Modeling the Effects of Tariffs on Loss Costs

(For P&C Insurance)

Summary of 3/14/2025 Brainstorming Session

March 20, 2025

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Author's note: This summary is based on a brainstorming session on March 14, 2025 between the author and 14 fellow insurance professionals. This collaborative session was conducted for the purpose of identifying and discussing the potential effects of tariffs on loss costs (and how to model them). This summary reflects the author's distillation and interpretation of information provided by the group. The author assumes responsibility for any errors or misrepresentations in this summary. This summary is for informational purposes only and does not constitute actuarial or professional advice.

Considerations for Modeling the Effects of Tariffs on Loss Costs

Probability of tariffs remaining in place for a specified duration

A loss cost model should consider the probability that tariffs may not be in place for the entirety of any prospective period. As observed recently, tariffs, unlike laws, are easily enacted and repealed with relatively little consensus or administrative friction. Some possible sources for estimating this probability include: 1) patterns in duration of tariffs and 2) estimates derived from betting markets, such as Polymarket. Models to test include power law distributions, distributions derived from historical data (domestic and abroad), and Markov models using probabilities based on external factors such as macro-economic metrics.

A model should also consider the probability that the effects of tariffs will extend beyond the period the tariff is in effect.

Indirect effect of tariffs

A loss cost model should consider the indirect effect of tariffs. The effects of tariffs at the transactional level are straightforward. For example, a 10% tariff on imported goods will increase the cost of those goods to consumers by 10%. At a macro-economic level, the relationship is not as obvious due to the potential for mitigating or exacerbating factors. A model should consider indirect effects such as: manufacturers adopting alternatives to tariffed goods (different sourcing or different materials), the probability that the US will enter a recession, political stress limiting access to capital, improvements in or re-domestication of manufacturing, opportunistic pricing by manufacturers, and many others. In most cases, these indirect effects will not be easily quantified; however, at a minimum, their potential to meaningfully impact loss costs should be acknowledged.

Proposals for measuring the effects of tariffs on loss costs

Matrix approach

The "matrix approach" starts with currently available cost estimates from insurance industry sources, academia, professional organizations, or any credible source. Each estimate represents an individual scenario. The estimates, once put on a common basis, can be ranked in order of low to high, thereby establishing lower and upper boundaries

The second "dimension" of the matrix are the various assumptions underlying each scenario. These assumptions can be stated explicitly, reviewed, and sensitivity-tested. This step will help identify weaknesses in some scenarios and may help narrow the range of estimates by eliminating scenarios with unreasonable assumptions.

One benefit of this approach is that it gives analysts an easy and immediately available starting point. It is likely that many currently existing cost estimates do not fully consider many of the factors discussed above. More accurate scenarios can be calculated as assumptions are scrutinized and refined. As time passes, actual claim experience can be used to further refine assumptions.

This approach does not preclude the use of any particular methodology; instead, it provides a framework to compare estimates and the underlying assumptions between various methods.

Ground-up approach

Rather than a top-down approach, modeling the effect of tariffs on loss costs could be structured on a ground-up basis. For example, consider the individual replacement parts for automobiles. One could track the source of the parts and determine the effect of tariffs. This exercise would be highly labor-intensive and would not necessarily reflect the indirect effects of tariffs described above. This may be more practical for niche applications.

Risk-based approach

An alternative to analyzing the effects of tariffs on loss cost is analyzing the effects of tariffs on risk. It is apparent that tariffs increase uncertainty for an insurer. One way that tariffs increase uncertainty is by increasing parameter risk. Parameter risk is the uncertainty related to the estimation of parameters in statistical models. Unlike process risk, parameter risk cannot be reduced through diversification. Consequently, an increase in parameter risk increases the overall risk assumed by an insurer. Companies that assume additional risk require additional capital to ensure the same likelihood of solvency. Estimates of the increased capital need can serve as the basis for calculating the required risk load reflected in the pricing process.

Other Interesting Observations and Considerations

An alternative perspective on tariffs

Tariffs can be viewed as a form of inflation that is discretionary and more easily reversed than inflation caused by an increase in monetary supply. Considering this, it may be valuable to examine the relationship between known inflationary events and the resulting impact on loss costs to help model the effects of tariffs.

Modeling loss costs does not ensure regulatory approval of rate changes

Modeling loss costs is valuable to insurers for multiple reasons, including pricing, reserving, and risk selection. Assuming loss costs can be modeled accurately, insurers are often required to seek regulatory approval. This process may present additional obstacles to insurers, especially those seeking rate increases. Insurers should consider the following:

1) Regulators may require tariffs to be in place for a minimum amount of time before approving corresponding rate changes.
2) Regulators may be less willing to approve significant rate increases due to subjective considerations, such as social or political pressure.
3) To the extend insurers are planning rate decreases, they may choose to mitigate or suspend the decreases due to uncertainty relating to tariffs.
4) Complex models may slow down the regulatory approval process. Simpler may be better with respect to achieving timely regulatory approval.
5) The politicization of tariffs and insurance pricing could lead to more public visibility into the assumptions underlying rate changes. Insurers should consider how these assumptions may be perceived in a more public setting.

Responsiveness of the insurance industry

Historically, the insurance industry has not always adopted a proactive approach when considering the effects of economic events. This “wait and see” approach bypasses the need to establish theoretical models; however, insurers that adopt this approach will likely be disadvantaged compared to insurers that are more proactive.

Please contact me with any questions you have about this summary.

Don Grimm, FCAS, MAAA
Principal and Consulting Actuary
Archer Actuarial Consulting, LLC
(215) 205-9425
don.grimm@archeractuarial.com
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