The identification of the constraints in the productive structure behind the near-linearity in the empirical wage-profit curve

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About me

My name is Matías, I'm currently finishing my B.S.c in Economics at the National Autonomous University of Mexico (UNAM). As of January 2025, I find myself doing an exchange semester at the Humboldt-Universität zu Berlin. My research interests are centered around multidimensional poverty, income inequality, development economics and the political economy of neoclassical theory. I'm interested in pursuing an academic career in economics after graduate school. I'm currently looking to apply to M.S.c programs in economics in the European Union for the incoming 2025 winter semester.

Identifying the problem

The empirical *wage rate-profit rate curve* (wage curve) for a typical market economy is nearly linear. Across a wide sample of countries, years, aggregation levels, and types of production models the near linearity of the wage curves contrasts with the potential shapes derived from the properties of the models as well as with the expected shapes discussed in the debates on capital theory in the 1960s-1970s.

One of the results of the debates in capital theory that Pasinetti (1966) paid most attention is that in the typical linear production models, with one or multiple techniques, we have that:

- Changes in income distributions ⇒ increase or decrease relative prices ⇒ the value of any aggregate of commodities becomes dependent on income distribution ⇒ **capital intensities cannot in general have a negative monotonic relationship with the rate of profit** (Pasinetti, 2012)

This sharp contrast between potential/expected and observed wage curves has produced a modern literature which seeks to explain this conundrum and to develop its implications for the debates on capital theory. We believe that

1. While the literature has not given a solid economic explanation, it has made substantial progress in the identification of the characteristics of actual productive structures behind the observed stylized fact (see, for example, Schefold, 2013b).
2. The theoretical characterization of nearly linear wage curves by the literature requires a consolidation, and the empirical work is incomplete in this regard: **the objective of the paper is to fill these gaps.**

Background

One part of the literature has advanced the hypothesis that the empirical regularities rest mainly on the characteristics of the input matrix. See Schefold (2013a) and Mariolis and Tsoulfidis (2011), for example. Another part consider that it is not only the input matrix but also its relationship with the labour vector and the vectors of social production and consumption, as seen in Torres-González (2018,2) and Ferrer-Hernández and Torres-González (2022). Hence:

- the empirical study of the eigenoutputs/the characteristics of the relationship between the numeraire and the input matrix has been overlooked. The only work in this matter is Torres-González (2018).
- In addition, there is room for consolidation and generalization of the previous results by Torres-González (2022) and Schefold (2023).

There is an absence of work on the measurement of the contributions of the relationship between the matrix A, of input-output coefficients, and q (gross output), f (net output) and l (labor vector) on the near linearity of the curves.

Our Approach

The paper can be broke down in *theoretical* and *empirical* contributions.

- **From a theoretical standpoint** we provide a characterization of linear and hyperbolic wage curves for a family of linear production models as well as *sufficient conditions for approximate curves with limited nonlinearities*. This characterization identifies the constraints in the parameters of the theoretical wage curves that can reproduce the shapes from the empirical curves.
- **Empirically** we compute the key parameters from the productive structure of a wide and detailed sample of economies and contrast them with the identified constraints from the theoretical models. The database consists of the full WIOD database (between 25 and 43 countries from 1965-2014 and for 23 to 56 sectors) and the U.S. Benchmark IO tables (for 1977-2017 and for more than 400 sectors).

Expected results: our current work

The empirical results show that the near linearity of actual wage curves is the product of three constraints on the productive structures:

1. A close association between the labor vector, l, and the left-hand *Perron-Frobenius* (P-F) eigenvector of the input matrix A.
2. A close association between the numeraire vectors (q, f and the *consumption vector*).
3. The clustering of most subdominant eigenvalues of the input matrix around zero.

These constraints on the I-O accounts are studied from multiple approaches and they all turn out to be robust across countries, years, and aggregation levels, strongly suggesting the existence of a set of stylized facts in the productive structures of market economies. As with their theoretical counterpart (the techniques of production and the structure of social output), these empirical regularities contrast with the potential/expected constraints on actual productive structures.

In a nutshell...

The paper discusses the theoretical and empirical results with the literature that seeks to explain the near linearity of the empirical wage curves. In addition, we discuss the implications of the identified stylized facts for the debates on the likelihood of experiencing capital paradoxes and its meaning for the critiques of the neoclassical theory. Finally, we aim to introduce the consumption-growth curve and, together with the theoretical and empirical results, discuss the implications for Pasinetti's theory of structural change.

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