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The ninth GEP Annual Postgraduate Conference

GEP's ninth Annual Postgraduate Conference, held in April, attracted PhD students from around the globe to present and discuss their work. Here organisers Zhihong Yu and Andreas Hoefele comment on the papers and findings to emerge from another hugely successful event.

• GEP's Professor Daniel Bernhofen addresses students at the Centre's ninth Annual Postgraduate Conference

GEP's prestigious Annual Postgraduate Conference continued its impressive tradition of generating worldwide interest when it was held on 29 and 30 April.

Attracted by the opportunity to present and discuss their research, PhD students from 16 universities in nine countries across Europe, the US and Asia attended this year's event.

The programme included 20 empirical and theoretical papers that covered issues related to offshoring, FDI, trade policy, European integration, financial development and labour market adjustments.

The success of previous conferences, coupled with a large number of high-quality submissions, compelled the organisers to spread this year's event over two days.

Dr Richard Kneller (GEP, University of Nottingham) delivered the keynote lecture, presenting his recent work, entitled Input Characteristics and the Mode of Offshoring: Evidence for French Firms, which he co-authored with Liza Jabbour.

As in 2008 and 2009, a prize for best paper was awarded at the close of the conference – although this year two entrants shared the honour.

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• Delegates at GEP's ninth Annual Postgraduate Conference, which attracted PhD students from around the world

A committee comprising Professor Daniel Bernhofen and the conference organisers chose Marcel Smolka (Tübingen University) for Do Contractual Frictions Shape Global Sourcing? Evidence from Spanish Firm-Level Data, co-authored with Wilhelm Kohler, and Veysel Avsar (Florida International University) for Industrial Evidence on Partisan Trade Policy: Tariff Versus Anti-Dumping.

Here, to give a flavour of the high-quality work being undertaken by the young researchers who travelled to GEP, we report on selected papers presented during the eight sessions.

Marcel Smolka presented his prize-winning paper during the session on firm productivity and organisational choices. Using a large sample of Spanish manufacturing firms, he investigates companies' global sourcing decisions with regard to their ownership structure and locational choice of intermediate input production. One novelty of the paper is that the authors are able to distinguish four sourcing categories – foreign integration, foreign outsourcing, domestic integration and domestic outsourcing – thus providing a much more comprehensive picture of the global production organisation than was the case with earlier studies. A major finding is that there is a productivity-sorting pattern of firms into the four sourcing categories, according to which foreign-integration firms have the highest and domestic-outsourcing firms the lowest total factor productivity. There is also evidence that foreign-outsourcing firms are slightly more productive than domestic-integration firms. In addition, there is a crucial interplay between a firm's capital intensity and total factor productivity, which shapes the probability of integrating intermediate input production into the firm boundaries of control – suggesting there remain unexplored channels through which the factor content of production affects firms' global sourcing decisions.

The other award-winning paper was presented by Veysel Avsar during the session on trade policy and market integration. His paper is the first attempt to examine empirically the influence of political partisanship on anti-dumping protection. Employing recently available data on industry protection and production, the paper shows an increase in the leftist orientation of a government makes labour-intensive industries – which already grant higher protection via tariff – less likely to file an anti-dumping petition. The evidence on governments' decisions to impose anti-dumping duty also demonstrates an increase in leftist orientation is associated with an increase in the likelihood of an affirmative anti-dumping outcome for the petitions of labour-intensive industries.

Daniel Etzel presented his joint work with Hartmut Egger (both University of Bayreuth), The Impact of Trade on Employment, Welfare and Income Distribution in Unionised General Oligopolistic Equilibrium. This paper aims to investigate profit and wage inequality across industries in the presence of unions. By introducing productivity differences, the model features profit and wage differentials across industries. In this set-up the distribution of cross-industry profit income is unaffected, while wage inequality is reduced when a country opens up to trade.

Liu Yao (Nankai University) analysed offshoring in a specific factor model, assuming skilled labour to be sector-specific. She shows that if offshoring is possible then the relative wage of skilled to unskilled workers decreases.

Benedikt Heid (IFO Munich) presented his joint work, Spatial Exporter Dynamics. The idea is that prior to exporting firms do not know how successful their efforts will be. By exporting to one destination they are able to learn about their ability to export and might start exporting to other destinations as well.

Thi Hong Hanh Pham (University of Rouen) discussed her work on the links between financial development, financial openness and trade openness in 29 Asian developing countries. She presented evidence that the opening up of an economy to trade seems to be a precondition for financial development and financial openness.

Danny McGowan (GEP, University of Nottingham) presented his co-authored work, Trade Costs and Trade Composition: Multi-Country and Product Evidence on Sources of Comparative Advantage. This empirical investigation focuses on the question of whether cross-country differences in country-specific trade costs affect comparative advantage and the commodity composition of trade in similar fashion to international differences in factor endowments. The authors find evidence in export performance at the industry level that country trade costs affect the pattern of comparative advantage and the export composition. <

Annual Report reflects on 'outstanding' year

Each year GEP produces an Annual Report to the Leverhulme Trust, which helps fund the Centre's activities. The 2009 version, now available for download from the GEP website, looks back on a year of "continued success and growth".

GEP has published its 2009 Annual Report, which summarises and reflects on all of the Centre's activities throughout last year.

As in previous years, the report was prepared principally for the Leverhulme Trust, which helps fund GEP's research, but it can be downloaded by visiting the GEP website at www.gep.org.uk.

Writing in the foreword, Professor Alan Duncan, GEP's Acting Director at the time the report was prepared, said: "A research institution such as GEP faces perhaps unprecedented pressure to demonstrate the value of its work.

"Against this challenging background, the Centre can justifiably be proud of its contributions during 2009 in terms of the quality and volume of research conducted by GEP staff, the high calibre of visitors to Nottingham, the outstanding quality of its Public Lecture series and the success of its communication, outreach and internationalisation strategies.

"We have benefited greatly from the vision and commitment shown by the Leverhulme Trustees in supporting our programmes of research and from the perceptive guidance of our Strategic Advisory Board in highlighting new, topical and relevant research questions. Both have underpinned our continued success and growth.

"In addition, through the talent and energies of GEP Internal and External Research Fellows, we have been able to maintain our commitment to communicate on global economic policy questions to as wide an audience as possible and chronicle the results and implications of our research in ways that reach far beyond academic peers and policymakers. This is something that in my view distinguishes GEP as an active participant in economic policy debates both at home and abroad."

Looking ahead, Professor Duncan added: "With 2009 seeing us yet again maintaining and building upon the previous year's momentum, we look to 2010 with optimism and an eye on new and important challenges.

"GEP's activities are themselves globalised, in so far as the Centre has always brought researchers from around the world to Nottingham and supported its own academics and students in overseas visits. This approach has progressively enhanced our profile, led to long-lasting collaborations and strengthened our involvement in key networks – particularly since the opening of GEP China and GEP Malaysia raised our own ambitions in this regard. We therefore intend to continue to invest in this very literal and highly effective method of knowledge transfer in 2010, which we hope will prove another productive, rewarding and memorable year." <

The Wolf and the Dragon: China's growing obligations

The Financial Times' Martin Wolf is a regular contributor to GEP's Leverhulme Globalisation Lecture Series. During his most recent visit he addressed the vital issue of China's growing role at the heart of the world economy and urged Beijing to fulfil its obligations as the next economic superpower.

One of the most influential voices in economics has used a speech at GEP to call on China to do more to fulfil its growing obligations as the world's next superpower.

Martin Wolf, the Financial Times' Associate Editor and Chief Economics Commentator, said the country's future interests would lie in maintaining a stable global system.

Its objective, he argued, should be to develop such an order rather than overthrow it – with a dangerous world of "power politics" a likely result if it were to choose the latter course.

Often described as the world's pre-eminent financial journalist, Wolf predicted much of the economic crisis in his book Fixing Global Finance.

A frequent and popular contributor to GEP's Leverhulme Globalisation Lecture Series, he delivered his latest address, entitled China in the World Economy, to a packed audience.

Assessing China's strategic interests, he said: "China is a developing country and is likely to remain relatively poor for decades in terms of incomes per head.

"But by virtue of its size it has a gigantic impact – indeed, it is on its way to becoming a superpower – and as a result it is one of the few countries that must take account of the impact of its actions on the world economy.

"It cannot just 'import order' – it must 'export order', too. So how should it define its interests while taking into account its impact on the world in which it finds itself?

"I would say its interest lies in maintaining a stable, peaceful and co-operative global political and economic environment. Only this would be able to support and adapt to China's rapid economic development.

"This would be best secured through a rules-governed, institutionally-based global system, on lines created by the US after the Second World War.

"The alternative is a world of power politics, which has proved highly unstable in the past. China has to recognise that in such a world there is a big risk that other powers might 'gang up' against it."

Wolf was critical of China's policy of investing in raw materials abroad, warning it could conceivably lead to "strategic rivalries" and ultimately even "open conflict".

He said: "It might make sense for China to complement a policy of investing in raw material supply with a policy of promoting free trade in resources. That should allay suspicion that it is trying to achieve a privileged position at the expense of others."

"China is one of the few countries that must take account of the impact of its actions on the world economy."

• GEP's Professor Alan Duncan and the FT's Martin Wolf

He added that China, if it were to choose the right path, would become "the natural defender of the multilateral, rules-based global trading system in the 21st century".

"For this reason it is important that its own policies be compatible with WTO rules in all respects and that it fully obeys rulings against it by the WTO," he said.

"It is also important that it uses WTO procedures to manage disputes with other trading powers and, finally, that it plays an energetic role in securing the completion of the Doha round of multilateral trade negotiations."

Wolf suggested China would also eventually become "the centre of the global financial system".

"Its interests therefore lie in securing a domestic financial system that promotes its own development and promoting a stable global financial system that supports a rapidly growing

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"Changes in China's policies are not enough. There also need to be large changes in the global monetary system."

• Martin Wolf chats with students at the end of his Leverhulme Globalisation Lecture on China's growing duty to safeguard the world economy

and reasonably stable world economy," he said.

Having foreseen the current credit crunch, Wolf now believes China's exchange-rate policies – along with those of "other significant powers" – could lead to a wave of further crises or even a depression if the problem is not addressed.

China has complained about demands for Beijing to let its currency appreciate, accusing some nations of engaging in "brazen" trade protectionism.

But Wolf contends that, considering the depth of the recession, the level of protectionism directed at Chinese exports has in fact been "astonishingly small".

Its decision to keep exchange rates down "to a degree unmatched in world economic history" has therefore distorted its own economy and that of the rest of the world, he says.

He told GEP: "Changes in China's policies are not enough. There also need to be large changes in the global monetary system.

"A much larger IMF or similar insurance arrangement is required to insure countries against the risk of a 'sudden stop' in foreign lending.

"And issuance of Special Drawing Rights on a regular basis, particularly to developing countries, is needed to allow nations to finance large ongoing current account deficits.

"To make this happen there also needs to be substantial reform of the governance of the IMF."

He concluded: "The big aim is to achieve a better balanced and more stable world economy.

"It is crazy that stability has depended on irresponsible and excessive spending by the world's richest consumers. In any case, this process has ended in crisis.

"China can play a huge role in securing necessary reforms – and it is very much in its interests to do so." <

The PowerPoint presentation that accompanied this lecture is available for download at www.gep.org.uk/leverhulme/events/Lecture_announcements/2010_Mar_LGL_Martin_Wolf.php.

The effect of EU structural funds on regional performance

The European Union provides grants to disadvantaged regions of member states to allow them to catch up with the EU average. Sascha Becker (University of Stirling), Peter Egger (ETH Zurich) and Maximilian von Ehrlich (ETH Zurich) estimate these funds' causal effects on regional GDP growth.

Under the Objective 1 scheme, NUTS2 regions with a per-capita-GDP level below 75% of the EU average qualify for structural funds transfers from the central EU budget. Most federations – both national and supra-national in scope – rely on a system of fiscal federalism that allows for transfers across jurisdictions. Examples of such national federations are the United States of America or the German States (Länder). An example of a supra-national federation is the EU itself. The most important aim of the transfers is to establish equalisation – at least partially – of fiscal capacity and per-capita income among the participating jurisdictions.

In comparison to other federations, the magnitude of equalisation transfers is particularly large within the EU. The lion's share of transfers is spent under the auspices of the Structural Funds Programme, which was launched in 1988 and distinguishes between transfers under three mutually exclusive schemes: Objective 1, Objective 2 and Objective 3.

We measure the causal effect of Objective 1 status on the per-capita-GDP growth of treated regions in the EU, using a regression-discontinuity design for program evaluation. Our analysis sheds light on the effectiveness of the Objective 1 scheme (i.e. whether it causes treated regions to grow faster) and its net benefits (i.e. whether the growth induced justifies the costs incurred).

We confine our analysis to Objective 1 treatment for three reasons. Firstly, Objective 1 funding has the explicit aims of fostering GDP-per-capita growth in regions that are lagging behind the EU average and promoting aggregate growth in the EU (European Commission, 2001). Secondly, Objective 1 expenditures form the largest part of the overall Structural Funds Programme budget, accounting for more than two thirds of the programme's total budget: 70% in the 1988-1993 period, 68% in the 1994-1999 period and 72% in the 2000-2006 period (European Commission, 1997 and 2007). Thirdly, the Objective 1 scheme has been largely unchanged over all three programming periods of its existence.

A region qualifies for Objective 1 transfers if its GDP per capita in purchasing power parity terms (PPP) is less than 75% of the EU average. This (somewhat arbitrary) rule, if strictly applied, leads to a so-called regression-discontinuity design: think of a NUTS2 region A with a GDP per capita of 74.99% and a NUTS2 region B with a GDP per capita of 75.01% – one formally eligible for Objective 1 transfers, one not. These two regions are certainly more comparable than regions far away from the threshold. In our context the reason is simply that, on average, regions whose per-capita income differs starkly at a point in time grow quite differently (according to the convergence hypothesis), whereas regions with a similar per-capita-income level should also display similar growth rates thereof at that point.

"We conclude that, on average, Objective 1 transfers might well be effective and – in net terms – not wasteful."

• Sascha Becker

Exploiting the variation in Objective 1 status around the 75% threshold, we identify positive causal effects of the Objective 1 treatment on the growth of per-capita income at PPP. In the benchmark specification and procedure, we estimate a differential impact of Objective 1 programme participation on the growth of GDP per capita at PPP of about 1.6 percentage points within the same programming period. No such effects can be found for employment growth.

A simple calculation of the net benefits of Objective 1 transfers suggests the following. According to our benchmark estimates, every euro spent on Objective 1 transfers leads to 1.20 euros of additional GDP. The latter is probably associated with a stimulus on the volume and structure investment (e.g. infrastructure) and, eventually, productivity gains but much less so with the creation of new jobs within the same programming period. From this we conclude that, on average, Objective 1 transfers under the EU's Structural Funds Programme might well be effective and – in net terms – not wasteful. <

This article is based on Sascha Becker's GEP Seminar presentation of Going NUTS: The Effect of EU Structural Funds on Regional Performance, delivered at the University of Nottingham on 18 January 2010.

Small businesses driving job creation in the UK

Opinion over the role of small firms in the UK economy has long been divided. GEP's Peter Wright helped reignite the debate by producing research showing the true extent of these businesses' involvement in the creation and destruction of jobs – raising important questions for policymakers.

Britain's small businesses are likely to create almost two thirds of the country's jobs in an average year, a major new study by GEP has revealed.

Research shows firms employing fewer than 100 workers accounted for 65% of new jobs in the UK in the period from 1997 to 2008.

The finding adds to the debate over the role of small companies in sustaining the nation's economy – particularly in light of the pre-election Budget, which was widely regarded as favourable to them.

Study co-author Dr Peter Wright said: "There has always been a discussion about whether small entrepreneurial firms or large firms are more important in terms of job creation.

"It's clear from this research that small companies employ a significant proportion of the workforce and account for most new jobs.

"Although their failure rates are higher, they certainly have more of a role to play than many economists have previously recognised.

"Therefore if the government could identify why so many of these firms fail then it could have a significant impact on net job creation."

GEP used data from the Office for National Statistics' Inter-Departmental Business Register, which records all businesses in the UK.

Researchers discovered that on average a total of 47,000 private-sector jobs are destroyed every week – equal to 2.35 million a year.

But another 53,000 a week – in other words, some 2.6 million a year – are created as part of the relentless "churn" in the job market.

Small firms employ between 38% and 52% of all workers and account for 65% of jobs created and 45% of those destroyed.

Overall, the job-creation rate in the service sector was 15.6% during the period studied, while the destruction rate was 13.6%.

Meanwhile, the struggling manufacturing sector declined each year, with a creation rate of 10% and a destruction rate of 13.7%.

Dr Wright, an associate professor of economics, said: "These relative rates reflect the continuing decline in manufacturing, which was shrinking every year.

"People might be surprised by our overall figures, but they show how dynamic the UK employment market really is."

"The difference in the growth rates of the two sectors is largely because of differences in the creation rate rather than destruction."

A study of regional results found manufacturing suffered the most rapid shrinkage in the North East, the West Midlands and London.

The North West, Scotland, the East of England, Yorkshire and Northern Ireland enjoyed the fastest expansion in the service sector.

Dr Wright added: "People might be surprised by our overall figures, but they show how dynamic the UK employment market really is.

"It's not necessarily a bad thing for the economy, but it does mean there are likely to be many people changing jobs involuntarily.

"That may involve considerable adjustment costs and also has important implications in terms of training provisions.

"Many workers will need to change or update their skills regularly to stay in work and maintain income levels in such a dynamic market."

Last year a GEP study suggested many Britons who lose their jobs through firm shutdowns still feel the impact half a decade later.

According to the research, the closure of a company leads to the average worker suffering a drop in income of around 50% in the first year.

Income recovers gradually thereafter, but even after five years it is significantly less than for those who have not lost their jobs. <

Who gains from international competition for FDI?

Countries compete to attract foreign direct investment from multinational enterprises, but what determines how much the "winning" state has to pay a firm? Ian Wooton (University of Strathclyde) examines the influences on the outcomes of tax competition games for FDI.

Examples abound of competition between governments (both national and state) in providing incentives to induce multinational enterprises to establish production facilities within their borders to serve a regional market.

"If two identical countries were to bid for two identicial MNEs then the 'race to the bottom' becomes a 'race to the top'."

Economists, bridging the fields of international trade and public finance, have attempted to shed light on this phenomenon. The nature of the competitive environment appears to be crucial in determining where the firm invests and how the benefits of this are distributed between the host nation and the firm.

This article, instead of providing a balanced review of the literature, offers some insights from my own research. I apologise to colleagues for ignoring some excellent contributions to this literature.

• Ian Wooton

Why do countries want FDI? The most obvious objective is to bring increased employment opportunities to the local population, but there may be other benefits associated with attracting foreign-owned production facilities. These may be viewed as the "low-hanging fruit" to attract more industry and further jobs. The state-of-the-art technology employed by the foreign firm may spill over to local firms in the industry and induce skill-upgrading amongst workers, transforming the economy. Consumers may also benefit from lower prices as goods that were previously subject to transport costs are now locally produced.

Given these benefits, it would seem worthwhile for governments to offer inducements in order to attract potential investors. Lower taxes, higher subsidies or other inducements to invest will make a country a more attractive location and may overcome any disadvantages it has relative to its rivals. However, given the high fixed costs of production, a firm may be prepared to set up in only one location. Thus the stage is set for competition between governments to persuade the firm to invest within their borders. What determines the outcome of such tax competition?

A useful baseline for analysis is a model of costly trade between two countries within a region. The identical countries make simultaneous tax or subsidy bids to attract the FDI of a single firm whose production will serve consumers in both countries. All players have full information about the game, knowing that both nations value the FDI equally and that the MNE is indifferent between the locations. As a result, whichever country offers the lowest tax (or largest subsidy) will attract the FDI, leading to a "race to the bottom" where the successful bidder offers a subsidy that transfers all of the "winning" nation's benefit from hosting the FDI to the MNE.

Thus, despite the apparent desirability of attracting foreign producers, no gains are realised in equilibrium. Why, then, should governments engage in such competition? Research with my collaborators has examined the generality of this result in an effort to explain this. We look at the impact of introducing changes in the model on the equilibrium outcomes.

• Country size

What if one of two competing countries were larger than the other? Andreas Haufler and I (1999) find that country-size asymmetry has two effects. First of all, a country with a larger population is likely to value the FDI more highly and, with a larger tax base, will have deeper pockets to pay subsidies to the firm. Secondly, the larger country is more attractive to the MNE in offering a bigger domestic market. As a result, the outcome of the tax competition is asymmetric, such that the larger country attracts the FDI but the equilibrium bid matches the

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"This is a cautionary tale about the importance of the correct specification of an economic model."

best offer of the smaller nation and hence does not exhaust all of the gains to the winning country.

• Domestic equity

The ownership of MNEs is often spread around the world, with the firms being listed on more than one stock exchange. Therefore a country might be bidding for a firm that is partly owned by its domestic residents. It might be anticipated that a government might be more "aggressive" in its bidding if some part of its subsidy ends up being redistributed to citizens. Perhaps surprisingly, this turns out not to be the case. Ben Ferrett and I (2010a) show that the outcome of the tax competition game is independent of the international distribution of ownership. Neither the firm's choice of location nor the tax or subsidy associated with the winning bid is affected by domestic shareholding.

• More than one MNE

How might the outcome of tax competition for FDI change if the two countries had the opportunity to bid for more than one firm's FDI? I have investigated this in papers with both Andreas Haufler (2010) and Ben Ferrett (2010b). The impact of changing the number of firms is particularly dramatic in the latter paper. If the two identical countries were to bid for FDI from two identical MNEs then the "race to the bottom" becomes a "race to the top". Each nation attracts one firm, not with a subsidy that gives all of the national gains to the firm but with a tax that extracts all of the profits the firm makes from the FDI. Only if one country is much larger than its rival will it capture both firms, which then reap some gains from their investments.

• Who bids when?

All of the previous analysis assumes that the two rival governments make simultaneous offers to the firm (or firms). My work with Taiji Furosawa and Kazumi Hori looks at the outcome of the bidding war when governments respond to their rivals' bids in an auction with sequential bids. Domestic ownership of the firm can make a difference in this setting. The smaller country will still lose the competition, but by bidding beyond its valuation of the investment it can improve the winning subsidy offer such that its domestic shareholders are made better off. We further show that, if there is any uncertainty about the benefits of the FDI to each country, bidding sequentially might even result in the FDI going to the "wrong" country.

In conclusion, this is a cautionary tale about the importance of the correct specification of an economic model. Quite different results can arise from fairly modest amendments to a model of tax competition for FDI. Consequently, it is important that we understand the nature of the competition between governments and their interaction with potential investors. <

This article is based on Ian Wooton's GEP Seminar presentation of A Race Beyond the Bottom: The Nature of Bidding for a Firm, work in progress with Taiji Furusawa (Hitotsubashi University) and Kazumi Hori (Waseda University), delivered at the University of Nottingham on 1 February 2010.

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Corporate tax, multinationals and true profit-shifting

Existing profit-shifting literature focuses on losses that accrue to the tax authorities due to the ability of MNEs to avoid paying taxes. New research by Pascalis Raimondos-Møller (Copenhagen Business School) focuses on real efficiency losses stemming from increased market power.

Corporate tax differences and the resulting profit-shifting behaviour of multinational firms represent a hotly debated issue in Europe.

The single-market initiative, with all its mobility provisions, has created incentives for corporations to locate activities in countries that have specific advantages. However, with taxes the responsibility of national governments, the issue of corporate tax competition is viewed as distorting the market.

"With taxes the responsibility of national governments, the issue of corporate tax competition is viewed as distorting the market."

• Pascalis Raimondos-Møller

Governments are simply accused of undercutting each other in terms of taxes in order to attract firms, which in turn react by creating a complicated nexus of subsidiaries with the aim of profit-shifting and tax minimisation. This profit-shifting clearly creates costs both to MNEs, which pay extravagant amounts to accounting companies that help them navigate through country-specific tax laws, and to governments, which struggle to explain why they have to shift taxation to other, less mobile sources.

The extent to which MNEs react to corporate tax differentials is well documented. While the quantitative results may differ according to the mechanism used or the country involved, the qualitative message is the same: firms do manipulate their reported profits in a tax-minimising way – i.e. they report low profits to high-tax countries and high profits to low-tax countries.

A common feature of this literature is the use of tax-reporting data – i.e. firms' profits are taken from the information that companies report to the tax authorities. This, of course, makes perfect sense when the focus is on how much profits firms report to different tax authorities – but a tax mis-reporting issue may arise here.

For example, many MNEs have two sets of books: an external one, which is presented to the tax authorities, and an internal one, which is used for managerial purposes. A 2003 survey by Ernst and Young indicated that more than 20% of MNEs use two sets of books for management and tax purposes. Note that having two sets of books is not illegal in the majority of OECD countries.

Accepting our premise that tax-reporting data can be distorted, the question becomes whether there exist other methods and data that could be used to estimate MNEs' profit-shifting behaviour. To our knowledge, two such methods exist in the literature: Clausing (2003) and Bartelsman and Beetsma (2003).

Clausing collects US import price data on intra- and inter-firm trade (i.e. transfer prices and arm's-length prices respectively). She documents that transfer prices are consistently above arm's-length prices when taxes abroad are lower than US taxes – and vice versa. Such direct evidence for transfer pricing – and thus for profit-shifting – is obviously hard to ignore. Such evidence is also hard to collect.

Using easily obtained OECD industry data, Bartelsman and Beetsma propose a method that focuses on reported value added. By regressing this reported value added (which is less prone to manipulation than reported profits) to corporate tax differentials, they are able to document significant profit-shifting effects. While the use of industry-based data is not ideal, the main contribution of their work is in combining accessible, activity-based data for estimating some form of real profit-shifting.

(Huizinga and Laeven [2008] follow a similar approach but focus on constructing earnings before interest and taxes [EBIT] from activity-based, firm-level data and showing how this is influenced by tax differences.)

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The present project aims to make a similar contribution, albeit using a different method. Using the method developed in Roeger (1995), we focus on estimating the true profit margin – i.e. the price-marginal cost ratio – of MNEs and how this is affected by corporate tax differences. We thus pay attention to the fact that MNEs are imperfectly competitive firms earning positive mark-ups and how these mark-ups are affected by international corporate tax differences.

The scenario we have in mind is the following. By operating in multiple countries, a multinational firm is able to reduce its costs (by exploiting corporate tax differences, for example). If competition were perfect then such a reduction in costs would be accompanied by a similar reduction in prices. When corporate tax differences lead to even higher price-cost mark-ups for the multinationals, however, markets are not competitive – and the multinationals are the beneficiaries of this. We call such effects "true profit-shifting".

Our analysis is based on a unique firm-level financial dataset that identifies firms' ownership structure. We use the extensive version of Amadeus, which contains approximately eight-million firms within 27 European countries for the period 1997-2007. Having data on ownership structure, we can identify MNEs and their decision control over subsidiaries.

We end up collecting firm-activity data for approximately 85,000 firms that operate within the manufacturing and service industries. This information constitutes the so-called unconsolidated dataset, where firms that belong to the same multinational are reported as individual firms (plant-level data). However, Amadeus also contains a consolidated dataset, where activity data are reported for global multinational operations. Consolidating the approximately 85,000 firms/plants into multinational firms, we end up with approximately 17,000 firms, and this represents the dataset we use. Finally, we combine this dataset with information about international (and not only European) corporate taxes for the whole period of our analysis. Thus, while we focus on European multinationals (i.e. firms that have headquarters in one of the 27 European countries contained in Amadeus), we do take into account that these firms own subsidiaries outside Europe and so can exploit international tax differences.

The results we obtain are clear. While the overall profit margin that we estimate for the average European multinational firm in our data is 28%, the existence of tax differentials makes the average profit margin jump to 33%. In this sense, indeed, exploiting tax differences is a source of significant market power for multinational firms.

While the existing profit-shifting literature focuses on losses that accrue to the tax authorities due to the ability of multinationals to avoid paying taxes, we focus on real efficiency losses stemming from increased market power. Such effects can clearly be far more distortive than those that have previously been identified. <

This article is based on True-Profit Shifting, co-authored by Delia Baghadasarayn (Laboratoire d'Economie Appliquée de Grenoble), David Dreyer Lassen (University of Copenhagen), Søren Bo Nielsen (Copenhagen Business School) and Pascalis Raimondos-Møller (Copenhagen Business School).

"When corporate tax differences lead to even higher price-cost mark-ups for the multinationals... markets are not competitive. We call such effects 'true profit-shifting'."

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Unemployment in an interdependent world

Policymakers have traditionally relied on the belief that a country's labour market frictions should benefit its trading partners by entailing an export of jobs. According to a new study by Mario Larch (CESifo, Munich), this might not necessarily be the case.

How do institutional labour market reforms affect countries at home and abroad? Are trading partners affected positively or negatively from a labour market reform leading to higher unemployment at home?

In a world where countries are increasingly linked via trade in goods, capital and migration flows, labour market outcomes may also become more strongly interdependent: one country's institutions affect not only its own rate of unemployment but those of its trading partners. Hence countries and their actions are no longer independent from each other.

The contribution of this study is twofold. Firstly, we develop a single-sector, multi-country, asymmetric general equilibrium framework that combines two recent workhorse models – the monopolistic competition, heterogeneous firms trade model of Melitz (2003) and the search-and-matching approach of Mortensen and Pissarides (1994) – in order to study the question of labour market interdependencies.

In our set-up, contrary to the literature (Brecher, 1974; Davidson, Martin and Matusz, 1988, 1999; Davis, 1998; Helpman and Itskhoki, 2010), structural (i.e. non-cyclical) unemployment rates are always positively correlated across countries. The strength of the correlation depends on the size and centrality of countries, as well as on the degree of real wage flexibility.

Secondly, we empirically investigate cross-country labour market linkages using panel econometrics. The data confirms our theoretical findings and rejects alternative approaches based on multi-sector comparative advantage models.

There are at least four potential channels through which higher unemployment benefits at home can affect other countries' labour market outcomes. The first link is the effect of labour market institutions on the pattern of comparative advantages. Assume an increase in unemployment benefits at home leading to higher unemployment at home. This increases the relative capital-labour abundance.

A relatively capital-rich home economy specialises more strongly on capital-intensive goods, while the foreign country produces more of the labour-intensive goods. Labour demand in the foreign country goes up, and the marginal value product of labour increases. Firms create more vacancies, leading to a fall in unemployment.

The opposite logic applies if the home country is labour-rich. Hence the correlation of unemployment rates between countries depends crucially on the comparison of capital-labour ratios across countries.

"In a world where countries are increasingly linked via trade in goods, capital and migration flows, labour market outcomes may also become more strongly interdependent."

• Mario Larch

The second channel is an income effect. Higher unemployment at home reduces demand for imports from foreign countries. This leads to a positive correlation of unemployment rates. Effects of this type operate in the new economic geography literature but have hardly been explored in models of trade and unemployment. Crucially, the effect relies on the use of a fully-fledged general equilibrium model.

A third potential link operates through a competitiveness effect. Higher wage costs at home drive up labour costs and decrease the degree of firms' international competitiveness. Hence

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consumers switch to foreign suppliers, reducing derived labour demand at home and increasing it abroad. This channel tends to decrease unemployment in the trading partners and therefore generates a negative correlation of unemployment rates across countries.

A fourth link compounds the second and third effects discussed above. It relies on firm selection. The income effect reduces export demand, thereby lowering the weight of exporting firms, which also happen to be the most productive ones. This reduces average productivity.

The competitiveness channel alleviates competitive pressures on foreign producers so that low-productivity firms, which were not viable before, are now profitable. This again reduces average productivity abroad and thus demand for labour, thereby generating a positive correlation between unemployment rates.

Our model focuses on the last three channels, thereby implying a positive conditional correlation of unemployment rates across countries. Our theoretical model gives us clear and empirically testable predictions about the conditioning effect of size, geography and real wage flexibility on labour market spillovers. Relatively larger and peripheral countries are harmed more by their own labour market institutions and less by foreign ones, whereas small and centrally located countries are hit relatively harder by foreign labour market reforms and less by their own. Rigid wages tend to increase unemployment effects.

These theoretical predictions are well in line with our empirical findings, whereas the comparative advantage channel based on factor endowment differences is not supported by the data.

In order to measure the empirical importance of spillovers we include trade-weighted foreign variables in otherwise standard cross-country unemployment regressions run on panel data for 20 rich OECD countries. Instrumenting the average foreign unemployment rate by foreign exogenous variables and their time lags and controlling for business cycle effects and own labour market variables, we find a strong positive correlation between unemployment rates of countries.

A one-standard-deviation increase in the domestic wedge (i.e. the sum of the average wage tax burden and social benefits) adds about 1.5 percentage points to the equilibrium unemployment rate, whereas a one-standard-deviation increase of the foreign wedge adds about 0.2 percentage points. On average across specifications, our results suggest that the effect of foreign institutions on domestic unemployment is about 10% as strong as the effect of domestic institutions.

This result has an important policy implication. Policymakers may rely on the wisdom that labour market frictions in, say, Europe entail an export of jobs and so benefit workers in trading partner countries such as the US (see Davis, 1998). However, this view, based on factor endowment differences, is not supported by the data. It appears it is outweighed by income effects and selection, discussed in our model. Therefore workers in all trading countries should be concerned about poor labour market institutions in other countries. <

This article is based on Unemployment in an Interdependent World, co-authored by Mario Larch, Gabriel Felbermayr and Wolfgang Lechthaler.

"Workers in all trading countries should be concerned about poor labour market institutions in other countries."

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Subsidising firm entry in open economies

Supporting new business is high on many countries' policy agendas. Michael Pflüger (University of Passau, DIW and IZA) examines how international trade affects incentives to impact on entry costs for domestic entrepreneurs and how entry subsidies can be used strategically in open economies.

While there is an extensive literature addressing the motivations to regulate and subsidise entry in closed economies, the repercussions that emerge in open economies that exploit market entry subsidies are not yet well understood.

An entrepreneur who decides to enter an industry must undergo a number of costly legal procedures in order to start up a firm. The complexity of this process of obtaining all necessary permits, paying all fees and complying with other official requests differs vastly across countries. Djankov et al (2002) report that starting a business in Canada requires only two steps and works almost instantaneously, while setting up a firm in the Dominican Republic is much more complicated and requires some 21 different procedures and a waiting time of at least 80 business days. At the same time, governments also often encourage entry by means of start-up grants, guaranteed loans, preferential tax treatments or other forms of subsidies. Entrepreneurs are thus faced with different levels of effective entry costs in different countries. These costs, which are typically sunk for the entrants, are not entirely set by governments, as they also include upfront expenses for research and development, marketing etc, but they are heavily influenced by economic policy.

Policymakers have become increasingly aware of the welfare-enhancing effects of business start-ups in recent years. As an example, the Council of Economic Advisers acknowledges in a recent Economic Report to the President that the low costs of business entry with relatively few administrative hurdles were key for the superior efficiency gains in the US compared to other countries (Council of Economic Advisers, 2007). A similar point is made in the EU Commission's statements regarding its Lisbon growth and employment agenda (EU, 2005) and its state aid scoreboard (EU, 2007), as well as in recent reports by the German government (BuMiFin, 2007) and the German Board of Economic Advisers (Sachverständigenrat, 2009).

Supporting new business is therefore high on policy agendas, and public subsidies in support of new business foundation are among the most widespread and frequently used instruments of industrial policy in practice. An extensive literature addresses a plethora of motivations for such policies, which range from curing market failures (e.g. those associated with capital market imperfections, environmental issues or product quality issues) to increasing competition and fostering innovation (e.g. European Advisory Group, 2008).

However, this literature has not explored the repercussions that emerge in open economies that exploit market entry subsidies. In fact, what is not well understood in the literature yet is how international trade affects governments' incentives to impact on

"Policymakers have become increasingly aware of the welfare-enhancing effects of business start-ups in recent years."

• Michael Pflüger

effective entry costs for domestic entrepreneurs and how entry subsidies can be used strategically in open economies. These are the questions that we explore in this paper.

We build on a model of intra-industry trade with heterogeneous firms à la Melitz (2003), where we assume two (potentially asymmetric) countries and two sectors: a monopolistically competitive manufacturing industry and a perfectly competitive outside sector (Demidova, 2008). This model is particularly well suited as the basis for our analysis: in contrast to the traditional new trade literature with homogeneous firms (e.g. Helpman and Krugman, 1989), it explicates the process of firm entry with ex-ante uncertainty in a general equilibrium framework. Entrepreneurs in the manufacturing sector pay a sunk entry cost and randomly draw their productivity level. Only firms with a sufficiently high productivity draw that exceeds some endogenously determined cut-off level remain in the market. Firms with too low productivity immediately exit. Only the most productive firms self-select into export markets and gain market shares when the economy opens up to trade. Less productive

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firms sell only domestically, and the least efficient are forced to shut down.

The level of sunk entry costs, which is crucial for the analysis, is purely exogenous in Melitz (2003) and in the subsequent vast literature on firm heterogeneity. In this paper we introduce a government that collects lump-sum taxes in order to finance subsidies that reduce effective entry costs for the domestic entrepreneurs. In autarky such a subsidy quite naturally increases the mass of entrants deciding to start a business. The mass of surviving firms in the market is far less responsive in the autarky equilibrium, because the subsidy encourages competition and thereby raises the toughness of firm selection. Indeed, with our model's specification, the subsidy does not lead to more but to better firms in the market. These more productive firms produce and sell more output at lower prices, to the benefit of consumers.

In the open economy the increased competition and selection induced by entry subsidies are transmitted to exporters from the other country. Export market entry becomes more difficult for foreign enterprises. This negatively affects expected profits, entry incentives and the quality of foreign firms and strengthens the market position of domestic firms. Due to these general equilibrium interactions, there is scope for governments to use entry subsidies strategically in order to give domestic producers a competitive advantage in trade. This strategic use is particularly interesting, because entry subsidies to local entrepreneurs are mainly perceived as a domestic policy issue and not as a classical trade policy instrument (such as import tariffs or export subsidies) whose abuse is put under scrutiny (e.g. by the WTO or the European Commission). Our analysis reveals that entry subsidisation does have strong cross-country repercussions and therefore is not innocuous in an open-economy context.

In the analysis we solve for the entry subsidies in the Nash equilibrium, which depend on the level of trade freeness. More specifically, we show that gradual trade liberalisation first leads to an increase and then a decrease of the non-cooperatively chosen entry subsidies. Put differently, our model predicts a U-shaped relationship between trade freeness and the level of effective entry costs. These Nash-equilibrium subsidies differ from the level that would be chosen if the two countries coordinated their entry subsidisation policies. In fact, comparing the Nash equilibrium with the cooperative solution, our analysis suggests there is first too much and then too little entry subsidisation in the course of trade integration.

Our paper is related to the literature on firm entry in industrial organisation (e.g. Hopenhayn, 1992), the traditional new trade policy literature (e.g. Helpman and Krugman, 1989), an emerging literature that analyses policy issues in the heterogeneous firms frameworks (e.g. Chor, 2009; Demidova and Rodriguez-Clare, 2009) and the literature on international tax competition (e.g. Davies and Eckel, 2009). However, none of these works focuses on the strategic use of entry regulation and the pro-competitive effect associated with entry subsidies identified in our paper. <

This article is based on Subsidising Firm Entry in Open Economies, co-authored by Michael Pflüger and Jens Südekum (2010) and available for download at http://www.gep.org.uk/leverhulme/events/seminars.php.

"Our analysis reveals that entry subsidisation does have strong cross-country repercussions and therefore is not innocuous in an open-economy context."

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Strategic tariffs, tariff jumping and heterogeneous firms

The debate regarding the merits of trade can be traced back almost 2,000 years yet has still to be resolved. Here Matthew T Cole (University College, Dublin) adds to the discussion by examining trade policy using a tractable trade model and firm heterogeneity.

The merits of trade have been disputed for a very long time. Irwin (1996) provides a history of this argument and points out that it began as early as 100AD with Greek philosophers.

Though this lengthy debate still continues, it is the general conclusion of economists that countries, unilaterally, may have an incentive to raise tariffs. However, when all countries follow this incentive the result is that all countries are worse off than with freer trade. Despite this general understanding, the world has not yet reached the "socially efficient" outcome, and the debate over tariffs continues. Thus economists are still trying to better understand all the complexities of strategic trade policy.

"Economists are still trying to better understand all the complexities of strategic trade policy."

• Matthew T Cole

The introduction of firm heterogeneity (firms differing in their productivity) into a tractable trade model has allowed us to investigate trade policy along three interesting margins: how firm heterogeneity affects the globally efficient outcome; how firm heterogeneity affects the unilateral strategic tariff; and how the introduction of foreign direct investment (FDI) as an option for firms affects the unilateral strategic tariff. This latter point is important, as FDI has become an increasingly significant portion of the global economy.

Firstly, we show that the global welfare maximising tariff is negative – i.e. welfare is highest when trade is subsidised. This is entirely a consequence of firm heterogeneity. As is well known in this class of models, when domestic firms are forced to compete with importers the least productive domestic firms exit. This shifts resources towards more productive firms. As a result, in the case of free trade the productivity benefits of additional competition outweigh the costs arising from the distortions in the relative price of imported versus domestically produced goods.

We next characterise the non-cooperative strategic tariff for a particular country. Regardless of whether FDI is permitted as a possible firm structure, we find that this unilateral tariff is greater than the world welfare maximising tariff (even though in some instances the unilateral tariff could, in fact, be a subsidy as well). This implies that tariff competition lowers average productivity and highlights a new inefficiency from tariff competition, one that arises only in a model of heterogeneity.

Finally, we use numerical examples to compare the unilateral strategic tariff when FDI is an option for firms and when it is not. We find that equilibrium tariffs are lower whenever firms have the option to avail themselves of FDI. Allowing FDI creates two intuitive changes in the strategic tariff decision. In this model a country gains from a tariff in two ways: tariff revenue and increased domestic profits.

However, in the presence of multinationals both of these gains are dampened. In response to a tariff increase, the least efficient foreign exporters drop out of the market and the most efficient exporters become multinationals – i.e. "tariff jump". Both actions lower tariff revenue. The latter also lowers the gains to domestic profits from protection. As a result, FDI mitigates tariff competition and raises welfare in a non-cooperative trade policy setting.

As a "loose example", think of the US auto industry. Recently these companies have been at risk of bankruptcy. One may think a possible solution is for the government to protect them from foreign competition with tariffs. However, the government cannot protect Chrysler without also protecting Toyota production already located within the US. Moreover, in response to tariffs, these multinationals will simply increase production of their foreign (in the US) plants. A tariff would therefore no longer provide much (if any at all) benefit to the US auto industry. <

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