

## **Kondratyeff Cycles stifled by Increasing Taxation Rates?**

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### **1. The Framework of the Model “Longwave, Employment & Taxation”**

In the financial markets, economic growth and employment in the US contrast with widespread and chronic unemployment on the European continent. While the debate is going on whether this is a short time phenomenon or not, one could hypothesize it to be the telltale of a serious bifurcation in economic longterm development.

Suppose the US with its relatively low taxation level was currently enjoying a new economic growth period in a longwave economic cycle, does that mean for Europe with its notoriously high taxation levels to expect no longwave upturn at all?

We have run experimental simulations on that hypothesis. To do this we've combined a robust model of the economic longwave with a weakly coupled employment and taxation model. By simply assuming a high taxation level coupled to extensive welfare subsidies we've been able to simulate the disappearance of any longwave phenomenon. The longwave selfordering cycles of capital building known as Kondratyeff-Cycles are being suppressed.

The models underlying our report were presented already at the ISDC in Stirling, 1994. This time we'll present an updated Powersim-version that will be made available at the Bergen conference courtesy of Fast Focus Consulting Group.

### **2. Taxation and Employment Model**

Statistical data from different national economies show an almost perfect correlation of taxation rates and subsidization level on one side and unemployment on the other. A preliminary confirmation of a causal relationship together with some insight into the inner workings of the observed correlations have been attained by a very simplified simulation model of the interaction between taxation and employment.

The model comprises two different economic sectors interacting with each other. A productive sector is the tax base. If profits after tax are positive, businesses will expand and hire people. Hiring reduces the population in the non-productive sector, that consumes rents and subsidies paid for by taxes. Hiring raises the level of income in the productive sector and therefore causes rents or subsidies to rise in the non-productive sector with some delay. With more delay due to taxation legislation such a rise is fed back to the productive sector.

### **3. The Longwave, Employment & Taxation Model Template**

A selfcontained introduction to the use of the model will be supplied with the model on diskette. This should help stimulate discussions about sustainable policies for economic growth on the basis of a realistic framework of causal relationships.

The template model consists of six different submodels with the imported longwave model (taken from reference [1], J.D. Sterman) comprising

- Capital Sector
- Productive Sector
- Goods Sector

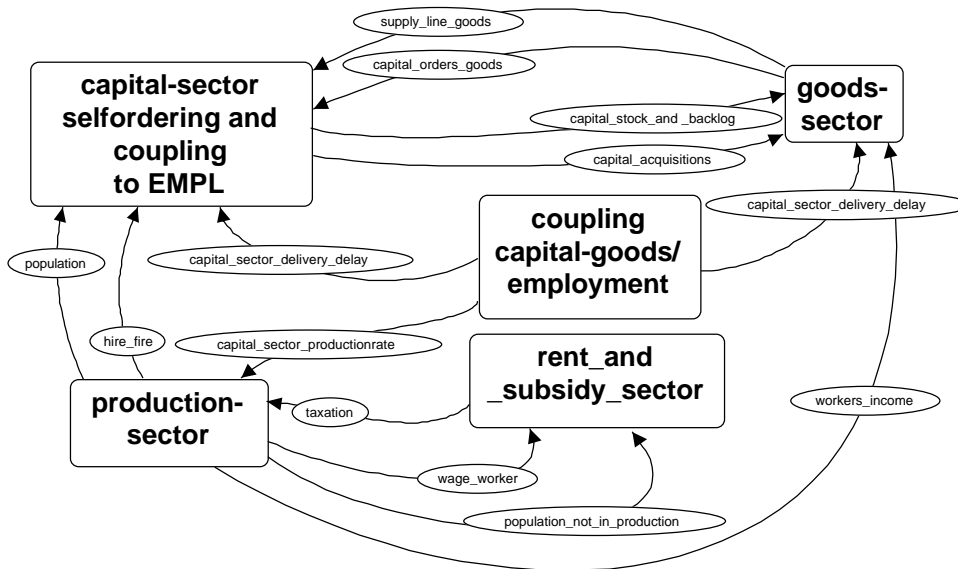
The employment model comprises

- Rent Sector

- Coupling Capital-Goods/Employment

Input and Simulation-Output

This latter model together with the coupling interface to the imported longwave model was developed by Fast Focus Consulting Group based on the Professional Dynamo Plus version presented first at the Stirling 1994 conference.



**Fig. 1** Overview of the Longwave, Employment & Taxation model template

**Conclusions**

Preliminary experiments with a simplified two-sector employment model emphasize the interdependence between employment and the net effect of taxations and subsidies. The time behavior of the model generally does show oscillations with periods of up to 50 years. Increasing the taxation rate results in decreasing or even suppressing cyclical economic longterm activity.

**References**

- [1] Sterman, J.D.; A Simple Model of the Economic Long Wave; ILP-Report 6-69-83, MIT
- [2] Sterman, J.D.; The Economic Long Wave: Theory and Evidence; WP-1656-85, MIT
- [3] Figgie, H.E.; Bankruptcy 1995; Little, Brown & Co. 1992, ISBN 3-550-06831-X