



**Leverhulme Centre**  
for Research on Globalisation and Economic Policy

# Newsletter

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**The University of  
Nottingham**

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### Asia and the shift from West to East

If the torch of economic superpower is truly passing to the East, when will the handover be finalised? What obstacles lie ahead? Or has the transition already effectively taken place? These and other key questions were addressed at a recent high-profile conference at GEP in Malaysia.

The challenges facing Asia as it bids to cement its role as the world's undisputed economic powerhouse came under the spotlight at GEP in Malaysia's annual international conference.

With the region's influence and importance continuing to strengthen in the wake of the financial crisis, leading economists gathered at the centre to consider the obstacles that still need to be negotiated if the torch is truly to be passed from West to East.

The prestigious event, held on 12 and 13 January and entitled Global Trends and Cycles: The Asian Experience, examined crucial issues such as international trade, business cycles, policy challenges, exports, foreign direct investment and openness.

It also featured two keynote lectures – The World Economy Annual Asia Lecture, sponsored by Wiley-Blackwell, and the Boustead Annual Globalisation Lecture.

The former, entitled Understanding the Middle-Income Trap in Economic Development, was delivered by Professor Wing Thye Woo, of the University of California, Davis.

Woo cited the example of Malaysia to explain the perils of the middle-income trap for developing nations – and the measures needed to escape the problem.

Other developing economies in Asia, chief among them China, are facing a similar challenge in making the leap from a labour-intensive to a knowledge-based economy.

According to Woo, Malaysia's outmoded economic growth strategy is responsible for "enshrining mediocrity at best and rewarding incompetence in general".

He said: "A knowledge-based economy stands on many pillars. It requires the

government to implement root-and-branch reform in many areas.

"Most notably, these include the civil service, educational and research institutions, the fiscal system, the state procurement system, the judiciary and government-linked companies.

"Only then do we get the microeconomic incentives right, get the macroeconomic balances right and get the governance institutions right in order to make the transition to a knowledge-based economy."

The Boustead Annual Globalisation Lecture, entitled Shifting Sands: The Global Financial Crisis and the Changing Balance of the World Economy, was given by Sunday Times Economics Editor David Smith.

He argued that one of the main effects of worldwide economic meltdown has been to speed up the rise of emerging economies such as China, India, Brazil and many African nations.

He told a packed audience: "These countries are much less affected by the aftermath of the crisis. Their banking systems are much less damaged and their public finances much less in trouble.

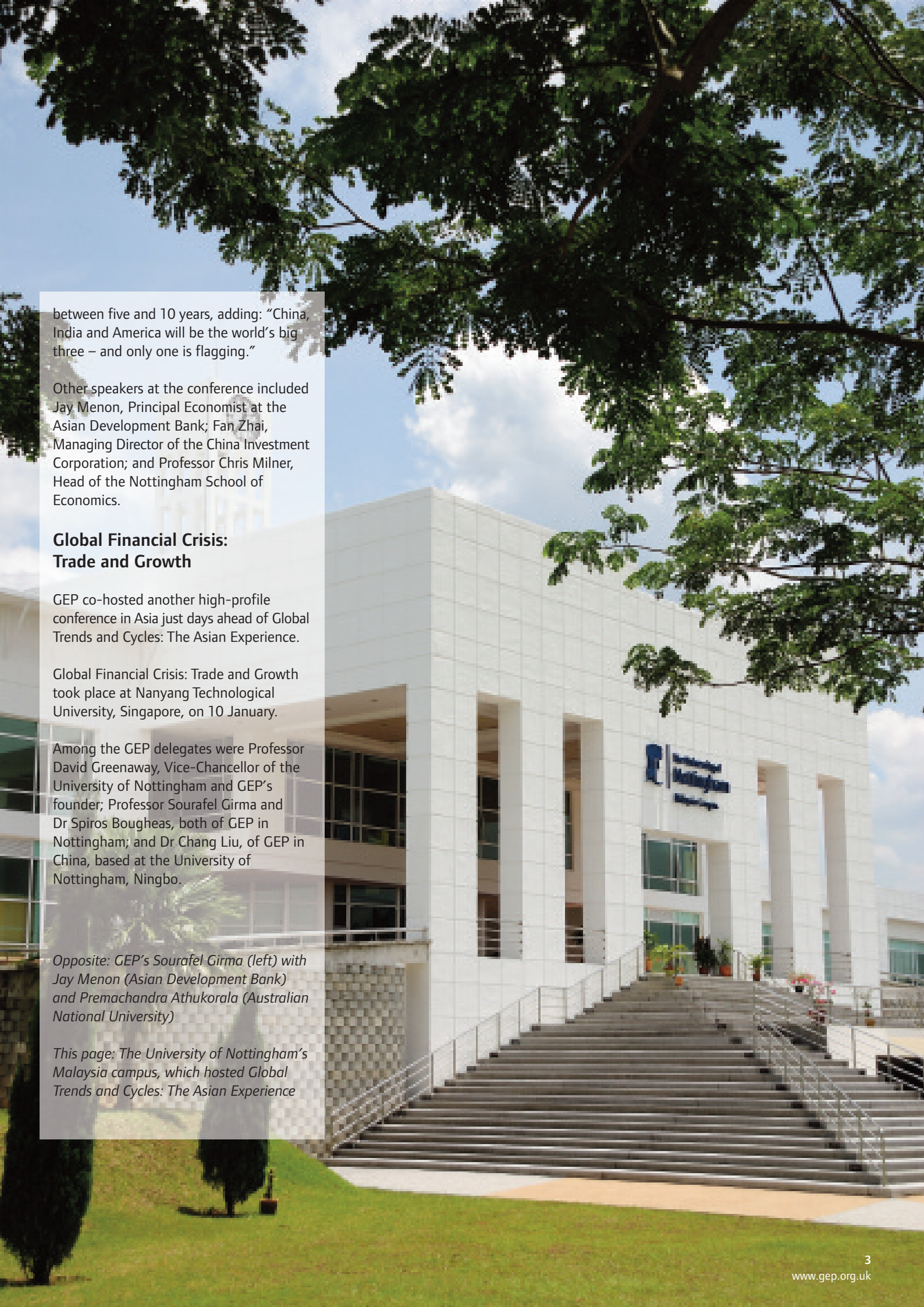
"Asian economies, having had their rehearsal with the Asian financial crisis of 1997-1998, made themselves more resilient, less vulnerable to the whims of the markets.

"Western economies, in contrast, are hobbled, in some cases very badly. The crisis of 2007-2009 perhaps marked the end of the American century, the passing of the torch to Asia.

"You write off America at your peril, but you can see in it a country that has lost its way. The problems there and in the eurozone are reflections of the fundamental shift that is occurring."

Smith suggested the financial crisis has accelerated the shift towards the East by





between five and 10 years, adding: “China, India and America will be the world’s big three – and only one is flagging.”

Other speakers at the conference included Jay Menon, Principal Economist at the Asian Development Bank; Fan Zhai, Managing Director of the China Investment Corporation; and Professor Chris Milner, Head of the Nottingham School of Economics.

### **Global Financial Crisis: Trade and Growth**

GEP co-hosted another high-profile conference in Asia just days ahead of Global Trends and Cycles: The Asian Experience.

Global Financial Crisis: Trade and Growth took place at Nanyang Technological University, Singapore, on 10 January.

Among the GEP delegates were Professor David Greenaway, Vice-Chancellor of the University of Nottingham and GEP’s founder; Professor Sourafel Girma and Dr Spiros Bougheas, both of GEP in Nottingham; and Dr Chang Liu, of GEP in China, based at the University of Nottingham, Ningbo.

*Opposite: GEP’s Sourafel Girma (left) with Jay Menon (Asian Development Bank) and Premachandra Athukorala (Australian National University)*

*This page: The University of Nottingham’s Malaysia campus, which hosted Global Trends and Cycles: The Asian Experience*

# GEP research helps highlight FTA benefits

The recently announced Free Trade Agreement between the EU and South Korea has been described as a “landmark agreement”. Trailblazing work by GEP helped shed light on its potential benefits.

Pioneering research by GEP in the field of modelling trade policy has been used to support the setting up of a major Free Trade Agreement between the EU and South Korea.

GEP’s Professor Chris Milner co-authored a key study into the benefits of the deal, which will come into force in July after winning European Parliament approval.

France’s Centre d’Etudes Prospectives et d’Informations Internationales and Laboratoire d’Economie Appliquée au Développement were also major contributors to the report.

**Economists are increasingly recognising the role played by issues such as transport infrastructure, problems with language and the quality of institutions.**

The study, *The Economic Impact of the Free Trade Agreement Between the European Union and Korea*, highlights the positive effects for both sides.

It details how GDP, imports and exports are likely to rise and reveals that the EU’s bilateral trade balance with South Korea could increase by more than 10bn euros.

The EU is set to improve its trade position in several industries, including chemicals, machinery, other manufactured goods and certain agricultural/food products.

South Korea’s position is likely to improve with regard to the likes of cars and other transport equipment, textiles, leather, clothing and other manufactured goods.

The study paid close attention to trade barriers and costs, which represent all the costs – excluding production – involved in delivering a good from manufacturer to final user.

Along with GEP colleagues, including founding Director Professor David Greenaway, Professor Milner has pioneered new research into the modelling and measurement of trade costs.

His work has focused on the costs arising out of factors such as transport infrastructure, distribution, contract enforcement and legal and regulatory requirements.

Professor Milner, Head of the Nottingham School of Economics, said: “Considerable research has been carried out into trade volumes and the impact of costs induced by government policy.

“But economists are increasingly recognising the role played by issues such as transport infrastructure, problems with language and the quality of institutions.

“There’s now a wider acceptance that these factors also encourage or discourage international trade – and the costs overall are greater than was previously thought.

“Differences in trade costs capture the differences in the quality of countries’ infrastructure and institutions and the competitiveness of business and policy environments.

“By concentrating on how those differences matter empirically to patterns of trade we see trade costs as an ‘endowment’ that can be fashioned to affect competitive advantage.

“It is possible for governments to help enhance trade cost endowments, boosting competitive advantage and a country’s goods and services exports.”

Professor Milner’s study into the effects of the EU–South Korea Free Trade Agreement shows EU GDP is likely to increase by 0.08% and South Korean GDP by 0.84%.

South Korean bilateral exports to the EU are estimated to rise by almost 40%, says the report, while EU bilateral exports to South Korea could go up by more than 80%.

The study concludes the most important export increase from the EU to South Korea will be cars and trucks, with a rise of 400% – worth some 8bn euros – predicted.

EU Trade Commissioner Karel De Gucht recently called the deal a “landmark agreement”, adding: “It is a benchmark for what we want to achieve with other key trading partners.”

## 2010 Annual Report published

GEP entered its second decade with the dawn of 2011. As our latest Annual Report illustrates, 2010 provided a suitably impressive climax to the Centre's first 10 years.

GEP has published its Annual Report for 2010, reflecting on the Centre's achievements during another productive and informative year.

As ever, the full version was delivered to the Leverhulme Trust, GEP's principal funder, while a summary version was produced for a wider audience.

Introducing the Report, GEP's Director, Professor Daniel Bernhofen, wrote: "It is now 10 years since Professor David Greenaway established the Leverhulme Centre for Globalisation and Economic Policy, and it is right to say that in the interim both GEP and the world economy have experienced significant changes.

"Thankfully, whereas the financial system has teetered on the brink of collapse and faces a lengthy period of recovery, the Centre has gone from strength to strength.

"Indeed, while Paul Samuelson's celebrated quip that 'economists have correctly predicted nine of the last five recessions' has enjoyed more than its fair share of airings since the turmoil of 2008, GEP and the people who have helped make it what it is have shown uncanny prescience from the start.

"First and foremost, Professor Greenaway and his fellow founders recognised at an early stage that an institution such as ours would prove increasingly significant in a world ever more receptive to the influence, importance and impact of globalisation.

"Secondly, the Centre acknowledged and embraced the nascent role of Asia by opening GEP in China and GEP in Malaysia – decisions whose foresight becomes plainer each year as the balance of growth continues its seemingly inexorable shift

and, as many commentators now agree, the torch of economic superpower passes from West to East.

"We can therefore take great satisfaction from the knowledge that GEP is firmly established at its base in Nottingham and in the region whose rise has been not just sustained but arguably accelerated by the financial crisis and subsequent events."

Professor Bernhofen said the Centre would continue to build on its work and would not become complacent, even after a decade of success.

He wrote: "The need for academia to demonstrate its worth... grows more acute each year. This is a period of austerity, an age of cuts, and in such circumstances a duty to identify, carry out and communicate research of genuine benefit to wider society is a paramount consideration.

"We must go on adding to our body of work, using the same combination of farsightedness, enthusiasm and rigour that has brought us this far. It is always a pleasure to reflect on previous achievements, but our focus remains on the future."

The report, which is available for download from the GEP website, contains extensive details of the Centre's research, conferences, seminars, lectures, visitors and outreach activities throughout the year.

The importance of GEP in China and GEP in Malaysia is also underlined in a section dedicated specifically to GEP's own globalisation efforts.

The report says: "Our initial statement of intent in terms of a serious commitment to the study of Asia's economies can be

traced back to the launch of our China and the World Economy programme in 2005. GEP in China and GEP in Malaysia followed three years later.

"Nothing since, the global financial crisis included, has cast doubt on the path we have taken. Asia is now almost universally regarded as the engine-room of worldwide economic recovery. By common consent, should the nation successfully complete the transition from a labour-intensive to a knowledge-based economy, China's pre-eminence will be complete and potentially long-lasting.

"We remain ideally positioned to observe and investigate the global recovery, Asia's central part in it and, perhaps most significantly of all, what lies beyond."



### Finance and trade

Finance and Trade, a joint conference co-organised by GEP, Munich's Ifo Institute and Tulane University's Murphy Institute, was held in Nottingham in February. GEP Research Fellow **Spiros Bougheas** reflects on some of the key contributions to the two-day event. GEP acknowledges financial support from the Ifo Institute in running this conference.



Spiros Bougheas

The global economic crisis has further highlighted the importance of issues relating to the impact of financial constraints on firms' international transactions. The aim of Finance and Trade, hosted by GEP at the University of Nottingham on 24 and 25 February, was to examine such concerns in detail.

**Pol Antras** (Harvard) delivered the event's keynote speech, entitled *Poultry in Motion: A Study of International Trade Finance Practices*. During the financial crisis trade volume has significantly declined, and some of this decline has been attributed to the tightening of liquidity constraints. Exporting firms can directly provide liquidity to their customers by accepting payments after goods are delivered, but there are also cases where firms ask for payments in advance of delivery. These practices are either directly negotiated between the two parties or, using letters of credit, intermediated through the banking system. Detailed data on trade finance collected from an American firm that exports to a

**The global economic crisis has further highlighted the importance of issues relating to the impact of financial constraints on firms' international transactions.**

large number of destinations show directly negotiated transactions are very common. Antras develops a theoretical model to analyse the determinants of the optimal choice between the two privately negotiated trade finance options.

**Kalina Manova** (Stanford) presented *Firm Exports and Multinational Activity Under Credit Constraints*, a study offering firm-level evidence that credit constraints restrict international trade flows and affect the pattern of foreign direct investment. Detailed data from China reveal foreign-owned firms and joint ventures have better export performance than private domestic firms and that this advantage, measured in a variety of ways, is systematically greater in sectors at higher levels of financial vulnerability.

Research by **Jiandong Ju** (Tsinghua University and University of Oklahoma), *Are Trade Liberalisations a Source of Global Imbalances?*, examines how trade reforms affect capital flows. Using a modified Heckscher-Ohlin framework, it is shown that trade liberalisations in a developing country always lead to capital outflow; by contrast, trade liberalisations in a developed country result in capital inflow. Trade reforms could thus contribute to global imbalances. It is also demonstrated

that the magnitude of capital outflow due to trade liberalisations in a country without financial frictions is significantly larger than that in a country with credit constraints.

**Christian Keuschnigg** (University of St Gallen) offered a theoretical study, *Innovation, Trade and Finance*, proposing a model in which heterogeneous firms choose whether to undertake R&D. Innovative firms are more productive and have larger investment opportunities and lower own funds for necessary tangible continuation investments than non-innovating firms: thus innovative firms are financially constrained, while standard firms are not. The research shows the efficiency of the financial sector and a country's institutional quality relating to corporate finance determine the share of R&D-intensive firms and the comparative advantage in producing innovative goods.

**Tomasz Michalski** (HEC Paris) presented a paper entitled *(Inter-State) Banking and (Inter-State) Trade: Does Real Integration Follow Financial Integration?*, which examines whether financial sector integration leads to real sector integration through trade. A theoretical model built to study this issue suggests this is the case, as banks with a presence in the two regions are better able to assess risks and charge the appropriate premiums for trade-related projects pertinent to the two markets; the same banks charge higher average interest rates for projects that involve trade to other markets from which they are absent. The implications of the model are tested using the deregulation of inter-state banking in the US as a natural experiment.

The empirical evidence indicates there is a trade channel associated with the finance growth nexus.

Drawing on a study entitled Financial System Architecture and the Patterns of International Trade, **Spiros Bougheas** (GEP, University of Nottingham) proposed a link between cross-country variations in financial system architecture and the patterns of international trade. It is argued that those countries with market-based financial systems should have similar trade patterns; the same should be true for countries with bank-based financial systems; and there should be strong differences in comparative

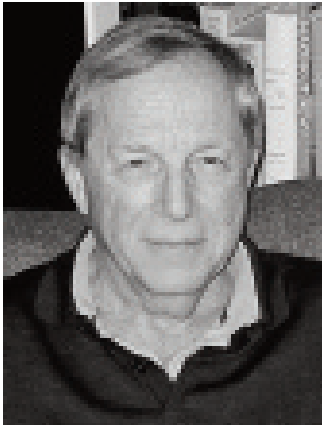
advantage between these two groups. There are two channels that might explain these observations: one is related to differences in technological advancement, while the other suggests differences in institutional quality as the drivers of financial development.

**During the financial crisis trade volume has significantly declined, and some of this decline has been attributed to the tightening of liquidity constraints.**



# Trade flows and the gravity model

GEP's prestigious Nottingham Lectures in International Economics are intended as a "masterclass" for graduate students and faculty. As GEP's Alejandro Riaño reports, this year they were delivered by **James E Anderson**, William B Neenan S J Millennium Professor of Economics at Boston College.



James E Anderson

Despite the strong impetus with which globalisation has spread over the past 50 years and the dramatic reduction of formal trade barriers between countries, we still observe that economic interaction tends to be highly localised. In other words, a substantial volume of transactions takes place within rather than between countries. Trade costs – broadly defined to include such factors as physical distance and language, cultural and regulatory differences – are still very large.

James E Anderson's "Gravity model" provides a powerful instrument to help us to determine the magnitude of these costs, as he showed when he visited GEP to deliver the Nottingham Lectures in International Economics on 8, 9 and 10 March.

In his first lecture, entitled Intuitive Gravity, Anderson provided some background on the origins of the Gravity model. Originally used as early as 1889 in E G Ravenstein's study of migratory patterns in the UK, the model was first applied to the explanation of trade flows by Jan Tinbergen in 1962. Despite its long intellectual history and remarkable success in explaining the large variation of economic interaction across space, it was only recently that a real grasp of its theoretical underpinnings was developed.

The model derives its name from an analogy to Newton's Law of Gravitation. The predicted flow of goods or factors of production between an origin and a destination equals the product of a mass of goods supplied at the origin and a mass of demand for goods or factors at the destination, with the potential flow reducing by the distance between the two.

In an international trade context – in which goods may flow from many origins to many destination countries – it is vital to notice that flows do not only respond to bilateral frictions, as the resistance to movement

**The Gravity model provides a powerful instrument to help us to determine the magnitude of trade costs.**

with respect to all possible origins and to all possible destinations matters. Thus the analogy extends to the N-body problem of Newtonian gravitation.

A natural first step towards understanding the workings of the model is to derive its implications under the simplest possible scenario – specifically, a completely smooth, homogeneous and frictionless world. This exercise provides a clear benchmark to

which we can compare observed trade flows, allowing us to infer the size of trade costs. Removing frictions also allows us to gain an understanding of a wide array of implications that the model provides with respect to the effect of economic size on trade flows – for example, the fact that smaller countries are more open to trade.

In the second lecture, Structural Gravity, Anderson reintroduced trade frictions and derived the main equations of the gravity model in a formal fashion. He first made the point that under the assumption of trade separability – meaning the allocation of production and consumption within a country is separable from the allocation of trade across countries – the model can be derived from three different structures describing the demand and supply of goods: (i) assuming goods are differentiated in demand in an endowment economy; (ii) assuming homogeneous demand in a Ricardian world where suppliers are heterogeneous in terms of productivity; and (iii) a discrete-choice environment in which traders choose of all bilateral pairs the one that yields the greatest gain.

Once the structural gravity equations have been derived, two new and important elements arise: the inward and outward multilateral resistance terms. These are

indices of bilateral trade costs that measure the incidence of trade costs on buyers and sellers.

Anderson's third and final lecture, Discrete Choice Gravity, sought to deal with the fact that many country pairs exhibit zero trade flows. These can be accounted for in several ways – for instance, the use of translog preferences rather than CES preferences. Translog preferences feature “choke prices” above which demand is equal to zero, which can account for the lack of trade flows between countries; another possibility is to assume fixed export costs maintaining CES preferences, which would result in zero trade flows if no firm in the origin country finds it profitable to export to a particular destination.

By way of conclusion, Anderson returned to the origins of the Gravity model and demonstrated how, making use of the discrete-choice modelling apparatus developed by McFadden, it can also be used for the effective modelling of factor movements. This marked the end of a fascinating three days that, as ever, ensured the Nottingham Lectures in Economics lived up to their “masterclass” billing.

**Once the structural gravity equations have been derived, two new and important elements arise: the inward and outward multilateral resistance terms.**



# Strategic trade policy and endogenous product differentiation

With domestic firms facing ever-fiercer competition in global markets, what is the optimal policy for research and development? **Andreas Hoefele** (GEP, University of Nottingham) introduces a novel methodology to revisit the debate.



Andreas Hoefele

Given that policymakers can work together or separately and that countries are in general able either to subsidise or tax R&D investment by firms, what is the optimal policy for research and development? One of the reasons the debate is important is the direct implication for policymakers. The European Commission aims to enhance innovation within the EU to increase competitiveness and foster job creation by coordinating the efforts of individual countries; yet the optimal policy might be different under cooperation compared to a decentralised system, since a centralised system can take into account competitive externalities.

Due to globalisation, domestic firms face fiercer competition in world markets. Firms have a variety of strategies to cope with the increased pressure: for example, they can invest in cost-cutting R&D, trim costs by offshoring part of their production or invest in changing their products' characteristics to reduce their substitutability. I consider strategic trade policy in an environment where firms competing in an international market invest in horizontally differentiating their products.

I first investigate the incentives for firms to invest in R&D to differentiate their products, concluding that the strategic nature of investment depends on demand structure. I further show this has important implications for the optimal policy, as this also depends on demand structure.

Following the standard approach to the policy game, the novelty of my methodology lies in considering investment in product differentiation by

firms. This contrasts with the existing literature, which, using the same policy game, focuses on investment in process innovation. Additionally, I am able to control for a change in the size of the market when firms invest in changing their product. Before laying out the main argument of the paper I will discuss in some detail the two dimensions in which my work differs from existing studies.

By investing in differentiating their products firms are able to change the characteristics of the products they sell, reducing the degree of substitutability between outputs. The reason for considering this type of innovation is the empirical observation that it is important for firms to invest in product innovation.

For example, a survey of London-based firms asked them to rank competitive strategies: on average they ranked those associated with differentiating their products higher than those associated with cost reduction. Furthermore, evidence suggests three quarters of the investment expenditure of US-based firms goes into product innovation. Japanese firms invest the lowest share in product innovation, but even this still represents a fifth of their expenditure. This evidence strongly indicates not only that investing in product differentiation is an important strategy for firms but that investment is biased towards differentiation.

In what way can firms benefit from differentiating their products? Firstly, they can increase their market power; secondly, they may attract consumers to the market. By way of example, consider the computer market and the invention of the netbook.

**The main contribution of the paper is to derive the optimal policy by distinguishing between cooperation and non-cooperation among policymakers.**

On the one hand, the netbook's introduction influenced consumers who bought a desktop to buy a netbook (which is transportable) as well. This increased overall spending on the computer market. On the other hand, the inventor of the netbook diverted resources from the production of computers to the production of netbooks, thus forfeiting competing in the desktop market. The result is that both the netbook producer and its rival, which still concentrates on desktop production, have greater power in their respective market segments.

The second new aspect of the model is the concept of the market-expansion effect and its impact on optimal policy. As described in the netbook example, by changing the characteristics of their products firms might be able to attract new consumers to the market, leading to an increase in aggregate demand; but the size of that increase might depend on the industry under consideration.

For instance, a young market might exhibit a strong market-expansion effect compared to an established market that is relatively saturated. The reason is that consumers value distinct products more in a young market than in an old one, as products are already established in the

latter. I use a formulation of the preference structure that allows me to control for the strength of the market-expansion effect.

The main contribution of the paper is to derive the optimal policy by distinguishing between cooperation and non-cooperation among policymakers.

Let us first consider non-cooperation. The first result of my paper is that there exist conditions under which an investment tax rather than a subsidy is optimal. If the market-expansion effect is weak the optimal policy is a tax, whereas if the market-expansion effect is strong a subsidy is optimal. The intuition for the result is that by differentiating their products firms are able to reduce the substitutability of those products in the market – and more market power means higher profits in the international market.

A result in favour of an R&D tax comes from the assumption that changing the characteristic of a product benefits a firm's rival by making the rival's product "more unique" as well. The policymaker exploits this free-riding effect by reducing domestic investment via a tax.

The intuition for an R&D subsidy is that the market-expansion effect dominates the free-riding effect. By changing the characteristic of its product a firm is able to capture new consumers, which implies an increase in aggregate demand. By subsidising the domestic firm a government induces a stronger change in characteristics and thus a stronger increase in the market.

In the case of policymakers coordinating their efforts, meanwhile, a subsidy is always

optimal. The intuition is that the free-riding effect of the R&D investment is internalised: accordingly, governments have an incentive to support innovation, as more differentiation means higher profits. The cooperative policy is independent of the market-expansion effect.

*This article is based on Strategic Trade Policy With Endogenous Product Differentiation, by Andreas Hoefele (GEP, University of Nottingham).*

# Global economic integration and the proximity-concentration trade-off framework

Brainard's proximity-concentration trade-off framework is the acknowledged "workhorse" in explaining why firms become exporters or foreign investors. Recent work by **Erdal Yalcin** (Ifo Institute, Munich) and Davide Sala (University of Aarhus) extends the framework in a novel direction.



Erdal Yalcin

**Overall, an increase in productivity growth and a rise in uncertainty amplify the dominance of the FDI strategy – but their effect on the expected entry time differs.**

International trade has for many years been considered the major force for global economic integration. This perception has changed fundamentally – starting in the early 1980s with the surge of foreign direct investment (FDI), which is mainly driven by multinational enterprises' cross-border investment activities.

While world exports and imports have exhibited an average annual growth rate of around seven per cent between 1980 and the recent financial crises, world FDI inflows, with minor exceptions, have grown at double-digit rates during the same period.

John Dunning's OLI Framework first identified three important characteristics of multinational enterprises to explain why firms become international and whether they choose to be exporters or foreign investors: ownership, location and internalisation advantages.

More advanced theoretical contributions followed, elaborating specific cost structures for exporters and foreign direct investors. The most prominent of these, the proximity-concentration trade-off framework, was first presented in Lael Brainard's seminal contributions and has become the workhorse model within international economics.

According to the framework, "the decision whether to expand abroad via trade or via investment hinges on a trade-off between [the] proximity advantages and scale advantages from concentrating production in a single location". Recent advances in trade theory have extended this basic to include a more involved treatment of the firm: not simply a multinational firm with two-plant operations but one with multiple platforms, different efficiency

levels or more complex foreign affiliate acquisition strategies. This last strand of literature has been motivated by further empirical observations of FDI flows, which turn out to be driven, crucially, by cross-border M&As.

While theoretical and empirical contributions are today able to explain the observed patterns of exporting and FDI strategies at any point in time, even in very narrowly defined industries, they still cannot fully account for the dynamics and timing of alternative internationalisation strategies. Two empirical patterns in export and FDI flows are still not entirely understood.

Firstly, FDI flows have steadily increased over the past decades, but they evolve in waves, with strong surges followed by decreasing growth rates.

Secondly, according to the proximity-concentration trade-off argument, only a drastic rise in transportation costs could explain the surge in FDI. But the available evidence generally points only to a slow (albeit steady) decline in air and ocean fares – a pattern that, if anything, should imply the consolidation of exporting.

One possible explanation for this paradox of increasing FDI flows and decreasing trade costs is provided by Peter Neary, who proposes to account for export platforms and regionalism. Accordingly, a decrease of intra-union barriers can motivate multinational enterprises to set up plants in free-trade areas and customs unions.

Along a similar line of reasoning, the increase of trade in intermediates between countries with low labour costs and industrialised nations is identified as a further source of increasing FDI where exports turn out to be complements.

These contributions provide a solution of the latter paradox but still fail to explain the wave-shaped evolutions of global FDI flows within the proximity-concentration hypothesis.

Accounting for uncertainty as a crucial determinant for a firm's internationalisation decision may offer a possible solution – one that might also explain particular FDI patterns. Indeed, firm-level data provide evidence that firms' uncertainty has risen over the past three decades.

Based on these stylised facts, our recent work extends the proximity-concentration trade-off framework by confronting a multinational enterprise with idiosyncratic productivity shocks and irreversible fixed costs that arise if the firm enters a new foreign market as an exporter or via FDI.

Following the neoclassical investment literature ("real option" theory), we show the combination of stochastic productivity growth and the specific cost structures of exporting and FDI leads to a timing of foreign market entry that can explain the wave-shaped FDI flows and their steady increase amid falling trade costs. The main result of the analysis is that uncertainty biases the firm's choice towards the FDI strategy.

Postponing market entry is valuable in partially resolving uncertainty; but in a dynamic setting, because fixed costs in the "real option" framework are irreversible and incurred only upon entry, waiting also reduces the prospective fixed costs. These cost adjustments over time reduce the relative fixed-cost disadvantage of the FDI mode.

Overall, an increase in productivity growth and a rise in uncertainty amplify the

dominance of the FDI strategy – but their effect on the expected entry time differs. More precisely, at a given point in time a boost in productivity growth accompanied by a constant extent of volatility (or a modest increase) leads to an anticipation of foreign market entry through FDI. By contrast, an increase in volatility amid a constant growth rate in productivity (or a modest increase) leads to a postponement of market entry through FDI.

Market entry observed in a specific period is therefore shaped by the dynamic cumulative effect of these two forces. It comprises those firms that are anticipating entry because of a higher productivity growth as well as those firms that, because of increased uncertainty, initially retarded entry.

It is worth noting here that the waves of FDI flows during the past decades emerged amid strong changes in productivity growth and volatility. We emphasise it is not necessarily only uncertainty in productivity that leads to this particular timing pattern: ultimately, it is uncertainty in periodical cash flows, which can stem from a vast range of microeconomic variables.

*This article is based on Uncertain Productivity Growth and the Choice Between FDI and Export, co-authored by Davide Sala (University of Aarhus) and Erdal Yalcin (Ifo Institute, Munich) and presented by the latter at the recent GEP/Ifo Institute conference, Finance and Trade.*



## Government, trade and finance

International trade indirectly spurs financial development if international competition weakens a government's power to implement public policies that substitute private transactions. **Anna Lo Prete** and Giuseppe Bertola (University of Torino) model this mechanism and find robust evidence of the relationship between the trade-driven decline of a government's economic role and the growth of credit. This summary is based on a paper presented by Anna at the recent GEP/ifo conference on 'Finance and Trade'.



Anna Lo Prete

Financial volumes and international trade both increased considerably between the 1980s and the 2000s. Over the same period governments tended to retrench from economic activity and deregulate financial markets.

While these broad trends may have been driven by common exogenous factors such as technological change, they are also linked through several channels. It is important to understand these channels, as the same forces that were at work in the past might produce opposite effects in the aftermath of the 2008-2009 financial crisis.

Since returns and incomes are higher but perhaps more disperse in more internationally integrated economies, openness to trade may increase the demand for external private finance from firms looking for more investment opportunities and households willing to smooth consumption fluctuations. Previous work has focused on such a direct relationship between financial development and trade, finding trade and finance are positively related in the data (Do and Levchenko, 2007).

We focus on a less direct and more policy-relevant explanation for such covariation. Combining insights from hitherto separate strands of literature, we explore the possibility that international trade, through its effects on policy choices, may also indirectly foster financial development.

Observed financial transactions are obviously influenced by government policies (e.g. social and unemployment

insurance schemes) that are intended to reallocate resources over time. In more open economies higher volatility of incomes may compel governments to play a bigger role in providing social insurance (Rodrik, 1998), but the extent of that role is limited by the fact that in such economies governments find it harder to raise taxes and fund public insurance schemes (Sinn, 2003). Whether or not it increases the volatility of incomes, trade should result in larger financial volumes if private market transactions substitute redistribution and public funding of educational and housing investments.

Policymakers may also facilitate private financial markets' operation through deregulation and the provision of suitable legal and informational infrastructure (Tressel and Detragiache, 2008). Financial market deregulation is more appealing when national government policies are more heavily restrained by trade liberalisation, which in turn reflects exogenous globalisation forces and country-specific policy choices.

We propose a simple model of how financial development results from choices along three policy dimensions: trade liberalisation, financial market deregulation and the economic role of government. Policy choices are interrelated and shaped by structural features: depending on how easy it is to substitute public policy with private markets and how beneficial or difficult it is to restrain international trade, each economy will choose a different package of barriers to international markets, public policies that substitute private contractual

arrangements and financial market deregulation.

We empirically analyse country-specific trajectories along and around broad worldwide trends of governments, trade and finance in a standard OECD panel dataset. To isolate an exogenous component of policy variation we interact time effects or trends (representing forces fostering global technological and cultural trade) with time-invariant country-specific features; to capture cross-country differences in the intensity of economic integration forces we use the Frankel and Romer (1999) “natural openness” indicator of geographic characteristics; and to account for differences in the ease of substituting private markets with public sector intervention we use the La Porta et alia (1999) indicator of how each country’s legal origin might affect its policies and markets.

Instrumental variable estimates document that government’s share of GDP has a large, significant and robust negative effect on financial development, measured as the ratio of private credit to GDP. Controlling for government economic activity and for financial market deregulation (which does not vary across countries and over time in ways conducive to precise and robust estimation), there is no evidence of a direct causal relationship between trade openness and financial development.

The theoretical channels and empirical patterns we detect over the period 1980–2007 may be relevant in the aftermath of the 2008–2009 economic and financial

crisis. Trade restrictions and financial repression might be accompanied by more pervasive finance-substituting public policies if financial markets’ performance proves unsatisfactory and policymakers reverse previous patterns.

In future work it would be useful and important to bring our model of policy choices to bear on welfare-relevant variables such as the growth, inequality and instability of income and consumption in different countries and periods.

*This article is based on Governments, Trade and Finance: 1980–2007, co-authored by Giuseppe Bertola and Anna Lo Prete (both University of Torino) and presented by the latter at the recent GEP/Ifo Institute conference, Finance and Trade.*

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# Exports, investment and firm-level sales volatility

Exporting and investing are among the most important decisions to confront a firm, but the two have traditionally been studied independently of each other. Recent research by **Alejandro Riaño** (GEP, University of Nottingham, and CESifo) attempts to bridge the gap.



Alejandro Riaño

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Selling a product in a foreign country and investing in physical capital are perhaps two of the most important decisions faced by a firm. Exporting signals an ability to compete in the global marketplace commonly associated with high productivity and efficiency, while today's investment provides the seeds for tomorrow's growth. Yet, despite their great importance, these two activities have so far been studied independently of each other.

The theoretical and empirical models used to investigate the decision to export frequently assume firms produce using only one factor of production (labour) and more often than not are set in static environments that cannot accommodate the decision to invest today's resources with the expectation of higher future rewards. Likewise, models of investment are simplified by assuming firms operate in a closed economy.

I provide a first attempt to bridge this gap in the literature by developing a quantitative model of the joint exporting and investment decisions at the firm level. Because I use Colombian firm-level data for the manufacturing sector during the 1980s to calibrate the model's parameters, I set up an environment that seeks to approximate salient features of the capital markets faced by firms in developing countries; in particular, I assume firms are owned by risk-averse entrepreneurs who derive their income from dividends. Additionally, to capture the underdevelopment of financial markets, I assume firms cannot borrow to finance investment and cannot sell capital goods in secondary markets, thus making investment irreversible.

On the exporting side the modelling is more standard. Firms face sunk entry costs when they start exporting, as well as fixed continuation costs every period they sell abroad, as is common in the literature pioneered by Roberts and Tybout (1997). The main distinction of the model with respect to this body of work is that, in addition to productivity shocks driving the decision to export, I assume firms face idiosyncratic, destination-specific demand shocks with an arbitrary correlation structure.

The calibrated model replicates several stylised facts characterising exporting at the firm level: (i) only a small fraction of firms export at any point in time; (ii) exporting status is highly persistent; and (iii) exporters are larger and present more volatile total sales than domestic firms. From a quantitative standpoint, a more novel result is that the model closely matches both the lower frequency of investment zeroes (episodes in which firms' investment rates are below one per cent in absolute value) and the higher likelihood of investment spikes (investment rates above 20 per cent) for exporters than for domestic firms observed in the data – a pattern that, to the best of my knowledge, has not been documented before.

With the confidence that the model closely provides a good fit to the data, I set out to study how a firm's decision to become an exporter affects the volatility of its sales.

A common concern among policymakers and the public is that as an economy becomes more interconnected with the rest of the world it might become increasingly unstable, as there are more

sources of uncertainty to worry about. The same analogy works at the firm level, where foreign demand or uncertainty over exchange rates can severely affect a firm's profits. On the other hand, one might argue firms can use the imperfect correlation of demand shocks across different destinations as a hedging mechanism to reduce the volatility of their earnings and profits.

Increasing the correlation between domestic and foreign demand shocks has a very small but positive effect on the share of exporting firms in the model. Increasing the correlation from -0.75 to +0.75 increases the share of exporters by around three percentage points. How can it be that a stronger positive correlation induces more firms to become exporters when firm owners are risk-averse?

The reason behind this puzzling pattern is that the high persistence of productivity implied by the calibration dramatically increases the value of being an exporter. Long-lived positive productivity shocks combined with high demand at home and abroad induce firms to become exporters regardless of the higher sales volatility induced by the positive correlation of demand shocks. When the persistence of productivity shocks is reduced the pattern reverses – and more firms export when the correlation of demand shocks is low or negative.

The punchline is that how exporting affects sales volatility crucially depends on the main determinant of a firm's decision to export – productivity or demand shocks. This is an important empirical question that the literature has only recently begun to address (Munch and Nguyen, 2008).

Finally, I conduct two counterfactual experiments to gauge the impact that exporting has on firm-level sales volatility. In the first the foreign market is shut down, so firms are precluded from exporting; in the second fixed and sunk costs are set to zero, so all firms find it optimal to export. Comparing the volatility of sales of firms that export in the benchmark model shows that sales volatility for these firms is higher in the benchmark than in both counterfactual experiments. The substantial changes in total sales induced by the fixed and sunk costs that firms incur when they export (costs that firms do not bear in either of the counterfactual experiments) result in higher sales volatility for firms that choose to start exporting.

*This article is based on Exports, Investment and Firm-Level Sales Volatility, by Alejandro Riaño (GEP, University of Nottingham, and CESifo).*

Visit <http://www.cesifo-group.de/portal/pls/portal/docs/1/1201150.pdf> for the full research.

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