Fairness, trade, and inequality ☆

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ARTICLE INFO

ABSTRACT

We develop a model of international trade between two symmetric countries that features inter-group inequality between managers and workers, and also intra-group inequality within each of those two groups. Individuals are heterogeneous with respect to their managerial ability, and firms run by more able managers have a higher productivity level and make higher profits. There is rent sharing at the firm level due to fair wage preferences of workers, and hence firms with higher profits pay higher wages in equilibrium in order to elicit their workers' full effort. We show that in this framework international trade leads to a self-selection of the best firms into export status, with exporting firms having to pay a wage premium. Aggregate welfare increases, but there is also larger inequality along multiple dimensions: Involuntary unemployment and income inequality between managers and workers increase, and so does inequality within these two subgroups of individuals, as measured by the respective Gini coefficients.

1. Introduction

The impact of globalisation on the distribution of income within countries is one of the classic questions in international economics. Traditionally, the focus of research has been on inequality between different abilities or skill groups (*inter-group inequality*). It is clear that the reality is considerably more complex. Empirical evidence shows that income inequality within skill groups (*intra-group inequality*) is an important part of overall inequality, and that it has increased substantially over the past decades (Katz and Autor, 1999; Barth and Lucifora, 2006; Autor et al., 2008). It is apparent that the observed increase in intra-group inequality has been simultaneous to the widely documented surge in the volume of international trade, and this co-movement has been addressed in the recent academic literature (see Egger and Kreickemeier, 2009; Helpman et al., 2010).

In this paper, we develop a tractable model of international trade that allows us to look at four empirically relevant dimensions of inequality at the same time: The model features inequality between production workers and managers, within the group of production workers, within the group of managers, and also involuntary unemployment.[2] Our framework is simple enough to yield closed-form solutions for all variables of interest, and it therefore allows a comprehensive analysis of the distributional effects of international trade. We find that trade leads to aggregate welfare gains, but also to an increase in inequality along multiple dimensions: The rate of unemployment increases, as do the gap between the average remuneration of managers and workers and the Gini coefficients for the income of production workers and managers, respectively.

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[2] Since unemployed individuals are typically at the bottom of the income distribution, the unemployment rate is directly relevant for aggregate measures of inequality.

Individuals in our framework are heterogeneous in their managerial ability, and as in Lucas (1978) they self-select into becoming either managers or production workers. Each firm needs one manager and an endogenous number of workers. In the role as production workers, individuals cannot use their managerial skill. The occupational choice mechanism borrowed from Lucas is combined with the assumption of a goods market that is characterised by monopolistic competition—as is standard in much of the trade literature—and a market for production workers that is characterised by fair wages, following Akerlof and Yellen (1990). Workers in this framework have discretion over the effort they supply, and they supply less than the full effort if their remuneration falls short of what they consider fair. If they choose to apply for a position as a production worker, all individuals are ex ante identical, but their fair wage preferences lead to rent sharing at the firm level: More able managers, running more successful firms with more employees, have to pay their production workers higher wages in order to elicit full effort.[3]

Inequality among managers and among production workers is therefore due to differing reasons: Managers are remunerated according to their ability, while workers participate in the success of their employer via the rent-sharing mechanism. Therefore only in the case of production workers do we have the case that individuals that are identical in all relevant dimensions are paid differently. Firm-specific wage rates for ex ante identical workers are a stable equilibrium outcome for a combination of two reasons: High-wage firms have no incentive to cut wages, since this would jeopardise the (non-contractible) effort of their workers, and low-wage firms are able to attract workers despite the competition from high-wage firms since there is a pool of unemployed production workers who would rather work for a low wage than not work at all.

We show that a unique equilibrium exists in the closed economy, and we derive closed form solutions for aggregate income, the rate of unemployment among production workers, and the Gini coefficients for labour income and managerial income. We then embed our worker/manager model into an otherwise standard framework of intra-industry trade between two symmetric countries, where trade is subject to iceberg transport cost and fixed cost. The fixed export cost in our model results from the requirement that all exporting firms need to hire a local expert in the destination market, to whom they have to pay the local average wage rate. Similarly to other models with heterogeneity among producers, international trade has two different selection effects: There is self selection of the high productivity firms into export status, while at the other end of the productivity distribution firms shut down, which in our model happens since the least able managers realise better income opportunities elsewhere, by supplying their labour as production workers for local firms or as local experts for foreign exporters.

The equilibrium features a wage premium of exporting firms (relative to the wage the same firms would have to pay if they were non-exporters), because these firms have to share the exporting profits with their workers, according to the fair wage-effort mechanism. The existence of an exporter wage premium is well in line with evidence from the trade literature (Bernard and Jensen, 1995, 1997). More recently, Schank et al. (2007) also find firm characteristics to be an important explanatory variable for individual wage inequality.

Using a large set of linked employer–employee data from Germany, they show that a wage premium of exporters exists even if one controls for observable and unobservable characteristics of both individuals and the workplace. Strong evidence for an exporter wage premium is also provided by Frías et al. (2009). Using data for Mexico during the Peso devaluation of 1994, they show that the differentially positive effect on exporting firms led to firm-specific positive wage effects, two-thirds of which are due to the existence of pure exporter wage premia, with the remaining third attributable to workforce composition at the firm level.

The model developed here is related to other papers in the literature that analyse the distributional effects of globalisation in models of heterogeneous firms. Similar to us, Monte (2011) analyses the effects of trade in a framework that uses the mechanism of Lucas (1978) to determine the self selection of individuals into a role of worker or manager. Since there is perfect competition in the market for production labour, his model features neither inequality among production workers nor unemployment. Antras et al. (2006) develop an offshoring model, in which occupational choice of a heterogeneous pool of individuals is affected by international integration. Globalisation is modelled as a decrease in communication cost that makes it feasible to form international production teams, which in turn affects the decision of individuals as to which role to assume within a team. In the trade model of Manasse and Turrini (2001) productivity of a given firm is determined, as in our framework, by the ability of the manager running it. Manasse and Turrini do not model occupational choice, and the number of firms in their model is equal to the exogenous supply of managers. Furthermore, the market for production workers is assumed perfectly competitive, and therefore workers are paid the same wage in all firms.

Our paper is also related to the fast-growing number of papers that consider labour market imperfections in the context of new-trade-theory models. Davidson et al. (2008) add search frictions to the trade model of Yeaple (2005), in which firms can choose between a basic technology (low-tech) and an advanced technology (high-tech), with the two technologies differing in a productivity parameter and in their factor requirements: While low-tech firms can employ both skilled and unskilled workers, high-tech firms need to hire skilled workers in order to make productive use of the labour input. With the added search frictions, captured by a linearly homogeneous matching function, and pair-wise Nash bargaining between a firm and its workers for determining the wage rate, the model generates task-specific incomes of skilled workers, which depend on the production technology used by their employer. Globalisation then affects both the relative income of skilled workers in high- and low-tech firms as well as the relative income of skilled and unskilled workers. The model cannot address distributional effects within the group of unskilled workers, since they all receive the same wage by construction. Furthermore, since each worker uses a specific capital stock, firm size per se is irrelevant for the wage-setting process. The feature of a constant firm size is attractive from the perspective of analytical tractability, but it implies that the model cannot accommodate the empirically robust links between firm size, productivity, and firm-level wages.

This link is accounted for in the model of Helpman et al. (2010), who introduce search frictions and Nash bargaining into a Melitz (2003)-type framework. They consider a combination of firm level bargaining, worker-specific abilities, and a screening technology that allows firms to determine the minimum ability of their workforce. Larger, more productive firms have a stronger incentive for screening, and therefore end up with higher recruitment costs and a workforce that is of higher average ability, reflected in a higher wage. Similar to us, Helpman et al. (2010) find a rich set of analytical results for the effect of trade on unemployment and inequality among production workers. However, being based on the Melitz framework with production labour as the only input, their model cannot address

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[3] There is strong empirical support for this type of reasoning. For instance, Faggio et al. (2010) utilise panel data for the UK to show that firm productivity is a key determinant of individual wage inequality. Furthermore, a positive relationship between firm size and wage payments is well documented in the empirical labour economics literature. Bayard and Troske (1999) find this relationship using U.S. data and rigorously controlling for individual and job characteristics. Winter-Ebmer and Zweimüller (1999) present a similar result for Switzerland. Finally, Blanchflower et al. (1996) and Hildreth and Oswald (1997) provide empirical support for the idea that rent sharing is a key determinant of the observed wage differential across producers.