Finance and Accounting	0.7%	98.3%	0.77	14
13. Actuarial	14.7%	91.3%	0.18	14
14. Corporate Services Function	25.2%	89.4%	0.07	14
(a) Human Resources	49.8%	84.4%	0.00	14
(b) Legal	41.2%	84.9%	0.01	14
(1) Compliance	25.8%	79.5%	0.06	14
(2) Government Affairs	6.0%	90.6%	0.42	13
(3) Outside Litigation	2.1%	90.9%	0.62	14
(4) Fraud, Waste & Abuse	24.8%	87.6%	0.07	14
(5) Independent Dispute Resolution Fees	10.9%	143.6%	0.59	5
(6) All Other Legal	39.0%	72.8%	0.02	13
(c) Facilities	2.9%	94.5%	0.56	14
(d) OPEB	2.3%	80.3%	0.67	10
(e) Audit	27.8%	85.2%	0.05	14
(f) Purchasing	0.6%	97.2%	0.81	13
(g) Imaging	8.5%	80.6%	0.33	13
(h) Printing and Mailroom	9.6%	87.2%	0.30	13
(i) Risk Management	2.3%	88.4%	0.64	12
(j) Other Corporate Services Function	9.2%	117.5%	0.31	13
15. Corporate Executive & Governance	2.2%	106.7%	0.61	14
16. Association Dues and License/Filing Fees	11.1%	90.7%	0.25	14
Subtotal Expenses	21.3%	96.2%	0.10	14
17. Miscellaneous Business Taxes	0.3%	102.1%	0.85	14
Total Expenses	15.9%	96.9%	0.16	14

Independent / Provider - Sponsored Plan Results

Figure 3, on the next page, shows the results of regression analyses of costs in each function and member months for Independent / Provider – Sponsored plans.

The 12 plans used for this analysis range from 311,000 to 1.4 million members. Of their administrative expense, 1.9% are in functions that exhibit economies of scale at a 0.1 p-value. A doubling of the size of these plans is calculated to lead to costs for those functions subject to economies of scale that are 58.0% of their pre-doubling value. The slope of Subtotal expenses was not significant, its BCG slope was 106.7%, that is, positive.

Of the 70 functions and sub-functions for IPS plans, only two displayed economies of scale (Precertification and Printing and Mailroom). Conversely, seven functions showed diseconomies of scale. They were Marketing, Case Management, Nurse Information Line, Medical Informatics, Utilization Review, Printed Materials and Other, and Benefit Configuration.

Combined Universe Results

Each of the two universes previously described reflect their origins and their operational philosophies and cultures. For instance, unlike the Blue Cross Blue Shield universe, most of the Independent / Provider – Sponsored Plans are owned by health systems. One possible reflection of this difference is that, holding product mix equal, Blue Plans appear to emphasize Information Systems and IPS plans seem to favor Medical Management.

Figure 4, on page 8, shows the results of regression analyses of costs in each function and members for the combined set of Blue Cross Blue Shield Plans and Independent / Provider – Sponsored Plans. It is interesting because the combined universe has a larger sample size, and the range of plan size is greater.

The 26 plans included here range from 311,000 to over five million members. Of their administrative expenses, 25.2% are subject to economies of scale. A doubling of the size of these plans is calculated to lead to those costs falling to 89.7% of their pre-doubling value.

Of the 67 total functions and sub-functions for the combined universe, 7 displayed economies of scale. Some of these functions include Provider Contracting, Information Systems, Actuarial, and others, shown in Figure 4.

The areas with statistically significant *diseconomies of scale* were Risk Adjustment, Case Management, Member Services, Claim and Encounter Capture and Adjudication, and Other Claims.

Figure 3. Economies of Scale
Scalar Effect on PMPM Costs, Mix-Adjusted
Independent / Provider-Sponsored Plans

	R-Squared	BCG Slope	P-Value	Number of Plans
1. Rating and Underwriting	8.9%	117.4%	0.35	12
(b) Risk Adjustment	16.6%	123.7%	0.19	12
(c) Other Rating and Underwriting	0.0%	98.4%	0.95	12
2. Marketing	39.5%	135.9%	0.03	12
(a) Product Development and Market Research	11.7%	140.8%	0.28	12
(b) Member and Group Communication	1.1%	111.5%	0.75	12
(c) Other Marketing	10.7%	127.9%	0.30	12
3. Sales	0.2%	102.3%	0.90	12
(a) Account Services	20.1%	123.1%	0.14	12
(b) Internal Sales Commissions	4.5%	84.2%	0.53	11
(c) Other Sales	5.0%	82.4%	0.48	12
4. External Broker Commissions	18.3%	120.6%	0.17	12
5. Advertising and Promotion	1.0%	92.2%	0.75	12
(a) Media and Advertising	2.2%	88.8%	0.64	12
(b) Charitable Contributions	9.8%	168.7%	0.45	8
6. Provider Network Management and Services	3.7%	109.6%	0.55	12
(a) Provider Relations Services	10.8%	128.7%	0.30	12
(b) Provider Contracting	5.6%	86.0%	0.46	12
(1) Provider Configuration	0.0%	98.7%	0.97	12
(2) Other Provider Contracting	14.6%	69.9%	0.22	12
(c) Other Provider Network Management and Services	14.3%	148.6%	0.23	12
7. Medical Management / Quality Assurance / Wellness	8.6%	113.5%	0.36	12
(a) Precertification	31.0%	60.4%	0.06	12
(b) Case Management	38.0%	143.6%	0.03	12
(c) Disease Management	4.6%	70.0%	0.50	12
(d) Nurse Information Line	59.4%	208.4%	0.04	7
(e) Health and Wellness	0.0%	98.1%	0.95	12
(f) Quality Components	0.2%	102.1%	0.89	12
(g) Medical Informatics	39.0%	178.7%	0.03	12
(h) Utilization Review	30.4%	182.2%	0.08	11
(i) Other Medical Management	3.9%	117.7%	0.54	12
8. Enrollment / Membership / Billing	4.3%	110.7%	0.52	12
(a) Enrollment and Membership	12.4%	120.5%	0.26	12
(b) Billing	1.5%	92.3%	0.71	12
9. Customer Services	24.4%	117.5%	0.10	12
(a) Member Services	20.8%	117.9%	0.14	12
(b) Printed Materials and Other	34.0%	259.9%	0.10	9
(c) Grievances and Appeals	20.2%	78.9%	0.19	10
10. Claim and Encounter Capture and Adjudication	0.4%	97.8%	0.85	12
(a) Coordination of Benefits (COB) and Subrogation	0.9%	123.8%	0.76	12
(d) Payment Integrity	1.6%	119.8%	0.71	11
(e) Other Claim and Encounter Capture and Adjudication	0.5%	96.7%	0.83	12
11. Information Systems Expenses	4.6%	105.9%	0.50	12
(a) Operations and Support Services	0.9%	95.4%	0.77	12
(b) Applications Maintenance	0.2%	102.8%	0.90	12
(1) Benefit Configuration	31.9%	181.6%	0.07	11
(2) Other Applications Maintenance	0.2%	96.0%	0.90	11
(c) Applications Acquisition and Development	9.2%	127.4%	0.34	12
(d) Security Administration and Enforcement	8.6%	142.5%	0.38	11
12. Finance and Accounting	9.3%	82.6%	0.34	12
(a) Credit Card Fees	11.7%	224.4%	0.30	11
(b) Fund Accounting for Self-Insured Groups	0.5%	109.9%	0.91	5
(c) Other Finance and Accounting	16.3%	79.8%	0.19	12
13. Actuarial	23.2%	75.4%	0.11	12
14. Corporate Services Function	1.7%	94.4%	0.69	12
(a) Human Resources	0.0%	98.7%	0.95	12
(b) Legal	1.0%	94.2%	0.75	12
(1) Compliance	0.3%	103.6%	0.86	12
(2) Government Affairs	29.4%	73.4%	0.11	10
(3) Outside Litigation	30.3%	0.0%	0.45	4
(4) Fraud, Waste and Abuse	12.7%	71.1%	0.26	12
(5) All Other Legal	5.3%	79.9%	0.47	12
(c) Facilities	0.8%	105.3%	0.79	12
(e) Audit	0.2%	103.6%	0.90	11
(f) Purchasing	2.1%	129.6%	0.73	8
(g) Imaging	18.5%	34.0%	0.21	10
(h) Printing and Mailroom	26.6%	39.5%	0.09	12
(i) Risk Management	2.5%	129.9%	0.62	12
(j) Other Corporate Services Function	6.8%	59.3%	0.44	11
15. Corporate Executive & Governance	10.1%	74.5%	0.31	12
16. Association Dues and License/Filing Fees	2.8%	88.1%	0.62	11
Subtotal Expenses	7.0%	106.7%	0.41	12
17. Miscellaneous Business Taxes	8.6%	78.3%	0.36	12
Total Expenses	2.3%	103.7%	0.64	12

Figure 4. Economies of Scale

Scalar Effect on PMPM Costs, Mix-Adjusted

Blue and IPS Plans

	R-Squared	BCG Slope	P-Value	Number of Plans
1. Rating and Underwriting	6.5%	110.1%	0.21	26
(b) Risk Adjustment	11.4%	128.3%	0.10	25
(c) Other Rating and Underwriting	0.2%	102.2%	0.81	26
2. Marketing	0.0%	99.7%	0.97	26
(a) Product Development and Market Research	0.2%	102.8%	0.84	26
(b) Member and Group Communication	1.4%	109.8%	0.56	26
(c) Other Marketing	0.2%	102.5%	0.84	26
3. Sales	0.5%	98.1%	0.73	26
(a) Account Services	0.1%	99.0%	0.90	26
(b) Internal Sales Commissions	5.0%	91.7%	0.31	23
(c) Other Sales	0.5%	97.3%	0.74	26
4. External Broker Commissions	10.8%	112.5%	0.10	26
5. Advertising and Promotion	5.3%	91.0%	0.26	26
(a) Media and Advertising	5.0%	91.3%	0.27	26
(b) Charitable Contributions	0.0%	102.1%	0.93	22
6. Provider Network Management and Services	0.7%	97.9%	0.68	26
(a) Provider Relations Services	0.5%	104.8%	0.73	26
(b) Provider Contracting	17.8%	81.5%	0.03	26
(1) Provider Configuration	26.8%	59.0%	0.01	23
(2) Other Provider Contracting	1.3%	92.7%	0.59	25
(c) Other Provider Network Management and Services	0.4%	104.3%	0.77	25
7. Medical Management / Quality Assurance / Wellness	10.6%	108.9%	0.10	26
(a) Precertification	3.8%	90.4%	0.34	26
(b) Case Management	27.8%	134.6%	0.01	26
(c) Disease Management	0.2%	104.6%	0.84	25
(d) Nurse Information Line	0.7%	105.4%	0.74	18
(e) Health and Wellness	0.7%	104.8%	0.69	25
(f) Quality Components	7.4%	119.2%	0.18	26
(g) Medical Informatics	0.2%	102.1%	0.84	25
(h) Utilization Review	5.4%	116.3%	0.26	25
(i) Other Medical Management	0.0%	99.4%	0.95	26
8. Enrollment / Membership / Billing	0.0%	99.8%	0.98	26
9. Customer Services	8.6%	107.2%	0.15	26
(a) Member Services	11.9%	109.3%	0.08	26
(c) Grievances and Appeals	5.0%	88.6%	0.32	22
10. Claim and Encounter Capture and Adjudication	20.2%	112.0%	0.02	26
(a) Coordination of Benefits (COB) and Subrogation	0.7%	108.5%	0.68	25
(d) Payment Integrity	0.8%	107.7%	0.67	25
(e) Other Claim and Encounter Capture and Adjudication	14.8%	113.4%	0.05	26
11. Information Systems Expenses	18.3%	90.8%	0.03	26
(a) Operations and Support Services	0.8%	103.2%	0.66	26
(b) Applications Maintenance	39.0%	66.0%	0.00	26
(1) Benefit Configuration	6.2%	78.9%	0.24	24
(2) Other Applications Maintenance	3.8%	86.8%	0.36	24
(c) Applications Acquisition and Development	6.7%	86.7%	0.20	26
(d) Security Administration and Enforcement	0.7%	105.8%	0.68	25
12. Finance and Accounting	0.0%	99.7%	0.97	26
(a) Credit Card Fees	5.0%	128.5%	0.32	22
(c) Other Finance and Accounting	0.1%	99.3%	0.91	26
13. Actuarial	14.6%	88.2%	0.05	26
14. Corporate Services Function	0.8%	97.5%	0.66	26
(a) Human Resources	1.9%	95.2%	0.50	26
(b) Legal	4.0%	93.5%	0.33	26
(1) Compliance	15.7%	82.2%	0.04	26
(2) Government Affairs	5.9%	90.3%	0.26	23
(3) Outside Litigation	0.3%	153.8%	0.83	18
(4) Fraud, Waste and Abuse	14.4%	84.4%	0.06	26
(5) All Other Legal	2.9%	91.0%	0.42	25
(c) Facilities	0.1%	98.7%	0.86	26
(e) Audit	0.9%	105.0%	0.66	25
(f) Purchasing	11.5%	146.2%	0.13	21
(g) Imaging	1.8%	86.1%	0.54	23
(h) Printing and Mailroom	3.7%	84.7%	0.36	25
(i) Risk Management	2.6%	120.9%	0.45	24
(j) Other Corporate Services Function	1.5%	112.4%	0.55	25
15. Corporate Executive & Governance	0.0%	99.3%	0.95	26
16. Association Dues and License/Filing Fees	0.8%	104.7%	0.67	25
Subtotal Expenses	1.2%	101.3%	0.60	26
17. Miscellaneous Business Taxes	0.0%	101.0%	0.92	26
Total Expenses	0.9%	101.1%	0.64	26

Application

Understanding economies of scale can be helpful in situations in which it is necessary to estimate the cost structure of a growing health plan. Organic growth and acquisitions are two business situations in which such an analysis would apply.

Figure 5 illustrates how the values calculated in the combined universe case (Figure 4) would impact costs. Recall that, for the Combined set of Blue Cross Blue Shield and Independent / Provider – Sponsored plans, the BCG Slope was 89.7% for the 25.2% of administrative costs that are subject to economies of scale.

This illustrates the case where a firm exactly doubles in size through an acquisition, and the 89.7% BCG Slope applies to those functions subject to economies of scale. The combined firm is modeled to enjoy savings of $43 million on a combined administrative expense of $1.7 billion or by 2.6% PMPM. Note while the 2.6% savings is modest in the context of the combined administrative expenses, the percent impact on combined operating profits is much greater. The increase from $235 million to $278 million is 18.2%.

While the BCG Slope is an intuitive way of expressing economies of scale, doubling the size of the firm is a special case. So, to calculate all possible alternatives, the BCG Slope must be converted to a *marginal scale* effect. The marginal scale effect is the BCG Slope adapted for the size of the smaller plan ("Target") relative to the larger plan ("Suitor"). We show its calculation in Figure 6.

Figure 5. Economies of Scale
Application of Scalability
Blue Cross Blue Shield Plans' Commercial Insured Cost Values, Combined Slopes

Assumptions	Suitor	Target	Total	Effect of Scale	Combined After Scale
Members	1,000,000	1,000,000	2,000,000		2,000,000
Revenues PMPM	$571	$571	$571		$571
Health Benefit Ratio	86.2%	86.2%	86.2%		86.2%
Administration/Premium	12.1%	12.1%	12.1%	-0.3%	11.8%
Total Administration PMPM	$69.00	$69.00	$69.00	-$1.79	$67.21
Scale Effect					89.7%
Scalable Proportion of Administration	25.2%	25.2%	25.2%		
Scalable Administration/Premium	3.1%	3.1%	3.1%		2.7%
Scalable Administration PMPM	$17.42	$17.42	$17.42		$15.63
Scalable Administration	$209,058,805	$209,058,805	$418,117,609	-$42,895,341	$375,222,268
Non Scalable Administration/Premium	9.0%	9.0%	9.0%		9.0%
Non Scalable Administration PMPM	$51.58	$51.58	$51.58		$51.58
Non Scalable Administration	$618,941,195	$618,941,195	$1,237,882,391		$1,237,882,391
Income Statements	Suitor	Target	Total	Effect of Scale	Combined
Revenues	$6,852,000,000	$6,852,000,000	$13,704,000,000	$0	$13,704,000,000
Health Benefits	5,906,424,000	5,906,424,000	11,812,848,000	0	11,812,848,000
Administration	828,000,000	828,000,000	1,656,000,000	-42,895,341	1,613,104,659
Operating Profits	$117,576,000	$117,576,000	$235,152,000	$42,895,341	$278,047,341
Operating Margin	*1.7%*	*1.7%*	*1.7%*	*0.3%*	*2.0%*

Suppose a health plan increases its membership by 50%, rather than doubling. This would occur if a million member plan was to acquire a 500,000 member plan. (For simplicity, we ignored the implications of scale on the smaller plan.) The 81.6% marginal scale effect is BCG Slope adapted for this 50% increase. The calculations converting the 89.7% scale effect to the 81.6% marginal scale effect are described on the left side of Figure 6 and are applied as an example on the right side.

Incidentally, the use of the marginal scale approach can also be applied to the Figure 5 case of the combination of two similarly sized organizations. The steps used in Figure 6 yield a marginal scale effect of 79.5% which, when applied to the $209 million in the Target's scalable administration (rather than the combined companies), produces the same $43 million savings as found in Figure 5.

In Figure 7, on the next page, we apply this marginal scale value to estimate the effect of economies of scale on a business combination, where the Target is one-half the size of the suitor. To calculate the scale related saving, we multiply the calculated marginal scale effect of 81.6% (calculated in Figure 6) by $105 million in the Target expenses that are subject to scale. This yields an estimated effect of scale on the target plan of $19.3 million. Again, the percent effect on earnings is greater than that of costs: while the Target's administrative expenses fall by 4.7%, its operating profits increase by 32.8%.

Once the framework for the marginal scalar effect is established, then it can be universally applied to any scale scenario.

Figure 6. Economies of Scale
Calculation of Marginal Scale Effects

	Formula			Example				
Step 1	2^x	=	BCG Slope	2^x	=	89.7%		Scale Effect from Figure 1
Step 2	x	=	$\frac{\ln(\text{BCG})}{\ln(2)}$	x	=	$\frac{\ln(.897)}{\ln(2)}$	= -0.156	Derived Slope from BCG Slope in Figure 1
Step 3	$(1 + \text{Proportion of Target-to-Suitor})^x$	=	Target - Adjusted "BCG Slope"	$(1 + 0.5)^{-.156}$	=	93.9%		
Step 4	$\frac{\text{BCG Slope Target - Adjusted} - \frac{1}{(1 + \text{Proportion of Target-to-Suitor})}}{\text{Proportion of Target to Combined Health Plan}}$			$\frac{93.9\% - \frac{1}{(1 + 0.5)}}{0.5 \ / \ 1.5}$	=		81.6%	Marginal Scale Effect Applied to Figure 7

The phrase "BCG Slope" reflects the case where the target is the same size as the suitor.
The "Target-Adjusted BCG Slope" accommodates the cases in which other sizes are contemplated.

An estimate of the effect of economies of scale in this way can be helpful as an initial approximation or as a default assumption when more in-depth analysis is not feasible. Since each organization has its own unique cost structure and the slopes of the economies of scale vary by function, it would be more appropriate to apply each of the scale slopes to each functional area. While this greater granularity hones the estimate, due diligence will likely modify that estimate. For instance, an overlapping network of providers could have a more pronounced effect on Provider Contracting than may be evident from the regression models.

Other Observations

Diseconomies of Scale. In the Blue Cross Blue Shield set, there were three functions that saw costs increase with scale. For IPS plans, seven functions exhibited diseconomies of scale. The combined set had seven functions with diseconomies of scale. We do not know why certain costs tended to increase with membership but it is possible that they reflect strategic investments in growth, membership retention and challenges associated with higher market share.

Qualifications. We are analyzing the experience of firms of various sizes to estimate scale, and the intent of this study is to provide information to health plans as they consider their individual strategic situations. One qualification to the results is that each firm operates differently and in different competitive environments, so that differences between firms that we attribute to scale may also stem from other factors. For instance, larger organizations may operate in service areas that have competitive environments that affect costs independently of the technical and administrative economies of scale.

Figure 7. Economies of Scale
Scalability For Firms of Different Sizes
Blue Cross Blue Shield Plans' Commercial Insured Cost Values, Combined Slopes

Assumptions	Suitor	Target	Effect of Scale On Target	Target After Scale	Combined After Scale
Members	1,000,000	500,000		500,000	1,500,000
Revenues PMPM	$571	$571		$571	$571
Health Benefit Ratio	86.2%	86.2%		86.2%	86.2%
Administration/Premium	12.1%	12.1%	-0.6%	11.5%	11.9%
Total Administration PMPM	$69.00	$69.00		$65.79	$67.93
Scale Effect				81.6%	
Scalable Proportion of Administration	25.2%	25.2%		25.2%	24.1%
Scalable Administration/Premium	3.1%	3.1%		2.5%	2.9%
Scalable Administration PMPM*	$17.42	$17.42		$14.21	$16.35
Scalable Administration	$209,058,805	$104,529,402	-$19,275,876	$85,253,526	$294,312,331
Non Scalable Administration/Premium	9.0%	9.0%		9.0%	9.0%
Non Scalable Administration PMPM	$51.58	$51.58		$51.58	$51.58
Non Scalable Administration	$618,941,195	$309,470,598		$309,470,598	$928,411,793
Income Statements	Suitor	Target	Effect of Scale	After Scale	Combined
Revenues	$6,852,000,000	$3,426,000,000	$0	$3,426,000,000	$10,278,000,000
Health Benefits	5,906,424,000	2,953,212,000	0	2,953,212,000	8,859,636,000
Administration	828,000,000	414,000,000	-19,275,876	394,724,124	1,222,724,124
Operating Profits	$117,576,000	$58,788,000	$19,275,876	$78,063,876	$195,639,876
Operating Margin	*1.7%*	*1.7%*	*0.2%*	*2.3%*	*1.9%*

Also, the size of the organizations may establish the bounds for which the conclusions are reliable. For instance, we suspect that organizations smaller than plans reflected here would have steeper declines in PMPM costs as they grow.

Finally, in our measurement of economies of scale we focused on differences in actual scale as a point in time, that is, a cross-sectional analysis. Because strategic decisions are long term, we elected not to employ a short duration time-series analysis.

Closing Thoughts

We sometimes face skepticism concerning our conclusions of limited economies of scale. Many other industries such as manufacturing, transportation and farming are known to enjoy these economies. In the health care sector of the economy, hospitals, like hotels, also exhibit economies of scale which is why occupancy rates are an indicator of profitability in both sectors.

An intuitive way of considering economies of scale is to consider the actual activities of health plans and how they are executed. Many of the activities that health plans perform grow with membership, such as responding to customer service inquiries, processing manual claims and processing enrollment transactions. When a plan adds a new member, he or she requires the same services as all previous members. Other functions may also be linked to volume, though more loosely, like the Provider Network Management and Services and Information Systems functions. Even the few areas that appear fixed can increase with the size of the plan. While Corporate Executive and Governance would be expected to be relatively fixed, the numbers of support staff, compensation and the enterprise-wide consulting usually grouped in that function can increase in larger organizations.

Moreover, the technical economies of scale, such as those discussed at the beginning of this analysis, may at the same time give rise to higher costs that partially offset the advantage. Suppose the investment in claims autoadjudication achieves its objective of reducing the need to process claims manually, thereby allowing for the redeployment of the staff that performed it. This change will nevertheless not entirely eliminate claims processors. In fact, a countervailing effect may be that the claims beyond the capability of the autoadjudication system are more complex, and therefore require greater effort and knowledge than the average claim. This more complex claim adjudication could require the expertise of claims people who are higher level and better paid, which could offset the advantage of reduced staffing. This paradox may occur in many activities that health plans increasingly automate.

Another intuitive way of thinking about economies of scale is to compare costs across the actual industry structure. Consider the vast size differences between organizations providing health coverage. They range from UnitedHealth, at 51 million members and $400 billion in annualized revenues, to organizations that serve only tens of thousands of members. UnitedHealth's first three quarter's administrative expense ratio was 7.2%, not vastly dissimilar to the much smaller companies analyzed here. UnitedHealth and these smaller companies coexist in a low margin competitive market: the fact of numerous competitors of a wide range in size argues against overstating the significance of advantages stemming from scale.

Background on the Sherlock Benchmarks

This analysis is of data drawn from the 2024 editions of *Sherlock Benchmarks*, which reflects calendar year 2023 results. In most cases, survey materials that populate the Benchmarks were distributed in February, collected in April, validated in May and published beginning in June. Plans report costs to us segmented by product. This allows us to compare the plans after the effect of mix adjustments. Collectively, the total participating plans in the 27th Annual *Sherlock Benchmarks* served about 52 million people.

The *Sherlock Benchmarks* themselves can be licensed. Please reach out to us if this is of interest.

In 2025, we will conduct our 28th annual Benchmarking Study for health plans and will reflect 2024 calendar year results. The Reports provided to participants are identical to licensed copies, plus we provide additional customized Reports that compare each plan to its peer group. We welcome Blue Cross Blue Shield Plans, Independent / Provider – Sponsored plans, Medicaid plans, Medicare plans and other plans.

The schedule should be similar to that of the 2024 cycle described above. In the coming weeks, plans that we understand to have an interest will receive an invitation including summary of our progress in 2024 and our plans for 2025. Let us know if you would like to consider participation. *You will be among good company.*

Please do not hesitate to contact us with questions concerning this analysis, the *Sherlock Benchmarks* on which it is based or your interest in licensing or participating in the *Sherlock Benchmarks*. We can be reached at sherlock@sherlockco.com or (215) 628-2289.

Note: We are indebted to the Boston Consulting Group for introducing the BCG Slope and some technical aspects of estimating economies of scale to us many years ago. We are also grateful to Stephen R. Niezgoda, Professor in the departments of Materials Science & Engineering and in Mechanical & Aerospace Engineering, The Ohio State University, for his review of our approach to this analysis as well as his insights on the premises underlying the calculations. All errors are the responsibility of Sherlock Company.

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