

Reassessing Tax Policies and their Coordination

Pedro Teles
Banco de Portugal, Católica-Lisbon SBE, CEPR

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- Reassessing tax policies...
 - Abrahám, A and E Carceles-Poveda, “Tax Reform with Endogenous Borrowing Limits and Incomplete Asset Markets”, No. 2016/013
 - **Caballé, J and A Dumitrescu, “Disclosure of Corporate Tax Reports, Tax Enforcement, and Insider Trading”**, No. 2016/026.
 - Reis, C and V Panousi, “A unified framework for optimal taxation with undiversifiable risk”, No. 2017/064.
 - Kapička, M “Quantifying the Welfare Gains from History Dependent Income Taxation”, No. 2017/070.
 - **Guerreiro, J, S Rebelo and P Teles, “Should Robots Be Taxed?”**, No. 2018/85

- ...And their coordination

- Correia, I, “Capital Taxation and Globalization”, No. 2016/019.
- Kehoe, P J and E Pastorino, “Fiscal Unions Redux”, No. 2016/12.
- Chari, V V, A DAVIS and P J Kehoe, “A Journey Down the Slippery Slope to the European Crisis: A Theorist’s Guide”, No. 2017/054
- **Chari, V V, J P Nicolini and P Teles, “Ramsey Taxation in the Global Economy”, No. 2018/084.**

Ramsey Taxation in the Global Economy by Chari, Nicolini and Teles

- Principles of optimal taxation for the open economy
- What are optimal coordinated policies? .
- What is minimal design of fiscal policy consistent with a second best outcome

Main principles of second best taxation for the open economy

1. Free trade
2. No restrictions to capital mobility
3. Zero taxation of capital (abstracting from initial confiscation)

Application of Diamond and Mirrlees

- If all net trades can be taxed, no taxes on intermediate goods.
 - No trade taxes
 - No taxes on the allocation of capital across countries
 - No taxes on the accumulation of capital

If all net trades can be taxed...

- Net trades being taxed, means taxing different labor at different rates
- Inconsistent with tax harmonization

Minimal design of international taxation

- Taxing goods according to destination versus origin
- Valued-added taxes with border adjustment
 - Exports are not taxed, but imports are
 - All goods are taxed at the same rate. Uniform taxation
 - No distortions on intermediate goods. Production efficiency

Valued-added taxes with and without border adjustment

- Value added taxes without border adjustment
 - Exports are taxed and imports are not
 - VAT without border adjustment is VAT with border adjustment plus an import subsidy and an export tax
- Lerner symmetry: Taxing imports or taxing exports is equivalent
 - Corollary: An import tariff with an export subsidy is neutral
 - Border adjustments don't matter

But Lerner symmetry does not hold in a dynamic context

- Generally, Lerner symmetry does not hold with multiple goods
- An import tariff and an export tax have the same effect on the relative price of an imported and an exported good
- But in a dynamic model there are many imported goods and many exported goods.

- An export tax, if time varying, affects the intertemporal price of the exported goods
- And an import tariff, if time varying, affects the intertemporal price of the imported goods.
- In a dynamic context taxes change over time

Recent discussion on the corporate income tax in the US

- Initial proposal for a border adjustment on the corporate income tax.
- Full deduction of investment.
 - A capital income tax with full deduction for investment does not distort capital accumulation.
 - Just taxes the initial capital.

Discussion in Europe on the fiscal union and tax harmonization

- No basis for tax harmonization
- Discussion on trade taxes and other taxes ought to be done jointly

Winners and losers from free trade

- In this set up there are no losers, just winners.
- In reality there are winners and losers of globalization, ... and automation
- And there are restrictions on how to compensate the losers

- Fiscal challenge in Europe, as in the rest of the developed world: How to deal with the social impact of widespread automation
- Make sure that the benefits from innovation in automation and artificial intelligence are not confined to only a few
- Policy discussion on the impact of automation on the job market in Europe and possible policy remedies, also in the European Parliament.

Should Robots Be Taxed? by Guerreiro, Rebelo and Teles

- Who are the winners and losers from automation?
- How can taxes compensate the losers?
- Is there a role for a robot tax?
- How is this consistent with the previous results on free trade and no taxation of capital and other intermediate goods?

Diamond and Mirrlees

- Diamond and Mirrlees (1971): No taxes on intermediate goods as long as all net trades can be taxed at different rates.
- Different types of labor supplied are different net trades, and therefore, in the model, they can be taxed at different rates.
- Because different people cannot be taxed at different rates, taxing robots may be useful
- A tax on robots is a tax on the non-routine and a subsidy for the routine, and even if it distorts production, it should be part of fiscal policy

Atkinson and Stiglitz

- Atkinson and Stiglitz (1976) show that uniform taxation (and production efficiency) is optimal in a Mirrleesian set up
- But in Atkinson and Stiglitz, productivity differentials are exogenous
- In a model with routine and nonroutine labor, productivities (or wages) are endogenous
- It may be optimal to tax robots to affect pre-tax wages and relax information constraints.

- An ex-ante, optimal social-insurance arrangement would have routine and non-routine consuming the same.
- The non-routine would work hard, while the routine would live off transfers. The result is that everyone would want to be routine.
- A tax system must ensure that the non-routine prefer to work hard, instead of earning the relatively low income of the routine, paying less taxes, and working less.
- Raising the robot tax, raises the pre-tax wage of the routine, and lowers the wage of the non-routine, increasing the hours that the non-routine would have to work to make the income of the routine.

How much should we tax robots?

- That depends on how restricted the tax system is.
- If the only restrictions are information constraints, not much, at most 10%.
- But if there are additional restrictions, the rate can get close to 40%.

Unconditional basic income

- If the tax system is the status quo with more progressivity, then despite the progressivity and high robot taxes, routine labor is still made very poor with automation.
- There is a better way to redistribute. A system with a universal transfer reduces substantially the costs of redistributing.
- The universal transfer is the unconditional basic income, recently discussed, and dismissed, in the European Parliament. Interestingly, also in the context of the perils from automation.

Figure 1: Status-Quo Equilibrium

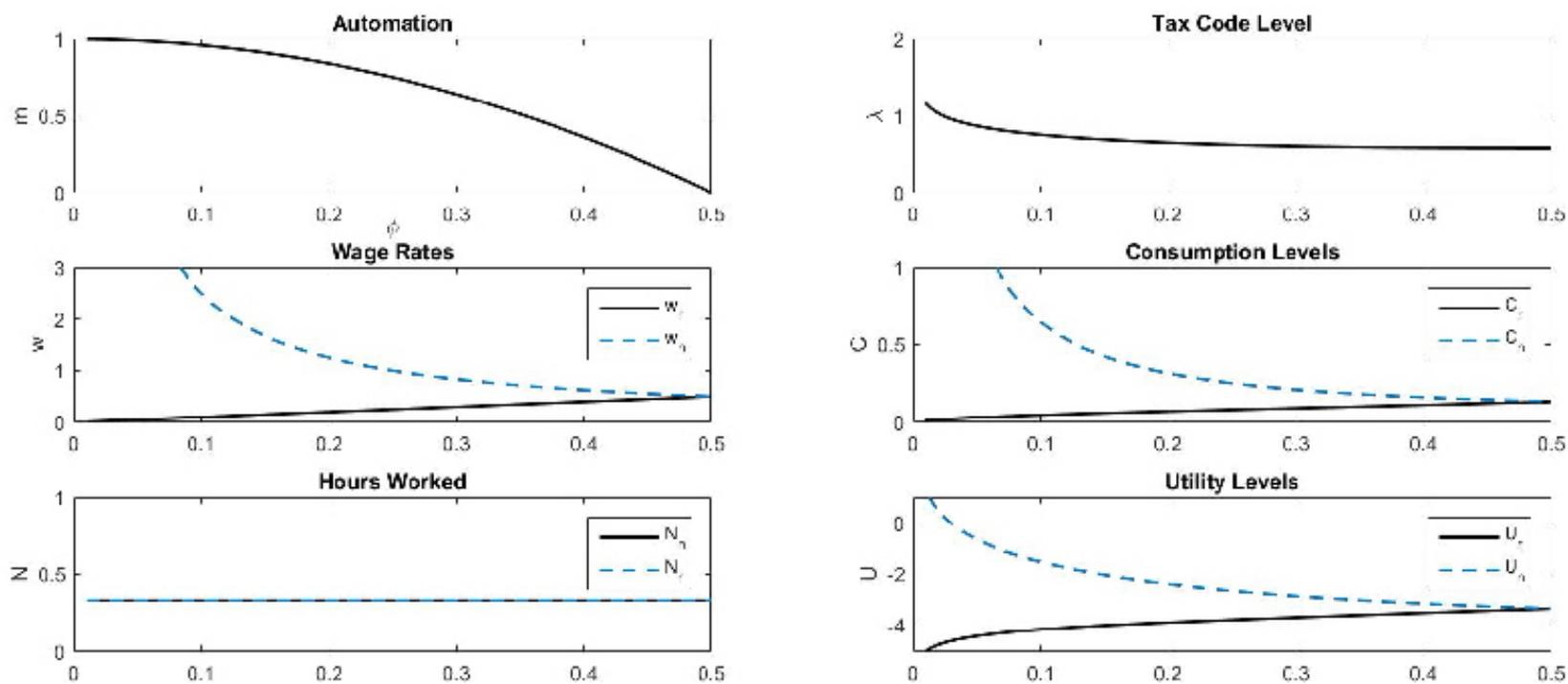


Figure 3: Mirrleesian Optimal Taxation

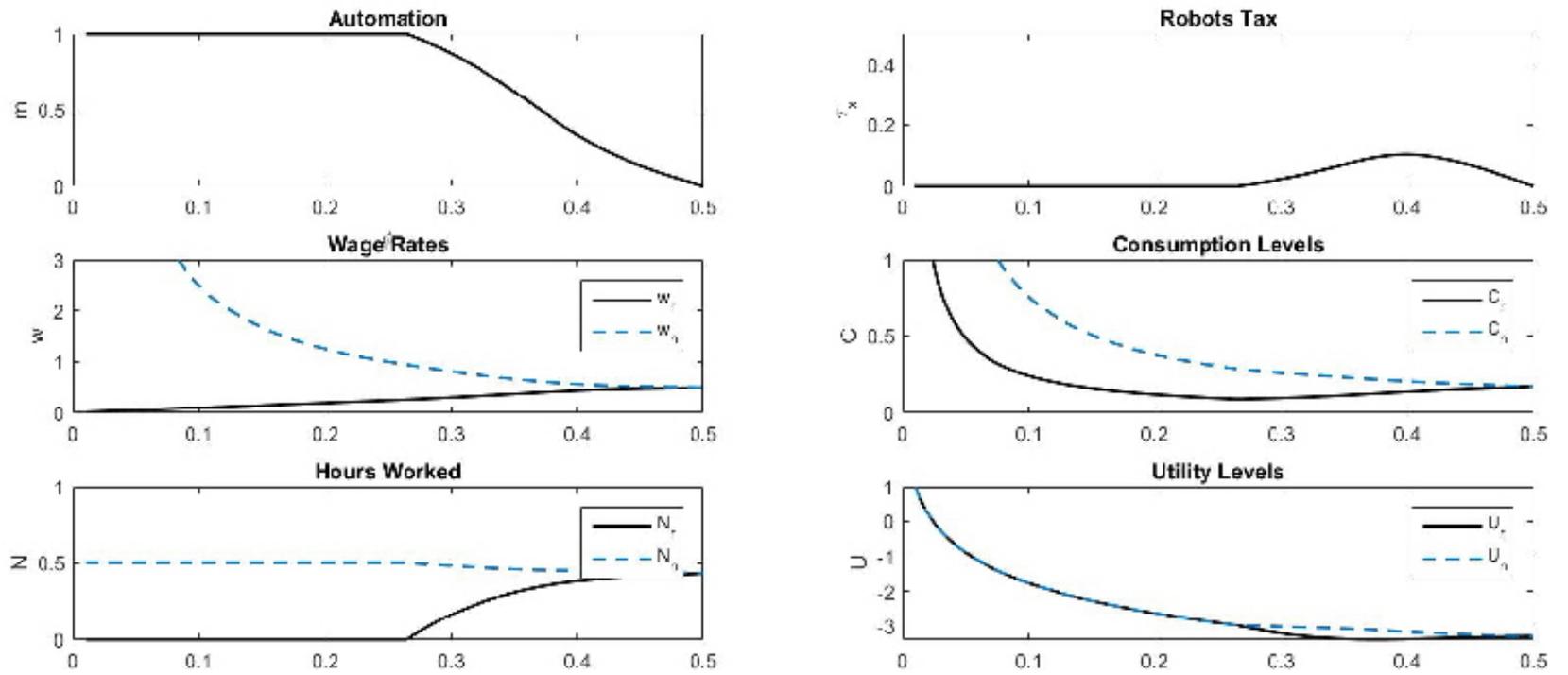


Figure 4: Simple Taxes - Panel A

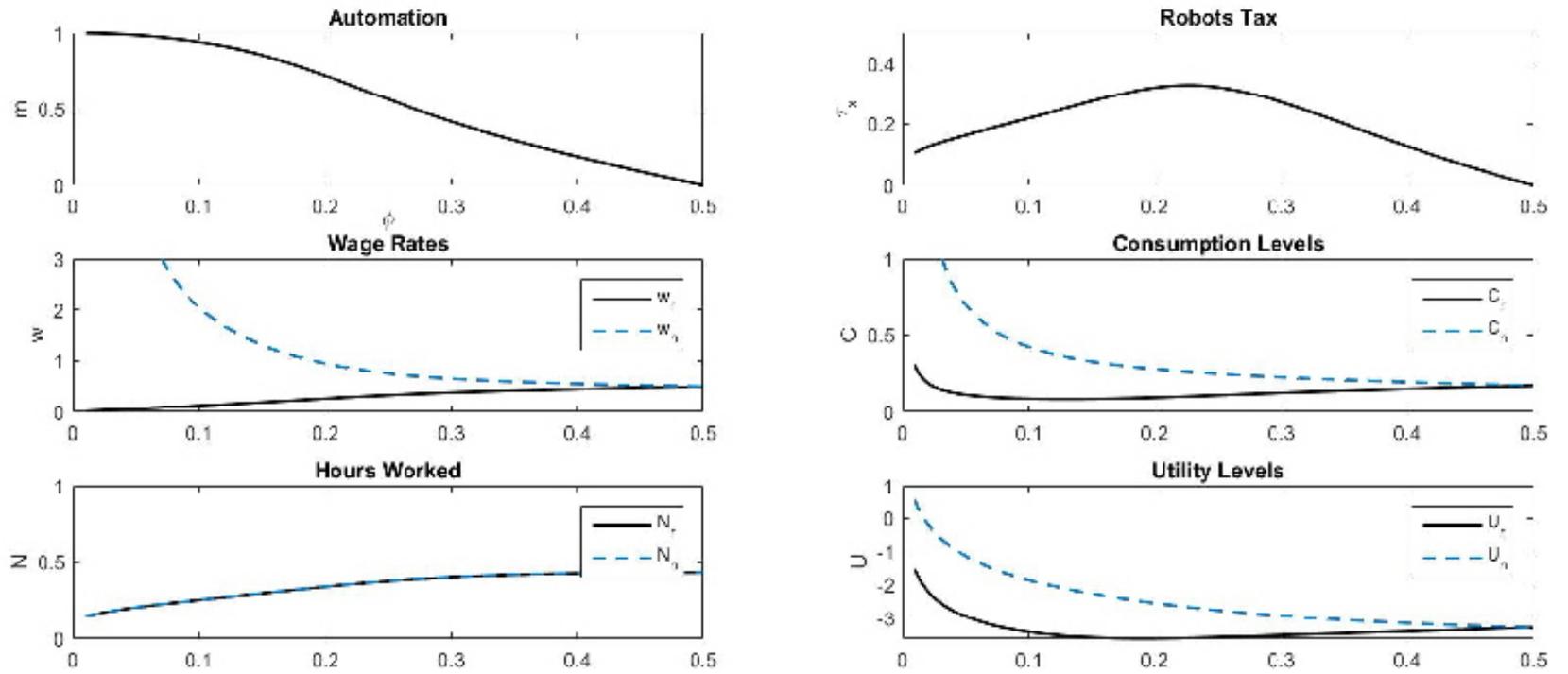


Figure 5: Simple Taxes & Lump Sum Rebate - Panel A

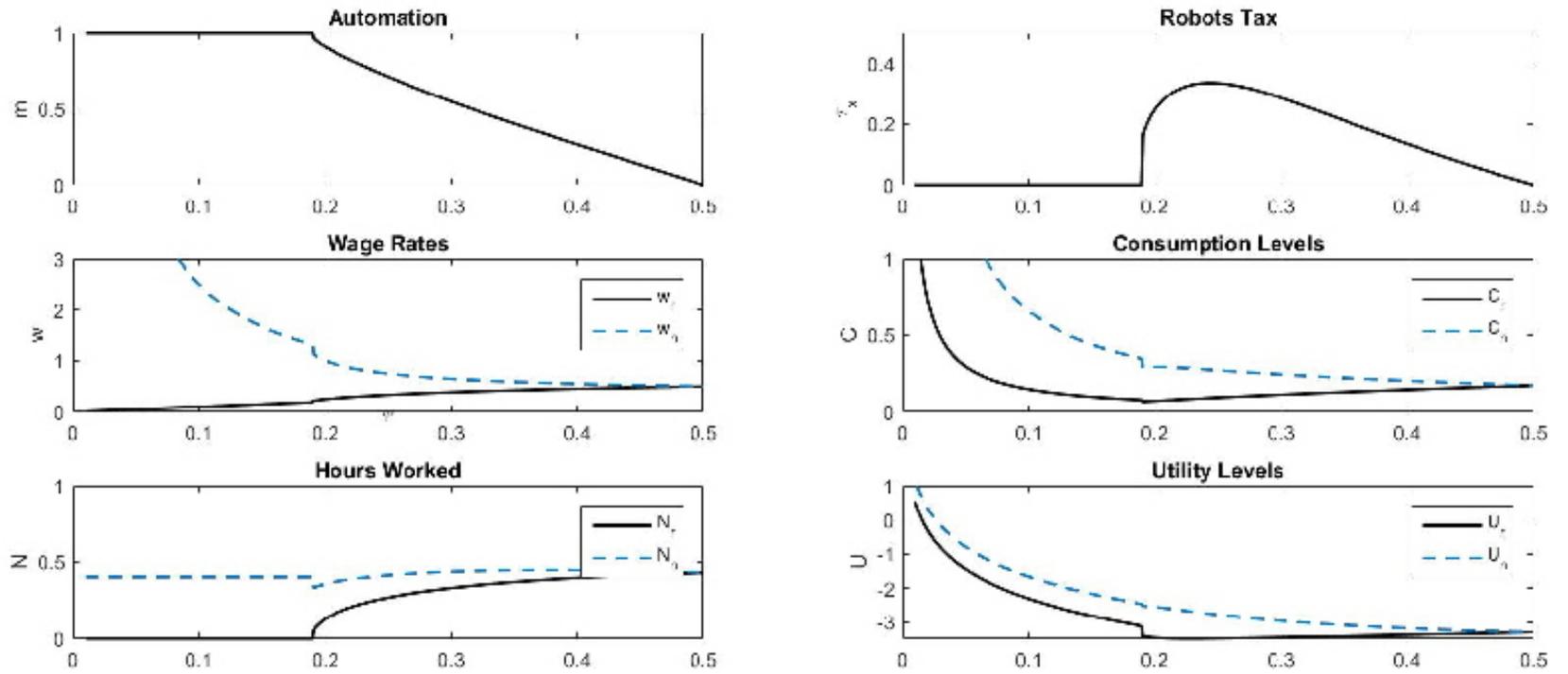


Figure 9: Mirrlees Second Best with Occupational Choice (Panel A)

