Globalization, inequality and welfare

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\textbf{ABSTRACT}

This paper studies the welfare implications of trade opening in a world in which trade raises aggregate income but also increases income inequality, and in which redistribution needs to occur via a distortionary income tax-transfer system. We provide tools to characterize and quantify the effects of trade opening on the distribution of disposable income (after redistribution). We propose two adjustments to standard measures of the welfare gains from trade: a ‘welfarist’ correction inspired by the Atkinson (1970) index of inequality, and a ‘costly-redistribution’ correction capturing the efficiency costs associated with the behavioral responses of agents to trade-induced shifts across marginal tax rates. We calibrate our model to the United States over the period 1979–2007 using data on the distribution of adjusted gross income in public samples of IRS tax returns, as well as CBO information on the tax liabilities and transfers received by agents at different percentiles of the U.S. income distribution. Our quantitative results suggest that both corrections are nonnegligible: trade-induced increases in inequality of disposable income erode about 20% of the gains from trade, while the gains from trade would be about 15% larger if redistribution was carried out via non-distortionary means.

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1. Introduction

Two of the most salient phenomena in the world economy in recent years have been a rapid increase in the extent to which economies have become interconnected and a significant rise in income inequality in many countries. For instance, during the period 1979–2007, the U.S. trade share (defined as the average of exports and imports divided by U.S. gross output) increased from a value of 4.9% to 7.7%, while the Gini coefficient associated with the distribution of U.S. market income grew dramatically from a level of 0.48 all the way to 0.59. Furthermore, as is clear from Fig. 1, trade integration and inequality grew very much in parallel, especially in the 1990s and 2000s. The extent to which these two phenomena are causally related has been the subject of intense academic debates, but it is by now a widely accepted view that trade integration has been a significant contributor to increased wage and income inequality in the U.S. and many other industrialized countries.\textsuperscript{1} The picture emerging from developing countries also points to the importance of trade-induced inequality. Goldberg and Pavcnik (2007) summarize a body of literature studying the consequences of trade liberalization across a number of developing countries after 1970s, with the bulk of episodes triggering significant increases in inequality.

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\textsuperscript{1} Feenstra and Hanson (1999), for instance, estimate that outsourcing alone could account for as much as 40% of the increase in the U.S. skill premium in the 1980s. Other studies, summarized in Krugman (2008), arrive at more conservative estimates suggesting that trade accounted for about 15–20 % of the increase in income inequality.
Despite these recent trends, the standard approach to demonstrating and quantifying the welfare gains from trade largely ignores the implications of trade-induced inequality. The paradigm used to evaluate the social welfare consequences of trade integration is the Kaldor-Hicks compensation principle (Kaldor, 1939; Hicks, 1939). This approach begins by computing the compensating (or equivalent) variation of a policy change at the individual level, and then aggregates this money metric across agents. The celebrated ‘gains from trade’ result demonstrates that, in competitive environments, when moving from autarky to any form of trade integration, the losers can always be compensated and there is some surplus to potentially turn this liberalization into a Pareto improvement. A key advantage of the Kaldor-Hicks criterion as a tool for policy evaluation is that it circumvents the need to base policy recommendations on interpersonal comparisons of utility, thus extricating economists’ prescriptions from their own moral convictions (cf., Robbins, 1932).

As influential as the Kaldor-Hicks compensation principle has proven to be, it has two basic shortcomings. First, the fact that there is the potential to compensate those that are hurt from a particular policy does not imply that these losers will be compensated in practice. If one knew that the redistribution or compensation necessary for a policy to generate Pareto gains would not happen or would not be complete, shouldn’t the evaluation of such a policy take this fact into account? Second, the simple aggregation of individual compensating or equivalent variations in the Kaldor-Hicks criterion implicitly assumes the existence of non-distortionary means to redistribute part of the gains from the policy to those that do not directly benefit from it. In reality, compensation often takes place through a tax and transfer system embodying nontrivial deadweight losses, so it seems reasonable to build this characteristic of redistribution into measures of the social welfare effects of a policy.

In this paper, we study the welfare implications of trade opening in a world in which international trade affects the shape (and not just the mean) of the income distribution, and in which redistribution policies need to occur via a distortionary income tax-transfer system. In this environment, we provide tools to characterize and quantify the actual amount of compensation that will take place following trade opening, as well as the efficiency costs of undertaking such redistribution. More specifically, we propose two types of adjustments to standard measures of the welfare gains from trade. On the one hand, we develop a ‘welfarist’ correction which captures the negative impact that an increase in inequality in the distribution of disposable income has on the welfare of an inequality-averse social planner. This first adjustment is tightly related to the Atkinson (1970) index of inequality, which has been rarely applied in trade contexts. On the other hand, we derive a ‘costly-redistribution’ correction which captures the behavioral responses of agents to trade-induced shifts across marginal tax rates. This second adjustment builds on the voluminous public finance literature on the efficiency costs of income taxation, and is especially related to the structural work of Benabou (2002), although our approach is generalized to apply to income distributions other than the lognormal one, and also to models with an extensive margin response to taxation.

We begin our analysis in Section 2 within a fairly general environment that illustrates the rationale for these two corrections when evaluating any policy (not just trade liberalization) that has the potential to affect the shape of the income distribution beyond its mean. In this environment, we derive explicit formulas for these adjustments in terms of specific moments of the income distribution, the level of progressivity of the tax-transfer system, the degree of inequality aversion of the social planner, and the elasticity of taxable income to changes in marginal tax rates.

Our environment in Section 2 is silent on the primitive determinants of the income-generation process or on the precise mechanism that leads to a positive elasticity of income to changes in marginal taxes. In Section 3, we develop a microfounded simple general equilibrium framework that illustrates how the ability of individuals and their labor supply decisions translate in equilibrium earnings and welfare levels given the tax system in place. When solving for the closed-economy equilibrium of the model, we are able to decompose changes in welfare into three terms: (i) changes in the welfare of a hypothetical ‘Kaldor-Hicks’ economy with access to costless redistribution and no inequality aversion, (ii) changes in the welfarist correction, and (iii) changes in the costly-redistribution correction.

The economic environment we develop builds on Itskohoki (2008), and is inspired by the canonical optimal taxation framework of Mirrlees (1971) and the workhorse model of trade of Melitz (2003). Agents in our economy are workers in which each produce a distinct task associated with the production of a final good. Unobservable heterogeneity in productivity across agents generates income inequality, which an inequality-averse social planner may try to moderate via a progressive system of income taxation. The two key departures from the classic Mirrlees framework is that we allow for imperfect substitutability in the task services provided by different workers and that we restrict attention to a specific form of non-linear taxation that, consistently with U.S. data, implies a log-linear relationship between income levels before and after taxes and transfers (see Heathcote et al., forthcoming). Imperfect substitutability is not essential for our closed-economy results but is the source of the welfare gains from trade later in the paper.

Before moving to this open-economy environment, in Section 4 we provide a brief calibration of the closed-economy model that decomposes the evolution of social welfare in the U.S. over the period 1979–2007 in terms of the welfarist and costly-redistribution corrections and the welfare of the hypothetical ‘Kaldor-Hicks’ economy. We calibrate our model using data on the distribution of adjusted gross income in public samples of IRS tax returns, as well as CBO information on the tax liabilities and transfers received by agents at different points of the U.S. income distribution. Our calibration reveals a very significant decline in the degree of tax progressivity over this period despite the concomitant increase in ‘primitive’ income inequality. This naturally resulted in an exacerbated increase in inequality in the

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2 Three very recent exceptions are the ongoing projects by Rodriguez-Clare et al. (2015), Artuc et al. (2017) and Carrère et al. (2015).

3 Imperfect substitutability between different types of labor in the Mirrlees model was studied by Feldstein (1973) and Stiglitz (1982) in a two-class economy, and more recently by Sachs et al. (2016) in a more general environment.
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