Trade integration and the skill premium: Evidence from a transition economy

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ABSTRACT

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Relatively little attention has been given to documenting the evolution of the skill premium (defined as the ratio of the wages of skilled to unskilled workers) in the economies of Central and Eastern Europe, most likely due to the lack of readily available data. In this article, we first uncover the patterns of the skill premium for a subset of transition economies, and then we turn our focus to the case of Slovenia, where we highlight the negative correlation between the skill premium and international trade after 2000, when Slovenia's trade with its largest partner, the European Union (EU), increased and intensified. To conduct our analysis, we develop an applied general equilibrium model, and combining a Social Accounting Matrix, Household Budget Surveys, and the EU KLEMS Growth and Productivity Accounts database, we calibrate it to match the Slovenian data. We next perform a numerical experiment that consists of Slovenia joining the EU and quantify the impact of this trade integration process on the skill premium. We also conduct additional sensitivity experiments to quantify how our model's predictions vary with some of the model's parameters, including the role of sectoral productivity growth. We find that trade liberalization leads to a fall in the skill premium of roughly up to 4.5%. This implies that our model is able to account for approximately 46% of the actual decrease in the skill premium observed in Slovenia for our period of analysis. *Journal of Comparative Economics* **41** (2) (2013) 601–620. School of Economics, Australian School of Business, University of New South Wales, Sydney, NSW 2052, Australia; Bowdoin College, 9700 College Station, Brunswick, ME 04011, USA.

1. Introduction

Starting in the early 1990s, the countries in Central and Eastern Europe embarked on deep institutional transformations as they moved from centrally-planned systems to market-oriented economies. One of the most evident outcomes of this transition is their increasing interrelation with the rest of the continent. The culmination of this process is best illustrated by the accession of eight "transition" countries (Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Slovakia, and Slovenia) into the European Union as full members in May 2004.[1]

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  [1] Cyprus and Malta also joined the European Union in that year, Bulgaria and Romania joined in 2007.

This increased integration was clearly noticeable in the foreign sectors of these economies, as the new and old members[2] quickly intensified their trade relationships, with the old European Union members rapidly becoming the major trade partners of the new members. Foreign trade with the old members grew by around 81% between 1999 and 2007. It is logical to think that this rapid expansion in trade between old and new members is bound to produce significant and widespread impacts, with output, prices, wages and welfare all expected to be affected. Moreover, an important characteristic of liberalized trade is that it generates asymmetric effects, in that different people (or different factors of production or production sectors) are impacted in different magnitudes. In that sense, liberalized trade entails distributional effects, with some agents benefiting from their exposure to trade and others losing from it.

The patterns of poverty and income and wage inequality following trade liberalizations have been previously documented in the literature (see, for example Goldberg and Pavcnik, 2004 or Winters et al., 2004 for comprehensive surveys of findings). We contribute to the literature by analyzing the impact of liberalized trade on the returns to different types of skills. More specifically, we focus on the effects of trade integration on the skill premium, defined as the ratio of the wages of skilled workers to the wages of unskilled workers.

Documenting patterns of the skill premium in transition economies has been relatively neglected in the literature. A likely explanation for this omission is the lack of data availability, and in particular the scarcity of industrial surveys of wages disaggregated by skill levels. By using the EU KLEMS (European Union Capital, Labor, Energy, Materials and Services) Growth and Productivity Accounts, we contribute to the literature by indirectly calculating time series for the skill premium for a subset of the Eastern and Central European countries, and in doing so we uncover several relevant facts related to the evolution of the skill premium in these economies.

Among the new European Union members we specifically focus our study on the patterns of the skill premium in Slovenia. We consider Slovenia to be an ideal candidate for our analysis, since it is a small economy which is also very open in terms of international trade. More importantly, since the late 1990s Slovenia has become increasingly integrated within the European Union, with many new members among its main trade partners, both in terms of imports and exports. Given its exposure to the rest of the world, we expect the Slovenian economy to be significantly affected by trade liberalization. Cho and Díaz (2011), for example, conduct a welfare analysis of the distributional impact of trade liberalization on Slovenian household consumption, and find that Slovenian households were asymmetrically and sizably impacted by liberalized trade (their analysis, however, does not explicitly delve into the effects of trade on the skill premium). Finally, from a methodological point of view, given its features (small and very open), the Slovenian economy represents a clean example of the artificial economy we construct in our model described below.

Interestingly, we find that the skill premium in Slovenia, which had been roughly constant for most of the 1990s, started decreasing from the year 2000, and by 2005 it was approximately 10% lower than its value in 2000. We also find that this change in the pattern of the skill premium coincides with a noticeable increase in Slovenia's foreign trade, and in particular trade with the European Union economies. While total trade in Slovenia had been decreasing during the 1990s (possibly due to the disintegration of former Yugoslavia), it actually started growing at a high rate since the beginning of the 2000s.

A natural question then arises: are these two sets of facts related? In particular, we want to determine if the increase in foreign trade can be directly related to the decline in the skill premium in Slovenia, and if so, how far can a trade-based explanation go at accounting for this fact.

The transmission mechanism that we have in mind operates as follows.[3] First, trade liberalization leads to significant increases in both exports and imports, with exports increasing more than imports due to the higher pre-liberalization tariff rates imposed by the rest of the world.[4] Next, the increase in trade is coupled with an increase in final production in the non-services sectors, while final production decreases in the services sector. Finally, due to production rising in the non-services sectors and falling in the services sector, domestic resources shift from the services sector (which is intensive in skilled labor) towards non-services sectors (which are intensive in unskilled labor). This sectoral reallocation of resources and its implied changes in the patterns of production and trade is in line with the predictions of the Heckscher–Ohlin theorem, which in turn leads to a relative increase in the wages of unskilled workers (or a skill premium decline), which is the result of the Stolper–Samuelson theorem.

To address this question quantitatively, we construct a static multi-sector applied general equilibrium model (AGEM) which we calibrate to replicate the main facts that characterize the Slovenian economy. To calibrate our model, we use a variety of data sources, including a Social Accounting Matrix (SAM) which we construct using input–output tables as the main source of information, as well as data from the Slovenia Household Budget Surveys (HBSs) and, as previously mentioned, the EU KLEMS database.

Using the calibrated model, we perform a series of numerical experiments aimed at reproducing the increase in foreign trade that we observe in Slovenia. We are then able to trace the effect of this increase in trade on all the economy-wide variables, and in particular, we can determine the impact of trade on the skill premium.

Our benchmark experiment consists of the elimination of tariffs that both Slovenia and the European Union impose on their imports. With this policy change we aim to mimic the increased foreign trade Slovenia has experienced since the year

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[2] For the remainder of this paper, we call the pre-2004 accession countries (the so-called EU-15) the "old" members, and the countries that joined in 2004 and after, the "new" members.

[3] We thank an anonymous referee for helping us clarify this point.

[4] Exports of primary goods increase more than exports of light or heavy manufactures because of the initially higher tariffs in that sector, but the overall economy-wide impacts are driven by the latter sectors because of their larger relative contribution to total output.