Which features of the productive structure are behind the empirical near-linearity of the wage-profit curves? A study of the U.S. Benchmark I-O accounts

Matías Carrasco-Jiménez[1,2,3] and Luis Daniel Torres-Gonzalez[4]

[1]Università degli Studi Roma Tre

[2]Sorbonne Université

[3]Université de technologie de Compiègne

[4]Universidad Nacional Autónoma de México

Long Abstract, April 14, 2026

The empirical wage–profit rate curve (wage curve) of market economies is strikingly close to linear. Across countries, years, aggregation levels, and alternative linear production models, this near linearity contrasts sharply with the wide range of theoretically admissible shapes and with the nonlinear patterns emphasized in the capital theory debates of the 1960's and 1970's. Despite a growing literature, a comprehensive economic explanation of this stylized fact remains elusive.

This paper provides a theoretical and empirical characterization of the productive-structure features underlying nearly linear wage curves. First, we derive conditions for linear, hyperbolic, and approximately linear wage curves within a general family of linear production models. The analysis identifies parameter restrictions—expressed in terms of spectral properties of the input-output matrix of the U.S. economy and the alignment of key economic vectors—that constrain the curvature of the theoretical wage–profit schedule.

Second, we evaluate these restrictions using the U.S. Benchmark Input–Output Accounts for 1977–2017 (over 400 sectors). We compute the relevant spectral parameters

and examine whether the empirical productive structure satisfies the theoretical constraints associated with near linearity. These results are associated strictly to the spectral decomposition of the empirically observed technical coefficients matrix ($\mathbf{A}$), such that $\mathbf{A} = \mathbf{Q}\mathbf{\Lambda}\mathbf{Q}^{-1}$.

Our results show that the empirical wage curve's near linearity is driven by three robust structural regularities: (i) a close alignment between the labor vector ($\mathbf{l}$) and the left-hand Perron–Frobenius eigenvector of the input matrix ($\mathbf{q}_1^L$);[1] (ii) a strong alignment between alternative numeraire vectors, either the gross ($\mathbf{x}$) or net output ($\mathbf{y}$), and the right-hand Perron–Frobenius eigenvector ($\mathbf{q}_1^R$) (a novel finding in the literature);[2] and (iii) a clustering of subdominant eigenvalues $\mathbf{\Lambda} = \text{diag}(\lambda_1, \lambda_2, ..., \lambda_n)$; eigenlabors $\alpha = \{\mathbf{l}\mathbf{q}_1^R, \mathbf{l}\mathbf{q}_2^R, ..., \mathbf{l}\mathbf{q}_n^R\} = \mathbf{l}\mathbf{Q}$; and eigenoutputs $\chi = \{\mathbf{q}_1^L\mathbf{x}, \mathbf{q}_2^L\mathbf{x}, ..., \mathbf{q}_n^L\mathbf{x}\} = \mathbf{Q}^{-1}\mathbf{x}$ around zero. These regularities are remarkably stable across years, suggesting the existence of stylized facts in the productive structure of the U.S. economy. The findings help reconcile theoretical possibilities with observed wage curves and contribute to ongoing debates on capital theory and linear production models.

[1] Where $\mathbf{q}_1^L = \{Q_{11}, Q_{12}, ..., Q_{1n}\}$ (i.e., the first row of the left-hand eigenvector matrix of $\mathbf{Q}$)

[2] Where $\mathbf{q}_1^R = \{Q_{11}, Q_{21}, ..., Q_{n1}\}$ (i.e., the first row of the right-hand eigenvector matrix $\mathbf{Q}^{-1}$)