Journal of International Economics 86 (2012) 197–208

Contents lists available at SciVerse ScienceDirect

Journal of International Economics

journal homepage: www.elsevier.com/locate/jie

Trade liberalization and organizational change[☆]

Paola Conconi [a,c,*], Patrick Legros [a,c], Andrew F. Newman [b,c]

[a] Université Libre de Bruxelles (ECARES), Belgium
[b] Boston University, United States
[c] CEPR, United Kingdom

ARTICLE INFO

Article history:
Received 6 August 2010
Received in revised form 30 August 2011
Accepted 5 November 2011
Available online 19 November 2011

JEL classification:
D23
F13
F23

Keywords:
Theory of the firm
Incomplete contracts
Globalization

ABSTRACT

We embed a simple incomplete-contracts model of organization design in a standard two-country perfectly-competitive trade model to examine how the liberalization of product and factor markets affects the ownership structure of firms. In our model, managers decide whether or not to integrate their firms, trading off the pecuniary benefits of coordinating production decisions with the private benefits of operating in their preferred ways. The price of output is a crucial determinant of this choice, since it affects the size of the pecuniary benefits. Organizational choices also depend on the terms of trade in supplier markets, which affect the division of surplus between managers. We show that, even when firms do not relocate across countries, the price changes triggered by the liberalization of product markets can lead to changes in ownership structures within countries. The removal of barriers to factor mobility can also induce widespread restructuring, which can lead to increases in product prices (or declines in quality), hurting consumers worldwide.

1. Introduction

Recent decades have witnessed drastic reductions in barriers to commodity trade and factor mobility around the world. Whether the result of liberalization policies — exemplified by the proliferation of regional trade agreements and by successive rounds of multilateral trade negotiations — or falling transport costs, the transformation of economic life has been dramatic. There is ample evidence that the internationalization of product and factor markets has contributed significantly to widespread organizational restructuring, most notably in the large — mergers and outsourcing — but also in the small — changes in reporting structures or compensation schemes.[1] Yet the mechanisms by which changes in the global economy can effect changes in the organization of firms are not well understood. The aim of this paper is to study one such mechanism: liberalization of product and factor markets can alter firms' integration decisions via the induced changes in prices.

As with other papers in the recent literature on organizations in the international economy (e.g., McLaren, 2000; Grossman and Helpman, 2002; Antras, 2003), we depart from the traditional trade framework by opening the "black box" of the neoclassical firm. We start from a simple model of organizational design in which, as in Hart and Holmström (2010), a firm's integration decision governs the trade-off between the managerial "quiet life" and the coordination of its production activities. As shown by Legros and Newman (2009), this choice depends on two key variables: the price at

☆ We thank for their comments Pol Antras, Gordon Hanson, Kala Krishna, Emanuel Ornelas, Shang-Jin Wei, and seminar participants at Boston University, Penn State University, the NBER International Trade and Organizations Working Group meeting, the LdA Conference on Outsourcing and Migration, the Harvard/MIT Economic Growth and Development Workshop, and the MWIEG Fall meeting at OSU. We thank Harald Fadinger for excellent research assistance. Research funding from the FNRS and the European Commission is gratefully acknowledged by Paola Conconi.

* Corresponding author.
E-mail address: pconconi@ulb.ac.be (P. Conconi).

[1] For example, the restructuring of US automakers' relations with their suppliers in the 1980s has been attributed largely to increased competition from Japanese imports and to some extent to the entry of foreign manufacturers into US supplier markets (Dyer, 1996). Various studies have also found that the creation of regional trade agreements leads to organizational restructuring activities within as well as across member countries (e.g., Breinlich (2008) and Guadalupe and Wulf (2010) on the Canada–United States Free Trade Agreement; European Commission (1996) on the EU Single Market; Chudnovsky (2000) on the Mercosur customs union in Latin America). Other studies have stressed the impact of trade liberalization on the reallocation of resources across individual plants and firms (e.g., Pavcnik, 2002; Trefler, 2004) or in work practices (Schmitz, 2005).

0022-1996/$ – see front matter
doi:10.1016/j.jinteco.2011.11.002

which the firm's product is sold, and the terms of trade prevailing in its supplier market. We embed this model of the firm in a perfectly competitive, specific-factor model of international trade, in which trade between countries results from differences in their factor endowments. The only significant departure from the standard framework is that the factors of production are supplier firms that are run by managers. The model provides a tractable analytical framework in which the effects of falling trade barriers on organization can be grasped by simple demand and supply analysis.

Intuitively, there are good reasons to believe that trade liberalization ought to have an impact on the internal organization of firms. In general, organizational design mediates trade-offs between organizational goals, such as profit, and private, non-contractible ones such as managerial effort or vision. For instance, a downstream firm may vertically integrate with its supplier because this forces better production coordination; this reorganization is not costless, since there may be revenue losses due to inexpert decision-making by non-specialists who take control of the upstream operations. Integration may be most valuable when profitability is too low to attract upstream and downstream managers away from indulging their private interests. Since profits depend on product price, changes in product markets (such as tariff reductions) affect the terms of this trade-off and therefore lead to changes in the degree of integration. Similarly, the amount of profit that needs to be sacrificed by the firm as a whole in order to accommodate the private benefits of its stakeholders will be affected by supplier; if these change (as when capital is allowed to cross borders), so will organizational structure.

The basic "building block" model of organizational design we use to formalize this intuition is one in which production requires the cooperation of two types of suppliers that can either integrate or deal at arm's length (non-integration). The production technology essentially involves the (non-contractible) adoption of standards: output (or, in an alternate interpretation, the likelihood that the good produced will actually work) is highest when the two suppliers coordinate, i.e., adopt similar decisions about their production standards. However, managers have opposing preferences — derived perhaps from the differing protocols and capabilities of their respective workforces — about the direction those decisions ought to go, and find it costly to accommodate the other's approach.[2] Under non-integration, managers make their decisions separately, and this may lead to inefficient production. Integration solves this problem by delegating the decision rights to an additional party, called headquarters (HQ), who is motivated solely by monetary concerns. HQ therefore maximizes the enterprise's profit by enforcing common standards between suppliers. However, HQ's will tend to undervalue managerial private benefits. Non-integration is thus associated with high private benefits and low coordination, integration with high coordination and high private costs. Organizational design depends on how much managers value the extra output generated by integration.[3]

In this setting, the price of output is a crucial determinant of firms' organizational choices. In particular, non-integration is chosen at "low" prices: managers do not value the increase in output brought by integration, since they are not compensated sufficiently for the high costs they have to bear. Therefore, integration only occurs at higher prices.

The ownership structure of firms will also be affected by the terms of trade in the supplier markets, which determine the division of surplus between managers. The performance of non-integration depends sensitively on how profits are shared: both managers must receive substantial shares in order to be willing to forgo the "quiet life" in favor of organizational objectives; unequal shares result in low performance. By contrast, integration is more flexible in its ability to distribute surplus between suppliers — since they do not make decisions, the profit shares they receive have no incentive effects — and will therefore tend to be adopted when the supplier market strongly favors one side or the other.

We consider the effects of the successive liberalization of product and factor markets and obtain two main results. First, even when supplier firms do not relocate across countries, freeing trade in goods triggers price changes that can lead to significant changes in ownership structures within countries (waves of mergers and divestitures). Second, following the liberalization of product markets, the removal of barriers to factor mobility can induce further organizational changes, by affecting terms of trade in supplier markets. In Home (the country with the more productive suppliers), restructuring will entail a shift toward integration, while Foreign firms will shift toward outsourcing.[4]

We also show that factor market liberalization can lead to increases in product prices (or decreases in their quality). The intuition for this result is that, by inducing foreign exporting firms to shift toward non-integration — the less efficient ownership structure — factor mobility can lead to a reduction in world supply.[5] Reorganization has thus implications for consumer welfare. In principle, price increases/quality losses may occur in many markets simultaneously, offsetting the normal benefits of factor market liberalization, possibly hurting consumers in all countries.

Our paper contributes to an emerging literature on general equilibrium models with endogenous organizations,[6] and in particular to a recent stream of this literature which has examined firms' organizational choices in a global economy.[7] Most papers have focused on how organizational design can explain the observed patterns of intra-firm trade. Much less attention has been devoted to how firms' boundaries respond to falling trade costs.[8] Nor to our knowledge has the previous literature pointed out the potential negative effects that trade liberalization can have on consumer welfare —

[2] As noted above, the view of the firm follows Hart and Holmström (2010); the model is a multi-sector, multi-country variant of the one in Legros and Newman (2009). These papers are part of a literature pioneered by Grossman and Hart (1986) and Hart and Moore (1990) that identifies a firm's boundaries with the extent of decision rights over assets and/or operations.

[3] Thus our model is consistent with the classic view of integration as the result of a tradeoff between specialization and coordination. But it also reflects the perspective expressed by Grossman and Hart (1986) that integration does not so much remove incentive problems as replace one incentive problem with another. The costs of integration are therefore unlikely to be fixed and will depend instead on prices, the level of output, etc.

[4] These predictions of our model about the organizational effects of trade liberalization are consistent with the findings of recent empirical studies (Breinlich, 2008; Alfaro et al., 2011).

[5] This finding is in line with evidence of supply disruptions and quality losses often attributed to firms switching from integration to non-integration. See, for example, the safety problems associated with American-designed toys produced by Chinese contractors and sub-contractors (see "Mattel Recalls 19 Million Toys Sent From China," *New York Times*, August 15, 2007) or customers' frustration with the outsourcing of call centers (see "Please Stay on the Line," *Wall Street Journal*, March 24, 2009).

[6] General equilibrium models of an industry have been used to describe how firms' organizational choices are affected by wealth distributions and relative scarcities of supplier types (Legros and Newman, 1996, 2009) and search costs (McLaren, 2000; Grossman and Helpman, 2002).

[7] Antras (2003) embeds a hold-up model of organization in a two-country international trade model with monopolistic competition, and is mostly concerned with explaining location decisions of multinational firms and the patterns of intra-firm trade; it does not examine organizational responses to the liberalization of product and factor markets, which is our focus. Antras and Helpman (2004) and Grossman and Helpman (2004) study models in which firms choose their modes of organization and the location of their subsidiaries or suppliers; however there is no analysis of either the positive or welfare effects of product and factor market integration. Puga and Trefler (2010) explore the links between contractual incompleteness and product cycles, showing that minor or incremental innovations can be important drivers of growth, particularly in emerging economies.

[8] An exception is Marin and Verdier (2002), which examines how trade integration affects the delegation of authority within monopolistically competitive firms in which managers cannot be given monetary incentives. Ornelas and Turner (2008, 2010) and Antras and Staiger (2008) examine how trade liberalization may mitigate hold-up problems by strengthening a foreign supplier's investment incentives.