# Welfare Analysis in the Krugman (1979) Model 

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In some points, Krugman (1979) is more attractive model than Krugman (1980) but few studies have extended Krugman (1979). Maybe, this is because Krugman (1979) is not tractable. In fact, a characterization of equilibrium allocation and welfare change in comparative statics is not trivial.
Partly, Zhelobodko et al (2012) solved this. Zhelobodko et al (2012) fully characterize the equilibrium in autarkic economy by introducing the relative love of variety (RLV). A important and remaining issue is how to characterize welfare. Krugman (1979) suggests that gains from trade occurs through an increase in real wage rate and in the number of available varieties. On the other hand, Krugman (1979) shows that opening up to trade raises the number of varieties while it reduces consumption level for each variety. That is, an increase in real wage does not directly leads to an increase in consumption level for each variety. Then, is this Krugman (1979)'s suggestion right? This paper presents two approaches which can characterize welfare in the Krugman (1979) model and gives a justification for the above Krugman (1979)'s suggestion.

The first approach is extent of love of variety (ELV) approach focusing decomposition of welfare change and the second approach is revealed preference approach focusing compensation income. These approaches depend on ELV. ELV is tractable, intuitive, and can be related to RLV.
In addition, the paper presents a simple extension. We introduce fixed export costs. Even if we introduce fixed export costs, results of two approaches can be applied directly. We shows that gains from trade occurs if fixed export costs is less than fixed domestic costs. A decrease in fixed export costs raises welfare.

