

OPTIMAL TAXATION: LESSONS FOR TAX POLICY

Outline of Lectures at the University of Tokyo

December 5–6, 2011

Robin Boadway, Queens University, Canada

The purpose of these lectures will be to study the main results from the optimal tax literature that have been relevant for tax policy. The following topics will be discussed, though some will be in much more detail than others. The readings listed at the end are suggested sources for following up some of the material in the lectures. Many of the theoretical results considered have influenced the recent Mirrlees Review of the UK tax system. Both the report and the background studies provide useful summaries of the use of optimal tax theory in practice.

Mirrlees, James, Stuart Adam, Timothy Besley, Richard Blundell, Stephen Bond, Robert Chote, Malcolm Gammie, Paul Johnson, Gareth Myles, and James Poterba (eds.) (2010), *Dimensions of Tax Design* (Oxford, Oxford University Press).

Mirrlees, James, Stuart Adam, Timothy Besley, Richard Blundell, Stephen Bond, Robert Chote, Malcolm Gammie, Paul Johnson, Gareth Myles, and James Poterba (eds.) (2011), *Tax by Design: The Mirrlees Review* (Oxford, Oxford University Press).

1 Optimal Linear Tax Analysis

Representative Household Models: Efficient Taxation

- a. Ramsey's optimal tax rule
- b. The Corlett-Hague Theorem
- c. Conditions for uniform commodity taxes
- d. Externalities

Heterogeneous Households: Linear Progressive Income Taxation

- a. Social welfare functions and aversion to inequality
- b. First-best outcomes
- c. Optimal linear progressive income tax
- d. Conditions for uniform commodity taxes
- e. The Production Efficiency Theorem

2 Optimal Nonlinear Tax Analysis

Optimal Nonlinear Taxation

- a. Two wage-type case
- b. Multiple discrete types
- c. Continuous wage-types
- d. Interpretation
- e. The maximin case
- f. Extensive margin labor supply

Income versus Commodity Taxation

- a. The Atkinson-Stiglitz Theorem
- b. Generalization of the Atkinson-Stiglitz Theorem
- c. Differential taxation of leisure complements

3 Two-Period Analysis and Capital Income Taxation

Representative Household Models

- a. The Corlett-Hague analogue
- b. Overlapping-generations case
- c. Time-consistent taxation
- d. Time-inconsistent preferences
- e. Bequests

Two Wage-Type Nonlinear Taxation

- a. Identical preferences
- b. Different discount factors
- c. Age-dependent taxation
- d. Uncertain future wage rates

Extensions

- a. Liquidity constraints
- b. Human capital accumulation
- c. Uncertain earnings

4 Further Issues

- a. Marginal cost of public funds
- b. Time-using consumption
- c. Minimum wage
- d. In-kind transfers
- e. Workfare
- f. Involuntary unemployment

References

- Aiyagari, S. Rao (1995), ‘Optimal Capital Income Taxation with Incomplete Markets, Borrowing Constraints, and Constant Discounting’, *Journal of Political Economy* **103**, 1158–75.
- Akerlof, George A. (1978), ‘The Economics of ‘Tagging’ as Applied to the Optimal Income Tax, Welfare Programs, and Manpower Training’, *American Economic Review* **68**, 8–19.
- Atkinson, Anthony B. and Agnar Sandmo (1980), ‘Welfare Implications of the Taxation of Savings’, *The Economic Journal* **90**, 529–49.
- Atkinson, Anthony B. and Nicholas Stern (1974), ‘Pigou, Taxation and Public Goods’, *Review of Economic Studies* **41**, 119–28.
- Atkinson, Anthony B. and Joseph E. Stiglitz (1976), ‘The Design of Tax Structure: Direct vs. Indirect Taxation’, *Journal of Public Economics* **6**, 55–75.
- Atkinson, Anthony B. and Joseph E. Stiglitz (1980), *Lectures on Public Economics* (New York: McGraw-Hill).
- Banks, James and Peter Diamond (2010), ‘The Base for Direct Taxation’, in Stuart Adam, Timothy Besley, Richard Blundell, Stephen Bond, Robert Chote, Malcolm Gammie, Paul Johnson, Gareth Myles, and James Poterba (eds.), *Dimensions of Tax Design: The Mirrlees Review* (Oxford, Oxford University Press), 548–648.
- Besley, Timothy and Stephen Coate (1992), ‘Workfare versus Welfare: Incentive Arguments for Work Requirements in Poverty-Alleviation Programs’, *American Economic Review* **82**, 249–61.
- Blackorby, Charles and David Donaldson (1988), ‘Cash versus Kind, Self Selection and Efficient Transfers’, *American Economic Review* **78**, 691–700.
- Blomquist, Sören and Vidar Christiansen (1995), ‘Public Provision of Private Goods as a Redistributive Device in an Optimum Income Tax Model’, *Scandinavian Journal of Economics* **97** (1995), 547–67.
- Blomquist, Sören and Vidar Christiansen (1998), ‘Topping Up or Opting Out? The Optimal Design of Public Provision Schemes’, *International Economic Review* **39**, 399–411.
- Boadway, Robin (2011), *From Optimal Tax Theory to Tax Policy: Retrospective and Prospective Views*, the 2009 Munich Lectures (Cambridge, US: MIT Press, forthcoming).
- Boadway, Robin and Katherine Cuff (2001), ‘A Minimum Wage Can Be Welfare-Improving and Employment-Enhancing’, *European Economic Review* **45**, 553–76.
- Boadway, Robin, Katherine Cuff and Maurice Marchand (2000), ‘Optimal Income Taxation with Quasi-Linear Preferences Revisited’, *Journal of Public Economic Theory* **2**, 435–60.
- Boadway, Robin and Firouz Gahvari (2006), ‘Optimal Taxation with Consumption Time

- as a Leisure or Labor Substitute’, *Journal of Public Economics* **90**, 1851–78.
- Boadway, Robin and Laurence Jacquet (2008), ‘Optimal Marginal and Average Income Taxation under Maximin’, *Journal of Economic Theory* **143**, 425–41.
- Boadway, Robin W. and Michael Keen (1993), ‘Public Goods, Self-Selection and Optimal Income Taxation’, *International Economic Review* **34**, 463–78.
- Boadway, Robin and Maurice Marchand (1995), ‘The Use of Public Expenditures for Redistributive Purposes’, *Oxford Economic Papers* **47**, 45–59.
- Boadway, Robin, Maurice Marchand and Motohiro Sato (1998), ‘Subsidies Versus Public Provision of Private Goods as Instruments for Redistribution’, *Scandinavian Journal of Economics* **100**, 545–64.
- Boadway, Robin and Pierre Pestieau (2006), ‘Tagging and Redistributive Taxation’, *Annales d’Économie et de Statistique* **83–84**, 123–47.
- Boadway, Robin and Motohiro Sato (2011), ‘Optimal Income Taxation with Uncertain Earnings’, Queen’s University, mimeo.
- Bovenberg, A. Lans and Bas Jacobs (2005), ‘Redistribution and Education Subsidies are Siamese Twins’, *Journal of Public Economics* **89**, 2005–35.
- Chamley, Christophe (1986), ‘Optimal Taxation of Capital Income in General Equilibrium with Infinite Lives’, *Econometrica* **54**, 607–22.
- Chetty, Raj (2009), ‘Is the Taxable Income Elasticity Sufficient to Calculate Deadweight Loss? The Implications of Evasion and Avoidance’, *American Economic Journal: Economic Policy* **1**, 31–52.
- Christiansen, Vidar (1984), ‘Which Commodity Taxes Should Supplement the Income Tax?’, *Journal of Public Economics* **24**, 195–220.
- Conesa, Juan Carlos, Sagiri Kitao and Dirk Krueger (2009), ‘Taxing Capital? Not a Bad Idea After All’, *American Economic Review* **99**, 25–48.
- Corlett, W.J. and D.C. Hague (1953), ‘Complementarity and the Excess Burden of Taxation’, *Review of Economic Studies* **21**, 21–30.
- Cremer, Helmuth and Firouz Gahvari (1995), ‘Uncertainty, Optimal Taxation and the Direct Versus Indirect Tax Controversy’, *Economic Journal* **105**, 1165–79.
- Cremer, Helmuth, Firouz Gahvari and Jean-Marie Lozachmeur (2010), ‘Tagging and Income Taxation: Theory and an Application’, *American Economic Journal: Economic Policy* **2**, 31–50.
- Cremer, Helmuth, Pierre Pestieau and Jean-Charles Rochet (2001), ‘Direct Versus Indirect Taxation: The Design of the Tax Structure Revisited’, *International Economic Review* **42**, 781–99.
- Cuff, Katherine (2000), ‘Optimality of Workfare with Heterogeneous Preferences’, *Canadian Journal of Economics* **33**, 149–74.

- Deaton, Angus (1979), ‘Optimally Uniform Commodity Taxes’, *Economics Letters* **2**, 357–61.
- Diamond, Peter A. (1980), ‘Income Taxation with Fixed Hours of Work’, *Journal of Public Economics* **13**, 101–10.
- Diamond, Peter A. (1998), ‘Optimal Income Taxation: An Example with a U-Shaped Pattern of Optimal Marginal Tax Rates’, *American Economic Review* **88**, 83–95.
- Diamond, Peter A. (2007), ‘Comment on Golosov et al’, *NBER Macroeconomics Annual 2006*, 365–79.
- Diamond, Peter A. and James A. Mirrlees (1971), ‘Optimal Taxation and Public Production I: Production Efficiency and II: Tax Rules’, *American Economic Review* **61**, 8–27 and 261–78.
- Diamond, Peter A. and Johannes Spinnewijn (2011), ‘Capital Income Taxes with Heterogeneous Discount Rates’ *American Economic Journal: Economic Policy*, forthcoming.
- Ebert, Udo (1992), ‘A Reexamination of the Optimal Nonlinear Income Tax’, *Journal of Public Economics* **49**, 47–73.
- Edwards, Jeremy, Michael Keen and Matti Tuomala (1994), ‘Income Tax, Commodity Taxes and Public Good Provision: A Brief Guide’, *Finanzarchiv* **51**, 472–97.
- Erosa, Andrés and Martin Gervais (2001), ‘Optimal Taxation in Infinitely-Lived Agent and Overlapping Generations Models: A Review’, *Federal Reserve Bank of Richmond Economic Quarterly* **87**, 23–44.
- Feldstein, Martin S. (1999), ‘Tax Avoidance and the Deadweight Loss of the Income Tax’, *Review of Economics and Statistics* **81** 674–80.
- Fischer, Stanley (1980), ‘Dynamic Inconsistency, Cooperation and the Benevolent Dissembling Government’, *Journal of Economic Dynamics and Control* **2**, 93–107.
- Golosov, Mikhael, Aleh Tsyvinski and Iván Werning (2007), ‘New Dynamic Public Finance: A Users Guide’, *NBER Macroeconomics Annual 2006*, 317–63.
- Gruber, Jonathan and Emmanuel Saez (2002), ‘The Elasticity of Taxable Income: Evidence and Implications’, *Journal of Public Economics* **84** 1–32.
- Guesnerie, Roger and Kevin Roberts (1984), ‘Effective Policy Tools and Quantity Controls’, *Econometrica* **52**, 59–82.
- Guesnerie, Roger and Kevin Roberts (1987), ‘Minimum wage Legislation as a Second Best Policy’, *European Economic Review* **31**, 490–98.
- Hare, Paul G. and David T. Ulph (1979), ‘On Education and Redistribution’, *Journal of Political Economy* **87**, S193–212.
- Hungerbühler, Mathias and Etienne Lehmann (2009), ‘On the Optimality of a Minimum Wage: New Insights from Optimal Tax Theory’, *Journal of Public Economics* **93**, 464–81.

- Hungerbühler, Mathias, Etienne Lehmann, Alexis Parmentier and Bruno Van der Linden (2006), ‘Optimal Redistributive Taxation in a Search Equilibrium Model’, *Review of Economic Studies* **73**, 743–67.
- Immonen, Ritva, Ravi Kanbur, Michael Keen and Matti Tuomala (1998), ‘Tagging and Taxing: The Optimal Use of Categorical and Income Information in Designing Tax/Transfer Schemes’, *Economica* **65**, 179–92.
- Jacobs, Bas (2005), ‘Optimal Income Taxation with Endogenous Human Capital’, *Journal of Public Economic Theory* **7**, 295–315.
- Jacobs, Bas and A. Lans Bovenberg (2010), ‘Human Capital and Optimal Positive Taxation of Capital Income’, *International Tax and Public Finance* **17**, 451–78.
- Jacquet, Laurence, Etienne Lehman and Bruno Van der Linden (2010), ‘Optimal Redistributive Taxation with both Extensive and Intensive Responses’, IRES Discussion Paper 2010033, Université catholique de Louvain.
- Kaplow, Louis (2006), ‘On the Desirability of Commodity Taxation Even When Income Taxation Is Not Optimal’, *Journal of Public Economics* **90**, 1235–50.
- Kaplow, Louis (2008), *The Theory of Taxation and Public Economics*, (Princeton: Princeton University Press).
- Kocherlakota, Narayana R. (2010), *The New Dynamic Public Finance* (Princeton: Princeton University Press).
- Konishi, Hideo (1995), ‘A Pareto-Improving Commodity Tax Reform under a Smooth Nonlinear Income Tax’, *Journal of Public Economics* **56**, 413–46.
- Krause, Alan (2006), ‘Redistributive Taxation and Public Education’, *Journal of Public Economic Theory* **8**, 807–19.
- Krause, Alan (2009), ‘Optimal Nonlinear Income Taxation with Learning-by-doing’, *Journal of Public Economics* **93**, 1098–110.
- Laroque, Guy (2005), ‘Indirect Taxation is Superfluous under Separability and Taste Homogeneity: A Simple Proof’, *Economics Letters* **87**, 141–44.
- Lee, David and Emmanuel Saez (2010), ‘Optimal Minimum Wage Policy in Competitive Labor Markets’, mimeo, Princeton University (previously NBER Working Paper 14320, 2008).
- Low, Hamish and Daniel Maldoom (2004), ‘Optimal Taxation, Prudence and Risk-sharing’, *Journal of Public Economics* **88**, 443–64.
- Marceau, Nicolas and Robin Boadway (1994), ‘Minimum Wage Legislation and Unemployment Insurance as Instruments for Redistribution’, *Scandinavian Journal of Economics* **96**, 67–81.
- Mirrlees, James A. (1971), ‘An Exploration in the Theory of Optimum Income Taxation’, *Review of Economic Studies* **38**, 175–208.
- Mirrlees, James, Stuart Adam, Timothy Besley, Richard Blundell, Stephen Bond, Robert

- Chote, Malcolm Gammie, Paul Johnson, Gareth Myles, and James Poterba (eds.) (2011), *Tax by Design: The Mirrlees Review* (Oxford, Oxford University Press).
- Naito, Hisahiro (1999), 'Re-examination of Uniform Commodity Taxes under a Non-linear Income Tax System and its Implication for Production Efficiency', *Journal of Public Economics* **71**, 165-88.
- Nava, Mario, Fred Schroyen and Maurice Marchand (1996), 'Optimal Fiscal and Public Expenditure Policy in a Two-Class Economy', *Journal of Public Economics* **61**, 119-37.
- Newbery, David M. (1986), 'On the Desirability of Input Taxes', *Economics Letters* **20**, 267-70.
- Nichols, Albert L. and Richard J. Zeckhauser (1982), 'Targetting Transfers through Restrictions on Recipients', *American Economic Review* **72**, 372-77.
- Parsons, Donald O. (1996), 'Imperfect 'Tagging' in Social Insurance Programs', *Journal of Public Economics* **62**, 183-207.
- Ramsey, Frank P. (1927), 'A Contribution to the Theory of Taxation', *Economic Journal* **37**, 47-61.
- Roemer, John E. (1998), *Equality of Opportunity* (Cambridge, USA: Harvard University Press).
- Saez, Emmanuel (2001), 'Using Elasticities to Derive Optimal Income Tax Rates', *Review of Economic Studies* **68**, 205-29.
- Saez, Emmanuel (2002), 'Optimal Income Transfer Programs: Intensive vs Extensive Labor Supply Responses', *Quarterly Journal of Economics* **117**, 1039-73.
- Saez, Emmanuel (2004), 'Direct or Indirect Tax Instruments for Redistribution: Short-run versus Long-run', *Journal of Public Economics* **88**, 503-18.
- Sandmo, Agnar (1975), 'Optimal Taxation in the Presence of Externalities', *Swedish Journal of Economics* **77**, 86-98.
- Sheshinski, Eytan (1972), 'The Optimal Linear Income Tax', *Review of Economic Studies* **39**, 297-302.
- Stern, Nicholas (1982), 'Optimum Taxation with Errors in Administration', *Journal of Public Economics* **17**, 131-133.
- Stiglitz, Joseph E. (1982), 'Self-Selection and Pareto Efficient Taxation', *Journal of Public Economics* **17**, 213-40.
- Stiglitz, Joseph E. (1987), 'Pareto Efficient and Optimal Taxation and the New New Welfare Economics', in Alan J. Auerbach and Martin Feldstein (eds.), *Handbook of Public Economics, Volume 2* (Amsterdam: North Holland), 991-1042.
- Tuomala, Matti (1990), *Optimal Income Tax and Redistribution* (Oxford: Clarendon Press).