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Labor market rigidities and R&D-based growth in the global economy

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Abstract

This paper constructs a dynamic model of trade between two countries, one with flexible wages (America) and another with a rigid wage for less-skilled workers (Europe). The model incorporates global R&D races that generate random switches in trade patterns. Furthermore, rigid wages in Europe give rise to unemployment in that region. Using the model, I study the role of international trade and labor market institutions in mediating local and global shocks. I also investigate the factors behind the stylized trends in Europe and the US: rising European unemployment, rising wage inequality (especially for the US), skill upgrading, and rising R&D intensities. I find that technology shocks coupled with institutional response from the European labor markets can generate results consistent with the trends.

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1. Introduction

Over the past three decades, there have been major changes in wage inequality and unemployment patterns in the advanced countries. In the US, between 1973 and

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1989, the wage premium of college graduates over high-school graduates has increased by 20 percentage points (Freeman and Katz, 1995, p. 34). The widened wage gap persisted in the 1990s with the exception of a modest narrowing in the late 90s. In Europe, on average, there has been a mild increase in the skill premium with some cross-country heterogeneity (see Freeman and Katz, 1995; Nickell and Bell, 1995). However, all European countries have experienced a secular and substantial increase in the rate of unemployment, mostly concentrated among the less-skilled workers. In 1973, the average rate of unemployment in OECD Europe was 2.21 percent. By 1995 it reached 9.32 percent and remained high since then.¹

In search of explanations, researchers have focused on two culprits: increased international trade and skill-biased technological change (henceforth SBTC) (see Bhagwati, 2002; Acemoglu, 2002 for recent overviews). Most economists have considered the issue using the perfect-competition-based Heckscher–Ohlin (H–O) model of trade. In this model, for increased trade to have an impact on relative wages, the Stolper–Samuelson mechanism must come into play. This mechanism implies that the prices of less-skilled labor-intensive goods must go down in order to generate a reduction in the relative wage of less-skilled labor. Moreover, according to the H–O model if trade is the main cause of the rising relative wage, then within each industry firms should substitute away from skilled labor towards less-skilled labor – the factor which becomes relatively cheaper. Nevertheless, there is no strong evidence that the prices of less-skilled intensive goods have been falling. Moreover, the relative employment of skilled workers within industries has risen in both the US and Europe.² As a result, many scholars have rejected the trade explanation in favor of SBTC.

However, there is an emerging literature that seriously challenges the above deduction by considering trade models based on monopolistic and oligopolistic market structures.³ Dinopoulos and Segerstrom (1999a) and Şener (2001) consider two-country endogenous growth models in which firms can exercise temporary monopoly power if successful in their R&D efforts. These models propose a Schumpeterian version of the Stolper–Samuelson mechanism which establishes a positive link between the relative price of innovation and the relative wage of skilled labor. Neary (2002a, b) constructs an oligopolistic general equilibrium model of trade in which higher levels of strategic investment by incumbent firms is associated with rising skill premium. In addition, Dinopoulos et al. (2001) construct a monopolistic competition model of intra-industry trade to study the effects of trade

¹To calculate the average (non-weighted) unemployment rate, I consider 15 OECD Europe countries: Austria, Belgium, Denmark, Finland, France, Germany, Ireland, Italy, Netherlands, Norway, Spain, Sweden, Switzerland, United Kingdom and Portugal. The data are from Nickell and Nunziata (2001).

²See Slaughter (2000) for a comprehensive overview of empirical studies on product price movements. See, among others, Berman et al. (1994, 1998), Machin and Van Reenen (1998) for evidence on SBTC.

³In particular, Neary (2002a) criticizes the exclusive focus on competitive general equilibrium models on the grounds that “it precludes any discussion of the impact of trade or technology shocks on mark-ups or profits.” In the same paper, Neary (2002a) also provides an overview of the arguments against the H–O-based explanations on wage inequality.

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