

Afonso, António; Rault, Christophe

Working Paper

Spend-and-tax : a panel data investigation for the EU

CESifo Working Paper, No. 2705

Provided in Cooperation with:

Ifo Institute – Leibniz Institute for Economic Research at the University of Munich

Suggested Citation: Afonso, António; Rault, Christophe (2009) : Spend-and-tax : a panel data investigation for the EU, CESifo Working Paper, No. 2705, Center for Economic Studies and Ifo Institute (CESifo), Munich

This Version is available at:

<https://hdl.handle.net/10419/30639>

Standard-Nutzungsbedingungen:

Die Dokumente auf EconStor dürfen zu eigenen wissenschaftlichen Zwecken und zum Privatgebrauch gespeichert und kopiert werden.

Sie dürfen die Dokumente nicht für öffentliche oder kommerzielle Zwecke vervielfältigen, öffentlich ausstellen, öffentlich zugänglich machen, vertreiben oder anderweitig nutzen.

Sofern die Verfasser die Dokumente unter Open-Content-Lizenzen (insbesondere CC-Lizenzen) zur Verfügung gestellt haben sollten, gelten abweichend von diesen Nutzungsbedingungen die in der dort genannten Lizenz gewährten Nutzungsrechte.

Terms of use:

Documents in EconStor may be saved and copied for your personal and scholarly purposes.

You are not to copy documents for public or commercial purposes, to exhibit the documents publicly, to make them publicly available on the internet, or to distribute or otherwise use the documents in public.

If the documents have been made available under an Open Content Licence (especially Creative Commons Licences), you may exercise further usage rights as specified in the indicated licence.

Spend-and-tax: A Panel Data Investigation for the EU

ANTÓNIO AFONSO
CHRISTOPHE RAULT

CESIFO WORKING PAPER NO. 2705
CATEGORY 6: FISCAL POLICY, MACROECONOMICS AND GROWTH
JULY 2009

An electronic version of the paper may be downloaded

- *from the SSRN website:* www.SSRN.com
- *from the RePEc website:* www.RePEc.org
- *from the CESifo website:* www.CESifo-group.org/wp

Spend-and-tax: A Panel Data Investigation for the EU

Abstract

Using bootstrap panel analysis, allowing for cross-country correlation, without the need of pre-testing for unit roots, we study the causality between government spending and revenue for the EU in the period 1960-2006. We find spend-and-tax causality for Italy, France, Spain, Greece, and Portugal, while tax-and-spend evidence is present for Germany, Belgium, Austria, Finland and the UK, and for several EU New Member States. Moreover, in the run-up to EMU there was some shifting away from a spend-and-tax strategy, implying adjustments of fiscal behaviour.

JEL Code: C23, E62, H62.

Keywords: panel causality, fiscal policy, EU.

António Afonso
European Central Bank
Directorate General Economics
Kaiserstrasse 29
60311 Frankfurt am Main
Germany
antonio.afonso@ecb.europa.eu

Christophe Rault
University of Orléans
LEO, CNRS, UMR 6221
Rue de Blois-B.P.6739
45067 Orléans Cedex 2
France
chrault@hotmail.com
christophe.rault@univ-orleans.fr

The opinions expressed are those of the authors and do not necessarily reflect those of the ECB or the Eurosystem.

1. Introduction

Fiscal sustainability studies usually assess the existence of a long-term cointegration relationship between government revenue and spending.¹ Nevertheless, an important feature linked to the existence of such cointegration relation is the direction of causality between spending and revenue, which conveys how fiscal policy is set-up in practice. Indeed, one may have one-way Granger-causality from spending (revenue) to revenue (spending), i.e. “spend-and-tax” (“tax-and-spend”) causality, two-way causality or no Granger-causality between revenue and spending.

The literature essentially assesses the existence of causality in a single country set-up.² However, there is economic rationale for undertaking a panel approach, taking advantage of non-stationary panel data econometric techniques. In the European Union (EU), and even if there is no single fiscal policy in place, panel analysis is relevant in the context of countries seeking to pursue sound fiscal policies within the framework of the Stability and Growth Pact. Cross-country dependence can be envisaged in the run-up to Economic and Monetary Union (EMU), via peer pressure or via integrated financial markets. Moreover, cross-country spillovers in government bond markets are to be expected, and interest rates comovements inside the EU have also gradually become more noticeable.

This paper contributes to the literature with a bootstrap panel analysis of causality between government revenue and spending in the EU country set, to assess which countries are characterised by a tax-and-spend or by a spend-and-tax behaviour during the period 1960-2006. Section two explains the methodology, section three reports the empirical analysis and section four concludes.

2. Methodology

We employ the panel data approach of Kónya (2006), based on a bivariate finite-order vector autoregressive model, and we apply it in our context to general government revenue, R , and spending, G :³

$$\begin{cases} R_{it} = \mathbf{a}_{1,i} + \sum_{j=1}^{p_{1i}} \mathbf{b}_{1,i,j} R_{i,t-j} + \sum_{j=1}^{p_{2i}} \mathbf{g}_{1,i,j} G_{i,t-j} + \mathbf{e}_{1,i,t} & t = 1, \dots, T \quad i = 1, \dots, N \\ G_{it} = \mathbf{a}_{2,i} + \sum_{j=1}^{p_{1i}} \mathbf{b}_{2,i,j} R_{i,t-j} + \sum_{j=1}^{p_{2i}} \mathbf{g}_{2,i,j} G_{i,t-j} + \mathbf{e}_{2,i,t} & t = 1, \dots, T \quad i = 1, \dots, N \end{cases} \quad (1)$$

where the index i ($i = 1, \dots, N$) denotes the country, the index t ($t = 1, \dots, T$) the period, j the lag, and p_{1i} , p_{2i} and p_{3i} , indicate the longest lags in the system. The error terms, $\mathbf{e}_{1,i,t}$ and $\mathbf{e}_{2,i,t}$, are supposed to be white-noises and may be correlated with each other for a given country.

System (1) is estimated by the Seemingly Unrelated Regressions (SUR) procedure, since possible links may exist among individual regressions via contemporaneous correlation⁴ within the two equations. Wald tests for Granger causality are performed with country specific bootstrap critical values generated by simulations.

¹ Afonso (2005) explains the relevant linkages and reviews the empirical evidence. Afonso and Rault (2007) test the cointegration relationship with panel unit root and cointegration tests, allowing for correlation within and between units.

² See, for instance, von Furstenberg et al. (1986), Chang et al. (2002), Payne (2004), and Kollias and Paleologou (2006).

³ We are grateful to L. Kónya for providing his TSP codes, which we have adapted for our analysis.

⁴ A likely assumption for macroeconomic time series for EU countries, with strong economic links.

With respect to system (1), in country i there is one-way Granger-causality from G to R if in the first equation not all $\mathbf{g}_{1,i}$ are zero but in the second all $\mathbf{b}_{2,i}$ are zero; there is one-way Granger-causality from R to G if in the first equation all $\mathbf{g}_{1,i}$ are zero but in the second not all $\mathbf{b}_{2,i}$ are zero; there is two-way Granger-causality between R to G if neither all $\mathbf{b}_{2,i}$ nor all $\mathbf{g}_{1,i}$ are zero; and there is no Granger-causality between R to G if all $\mathbf{b}_{2,i}$ and $\mathbf{g}_{1,i}$ are zero.⁵

This procedure has several advantages. Firstly, it does not assume that the panel is homogeneous, being possible to test for Granger-causality on each individual panel member separately. However, since contemporaneous correlation is allowed across countries, it makes possible to exploit the extra information provided by the panel data setting. Secondly, it does not require pre-testing for unit roots and cointegration (since country specific bootstrap critical values are generated), though it still requires the specification of the lag structure. This is an important feature since the unit-root and cointegration tests in general suffer from low power, and different tests often lead to contradictory outcomes. Thirdly, this approach allows detecting for how many and for which members of the panel there exists one-way, two-way, or no Granger-causality.

3. Empirical analysis

Data for general government expenditure and revenue are taken from the European Commission AMECO database.⁶ The data cover the periods 1960-2006 for the EU15 countries, and 1998-2006 for the EU25 countries and the unbalanced panels are used for the SUR analysis and Granger-causality testing.⁷ The following panels are used: EU15 (Austria, Belgium, Denmark, Finland, France, Germany, Greece, Italy, Ireland, Luxembourg, the Netherlands, Portugal, Spain, United Kingdom, and Sweden); and EU25 (EU15 countries, Bulgaria, Czech Republic, Estonia, Hungary, Lithuania, Latvia, Malta, Poland, Slovakia and Slovenia).

We use government spending and revenue data as a ratio of GDP. Apart from the fact that ratios of nominal magnitudes are commonly used in the international debate, it is also important to scale the variables for the panel approach. In addition, the bootstrap causality test that we use does not require unit root testing.

Table 1 shows the results of the causality tests for the EU15 panel for the period 1960-2006. It is possible to observe that while government revenue positively causes government spending for Germany and negatively for Ireland, there are more cases pointing to the spend-and-tax hypothesis: Austria, France, Greece, Italy, Spain, and Sweden.

[Table1]

We also compared the results (not shown) for two sub-periods, 1960-1985 and 1986-2006. In the first sub-period, causality from revenue to spending occurs in six countries, while causality from spending to revenue is detected for Greece, Italy and Portugal. In addition, the tax-and-spend result is obtained for Portugal in the second sub-period while a negative causality from revenue to spending is found for Italy and Belgium, which may

⁵ This implies a one period ahead causality.

⁶ The AMECO codes are as follows: total expenditure (% of GDP), .1.0.319.0.UUTGE, .1.0.319.0.UUTGF; total revenue (% of GDP), .1.0.319.0.URTG, .1.0.319.0.URTGF.

⁷ For the SUR approach to work properly, the time series dimension should be substantially larger than N , a condition that is only fulfilled for the EU25 over the 1998-2006 period. Therefore, for the EU25 panels the SUR estimation is performed on the (unbalanced) 1970-2006 period.

signal increased concerns regarding fiscal behaviour in the run-up to EMU. On the other hand, the spend-and-tax result occurs in the second sub-period for France and Ireland.

Table 2 reports the results for the EU25 country sample, considering most of the EU New Member States (NMS). The spend-and-tax result is still found for Austria, France, Greece, Italy, and Spain, and causality still runs from revenue to spending in the case of Germany and Luxembourg. On the other hand, the evidence shows causality from revenue to spending in several EU New Member States: Czech Republic, Estonia, Lithuania, and Poland. Finally, two countries exhibit two-way, bi-directional causality between government revenue and spending: Ireland and Slovakia. Table 3 summarises the causality results.

[Table2]

[Table3]

4. Conclusion

We used a bootstrap panel analysis of causality between government revenue and spending for the EU, which allows for contemporaneous correlation across countries and dispenses the need of pre-testing for unit roots. The results support the so-called spend-and-tax causality for such countries as Italy, France, Spain, Greece, and Portugal. Tax-and-spend evidence is present notably for Germany, Belgium, Austria Finland and the UK, and also for several EU New Member States. Some changes regarding the direction of the causality patterns can also be detected, after the 2nd half of the 1980s, notably with countries like Greece, Italy, and Portugal, shifting away from a spend-and-tax strategy, which may imply welcome adjustments of fiscal behaviour in the run-up to EMU.

References

- Afonso, A. (2005). "Fiscal Sustainability: the Unpleasant European Case", *FinanzArchiv*, 61(1), 19-44.
- Afonso, A. and Rault, C. (2007). "What do we really know about fiscal sustainability in the EU? A panel data diagnostic", ECB Working Paper n. 820.
- Chang, T.; Liu, W., Caudill, S. (2002). "Tax-and-Spend, Spend-and-Tax, or Fiscal Synchronization: New Evidence for Ten Countries," *Applied Economics*, 34(12), 1553-1561.
- Kollias, C., Paleologou, S.-M. (2006). "Fiscal policy in the European Union: Tax and spend, spend and tax, fiscal synchronisation or institutional separation?" *Journal of Economic Studies*, 33(2), 108-120.
- Kónya, L. (2006). "Exports and growth: Granger Causality analysis on OECD countries with a panel approach", *Economic Modelling*, 23(6), 978-992.
- Payne, J. (2004). "The tax-spend debate: Time series evidence from state budgets", *Public Choice*, 95(3-4), 307-320.
- von Furstenberg G.; Green, R., Jeong, J. (1986). "Tax and spend, or spend and tax?" *Review of Economics and Statistics*, (68)2, 179-188.

Table 1a – Causality from government revenue to spending, EU15 (1960-2006)

	Estimated coefficient	Test Statistic	Bootstrap critical values		
			1%	5%	10%
Austria	0.1351	1.2361	26.5043	15.5115	11.5606
Belgium	0.0183	0.0600	21.6994	12.7869	8.60072
Denmark	-0.0238	0.1362	24.1007	13.7943	9.80305
Finland	0.1050	1.6209	21.8583	13.4235	10.4536
France	-0.0119	0.0153	33.3617	23.3719	16.5679
Germany	0.4409	28.130***	23.0660	14.5004	9.82668
Greece	-0.0986	1.5955	27.2009	16.9224	12.2377
Ireland	-0.2049	11.572*	22.1834	12.5130	9.63277
Italy	0.0003	0.0004	21.0231	16.4763	12.2038
Luxembourg	0.2337	6.8957	21.7075	12.2952	9.19950
Netherlands	0.1453	1.9476	21.0882	13.4699	9.83869
Portugal	0.1810	7.7905	29.4152	20.8129	16.4777
Spain	-0.0867	2.4448	32.6605	23.7844	17.7405
Sweden	0.0281	0.1175	25.0536	15.5121	10.4427
UK	0.1628	3.6575	17.4399	9.79579	7.52149

***, **, *: significance at the 1%, 5% and 10% levels, respectively.

H₀: *R* does not cause *G*.

Table 1b – Causality from government spending to revenue, EU15 (1960-2006)

	Estimated coefficient	Test Statistic	Bootstrap critical values		
			1%	5%	10%
Austria	0.2290	8.2731*	22.2499	11.1867	7.9895
Belgium	0.0052	0.0266	18.3643	10.5409	7.73236
Denmark	0.1307	3.9247	23.6322	12.5703	9.37391
Finland	0.0632	1.1145	18.9469	13.1284	9.68753
France	0.3230	25.450***	19.3738	14.0002	10.7197
Germany	0.1468	5.0713	18.5037	11.7241	8.79791
Greece	0.1043	12.325*	28.6306	16.7483	11.6541
Ireland	0.0988	6.3321	29.5567	12.8465	8.51660
Italy	0.1363	17.783**	27.4934	16.1808	11.8194
Luxembourg	0.0806	0.7435	20.2061	11.3574	8.39400
Netherlands	0.0871	0.9737	19.4031	11.6964	8.71781
Portugal	0.1075	4.9057	26.1445	15.9634	13.1014
Spain	0.1340	10.590*	17.4415	11.5850	8.50721
Sweden	0.1285	8.1168*	15.9548	10.9160	7.76927
UK	-0.0434	0.3727	20.3780	10.9510	6.97039

***, **, *: significance at the 1%, 5% and 10% levels, respectively.

H₀: *G* does not cause *R*.

Table 2a – Causality from government revenue to spending, EU25
(1960-2006, 1998-2006 for NMS)

	Estimated coefficient	Test Statistic	Bootstrap critical values		
			1%	5%	10%
Austria	0.2009	3.6305	41.2461	23.1395	16.6998
Belgium	-0.0010	0.0020	32.2159	17.9067	13.2455
Bulgaria	2.1296	1.9209	72.7410	18.1467	10.6635
Czech Republic	1.1902	117.58***	60.7540	22.8137	16.6407
Denmark	-0.0645	1.3795	41.9757	22.3520	16.6643
Estonia	0.5861	116.77***	72.8279	24.2003	16.6886
Finland	0.1707	6.4720	46.0596	26.9281	20.8231
France	0.0676	0.7831	43.3779	24.2287	19.8115
Germany	0.4764	47.753***	34.4426	23.1298	15.8835
Greece	-0.1240	3.3001	29.8829	19.4335	14.3818
Hungary	1.3929	13.215	133.850	33.8927	22.9206
Ireland	-0.1863	10.846*	32.9529	16.8088	9.91600
Italy	-0.0093	0.0406	40.0782	24.0417	18.1905
Lithuania	0.7834	71.052***	45.0261	25.1628	17.2383
Luxembourg	0.2527	11.364*	36.1252	17.8449	10.5813
Latvia	-0.2954	0.8001	72.6016	26.0319	18.1718
Malta	0.1944	0.0612	66.7247	27.0500	18.7337
Netherlands	0.0917	1.1335	40.9455	20.3194	14.3195
Poland	0.7741	16.350*	75.7026	29.3214	16.1523
Portugal	0.1771	9.9942	66.3728	34.3644	24.1508
Spain	-0.0987	3.6759	50.0771	32.0511	26.2648
Slovakia	0.8231	91.575***	47.1513	18.5281	12.4573
Slovenia	1.3726	0.9320	66.6083	25.8891	17.3368
Sweden	0.0286	0.1586	34.9508	18.8386	13.6560
UK	0.2061	6.7309	27.4755	14.3481	10.2508

***, **, *: significance at the 1%, 5% and 10% levels, respectively.

H₀: R does not cause G.

Table 2b – Causality from government spending to revenue, EU25
(1960-2006, 1998-2006, for NMS)

	Estimated coefficient	Test Statistic	Bootstrap critical values		
			1%	5%	10%
Austria	0.2529	12.044*	19.5303	13.4184	10.2562
Belgium	0.0224	0.54781	19.5653	13.9294	10.8562
Bulgaria	1.6730	1.04981	42.6198	25.0232	10.3543
Czech Republic	-0.0349	0.41078	71.0631	41.1924	28.0181
Denmark	0.1089	3.27944	26.2961	19.5282	14.9182
Estonia	-0.0841	2.03649	72.0515	39.0268	28.0185
Finland	0.0329	0.42829	21.5672	13.2089	10.1670
France	0.2434	18.0268**	21.3095	13.3523	10.4775
Germany	0.0991	3.13249	20.9963	14.3719	10.3984
Greece	0.1141	19.9956*	28.9023	21.6341	17.0258
Hungary	-0.3327	0.57414	51.9562	29.3867	18.4169
Ireland	0.1169	9.55691*	19.7658	12.5920	9.21358
Italy	0.1159	16.4259**	22.1347	15.3167	11.6779
Lithuania	-0.0018	0.00152	69.7456	45.8297	29.9929
Luxembourg	0.0927	1.18539	21.8078	13.8562	10.6759
Latvia	0.3720	0.78022	32.1787	21.9743	16.1741
Malta	0.1615	0.09375	28.1466	17.6842	10.9345
Netherlands	0.0557	0.48933	20.5256	14.6298	12.2631
Poland	-0.4814	6.97142	75.3512	40.3326	28.0697
Portugal	0.1048	7.61307	30.8244	20.4392	15.4292
Spain	0.1273	12.0118*	25.0689	17.7928	11.3755
Slovakia	0.1732	40.8910**	67.3608	36.4847	29.9371
Slovenia	0.0828	0.00149	41.5854	23.4056	14.1824
Sweden	0.1010	6.42458	18.9381	12.8071	9.37407
UK	-0.0523	0.63520	18.1513	11.5070	8.34389

***, **, *. significance at the 1%, 5% and 10% levels, respectively.

H₀: *G* does not cause *R*.

Table 3 – Summary of results

Panel	Revenue \Rightarrow Spending		Spending \Rightarrow Revenue (spend-and-tax)
	$DR \Rightarrow DG$ (tax-and-spend)	$DR \Rightarrow \nabla G$	
EU15, 1960-2006	Germany	Ireland	Austria, Italy, France, Spain, Greece, Sweden
EU15, 1960-1985	Belgium, Germany, Spain, Sweden, Luxembourg, UK		Greece, Italy, Portugal
EU15, 1986-2006	Austria, Finland, Portugal	Belgium, Denmark, Italy, Sweden	France, Ireland
EU25, 1960-2006; NMS, 1998-2006	Czech Republic, Estonia, Lithuania, Poland, Slovakia Germany, Luxembourg	Ireland	Slovakia, Austria, France, Greece, Ireland, Italy, Spain

CESifo Working Paper Series

for full list see www.cesifo-group.org/wp

(address: Poschingerstr. 5, 81679 Munich, Germany, office@cesifo.de)

- 2641 Martin Halla, Mario Lackner and Friedrich G. Schneider, An Empirical Analysis of the Dynamics of the Welfare State: The Case of Benefit Morale, May 2009
- 2642 Balázs Égert, Infrastructure Investment in Network Industries: The Role of Incentive Regulation and Regulatory Independence, May 2009
- 2643 Christian Gollier, Expected Net Present Value, Expected Net Future Value, and the Ramsey Rule, May 2009
- 2644 Sören Blomquist and Håkan Selin, Hourly Wage Rate and Taxable Labor Income Responsiveness to Changes in Marginal Tax Rates, May 2009
- 2645 Dominique Demougin, Oliver Fabel and Christian Thomann, Implicit vs. Explicit Incentives: Theory and a Case Study, May 2009
- 2646 Francesco C. Billari and Vincenzo Galasso, What Explains Fertility? Evidence from Italian Pension Reforms, May 2009
- 2647 Kjell Arne Brekke, Karen Evelyn Hauge, Jo Thori Lind and Karine Nyborg, Playing with the Good Guys – A Public Good Game with Endogenous Group Formation, May 2009
- 2648 Guglielmo Maria Caporale and Luis A. Gil-Alana, Multi-Factor Gegenbauer Processes and European Inflation Rates, May 2009
- 2649 Henning Bohn, A Static Model for Voting on Social Security, May 2009
- 2650 Markus Haavio and Kaisa Kotakorpi, The Political Economy of Sin Taxes, May 2009
- 2651 Augusto de la Torre, María Soledad Martínez Pería and Sergio L. Schmukler, Drivers and Obstacles to Banking SMEs: The Role of Competition and the Institutional Framework, May 2009
- 2652 Tobias Lindhe and Jan Södersten, Dividend Taxation, Share Repurchases and the Equity Trap, May 2009
- 2653 Assaf Razin and Edith Sand, Migration-Regime Liberalization and Social Security: Political-Economy Effect, May 2009
- 2654 Yin-Wong Cheung and Hiro Ito, A Cross-Country Empirical Analysis of International Reserves, May 2009
- 2655 Bart Cockx and Bruno Van der Linden, Flexicurity in Belgium. A Proposal Based on Economic Principles, May 2009

- 2656 Michael Melvin, Lukas Menkhoff and Maik Schmeling, Exchange Rate Management in Emerging Markets: Intervention via an Electronic Limit Order Book, May 2009
- 2657 Susanne Neckermann, Reto Cueni and Bruno S. Frey, What is an Award Worth? An Econometric Assessment of the Impact of Awards on Employee Performance, May 2009
- 2658 Steven Brakman, Harry Garretsen and Charles van Marrewijk, Economic Geography within and between European Nations: The Role of Market Potential and Density across Space and Time, May 2009
- 2659 Giovanni Facchini and Cecilia Testa, Reforming Legislatures: Is one House better than two?, May 2009
- 2660 Carsten Kowalczyk and Raymond Riezman, Trade Agreements, May 2009
- 2661 Oliver Falck, Stephan Heblich and Elke Luedemann, Identity and Entrepreneurship, May 2009
- 2662 Christian Lessmann and Gunther Markwardt, One Size Fits All? Decentralization, Corruption, and the Monitoring of Bureaucrats, May 2009
- 2663 Felix Bierbrauer, On the Legitimacy of Coercion for the Financing of Public Goods, May 2009
- 2664 Alessandro Cigno, Agency in Family Policy: A Survey, May 2009
- 2665 Claudia M. Buch and Christian Pierdzioch, Low Skill but High Volatility?, May 2009
- 2666 Hendrik Jürges, Kerstin Schneider, Martin Senkbeil and Claus H. Carstensen, Assessment Drives Learning: The Effect of Central Exit Exams on Curricular Knowledge and Mathematical Literacy, June 2009
- 2667 Eric A. Hanushek and Ludger Woessmann, Schooling, Cognitive Skills, and the Latin American Growth Puzzle, June 2009
- 2668 Ourania Karakosta, Christos Kotsogiannis and Miguel-Angel Lopez-Garcia, Does Indirect Tax Harmonization Deliver Pareto Improvements in the Presence of Global Public Goods?, June 2009
- 2669 Aleksandra Riedl and Silvia Rocha-Akis, Testing the Tax Competition Theory: How Elastic are National Tax Bases in OECD Countries?, June 2009
- 2670 Dominique Demougin and Carsten Helm, Incentive Contracts and Efficient Unemployment Benefits, June 2009
- 2671 Guglielmo Maria Caporale and Luis A. Gil-Alana, Long Memory in US Real Output per Capita, June 2009

- 2672 Jim Malley and Ulrich Woitek, Productivity Shocks and Aggregate Cycles in an Estimated Endogenous Growth Model, June 2009
- 2673 Vivek Ghosal, Business Strategy and Firm Reorganization under Changing Market Conditions, June 2009
- 2674 Francesco Menoncin and Paolo M. Panteghini, Retrospective Capital Gains Taxation in the Real World, June 2009
- 2675 Thomas Hemmelgarn and Gaëtan Nicodème, Tax Co-ordination in Europe: Assessing the First Years of the EU-Savings Taxation Directive, June 2009
- 2676 Oliver Himmler, The Effects of School Competition on Academic Achievement and Grading Standards, June 2009
- 2677 Rolf Golombek and Michael Hoel, International Cooperation on Climate-Friendly Technologies, June 2009
- 2678 Martin Cave and Matthew Corkery, Regulation and Barriers to Trade in Telecommunications Services in the European Union, June 2009
- 2679 Costas Arkolakis, A Unified Theory of Firm Selection and Growth, June 2009
- 2680 Michelle R. Garfinkel, Stergios Skaperdas and Constantinos Syropoulos, International Trade and Transnational Insecurity: How Comparative Advantage and Power are Jointly Determined, June 2009
- 2681 Marcelo Resende, Capital Structure and Regulation in U.S. Local Telephony: An Exploratory Econometric Study; June 2009
- 2682 Marc Gronwald and Janina Ketterer, Evaluating Emission Trading as a Policy Tool – Evidence from Conditional Jump Models, June 2009
- 2683 Stephan O. Hornig, Horst Rottmann and Rüdiger Wapler, Information Asymmetry, Education Signals and the Case of Ethnic and Native Germans, June 2009
- 2684 Benoit Dostie and Rajshri Jayaraman, The Effect of Adversity on Process Innovations and Managerial Incentives, June 2009
- 2685 Peter Egger, Christian Keuschnigg and Hannes Winner, Incorporation and Taxation: Theory and Firm-level Evidence, June 2009
- 2686 Chrysovalantou Milliou and Emmanuel Petrakis, Timing of Technology Adoption and Product Market Competition, June 2009
- 2687 Hans Degryse, Frank de Jong and Jérémie Lefebvre, An Empirical Analysis of Legal Insider Trading in the Netherlands, June 2009
- 2688 Subhasish M. Chowdhury, Dan Kovenock and Roman M. Sheremeta, An Experimental Investigation of Colonel Blotto Games, June 2009

- 2689 Alexander Chudik, M. Hashem Pesaran and Elisa Tosetti, Weak and Strong Cross Section Dependence and Estimation of Large Panels, June 2009
- 2690 Mohamed El Hedi Arouri and Christophe Rault, On the Influence of Oil Prices on Stock Markets: Evidence from Panel Analysis in GCC Countries, June 2009
- 2691 Lars P. Feld and Christoph A. Schaltegger, Political Stability and Fiscal Policy – Time Series Evidence for the Swiss Federal Level since 1849, June 2009
- 2692 Michael Funke and Marc Gronwald, A Convex Hull Approach to Counterfactual Analysis of Trade Openness and Growth, June 2009
- 2693 Patricia Funk and Christina Gathmann, Does Direct Democracy Reduce the Size of Government? New Evidence from Historical Data, 1890-2000, June 2009
- 2694 Kirsten Wandschneider and Nikolaus Wolf, Shooting on a Moving Target: Explaining European Bank Rates during the Interwar Period, June 2009
- 2695 J. Atsu Amegashie, Third-Party Intervention in Conflicts and the Indirect Samaritan's Dilemma, June 2009
- 2696 Enrico Spolaore and Romain Wacziarg, War and Relatedness, June 2009
- 2697 Steven Brakman, Charles van Marrewijk and Arjen van Witteloostuijn, Market Liberalization in the European Natural Gas Market – the Importance of Capacity Constraints and Efficiency Differences, July 2009
- 2698 Huifang Tian, John Whalley and Yuezhou Cai, Trade Sanctions, Financial Transfers and BRIC's Participation in Global Climate Change Negotiations, July 2009
- 2699 Axel Dreher and Justina A. V. Fischer, Government Decentralization as a Disincentive for Transnational Terror? An Empirical Analysis, July 2009
- 2700 Balázs Égert, Tomasz Koźluk and Douglas Sutherland, Infrastructure and Growth: Empirical Evidence, July 2009
- 2701 Felix Bierbrauer, Optimal Income Taxation and Public Goods Provision in a Large Economy with Aggregate Uncertainty, July 2009
- 2702 Marc Gronwald, Investigating the U.S. Oil-Macroeconomy Nexus using Rolling Impulse Responses, July 2009
- 2703 Ali Bayar and Bram Smeets, Government Deficits in the European Union: An Analysis of Entry and Exit Dynamics, July 2009
- 2704 Stergios Skaperdas, The Costs of Organized Violence: A Review of the Evidence, July 2009
- 2705 António Afonso and Christophe Rault, Spend-and-tax: A Panel Data Investigation for the EU, July 2009