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Welfare versus market access: The implications of tariff structure for tariff reform

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Abstract

We show that the effects of tariff changes on welfare and import volume are fully characterised by their effects on the generalised mean and variance of the tariff distribution, implying two "cones of liberalisation" in commodity price space. Because welfare is negatively but import volume positively related to the generalised variance, the cones do not intersect, which poses a policy dilemma. We present a new radial tariff reform rule, which implies new results for welfare- and market-access-improving tariff changes. Finally, we show that generalised and trade-weighted moments are mutually proportional when the trade expenditure function is CES.

Keywords: Concertina rule; Market access; Piecemeal policy reform; Tariff moments; Uniform tariff reductions

JEL classification: F13; F15

Welfare and trade volume increase together in a small open economy when only one good is subject to a tariff and that tariff is reduced. Tariff reduction thus serves both domestic and international goals: on the one hand, it raises home welfare; on the other hand, it increases foreign access to domestic markets as required by multilateral trade obligations under the WTO.[1] However, in the empirically relevant case where there are many tariff-ridden goods, the analytic

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[1] Bagwell and Staiger (1999) note that reciprocity, which they interpret as trade policy "concessions" that yield equal increases in market access and so keep world prices constant, is one of the foundational principles of GATT.

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relationship between changes in tariffs, welfare and trade volume forms a difficult tangle due to cross effects. The theory of the second best noted long ago that cutting a single tariff need not raise welfare, and it is easy to see that it need not improve market access either. What tariff changes do improve welfare? Market access? What is the relationship between the two?

Computation can in principle provide answers to these questions. But computations of the effects of multiple tariff changes from any applied general equilibrium model will always be suspect because of uncertainty about the parameters and specification of the 'true' model of the economy. The theory of piecemeal trade policy reform is a promising alternative which seeks to specify directions of change which can raise welfare or improve market access under plausibly general conditions. However, progress in this research program has been relatively limited thus far (see Foster and Sonnenschein, 1970; Bruno, 1972; Hatta, 1977; Diewert et al., 1989). There are but two results, the uniform radial reduction result (reduce all tariffs by the same proportion) and the "concertina rule" (reduce the highest tariff rate). Each characterizes a single welfare-improving path in tariff space, and neither is consistent with trade reforms typically proposed or implemented in negotiations or in applied policy-making advice such as that dispensed by international institutions. Moreover, as usually stated, the concertina rule requires implausibly strong restrictions on the general equilibrium substitution effects matrix. As for the effects of tariff reform on market access, Ju and Krishna (2000) explore the implications of the uniform radial reduction and concertina reforms, and derive a new reform rule which ensures an increase in market access (see Section 3.3 below), but much remains to be done.

This paper takes a new approach to the theory of piecemeal trade policy reform, which yields substantial generalisations of previous results. It provides general characterizations of cones of welfare-improving and market-access-improving trade reforms. Under fairly mild and plausible restrictions, tariff change paths within these cones guarantee improvements in welfare or increases in market access for small open economies. The directions of change within the cones approximate many of the practical tariff-cut formulae of multilateral negotiations. They also contain dispersion-changing directions of change which provide the first formal justification for the World Bank's emphasis on reducing dispersion of tariff structure.

The cones of liberalization are closely related to new concepts of the generalized mean and variance of tariff schedules.[2] Standard atheoretic measures of mean and variance of tariffs are often used as indexes by the World Bank and other analysts because they appear intuitively to be linked to welfare. There is something right about the intuition, but the weights for the appropriate generalized mean and variance are based on marginal substitution effects rather than on average trade shares.[3] In a special CES case, we show that the generalized mean and variance are proportional to the trade-weighted mean and the trade-weighted variance.

[2] Anderson (1995) introduced generalised tariff moments and used them to elucidate the properties of the Trade Restrictiveness Index (TRI) of Anderson and Neary (1996). (He defined them in terms of world prices, whereas it is more convenient for our purposes to define them in terms of domestic prices, since it allows us to make use of the homogeneity restrictions on import demand.) Feenstra (1995, p. 1562) also notes the importance of tariff dispersion in the special case of linear demands. These papers, like ours, consider the moments of the distribution of a cross-section of tariffs in a deterministic framework, whereas Francois and Martin (2004) explore the implications for market access of the moments of a single tariff's distribution over time in a stochastic framework.

[3] Kee et al. (2004) highlight the importance of taking substitution effects into account when tariffs are non-uniform. They show that, because of the high variance of the U.S. tariff schedule, the simple and trade-weighted average tariffs underestimate the true average tariff (the TRI) for the U.S. by more than any other country in their sample. (The atheoretic average tariffs for the U.S. are about 4%, whereas their estimate of the TRI uniform tariff is about 15%.)