

Institution: Queen Mary University of London (QMUL)

Unit of Assessment: C18 Economics and Econometrics

A. Overview

Since 2008 the School of Economics and Finance (SEF) at QMUL has significantly increased the size and quality of its staff, research output, and doctoral programme in order to establish itself as a centre of international excellence in research. This document describes the School's achievements on these dimensions as well as the explicit and articulated strategy that underpins its continuing expansion.

B. Research strategy

B.1. Introduction

During the assessment period the School has sought to capitalise on its success in RAE 2008 (when it was ranked third in London and joint-sixth in the UK) to become a centre of international excellence in research and a leading doctoral training institution in Europe.

The School has pursued these aims by hiring and retaining researchers of the highest calibre, substantially increasing the size and quality of its doctoral student intake, and creating an environment that facilitates and rewards high-quality research. Its success is also linked to recent gains by the wider university, notably the improvement in research strength across most disciplines, which enabled QMUL to join the Russell Group in August 2012.

The School's central objective for the future is to strengthen further its international standing and research profile, and thereby firmly establish itself among top UK departments. To achieve this goal the School plans to continue to focus on the key areas of hiring and retention, doctoral training, and research environment, as well as to renew its emphasis on securing external research funding.

B.2. Structure of research activity

In its RAE 2008 submission the School set out three explicit aims: to strengthen the clusters of internationally renowned staff around its distinctive areas of strength (applied economics, economic theory, and econometrics); to continue to produce and publish research of the highest quality; and to expand its doctoral programme. The School has delivered on each of these aims, and has in many respects outperformed its RAE 2008 goals.

Since 2008 the size and scientific quality of SEF staff and its research output have increased markedly. The academic staff count has increased from 25.5 to 32.45 FTE (see Section C.1), and the number of publications in top-five journals (*Amer Econ Rev, Econometrica, J Polit Economy, Quart J Econ,* and *Rev Econ Stud*) produced during the assessment period has risen from 4 to 15.

The School's doctoral programme has grown from 26 to 35 students during the assessment period, and its PhD students increasingly come from top universities (see Section C.2).

The School has further strengthened its historical areas of specialization and has also expanded into new fields, notably macroeconomics and finance. The School now produces high-quality research across most areas of economics, econometrics, and finance, with concomitant effects on its research impact, its national and international visibility, and the appeal of its doctoral programme.

The School's scholarly activities can be usefully classified into the following five research groups (though there are significant overlaps and collaborations between them).

1. Applied microeconomics (Azmat, Battistin, Cornaglia, Fasani, R Hjalmarsson, Manacorda, Petrongolo, Tesei).

Research in this area has addressed central issues in labour economics, examining the impact of migration, welfare systems, and development policies. Other work relates to a wide variety of applied topics, including education, health, crime, the media, and voting behaviour. Members of



this group have studied a range of developed and developing countries.

A common thread running through SEF research in applied microeconomics is the question of how policy interventions interact with individual incentives, sometimes producing unintended outcomes. Examples include the effects of smoking bans in public places on children's passive smoke exposure at home; the effects of strict job-search requirements on detachment from the labour market; the effects of working-time regulations on spousal labour supply; the effects of education legislation on criminal behaviour; the effects of interactions with the justice system on high school dropout rates; and the effects of grade retention policies on school attendance.

2. Economic theory (Allouch, Ivanov, Llorente-Saguer, Tyson, Veneziani, Vriend).

SEF research in economic theory has three main strands. The first is behavioural and experimental game theory, including studies of common-value auctions, investment games, and voting behaviour. This work has highlighted systematic deviations of laboratory behaviour from theoretical predictions.

The second strand of research is theoretical political economy, including studies of public goods and coalition formation in networks, political motivations, and electoral competition. One key finding here is that segregation in a society can undermine the impact of redistributive policies that aim to enhance public good provision.

The third strand of research is individual and social choice, covering a range of topics in individual decision making as well as the theory of inequality of opportunities. This work has highlighted a fundamental inconsistency in the liberal democratic outlook: Every social decision rule that satisfies unanimity and a principle of non-interference must be dictatorial.

3. Macroeconomics (Blake, Faccini, Fella, Mateos-Planas, Mumtaz, Sustek, Weale).

Research in this area develops along three main lines: macroeconomic fluctuations, heterogeneous agents with incomplete markets, and time-consistent policy.

It includes novel quantitative conclusions about the relative contribution of nominal and financial frictions to economic fluctuations—an issue both timely and timeless. Work on time-consistent taxation has uncovered the quantitative role of demographic factors. Research in policy design with heterogeneous agents has provided a comprehensive, general-equilibrium analysis of how interventions in education can dominate alternative interventions in terms of crime reduction.

4. Finance (Baillie, Breedon, Fernandes, E Hjalmarsson, Nikolowa, Skiadopoulos).

Research in finance relates to topics such as financial contagion, risk premia, quantitative easing, expectation hypotheses, foreign exchange markets, and macroeconomic forecasting.

Other work studies algorithmic trading, which involves computers directly managing the transaction process at high frequencies. This practice is now widespread in financial markets, and has been shown to have significant implications for market efficiency and price discovery.

Developing research in finance, economics and econometrics under one roof is a distinctive aspect of the School in the wider UK and international context, and one strategic choice that has successfully encouraged collaborations and synergies between the different disciplines.

Econometrics (Carriero, Giraitis, Guerre, Kapetanios, Lazarova, Leonida).

SEF econometricians have produced significant contributions to both econometric theory and its applications. Theoretical research has investigated long-memory processes, nonparametric analysis, large datasets, factor models, and forecasting under structural change. Other highly influential work in this area studies non-stationary multifactor error structures in panel data.

Research in applied econometrics relates to industrial organisation, auction theory, and financial economics, among other fields. For example, the work on auctions has proposed parametric identifying restrictions and a semi-parametric estimator for risk aversion and the latent distribution of private values.



B.3. Achievements during the assessment period

SEF total research output from 2008–13 (not limited to the REF submission) contains publications in all top-five journals in economics, all main general-interest journals, and all of the top field journals in relevant areas.

Specifically, the School has generated: 6 publications in *Amer Econ Rev*, 2 in *Econometrica*, 2 in *J Polit Economy*, 2 in *Quart J Econ*, 3 in *Rev Econ Stud*, 3 in *Amer Econ J*, 4 in *Econ J*, 3 in *Int Econ Rev*, 2 in *J Europ Econ Assoc*, 1 in *RAND J Econ*, 3 in *Games Econ Behav*, 9 in *J Appl Econometrics*, 3 in *J. Bus. Econ. Statist.*, 1 in *J Devel Econ*, 13 in *J Econometrics*, 3 in *J Econ Theory*, 1 in *J Finance*, 2 in *J Finan Econ*, 1 in *J Lab Econ*, 4 in *J Monet Econ*, 4 in *J Public Econ*, 3 in *Rev Econ Dynam*, 5 in *Rev Econ Statist*, 1 in *Theoretical Econ*. (Details of these publications are provided in the Annex at the end of this document.)

Several articles published during the assessment period have already been cited more than one hundred times on Google Scholar, including: Bayer, R Hjalmarsson, and Pozen (*Quart J Econ*, 2009); Berlinski, Galiani, and Manacorda (*J Public Econ*, 2008); Campo, Guerre, Perrigne, and Vuong (*Rev Econ Stud*, 2011); Chaboud, Chiquoine, E Hjalmarsson, and Vega (*J Finance*, forthcoming); Kapetanios, Pesaran, and Yamagata (*J Econometrics*, 2011); Manning and Petrongolo (*Econ J*, 2008); Olivetti and Petrongolo (*J Lab Econ*, 2008).

Other recent achievements of the School include:

- success in recruiting, developing, and retaining outstanding staff (Section C.1);
- expansion and enhancement of its doctoral programme, with improvements to training, financial support, and placement (Section C.2);
- success in attracting external research income and establishment of an ESRC-funded research centre (Section D.1);
- improvements to its physical environment and infrastructure (Section D.2); and
- numerous indications of professional esteem (Section E).

B.4. Future aims and strategy

Over the next five years the School's primary objective is to firmly establish itself among top UK departments by further enhancing its international research profile and strengthening its contributions to major debates in economics and finance.

To achieve this aim the School intends to focus on four strategic areas:

- Recruitment and retention. The School cannot rest on its hiring achievements and must continue to make itself an appealing employer for the best researchers. The School must maintain an active presence on the international job market, continue to offer attractive salaries and teaching loads, and be seen to have proactive and meritocratic promotion policies (Section C.1).
- 2. *Doctoral training*. The School will complete the restructuring of its PhD programme (Section C.2) and will continue to improve the quality of its doctoral students and placement outcomes.
- 3. Research environment. The School is scheduled to move in 2015 to a newly constructed building, offering fresh opportunities to enhance the working environment for staff and students alike (Section D.2).
- 4. External research funding. Increasing the share of research funds from external sources is a priority for the School and motivates the decision to appoint a dedicated grant officer (Section D.1). The eventual goal is to reduce cross-subsidies from teaching and to put the School's research activities on a more sustainable financial footing.

C. People

C.1. Staffing strategy and staff development

Recruitment, development, and retention of distinguished scholars are among the highest SEF priorities.

The School's staffing strategy is to seek the widest international pool of candidates for its job



openings and to hire the best researchers—based on both record and potential—in any area of specialisation.

In the past four years the School has recruited 16.95 FTE staff members (6 in 2010, 3.2 in 2011, 2 in 2012, and 5.75 in 2013), significantly exceeding departures since RAE 2008 (which amount to 10 FTE). New staff have been hired at both the junior and senior levels and from institutions in both Europe and North America. The School's medium-term goal is to achieve research staff numbers of 35–40 FTE.

The net expansion in academic staff over the assessment period has strengthened the School's core research areas as well as broadened its coverage of economics and finance. The research groups that have grown most visibly are applied microeconomics, which has added three professors (Battistin, R Hjalmarsson, Petrongolo), one reader (Azmat), and two lecturers (Fasani, Tesei); and macroeconomics, which has added 2.45 FTE professors (Blake, Mateos-Planas, Mumtaz, Weale) and two lecturers (Faccini, Sustek). The other groups that have made new hires are economic theory (Ivanov, Llorente-Saguer) and finance (Breedon, E Hjalmarsson, Nikolowa, Skiadopoulos).

The School has deliberately restricted part-time appointments, taking the view that building a healthy and sustainable research culture requires continuity and institutional citizenship. Part-time positions are generally limited to researchers who hold prominent positions outside of academia (Weale at 0.2 FTE is a member of Bank of England's Monetary Policy Committee, and Blake at 0.25 FTE is a Senior Adviser at the Bank). Two further appointments are motivated by complementarities with other staff and doctoral students working at the boundary between econometrics and finance (Baillie at 0.5 FTE and Skiadopoulos at 0.5 FTE).

Research, teaching, and administrative duties are balanced through careful monitoring of workloads by the Head of School. The standard teaching load is 77 contact hours annually (often accommodated within one semester) and can be reduced through buyouts from external funding and discounts for significant administrative assignments. Major institution-building and management roles are normally allocated to senior staff, with administrative tasks kept to a minimum during the initial years of a junior appointment.

The Head of School meets regularly with a Senior Management Team composed of three professor-rank staff, who are given delegated authority over the areas of undergraduate teaching, postgraduate teaching, and research (including the doctoral programme). To reduce the teaching and administrative load on research staff, six staff have recently been hired to teaching-only roles and the number of support staff has increased dramatically (from three in 2008 to fifteen in 2013).

Staff have an annual research allowance of £5000, and there is a streamlined process to request additional funds to cover research assistantships, short-term visits, conference organisation, data and hardware purchases, etc. QMUL has a generous sabbatical leave policy (six months per six semesters) that facilitates periods of concentrated research. For projects that involve human subjects or other ethical considerations, a Research Ethics Committee drawn from across QMUL provides guidance and approval of the research plan.

Mentoring, staff development, and merit-based promotion are pillars of the School's personnel strategy. Newly-hired lecturers are integrated into one of the School's five research groups, receive feedback on their work from colleagues and career guidance from a senior mentor in their field, and have an annual probation review for the first three years. All other staff undergo either appraisal by the School or professorial review by QMUL on an annual basis. Promotion to the ranks of reader and professor is based on excellence in research and leadership in the field of specialisation, as demonstrated by high-quality publications and evidence of professional esteem. During the assessment period three members of staff have been promoted internally to personal chairs (Carriero, R Hjalmarsson, Manacorda), and two have been promoted to readerships (Azmat, Cornaglia).

Outside of the School, opportunities for staff development are provided by the Centre for Academic and Professional Development, which offers training in teaching practice (e.g., PGCAP) and research skills such as effective presentation techniques and preparation of grant applications. In



addition, QMUL has endorsed the principles of the Concordat to Support the Career Development of Researchers.

The School has a diverse profile, employing relatively young but nevertheless well-established academic staff from more than fifteen countries on three continents. In recent years the School has continued to improve its gender balance, with the recruitment or promotion of two female professors (R Hjalmarsson, Petrongolo), two readers (Azmat, Cornaglia), and one lecturer (Nikolowa). QMUL is committed to equality and diversity, has in place a firm equal opportunities policy, is a member of the Stonewall Diversity Champions programme, and actively monitors its recruitment, staff development, promotion, and REF inclusion practices.

C.2. Research students

The School's doctoral programme is growing rapidly and is in the process of a thorough restructuring. The aim of these changes is to establish a PhD programme with the quality and reputation appropriate for a top UK department.

Doctoral students are central to the research culture of the School, and they are offered an inclusive environment with excellent infrastructure and many opportunities for formal and informal interaction with staff. Each student has both a principal and second supervisor, and is a member of one of the School's five research groups.

Over the assessment period the PhD programme has enrolled 35 students (up from 21 in 2008). For 2013 entry 99 applications were received (10% more than the previous year), and the admission rate was about 7%. Students increasingly come with undergraduate and master's degrees from prestigious European universities such as LSE, UCL, Oxford, Warwick, Essex, Cambridge, Bocconi, Toulouse, and Pompeu Fabra.

The School's PhD programme has held ESRC recognition since 2008 and is now part of the QMUL-Goldsmith's Doctoral Training Centre (DTC), which awards ESRC-funded studentships and offers social science training beyond the research areas covered by the School.

Financial packages that combine a fee waiver, research grant (currently £14,000), and teaching assistantship (£4000 for 60 contact hours) are offered to all incoming students. (ESRC fellowships are also available through the DTC on a competitive basis, with no teaching obligation.) Doctoral students are provided with office space, a desktop computer and access to the School's other computing resources, and an annual research allowance of £1000 (with additional funds available through QMUL's Postgraduate Research Fund).

In recent years the School has expanded the training it offers to doctoral students, adding a taught component in year one that contains eight short (six-hour) advanced topics modules intended to bridge the gap between MSc courses and the research frontier. Progression at the end of the first year is based on satisfactory performance in this taught component as well as a presentation of ongoing research in the School's annual PhD conference in late spring.

Students whose research is sufficiently advanced can present their findings in one of the School's weekly internal workshops. More general support and training in professional and transferrable skills is provided by the DTC and the Centre for Academic and Professional Development. Students can also attend postgraduate courses in the School and elsewhere in the University of London with the approval of their supervisors.

The doctoral programme is overseen by the School's Director of Graduate Studies, who chairs the four-member Graduate Studies Committee. Administrative support is provided by a full-time Graduate/Research Programme Manager. The joint supervision system means that a large proportion of the staff is involved with the PhD programme in some way, and supervisor training sessions offered by QMUL ensure that staff remain informed about good practice and correct procedures.

PhD student placement is the responsibility of a senior member of staff. Recent outcomes include permanent lectureships at Leicester, York, Aarhus, Vienna, and Queen's Belfast; as well as postdoctoral or research positions at Cambridge, Warwick, Duke, and the OECD. The School is



also a buyer in the new PhD market, offering two-year postdoctoral positions at the Centre for Research in Macroeconomics and Finance.

The School is currently restructuring its doctoral programme to move to an MRes-PhD model that more closely resembles the structure of graduate programmes adopted by top US and UK Schools. Under the new structure, expected to be in place by September 2015, the advanced topics modules offered at present in year one of the PhD will be expanded and transferred to the MRes. Students following the full MSc-MRes-PhD pathway will therefore undertake two full years of study (MSc-MRes) with a substantial taught component before deciding on their research topic and embarking on the PhD dissertation.

D. Income, infrastructure, and facilities

D.1. Research income

During the assessment period SEF staff members have attracted external research income from peer-reviewed funding sources totalling approximately £1.5 million. (Some of these awards have been managed by QMUL and are thus covered by the information in REF4b, while the majority have been managed by other institutions, and thus are not covered by these data regarding QMUL.) The funding agencies are diverse, including: ESRC (£159,623 to Cornaglia, £155,181 to Petrongolo, £108,132 to Fernandes, £91,590 to Giraitis, £29,836 to Ivanov and Vriend), NSF (\$166,000 to R Hjalmarsson, \$89,220 to Ivanov), EU (£95,000 to Baillie), Inter-American Development Bank (\$70,000 to Manacorda), NORFACE (£60,000 to Mateos-Planas). In March 2012 the School established the Centre for Research in Macroeconomics and Finance, which has secured ESRC funding in the amount of £322,000 (under the project "Economic Forecasting under Macroeconomic Uncertainty").

Research is also cross-subsidized by SEF teaching activities, and in particular by its array of thriving MSc programmes. Overall the School runs an operating surplus of approximately £2.5 million.

Grant holders are supported by QMUL's Joint Research Management Office (JRMO), which provides services such as costing, specialist advice (including a European funding unit), and assistance with proposals, contracts, and negotiations. Partnerships with private sector organisations are supported by Queen Mary Innovation Ltd.

Generation of increased external funding is a central strategic objective of the School in view of its ambition to cement its position as a centre of international excellence in research. In order to encourage funding applications and further support award holders, the School plans to appoint a dedicated grant officer who will liaise with funding agencies and the JRMO.

D.2. Infrastructure and facilities

During the assessment period the space occupied by the School has undergone a major refurbishment and has increased by approximately 50%, with the addition of new staff and PhD offices, computer labs, and seminar and meeting rooms. More broadly, QMUL's capital investment programme has dramatically transformed the campus in recent years, including provision for accommodation of research students and visitors in the £45 million Westfield Student Village.

The School has excellent computing resources, including two high-performance servers available to staff and doctoral students conducting data-intensive research. The computing infrastructure is managed by a team of three full-time IT specialists.

In 2015 the School is scheduled to move into new, purpose-built facilities in the £36 million Graduate Centre now under construction. This move will raise the profile of the School and further enhance both the student experience and the working environment for staff.

E. Collaborations and contribution to the discipline or research base

E.1. Introduction

The research profile and international visibility of the School are enhanced by the wide range of



collaborative activities pursued by staff, such as membership in research networks, participation in conferences, establishment of external collaborations, editorial work, and interdisciplinary research. A selection of these activities is detailed below.

E.2. Research networks and awards

SEF staff are members of prominent research networks, centres, and committees, including: NBER Crime Working Group (R Hjalmarsson), CEPR (R Hjalmarsson, Manacorda, Petrongolo), IZA (Battistin, Manacorda, Petrongolo), LSE Financial Markets Group (Nikolowa), LSE Centre for Economic Performance (Azmat, Cornaglia, Manacorda, Petrongolo), ESRC Centre for Macroeconomics (Sustek), Institute for Fiscal Studies (Battistin, Cornaglia), ESRC Centre for Population Change (Mateos-Planas), CESifo Group (Azmat, Manacorda, Tesei), Becker Friedman Institute (R Hjalmarsson), Max Planck Institute for Research on Collective Goods (Llorente-Saguer). Petrongolo is an elective council member of the European Economic Association (EEA), and a member of the EEA Women in Economics Standing Committee.

Recent prizes and awards include: *American Law and Economics Review* Distinguished Article Prize (for the best empirical paper published in the last two years), R Hjalmarsson 2010; Fundacion Ramón Areces Prize for Economic Research, Azmat 2009; Chaire Île-de-France, Paris School of Economics, Petrongolo 2009–12.

E.3. Conferences and seminars

The School organises two weekly seminar series with external speakers from top institutions in North America and Europe, as well as two internal workshops with talks by staff and doctoral students. During the assessment period the School has also hosted a number of conferences, including: Spring Workshop in Economic Theory (2011, 2012, 2013), Money Macro and Finance Conference (2013), Royal Economic Society PhD Presentation Meeting (2012, 2013).

During 2008–13, SEF staff have presented their work at major international conferences (e.g., NBER Summer Institutes, CEPR conferences and symposia, and AEA and Econometric Society meetings) and in invited seminars at prominent universities in North America (Chicago, Princeton, UC Berkeley, Stanford, Columbia, NYU, Boston, Maryland, Toronto, UPenn) and Europe (LSE, UCL, Warwick, Cambridge, Oxford, Essex, Paris School of Economics, Toulouse, Sciences Po, Pompeu Fabra, Bocconi).

E.4. External collaborations

SEF staff have ongoing collaborations with researchers at numerous institutions, including: UC Berkeley, MIT, Stanford, Yale, NYU, Boston University, Minnesota, Maryland, Carnegie Mellon, LSE, UCL, LBS, Paris School of Economics, Pompeu Fabra, Bocconi. The list of co-authors contains two Nobel laureates (Finn Kydland and Christopher Pissarides). The School has in place a funded visitors programme to encourage high-quality collaborative work.

Recent visiting appointments include: Stanford (Azmat), Princeton (Manacorda), UPenn (Fella), Michigan State (Giraitis), Minneapolis Fed (Mateos-Planas), LSE (Azmat), IFS (Azmat), Paris School of Economics (Petrongolo), EUI (Cornaglia), National U Singapore (Tyson).

E.5. Editorial work

SEF members sit on editorial boards of numerous Journals. Allouch is associate editor of the *Journal of Public Economic Theory;* Baillie is managing editor of the *Journal of Empirical Finance* and associate editor of the *Review of International Economic;* Fernandes is on the editorial board of *Annals of Financial Economics;* Giraitis is associate editor of *Econometric Theory*; Guerre is associate editor of *Annals of Economics and Statistics, Econometrics Journal,* and *Econometric Theory*; Kapetanios is associate editor of the *Journal of Applied Economics;* Manacorda is panel member for *Economic Policy*; Petrongolo is co-editor of *Labour Economics;* Vriend is co-editor of the *Journal of Economic Behavior and Organization,* and associate editor of the *Journal of Economic Dynamics and Control.*

E.6. Interdisciplinary research



Research by SEF staff includes work spanning the boundaries between economics and several other disciplines, including: criminology (R Hjalmarsson), education (Manacorda), health (Cornaglia), law (R Hjalmarsson), management (Azmat), political science (Llorente-Saguer, Tesei), and psychology (Ivanov, Tyson, Vriend). The School is also a partner in QMUL's interdisciplinary Centre for Mind in Society.

ANNEX: Selected staff publications (since 2008)

Amer Econ Rev. Battistin 2009; Cornaglia forthcoming; Ivanov 2009; Mateos-Planas 2010; Petrongolo 2008 (P&P), forthcoming.

Econometrica: Guerre 2009; Ivanov 2010.

J Polit Economy: Battistin 2009; Llorente-Saguer 2012.

Quart J Econ: R Hjalmarsson 2008, 2012.

Rev Econ Stud: Blake 2012; Guerre 2011; Fella forthcoming.

Amer Econ J: Cornaglia 2010; Manacorda 2010, 2011.

Econ J: Faccini 2013; Kapetanios and Mumtaz 2012; Petrongolo 2008; Vriend 2009.

Games Econ Behav: Ivanov 2011; Llorente-Saguer 2010; Vriend forthcoming.

Int Econ Rev. Carriero 2011; Mumtaz 2012; Petrongolo 2008.

J Appl Econometrics: Carriero forthcoming; Carriero and Kapetanios 2011; Kapetanios 2010, forthcoming (x2); Leonida 2009; Mumtaz 2009, 2013; Petrongolo 2011.

J Devel Econ: Fasani 2013.

J Business and Econ Statistics: Kapetanios 2008, 2010, 2012.

J Econometrics: Baille and Kapetanios 2008; Battistin 2008; Carriero 2011; Fernandes forthcoming; Giraitis 2009, 2010, 2011, 2012; Giraitis and Kapetanios forthcoming (x2); Guerre 2008; Guerre and Lazarova forthcoming; Kapetanios 2011.

J Econ Theory: Allouch 2008; Tyson 2008; Veneziani 2013.

J Europ Econ Assoc: Manacorda 2012; Mumtaz 2012.

J Finance: E Hjalmarsson forthcoming.

J Finan Econ: Breedon 2010; E Hjalmarsson 2009.

J Lab Econ: Petrongolo 2008.

J Monet Econ: Mumtaz 2009; Sustek 2010, 2011, forthcoming.

J Public Econ: Azmat 2010; Manacorda 2008; Mateos-Planas 2008; Petrongolo 2009.

RAND J Econ: Azmat 2009.

Rev Econ Dynam: Fella forthcoming; Mumtaz 2011; Sustek 2011.

Rev Econ Statist: Battistin 2011; Fasani 2013; R Hjalmarsson 2011; Manacorda 2012; Tesei 2013.

Theoretical Econ: Tyson 2013.