Fixed export cost heterogeneity, trade and welfare

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Abstract

Recent literature on the workhorse model of intra-industry trade has explored heterogeneous cost structures at the firm level. These approaches have proven to add realism and predictive power. This paper presents a new and simple heterogeneous-firms specification. We develop a symmetric two-country intra-industry trade model where firms are of two different marginal cost types and where fixed export costs are heterogeneous across firms. This model traces many of the stylized facts of international trade. However, we find that with heterogeneous fixed export costs there exists a positive bilateral tariff that maximizes national and world welfare.
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1. Introduction

Recently, firm-level heterogeneity has been introduced to intra-industry trade models, e.g. by Schmitt and Yu (2001), Montagna (2001), Jean (2002), Melitz (2003), Helpman et al. (2004) or Yeaple (2005). These specifications, where firms are heterogeneous with respect to their cost structures, have provided important new insights, frequently reconciling theory with the stylized facts of international trade, see Bernard et al.

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(2006), Greenaway and Kneller (2007), Helpman et al. (2007). For example Schmitt and Yu (2001) resolve the puzzle of scale economies and the volume of intra-industry trade by introducing firm-level heterogeneous fixed exporting costs. Montagna (2001) examines trade between countries with efficiency asymmetries when firms are heterogeneous with respect to marginal costs. Melitz (2003) features firm-level heterogeneous marginal costs and analyzes intra-industry reallocations, showing that additional gains from trade stem from the induced productivity improvements.

However, thus far the literature has not fully examined the implications of these new—and more realistic—assumptions for the welfare effects of trade policies such as tariffs. Melitz (2003), Falvey et al. (2004) and Baldwin and Forslid (2006) examine the welfare effects of reducing iceberg and fixed export costs in a Melitz-type (2003) setting with firm-level heterogeneous marginal costs. Bernard et al. (2007) model iceberg cost reductions for heterogeneous firms in a neoclassical trade setting. The present paper contributes to this literature. In particular, we examine trade policy by introducing fully redistributed bilateral ad valorem tariffs—instead of the customary iceberg costs—into a simple symmetric two-county Krugman-type (1980) intra-industry trade model with firm-level heterogeneous fixed costs of exporting as in Schmitt and Yu (2001). We find that, even though free trade welfare exceeds autarky welfare, a positive bilateral tariff exists that maximizes national and world welfare. Thus small bilateral tariffs increase welfare. The underlying mechanism is that small tariffs force fairly inefficient (high fixed export costs) producers to cease their trading activity. This saving is paired with a volume reduction occurring for all remaining traded varieties, due to the tariff driven price increase. In sum, these effects compensate consumers for the loss in imported varieties, via domestic entry and larger consumption volumes of home varieties. This effect is at work, even though we employ assumptions that promote free trade as the welfare optimum. For example, the firm-specific fixed costs of exporting, i.e. creating variety via imports, are always lower than the cost of creating a new domestic variety.

Modelling tariffs explicitly, including the redistribution of revenues, our paper follows an empirically based criticism of the iceberg costs approach, e.g. Hummels and Skiba (2004). In terms of welfare results, iceberg cost specifications may raise additional issues. If one captures trade liberalization as improvements in the transport technology (reductions in iceberg costs), such technological improvements should have a positive impact on welfare irrespective of their trade implications.[1] In contrast, modelling tariffs explicitly and with full redistribution of revenues helps to disentangle actual tariff liberalization effects from transport technology effects, see e.g. Schröder (2004). Moreover, with marginal cost heterogeneity iceberg cost specifications (e.g. Melitz, 2003) imply that the more productive firms not only are more productive in terms of producing output, but also in terms of shipping their output; thus creating a trade bias for these firms.

A second contribution of the present paper is to extend the literature by combining a simple model of firm-level heterogeneous fixed export costs (i.e. Schmitt and Yu, 2001; Jørgensen and Schröder, 2006) with an element of marginal cost heterogeneity, where firms can be of two types, and most importantly by introducing an entry mechanism in the manner of Hopenhayn (1992) and Melitz (2003). In particular, in our model firms make their entry decisions subject to sunk costs and based on expected profits, knowing only the

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[1] Put differently, if the world loses only five instead of 10 containers for every 1000 containers that are shipped, surely welfare must increase.