



Low-skill offshoring and welfare compensation policies[☆]



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ABSTRACT

We analyze the effects of low-skill offshoring on welfare. In the context of a matching model with different possible equilibria we discuss three alternative policies that could potentially outweigh the negative welfare effects of offshoring, namely, a change of the unemployment benefits, labor market flexibility, and a progressive tax structure. Our calibrations for the German economy suggest that increased flexibility can bring low-skill workers to pre-offshoring welfare levels, something that cannot be accomplished by meddling with the unemployment benefits scheme or a more progressive tax structure. In addition, we find that a full compensation can be achieved by an upgrading of low-skill workers, its size depending on the type of equilibrium involved. In sum, our analysis gives support to labor market flexibility and upgrading by education as best therapies for offshoring.

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1. Introduction

Critics of offshoring are mainly concerned with the welfare effects that these business practices can have on the population at large, but especially on low-skill low-wage workers. Active measures are usually called forth to palliate these negative effects of globalization, but sometimes the remedy might turn out to be worse than the disease. This paper analyzes the welfare implications of the offshoring of low-skill activities, while discussing different usual counter measures with diverging results. We evaluate three particular policies that could potentially outweigh the effects of offshoring, namely, a change in the level of unemployment benefits, a reduction of vacancy costs – broadly understood as labor market flexibility – and a progressive tax structure. As an additional exercise, we also consider an exogenously given skill upgrading as a compensating mechanism.

The policies we have chosen for discussion have been proposed on both sides of the political spectrum, and as with every other policy measure, they have been clumsily tailored for political advantage only to deal with difficulties in a short-time horizon. It is in this light that we aim at suggesting possible policy outcomes, while giving a word of warning which calls for discretion in coping with the offshoring ‘threat’.²

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² For an interesting and intense debate on the welfare implications of offshoring see the Samuelson–Bhagwati exchange (Bhagwati et al., 2004, and Samuelson, 2004).

Notice that, in focusing on the effects of offshoring and its immediate political reaction, we are emphasizing the interactions between trade and labor market policies for a hypothetical equilibrium. In order to account for some of the welfare improving effects of offshoring – e.g. the future recycling of low-skill workers and their increase in productivity levels – we will allow for an exogenous upgrading of low-skill workers that can also be considered as a supplementary compensating mechanism to those offered by the proposed policies.

We build on the previous literature of matching models like Albrecht and Vroman (2002), Rogerson et al. (2005), and Davidson et al. (2008). Albrecht and Vroman (2002) propose a matching model with endogenous skill requirements where employers create both high and low-skill vacancies and where the distribution of skill requirements across these vacancies is endogenous. It is also assumed that a low-skill job can be done by either type of worker whereas high-skill jobs can only be done by high-skill workers. Unemployment is generated by frictions and the meeting process (undirected) is taken from Diamond (1982), Mortensen (1982), and Pissarides (2000), while the wage-setting approach is of the Nash bargaining type. Low-skill workers are better off the greater the fraction of low-skill vacancies, while the opposite is true for high-skill workers. Likewise, firms with low-skill requirements are better off the greater the fraction of low-skill job candidates.

We adapt and extend the model in Albrecht and Vroman (2002) to the case of low-skill offshoring, and then use different parameter combinations that render interesting comparative statics which can be used for policy recommendation analysis. In particular, we will focus the discussion on the welfare effects of offshoring for low-skill workers and the potential compensating mechanisms. As important as the welfare of those directly affected by offshoring is, special attention must also be paid to the funding limitations that such compensating policies involve. For that reason, we extend the model as to account for the government

financing of such policies, and then compare the alternative welfare outcomes produced by each of the alternatives. The objective is, when possible, to bring up the welfare of low-skill workers back to pre-offshoring levels. In sum, we depart from Albrecht and Vroman (2002) in a few key aspects: first, we interpret a lowering in low-skill productivity as a result of higher intensity in low-skill offshoring activities; second, we include a potentially progressive tax structure to justify the role of government and the funding of offshoring-related displaced workers; and third, we carry out a comparative statics and welfare analysis.

As in the context of Albrecht and Vroman (2002) two equilibria will be discussed: the equilibrium with cross-skill matching (CSM) and the equilibrium with ex post segmentation (EPS). CSM occurs when high-skill workers and low-skill vacancies are matched, whereas EPS takes place when these potential matches do not meet (e.g. high-skill workers only work in high-skill jobs). Changing the model's parameters yields three scenarios: (i) a change from a CSM equilibrium to another; (ii) a switch from a CSM to an EPS equilibrium; and (iii) a change from an EPS equilibrium to another. These different scenarios, in combination with the policy measures, will produce different welfare effects.

The offshoring literature has seen a recent surge in welfare analysis. For example, Mitra and Ranjan (2013) suggest that a reduction in the cost of offshoring increases offshoring and the unemployment of unskilled workers, but has a positive effect on skilled workers in the form of higher wages and lower unemployment. Ranjan (2013a) argues that some employment protection policies can play an important role in protecting workers against external shocks like offshoring. He concludes that offshoring can reduce welfare even in the presence of optimal severance payments, and that some additional redistribution program might be needed to ensure welfare gains. He also points out that employment protection in the form of administrative cost of firing fails to protect workers as it unambiguously reduces welfare. On the same line, Ranjan (2013b) suggests that when unemployment arises due to both job destruction and matching frictions, a combination of severance payments and unemployment benefits is a better policy to shield workers from offshoring than either of them alone. Jung and Mercenier (2014), in turn, analytically derive the conditions under which all workers, including low-skill, might gain from the surge of offshoring. Their main policy implication is that government action should aim at reducing market rigidities, rather than thwarting adjustment, something that calls, for instance, for extensive and flexible retraining programs.

It must be observed that offshoring indicators are not easy to come by, and that indirect indicators seem to be the best choice. For that reason we rely on an intermediate imports index, as originally proposed by Feenstra and Hanson (1996). Arguably, the higher the volume of intermediate trade the higher the offshoring intensity. The rationale goes as follows: as soon as 'relocated' business units start operating from abroad, the intensity of intrafirm trade, which mostly consists of parts, components, and other inputs previously produced in the home country, will grow substantially. Firms are thus responding to import competition from low-wage countries by moving their non-skill intensive activities to foreign locations from which they can later import back.

In order to produce a fair measure of low-skill offshoring, we restrict our offshoring index to the inputs originated in the manufacturing sector of the foreign country. As a result, we are able to determine the intensity of the offshoring of material inputs (or low-skill offshoring) as opposed to that of services — which is usually in the higher end of the skill ladder. According to our numbers, the offshoring of relatively low-skill materials-related activities turns out to be consistently higher than that of services for the group of countries considered.³ Moreover, beyond what we get from the data, firm theory holds that it is lower-

skill activities that become redundant earlier and are thus at risk of being relocated first. Unlike Davidson et al. (2008) and Arseneau and Epstein (2014), we start from this hypothesis to lay out our model below and carry out our welfare analysis — that is, low-skill offshoring is significantly more prominent than high-skill and, consequently, deserving of more attention in terms of welfare effects.⁴

To get an idea of the significance of low-skill offshoring we calculate the indices for a group of highly developed countries, before laying out the model in full in the following sections.⁵ For the purpose of calibrating our model we use German data, given that, as it clearly stands out in Fig. 1, Germany is at the forefront of low-skill offshoring practices while still having an important share of workers falling into the low-skill category. Fig. 1a–c shows the recent evolution of materials-based low-skill offshoring, our intermediate imports index (vertical axis), along with the evolution of the low-skill share, namely, workers with below tertiary education (horizontal axis). We use data on seven of the largest economies, with the size of the bubble indicating the country's GDP weight. Notice that unlike other countries Germany displays an unambiguous upward trend of low-skill offshoring (Fig. 1a–c) and, at the same time, remains very high among the countries with a significant pool of low-skill level workers — this is clearly seen in Fig. 1c, where Germany is positioned very high and to the right. Low-skill offshoring is likely to become a real issue in the near future, especially in places like Germany where the share of low-skill workers is, even when decreasing, still non-trivial.

The remainder of the paper is organized as follows. The model, its main properties, and the possible types of equilibria are discussed in Section 2. We briefly outline the strategy for the solution of the model in Section 3. The welfare effects of the proposed policies as well as the additional exercise on skill upgrading are studied in Section 4. Final remarks are summarized in Section 5.

2. Model

We adapt the model in Albrecht and Vroman (2002) to account for the welfare effects of offshoring.⁶ We also extend the model by introducing the public sector in response to the financing of the proposed compensation policies. In short, our model considers three types of agents: workers, firms, and the government.

Workers are infinitely lived and of measure one. An exogenous fraction q of these workers is low-skill, L , and the rest are high-skill, H . A worker of type i , $i = L$ or H , searching for a job, seeks to maximize the expected lifetime discounted utility function

$$E \sum_{t=0}^{\infty} \rho^t x_{it}$$

where $0 < \rho < 1$ is the discount factor and x_{it} is consumption of type i at time t . Consumption is equal to the expected net income in each period, so saving is not possible.

There is free entry for firms and each firm employs one worker when active. A vacancy can be opened at an exogenous cost c , and firms place vacancies of both skill types — notice that c includes both the hiring costs and the firing costs that firms will potentially face in the future. A fraction ϕ of vacancies is low-skill and a fraction $1 - \phi$ is high-skill

⁴ Low-skill or 'blue collar' offshoring is also more prominent in the literature — see for instance Jung and Mercenier (2014) for a recent study. The group of low-skill workers in the model corresponds to the low and mid-skill levels in the data (below tertiary education), as usually found in the literature—see for example Davidson et al. (2008) or Arseneau and Epstein (2014).

⁵ This group of developed countries include: the US, Japan, Germany, France, Great Britain, Italy, and Spain.

⁶ A description of how the model works for one type of worker can be found in Rogerson et al. (2005) and Williamson (2010).

³ Numerical details on the services offshoring measure are not presented here for reasons of space but are available on request.

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