

Firms in International Trade: Trade Policy Implications of the *New New* Trade Theory

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Abstract

This paper explores the implications of recent developments in firm-based trade theory and empirics for trade policy and negotiations. While traditional trade theory focused on the country, and the new trade theory of the 1980s adopted the industry as the unit for analysis, the newest theory emphasizes the role of firms and firm heterogeneity in international trade. We describe insights from this reformulation of theory and the empirical literature that illuminates it. The realities of trade as now understood show the need for a *new new* trade policy. Evaluating trade at the level of the firm implies that overcoming firm-level fixed costs of trade and reducing uncertainty lead to increased trade along margins that generate the highest productivity, innovation and welfare gains. The traditional market access agenda ought now to be less important on the multilateral agenda than services, standards, trade facilitation, procurement and innovation policy. The analytical needs of a *new new* trade policy require new models and more access to firm-level data to formulate and evaluate the multifaceted impacts of trade policy.

Policy Implications

- Heterogeneous firm models allow trade negotiators to evaluate the impact of policy on the potential expansion of trade in products that previously were not traded, the diversification of exported products into new markets and the entry of new trading firms.
- New models support the importance trade negotiators now attach to lowering the domestic regulatory obstacles that restrict market access for firms.
- Negotiators need access to quantitative studies on how individual firms (traders, nontraders and potential traders) will be affected by changes in policy.

When national competitiveness is invoked as a policy objective, trade experts often retort that countries do not trade, firms do. This focus on the importance of the firm in international trade is consistent with recent developments in trade theory and helps to explain observed

trends in the agenda for trade negotiations. In this paper we provide an overview of recent developments in trade theory and empirics. We discuss the implications of these recent developments for trade policy and negotiations. This conceptual review is primarily directed toward trade

policy practitioners who are interested in the theoretical basis for the increasing trend toward considering the role of firms in trade policy and to readers familiar with the heterogeneous firm trade literature who are interested in policy implications.

Traditional trade theory argues that countries gain from exporting goods and services that they are relatively good at producing while importing goods and services that other countries are relatively good at producing, but this theory does not fully explain observed trade patterns. Recognizing the anomalies in actual trade patterns, the 'new trade theory' of the 1980s focused on industries rather than countries as the basic unit of trade, leading Paul Krugman to suggest the need for a 'new trade policy' (Krugman, 1992). Recent work on what some call the 'new new trade theory' focuses on the trading activities of individual firms and makes tight links between trade, innovation and productivity. In this firm-based approach, trade still plays an important role in a country's growth and prosperity, but our understanding of the complex mechanisms through which trade has positive and normative impacts has changed.

The primary elements of this new framework for analyzing trade – firms that differ in productivity, fixed and variable costs of trade, varied margins of firm-level adjustments, economies of scale, imperfect competition – had been discussed by researchers and policy makers for many years before the ideas were formalized in the seminal theoretical model of Melitz (2003). That work, and other theoretical and empirical research, clarifies mechanisms and issues that could not be addressed in previous models of trade. We do not attempt to review the vast literature on 'Melitz style models', though we do offer a guide to key articles. We primarily draw attention to the policy implications of economic models of trade based on heterogeneous firm theory. Given that heterogeneity exists at many levels, models help us make sense of the complexity we observe, and ought to allow causal predictions about how trade flows will respond to policy changes. Hence, in light of the new models, Krugman's question must be asked again: does the *new new trade theory* warrant a *new new trade policy*? We argue in the affirmative.

Several policy implications emerge from this recent firm-level approach to the analysis of trade. In addition to the effects on existing trade flows, trade negotiators should evaluate the impact of policy on the potential expansion of trade in products that previously were not traded, the diversification of exported products into new markets, and the entry of new trading firms. The recent emphasis on the role of fixed costs that limit firms' access to foreign markets, and the positive links between this access and aggregate productivity growth, supports the importance trade negotiators now attach to lowering the regulatory obstacles that restrict market access for firms.

Given the product and process innovation that is closely associated with entry into trade, these policies should be coordinated with industrial and innovation policies. An essential objective in lowering the fixed costs of entry into trade is making it easier for firms to understand the regulations that govern new products and new markets. Recognizing the importance of firm heterogeneity also implies that trade negotiators need access to quantitative studies based on firm and industry-level data analysis that provide information on how individual firms will be affected by changes in policy. Such disaggregated data and a value-added approach to measuring trade flows is essential for quantitative assessments of the impact of trade liberalization policies on firm, industry and economy-level employment, output and productivity.

This paper does not address concerns about policy space, or how trade policy can conflict with other policy objectives. We show how new economic models let us see well-established aspects of trade in a clearer light, and then draw some policy implications. This parsimonious ambition for our conceptual review means that we do not attend to other literatures at the nexus of trade theory and policy, notably literatures on how the preferences of multinational firms affect political and regulatory outcomes.

Section 1 of this paper briefly discusses the evolution of trade theory. Section 2 describes some of the empirical and theoretical developments in the newest trade literature while Section 3 discusses several general policy implications emanating from this approach. Section 4 examines the implications of the issues raised in the previous two sections for relationships between governments and firms. In Section 5 we stress the need for improved access to, and analysis of, firm-level data for providing a more complete understanding of the formulation and impact of trade policy.

1. The evolution of trade theory

Traditional trade theory, based on comparative advantage, adopts the country as its basic unit for analysis. Countries trade because they differ in their technologies and/or their relative supplies of factors. The greater these differences, the greater the volume of trade. The theory also predicts that trade will be across industries, increased trade will result in both increased production specialization within countries and in decreased income inequality across countries. A general policy implication is that national welfare will increase through the mutual specialization induced by the dismantling of trade barriers.

This approach, however, does not fully explain observed trade patterns and the impact of trade liberalization measures. A great deal of actual trade is within industries and between countries that are fairly similar in

their factor supplies and technological level; liberalizing countries frequently diversify their production; and increased trade is often accompanied by increased cross-country inequality.

The 'new trade theory' developed in the 1980s focused on industries as the unit of analysis and provided explanations for some of these observations. Many models in this literature incorporated increasing returns in production and monopolistic competition among firms using identical production technologies (Helpman and Krugman, 1985). This new approach strengthened the case for trade liberalization by pointing to additional sources of gains: a rise in efficiency resulting from increased scale of production and welfare gains for consumers from access to increased product variety and possibly from decreases in mark-ups of prices over marginal cost. Some papers suggested a role for 'strategic trade policy' with targeted subsidies for particular export industries to exploit increasing returns and to shift profits from foreign firms toward domestic firms. But some predictions of the new trade theory were still inconsistent with some features of trade data. Exporting industries typically do not export to all countries and import-competing industries sometimes experience efficiency gains following trade liberalization, despite a smaller scale of production.

The next major development in trade theory, the 'new new trade theory' introduced in the early 2000s, shifted the unit of analysis from industries to firms. These models share many of the features of the monopolistic competition models in the 'new trade theory' of the 1980s but introduce differences in firms' characteristics within industries, especially with regard to productivity. In this environment, increased trade forces the least efficient firms out of the market and generates within industry reallocations of resources from low productivity to high productivity firms. These models also shed light on firm-level innovation responses to trade liberalization and spillovers from interactions in foreign markets. In the next section we briefly elaborate on empirical and theoretical developments in this research.

2. Trade according to the new new trade empirics and theory

The structure of the newest theoretical models of trade that focus on firm-level analysis is motivated by observations emerging from empirical studies of the international activities of firms that use firm and plant-level data from a wide set of countries. In this section, we first briefly describe some of those key facts and provide references to relevant papers. We then describe a baseline model of trade based on firm heterogeneity to clarify the insights that have arisen from the new developments in

trade theory, and we close by discussing extensions to the basic model.

Empirics of firm heterogeneity and trade

First, not all firms in an industry export or use imported inputs. While the actual frequency varies by country, among firms that do engage in trade, exporters often export only a small portion of their output and imported inputs often account for only a small share of firms' inputs (Bernard and Jensen, 1995).

Second, firms that export, firms that use imported inputs, and firms that engage in foreign direct investment tend to be larger, more productive, relatively more capital and skilled labour-intensive, and pay higher wages than firms that do not participate in international markets. Furthermore, firms entering export markets tend to grow faster than nonexporters (Bernard et al., 2003; Bernard, Jensen and Schott, 2009; Eaton, Kortum and Kramarz, 2011; Kasahara and Lapham, 2013).

Third, firms' and industries' international activities exhibit volatility over time. In particular, the magnitude of existing trade flows by incumbent firms fluctuates. These quantity adjustments are labelled as 'intensive margin' responses. In addition, industries exhibit firm entry into and exit from export and import markets and fluctuations in the composition and destination of exported products. Such adjustments in the type and number of firms, products and markets are labelled as 'extensive margin' responses (Bernard et al., 2012; Eaton, Kortum, and Kramarz, 2011; Kasahara and Lapham, 2013).

Fourth, empirical studies of actual trade liberalizations provide evidence that the aggregate productivity increases following trade reform are primarily a result of within-industry reallocations of resources rather than across-industry reallocations (Bernard, Jensen and Schott, 2006; Fernandes, 2007; Khandelwal and Topalova, 2011; Trefler, 2004).

Fifth, firms' technology adoption choices are linked to their decisions regarding participation in trading activities. Firms entering export markets tend to adopt newer, mass production technologies. Further, spillover effects at the firm level from engaging in international activities include import-related and export-related learning effects (Aw, Roberts, and Xu, 2011; Baldwin and Gu, 2003; Bernard, Redding and Schott, 2011; Bustos, 2011; De Loeker, 2007; Keller, 2004; Lileeva and Trefler, 2010).

A baseline model of firm heterogeneity and trade

We now describe the key features of a seminal model of firm heterogeneity and trade formalized by Melitz (2003). We first explain the basic mechanisms at work that dic-

tate the adjustments in a country following a trade liberalization initiative.

On the production side, there is a single industry with many firms. The firms use heterogeneous increasing-returns-to-scale technologies and sell differentiated goods under monopolistic competition. On the demand side, there are consumers whose welfare is increasing in the quantity and variety of goods they consume and who earn income from supplying their labour. The trading environment is characterized by fixed and variable costs of trade.

Only a fraction of firms in an industry will sell to foreign consumers as well as to consumers in their own country. Indeed, only the most productive firms will choose to be an exporter. These firms will also tend to be the largest firms in their industry, a result that emerges from increasing returns in production. Also, because the number of active firms and the fraction of those firms that are exporters are endogenous, those variables will fluctuate with shocks to the economy. These characteristics of the theoretical economy are consistent with the first three facts emanating from firm-level empirical analysis described above.

Now consider the effects of a trade liberalization initiative that expands the trading opportunities for a country, such as an increase in the number of the country's trading partners, or a decrease in the variable or fixed costs of exporting. The larger market leads to an increase in the number of firms that export. Those firms, as well as the previously exporting firms, expand their production, putting upward pressure on the real wage, and making it no longer profitable for the least productive firms to operate. Firms with intermediate levels of productivity – high enough to survive but not high enough to export – continue to produce but contract. This exit and contraction shifts labour from the least efficient firms toward the most efficient firms, generating an increase in average industry productivity. These mechanisms are consistent with the impact of observed trade liberalization as described above.

We stress the important role in this approach of fixed costs of trade. Examples of such costs include the expenditures that firms must undertake to obtain foreign market intelligence, address foreign regulatory requirements, set up distribution networks in export markets, and so forth. The presence of these fixed and sunk costs implies that there will be significant differences in responses of firms to trade liberalization in regard to operations and participation in international markets. Thus, the model predicts significant extensive margin responses in addition to the intensive margin responses present in the older models of trade.

These models can be used to explore the normative effects of trade liberalization. The increase in the real wage associated with the rise in productivity, and the

increased variety of goods available to consumers, lead to a rise in national and individual welfare under conventional assumptions. The emphasis on firm and consumer-level analysis in the new research provides a better understanding of the complex margins along which a country adjusts to changes in the trading environment, which is essential for evaluating the overall and individual welfare effects of trade policy.

Other models of firm heterogeneity and trade

We now briefly describe some extensions of this baseline model of trade with heterogeneous firms. Readers interested in a review of theoretical developments in models of firm heterogeneity and trade should see Greenaway and Kneller (2007), Helpman (2006), Melitz and Redding (2014), Melitz and Trefler (2012) and Redding (2011).

Other papers have explored the implications of firm heterogeneity for international market activities beyond exporting, such as foreign direct investment, imported inputs and global value chains (Antràs and Helpman, 2004, 2008; Grossman and Rossi-Hansberg, 2008; Helpman, Melitz, and Yeaple, 2004; Kasahara and Lapham, 2013; and Ma, Van Assche and Hong 2009). Another tranche of the literature explores the links between firms' international activities and their innovation activities: see, for example, Atkeson and Burstein (2010), Baldwin and Yan (2010), Bustos (2007), Constantini and Melitz (2008), Ederington and McCalman (2008) and Yeaple (2005).

Other open economy models with heterogeneous firms introduce labour market frictions to explore the linkages between trade, unemployment and wage inequality. Many papers predict that more productive firms will pay higher wages and employ more highly skilled workers, consistent with empirical findings, and that a fall in trade costs will reduce inequality and unemployment when trade costs are low but will raise these variables when costs are high (Amiti and Davis, 2012; Davis and Harrigan, 2011; Helpman and Itskhoki, 2010; and Helpman, Itskhoki and Redding, 2013).

To summarize, modern models of international trade place emphasis on the important roles of firm-level differences and firm-level sunk and fixed costs of participating in international markets. These models highlight the reallocation of resources across firms in response to changes in the trading environment and the associated changes in aggregate productivity and in the innovation activity of firms. The models also provide a framework for a micro-level analysis of the aggregate and individual welfare effects of trade liberalization. The complexity of these models implies that policy has the potential to impact firm entry and exit, the intensive and extensive margins of firms' international activities, the manner in which firms organize their production, firms' innovation decisions, the degree of product variety available to con-

sumers, unemployment, etc. Some theoretical papers have examined the formulation and the effects of specific trade policies in models with firm-level heterogeneity, including Abel-Koch (2013), Das, Roberts and Tybout (2007) and Demidova and Rodriguez-Clare (2009) but this area is in need of further research. In the next section, we focus the discussion on some of the implications emanating from this new firm-level approach to trade analysis that are particularly relevant for trade policy practitioners.

3. Towards a new new trade policy

The emphasis in the *new new* trade theory on firm-level heterogeneity, the importance of fixed costs of participating in international markets, and the increasing complexity of global strategies of firms does not change the basic message of trade theory regarding the existence of gains from international trade. Indeed, the newest theory suggests that these gains are potentially larger than previously thought but the trade policy implications are different. Understanding these realities requires adjusting the usual conceptual models that trade negotiators use in identifying their offensive and defensive interests and in evaluating the impact of new agreements. Note that we refer to 'trade policy' as *any* government action that alters the flow of goods and services across international borders. Hence, trade policy includes both measures imposed at the border, such as tariffs and import quotas, *and* regulatory policies, such as standards, competition policy, innovation and investment policies, and intellectual property rights. Many trade policy analysts are aware of the new firm-level models, and new issues are emerging on the agenda of various trade negotiations. The contribution of this section is to construct a systematic overview of the basis for the emerging *new new* trade policy.

The importance of extensive margin responses

Trade negotiators typically focus on existing products imported from and exported to current markets. While increasing access to existing markets (the intensive margin) through traditional market access negotiations remains important, the *new new* trade theory and empirical evidence indicate that trade liberalization is also likely to lead to a diversification of exports and imports across products and markets (the extensive margin). In *new new* trade policy, therefore, more focus should be placed on new firms entering export and import markets, on incumbent exporters' introduction of new products into existing markets, and on the diversification of their exports into new markets. If changes along these extensive margins, the rise in imports of new varieties, and the increased use of global value chains are responsible for increases in productivity growth, it may be more impor-

tant to put negotiating resources towards markets where access is limited now, rather than aiming at marginal improvements in existing markets.

Some trade theorists argue that when countries' tariff levels are bound at low levels by trade agreements, governments in those countries may use domestic taxes, subsidies and regulation to restrict market access (Antràs and Staiger, 2012a, 2012b; Blanchard, 2010). The World Trade Organization (WTO) may need to focus, therefore, on domestic policies that limit extensive margin responses by firms to the lowering of explicit trade barriers. Given the uncertainties that potential exporters and importers face, an intriguing possibility is that an important role of the WTO is to resolve uncertainty in the mind of potential traders regarding the evolution of policies that affect market access (Dutt, Mihov and Van Zandt, 2011).

From the perspective of reducing uncertainty, squeezing the water between bound and applied tariff rates matters more than cutting applied rates, either in the WTO or in a regional trade agreement (Handley, 2011; Handley and Limão, 2012). Of course firms are happier still if the bound tariff at the conclusion of a negotiation is lower than the applied tariff they faced at the outset. Moreover reducing one's own import tariffs, especially on intermediates, matters for firm participation in global value chains (Baldwin and Venables, 2013). When firms are part of tightly linked global supply chains that pay little attention to borders, measures that restrict imported inputs can act to harm a country's exports. Detailed analysis of policy responses to the financial crisis in seven developing countries shows the power of this new reality of vertical specialization to affect trade policy (Gawande, Hoekman and Cui, 2011). Indeed this new reality may even be leading to a drop in firm demands for antidumping investigations (Jensen, Quinn and Weymouth, 2014).

The original General Agreement on Tariffs and Trade (GATT) rules on dumping and countervailing duties fit with the trade theories of the 1980s, where analysis of an industry could be based on the 'representative firm' hypothesis. Under the WTO Agreement on Subsidies and Countervailing Measures only a sample of exporters are investigated in a countervailing duty case. Under the antidumping agreement, authorities in an importing country may choose to investigate a sample of firms in the exporting country, but then apply any resulting duties to all exporting firms. Mavroidis and Sapir (2008) argue that the agreement muddles whether it is countries or individual firms that are responsible for dumping and that a revision of the agreement is needed. Firms trade, not industries, and firms differ in their characteristics and in their trading behaviour both as domestic producers supposedly injured by dumping and as exporters allegedly engaging in anticompetitive pricing. While the best revision of the antidumping rules might be abolition

(Collins-Williams, 2009), the insights of the newest trade theories suggest some change is needed to reflect the realities of the contemporary trading system.

Most of the empirical facts described in Section 2 above are primarily based on trade in goods rather than in services, but services trade is rapidly increasing. Services were important in the Doha Round of negotiations in the WTO, but progress was slow, perhaps in part because negotiators do not fully appreciate that manufacturing firms depend on access to imports of services and are producers of services as part of or accompanying their products. If manufacturing firms are consulted when developing strategy for services negotiations, they are likely to stress the importance of temporary visas for their experts (Mode 4 in the jargon) and may increasingly stress the need to address restrictions on moving customer data across borders (Kommerskollegium, 2012). The current approach to services negotiations multilaterally and regionally has proved insufficient to overcome the diverse regulatory and political interests at stake that are lumped together to suit the convenience of trade negotiators (Hoekman and Mattoo, 2013).

In summary, to evaluate the gains from trade liberalization, trade negotiators must look beyond the expansion of existing trade flows. They should evaluate the potential expansion of imports and exports of goods and services that previously were not sold internationally, diversification into new markets, the entry of firms into importing and exporting, and changes in the international components of firms' production structures.

The importance of addressing policy-related fixed and sunk costs of trade

The presence of significant fixed and sunk costs of exporting, importing, outsourcing and foreign direct investment changes the traditional market access agenda. If firms must commit significant resources to enter and sustain a presence in foreign markets, then the uncertainties inherent in the international arena loom large. Firms that participate in international markets face greater uncertainties about success abroad than at home. They may have less knowledge than local firms in foreign markets and face additional risks from fluctuations in real and nominal exchange rates. If market entry costs deter firms from entering export and import markets, they also have negative impacts on technology choice, productivity and the dynamism of firms.

When products are 'made in the world' many types of regulatory differences can significantly increase the costs that firms must incur in international markets. Barriers between third countries, including various nontariff measures (NTMs), such as certification of conformance with product safety standards and licensing requirements, can be just as important as barriers put in place by direct

partners. The impact of NTMs on international trade may exceed that of tariffs (WTO, 2012c). Consider, for example, the challenges foreign firms face in China. The creation of the China Compulsory Certification (CCC) simplified and unified previous certification systems (WTO, 2012b), but full information on regulations is often unavailable, or available only in Chinese, and foreign assessment and certification bodies are not accredited (WTO, 2012a).

A related fixed trade cost facing firms is associated with learning what the relevant standards are in a foreign market. Some standards are global but others are developed by a host of national standards bodies. In both cases, firms benefit from being able to participate in the development of standards, but national systems of standard-setting differ in their capacity to aggregate national preferences up to international organizations, and to diffuse information about new standards back to firms. Larger, more productive firms are better able to incur the costs of adapting to relevant standards and may even participate in their development. Smaller firms must inherently be standard-takers and often face significant adjustment costs when standards change in foreign markets.

When the fixed costs of exporting are high but tariffs are low, firms can also be hurt by the expensive procedures for getting products across borders. Thus, trade facilitation assumes increased importance (Taylor and Wilson, 2011; Moisé and Bris, 2013), especially at the extensive margin (Persson, 2013), with potential trade cost reductions as high as 16 per cent for some developing countries (OECD, WTO and UNCTAD, 2013). Similarly, customs cooperation is increasingly important from a firm-centered global value chain perspective. The harmonized tariff system is not harmonized enough, since every country has different classification methods below a certain level of product detail. Furthermore, different rules on transfer prices and preferential rules of origin compound the difficulties firms face in global markets (Keck and Lendle, 2012). In addition, minor border frictions can be significant barriers for the Internet-enabled trade of micro firms (Melin, 2013).

The dynamic models of firm-based trade theory take explicit account of the ongoing need for firms to make investments in new technologies, products and markets under uncertainty. For firms, the outcomes of these investments can represent the difference between sustained or expanded presence in markets and exit from the markets. For countries, innovation outcomes at the firm level can change their apparent comparative advantage. But just as innovation is important to trade success, entry into export markets can drive firms to innovate. Hence, there are strong and dynamic linkages among trade policy, investment policy and innovation policy.

The *new new* trade literature suggests that innovation activities are not evenly distributed across firms; they are concentrated in firms that tend to be large and multinational. The home bias in research and development activities in multinational firms tends to concentrate innovation in the countries that are the main sources for outward foreign direct investment. Since the failure of attempts to bring investment into the WTO at the Cancún WTO ministerial in 2003, negotiation of bilateral investment agreements has proliferated. These agreements focus more on the treatment of established investors in developing countries and less on barriers to entry for new investors between developed and developing countries alike. The *new new* trade literature suggests that this myopia may be misguided.

In summary, the *new new* trade theory highlights the positive links between aggregate productivity growth and firms' access to foreign markets through exporting, importing, foreign direct investment and global supply chains. To encourage firms to diversify across markets and to allow them to capitalize on the rapid rise of complex global supply chains, compatible and transparent regulation along the production chain is essential. Trade policy has a role in creating an enabling framework for the global strategies of firms, although balancing the objective of lower regulatory obstacles for firms with legitimate domestic policy concerns is not easy.

A need for *new new* trade institutions

The newest ways of thinking about trade have implications regarding the feasible and optimal structure of trade institutions. Firms were once thought to operate largely within one country, subject to the regulatory control of the state. The explosive growth of trade, of the multinational firm, and of global value chains has created a situation in which the activities and boundaries of firms extend far behind the border, suggesting that the domain of trade institutions should do so as well. The new reality was not well-addressed in the Doha Round agenda, not least because of its origins in the Uruguay Round 'built-in agenda' based on older theoretical models.

Multilateral trade agreements are still good for trade, the scepticism provoked by Rose (2004) notwithstanding, and they are especially useful at the extensive margin (Kim, 2011; Felbermayr and Kohler, 2006, 2010; Dutt, Mihov and Van Zandt, 2011). Recent empirical studies suggest that the impact of the WTO for a newly acceded Member is almost exclusively on the extensive margin of trade. Conversely, some evidence suggests that new preferential agreements may lead to a reduction in the extensive margin in absolute terms (Dutt, Mihov and Van Zandt, 2011). Past GATT/WTO agreements may well have been intended to limit the manipulation of the terms of

trade (Bagwell and Staiger, 2011; Antràs and Staiger, 2012a), but when tariffs matter less than rules for firms, we need a richer understanding of what the WTO can do.

An emerging body of literature conjectures theoretically, and seeks to demonstrate empirically that greater transparency improves trade flows (Helble, Shepherd and Wilson, 2009), perhaps by reducing fixed or sunk costs and policy uncertainty (van Tongeren, 2009; Handley and Limão, 2012). Transparency matters for small firms and for firms without access to private information about foreign markets. Knowing the rules of an agreement is no longer enough; governments and firms need to know how those rules are being implemented in other markets, and they need ways to try to influence that implementation quickly. The WTO generally has much stronger notification and surveillance mechanisms than any regional agreement (save the EU), but more can be done to make it easier for firms to use online sources of data on the trade policy of members (Wolfe, 2013).

We cannot summarize the vast literature on WTO dispute settlement, but we note here that one scholar explicitly uses heterogeneous firm theory to construct his explanation of how it works. Bown (2009) calls the WTO 'self-enforcing' because members and their firms have to do it themselves; the international organization only provides information and a forum. Firms must assess the economic costs of the foreign restriction, convince their own government to launch a WTO dispute, help prepare the legal case, and help motivate policy change if the dispute succeeds (Bown, 2009). It follows that only large firms can rely on dispute settlement to enforce market access, increasing the role for governments in using surveillance mechanisms to ensure that their trading partners are accountable for meeting their obligations (Wolfe, 2014).

Members of existing trade institutions are adapting slowly to the need to think in terms of firms, not industries or countries. The proliferation of mega-regional trade negotiations notwithstanding, multilateral negotiations must take on increased importance as those agreements tend to produce standards that are more uniform across markets. Also, multilateral standards are less likely to be discriminatory. Despite claims to be tackling 21st century trade issues in the mega-regionals, we see no reason why such issues must necessarily be addressed in preferential negotiations. Indeed such negotiations rarely make much substantive progress in areas not covered in the WTO (Hoekman, 2014).

4. Implications for understanding the political economy of trade policy

Trade policy still begins at home: negotiators cannot know their objectives without talking to economic actors, but knowing who to talk to is now more complicated.

The focus on heterogeneous firms as the key participants in international markets helps us to understand why negotiators face new challenges in evaluating their country's commercial interests. The usual story has been that, at the economy-wide level, overall welfare gains from trade liberalization allow winners to compensate losers at least implicitly – hence the logic of the WTO Single Undertaking. We have always understood, however, that this economic logic faces political difficulties. The *new new* trade theory implies that the differential gains *within* industries complicate the picture even further. Import-competing industries that will shrink as a result of liberalization will nonetheless likely have firms that become winners.

Standard explanations of trade policy preferences in the political science literature are based on the assumption that individuals care about self-interest, not national welfare, and that they know how to evaluate the effect of policies on their income (Scheve and Slaughter, 2001). Basing themselves on either Heckscher-Ohlin or Ricardo-Viner models, the two approaches to disaggregating society on the basis of interests assume that individuals will be motivated either by their skills and education or by the industry in which they are employed. The newest firm-based approaches suggest that it is reasonable to ask whether heterogeneity in public opinion about trade might be due to heterogeneity in where people work.

Similarly, scholars have long understood that explaining the policy preferences of firms, and hence their lobbying activity, requires understanding something about whether they are import-competing or export-dependent. The trade theory and empirics of the 1980s focused on intra-firm trade and found its counterpart in research showing that multinational firms were less protectionist than might otherwise be expected (Milner, 1988). One might assume that large multinationals would lobby for further liberalization today, but some research suggests that firms that benefit from market segmentation might lobby against regulatory harmonization (WTO, 2013).

Negotiators also face obstacles finding vocal support to counter vocal opposition to new agreements. The *new new* theory suggests that mobilizing industry associations in support of negotiations will be difficult as they will be conflicted because they represent both winners and losers. The traditional solution has been first to research the net benefit to consumers of bilateral/multilateral trade liberalization and then, second, to undertake economic studies of the impact on key industries. The *new new* trade approach implies that this second step may be dated.

5. Firm-level data issues

The latest developments in trade theory were driven in part by the increased availability of firm-level data. But

application and tests of the ideas of the *new new* trade theory to real world policy problems requires more extensive micro data sets and analysis. The traditional macro-level approach to measuring the impacts of trade agreements focused on quantifying expansions of existing trade flows. Quantitative analysis is essential for assessing the magnitude of the impact of trade liberalization, but negotiators must now examine the characteristics of individual firms. We also need to estimate the potential expansion of micro-level trade by firms in products and markets that we do not know about. Firm-level data is required to estimate fixed and sunk costs associated with participation in international markets

Furthermore, much of the previous micro-level data analysis exclusively uses data from relatively large manufacturing firms. Yet the trading activities of small and medium manufacturing firms as well as firms in agriculture, services, retail, etc. are economically important for formulating and assessing the impact of trade policy, particularly for some countries. Also, previous trade negotiating agendas tended to focus on mature industries whereas the *new new* trade theory and policy suggests that empirical attention should be placed on emerging products, firms and industries.

The growth of global value chains makes the data challenges even more urgent. The impact on a country's exports of its own import liberalization because of value chain linkages is widely recognized by policymakers. Attributing the full value of the product to the country from which it is exported to its final consumer destination can give an exaggerated idea of the importance of trade with that country. A new accounting of a country's contribution to global trade is needed to take these linkages into proper account: we need a value-added concept of exports and imports, recognizing that imports might embody a country's previously exported components or intellectual property. The work that the WTO is doing with the OECD on better statistics is invaluable, as is the WTO's own 'made in the world' initiative (OECD, 2013; Jara and Escaith, 2012).

In summary, theoretical firm-level analysis of trade has increased the need for firm-level data and has highlighted the complex processes behind producing goods for exporting, including the use of imported intermediates. Analysis of firm-level data allows for a quantitative analysis of changes in policy and policy makers should use a value-added approach to measure trade flows to provide an accurate picture of contributions to global trade.

Conclusions

Our goal in this paper is to show the implications for trade policy of new developments in heterogeneous

firm trade theory and empirics. An important value of new theories is to help us to be more systematic and formal in our analysis of complex issues. This paper shows how the policy perspective changes when we focus on differentiated firms, in addition to industries and countries.

The *new new* trade policy agenda is indeed familiar in some respects: regulation and standards, procurement, investment, competition policy, services liberalization, export subsidies, labour mobility, regionalism and rules of origin. Nondiscrimination and reciprocity still anchor the trading system, and the law of comparative advantage has not been repealed, even if we now observe it at the level of trade in tasks. It is worth noting, however, how few of the elements included in this list involve traditional market access concerns.

To evaluate the gains from trade liberalization, trade negotiators must look beyond the expansion of existing trade flows. They should evaluate the potential expansion of imports and exports of products that previously were not sold internationally, the diversification of currently exported products into new markets, the entry of firms with purely domestic operations into exporting, and changes in the international components of firms' production structures.

The new agenda does overlap with the old, but we show how *new new* trade policy requires an emphasis on firms, which changes how one sees the agenda, and what the objectives should be. The most-favored nation and national treatment norms matter more than ever. Tariffs remain an issue, but while firms like to see cuts in applied rates, binding may be more significant. Simplifying and coordinating border and customs procedures through the new WTO Trade Facilitation Agreement might matter more than further efforts to reduce tariff rates. Services negotiations might be more urgent than further attention to trade in goods, even for manufacturers. Investment rules need to address right of establishment and not just asset protection. Finally, in each country the *new new* trade policy needs new models and new data, including value-added trade data.

Thinking about firms, not just industries, will lead to exciting new opportunities for trade negotiators and create challenges. The *new new* trade policy underlines the need to move past the impasse in the Doha Round to start now to develop the agenda for the next round of multilateral trade negotiations, but explaining the new agenda to traditional interlocutors in business and government will not be easy. Developing new models and data sources will also be difficult. But the payoff is the opportunity for better trade policy. Even more important, the *new new* theory places trade policy at the heart of any government's productivity and innovation agenda.

References

- Abel-Koch, J. (2013) 'Endogenous Trade Policy with Heterogeneous Firms,' Gutenberg School of Management and Economics, Working Paper No. 1306. Mainz, Germany: Johannes Gutenberg-Universität Mainz.
- Amiti, M. and Davis, D. (2012) 'Trade, Firms, and Wages: Theory and Evidence,' *Review of Economic Studies*, 79 (1), pp. 1–36.
- Antràs, P., and Helpman, E. (2004) 'Global Sourcing,' *Journal of Political Economy*, 112 (3), pp. 552–580.
- Antràs, P. and Helpman, E. (2008) 'Contractual Frictions and Global Sourcing,' in Helpman, E., Verdier, T. and Marin, D. (eds.), *The Organization of Firms in a Global Economy*. Cambridge, MA: Harvard University Press, pp. 9–54.
- Antràs, P. and Staiger, R. W. (2012a) 'Offshoring and the Role of Trade Agreements,' *American Economic Review*, 102 (7), pp. 3140–3183.
- Antràs, P. and Staiger, R. W. (2012b) 'Trade Agreements and the Nature of Price Determination,' *American Economic Review*, 102 (3), pp. 470–476.
- Atkeson, A. and Burstein, A. (2010) 'Innovation, Firm Dynamics, and International Trade,' *Journal of Political Economy*, 118 (3), 433–484.
- Aw, B. Y., Roberts, M. and Xu, D. Y. (2011) 'R&D Investment, Exporting, and Productivity Dynamics,' *American Economic Review*, 101(4), pp. 1312–1344.
- Bagwell, K. and Staiger, R. W. (2011) 'What Do Trade Negotiators Negotiate About? Empirical Evidence from the World Trade Organization,' *American Economic Review*, 104 (4), pp. 1238–1273.
- Baldwin, J. and Gu, W. (2003) 'Export-Market Participation and Productivity Performance in Canadian Manufacturing,' *Canadian Journal of Economics*, 36 (3), August, pp. 634–657.
- Baldwin, J. and Yan, B. (2010) 'Export Market Dynamics and Plant-level Productivity: Impact of Tariff Reductions and Exchange Rate Cycles,' in D. Ciuriak (ed.), *Trade Policy Research 2010: Exporter Dynamics and Productivity*. Ottawa: Foreign Affairs and International Trade Canada, pp. 19–62.
- Baldwin, R. and Venables, A. J. (2013) 'Spiders and Snakes: Offshoring and Agglomeration in the Global Economy,' *Journal of International Economics*, 90 (2), pp. 245–254.
- Bernard, A., Eaton, J., Jensen, J. B. and Kortum, S. (2003) 'Plants and Productivity in International Trade,' *American Economic Review*, 93 (4), September, pp. 1268–1290. Bernard, A., Jensen, J. B., Redding, S. and Schott, P. (2012) 'The Empirics of Firm Heterogeneity and International Trade,' *Annual Review of Economics*, 4, pp. 283–313.
- Bernard, A., Jensen, J. B. and Schott, P. (2006) 'Trade Costs, Firms, and Productivity,' *Journal of Monetary Economics*, 53(5), pp. 917–937.
- Bernard, A., J. B. Jensen, and Schott, P. (2009) 'Importers, Exporters, and Multinationals: A Portrait of Firms in the US that Trade Goods,' in T. Dunne, J. B. Jensen, and M. J. Roberts (eds.), *Producer Dynamics: New Evidence from Micro Data*. Chicago, IL: University of Chicago Press.
- Blanchard, E. J. (2010) 'Reevaluating the Role of Trade Agreements: Does Investment Globalization Make the WTO Obsolete?,' *Journal of International Economics*, 82 (1), pp. 63–72.
- Bown, C. P. (2009) *Self-Enforcing Trade: Developing Countries and WTO Dispute Settlement*. Washington, DC: Brookings Institution Press.
- Bustos, P. (2011) 'Trade Liberalization, Exports and Technology Upgrading: Evidence on the Impact of MERCOSUR on Argentinian Firms,' *American Economic Review*, 10 (1), pp. 304–340.
- Collins-Williams, T. (2009) 'The Evolution of AntiDumping in a Globalizing Economy,' in T. P. Stewart (ed.), *Opportunities and*

- Obligations *New Perspectives on Global and US Trade Policy*. Amsterdam: Kluwer Law International.
- Costantini, J. and Melitz, M. (2008) 'The Dynamics of Firm-Level Adjustment to Trade Liberalization', in E. Helpman, D. Marin, and T. Verdier (eds.), *The Organization of Firms in a Global Economy*. Cambridge, MA: Harvard University Press, pp. 107–141.
- Das, S., Roberts, M. J. and Tybout, J. R. (2007) 'Market Entry Costs, Producer Heterogeneity, and Export Dynamics', *Econometrica*, 75 (3), pp. 837–873.
- Davis, D. and Harrigan, J. (2011) 'Good Jobs Bad Jobs, and Trade Liberalization', *Journal of International Economics*, 84, pp. 26–36.
- De Loeker, J. (2007) 'Do Exports Generate Higher Productivity? Evidence from Slovenia', *Journal of International Economics*, 73, pp. 69–98.
- Demidova, S. and Rodriguez-Clare, A. (2009) 'Trade Policy Under Firm-Level Heterogeneity in a Small Economy', *Journal of International Economics*, 78(1), pp. 100–112.
- Dutt, P., Mihov, I. and Van Zandt, T. (2011) 'Does WTO Matter for the Extensive and Intensive Margins of Trade?' INSEAD Working Paper No. 011/47/EPS. Available from SSRN: <http://ssrn.com/abstract=1768347> [Accessed 18 October 2014].
- Eaton, J., Kortum, S. and Kramarz, F. (2011) 'An Anatomy of International Trade: Evidence from French Firms', *Econometrica*, 79 (5), pp. 1453–1498.
- Ederington, J. and McCalman, P. (2008) 'Endogenous Firm Heterogeneity and the Dynamics of Trade Liberalization', *Journal of International Economics*, 74, pp. 422–440.
- Felbermayr, G. and Kohler, W. (2006) 'Exploring the Intensive and Extensive Margins of World Trade', *Review of World Economics*, 142 (4), pp. 642–674.
- Felbermayr, G. and Kohler, W. (2010) 'Modelling the Extensive Margin of World Trade: New Evidence on GATT and WTO Membership', *The World Economy*, 33 (11), pp. 1430–1469.
- Fernandes, A. (2007) 'Trade Policy, Trade Volumes, and Plant-Level Productivity in Columbian Manufacturing Industries', *Journal of International Economics*, 71 (1), pp. 52–71.
- Gawande, K., Hoekman, B. and Cui, Y. (2011) 'Determinants of Trade Policy Responses to the 2008 Financial Crisis', The World Bank: Policy Research Working Paper WPS5862. October. Washington, DC.
- Greenaway, D. and Kneller, R. A. (2007) 'Firm Heterogeneity, Exporting, and Foreign Direct Investment', *Economic Journal*, 117 (517), pp. F134–F161.
- Grossman, G. and Rossi-Hansberg, E. (2008) 'Trading Tasks: A Simple Model of Offshoring', *American Economic Review*, 98 (5), pp. 1978–1997.
- Handley, K. (2011) 'Exporting under Trade Policy Uncertainty: Theory and Evidence', Geneva: World Trade Organization, Working Paper ERSD-2011-20, December.
- Handley, K. and Limão, N. (2012) 'Trade and Investment under Policy Uncertainty: Theory and Firm Evidence', Cambridge, MA: National Bureau of Economic Research, Inc, Working Paper 17790, January.
- Helble, M., Shepherd, B. and Wilson, J. S. (2009) 'Transparency and Regional Integration in the Asia Pacific', *World Economy*, 32 (3), pp. 479–508.
- Helpman, E. (2006) 'Trade, FDI, and the Organization of Firms', *Journal of Economic Literature*, LIV, pp. 589–630.
- Helpman, E. and Itskhoki, O. (2010) 'Labor Market Rigidities, Trade, and Unemployment', *Review of Economic Studies*, 77, pp. 1100–1137.
- Helpman, E., Itskhoki, O. and Redding, S. (2013) 'Trade and Labor Market Outcomes', in Acemoglu, D., Arellano, M. and Dekel, E. (eds.), *Advances in Economics and Econometrics, Tenth World Congress of the Econometric Society, vol 2*, Applied Economics. New York: Cambridge University Press.
- Helpman, E. and Krugman, P. (1985) *Market Structure and Foreign Trade: Increasing Returns, Imperfect Competition, and the International Economy*. Cambridge, MA: MIT Press.
- Helpman, E., Melitz, M. and Yeaple, S. (2004) 'Export Versus FDI with Heterogeneous Firms', *American Economic Review*, 94 (1), pp. 300–316.
- Hoekman, B. (2014) *Supply Chains, Mega-Regionals and Multilateralism: A Road Map for the WTO*. London: CEPR Press.
- Hoekman, B. and Mattoo, A. (2013) 'Liberalizing Trade in Services: Lessons from Regional and WTO Negotiations', Robert Schuman Centre for Advanced Studies, EUI, Global Governance Programme Working Paper RSCAS 2013/34. San Domenico di Fiesole (FI), Italy.
- Jara, A. and Escaith, H. (2012) 'Global Value Chains, International Trade Statistics and Policymaking in a Flattening World', *World Economics*, 13 (4), pp. 5–18.
- Jensen, J. B., Quinn, D. P. and Weymouth, S. (2014) 'The Influences of Foreign Direct Investments, Intrafirm Trading, and Currency Undervaluation on US Firm Trade Disputes', US Census Bureau Center for Economic Studies Paper No. CES-WP-14-04. January 1 [online]. Available from: <http://ssrn.com/abstract=2398422> [Accessed 18 October 2014].
- Kasahara, H. and Lapham, B. (2013) 'Productivity and the Decision to Import and Export: Theory and Evidence', *Journal of International Economics*, 89 (2), pp. 297–316.
- Keck, A. and Lendle, A. (2012) 'New Evidence on Preference Utilization', Geneva: World Trade Organization, Staff Working Paper ERSD-2012-12, September.
- Keller, W. (2004) 'International Technology Diffusion', *Journal of Economic Literature*, 42(3): pp. 752–782.
- Khandelwal, A. and Topalova, P. (2011) 'Trade Liberalization and Firm Productivity: The Case of India', *Review of Economics and Statistics*, 93(3), pp. 995–1009.
- Kim, M. H. (2011) 'Do We Really Know That the WTO Increases Trade? Revisited', *Global Economy Journal*, 11 (2), pp. 1–19.
- Kommerskollegium (2012) 'Everybody Is in Services – the Impact of Servicification in Manufacturing on Trade and Trade Policy', Stockholm: National Board of Trade, November.
- Krugman, P. (1992) 'Does the New Trade Theory Require a New Trade Policy?', *The World Economy*, 15 (4), pp. 423–442.
- Lileeva, A. and Trefler, D. (2010) 'Improved Access to Foreign Markets Raises Plant-Level Productivity For Some Plants', *Quarterly Journal of Economics*, 125 (3), pp. 1051–1099.
- Ma, A., Van Assche, A. and Hong, C. (2009) 'Global Production Networks and China's Process Trade', *Journal of Asian Economics*, 20(6), pp. 640–654.
- Mavroidis, P. C. and Sapir, A. (2008) 'Mexico – Antidumping Measures on Rice', *World Trade Review*, 7 (1), pp. 305–323.
- Melin, H. (2013) 'Micro-Multinationals, Global consumers, and the WTO: Towards a 21st Century Trade Regime' [online]. Available from: http://www.ebaymainstreet.com/sites/default/files/Micro-Multinationals_Global-Consumers_WTO_Report_1.pdf [last accessed 13 August 2014].
- Melitz, M. (2003) 'The Impact of Trade on Intra-Industry Reallocations and Aggregate Industry Productivity', *Econometrica*, 71(6), pp. 1695–1725.
- Melitz, M. and Redding, S. (2014) 'Heterogeneous Firms and Trade', in Gopinath, G., Helpman, E. and Rogoff, K. (eds.), *Handbook of International Economics*, vol 4. Amsterdam: Elsevier Press.
- Melitz, M. and Trefler, D. (2012) 'Gains From Trade When Firms Matter', *Journal of Economic Perspectives*, 26 (2), pp. 91–118.
- Milner, H. (1988) *Resisting Protectionism: Global Industries and the Politics of International Trade*. Princeton, NJ: Princeton University Press.

- Moisé, E. and Le Bris, F. (2013) 'Trade Costs: What Have We Learned? A Synthesis Report,' Paris: OECD Trade Policy Papers, No. 150, 23 April.
- OECD (2010) *Trade and Economic Effects of Responses to the Economic Crisis*. Paris: Organisation for Economic Cooperation and Development.
- OECD (2013) 'Measuring Trade in Value Added: An OECD-WTO joint initiative' [online]. Available from: <http://www.oecd.org/industry/ind/measuringtradeinvalue-addedanoecd-wtojointinitiative.htm>
- OECD, WTO and UNCTAD (2013) 'Implications of Global Value Chains for Trade, Investment, Development and Jobs,' Prepared for the G-20 Leaders Summit, Saint Petersburg (Russian Federation), September
- Persson, M. (2013) 'Trade Facilitation and the Extensive Margin,' *Journal of International Trade and Economic Development*, 22(5), pp. 658–693.
- Redding, S. (2011) 'Theories of Heterogeneous Firms and Trade,' *Annual Review of Economics*, 3, 77–105.
- Rose, A. K. (2004) 'Do We Really Know That the WTO Increases Trade?', *American Economic Review*, 94(1), pp. 98–114.
- Scheve, K. F. and Slaughter, M. J. (2001) *Globalization and the Perceptions of American Workers*. Washington, DC: Institute for International Economics.
- Taylor, B. J. and Wilson, J. S. (2011) 'Doha and Trade Facilitation: Lending Specificity to the Multilateral Trade and Development Agenda,' in W. Martin and A. Mattoo (eds), *Unfinished Business? The WTO's Doha Agenda*. London and Washington, DC: CEPR and the World Bank, pp. 213–231.
- Trefler, D. (2004) 'The Long and Short of the USUS-Canada Free Trade Agreement,' *American Economic Review*, 94, 870–895.
- van Tongeren, F. (2009) 'Transparency in the Design of NonTariff Measures and the Cost of Market Entry: Conceptual Framework,' Organisation for Economic Cooperation and Development, Working Party of the Trade Committee, TAD/TC/WP(2009)33, November.
- Wolfe, R. (2013) 'Letting the Sun Shine in at the WTO: How Transparency Brings the Trading System to Life,' World Trade Organization, Staff Working Paper ERS-2013-03, March.
- Wolfe, R. (2015) 'An Anatomy of Accountability at the WTO,' *Global Policy*. First published online 21 July 2014, doi: 10.1111/1758-5899.12160.
- WTO (2012b) 'Minutes of the Meeting of 10–11 November 2011,' World Trade Organization, Committee on Technical Barriers to Trade, G/TBT/M/55, February.
- WTO (2012c) 'Trade Policy Review China: Report by the Secretariat,' Trade Policy Review Body, World Trade Organization, WT/TPR/W/264, May.
- WTO (2012a) *World Trade Report 2012: Trade and Public Policies: A Closer Look at NonTariff Measures in the 21st Century*. Geneva: World Trade Organization.
- WTO (2013) *World Trade Report 2013: Factors Shaping the Future of World Trade*. Geneva: World Trade Organization.
- Yeaple, S. (2005) 'A Simple Model of Firm Heterogeneity, International Trade, and Wages,' *Journal of International Economics*, 65, pp. 1–20.

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