

Measuring the Sources of Change in the Postal Service's Product Costs

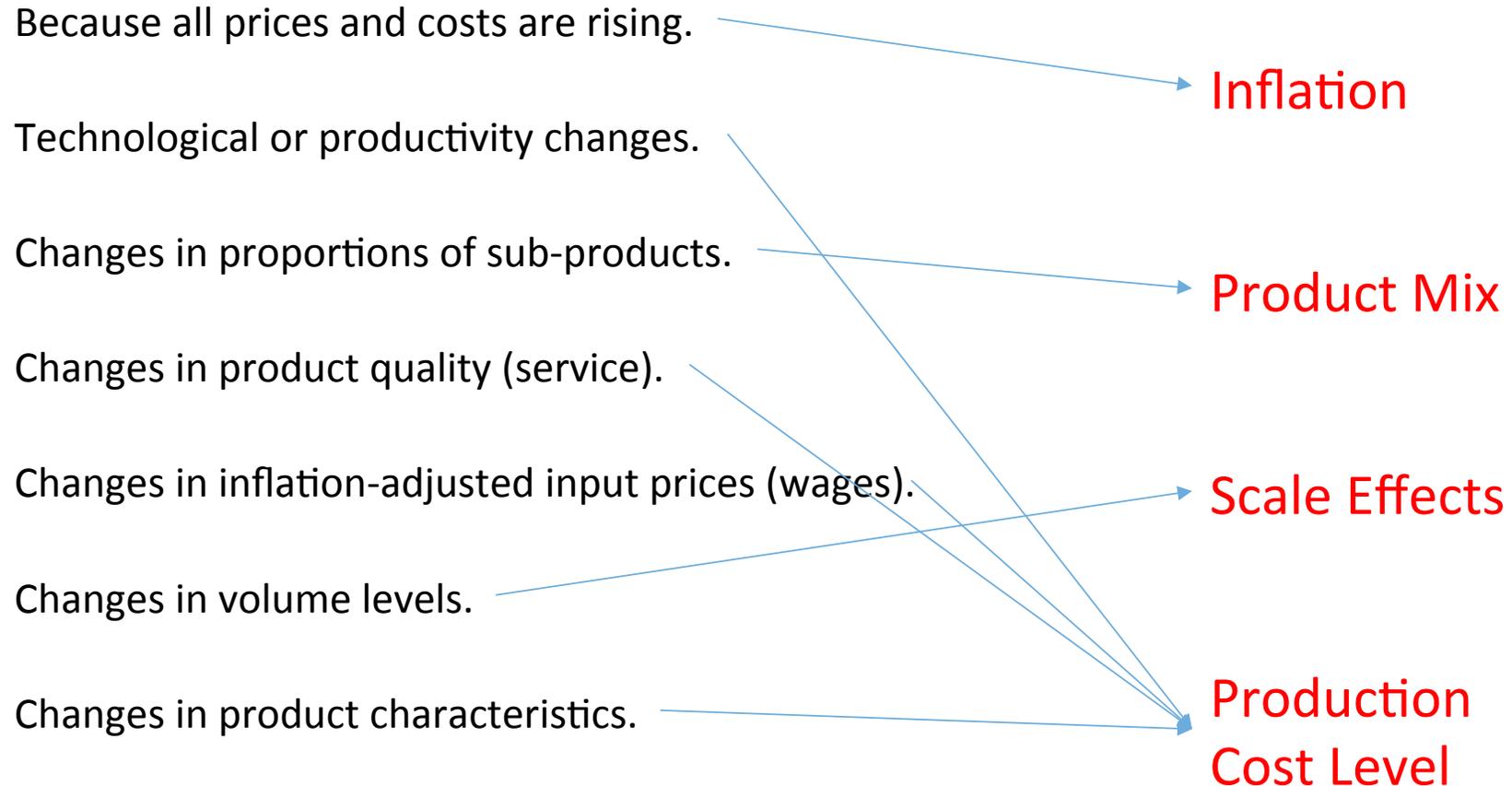
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From 2006 through 2015, the measured product costs for the Postal Service's four main products changed as follows:

| | FY 2006 Unit Cost | FY 2015 Unit Cost | Change | % Change |
|------------------|-------------------|-------------------|-----------|----------|
| First Class | \$0.193 | \$0.218 | \$0.025 | 13.0% |
| Standard | \$0.120 | \$0.138 | \$0.018 | 14.8% |
| Periodicals | \$0.285 | \$0.360 | \$0.075 | 26.3% |
| Package Services | \$1.824 | \$1.433 | (\$0.390) | -21.4% |

- The OIG asked me to initiate research into measuring why the product costs changed in the way they did.
- This paper is a first step in identifying and measuring sources of product cost change.

Why do product costs change?



Definitions & Methods

Changes in the General Price Level

- Changes in product costs due to the general change in all prices and costs across the economy.

Changes in Workload Arising from Changes in Product Mix

- Changes in product costs due to change in the mix of sub-products.

Changes in Individual Product and Overall Volume

- Changes in product costs due scale effects caused by volume changes

Changes in Production Cost Levels

- Changes in product costs due individual effects like technological change, product quality change, inflation-adjusted input price change.

Effects of Change in the General Price Level

| | Observed Change | Inflation Adjusted Change |
|------------------|-----------------|---------------------------|
| First Class | \$0.025 | (\$0.008) |
| Standard | \$0.018 | (\$0.003) |
| Periodicals | \$0.075 | \$0.021 |
| Package Services | (\$0.390) | (\$0.605) |

- First Class and Standard product costs increased less than inflation.
- Periodicals product costs increased more than inflation
- Inflation-adjusted Package Services product costs fell by a third.

Effects of Changes in the Product Mix

| | Change Due to Product Mix | % Change |
|------------------|---------------------------|----------|
| First Class | (\$0.0144) | -7.5% |
| Standard | \$0.0004 | 0.3% |
| Periodicals | (\$0.0028) | -1.0% |
| Package Services | (\$0.7160) | -39.3% |

- A shift to presort reduced First Class product cost.
- Standard Mail had no appreciable product mix effect.
- A substantial amount of the overall Package Service decline is due to a mix change toward drop-shipped Parcel Select.

Effects of Economies of Scale

| | Change From Individual Volume Growth/Decline | Change From Overall Volume Decline | % Change From Individual | % Change From Overall |
|------------------------|--|------------------------------------|--------------------------|-----------------------|
| Total First-Class | \$0.011 | \$0.005 | 5.4% | 2.4% |
| Total Standard Mail | \$0.003 | \$0.007 | 2.6% | 6.0% |
| Total Periodicals | \$0.002 | \$0.018 | 0.6% | 6.1% |
| Total Package Services | (\$0.026) | \$0.115 | -1.4% | 6.3% |

- Product costs change both because of individual volume changes and, due to common production, as a result of overall volume changes.
- Small volume products are likely to see bigger effects from the overall volume changes.

Effects of Changes in Production Cost Level

| | Cost Level Changes | % Change |
|------------------------|--------------------|----------|
| Total First-Class | (\$0.010) | -5.0% |
| Total Standard Mail | (\$0.014) | -11.7% |
| Total Periodicals | \$0.009 | 3.0% |
| Total Package Services | (\$0.084) | -4.6% |

- Production cost levels fell for most products.
- This includes factors like changes in service standards, technology improvements, productivity gains, or changes in individual product characteristics

Observations and Caveats

- First-Class Mail and Package Services experiences inflation-adjusted cost declines, in part, because these products' average workloads fell.
- Volume declines caused increases in marginal costs for all products.
- Smaller volume products, like Periodicals and Package Services, experienced increases in their marginal costs due to decline in overall volume levels.
- Most products experienced reductions in their production cost levels. Investigation of these sources of change is an important topic for future research.
- Application of these results should be done thoughtfully.